Australian Government
National Capital Authority

Application Number: WA100347

s22 [redacted]
Defence Housing Australia
Level 2, 287 Elizabeth St
Sydney NSW 2000

s22 [redacted]

Block 3 Section 65 Campbell – Academy Close, Campbell: Demolition of dwellings, carports, fences and driveways

I refer to the works approval application, drawings and supporting information on the above works submitted to the National Capital Authority (NCA) for consideration on 19 April 2017. I also refer to further information submitted on 1 June 2017.

The NCA advises that:

Works Approval is granted pursuant to Section 12(1)(b) of the *Australian Capital Territory (Planning and Land Management) Act 1988* for the demolition of twenty two (22) dwellings, carports, fences and driveways at Academy Close as shown on Drawing Nos. DHA_SK_ACAD.08(A) – Demolition Site Plan, TMP(02)A – Demolition Tree Management Plan (Amended), RTMTDHA-0001 – Demolition Traffic Management Plan and as outlined in the supporting documentation submitted.

> The term "works" is defined in the Act to exclude anything done inside buildings or structures. Under the Act works approval may be given where the works are in accordance with the National Capital Plan. This works approval is given only on the basis of satisfaction that the works are in accordance with the National Capital Plan and does not constitute building approval. It does not constitute any form of warranty as to the structural sufficiency of the proposed works, as to safety of the works or as to safety of the performance of the works. It is the responsibility of the applicant to ensure the safety of the works and the safety of the performance of the works and to ensure that any approvals required under separate legislation are also obtained.

Please Note:

1. All existing trees are to be adequately protected during the demolition works. It is noted that no trees are proposed to be removed as part the works.
2. A separate Works Approval application will be required to be submitted to the NCA for the construction of new dwellings and the removal of any trees.
3. Prior to commencement of works, Roads ACT approval for temporary traffic management (TTM) works as shown Drawing No. RTMTDHA-0001 is to be submitted to the NCA for approval. If this drawing is not approved by Roads ACT, further approval will be required from the NCA for the approved TTM works.
4. Prior to the commencement of works, any ACT Government approvals including those required from the Environment Protection Authority are to be obtained.

The approved plans are available for download from your Works Approval eLodgement account. Should you have any query or need further advice on the matter please contact Andrew Connor on (02) 6271 2822.

s22 [redacted]

Director, Development Approvals & Heritage

11 July 2017

HOLD POINT RELEASE – Rev: -

PROJECT No.	283	**HP REF**	5
PROJECT	DHA - Academy Close	**DATE**	Thursday, 20 January 2022
CONTRACT No.			
PRINCIPLE	Defence Housing Australia		
CLIENT REPRESENTATIVE	Northrop		

HOLD POINT DETAILS		
HP / Clause Reference	15.7	15.7.01.1
Description of Hold Point	Placement of concrete in the works	
Submission details	At least two (2) working days notice of each intention to place concrete in the Works. At least four (4) working hours prior to the proposed commencement of placing concrete (unless otherwise specified), the Contractor shall submit a certificate of compliance in respect of formwork, reinforcement, embedments and screeding guide rails. This certificate is to be accompanied by verification checklists and other details showing compliance.	
Release of Hold Point	The Superintendent will consider the submitted documents and may carry out further surveillance and audit, prior to authorising the release of the Hold Point.	

SUBMISSION DETAILS			
LOCATION REFERENCE	Prepour inspection of bridging slab concrete footings Note that footings foundation have been inspected by the Geotech Engineer on 20/11/22 at s22 [redacted] will be provided upon receipt		
GroupOne Representative	[redacted]		
NAME	[redacted]	**DATE**	20/01/2022

APPROVAL DETAILS			
Approval to proceed past this HOLD POINT is (Please circle)		**GRANTED / NOT GRANTED**	
Details / Comments	s22 [redacted]		
CLIENT REPRESENTATIVE	[redacted]		
NAME	[redacted]	**DATE**	

ACT Geotechnical Engineers Pty Ltd
ACN 063 673 530

5/9 Beaconsfield Street, Fyshwick ACT 2609
PO Box 9225, Deakin ACT 2600
Ph: (02) 6285 1547

27 January 2022
Our ref: JH/C11483

Client: Group 1
Via email: <mine@groupone.com.au>

Attention: Mine

Academy Close Subdivision

Geotechnical Foundation Certification

1 Introduction

At the request of the client, ACT Geotechnical Engineers Pty Ltd carried out a geotechnical assessment of the foundation of the bored piers for the watermain protection measures at the above project (See Figure 1 for location).

The inspection was undertaken on the 20 January 2022.

2 Foundation Conditions

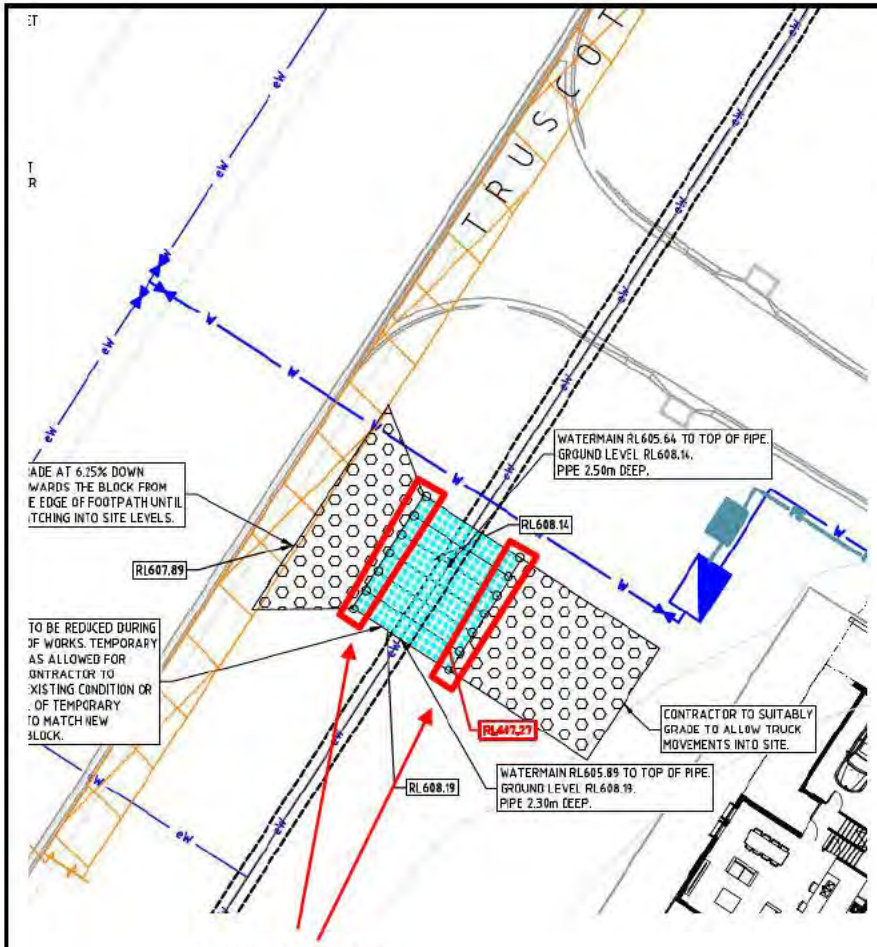
The pier foundations exposed natural materials in HW Dacitic Ignimbrite. The depth of the piers was approximately 3.3m below the existing surface.

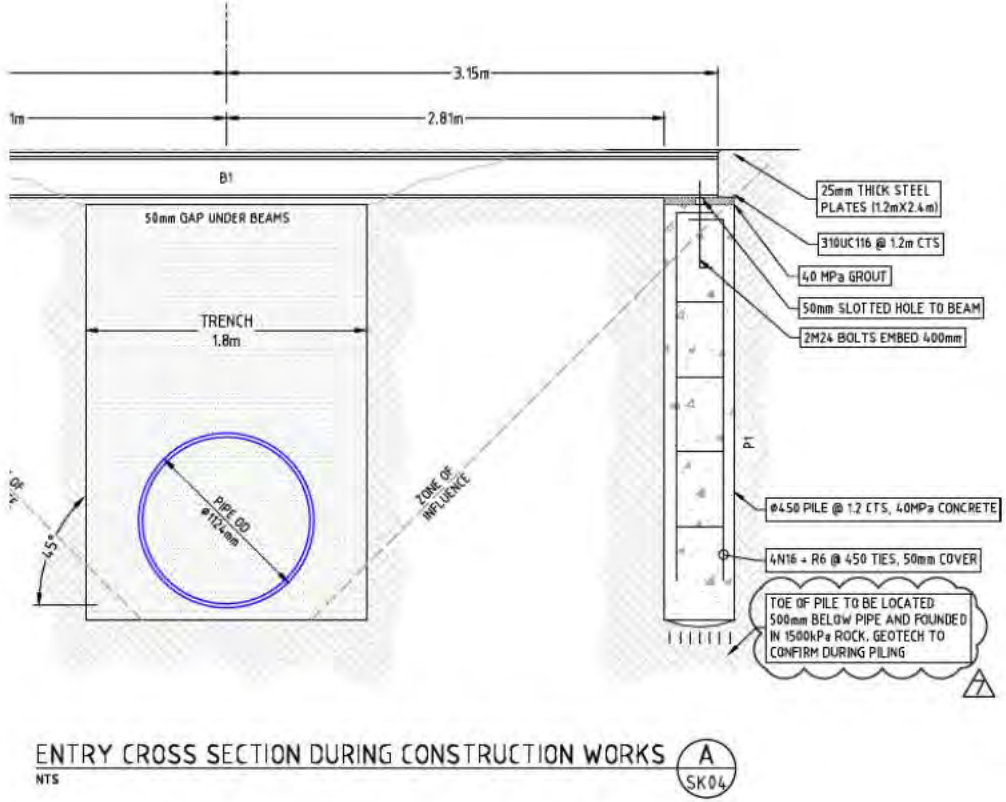
3 Assessment & Recommendations

The exposed HW Dacitic Ignimbrite foundation is suitable for the required 1500kPa allowable bearing pressure as shown on the Northrop Engineers Structural drawings.

Yours faithfully
ACT Geotechnical Engineers Pty Ltd

s22 [redacted]





ACADEMY CLOSE

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

Concrete Dispatch Advice

Holcim

NOTE: This Dispatch Advice cannot be used as proof of Delivery.
Proof of Delivery is available on the Customer Portal.
Refer to our website www.holcim.com.au

TAX INVOICE
Total price includes GST for COD only
For Terms of Sale refer overleaf
Holcim (Australia) Pty Ltd ABN 87 099 732 297

WARNING WORK SAFELY WITH CONCRETE

WET CONCRETE MIX. A splash of concrete into the eyes can cause serious eye injury and blindness. Wear eye protection (AS/NZS 1337) when handling wet concrete. Direct contact with wet concrete will irritate your skin and can cause dermatitis and severe chemical (caustic) burns. Do not kneel or rest any part of your body on wet concrete or wet concrete surfaces. Wear gloves (AS 2161) and protective clothing and change if they become wet from concrete. Special protective equipment may be required depending on the application, e.g. concrete pumping may require a face shield or sealed goggles.
FIRST AID: Eyes – flush with plenty of water for at least 15 minutes
Skin – remove soaked clothing and wash thoroughly.
HARDENED CONCRETE: If you cut, drill, saw, chase, sand, grind or break up hardened concrete,concrete dust containing Crystalline Silica may be realeased. National Exposure Standard for Respirable Crystalline Silica must be complied with. Breathing Crystalline Silica dust repeatedly may lead to lung diseases including bronchitis and silicosis. Breathing heavy concentrations of concrete dust may cause coughing and sore throat. Wear an approved P2 dust mask (AS/NZS 1715/1716) when exposed to concrete dust. Dust may irritate the eyes; wear eye protection (AS/NZS 1337). To stop dust build up regularly wet and sweep or vacuum and put dust in a covered container.
DISPOSAL. Follow local authority guidelines for getting rid of waste.
See Holcim Premixed Concrete Material Safety Data Sheet for more information – available at this website address:
www.holcim.com.au

December, 2017

Date	Command Job No. / SAP Quote No.	Plant	Plant No.	DOCKET No.
21-Jan-22	1421	FYSHWICK	5450	45079290

Customer No.	Customer Name	Time Printed	Time Batched
409020	GROUP ONE PTY LTD	13:17	

Delivery Address / Instructions	Customer Purchase Order No.
+CAMPBELL, CNR TRUSCOTT AND ACADEMY DR	

Total Order M³	Progressive M³	This Load M³	Truck No.	Klm / Zone / Map Ref.	Design Slump	Actual Slump
7.00	7.0	7.0	2518	8 CA60D6	80	

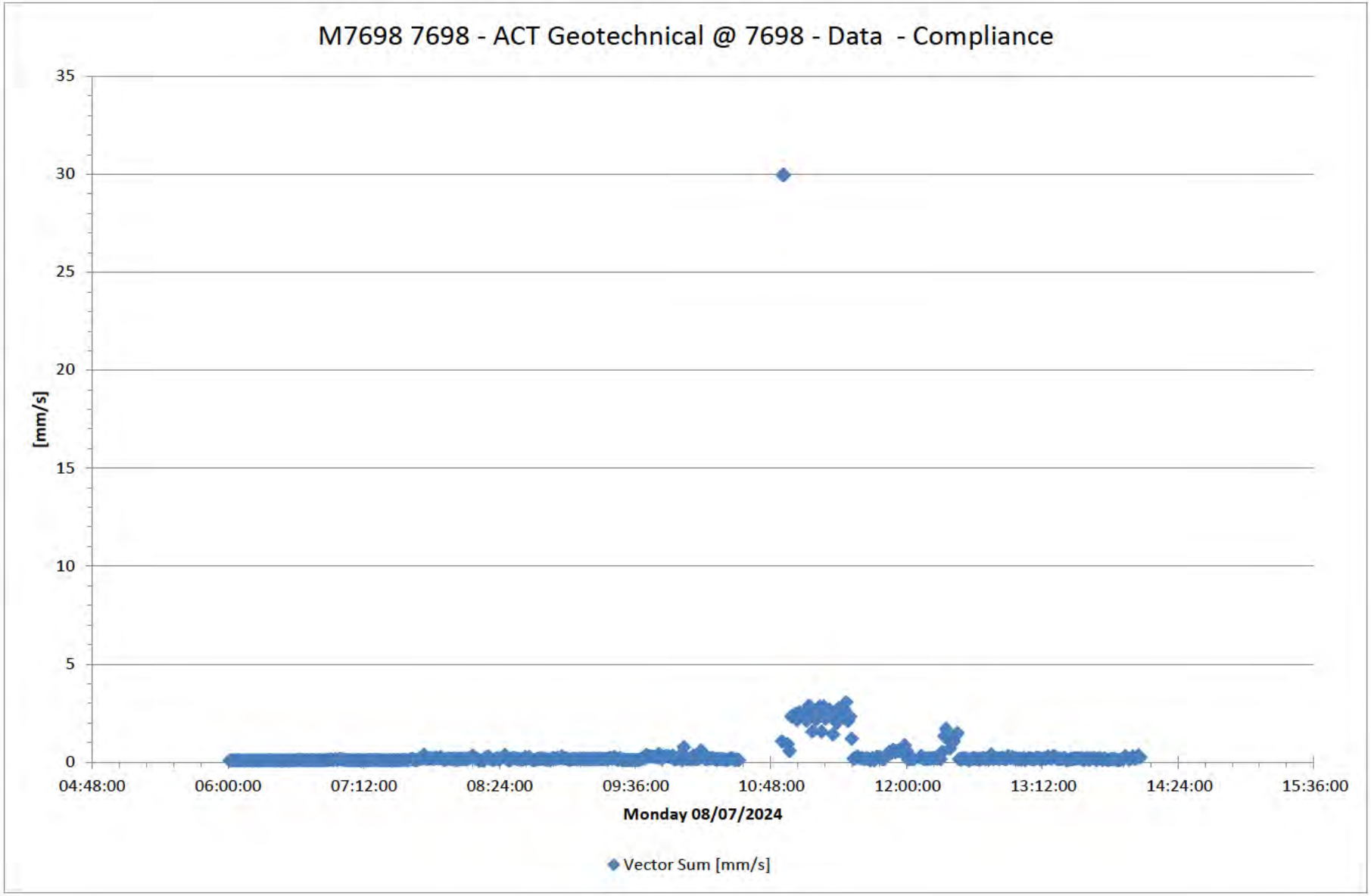
Material Code / Strength MPa	Mix Description	COD Unit Price	GST Inc COD Total
NN402B	N40 20mm 80mm SLUMP CONCRETE		

EXTRA PRODUCTS, SURCHARGES AND MERCHANDISING

Material Code	Description/UOM	Quantity	COD Unit Price	GST Inc COD Total

		WATER ADDED		CASH SALES ONLY	
Customer Service Phone	02 6285 5320	Batch + Moisture		Total COD Price (This Docket)	
		Slump stand			
Previous Truck		On site		Total COD Price Progressive	
		Customer's request			
		Max. water			

Comments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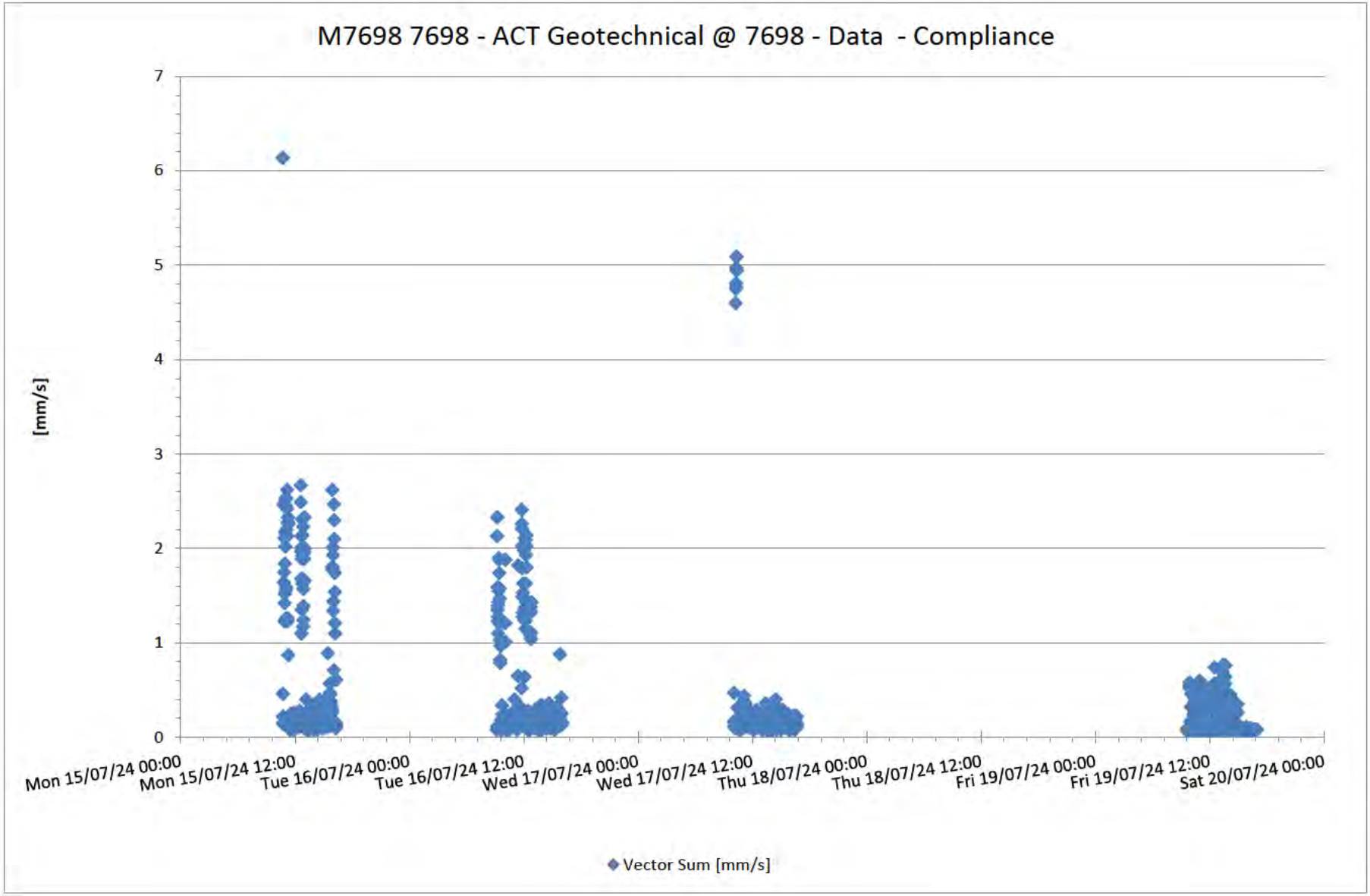
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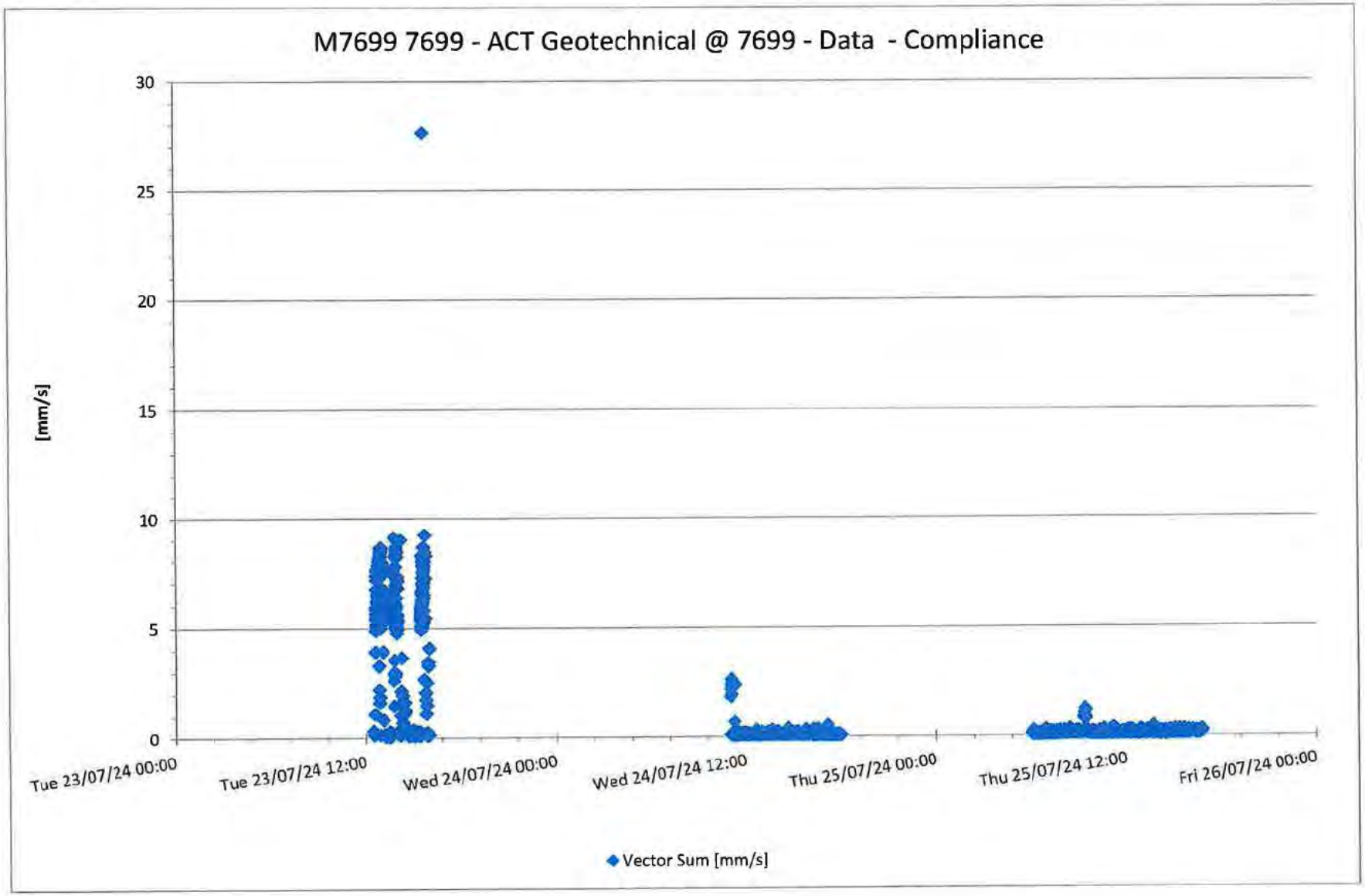
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Fri 26/07/24 00:00
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TRUSCOTT STREET

APPROX W-MAIN

SITE BOUNDARY

COMMONWEALTH LAND

BLOCK 4 (OFFSITE) TO SOUTH NOT ASSESSED

LANDSCAPE ARCHITECT

enviro links design
LANDSCAPE • GOLF • WATER
VEGETATION MANAGEMENT
ENVIRONMENT • ECO RESORTS
5 / 61 Dundas Court PHILLIP ACT 2606
PO Box 88 WARAMANGA ACT 2611
Ph:(02) 6281 6066 Fax:(02) 6281 6065
www.enviro links.com.au

NO.	DESCRIPTION	DWN	APP'D	DATE
A	FOR INFORMATION	JK	JRD	17/04/19

PROJECT
CAMPBELL
(Block 3 Section 65)

TITLE
EXISTING TREE RETENTION ANALYSIS

SCALE 1:1000@A3 (0 5 10 15 20m)

NORTH N/A

JOB NO. 1120

DWG NO. TMP01

ISSUE A

NOTES
- Copyright and property of Enviro Links Design Pty Ltd. May be used only for the stated project and issue status, and in accordance with terms of engagement for which it was commissioned.
- To be read in conjunction with all relevant contracts, specifications, reports, drawings and development approval conditions. Obtain any outstanding statutory approvals prior to commencement of works.
- Figured dimensions to be taken in preference to scaled measurements. Dimensions in millimetres unless noted otherwise.

Where Issued For Construction
- Contractor is responsible for locating all services and obtaining necessary clearances and approvals. Contractor to verify dimensions, levels & details to site conditions and prior works, and report all discrepancies to the Superintendent for resolution before commencing work.
- Present samples and gain approval from Superintendent for any nominated materials or finishes.
- Adopt and Implement approved Tree Management Plan, Landscape Management & Protection Plan & Environmental authorisations. All works to be in accordance with current TaMS (DUS) Standard Specification for Urban Infrastructure Works unless otherwise prescribed. All disturbance by works must be reinstated to existing condition.

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CLIENT
DEFENCE HOUSING AUSTRALIA (DHA)

Academy Close
CAMPBELL

DHA
Defence Housing Australia

LEGEND

TREES TO BE RETAINED

TREES PROPOSED FOR REMOVAL

TREES TO BE RETAINED SUBJECT TO DETAILED ENGINEERING DESIGN

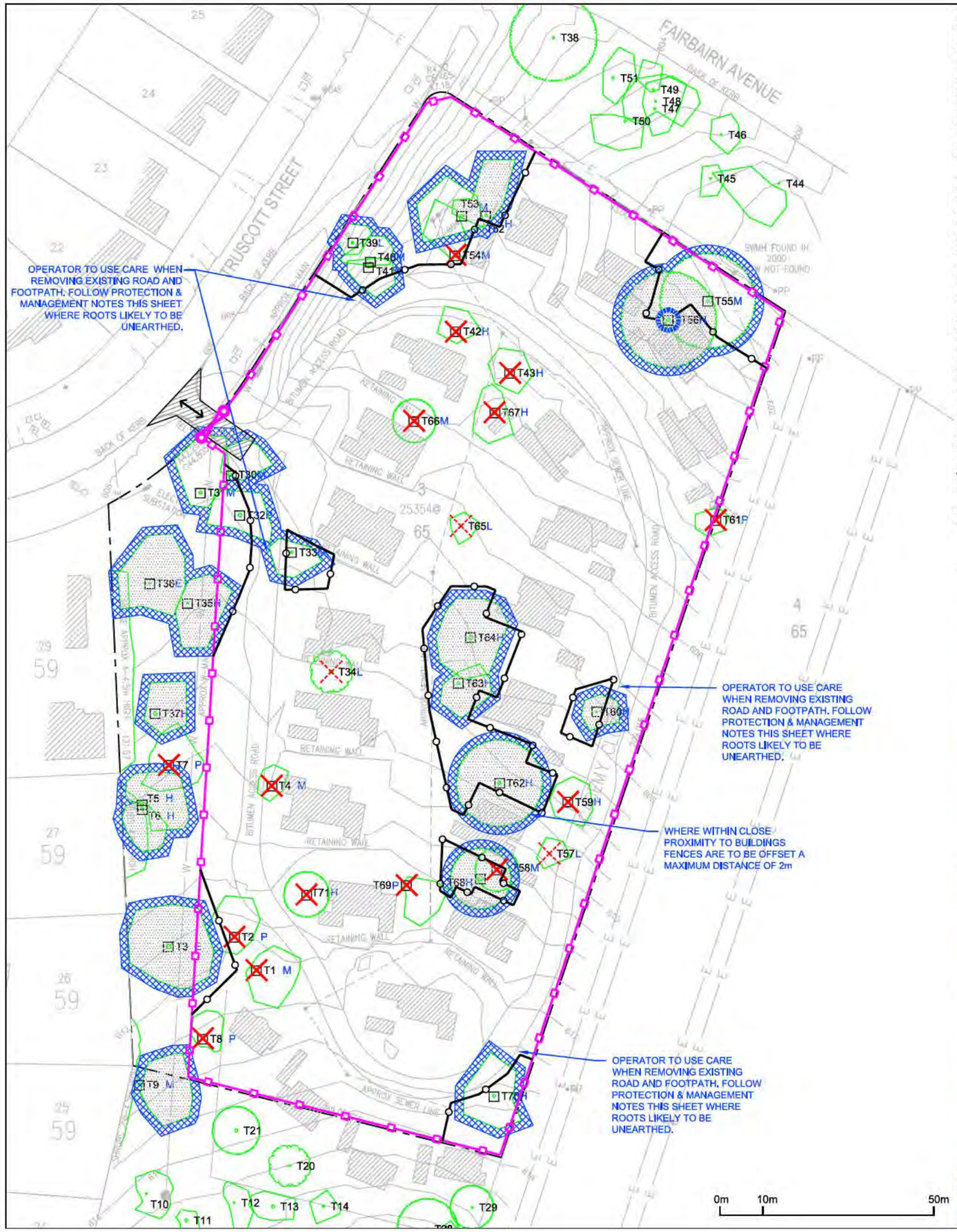
TREE APPROVED TO BE REMOVED AS PER NATIONAL CAPITAL PLAN

E,H,M,P,D — VALUE RANKING FOR INDIVIDUAL TREES (L= LOW VALUE UNREGULATED, P=POOR VALUE TREE, M=MEDIUM VALUE TREE, H=HIGH VALUE TREE, D=DEAD)

AMC ARCHITECTURE +

NORTHROP

PURDON PLANNING



TREE PROTECTION NOTES

1. Contractors are reminded that the majority of tree roots grow in the top 300 mm of soil. These are the feeder roots, often very fine roots that provide the tree with water, oxygen and nutrients. These roots typically grow between the tree's trunk to well beyond its 'drip-line' (the canopy edge). Ground works within the drip zone of a tree have the potential to do considerable damage to its root system. It can affect tree stability and tree health to such an extent that it will lead to the decline and possible death of the tree over a period of years.

2. Tree Protection
Existing canopy clearance is not to be altered, unless otherwise approved.
Crowns and apex of canopies are not to be altered or reduced.
Ensure lifting equipment and load can clear height and width of tree canopy without damage to crown.
Ensure demolition equipment can pass beneath lowest limb,.

3. Tree Root Protection
Excavation greater than 100mm depth that occurs within 2m of the drip zone of a tree must be approved by the relevant government agency.

Where excavation is approved, the following measures are to be adopted for tree protection:
- Do not sever large roots (>30 mm diameter) closer than halfway from the drip-line to the trunk. Hand trenching to a depth of 300mm is required to locate these roots before any mechanical trenching is undertaken.
- All roots must be cut cleanly with equipment specifically designed to cut roots cleanly or other suitable pruning equipment.
- Roots exposed during excavation must be protected from desiccation. Keep lightly watered or cover with hessian, which must be kept moist.
- Water trees that have had disturbance in their root zone. The amount and frequency of water needs to be adapted to the trees requirement, based on seasonal conditions.
- Roots 50mm in diameter or larger shall be protected, including by excavation underneath tree roots where feasible;
- Minimise width of excavation in vicinity of trees as far as possible. shoring of excavations should be adopted in lieu of benching, to minimise overall cut width.

Tree 'Regulated' Status by Virtue of Size

Under the Tree Protection Act 2005 a tree is termed a Regulated Tree and is to be protected if it is growing on Urban Leased Land and has at least one of:
* A height of 12m or more; or
* A trunk circumference of 1.5m (approx 0.5m in diameter) or more at 1m above ground level; or
* Two or more trunks and the total circumference of all the trunks, 1m above ground level, is 1.5m or more, or
* A minimum crown width of 12m or more, and
* Must be alive - all dead trees have been ranked as Non Protected tree.
* Is not a weed species under the Pest Plant & Animals Declaration 2005

Tree Protected Status
YES - The tree has a dimension that any activity must be assessed under the Tree Protection Act.
NO - The tree is sufficiently small or declared a Weed Species that it does not require assessment under the Tree Protection Act.
NA - Not applicable as Off Lease but often protected as these trees are generally on Government (Unleased) Land.

Future Tree Approvals
On-Leased Land: If a tree has protected status then approval must be gained from Tree Protection Unit prior to removal, lopping or ground damaging activty.

Off-Leased (Territory) Land: Please note all trees located external to the block boundary i.e. the verge, cannot be removed, pruned or damaged without the approval of the Urban Tree Management Unit, City Services (13 22 81) as on Government land.

LEGEND

EXTENT OF WORKS - BLOCK 3 SECTION 65 BOUNDARY

Existing non-regulated tree to be retained and protected
(L = Low value)

Existing non regulated tree to be removed
(L = Low value)

Existing regulated tree to be retained and protected
(P = Poor value; M = Medium value)

Existing Significant regulated tree to be retained and protected
(E = Exceptional value; H = High value)

Existing regulated tree proposed to be removed
(P = Poor value; M = Medium value, H = High value)

Tree protection zone - 2 metre zone beyond crown dripline

Softwood timber battens 1.8m height to circumference of trunk so to produce a continuous protective barrier. Secure peripherally with wire loops.

Temporary Protective Fencing -Trees to be retained are to be surrounded by 1800 high continuous mesh temporary fencing as shown on plan for the duration of works. No stockpiling of material, Installation of services or site sheds or storage is allowed within the fenced area. Fencing may be relocated temporarily for the purpose of landscape works and service Installations, but must be re-instated to original alignment immediately upon completion of these operations

Site Hoarding / Construction Fence

Site Gate

Site Access Points

NOTE:
The Demolition Tree Management Plan sets in place protective measures during the demolition of the existing buildings and Infrastructure. Refer dwg TMP01 for protective measures during construction of the proposed development.

NOTES:
1) Generally machine operators are to use care when removing kerbing, guttering and roadways within tree protection zones, avoiding ripping or tearing of tree roots. Tree protection and management notes this sheet should be followed.

2) If fences are required to be moved for additional access, softwood timber battens are to be applied to any tree trunk likely to be impacted on. Fences are to be reestablished immediately upon completion of demolition works in that zone.

3) Operator to use care when removing existing road and footpath. Follow protection & management notes this sheet where roots likely to be unearthed.

NO.	DESCRIPTION	DWN	APP'D	DATE
A	DEMOLITION TREE MANAGEMENT PLAN FOR DA	ND	JRD	12/10/11

NOTES
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- Figured dimensions to be taken in preference to scaled measurements. Dimensions in millimetres unless noted otherwise.

Where Issued For Construction:
- Contractor is responsible for locating all services and obtaining necessary clearances and approvals. Contractor to verify dimensions, levels & details to site conditions and prior works, and report all discrepancies to the Superintendent for resolution before commencing work.
- Present samples and gain approval from Superintendent for any non-stated materials or finishes.
- Adopt and implement approved Tree Management Plan, Landscape Management & Protection Plan & Environmental authorisations. All works to be in accordance with current TaMS (QUS) Standard Specification for Urban Infrastructure Works unless otherwise prescribed. All disturbance by works must be reinstated to existing condition.

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CLIENT
PURDON
PLANNING SUSTAINABLE FUTURES
DEFENCE HOUSING AUTHORITY (DHA)

LANDSCAPE ARCHITECT
enviro links design
LANDSCAPE • GOLF • WATER
VEGETATION MANAGEMENT
ENVIRONMENT • ECO RESORTS
5 / 61 Dundas Court PHILLIP ACT 2606
PO Box 88 WARAMANGA ACT 2611
Ph:(02) 6281 6088 Fax:(02) 6281 6055
www.envirolinks.com.au

PROJECT
CAMPBELL
(Block 3 Section 65)

TITLE
DEMOLITION TREE MANAGEMENT PLAN

SCALE	NORTH
1:1000 (A3)	N/A

JOB NO.	DWG NO.	ISSUE
1120	TMP02	A

18 April 2019

s22 [redacted]
Development Manager
PPG, Defence Housing Australia
Level 2, 287 Elizabeth St, Sydney NSW 2000
T: 02 8836 5709
s22 [redacted]

Block 3 Section 65, Campbell, ACT – Ecological Impact Assessment

Capital Ecology project no. 2785

Dear Mr Thompson,

This letter provides an Ecological Impact Assessment (EIA) for Block 3 Section 65, Campbell, ACT (the 'study area'). The study area (2.54 ha) previously contained 22 defence houses. These houses have been demolished and Defence Housing Australia (DHA) are proposing to redevelop the site for residential purposes (the 'proposed development').

Figure 1 shows the location of the study area. Figure 2 shows the study area and ecological values as described in this EIA, on 2018 aerial imagery.

The study area is located in the suburb of Campbell and is bordered:

- to the north by Fairbairn Avenue, beyond which lies Mt Ainslie Nature Reserve;
- to the east by urban open space, which contains both planted and remnant native vegetation;
- to the south by urban open space, which contains both planted and remnant native vegetation; and
- to the west by Truscott Street and the suburban areas of Campbell.

The primary aim of this EIA is to determine and assess the impacts of the proposed development upon habitat for terrestrial flora and fauna species and ecological communities listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or the *ACT Nature Conservation Act 2014* (NC Act).

This EIA has been prepared based on:

- information provided by Purdon Planning Pty Ltd and DHA, notably the location of the proposed development and associated building envelopes (AMC Architecture 2019[1]);
- the results of database searches for the study area, including the EPBC Act Protected Matters Search Tool (PMST), ACTMAPi, and Canberra Nature Map;
- a review of relevant studies and other background information, including the surveys and sources referenced herein;
- two four-hour field surveys on 18 May 2018 and 4 July 2018, completed to record and assess the ecological values of the study area; and
- the knowledge of the authors regarding the biota of the locality, specifically the threatened ecological communities, flora, and fauna (and associated habitat) with the potential to occur in the lowland ecosystems of the region.

1. Background

No 'Significant Plants and Animals' are mapped within the study area on the ACT Government ACTMAPi online mapping tool. ACTMAPi identifies areas to the east and south of the study area as NC Act listed Yellow Box – Red Gum Grassy Woodland (commonly known as Box-Gum Woodland).

The 'Territory Plan – Land Use Zone' of the study area is 'DES: DESIGNATED'. The 'Territory Plan - Overlay Zone' of the study area is 'MAAR: Main Avenues and Approach Routes'.

The entire study area is a 'Designated Area' under the National Capital Plan (NCP). Within Designated Areas the National Capital Authority (NCA) has responsibility for determining detailed planning policy and for Works Approval (otherwise known as development assessment) under the *Australian Capital Territory (Planning and Land Management) Act 1988*.

As detailed in Appendix D (Likelihood of Occurrence Assessment), database searches returned 44 EPBC Act and/or NC Act listed threatened species and two EPBC Act and/or NC Act listed threatened ecological communities as having the potential to occur in the locality. Those species assessed as having a moderate or higher likelihood of occurring within the study area are considered in detail in Section 2.

2. Current ecological values

2.1 Tree Assessment Methods

On 18 May 2018, Capital Ecology visited the study area and assessed all of the native trees identified in Enviro Links Design (2017[2], 2019[3]) and located within the study area. The results of Capital Ecology's tree habitat assessment are provided in Appendix A.

[1] AMC Architecture. *DHA Masterplan – Site Plan*. Drawing SK01 Revision 8, 1 April 2019.
[2] Enviro Links Design (2017). *Existing Tree Analysis*. Job No. 1120, DWG No. TA03, Issue C, 8 September 2017.
[3] Enviro Links Design (2019). *Existing Tree Retention Analysis*. Job No. 1120, DWG No. TMP01, Issue A, 17 April 2019.

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Tree identification numbers were determined based on Enviro Links Design (2017, 2019), and the following details were recorded for each tree.

- Tree Number – a unique identifying number allocated to the tree, based on Enviro Links Design (2017, 2019).
- Species Name and Common Name.
- Remnant / Naturally Occurring or Planted.
- Diameter at Breast Height (DBH) – measured with a DBH tape.
- Height – the approximate height of the tree measured with a clinometer.
- Hollows – the number and characteristics of any hollows present.
- Alive or Dead.
- Overall Habitat Value – Low, Moderate, High, Very High. This was determined based on the presence of hollows, other habitat values such as mistletoe, whether the tree is naturally occurring and/or Plant Community Type (PCT) appropriate, and whether the tree has the potential to develop valuable habitat over time.
- Other Notes – regarding any other notable features observed.

2.2 Vegetation Survey Methods

On 4 July 2018, Capital Ecology undertook a survey to identify, assess and map the current vegetation and habitat values within the study area. The method employed was developed by Capital Ecology in 2015 and has been used for a number of projects in the ACT, including large-scale vegetation mapping projects commissioned by Parks and Conservation Service[4,5].

The method can be used to assess and map each of the Plant Community Types (PCTs) occurring in the lowland areas of the Southern Tablelands of NSW and the ACT. As detailed below, the method for woodland mapping draws upon elements of the relevant contemporary Commonwealth Government (Commonwealth of Australia 2006[6]), ACT Government (ACT Government 2015a[7]; ACT Government 2015b[8]), and NSW Government (NSW Government 2014[9] 2017[10]) vegetation mapping guidelines, together with other technical guidelines.

[4] Capital Ecology (2018a). *2017 Grassland Quality and Extent Mapping*. May 2018. Prepared for Environmental Offsets, ACT Parks and Conservation Service. Authors: S. Reid and R. Speirs. Project no. 2759.
[5] Capital Ecology (2018b). *2017 Woodland Quality and Extent Mapping – ACT Government Environmental Offsets*. May 2018. Prepared for Environmental Offsets, ACT Parks and Conservation Service. Authors: S. Reid and R. Speirs. Project no. 2756.
[6] Commonwealth of Australia (2006). *Policy Statement 3.5: White Box – Yellow Box – Blakely's Red Gum grassy woodlands and derived native grasslands.* Commonwealth Department of Environment and Heritage.
[7] ACT Government (2015a). *Monitoring Guidelines for Box-Gum Woodlands*. Conservation Research, October 2015.
[8] ACT Government (2015b). *ACT Environmental Offsets Calculator Assessment Methodology*. Environment and Planning. May 2015.
[9] NSW Government (2014). *BioBanking Assessment Methodology 2014.* NSW Government Office of Environment and Heritage.
[10] NSW Government (2017). *Biodiversity Assessment Method.* Office of Environment and Heritage.

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Step 1. Plant Community Type (PCT) mapping

The on-ground boundaries of each PCT (as defined in ACT Government 2015c[11]) present within the study area were accurately mapped using either hand-held GPS or by marking boundaries directly onto recent high resolution orthorectified aerial photograph field. PCT boundary delineation was undertaken by walking across and around the study area, carefully reading the landscape, considering numerous less conspicuous landscape elements, such as the:

- presence, species, growth form and density of remnant canopy trees and/or stags or stumps of these;
- presence and species of midstorey shrubs and trees;
- floristic composition of the groundstorey; and
- the landscape position and other geographical features (elevation, aspect, soils, apparent hydrology etc.).

Step 1 is critical to the accurate mapping of temperate vegetation communities and was completed, and mapped in GIS, prior to moving on to Step 2.

Note: The entire study area was determined to contain only one PCT, namely 'PCT-ACT16 – *Eucalyptus melliodora* – *E. blakelyi* Tableland Grassy Woodland'.

Step 2. Vegetation zone mapping

The mapped PCT was further divided into vegetation zones based on the structure, floristic composition and overall quality ('intactness') of the vegetation. As described above for Step 1, each patch of each discernible (generally homogenous) vegetation zone was accurately mapped using either hand-held GPS or by marking boundaries directly onto recent high resolution orthorectified aerial photograph field maps. Vegetation zone boundary delineation was undertaken by walking across and around the study area, carefully determining and recording the boundary alignment.

Observations were made regarding the type and condition of the vegetation present within the study area. Based on these, the portions of the study area with a native dominant groundstorey were delineated from those with an exotic dominant groundstorey.

As the survey occurred during winter (i.e. not the optimal time of year, which is October to November for woodlands in the ACT), it was not appropriate to perform survey plots and transects to quantify vegetation quality. Therefore, a precautionary approach was taken when determining the condition, quality and diversity of the vegetation present within the study area.

2.3 Tree Assessment Results

The results of the tree habitat assessment are provided in Appendix A and the associated photograph of each of the assessed trees is provided in Appendix C. Figure 2 shows the study area and assessed trees on 2018 aerial imagery.

In total 38 trees within the study area were assessed, 30 of which were determined to be naturally occurring remnant trees. Of the 38 trees, 17 contain hollows and therefore have 'Very High' habitat

[11] ACT Government (2015c). *ACT Vegetation Types Database – Attachment to the ACT Environmental Offsets Calculator Assessment Methodology.* 18 May 2015.

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value. Another 17 trees have 'High' habitat value, based on other characteristics such as the presence of mistletoe/nests and/or on the tree's potential to develop important habitat for fauna in the future (based largely on the species of tree). Four (4) trees have 'Low' habitat value as they have been planted and are an inappropriate species for the PCT of the study area (determined to be 'PCT-ACT16 – *Eucalyptus melliodora* – *E. blakelyi* Tableland Grassy Woodland').

The trees of 'Very High' habitat value are likely to provide a valuable foraging resource to a variety of woodland birds and a nesting resource to hollow dependent fauna. The proposed development has been designed to retain as many of the trees as practicable. As a result, 10 'Very High' value trees will be retained, 2 'Very High' value trees will be retained if planning and engineering constraints permit, and 5 'Very High' value trees will be removed (refer Figure 2 and Appendix A). Furthermore, 4 'High' habitat value trees will be retained, and an additional 1 'High' value tree and 1 'Low' value tree will be retained if planning and engineering constraints permit.

2.4 Vegetation Survey Results

As determined during Step 1 of the vegetation assessment, the entire study area was found to contain only one PCT, namely 'PCT-ACT16 – *Eucalyptus melliodora* – *E. blakelyi* Tableland Grassy Woodland'. The results of the field survey, namely a species list obtained by a random meander throughout the study area, are presented in Appendix B.

Both native and exotic trees and shrubs are present within the study area. As described in Section 2.3, the majority of the mature native trees are naturally occurring remnant trees within PCT-ACT16, with Yellow Box *E. melliodora* and Red Gum *E. blakelyi* the most common species (refer Appendix A). A small proportion of the native trees appear to have been planted over 30 years ago. Exotic tree species present in the study area include Elm *Ulmus* spp. and Ash *Fraxinus* spp..

The entire study area has been historically disturbed as it previously contained 22 defence houses and associated urban infrastructure. As a result, the majority of the study area has been intensively landscaped and regularly mown over a long period of time. This has modified the groundlayer and midstorey and encouraged the proliferation of garden plants and other exotic species.

As shown in Figure 2, the areas where the demolished houses once stood are now bare/disturbed land (Appendix C, Photo Plates 39 to 41). The remaining parts of the study area are characterised by groundlayer vegetation entirely dominated by exotic grasses, notably Chilean Needle Grass *Nassella neesiana*, African Love Grass *Eragrostis curvula*, and Couch Grass *Cynodon dactylon* (Appendix A, Photo Plate 42). The exotic dominated areas contain a high diversity of exotic forbs, in particular Ribwort Plantain *Plantago lanceolata*. Some small, isolated patches of Red-leg Grass *Bothriochloa macra* occur along the western portion of the study area (Photo Plate 43).

Due to the study area's history of disturbance and landscaping, the midstorey throughout is characterised by a mix of planted native species (cultivars and non-local) and exotic species (Photo Plate 44). Non-local native species include Fringed Wattle *Acacia fimbriata*, Tea-tree *Melaleuca* spp., and Bottlebrush *Callistemon* spp.. Exotic species include Grey Cotoneaster *Cotoneaster franchetii*, Blue Periwinkle *Vinca major*, and common garden herbs such as Rosemary *Rosmarinus officinalis* and Thyme *Thymus vulgaris*.

2.5 Threatened Ecological Communities

The following two threatened ecological communities (TECs) were identified on the EPBC Act PMST as potentially occurring within the study area. Their presence within the study area, based on EPBC Act and NC Act criteria, is assessed below.

Natural Temperate Grassland of the South Eastern Highlands.

Listed as:

- critically endangered pursuant to the EPBC Act; and
- endangered pursuant to the NC Act.

Description: The Natural Temperate Grassland TEC is characterised by grassy vegetation dominated by moderately tall (25–50 cm) to tall (50–100 cm), dense to open tussock grasses in the genera *Rytidosperma*, *Austrostipa*, *Bothriochloa*, *Poa* and *Themeda*, with good quality patches supporting a diversity of native forbs. The community may be treeless or contain up to 10% cover of trees, shrubs or sedges. Natural Temperate Grassland occurs within the biogeographical region of the South Eastern Highlands in valleys influenced by cold air drainage and in broad plains.

Potential for occurrence: None – as detailed above, the climax (i.e. pre-European) ecological community for the entire study area is 'PCT-ACT16 – *Eucalyptus melliodora – E. blakelyi* Tableland Grassy Woodland'. No part of the study area would have once supported a grassland PCT.

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Listed as:

- critically endangered pursuant to the EPBC Act; and
- endangered pursuant to the NC Act.

Description: The White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC is characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs (where shrub cover comprises less than 30% cover), and a dominance or prior dominance of White Box and/or Yellow Box and/or Blakely's Red Gum trees. This TEC occurs along the western slopes and tablelands of the Great Dividing Range from southern Queensland through New South Wales and the Australian Capital Territory to Victoria.

Potential for occurrence (EPBC Act or NC Act): The vegetation within the study area has been assessed against the flowchart provided in the EPBC Act Box-Gum Woodland Policy Statement[12] and does not meet the criteria for Box-Gum Woodland as the groundstorey is predominantly exotic.

Potential for occurrence – NC Act:

Box-Gum Woodland meeting the NC Act listed community was defined in Action Plan 10 (ACT Government 1999[13]) and Action Plan 27 (ACT Government 2004[14]) as any polygon in which:

- *the proportion of crown cover contributed by either E. melliodora or E. blakelyi or both jointly is ≥ 40%; and*
- *understorey is not exotic pasture; and*

[12] Commonwealth of Australia (2006). *Policy Statement 3.5: White Box – Yellow Box – Blakely's Red Gum grassy woodlands and derived native grasslands*.
[13] ACT Government (1999). *Yellow Box – Red Gum Grassy Woodland: An endangered ecological community. Action Plan No. 10.* Environment ACT, Canberra.
[14] ACT Government (2004). *Woodlands for Wildlife: ACT Lowland Woodland Conservation Strategy. Action Plan No. 27*. Environment ACT, Canberra.

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- *remnants are not isolated trees or clumps.*

Polygons within which most or all of the trees have been cleared (described as secondary grassland) also constitute the NC Act listed community, provided:

- *Yellow Box and/or Blakely's Red Gum are estimated to have previously been the dominant or co-dominant species; and*
- *the groundstorey is predominately native; and*
- *a moderate diversity of native groundstorey species is present.*

According to this definition, the vegetation within the study areas does not meet the criteria for this community as the groundstorey is predominantly exotic.

2.6 Likelihood of Occurrence Assessment

The Likelihood of Occurrence Assessment for threatened flora and fauna species is a categorisation used to determine the likelihood that the subject species occurs within a site. The results are based on the findings of completed desktop studies and field surveys, expert opinion, and consideration of the species' currently recognised distribution and preferred habitat.

Threatened species and populations included in the Likelihood of Occurrence Assessment include all of those identified during the database and literature review as potentially occurring within 10 kilometres of the study area. Also included are threatened species listed pursuant to the NC Act alone and considered by Capital Ecology to have some potential to occur within the study area.

The likelihood of a species occurring within the study area is categorised as either negligible, low, moderate, or high. A species that has been identified within the study area during the surveys for this study or by other confirmed records is expressed as confirmed.

The completed Likelihood of Occurrence Assessment is provided as Appendix D. Species assigned a moderate or higher likelihood of occurrence within the study area, other than if this is limited to transient visitation, are considered in more detail in Section 2.7 (threatened flora) and Section 2.8 (threatened fauna) of this EIA.

2.7 Threatened Flora Occurrence

One threatened flora species, Hoary Sunray *Leucochrysum albicans* var. *tricolor* (endangered EPBC Act) was assessed as having a moderate potential to occur within the study area. Although listed as 'endangered' under the EPBC Act, Hoary Sunray is a relatively common daisy in the ACT and region, particularly across the Mt Ainslie, Mt Majura, Goorooyarroo reserve network. It is also known to occur along the road verge of Fairbairn Avenue. If the species is present in the study area, or establishes there in the future, it is estimated that the plants are likely to comprise only a very small fraction of the plants present within a one kilometre radius of the study area. The loss of such a small proportion of the local population would be unlikely to significantly impact the species. Furthermore, the proposed development will not result in the clearance of the entire study area, and notably, will not directly impact the road reserve or surrounding open urban space, which represent the portions of the study area containing potential Hoary Sunray habitat. The remaining habitat within the study area, which is

largely comprised of former gardens and has been intensively landscaped, mown and modified, is unlikely to provide constitute Hoary Sunray habitat.

As detailed in the Likelihood of Occurrence Assessment (refer Appendix D), no other threatened flora species with the potential to occur in the locality are considered to have a moderate or higher likelihood of occurrence within the study area.

2.8 Fauna Habitat and Threatened Fauna Occurrence

Native birds recorded during the field survey include Red Wattlebird *Anthochaera carunculate*, Australian Raven *Corvus coronoides*, Australian Magpie *Gymnorhina tibicen*, Superb Fairy-wren *Malurus cyaneus*, and Crested Pigeon *Ocyphaps lophotes*.

As recorded during the field survey, the study area supports the following fauna habitat features.

- Remnant eucalypt trees. Some of the mature remnant trees contain hollows with a void which may be of habitat value to hollow dependant fauna. However, given the disturbed nature of the vegetation and location immediately adjacent to Campbell suburbs and Fairbairn Avenue, it is unlikely that these hollows would be utilised by any of the threatened hollow-dependant native birds which may occur in the locality.
- Remnant and planted eucalypt trees. These trees would provide a nectar resource for numerous honeyeater species and other birds when in flower. The seed from the River Sheoak *Casuarina cunninghamiana*, Radiata Pine *Pinus radiata* and Wattles *Acacia* spp. in the study area would also provide a foraging resource for several parrot species, potentially including the Gang-gang Cockatoo *Callocephalon fimbriatum* and Yellow-tailed Black Cockatoo *Calyptorhynchus funereus*.
- Planted native trees, including eucalypt trees. These trees are unlikely to contain hollows. They may provide other nesting/roosting habitat for insectivorous bats and some native birds.
- The study area supports a sparse understorey dominated by exotic species. Such areas are unlikely to be of value to threatened fauna species but may be used by common native fauna (e.g. birds, kangaroos, reptiles, arthropods).
- As detailed in the Likelihood of Occurrence Assessment (refer Appendix D), several threatened woodland birds are also likely to visit the study area to forage. However, it is unlikely that the foraging resources present within the study area constitute an important proportion of those present within the locality for any threatened fauna species.
- The study area is unlikely to constitute important habitat for any EPBC Act listed migratory birds, although some migratory species may periodically forage within the study area.

The fauna habitat within study area is adjacent to high quality habitat to the north (Mt Ainslie Nature Reserve) and is bordered to the east and south by NC Act listed Box-Gum Woodland. Given that the study area previously contained houses and suburban gardens, it is unlikely that it constitutes a significant component of a wildlife movement corridor or is otherwise of high importance for fauna habitat connectivity. This is evident as the study area is not identified as a 'Local Link' or as possessing 'Regional Linkage Value' on ACTMAPi.

In summary, the fauna habitat within the study area has been substantially modified by the use of the land for residential purposes, notably the associated intensive landscaping primarily with exotic plants,

mowing of open areas, and other ongoing disturbance. As a result, the only remaining features of fauna habitat of value in the study area are the remnant eucalypt trees. The proposed development has been designed to retain as many of the 'Very High' habitat value remnant trees as practicable (refer Section 2.3 and Section 3).

Woodland birds

The Regent Honeyeater *Anthochaera phrygia* (vulnerable, EPBC Act and the NC Act), Painted Honeyeater *Grantiella picta* (vulnerable, EPBC Act and the NC Act), and Superb Parrot *Polytelis swainsonii* (vulnerable, EPBC Act and the NC Act) may visit the study area to forage on the native trees and shrubs (i.e. *Eucalyptus* spp. and *Acacia* spp.). These species are not known to breed in the study area or nearby, and the foraging habitat in the study area is of relatively low significance in the context of that occurring throughout the locality. In addition, the proposed development has been designed to retain as many of the 'Very High' habitat value remnant native trees as practicable, thereby reducing the potential impacts of the proposed development on threatened bird species.

The remnant native trees, planted native trees, and planted exotic trees would provide a foraging resource for many other native woodland birds. In addition to common native birds, several NC Act listed woodland birds are likely to visit the native trees and shrubs in the study area, including Varied Sittella *Daphoenositta chrysoptera*, Scarlet Robin *Petroica boodang* and Hooded Robin *Melanodryas cucullata cucullata*. These species may visit the study area to forage, but, given the disturbance caused by a nearby busy road and the suburb of Campbell, they are unlikely to nest in the study area. Notwithstanding this, the overall impacts of development within the study area on native fauna will be minimised by retaining as many of the 'Very High' habitat value remnant eucalypt trees as practicable.

3. Avoidance, Minimisation and Mitigation Measures

In order to reduce potential impacts on the ecological values within the study area, a number of measures will be implemented during and following the proposed development. These are described below.

Retention of Remnant Trees

The trees of 'Very High' habitat value are likely to provide a valuable foraging resource to a variety of woodland birds and a nesting resource to some hollow dependent fauna. The proposed development has been designed to retain as many of these trees as practicable and will retain 10 'Very High' value trees, 2 'Very High' value trees if planning and engineering constraints permit, and remove only 5 'Very High' value trees (Figure 2, Appendix A). Furthermore, 4 'High' habitat value trees will also be retained, and an additional 1 'High' value tree and 1 'Low' value tree if planning and engineering constraints permit.

The trees to be retained, and those to removed, will be identified on the engineering drawings and/or similar documents that pertain to the proposed development. The trees to be retained will be fenced off and protected during construction with reference to the guidance provided in the Australian Standard[15].

[15] Standards Australia (2010). *AS4970-2009 Protection of trees on development sites*.

Weed Management

The weed management measures that will be implemented to prevent the introduction and/or spread of weeds include the following.

- Appropriate vehicle hygiene will be maintained. Vehicles and machinery entering the study area will be clean of weed seed or propagules.
- Only sterile materials such as hessian/jute or rice straw will be used for soil stabilisation or similar purposes.
- For 12 months following conclusion of the works, significant weeds will be controlled throughout the study area by a qualified and experienced weed control contractor.

A weed control program will be developed to prevent the establishment and spread of significant weeds and control other less significant exotic species (lawn/pasture grasses etc.) within road verges, landscaped areas, and other open space.

Recommendations for Landscaping

The following principles will be followed for all landscaping.

- Local native species will be used for landscaping to the fullest extent practicable.

Where practicable within open space areas, all strata will be re-established (i.e. groundcover, midstorey shrubs, and canopy trees) to create habitat complexity. This will discourage urban adapted species and encourage small woodland birds to visit the neighbourhood. Open space plantings will comprise only species appropriate for the applicable historical PCT (PCT-ACT16 Box-Gum Woodland).

4. Summary of Proposed Direct Impacts

As illustrated in Figure 2, the proposed development will result in the maximum clearance of a total area of 22,675 m^2 (2.27 ha) of vegetation. This is comprised of 22,675 m^2 (2.27 ha) of exotic vegetation and 20 to 24 eucalypt trees (Figure 2, Appendix A). The proposed development will not impact a listed ecological community or potentially important habitat for any listed threatened flora or fauna species.

5. Legislative Requirements

5.1 EPBC Act Referral

Matters of National Environmental Significance

The EPBC Act is the key Commonwealth Government legislation for the protection and conservation of Australia's environment and biodiversity. The EPBC Act provides the legislative framework for the assessment and approval mechanism requiring that proposed 'actions' to be assessed in terms of their potential to impact upon 'Matters of National Environmental Significance' (MNES). MNES currently listed under the EPBC Act are:

- listed threatened species and communities;
- listed migratory species;
- Ramsar wetlands of international importance;

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- Commonwealth marine environment;
- world heritage properties;
- national heritage places;
- the Great Barrier Reef Marine Park;
- nuclear actions; and
- a water resource, in relation to coal seam gas development and large coal mining development.

Where a potential impact on a MNES may occur as a result of a proposed action, the significance of that impact must be assessed. Guidelines for determining whether an impact is significant are provided by the Department of the Environment (Commonwealth of Australia 2013[16]). If it is determined that a proposed action will, or is likely to, have a significant impact on a MNES, the action must be referred to the Commonwealth Minister for the Environment and Energy. The Department of the Environment and Energy will then consider the referred action and the Minister (or his/her Delegate) will make a determination regarding whether the action requires approval under the EPBC Act and associated conditions and controls.

With respect to the above, the proposed development is unlikely to impact any MNES. As such, EPBC Act referral is unwarranted and is not recommended.

Whole of Environment

As the proposed action will be carried out by a Commonwealth agency (DHA) and will occur on Commonwealth/National land, the significance of the proposed actions on the 'whole of environment' must also be assessed. Guidelines for determining whether an impact is significant are provided by the Department of the Environment (Commonwealth of Australia 2013[17]) and are addressed below. If it is determined that a proposed action will, or is likely to, have a significant impact on the 'whole of environment', the action must be referred to the Commonwealth Minister for the Environment and Energy. The Department of the Environment and Energy will then consider the referred action and the Minister (or his/her Delegate) will make a determination regarding whether the action requires approval under the EPBC Act and associated conditions and controls.

In deciding whether or not the proposed action is likely to have a significant impact, the following must be considered.

- The environmental context

  The study area has been historically disturbed as it previously contained 22 defence houses and associated urban infrastructure. As a result, the majority of the study area has been intensively

[16] Commonwealth of Australia (2013). *Matters of National Environmental Significance - Significant Impact Guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth Department of the Environment

[17] Commonwealth of Australia (2013). *Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies - Significant Impact Guidelines 1.2. Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth Department of the Environment

landscaped and regularly mown over a long period of time. This has heavily modified the groundlayer and midstorey and encouraged the proliferation of exotic species.

The study area is adjacent to high quality habitat to the north (Mt Ainslie Nature Reserve) and is bordered to the east and south by NC Act listed Box-Gum Woodland. Given the historic disturbance to the study area, it is unlikely that it constitutes a significant component of a wildlife movement corridor or is otherwise important for fauna habitat connectivity. This is evident as the study area is not identified as a 'Local Link' or as possessing 'Regional Linkage Value' on ACTMAPi.

As a result, the only notable ecological values within the study area are the remnant eucalypt trees. The proposed development has been designed to retain as many of these trees as practicable, thereby reducing the potential impacts of the proposed development (refer Section 2.3 and Section 3). In addition, and as discussed below, the removal of a small number of mature eucalypts from a previously developed and highly disturbed area is unlikely to impact the environment.

- <u>The potential impacts likely to be generated by the action, including indirect consequences of the action</u>

  As discussed above, the only notable ecological values within the study area are the remnant eucalypt trees. The proposed development will remove 20 to 24 of these mature eucalypts (Figure 2, Appendix A). Given the historic disturbance to the study area and its long-term use for housing, it is unlikely that the trees within the study area have recently constituted a significant resource for fauna in the locality. Furthermore, the study area is adjacent to high quality habitat to the north (Mt Ainslie Nature Reserve) and is bordered to the east and south by NC Act listed Box-Gum Woodland. These areas contain a high number of mature eucalypt trees. As such, the trees to be removed in the study area comprise only a very small fraction of the similar trees within a one kilometre radius. The loss of such a small proportion of the local vegetation would be unlikely to significantly impact the environment. Nonetheless, the proposed development has been designed to retain as many of the 'Very High' habitat value remnant native trees as practicable, thereby reducing the potential impacts of the proposed development.

  With respect to the above, it is very unlikely that the removal of 20 to 24 mature eucalypts will directly or indirectly impact the environment.

- <u>Whether mitigation measures will avoid or reduce these impacts</u>

  The study area previously contained 22 defence houses. It still contains most of the associated urban infrastructure. As a result, the majority of the study area has been intensively landscaped and regularly mown over a long period of time. This has modified the groundlayer and midstorey and encouraged the proliferation of exotic species. The selection of this site for the proposed development greatly reduces and avoids impacts on a wide variety of environmental considerations.

  As discussed previously, the only notable ecological values within the study area are the remnant eucalypt trees. In particular, the trees of 'Very High' habitat value are likely to provide a valuable foraging resource to a variety of woodland birds and a nesting resource to some hollow dependent fauna. The proposed development has been designed to retain as many of these trees as practicable and will retain 10 'Very High' value trees, 2 'Very High' value trees if planning and engineering constraints permit and remove only 5 'Very High' value trees (Figure

2, Appendix A). Furthermore, 4 'High' habitat value trees will also be retained, and an additional 1 'High' value tree and 1 'Low' value tree if planning and engineering constraints permit.

In combination, the mitigation measures outlined above substantially avoid and/or reduce impacts on the environment.

With respect to the above, the proposed development is unlikely to impact on the 'whole of environment'. As such, EPBC Act referral is unwarranted and is not recommended.

We trust that this EIA provides the information, assessment, and advice required. If, however, you should have any questions relating to any of the matters discussed herein, please do not hesitate to contact us.

Yours sincerely,

s22 [redacted]

Attachments:

Figure 1. Locality Plan

Figure 2. Study Area and Ecological Values

Appendix A. Tree Habitat Assessment

Appendix B. Vegetation Survey Results Table

Appendix C. Photo Plates

Appendix D. Threatened Species Likelihood of Occurrence Assessment

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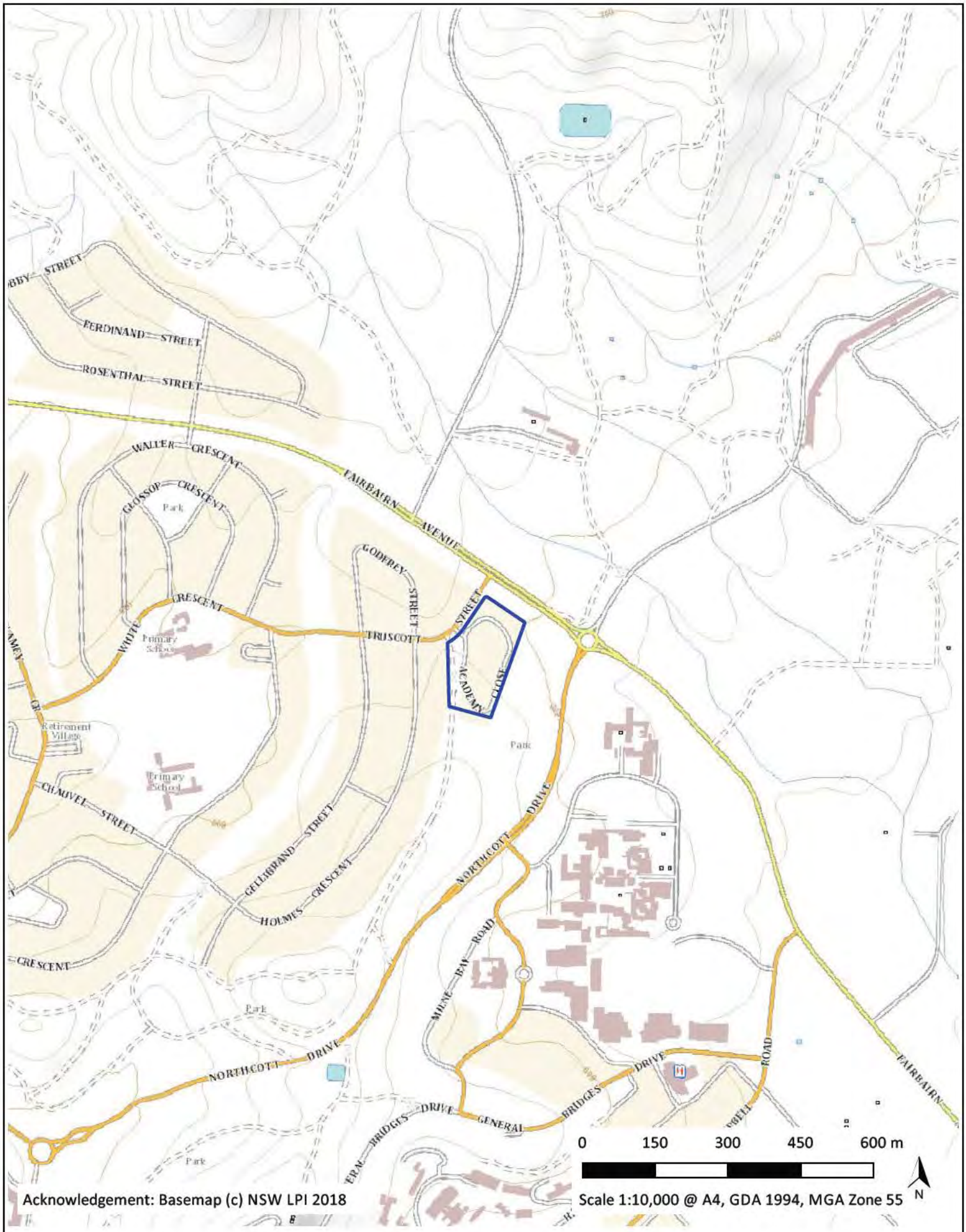

Acknowledgement: Basemap (c) NSW LPI 2018

Scale 1:10,000 @ A4, GDA 1994, MGA Zone 55

Figure 1. Locality Plan

Legend

Study Area

Capital Ecology Project No: 2785
Drawn by: S. Reid
Date: 31 July 2018

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Figure 2. Study Area and Ecological Values

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Capital Ecology Project No: 2785
Drawn by: S. Reid
Date: 18 April 2019

Appendix A. Tree Habitat Assessment

Tree Number	Species Name	Common Name	Remnant/ Planted	DBH (cm)	Height (m)	Overall Habitat Value	Hollows				Alive/ Dead	Notes Other Habitat Values (nests, mistletoe etc.)	Proposed Development - Trees to be Retained or Removed
							S	M	L	XL			
T01	*E. blakelyi*	Blakely's Red Gum	Remnant	55/50	13	Very High	1	-	1	-	A	Substantial dieback	Remove
T02	*E. blakelyi*	Blakely's Red Gum	Remnant	58	12	High	-	-	-	-	A	Substantial dieback	Remove
T03	*E. melliodora*	Yellow Box	Remnant	102	25	Very High	4	2	2	-	A	3 x Mistletoe	Retain
T04	*E. polyanthemos*	Red Box	Planted	54	15	Low	-	-	-	-	A		Remove
T05	*E. blakelyi*	Blakely's Red Gum	Remnant	59	17	High	-	-	-	-	A		Retain
T06	*E. blakelyi*	Blakely's Red Gum	Remnant	58	18	High	-	-	-	-	A		Retain
T07	*E. melliodora*	Yellow Box	Remnant	84	22	Very High	3	1	-	-	A	Half of tree is dead	Retain
T08	*E. blakelyi*	Blakely's Red Gum	Remnant	61	8	Very High	2	-	-	-	A	Substantial dieback	Retain if planning and engineering constraints permit
T30	*E. melliodora*	Yellow Box	Remnant	47	13	Very High	1	1	-	-	D	Tree is dead	Remove
T31	*E. melliodora*	Yellow Box	Remnant	69	12	High	-	-	-	-	A		Retain
T32	*E. melliodora*	Yellow Box	Remnant	85	16	Very High	3	3	-	-	A		Retain if planning and engineering constraints permit
T33	*E. goniocalyx*	Bundy	Planted	66	12	Low	-	-	-	-	A		Remove
T35	*E. melliodora*	Yellow Box	Remnant	69	13	Very High	1	1	-	-	A		Retain
T36	*E. blakelyi*	Blakely's Red Gum	Remnant	89	15	Very High	2	2	3	-	A		Retain
T37	*E. melliodora*	Yellow Box	Remnant	72	17	Very High	1	1	-	-	A		Retain
T39	*E. melliodora*	Yellow Box	Remnant	36	9	High	-	-	-	-	A		Remove
T40	*E. melliodora*	Yellow Box	Remnant	40	7	High	-	-	-	-	A		Remove
T41	*E. melliodora*	Yellow Box	Remnant	25	10	High	-	-	-	-	A		Remove
T42	*E. melliodora*	Yellow Box	Remnant	72	18	Very High	2	1	-	-	A		Remove
T43	*E. blakelyi*	Blakely's Red Gum	Remnant	65	12	Very High	-	1	-	-	A	Substantial dieback	Remove
T52	*E. melliodora*	Yellow Box	Remnant	69	14	High	-	-	-	-	A		Remove
T53	*E. bridgesiana*	Apple Box	Remnant	73	11	High	-	-	-	-	A		Remove
T54	*E. blakelyi*	Blakely's Red Gum	Remnant	60	14	High	-	-	-	-	A	1 x Mistletoe present	Remove
T55	*E. blakelyi*	Blakely's Red Gum	Remnant	68	12	Very High	-	1	1	-	A	1 x Mistletoe; 2 x Small stick nest; Substantial dieback	Retain
T56	*E. melliodora*	Yellow Box	Remnant	73	17	Very High	2	-	-	-	A		Retain
T58	*E. polyanthemos*	Red Box	Planted	38	9	Low	-	-	-	-	A		Retain if planning and engineering constraints permit
T59	*E. bridgesiana*	Apple Box	Planted	55	14	High	-	-	-	-	A		Remove
T60	*E. rubida*	Candlebark	Planted	50	10	High	-	-	-	-	A		Remove
T61	*E. melliodora*	Yellow Box	Planted	45/29/27	11	High	-	-	-	-	A		Retain if planning and engineering constraints permit
T62	*E. melliodora*	Yellow Box	Remnant	59	15	Very High	2	1	-	-	A		Retain
T63	*E. melliodora*	Yellow Box	Remnant	61	17	Very High	-	1	-	-	A		Retain
T64	*E. blakelyi*	Blakely's Red Gum	Remnant	64/45	16	Very High	2	-	-	-	A	3 x Mistletoe	Retain
T66	*E. polyanthemos*	Red Box	Planted	49	13	High	-	-	-	-	A	1 x Nest box	Remove
T67	*E. blakelyi*	Blakely's Red Gum	Remnant	87	14	Very High	1	2	-	-	A	1 x Nest box	Remove
T69	*E. blakelyi*	Blakely's Red Gum	Remnant	55	10	High	-	-	-	-	A		Remove
T70	*E. melliodora*	Yellow Box	Remnant	78	16	High	-	-	-	-	A		Retain
T71	*E. blakelyi*	Blakely's Red Gum	Remnant	60	17	High	-	-	-	-	A	1 x Mistletoe; Substantial dieback	Remove
T71B	*E. goniocalyx*	Bundy	Planted	46	10	Low	-	-	-	-	A	Not shown in 'Existing Tree Analysis' (27/11/17)	Remove

*Estimated size class of each hollow based upon entrance diameter (i.e. Small <5 cm, Medium 5-15 cm, Large 15 – 25 cm and Extra Large >25 cm)

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Appendix B. Vegetation Survey Results Table

Table A1. Plant species list recorded in the study area

Species Name	Common Name
Exotic	
Acer negundo	Box Elder
Briza maxima	Quaking Grass
Bromus sp.	Brome
Carpobrotus aequilaterus	Chilean Pigface
Centaurium sp.	Common Centaury
Cotoneaster franchetii	Grey Cotoneaster
Cirsium vulgare	Spear Thistle
Cynodon dactylon	Couch Grass
Eragrostis curvula	African Love Grass
Festuca arundinacea	Tall Fescue
Fraxinus sp.	Ash
Iris sp.	Iris
Hirschfeldia incana	Hoary Mustard
Hypericum perforatum	St John's Wort
Hypochaeris radicata	Cat's Ear
Malva sp.	Mallow Weed
Modiola caroliniana	Red-flowered Mallow
Nassella neesiana	Chilean Needle Grass
Nassella trichotoma	Serrated Tussock
Opuntia sp.	Prickly Pear
Paspalum dilatatum	Paspalum
Passiflora sp.	Passion Vine
Petrorhagia nanteuil	Proliferous Pink
Pinus radiata	Radiata Pine
Plantago lanceolata	Ribwort Plantain
Prunus sp.	Plumb Tree
Ricinus communis	Castor Oil Plant
Rosmarinus officinalis	Rosemary
Shonchus sp.	Sow Thistle
Thymus vulgaris	Thyme
Ulmus sp.	Elm
Vinca major	Blue Periwinkle
Vulpia sp.	Silver Grass
Yucca sp.	Yucca
Native	
Acacia fimbriata	Fringed Wattle
Bothriochloa macra	Red-leg Grass
Callistemon sp.	Bottlebrush
Chloris truncata	Windmill Grass
Casuarina cunninghamiana	River Sheoak
Dianella revoluta	Blue Flax-lily
Melaleuca sp.	Tea Tree
Rhytidosperma sp.	Wallaby Grass

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Appendix C. Photo Plates

Plate 1 – Tree 01.

Plate 2 – Tree 02.

Plate 3 – Tree 03.

Plate 4 – Tree 04.

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Plate 5 – Tree 05.

Plate 6 – Tree 06.

Plate 7 – Tree 07.

Plate 8 – Tree 08.

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Plate 9 – Tree 30.

Plate 10 – Tree 31.

Plate 11 – Tree 32.

Plate 12 – Tree 33.

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Plate 13 – Tree 35.

Plate 14 – Tree 36.

Plate 15 – Tree 37.

Plate 16 – Tree 39.

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Plate 17 – Tree 40.

Plate 18 – Tree 41.

Plate 19 – Tree 42.

Plate 20 – Tree 43.

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Plate 21 – Tree 52.

Plate 22 – Tree 53.

Plate 23 – Tree 54.

Plate 24 – Tree 55.

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Plate 25 – Tree 56.

Plate 26 – Tree 58.

Plate 27 – Tree 59.

Plate 28 – Tree 60.

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Plate 29 – Tree 61.

Plate 30 – Tree 62.

Plate 31 – Tree 63.

Plate 32 – Tree 64.

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Plate 33 – Tree 66.

Plate 34 – Tree 67.

Plate 35 – Tree 69.

Plate 36 – Tree 70.

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Plate 37 – Tree 71.

Plate 38 – Tree 71B.

Plate 39 – Disturbed land.

Plate 40 – Disturbed land.

Plate 41 – Disturbed land.

Plate 42 – Exotic dominated groundlayer.

Plate 43 – Some areas, while still exotic dominated, contained a higher proportion of native grasses such as Red-leg Grass.

Plate 44 – Landscaped former gardens, containing planted native and exotic trees and shrubs.

Appendix D. Threatened Species Likelihood of Occurrence Assessment

Key for the below table:

1) Listed pursuant to the EPBC Act as Critically Endangered (CE), Endangered (E), or Vulnerable (V)
2) Listed pursuant to the NC Act as Endangered (E) or Vulnerable (V)

Note: The brief descriptions of species distribution and habitat are paraphrased from or based on information sourced from the threatened species profiles, recovery plans and listing determinations prepared for each species by the Commonwealth and ACT governments. These resources and their references can be found on the relevant government websites.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Plants				
Caladenia actensis Canberra Spider Orchid	CE	E	This orchid is endemic to the ACT and is only known from two populations on the western lower slopes of Mount Ainslie and Mount Majura. It was previously recorded at Aranda and Campbell, but no longer exists at those locations. The Canberra Spider Orchid grows on shallow, gravelly, brown clay loam soils. The species occurs amongst a groundcover of grasses, forbs and low shrubs, often among rocks. It grows on the transition zone (ecotone) between grassy woodland and dry sclerophyll forest.	Negligible The study area is highly disturbed and has been substantially modified by landscaping and mowing. There is no potential habitat in the study area for the species.
Dodonaea procumbens Trailing Hop-bush	V	-	Trailing Hop-bush is found in the dry areas of the Monaro, between Michelago and Dalgety where it occurs mostly in Natural Temperate Grassland or Snow Gum *Eucalyptus pauciflora* Woodland. A single known population occurs at Lake Bathurst (the northern-most occurrence of the species) where it occurs adjacent to the lake bed in grassland dominated by Corkscrew Grass *Austrostipa scabra* and Curly Sedge *Carex bichenoviana*. The species grows on sandy-clay soils in open bare patches where there is little competition from other species. The species often occurs on roadside batters and does not persist in heavily grazed pastures.	Negligible There is no potential habitat in the study area for the species.
Eucalyptus aggregata Black Gum	V	-	Black Gum occurs on the central and southern tablelands of NSW, and in a small disjunct population in Victoria. In NSW, it occurs predominantly in the South Eastern Highlands Bioregion. The species is a small to medium-sized woodland tree which grows in grassy woodlands on alluvial soils in moist sites along creeks on broad, cold and poorly-drained flats and hollows. It commonly occurs with	Negligible The species is not present in the study area.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
			Candlebark *Eucalyptus rubida*, Ribbon Gum *E. viminalis*, and Snow Gum *E. pauciflora*, with a grassy understorey of River Tussock *Poa labillardieri*. Most populations are located on private land or road verges and travelling stock routes.	
Lepidium ginninderrense Ginninderra Peppercress	V	E	The species is known from two natural sites in northern ACT, both within Natural Temperate Grassland.	Negligible There is no potential habitat in the study area for the species.
Lepidium hyssopifolium Basalt Peppercress	E	-	This species is known from a few populations in NSW, Victoria and Tasmania. The Basalt Pepper-cress is known to establish on open, bare ground with limited competition from other plants. It was previously recorded from Eucalypt woodland with a grassy ground cover, low open Casuarina woodland with a grassy ground cover and tussock grassland. Recently recorded localities have predominantly been in weed-infested areas of heavy modification, high degradation and high soil disturbance such as road and rail verges, on the fringes of developed agricultural land or within small reserves in agricultural land. Many populations are now generally found amongst exotic pasture grasses and beneath exotic trees.	Negligible There is no potential habitat in the study area for the species.
Leucochrysum albicans var. *tricolor* Hoary Sunray	E	-	The Hoary Sunray occurs from Queensland to Victoria and in Tasmania. In the ACT the species can be seen in spring in abundance on the roadside along Fairbairn Avenue and into Mt Ainslie Nature Reserve, on the western slopes of Mt Majura and adjacent to the Federal Highway road easement. The species is usually found in ungrazed and lightly grazed areas, along roadsides in particular. It appears to be very sensitive to grazing but responds to disturbance as a coloniser and appears to tolerate mowing. Flowers spring to summer.	**Moderate** The species is known to occur nearby in Mt Ainslie Nature Reserve and along the road verge of Fairbairn Avenue.
Pelargonium sp. Striatellum Omeo Stork's-bill	E	-	An undescribed species of Pelargonium, Omeo Stork's Bill is a tufted perennial herb threatened by grazing, recreational activities, and exotic species. It is known to occur just above the high water level of ephemeral lakes in NSW and Victoria.	Negligible There is no potential habitat in the study area for the species.
Pomaderris pallida Pale Pomaderris	V	-	A compact perennial shrub, growing to 1.5 m high. It is found in the ACT, southern NSW and eastern Victoria. In the ACT it is scattered along the Cotter, Paddy's and Murrumbidgee Rivers and through the Molonglo Gorge. It is found along the plateau edge and very steep upper slopes and cliffs of river valleys, in shallow, pale brown sandy loam soil over granite rock. It grows in shrubland, surrounded by	Negligible There is no potential habitat in the study area for the species.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
			Eucalyptus or *Callitris* woodland. In the ACT, it is only found on the eastern banks of the rivers.	
Prasophyllum petilum Tarengo Leek Orchid	E CE (listed as *Prasophyllum* sp. Wybong)	E	When first described in 1991, the Tarengo Leek Orchid was known only from the Hall Cemetery in the ACT. It has since been found at four sites in New South Wales: Captains Flat Cemetery, Ilford Cemetery, Steves Travelling Stock Route (TSR) at Delegate and the Tarengo TSR near Boorowa. The Tarengo Leek Orchid occurs on relatively fertile soils in grassy woodland or natural grassland. The three cemetery sites originally contained grassy woodland, dominated by Snow Gum *Eucalyptus pauciflora* and Black Gum *E. aggregata* at Captains Flat, and Blakely's Red Gum *E. blakelyi* and Yellow Box *E. melliodora* at Hall and Ilford. Both Tarengo TSR and Steves TSR are natural grasslands. The species is intolerant of grazing and this is considered to be the key reason it has been found only within cemeteries and TSRs, land from which grazing has been restricted.	Negligible The study area is highly disturbed and has been substantially modified by landscaping and mowing. There is no potential habitat in the study area for the species.
Rutidosis leptorrhynchoides Button Wrinklewort	E	E	In the ACT and NSW, Button Wrinklewort occurs in box-gum woodland, secondary grassland derived from box-gum woodland or in natural temperate grassland. It prefers open spaces where it does not have to compete for light. It is known from several sites in the ACT, NSW and Victoria, where it is threatened by habitat loss, grazing and weed encroachment.	Negligible The study area is highly disturbed and has been substantially modified by landscaping and mowing. There is no quality habitat in the study area for the species, and it is unlikely that it is present and was not recorded during the field surveys.
Swainsona recta Small Purple-pea	E	E	The Small Purple-pea occurs in the grassy understorey of woodlands and open forests dominated by Blakely's Red Gum, Yellow Box, Candlebark and Bundy. The species grows in association with understorey dominants that include Kangaroo Grass, Poa tussocks and Spear-grasses. Plants die back in summer, surviving as rootstocks until they shoot again in autumn. The species is intolerant of grazing but generally tolerant of fire, which also enhances germination by breaking the seed coat and reducing competition from other species.	Negligible The study area is highly disturbed and has been substantially modified by landscaping and mowing. There is no potential habitat in the study area for the species.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Thesium australe Austral Toadflax	V	-	Found in very small to large populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Austral Toadflax is a root parasite that takes water and some nutrients from other plants, especially Kangaroo Grass. It is often found in damp sites in association with Kangaroo Grass, but it is also found on other grass species at inland sites. Occurs on clay soils in grassy woodlands or coastal headlands.	Negligible The study area is highly disturbed and has been substantially modified by landscaping and mowing. There is no potential habitat in the study area for the species.
Mammals				
Chalinolobus dwyeri Large-eared Pied Bat	V	-	The Large-eared Pied Bat is found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. The species roosts in caves, crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin *Petrochelidon ariel*. The species frequents low to mid-elevation dry open forest and woodland close to roosts and is often found in well-timbered areas containing gullies.	Low No potential roosting habitat is present in the study area or nearby. As the species is known to forage close to roost sites, it is unlikely to forage in the study area.
Dasyurus maculatus maculatus Spot-tailed Quoll (SE mainland population)	E	V	The Spot-tailed Quoll occurs along the east coast of Australia and the Great Dividing Range. The species uses a range of habitats including sclerophyll forests and woodlands, coastal heathlands and rainforests. Occasional sightings have been made in open country, grazing lands, rocky outcrops and other treeless areas. Habitat requirements include suitable den sites, including hollow logs, rock crevices and caves, an abundance of food and an area of intact vegetation in which to forage. Seventy per cent of the diet is medium-sized mammals, and also feeds on invertebrates, reptiles and birds. Individuals require large areas of relatively intact vegetation through which to forage. The home range of a female is between 180 and 1000ha, while males have larger home ranges of between 2000 and 5000ha. Breeding occurs from May to August.	Negligible The species is highly unlikely to occur within the study area.
Petauroides Volans Greater Glider	V	-	The greater glider is restricted to eastern Australia, occurring from the Windsor Tableland in north Queensland through to central Victoria, with an elevational range from sea level to 1200 m above sea level. The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, and is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. The greater	Negligible The study area is highly disturbed and has been substantially modified by landscaping and mowing. There is no potential habitat in the study area for the species.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
			glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species	
Petrogale penicillate Brush-tailed Rock-wallaby	V	E	The Brush-tailed Rock-wallaby was once widespread in south-eastern Australia, but its range and numbers have contracted, particularly in Victoria and southern NSW. The last sighting of this species in the ACT was in Tidbinbilla Nature Reserve in 1959. Populations are comprised of small, isolated groups or 'colonies'. Each colony may occupy a territory of up to 35 ha. The species prefers rocky habitats/outcrops and steep slopes/cliffs, combined with dense arboreal cover. They are associated with rainforest, wet and dry sclerophyll forest, vine thicket, and open forest.	Negligible The species is not known to occur in the lowland/urban areas of the ACT.
Phascolarctos cinereus Koala (combined populations of Qld, NSW and the ACT)	V	-	In NSW, the Koala mainly occurs on the central and north coasts with some populations in the western region. Koalas feed almost exclusively on eucalypt foliage, and their preferences vary regionally. They are solitary with varying home ranges. In high quality habitat home ranges may be 1 -2 ha and overlap, while in semi-arid country they are usually discrete and around 100 ha.	Negligible The species is not known to occur in the lowland/urban areas of the ACT. The study area also does not contain potential habitat for the species.
Pteropus poliocephalus Grey-headed Flying Fox	V	-	The Grey-headed Flying Fox occurs in the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria. Whilst Brisbane, Newcastle, Sydney and Melbourne are occupied continuously, the species is widespread throughout their range during summer. In autumn the species occupies coastal lowlands and is uncommon inland. In winter the species congregates in coastal lowlands north of the Hunter Valley and is occasionally found on the south coast of NSW and on the northwest slopes (associated with flowering eucalypts of these areas). The Grey-headed Flying-fox requires foraging resources and roosting sites. It is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. The Grey-headed Flying-fox roosts in aggregations of various sizes on exposed branches. Roost sites are typically located near water, such as lakes, rivers or the coast. The roost at Commonwealth Park in Canberra is the only known roost in the ACT region.	Low The species may periodically forage within the study area on flowering eucalypts, however the study area is highly unlikely to contain habitat of significance to the species. The study area is not located near any known camps.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Birds				
Anthochaera phrygia Regent Honeyeater	E	E	A semi-nomadic species occurring in temperate eucalypt woodlands and open forests. Most records are from box-ironbark eucalypt forest associations and wet lowland coastal forests. Key eucalypt species include Mugga Ironbark, Yellow Box, Blakely's Red Gum, White Box and Swamp Mahogany. It also utilises a number of other eucalypt species. Nectar and fruit from the mistletoes *Amyema miquelii*, *A. pendula*, and *A. cambagei* are also eaten during the breeding season. Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and sheoaks as well as within mistletoe haustoria (section of the root which connects with the host tree). An open cup-shaped nest is constructed by the female of bark, grass, twigs and wool.	**Moderate** The species may periodically visit the study area to forage, however it is not known to nest in the locality and the potential foraging habitat is not of potential importance to the species.
Botaurus poiciloptilus Australasian Bittern	E	-	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes *Typha* spp. and spikerushes *Eleocharis* spp.. Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails.	Negligible There is no potential habitat in the study area for the species.
Calidris ferruginea Curlew Sandpiper	CE	-	The Curlew Sandpiper occurs around the coast of Australia, and are also widespread inland, albeit in smaller numbers. In the south-east they are occasionally recorded in the Tablelands and often in the Riverina. When inland, they are found around ephemeral and permanent lakes, dams, waterholes and bore drains. Curlew Sandpipers prey mainly on invertebrates, foraging on mudflats and at the edge of shallow pools, wading up to depths of 60 mm deep. They generally roost on dry shingle or sandy beaches, sandspits, and islets. Curlew Sandpipers are migratory and adults are found in Australia from August to April, juveniles are found year-round. This species does not breed in Australia.	Negligible There is no potential habitat in the study area for the species.
Daphoenositta chrysoptera Varied Sittella	-	V	In the ACT region, the Varied Sittella occurs in a wide variety of woodland and forest habitats, particularly in lowland areas. The species prefers areas with a dominance of rough barked trees, notably Red Stringybark at relatively high density. The species is rarely recorded in sparsely treed areas.	**Moderate** The species may periodically visit the study area to forage, however it is unlikely to nest in the study area.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Grantiella picta Painted Honeyeater	V	V	The Painted Honeyeater is found in Queensland and New South Wales west of the Great Dividing Range, through to northern Victoria. The species displays some migratory movement and is occasionally found in the Northern Territory and is a vagrant to South Australia and the ACT. The species frequents eucalypt forests and woodlands, particularly those that are infested heavily with mistletoes. In the ACT, the species' primary habitat is River Oak (*Casuarina cunninghamiana*) along river systems, especially the Murrumbidgee River.	**Moderate** The species may periodically visit the study area to forage, however it is unlikely to nest in the study area.
Hieraaetus morphnoides Little Eagle	-	V	The Little Eagle is distributed throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment and occupies habitats rich in prey within open eucalypt forest, woodland or open woodland. The species is sensitive to human disturbance.	Low The study area may be part of the range of an individual or pair of Little Eagles, but the species is unlikely to forage or nest in the study area.
Lathamus discolor Swift Parrot	E	V	The Swift Parrot occurs in woodlands and forests of NSW (and occasionally the ACT) from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. This species is migratory, breeding in Tasmania and also nomadic, moving about in response to changing food availability.	Low The species may move through the study area during winter, however this is unlikely due to the paucity of records of the species in the region.
Limosa lapponica baueri Bar-tailed Godwit	V	-	The Bar-tailed Godwit is a large migratory shorebird. In Australia, the species has been recorded in the coastal areas of all Australian states. It usually forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours. The Bar-tailed Godwit breeds in north-east Siberia and west Alaska. Potential habitat for the species in or nearby the ACT is limited to Jerrabomberra Wetlands and Lake George.	Negligible There is no potential habitat in the study area for the species.
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit	CE	-	The Northern Siberian Bar-tailed Godwit is a large migratory shorebird. In Australia, the species has been recorded in the coastal areas of all Australian states. It usually forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours. The Northern Siberian Bar-tailed Godwit breeds in northern Siberia. Potential habitat for the species in or nearby the ACT is limited to Jerrabomberra Wetlands and Lake George.	Negligible There is no potential habitat in the study area for the species.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Numenius madagascariensis Eastern Curlew	CE	-	The eastern curlew is Australia's largest shorebird and a long-haul flyer. The eastern curlew takes an annual migratory flight to Russia and north-eastern China to breed, arriving back home to Australia in August to feed on crabs and molluscs in intertidal mudflats. It is extremely shy and will take flight at the first sign of danger.	Negligible There is no potential habitat in the study area for the species.
Melanodryas cucullata cucullata Hooded Robin (southeastern form)	-	V	The Hooded Robin occupies drier eucalypt forest, woodland and scrub, grasses and low shrubs, as well as cleared paddocks with regrowth or stumps. The species uses stumps, posts or fallen timber from which to locate prey on the ground. In the ACT region, the species is found in woodland, often with scattered Yellow Box and/or Blakely's Red Gum, with long grass and low shrubs, or fallen logs.	**Moderate** The species may periodically visit the study area to forage, however it is unlikely to nest in the study area.
Petroica boodang Scarlet Robin	-	V	The Scarlet Robin is found in south-eastern Australia (extreme south-east Queensland to Tasmania, western Victoria and south-east South Australia) and south-west Western Australia. In NSW it occupies open forests and woodlands from the coast to the inland slopes, breeding in drier eucalypt forests and temperate woodlands.	**Moderate** The species may periodically visit the study area to forage, however it is unlikely to nest in the study area.
Polytelis swainsonii Superb Parrot	V	V	Found mainly in open, tall riparian River Red Gum forest or woodland. Often found in farmland including grazing land with patches of remnant vegetation. Breeds in hollow branches of tall eucalypt trees within 9 km of feeding areas.	**Moderate** The species may periodically visit the study area to forage, however it is unlikely to nest in the study area.
Rostratula australis Australian Painted Snipe	E	-	Usually found in shallow inland wetlands including farm dams, lakes, rice crops, swamps and waterlogged grassland. The species prefers freshwater wetlands, ephemeral or permanent, although it has been recorded in brackish waters.	Negligible There is no potential habitat in the study area for the species.
Amphibians				
Litoria aurea Green and Golden Bell Frog	V	-	The species is found in marshes, dams and stream sides, particularly those containing bullrushes or spikerushes. Preferred habitat contains water bodies that are unshaded, are free of predatory fish, have a grassy area nearby and have diurnal sheltering sites nearby such as vegetation or rocks, although the species has also been recorded from highly disturbed areas including disused industrial sites, brick pits, landfill areas and cleared land.	Negligible There is no potential habitat in the study area for the species.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Litoria booroolongensis Booroolong Frog	E	-	The Booroolong Frog is restricted to tablelands and slopes in NSW and north-east Victoria at 200–1300 m above sea level. The species is predominantly found along the western-flowing streams and their headwaters of the Great Dividing Range, and a small number of eastern-flowing streams in the north end of its range. The Booroolong Frog occurs along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within stream margins, or near slow-flowing connected or isolated pools that contain suitable rock habitats. Streams range from small slow-flowing creeks to large rivers in dissected mountainous country, tablelands, foothills and lowland plains. Primary habitat requirements for the Booroolong Frog are extensive rock bank structures along permanent rivers. The species can occur in cleared grazing land and pasture.	Negligible There is no potential habitat in the study area for the species.
Litoria castanea Yellow-spotted Tree Frog	E	-	The Yellow-spotted Tree Frog previously had a disjunct distribution, being recorded on the New England Tablelands and on the Southern Tablelands from Lake George to Bombala. The species has only recently (2010) been rediscovered on the Southern Tablelands. Prior to this the species had not been recorded on the Southern Tablelands since the 1970s. Found in large permanent ponds, lakes and dams with an abundance of bulrushes and other emergent vegetation, it shelters during autumn and winter under fallen timber, rocks, other debris or thick vegetation.	Negligible There is no potential habitat in the study area for the species.
Reptiles				
Aprasia parapulchella Pink-tailed Worm-lizard	V	V	The Pink-tailed Worm-lizard is a fossorial species which lives beneath surface rocks and occupies ant burrows. It feed on ants, particularly their eggs and larvae. Thought to lay eggs within the ant nests under rocks that it uses as a source of food and shelter and for thermoregulation. Key habitat features are a cover of native grasses, particularly Kangaroo Grass, sparse or no tree cover, little or no leaf litter, and scattered small rock with shallow embedment in the soil surface.	Negligible There is no potential habitat in the study area for the species.
Delma impar Striped Legless Lizard	V	V	The Striped Legless Lizard is patchily distributed in grasslands of south-eastern NSW, the ACT, north-eastern, central and south-western Victoria, and south-eastern South Australia. In the ACT, the species is known to occur at four separate locations - in grassland areas of Gungahlin, Majura and Jerrabomberra Valleys, and Yarramundi. Unsuitable habitat, roads and urban development separate these	Negligible There is no potential habitat in the study area for the species.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
			sites. Most areas where the species persists are thought to have had low to moderate levels of agricultural disturbance in the past and it has been suggested that ploughing in particular may be incompatible with the survival of the species. Until recently, the species was thought to inhabit only native grasslands dominated by species such as Tall Speargrass and Kangaroo Grass. In recent years, surveys have revealed the Striped Legless Lizard in many sites dominated by exotic species such as Phalaris, Serrated Tussock and Flatweed (Biosis Research 2012). They have also been found in several secondary grassland sites, generally within two kilometres of primary grassland.	
Tympanocryptis pinguicolla Grassland Earless Dragon	E	E	In the Canberra-Monaro region the Grassland Earless Dragon is restricted to Natural Temperate Grassland that is dominated by perennial tussock-forming species. It is known to make use of grass tussocks as well as small holes in the ground that are also used by invertebrates such as wolf spiders and crickets. The species is known to occur in suitable native grassland habitat in the Majura and Jerrabomberra valleys in the ACT and at 'Letchworth' near Queanbeyan in NSW.	Negligible There is no potential habitat in the study area for the species.
Fish and Crustacea				
Maccullochella peelii Murray Cod	V	-	The Murray Cod's natural distribution extends throughout the Murray-Darling basin ranging west of the divide from south east Queensland, through NSW into Victoria and South Australia. The species is found in the waterways of the Murray–Darling Basin in a wide range of warm water habitats that range from clear, rocky streams to slow flowing turbid rivers, billabongs and large deep holes. Murray Cod is entirely a freshwater species and will not tolerate high salinity levels.	Negligible There is no potential habitat in the study area for the species.
Macquaria australasica Macquarie Perch	E	E	Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury and Shoalhaven catchments. Macquarie perch are found in both river and lake habitats, especially the upper reaches of rivers and their substantial tributaries.	Negligible There is no potential habitat in the study area for the species.
Insects				
Perunga ochracea Perunga Grasshopper	-	V	The Perunga Grasshopper is usually recorded opportunistically by ecologists undertaking vegetation surveys or targeted surveys for other species. The species is generally a natural grassland specialist, and although some records occur in Box-	Negligible There is no potential habitat in the study area for the species.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
			Gum Woodland, such sites are usually nearby the historical ecotone between the two ecological communities.	
Synemon plana Golden Sun Moth	CE	E	The Golden Sun Moth's NSW populations are found in the area between Queanbeyan, Gunning, Young and Tumut and the species has been recorded at many sites in the lowland areas of the ACT. The species occurs in Natural Temperate Grasslands and Box-Gum Grassy Woodland in which the groundcover is dominated by Wallaby Grasses *Rytidosperma* spp. It is believed that the females lay up to 200 eggs at the base of the Wallaby Grass tussocks. After hatching, the larvae tunnel underground where they remain feeding on the roots of Wallaby Grass tussocks. The species is also known to feed on the introduced species (and Weed of National Significance), Chilean Needle Grass *Nassella neesiana*.	Negligible There is no potential habitat in the study area for the species.

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24 May 2018

s22 [redacted]
Development Manager
PPG, Defence Housing Australia
Level 2, 287 Elizabeth St, Sydney NSW 2000
T: 02 8836 5709
s22 [redacted]
[redacted]

Block 3 Section 65, Campbell, ACT – Tree Habitat Assessment

Capital Ecology project no. 2785

Dear s22 [redacted]

This letter provides an assessment of the fauna habitat values of the trees located in Block 3 Section 65, Campbell, ACT (the 'site'). The site previously contained approximately 21 defence houses. These houses have been demolished and Defence Housing Australia (DHA) are proposing to redevelop the site.

All trees within the site were retained during the demolition of the houses. The removal of many of these trees has already been approved by the National Capital Authority (refer to Enviro Links Design 2017[1]). Capital Ecology was commissioned by DHA to assess those trees located within the site which have not yet been approved for removal, and which are located within proposed block boundaries (refer to Enviro Links Design 2017, Purdon Planning 2018[2]).

On 18 May 2018, Capital Ecology visited the site and assessed all of the trees identified in Enviro Links Design (2017) and located within the site. This included both the trees already approved for removal and those which have not been approved for removal.

The results of Capital Ecology's tree habitat assessment are provided in Appendix A. Tree identification numbers were determined based on Enviro Links Design (2017), and the following details were recorded for each tree.

- Tree Number – a unique identifying number allocated to the tree, based on Enviro Links Design (2017).
- Species Name and Common Name.
- Remnant / Naturally Occurring or Planted.

[1] Enviro Links Design (2017). *Existing Tree Analysis*. Job No. 1120, DWG No. TMP01, 27 November 2017.
[2] Purdon Planning. *DHA Academy Close Masterplan.* February 2018.

- Diameter at Breast Height (DBH) – measured with a DBH tape.
- Height – the approximate height of the tree measured with a clinometer.
- Hollows – the number and characteristics of any hollows present.
- Alive or Dead.
- Overall Habitat Value – Low, Moderate, High, Very High. This was determined based on the presence of hollows, other habitat values such as mistletoe, whether the tree is naturally occurring and/or Plant Community Type (PCT) appropriate, and whether the tree has the potential to develop valuable habitat over time.
- Other Notes – regarding any other notable features observed.

Appendix B provides a photograph of each of the assessed trees in the site. Figure 1 shows the location of the site, and Figure 2 shows the site and assessed trees on 2018 Nearmap aerial imagery.

In total Capital Ecology assessed 38 trees within the site. Of these trees, 17 contain hollows and therefore have 'Very High' habitat value. Another 17 trees have 'High' habitat value, based on other characteristics such as the presence of mistletoe/nests and/or on the tree's potential to develop important habitat for fauna in the future (based largely on the species of tree). Finally, 4 trees have 'Low' habitat value as they have been planted and are an inappropriate species for the PCT of the site (determined to be 'ACT-PCT16 - White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland').

The trees of 'Very High' and 'High' habitat value are likely to provide a valuable foraging resource to a variety of woodland birds and a nesting resource to hollow dependent fauna. As the site adjoins the Mount Ainslie Nature Reserve, the trees within the site are also likely to provide a 'stepping-stone' link to other areas located deeper within the urban areas of Campbell and beyond. We therefore recommend that the development design retain as many as practicable of the trees assessed to have 'Very High' or 'High' habitat.

We trust that this assessment provides the information required. If, however, you should have any questions, please do not hesitate to contact us.

Yours sincerely,

s22 [redacted]

Attachments:

Figure 1. Locality Plan

Figure 2. Site Boundary and Assessed Trees

Appendix A. Tree Habitat Assessment

Appendix B. Tree Photo Plates

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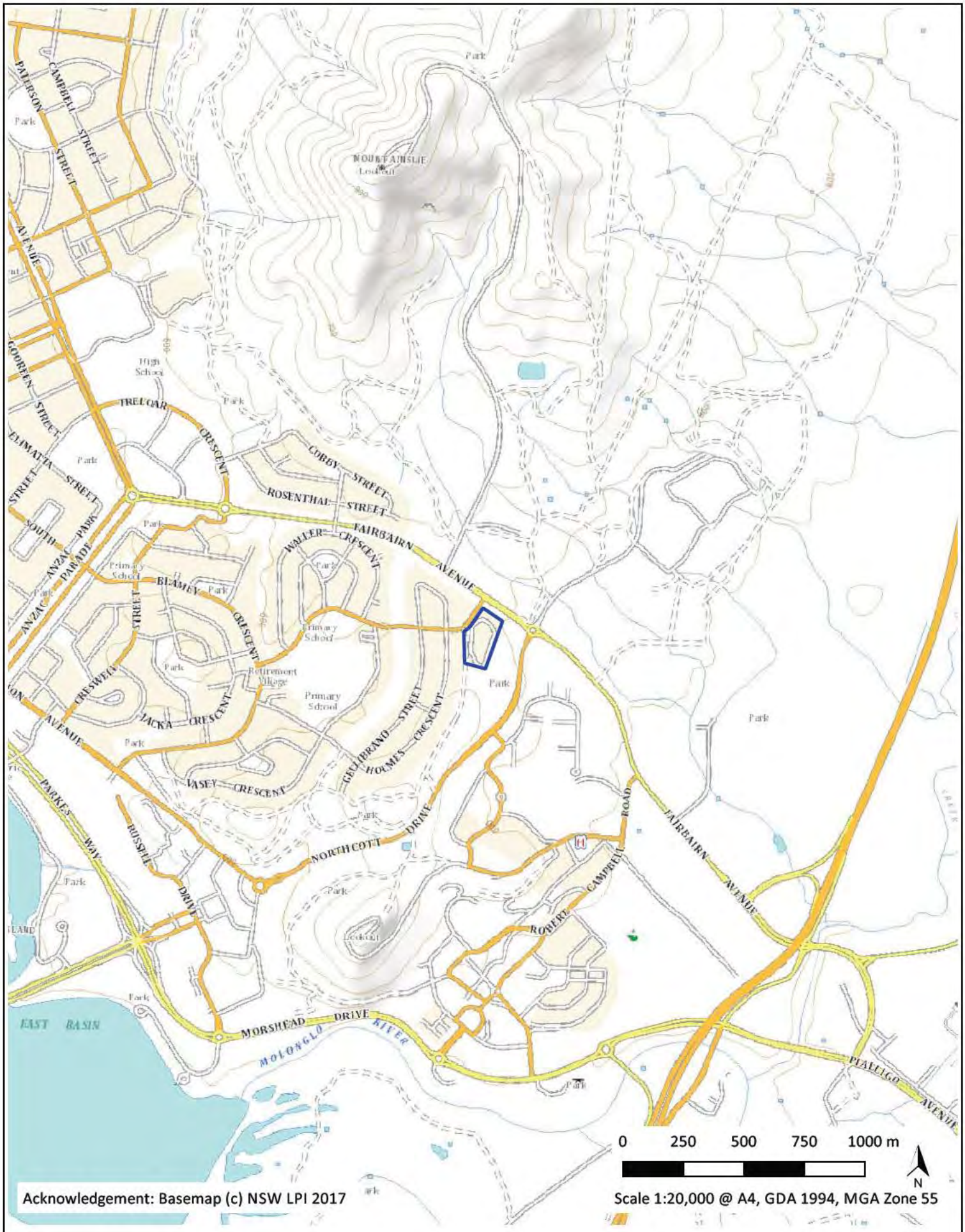

Figure 1. Locality Plan

Legend

Site Boundary

Capital Ecology Project No: 2785
Drawn by: S. Reid
Date: 23 May 2018

capital ecology

Figure 2. Site Boundary and Assessed Trees

capital ecology

Capital Ecology Project No: 2785
Drawn by: S. Reid
Date: 23 May 2018

Appendix A. Tree Habitat Assessment

Tree Number	Species Name	Common Name	Remnant/ Planted	DBH (cm)	Height (m)	Overall Habitat Value	Hollows				Alive/ Dead	Notes Other Habitat Values (nests, mistletoe etc.)
							S	M	L	XL		
T01	*E. blakelyi*	Blakely's Red Gum	Remnant	55/50	13	Very High	1	-	1	-	A	Substantial dieback
T02	*E. blakelyi*	Blakely's Red Gum	Remnant	58	12	High	-	-	-	-	A	Substantial dieback
T03	*E. melliodora*	Yellow Box	Remnant	102	25	Very High	4	2	2	-	A	3 x Mistletoe
T04	*E. polyanthemos*	Red Box	Planted	54	15	Low	-	-	-	-	A	
T05	*E. blakelyi*	Blakely's Red Gum	Remnant	59	17	High	-	-	-	-	A	
T06	*E. blakelyi*	Blakely's Red Gum	Remnant	58	18	High	-	-	-	-	A	
T07	*E. melliodora*	Yellow Box	Remnant	84	22	Very High	3	1	-	-	A	Half of tree is dead
T08	*E. blakelyi*	Blakely's Red Gum	Remnant	61	8	Very High	2	-	-	-	A	Substantial dieback
T30	*E. melliodora*	Yellow Box	Remnant	47	13	Very High	1	1	-	-	D	
T31	*E. melliodora*	Yellow Box	Remnant	69	12	High	-	-	-	-	A	
T32	*E. melliodora*	Yellow Box	Remnant	85	16	Very High	3	3	-	-	A	
T33	*E. goniocalyx*	Bundy	Planted	66	12	Low	-	-	-	-	A	
T35	*E. melliodora*	Yellow Box	Remnant	69	13	Very High	1	1	-	-	A	
T36	*E. blakelyi*	Blakely's Red Gum	Remnant	89	15	Very High	2	2	3	-	A	
T37	*E. melliodora*	Yellow Box	Remnant	72	17	Very High	1	1	-	-	A	
T39	*E. melliodora*	Yellow Box	Remnant	36	9	High	-	-	-	-	A	
T40	*E. melliodora*	Yellow Box	Remnant	40	7	High	-	-	-	-	A	
T41	*E. melliodora*	Yellow Box	Remnant	25	10	High	-	-	-	-	A	
T42	*E. melliodora*	Yellow Box	Remnant	72	18	Very High	2	1	-	-	A	
T43	*E. blakelyi*	Blakely's Red Gum	Remnant	65	12	Very High	-	1	-	-	A	Substantial dieback
T52	*E. melliodora*	Yellow Box	Remnant	69	14	High	-	-	-	-	A	
T53	*E. bridgesiana*	Apple Box	Remnant	73	11	High	-	-	-	-	A	
T54	*E. blakelyi*	Blakely's Red Gum	Remnant	60	14	High	-	-	-	-	A	1 x Mistletoe present
T55	*E. blakelyi*	Blakely's Red Gum	Remnant	68	12	Very High	-	1	1	-	A	1 x Mistletoe; 2 x Small stick nest; Substantial dieback
T56	*E. melliodora*	Yellow Box	Remnant	73	17	Very High	2	-	-	-	A	
T58	*E. polyanthemos*	Red Box	Planted	38	9	Low	-	-	-	-	A	
T59	*E. bridgesiana*	Apple Box	Planted	55	14	High	-	-	-	-	A	
T60	*E. rubida*	Candlebark	Planted	50	10	High	-	-	-	-	A	
T61	*E. melliodora*	Yellow Box	Planted	45/29/27	11	High	-	-	-	-	A	
T62	*E. melliodora*	Yellow Box	Remnant	59	15	Very High	2	1	-	-	A	
T63	*E. melliodora*	Yellow Box	Remnant	61	17	Very High	-	1	-	-	A	
T64	*E. blakelyi*	Blakely's Red Gum	Remnant	64/45	16	Very High	2	-	-	-	A	3 x Mistletoe
T66	*E. polyanthemos*	Red Box	Planted	49	13	High	-	-	-	-	A	1 x Nest box
T67	*E. blakelyi*	Blakely's Red Gum	Remnant	87	14	Very High	1	2	-	-	A	1 x Nest box
T69	*E. blakelyi*	Blakely's Red Gum	Remnant	55	10	High	-	-	-	-	A	
T70	*E. melliodora*	Yellow Box	Remnant	78	16	High	-	-	-	-	A	
T71	*E. blakelyi*	Blakely's Red Gum	Remnant	60	17	High	-	-	-	-	A	1 x Mistletoe; Substantial dieback
T71B	*E. goniocalyx*	Bundy	Planted	46	10	Low	-	-	-	-	A	Not shown in 'Existing Tree Analysis' (27/11/17)

*Estimated size class of each hollow based upon entrance diameter (i.e. Small <5 cm, Medium 5-15 cm, Large 15 – 25 cm and Extra Large >25 cm)

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Appendix B. Tree Photo Plates

Plate 1 – Tree 01.

Plate 2 – Tree 02.

Plate 3 – Tree 03.

Plate 4 – Tree 04.

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Plate 5 – Tree 05.

Plate 6 – Tree 06.

Plate 7 – Tree 07.

Plate 8 – Tree 08.

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Plate 9 – Tree 30.

Plate 10 – Tree 31.

Plate 11 – Tree 32.

Plate 12 – Tree 33.

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Plate 13 – Tree 35.

Plate 14 – Tree 36.

Plate 15 – Tree 37.

Plate 16 – Tree 39.

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Plate 17 – Tree 40.

Plate 18 – Tree 41.

Plate 19 – Tree 42.

Plate 20 – Tree 43.

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Plate 21 – Tree 52.

Plate 22 – Tree 53.

Plate 23 – Tree 54.

Plate 24 – Tree 55.

© Capital Ecology Pty Ltd 2018

Plate 25 – Tree 56.

Plate 26 – Tree 58.

Plate 27 – Tree 59.

Plate 28 – Tree 60.

© Capital Ecology Pty Ltd 2018

Plate 29 – Tree 61.

Plate 30 – Tree 62.

Plate 31 – Tree 63.

Plate 32 – Tree 64.

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Plate 33 – Tree 66.

Plate 34 – Tree 67.

Plate 35 – Tree 69.

Plate 36 – Tree 70.

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Plate 37 – Tree 71.

Plate 38 – Tree 71B.

ACT Government
Transport Canberra and City Services

TTM registered number:	TM/	10358

Authorisation of Temporary Traffic Management (TTM) Plans

Group One

is authorised pursuant to Part 5 of Road Transport (Safety and Traffic Management) Act 1999 to install or display (or to interfere with, change or remove) the prescribed traffic control devices shown on the authorised TTM plans for the period of authorisation and for the daily authorised times for each TTM plan and in accordance with the attached conditions of authorisation.

A copy of this authorisation together with the plans authorised, the conditions of authorisation and the risk assessment must be available at the work site during working hours.

Period of authorisation

From				To			
Date:	17/01/2022	**Time:**	07:00 AM	**Date:**	15/01/2023	**Time:**	05:00 PM

Authorised prescribed traffic control devices and daily authorised times

Authorised Plan	Devices authorised	Day/s	Times authorised
GRO-TRU-001 SHT 1 REV A 24 Hours	All temporary lines, signs and devices excluding W5-22	Mon, Tue, Wed, Thu, Fri, Sat	07:00 AM - 05:00 PM 17/01/2022 - 15/01/2023
GRO-TRU-001 SHT 1 REV A Daily	W5-22	Mon, Tue, Wed, Thu, Fri, Sat	07:00 AM - 05:00 PM 17/01/2022 - 15/01/2023
GRO-TRU-001 SHT 1 REV A, GRO-TRU-002 SHT 1 REV B, GRO-TRU-003 SHT 1 REV B 24 Hours	All temporary lines, signs and devices excluding T1-5, W5-22, R4-212	Mon, Tue, Wed, Thu, Fri, Sat	07:00 AM - 05:00 PM 17/01/2022 - 15/01/2023
GRO-TRU-001 SHT 1 REV A, GRO-TRU-002 SHT 1 REV B, GRO-TRU-003 SHT 1 REV B 24 Hours	T1-5, W5-22, R4-212	Mon, Tue, Wed, Thu, Fri, Sat	07:00 AM - 05:00 PM 17/01/2022 - 15/01/2023

Additional details on proposed daily working hours
Set up 24 hours. Working hours 7am to 5pm.

Conditions of Authorisation:

The ACT Government reserves the right to revoke this TTM application should there be any incidence of non-compliance to the conditions of authorisation listed.

GPO Box 158 Canberra ACT 2601 | phone: 132281 | www.act.gov.au

National Capital Authority Works Approval will be required for any works undertaken on National or Designated land.

Campbell residential waste collection day is every Friday

The ACT Government waste collection contractor Suez require a minimum lane width of 3.8 metres for the collection of residential waste bins on the nominated waste collection day.

Due to the narrow road width on the local streets adjacent to and surrounding the construction site. The principal contractor shall nominate one side of each street where construction parking will be permitted and issue this as a site instruction during the site induction process.

TCCSD will require a dilapidation report to be undertaken on the condition of the assets located within the road / road related area under the area of works as shown on the authorised TTM drawing. Any damage to the assets located above or below the ground will be repaired at the contractor's expense in accordance with TCCSD Specifications.

The contractor shall liaise with ACTION Field Operations at least 24 hours prior to installing any lane / road closures or traffic controller operations on any ACTION service delivery route. Access to bus stops shall be always maintained.

s22 [redacted]

The principal contractor shall submit specific traffic management plans (TMP) and traffic guidance schemes (TGS) for each additional stage of works associated with this project.

Site inspections and record keeping shall be undertaken and documented in accordance with the requirements of the Austroads Guide to Temporary Traffic Management Part 2: Traffic Management Planning.

Signs and devices shall be installed by a competent person who has the necessary training, skills and experience as defined in Austroads Guide to Temporary Traffic Management Part 8.

A record of dates and times temporary speed limits are in operation shall be kept, including any changes made, the name of personnel installing, changing or removing signs (see Section 2.5.3 Austroads Guide to Temporary Traffic Management).

Any permanent speed signs that contradict the temporary speed limit in the required zone shall be covered or removed. The contractor shall ensure all permanent speed signs have been reinstated as per the authorised TCD drawing at the completion of each shift.

Construction vehicles shall only enter and exit this site in a forward direction. Construction vehicles shall not be permitted to enter and exit in a reverse direction under any circumstances without <u>appropriate and authorised control measures being in place</u>.

The contractor shall only install or display (or to interfere with, change or remove) a prescribed traffic control device during the authorised working times. Prescribed traffic control devices shall be fully covered or removed at all other times.

The contractor shall ensure that all temporary signs and devices are removed at the completion of these works.

Where pedestrians including people with disabilities or visual impairment have to move through, past or around a work site or to cross the road within a work site they shall be provided with and directed to suitably constructed and protected temporary footpaths and crossing points or formal pedestrian crossings or refuges if warranted.

The principal contractor shall ensure that all directly affected businesses / residents and Government Agencies have been advised in writing prior to these works commencing This letter shall include the following information.

- **Project details.**
- **Proposed commencement / completion dates**
- **Proposed site hours of operation.**
- **Principal contractors' details including contact numbers to answer any enquiries in relation to these works.**

Access to commercial and residential properties including any driveways shall be always maintained unless agreed to otherwise with the property owners prior to works commencing.

Temporary fencing footing blocks shall be installed a minimum of 500 mm clear of any footpath for the safety of pedestrians and cyclists.

The principal contractor shall identify areas where construction workers associated with this site can park legally in accordance with the Australian Road rules and this advice shall be communicated to all staff during induction / toolbox meetings during the course of the construction period. **Construction parking is not permitted on any of the following areas,**

- **Footpaths**
- **Verges / Nature Strips**
- **Driveways**
- **Public Open Spaces**

Delegate: s22 [redacted] Pos. No. 23592

Signature:

Date: 14/01/2022

(Delegate of the road transport authority)

THE AUTHORISATIONS

TTM plan authorisation	**Authorised**
Public unleased land Act work approval	**Approved**
Approval to use a road closure and Temporary public road closure	**No**

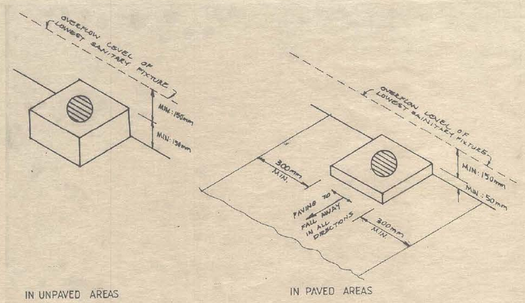
Area of Works

TRUSCOTT STREET - Northbound and Southbound: from FAIRBAIRN AVENUE to GODFREY STREET.

Applicant details
Organisation: Aurican Consulting

Contractor details
Organisation: Group One

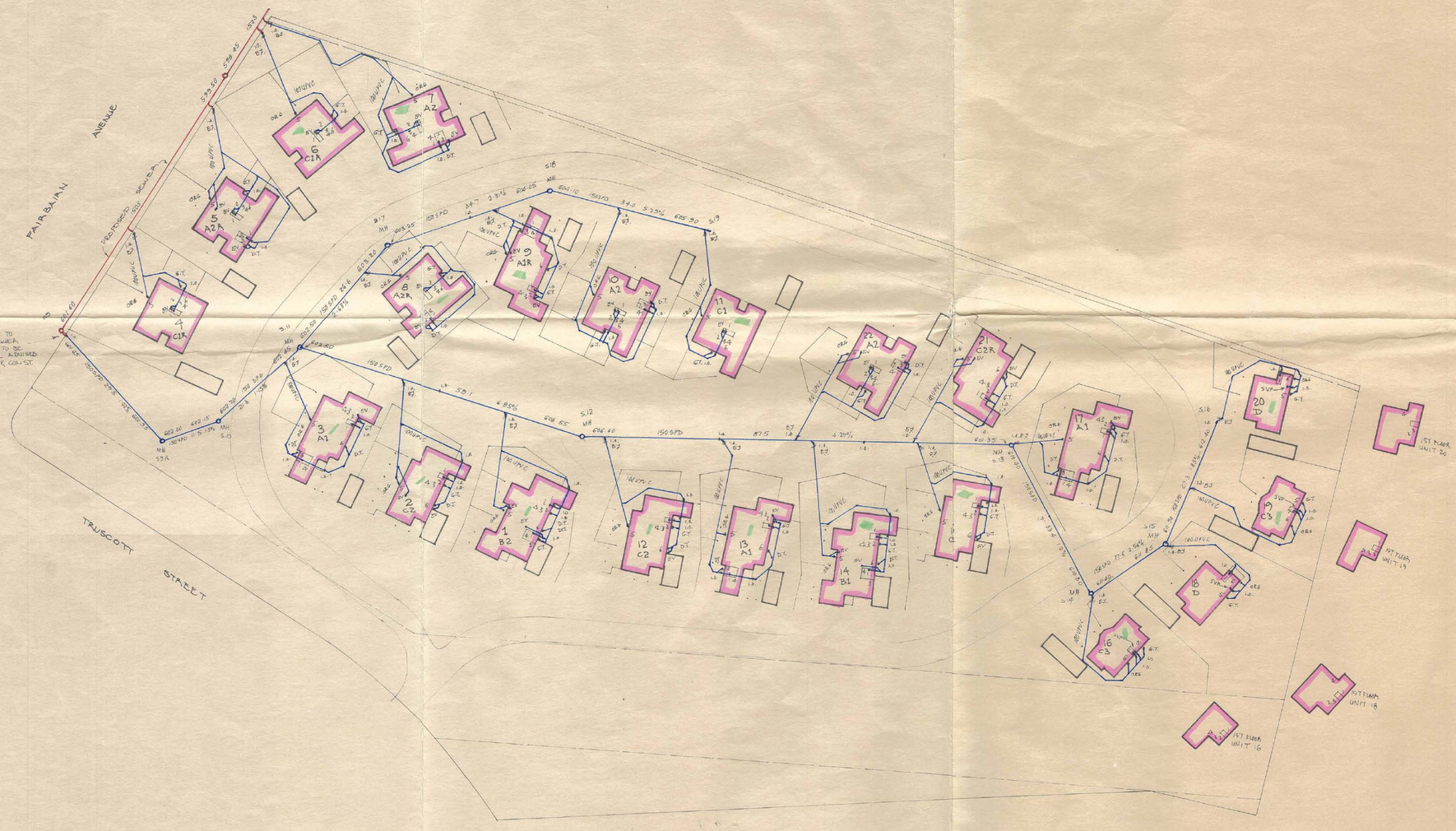
s22 [redacted]



IN UNPAVED AREAS

IN PAVED AREAS

DETAIL OF FINISHED LEVELS OF DTs GTs & ORGs
not to scale



Designed by: I.T.BIRD & ASSOCIATES PTY. LTD & SCOTT & FURPHY
Architects: COCKS & CARMICHAEL - Melbourne Vic.

Drainage Plan No. 42316

PLAN OF SANITARY DRAINAGE

For

AUSTRALIAN DEFENCE FORCES ACADEMY
HOUSING
Block Section 59 CAMPBELL

Scale 1:500

REFERENCE:

G.T.	Gully Trap
D.T.	Disconnector Trap
C.I.P.	Cast Iron Pipe
S.P.D.	Stoneware Pipe Drain
S.V.P.	Soil Vent Pipe
V.P.	Vent Pipe
E.V.	Educt Vent
I.O.	Inspection Opening
E.J.	Expansion Joint
F.P.	Fixed Point
J.U.	Jump Up
M.H.	Manhole
O.R.G.	Overflow Relief Gully

FIXTURES:

1.	W. CLOSET	(37)
2.	BATH	(22)
3.	BASIN	(33)
4.	SHOWER	(33)
5.	SINK	(22)
6.	TROUGH	(22)
7.	URINAL	(–)
8.	CLEANER'S SINK	(–)
9.	BIDET	(–)
		169

NOTES:

1. Drains to be laid shown in BLUE lines.
2. All work must be carried out in conformity with the Canberra Sewerage and Water Supply Regulations.
3. This Plan to be read in conjunction with approved Architectural plans and Specifications.
4. Drains to be supported on or from solid ground.
5. Manholes to be constructed in accordance with the Dept. of Housing & Construction Standard Drawing No. H 12, and shall be fitted with approved heavy duty cast iron covers.
6. Copper pipes to be in accordance with AS.1432–1973 Table 2 Type B tubes.
7. Cast Iron Pipes and Fittings to be in accordance with AS.1631.
8. Unplasticised Polyvinyl Chloride Pipe Drains (U.P.V.C.), including STACKS, to be constructed in accordance with AS CA 67 – 1972, AS CA 69 – 1972, AS 2032–1977 and Canberra Codes of Practice.
9. Existing drains shown in GREEN lines.
10. Existing drains X'ed in RED to be abolished to approval.
11. Location and depth/invert level of branch to be verified on site before any work is commenced.
12. Drains under building must be retested – drains having cement joints must be totally surrounded with cement concrete 150 mm thick.
13. Inspection Openings must be provided at the property boundary; on each W.C. or slop–hopper branch; at intervals of not more than 30 metres spaced equidistant where possible; immediately upstream and downstream of all jump–ups.

S22 [redacted]

5.12. 1984

Paradigm 42

P: 0437 405 365
E: asubkey@paradigm42.com.au

8 March 2019

Your Reference: Academy Close, Campbell ACT
Our Reference: 0272 R01 2.docx

s22
Development Manager
PPG, Defence Housing Australia
Level 2, 287 Elizabeth Street
Sydney NSW 2000

Dear s22

RE: Acoustic Report Addressing Road Traffic Noise on Site

1 Executive Summary

Noise levels were measured at the worst affected boundary of Academy Close at L_{Aeq} 58 dB during peak hour. It is expected that with standard house construction techniques the internal noise levels of the future proposed houses along Fairbairn Ave should be in the order of L_{Aeq} 35 dB during peak hour and quieter in the evening and night. Noise levels of houses located further into the estate being significantly less than this utilising the same construction. Noise levels within bedrooms during hours of use as specified in Australian/New Zealand Standard AS/NZS 2107:2016 *Acoustic – Recommended design sound levels and reverberation times for building interiors* (*AS 2107*) will be significantly quieter than L_{Aeq} 35 dB.

Also, it is understood that a further Works Application for the design and construction of the houses will be lodged with the NCA and this application will further assess acoustic requirements.

2 Introduction

Defence Housing Australia has engaged Paradigm 42 to investigate noise levels on the above site to inform the approval process for delivery of a number of houses for Defence personnel.

This report is meant for lodgement to the NCA to show that noise levels can be attenuated with standard construction. In this report we have:

1. Measured noise levels on site;
2. Reported on criteria;
3. Compared the measured noise levels with the criteria;
4. Provided impacts of noise on the proposed properties.

3 Criteria

3.1 External Criteria

There is no criteria for external noise levels on a property from road traffic noise in the ACT. This was confirmed by Peter Ryan of the ACT EPA.

3.2 Internal Criteria

Australian/New Zealand Standard AS/NZS 2107:2016 *Acoustic – Recommended design sound levels and reverberation times for building interiors* (*AS 2107*) provides a guideline for internal noise levels for different spaces. The relevant section has been reproduced below in Table 1

Table 1: AS 2107 noise levels for residential buildings

	Type of occupancy/activity	**Design sound level, ($L_{Aeq,t}$) range**
7	RESIDENTIAL BUILDINGS	
	Houses and apartments in suburban areas or near minor roads—	
	Living areas	30 to 40
	Sleeping areas	30 to 35
	Work areas	35 to 40

4 Measurements

Attended measurements were conducted on Monday 7 May 2018 commencing just before the afternoon peak hour, and extending into peak hour. The following instrumentation was used:

1. Svantek 971 SLM serial # 39005;
2. Bruel and Kjaer field calibrator.

Location of the measurements is below in Figure 1. The location was chosen to be representative of noise at the most noise affected boundary of the properties.

Times and noise levels are below in Table 2, below. Measurements were for 15 minutes each. Noise levels did not vary by a significant amount, and should be rounded to L_{Aeq} 58 dB.

Table 2: Measured Noise Levels at Academy Close, Campbell

Start time	L_{Aeq}	L_{A01}	L_{A10}	L_{A90}
16:34:26	**58.16**	63.9	60.1	54.7
16:49:26	**57.90**	63.5	59.5	55.1
17:04:26	**57.86**	62.2	59.6	55.1
17:19:26	**57.73**	62.5	59.4	55.2

The decimal places should be ignored and rounded to the nearest whole numeral.

The parameter of most interest is L_{Aeq} as this is the parameter specified in *AS 2107*.

Figure 1: Masterplan with measurement location

5 Discussion

5.1 External

Noise levels were not particularly high. Other jurisdictions (Queensland for example) set a level of L_{A10} 63 dB. Noise levels will be further reduced within the backyard of the proposed residences with a back fence. If this is slightly upgraded to be a noise barrier the noise levels at 1.5 metres above ground level will be reduced by 5 dB at mid frequencies.

We would expect noise levels at first floor level to be slightly higher than the measurements by about 2 dB.

5.2 Internal

The weak point to noise attenuation in a house is the widows and doors. Assuming rooms have large windows facing the Fairbairn Avenue, we have calculated that standard construction will provide adequate attenuation to comply with *AS 2107*. Windows and glazed doors should achieve a minimum attenuation of RW 24. This can normally be achieved with 4 mm float glass without acoustically rated seals.

6 Conclusion

There is no reason due to noise that residential premises can achieve a high level of noise amenity on this site, using careful design and standard construction materials and techniques.

Yours Faithfully

s22 [redacted]

Director

NATIONAL CAPITAL AUTHORITY

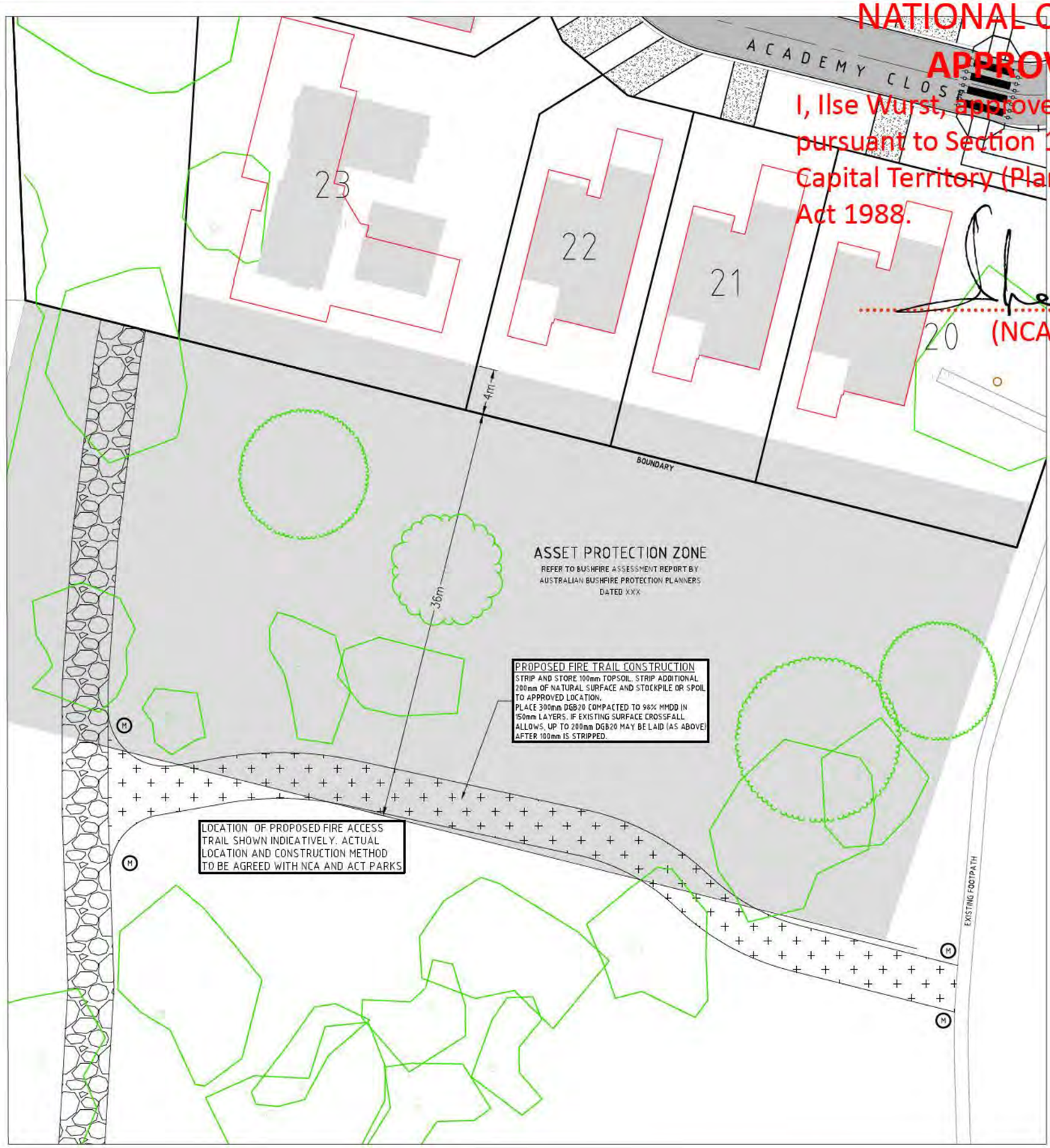
APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1)(b) of the Australian Capital Territory (Planning and Land Management) Act 1988.

.....

(NCA Delegate)

LOCALITY PLAN
NTS



PAVEMENT LEGEND

PROPOSED GRAVEL FIRE TRAIL
100mm CONCRETE (20mm MAX AGGREGATE SLUMP REINFORCEMENT (CONTRACTOR PLACED) BROOM FINISH
75mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE (COMPACTED TO 95% MMDD)

EXISTING GRAVEL FIRE TRAIL

(M) MATCH TO EXISTING LEVELS AND MAKE GOOD

GENERAL FILL

1. THICKNESS SPECIFIED IS MINIMUM REQUIRED. USE GENERAL FILL WON FROM EXCAVATION IF AVAILABLE. OR IMPORTED FILL CBR ≥ 8 PLACED IN MAXIMUM 200mm LAYERS COMPACTED TO 95% MMDD, BETWEEN STRIPPED SURFACES AND NOMINATED PAVEMENT SUBGRADE LEVEL.

TESTING

ALLOW FOR FOLLOWING:
(REFER ALSO TO SPECIFICATION)

1. COMPACTION TESTS ON EACH PAVEMENT LAYER – ONE PER DRIVEWAY
2. TESTS VERIFYING ALL SPECIFIED MATERIAL PROPERTIES OF SELECT FILL, DGS – 20 AND DGB – 20, (1 SAMPLE FOR EACH PAVEMENT LAYER)
3. PLANT SAMPLES VERIFYING MIX PROPERTIES OF SUPPLIED ASPHALTIC CONCRETE .(ALLOW 1 No)
4. DENSITY TESTS ON ASPHALTIC CONCRETE .SURFACING (ALLOW 1 No.)
5. CONCRETE COMPRESSION & SLUMP TESTS .(ALLOW 1 No).
6. SOAKED CBR TESTS TO VERIFY PAVEMENT SUBGRADE (1 No.)

NOT FOR CONSTRUCTION

DRAWN: F. CRAIDOV DESIGNED: F. CRAIDOV JOB MANAGER: D. FIELD VERIFIER: A. HOWARD

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR DISCUSSION	RC		DF	12.10.18
2	WORKS APPROVAL	RC		DF	11.04.19
3	WORKS APPROVAL	RC		DF	17.04.19
4	PROGRESS	RC		DF	07.11.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL

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PROJECT: DEFENSE HOUSING AUSRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS OFF SITE WORKS AND PAVEMENT PLAN SHEET 4 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C128

REVISION: 6

DRAWING SHEET SIZE = A1

08 Sep, 2020

Deed

17 September 2020

Academy Close Civil Works

Construction Contract
PROC-46448

Defence Housing Australia

Group One Pty Ltd

Version: 14 May 2020

Deed

Formal Instrument of Agreement

Date ►

Between the parties

Defence Housing Australia

ABN 72 968 504 934 of 26 Brisbane Avenue, Barton ACT 2603

(Principal)

Group One Pty Ltd

ABN 24 124 956 154 of Unit 5/45-51 Grimwade street, Mitchell, ACT, 2911

(Contractor)

Recitals

1 The Principal wishes to enter into a contract with the Contractor for the construction of the Works in accordance with the Contract.

2 The Contractor has agreed to carry out WUC in accordance with the Contract.

The parties agree in consideration of, among other things, the mutual promises contained in this deed:

1 Definitions and interpretation

1.1 Definitions

The meanings of the terms used in this Contract are set out below.

Term	Meaning
Conditions Precedent	Nil
Contract	the documents set out in clause 5 of this Formal Instrument of Agreement.
General Conditions of Contract	the General Conditions of Contract (AS 4000-1997) (as amended) set out in Schedule 1.
Risk Allocation Outline	the 'DHA standard form AS 4000 Design and Construct Contract Template Risk Allocation Outline' provided by the Principal to the Contractor at the time of tender.

1.2 Terms

In this Formal Instrument of Agreement, all defined terms used and which are defined in the General Conditions of Contract have the same meaning as given to them in the General Conditions of Contract.

2 Completion of the Works

The Contractor must execute WUC in accordance with the Contract.

3 Payment of Contract Sum

The Principal must pay the Contractor the Contract Sum of s22 [redacted] in accordance with the Contract.

4 Warranties

The Contractor represents and warrants to the Principal that:

(a) it is a company duly incorporated and validly existing under the laws of its place of incorporation;

(b) it has taken all necessary action to authorise the execution, delivery and performance of the Contract, in accordance with its terms;

(c) it has power to enter into and perform its obligations under the Contract and to carry out the transactions contemplated by the Contract;

(d) its obligations under the Contract are valid and binding and are enforceable against it in accordance with its respective terms subject to any necessary stamping and registration, the availability of equitable remedies and laws relating to the enforcement of creditor's rights;

(e) it has the corporate power to own its own assets and to carry on its business as it is now being conducted;

(f) it is not the responsible entity of any trust nor does it hold any property subject to or impressed by any trust; and

(g) no litigation, arbitration, tax claim, dispute or administrative or other proceeding (which has not been disclosed to the Principal in writing prior to the Execution Date) has been commenced, is pending or, to its knowledge, threatened in writing against it which is likely to have an adverse effect upon it or its ability to perform its financial or other obligations under the Contract.

5 Contract documents

The Contract consists of the documents listed below:

(a) this Formal Instrument of Agreement;

(b) the General Conditions of Contract;

(c) the Annexures referred to in the General Conditions of Contract; and

(d) the Works Documents.

6 Conditions precedent

(a) If Conditions Precedent are included above, other than the clauses referred to in clause 6(d) of this Formal Instrument of Agreement, the Contract does not commence, and has no force or effect, until the Conditions Precedent have been either satisfied or waived in writing by the Principal (in its sole discretion and without any obligation to do so).

(b) The Conditions Precedent are solely for the benefit of, and may only be relied upon by, the Principal.

(c) The Principal may impose conditions on the waiver by it of any of the Conditions Precedent and any such conditions must be complied with by the Contractor.

(d) Clauses 1, 4, 5, 6 and 7 of this Formal Instrument of Agreement and Clauses 1, 7, 8.5, 8.6, 9.1, 10, 39, 42, 46, and 47 come into full force and effect immediately upon the Execution Date.

(e) Subject to Clause 6(d) of this Formal Instrument of Agreement, if the Conditions Precedent are not:

(1) satisfied; or

(2) waived in writing by the Principal,

within 30 days of the Execution Date, the Principal may terminate the Contract immediately upon written notice to the Contractor and the Contract will be of no further force or effect.

(f) The Principal is not liable for, or in connection with, any Claim by the Contractor (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of or in connection with the termination of the Contract in accordance with this Clause 6 of this Formal Instrument of Agreement.]

7 Entire agreement

7.1 Previous agreements

The Contract supersedes all previous agreements in respect of its subject matters and embodies the entire agreement between the parties.

7.2 No reliance

No reliance shall be placed by either party on any representations, promise or other inducement made or given or alleged to be made or given by one party to the other party prior to the Execution Date.

7.3 Risk Allocation Outline

Without limiting 7.2 above, if the Contractor has been provided by DHA a “Risk Allocation Outline” document pertaining to this AS4000 based contract with DHA amendments;

(a) The Contractor acknowledges and agrees that the Contractor has read and agrees with the terms of the "Disclaimer and qualifications" contained in section 2 of the Risk Allocation Outline.

(b) The Contractor warrants to the Principal that it has not in any way relied (and will not rely) upon the Risk Allocation Outline, including in entering into this Contract and in determining the Contract Sum.

(c) The Contractor acknowledges and agrees the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make any Claim) arising out of or in connection with the Risk Allocation Outline.

Signing page

Executed as a deed

Signed by an authorised representative of

Defence Housing Australia

sign here ► _____

Authorised representative

print name _____

in the presence of

sign here ► _____

Witness

print name _____

Signed by

Group One Pty Ltd

by

sign here ► _____

Company Secretary/Director

print nam s22 [redacted]

sign here

print nam

14/10/20

Schedule 1

General Conditions of Contract

These General Conditions of Contract are based on AS 4000-1997 edition as amended by Defence Housing Australia and reproduced with the permission of Standards Australia under a licensing arrangement.

Australian Standard®

Amended from AS 4000-1997
General conditions of contract for constructions

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This Australian Standard was prepared by Committee OB/3 – General Conditions of Contract. It was approved on behalf of the Council of Standards Australia on 25 July 1997 and published on 5 August 1997.

The following interests are represented on the Committee OB/3:

Association of Consulting Engineers Australia
Australasian Railways Association
Australian Chamber of Commerce and Industry
Australian Procurement and Construction Council
AUSTROADS
Construction Industry Engineering Services Group
Construction Policy Steering Committee
Electricity Supply Association of Australia
Institution of Engineers, Australia
Institution of Professional Engineers, New Zealand
Law Council of Australia
Master Builders Australia
National Construction Council / MTIA
Process Engineers and Constructors Association
Royal Australian Institute of Architects

This Standard was issued in draft form for comment as DR 96319.

First published as part of AS CA24 – 1952.
Revised and redesignated in part as AS CA24.1 – 1964.
Second Edition 1973.
Revised and redesignated AS 2124 – 1978.
Second edition 1981.
Third Edition 1986.
Fourth Edition 1992.
Revised and redesignated AS 4000 – 1997.

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ISBN 0 7337 1375 0

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Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee OB/3, General Conditions of Contract.

This Standard is the result of a consensus among Australian and New Zealand representatives on the Joint Committee to produce it as an Australian Standard.

Subclauses 8.6 and 29.2 (prefixed by an asterisk) are optional, and may be omitted in the Contract, where necessary, without making consequential amendments but such omission should be clearly shown on the face of the document by striking out these subclauses or indicating clearly in clause **Error! Reference source not found.** of or elsewhere that they are *not to apply*.

Warning

Users of this Australian Standard are warned that clause 15 (Damage to persons and property other than Work Under the Contract ('WUC')) does not limit the liability of parties for special, indirect or consequential losses.

This unlimited liability applies notwithstanding any limitations or exclusions permitted under insurance clauses 16 (Insurance of the Works) and 17 (Public liability insurance).

Parties wishing to limit their liability should seek insurance and legal advice before entering a contract under this Standard.

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Contents

Clause	Title	Page
1	Interpretation and construction of Contract	16
2	Nature of Contract	28
3	Provisional sums	31
4	Separable Portions	31
5	Security	32
6	Evidence of Contract	33
7	Service of notices	33
8	Contract documents	34
9	Assignment and subcontracting	37
10	Intellectual property rights	40
11	Legislative requirements	41
12	Protection of people and property	43
13	Urgent protection	44
14	Care of the work and reinstatement of damage	44
15	Damage to persons and property	44
16	Insurance of the Works	45
17	Public liability insurance	46
18	Insurance of employees	47
19A	Motor Vehicle Insurance	47
19	Inspection and provisions of insurance policies	47
20	Superintendent	49
20A	Release	50
21	Superintendent's Representative	50
21A	Instructions Given by Superintendent	50
21B	Contractor's Acknowledgement	51
22	Party representatives and Key Personnel	52
23	Control of Contractor's employees and subcontractors, the project and other contractors	53
24	Site	56
25	Site conditions	58
26	Setting out the Works	61
27	Cleaning up	61
28	Materials, labour and construction plant	62

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29 Quality 62
30 Examination and testing 63
31 Working hours 64
32 Programming 64
33 Suspension 65
34 Time and progress 66
35 Defects liability 71
36 Variations 71
37 Payment 74
38 Payment of workers and subcontractors 77
39 Default or insolvency 78
40 Termination by frustration 82
41 Notification of claims 82
42 Dispute resolution 83
43 Waiver of conditions 84
44 Taxes other than GST 84
45 GST 85
46 General 85
47 Privacy 87
48 Building Code 88
49 Equal employment opportunity 90
50 Engagement of illegal workers prohibited 90
51 Accreditation scheme 91
52 PPSA 91
53 Additional clauses specific to States and Territories 92
Annexure Part A – Contract details 94
Annexure Part B – Amendments to the General Conditions of Contract 106
Annexure Part C – Approved form of unconditional undertaking 108
Annexure Part D – Scope of Works 109
Annexure Part E – Deed of Novation 133
Annexure Part F – Not used 135
Annexure Part G – Form of Parent Company Guarantee 1358
Annexure Part H – Subcontractor Warranties and Form of Subcontractor Warranty 150

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Annexure Part I – Form of Statutory Declaration 154
Annexure Part J – Schedule of Rates 156
Annexure Part K – Bill of Quantities 157
Annexure Part L – Jurisdiction-specific provisions 158

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1 Interpretation and construction of Contract

1.1 Definitions

In the Contract, except where the context otherwise requires:

Acceleration Direction means a Direction issued by the Principal in accordance with clause 34.9(a)

Approvals means any certificates, licences, consents, permits, approvals, authorities or requirements of Law or requirements of any Authorities;

As-built Documents means the records, documents, drawings and other information required by the Contract and created (and including, where the context so requires, those to be created) by the Contractor detailing the Works as constructed;

Authorities means any statutory, public, municipal, governmental or administrative department, commission, authority, agency or entity with jurisdiction in connection with WUC;

Bill of Quantities means a document named therein as a bill of quantities (and attached at Annexure Part K for reference purposes only) stating estimated quantities of work to be carried out;

Business Day means:

(a) except in clause 37 and clause 38, a day on which banks are open for general banking business in the State or Territory where the Site is located excluding a Saturday, Sunday, statutory or public holiday; and

(b) in clause 37 and clause 38, has the same meaning as in the SOP Act.

Certificate of Practical Completion has the meaning in subclause 34.6;

Certification Functions means the following functions of the Superintendent under the Contract:

(a) assessing the proportional contribution of Excepted Risks and other risks to loss or damage under subclause 14.2;

(b) certifying the cost of reinstatement under subclause 19.5(a);

(c) assessing whether the Contractor is entitled to an extension of time to the Date for Practical Completion under subclause 34.3;

(d) determining whether Practical Completion has been reached and issuing a Certificate of Practical Completion under subclause 34.6;

(e) making valuations under subclause 36.4;

(f) assessing progress claims and issuing payment certificates under subclause 37.2;

(g) assessing the Final Payment Claim and issuing the Final Payment Certificate under subclause 37.4; and

(h) assessing amounts under subclause 39.6;

Change in Legislative Requirement has the meaning given in subclause 11.2;

Claim includes any claim, action right or demand for payment of money (including damages) or for an increase in the Contract Sum or any other entitlement:

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(a) under, arising out of, or in any way in connection with, the Contract, including any Direction of the Superintendent;

(b) arising out of, or in any way in connection with, WUC or the Works; or

(c) otherwise at Law or in equity including:

(1) by statute;

(2) in tort for negligence or otherwise, including negligent misrepresentations; or

(3) for restitution;

Code Monitoring Group means the Code Monitoring Group established by the 'Building Code 2013 – Supporting Guidelines for Commonwealth Funding Entities';

Compensable Cause means:

a) a breach of the Contract by the Principal;

b) any negligent act or omission of the Principal; or

b) suspension by the Principal or the Superintendent under subclause 33.1(a)(i) as long as the suspension is not caused by any act, default or omission by the Contractor of any of the Contractor's Personnel;

Competent Contractor means an experienced and competent construction contractor of the highest skill and quality, with particular experience in Australia;

Construction Program has the meaning in clause 32;

Construction Plant means appliances and things used in the carrying out of WUC but not forming part of the Works;

Contamination means a solid, liquid, gas, odour, heat, sound, vibration, radiation, pollutant or substance of any kind which makes or may make any segment of the Environment unsafe, unfit or harmful for habitation, use or occupation by any person or animal or not comply with any Law or otherwise damages or may damage the Environment;

Contract has the meaning in clause 5 of the Formal Instrument of Agreement;

Contract Sum means the fixed lump sum amount set out in Item 6A (which includes the Provisional Sums), as adjusted in accordance with the Contract;

Contractor means the person stated in Item 3 of Annexure Part A and bound to carry out and complete WUC;

Contractor's Personnel means the Contractor's officers, employees, agents, consultants and subcontractors employed or engaged in the performance of WUC, and the officers, employees, agents, consultants and subcontractors of the Contractor's consultants and subcontractors;

Contractor's Representative means the person identified as such in Item 4A of Annexure Part A or as replaced by the Contractor from time to time in accordance with subclause 22.2;

Controller has the same meaning as in the Corporations Law;

Corporation has the same meaning as in the *Corporations Law*;

Corporations Law means the *Corporations Act 2001* (Cth);

Date for Practical Completion means:

(a) where Item 7(a) provides a Date for Practical Completion, the date;

(b) where Item 7(b) provides a period of time for Practical

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Completion, the last day of the period,

but if any EOT for Practical Completion is granted in accordance with subclause 34.5 or determined in any litigation under clause 42, it means the date resulting therefrom;

Date of Practical Completion means:

(a) the date evidenced in a Certificate of Practical Completion as the date upon which Practical Completion was reached; or

(b) where another date is determined in any litigation under clause 42 as the date upon which Practical Completion was reached, that other date;

Daywork means work referred to in clause 36.6.

Defects means:

(a) any error, deficiency, omission, non-conformity, fault, failure, malfunction, irregularity or other defect in WUC or the Works; or

(b) any aspect of WUC or the Works which is not in accordance with the requirements of this Contract;

Defects Liability Period has the meaning in clause 35;

Direction includes agreement, approval, assessment, authorisation, certificate, decision, demand, determination, explanation, instruction, notice, order, permission, rejection, request or requirement;

Dispute has the meaning in clause 42;

Dispute Resolution Executives means the representatives of the Contractor and the Principal set out in Item 32;

Environment means all:

(a) physical factors including the land (and subsurface), weather, waters, atmosphere, climate (including wind), sounds, odours and tastes;

(b) biological factors of animals and plants;

(c) social factors of aesthetics; and

(d) properties and occupants of those properties,

at, around, nearby or affecting the Site;

EOT (from 'extension of time') has the meaning in subclause 34.3;

EOT Claim has the meaning in subclause 34.3;

Excepted Risk has the meaning in subclause 14.3;

Execution Date means the date on which the Formal Instrument of Agreement is executed by the parties;

Final Certificate means a certificate issued by the Superintendent to the Principal and to the Contractor pursuant to subclause 37.4;

Final Payment has the meaning in subclause 37.4;

Final Payment Claim means the Final Payment Claim referred to in subclause 37.4;

Formal Instrument of Agreement means the agreement between the parties to which these General Conditions of Contract are attached;

FW Act means the *Building and Construction Industry ty (Improving*

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Productivity) (Building Industry) Act 2012 (Cth);

FWBC means the Australian Building & Construction Commission;

Good Construction Practices means practices followed when work is undertaken in accordance with all of the following:

(a) in a sound and workmanlike manner;

(b) with due care and skill;

(c) using materials of new and merchantable quality which are fit for their intended purpose;

(d) to the standard expected of a Competent Contractor;

(e) in accordance with all applicable Laws; and

(f) consistently with best practice for the construction of works similar to the Works;

Inclement Weather Event means the existence of weather conditions on Site:

(a) which renders it unsafe for employees of the Contractor (or its subcontractors) to continue performance of WUC on the Site if directly exposed to such conditions; or

(b) where WUC or the Works are unable to continue during such conditions; or

(c) which prevents the Contractor (or its subcontractors) from accessing the Site,

provided that the circumstances described in paragraphs (a), (b) or (c), as applicable, continue for a full working day.

Insolvency Event means in respect of a person:

(a) an order being made, or the person passing a resolution, for its winding up;

(b) an application being made to a court for an order for its winding up, unless the application is withdrawn or dismissed within 5 Business Days;

(c) an administrator being appointed to the person;

(d) the person resolving to appoint a Controller or analogous person to the person or any of the person's property, assets or undertaking to make:

(i) an application to a court for an order to appoint a Controller, provisional liquidator, trustee for creditors or in bankruptcy or analogous person to the person or any of the person's property, unless the application is withdrawn or dismissed within 5 Business Days; or

(ii) an appointment of the kind referred to in subparagraph (d)(i) being made (whether or not following a resolution or application);

(e) the holder of a Security Interest (as defined under the PPSA) taking possession of any of the person's property;

(f) the person being taken under section 459F(1) of the Corporations Law to have failed to comply with a statutory demand;

(g) the person:

(i) suspending payment of its debts, ceasing (or

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threatening to cease) to carry on all or a material part of its business, stating that it is unable to pay its debts or being or becoming otherwise insolvent; or

(ii) being taken by an applicable law to be (or if a court would be entitled or required to presume that the person is) unable to pay its debts or is otherwise insolvent;

(h) the process of any court or authority being invoked against the person or any of its property to enforce any judgment or order for the payment of money or the recovery of any property, unless the person is able, within 5 Business Days to satisfy the other party that there is no substantial basis for the judgment or order in respect of which the process was invoked;

(i) the person dying, ceasing to be of full legal capacity or otherwise becoming incapable of managing its own affairs for any reason;

(j) the person taking any step that could result in the person becoming an insolvent under administration (as defined in section 9 of the Corporations Law);

(k) the person taking any step toward entering into a compromise or arrangement with, or assignment for the benefit of, any of its members or creditors; or

(l) any analogous event,

unless this takes place as part of a solvent reconstruction, amalgamation, merger or consolidation that has been approved by the other party;

Intellectual Property Rights means all current and future intellectual and industrial property rights and interests throughout the world, whether registered or unregistered, including:

(a) patents, trade marks (including goodwill in those marks), domain names, design rights, copyright, circuit layout rights, trade secrets, know how and the right to confidentiality;

(b) applications for, or right to apply for registration of, any of them;

(c) rights under licences and consents in relation to any of them; and

(d) other forms of protection of a similar nature or having equivalent or similar effect to any of them;

Item means an Item in Annexure Part A ;

Key Personnel means the personnel of the Contractor set out in Item 21C in the roles identified in Item 21C;

Law means any act, ordinance, regulation, subordinate legislation, by-law, award and proclamation of the Commonwealth and the State or Territory in which WUC or any part thereof is being carried out;

Legislative Requirement includes:

(a) Law;

(b) Approvals and Principal's Approvals;

(c) WHS Law; and

(d) fees and charges payable in connection with the foregoing;

Material Omission has the meaning in subclause 8.1A(c);

Moral Rights has the meaning given in the *Copyright Act 1968* (Cth);

Nominating Authority has the meaning given to the term 'authorised nominating authority',

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'nominating authority', 'prescribed appointer' or 'prescribed appointor' (or corresponding term) as that term is defined in the SOP Act.

Parent Company means the entity set out in Item 4C;

Parent Company Guarantee means a deed of guarantee and indemnity provided by the Parent Company in favour of the Principal in the form set out in Annexure Part G (or other form approved in writing by the Principal);

person includes a firm or body corporate or unincorporate or an individual;

PPSA means the *Personal Property Securities Act 2009* (Cth);

PPS Law means:

(a) the PPSA and any regulations made at any time under the PPSA, as amended from time to time;

(b) any relevant amendment made at any time to any other legislation as a consequence of paragraph (a);

(c) any provision of the PPSA or regulations referred to in paragraph (a);

(d) any amendment to any of the above, made at any time; or

(e) any amendment made at any time to the Corporations Law or any other legislation in connection with the implementation or as a consequence of the PPSA;

Practical Completion is that stage in the carrying out and completion of WUC when:

(a) the Works are complete in accordance with the Contract and are fit for use or occupation by the Principal except for minor Defects:

(i) which do not prevent the Works from being reasonably capable of being used for the Stated Purpose;

(ii) which the Superintendent determines the Contractor has reasonable grounds for not promptly rectifying;

(iii) the existence and rectification of which will not inconvenience or adversely affect the Principal having regard to the purpose for which it intends to use and occupy the Works; and

(iv) which do not cause any legal impediment to the use or occupation of the Works by the Principal;

(b) those Tests which are required by the Contract to be carried out and passed before the Works reach Practical Completion have been carried out and passed and the results have been provided to the Superintendent;

(c) all documents and other information required by the Contract to have been delivered by the Contractor to the Principal or the Superintendent, prior to Practical Completion, including:

(i) all As-built Documents;

(ii) all Subcontractor Warranties required by subclause 9.6;

(iii) evidence of compliance with all documents created in accordance with the Contractor's quality assurance system, including final inspection and lists; and

(iv) the manuals to be prepared by the Contractor for the operation, maintenance and repair of the Works,

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have been supplied to the Principal or the Superintendent;

(d) all other warranties, certificates, documents and other information required under the Contract which, in the Superintendent's opinion, are essential for the use, operation and maintenance of the Works or any part of the Works have been supplied to the Principal or the Superintendent;

(e) certification from each of the Principal's consultants, in a form acceptable to the Principal, that the Works have been completed in accordance with the design prepared by that consultant, has been provided to the Principal or the Superintendent;

(f) certification from a licensed surveyor to the effect that the Works are within the boundaries required by the Contract and that the structural elements of the Works are within the spatial tolerances specified in the Contract, has been provided to the Principal or the Superintendent;

(g) all Approvals which are necessary for the use of the Works have been obtained and are in effect and copies of which have been provided to the Principal or the Superintendent;

(h) the Contractor has (at its own cost, and in a manner approved by the Principal), assigned full right, title and interest in and to any part of the Works in respect of which property has not already passed to the Principal;

(i) all Intellectual Property Rights have vested and been granted in accordance with clause 10;

(j) all rubbish, surplus material and minor items of plant and equipment have been removed from the Site so as to leave the Site in a clean and tidy condition, except only those items which the Superintendent consents in writing to remain on the Site for the purpose of the Contractor performing work during the Defects Liability Period; and

(k) any other matters or conditions required by the Contract in order to achieve Practical Completion have been satisfied;

Pre-existing Contamination means any Contamination existing at the Site caused by any previous use of the Site or any other previous use in proximity to the Site prior to the Execution Date which is not on or above the surface of the Site and which could not have been foreseen by a Competent Contractor:

(a) having regard to the Site, the Environment and all the information provided by, or on behalf of, the Principal; and

(b) having undertaken those things which the Contractor represents it has done under subclauses 2A.1 and 25.4;

Principal means the Principal stated in Item 1;

Principal-caused Delay any delay or disruption caused by:

(a) the Principal;

(b) the Superintendent;

(c) an employee, consultant, other contractor or agent of the Principal or Superintendent,

but excluding any events in paragraphs (a) to (c) which would not have occurred but for:

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(d) an act or omission of the Contractor or any of the Contractor's Personnel;

(e) the occurrence of an event or the existence of a circumstance the risk of which has been accepted by the Contractor under the Contract; or

(f) the lack of legal capacity, or corporate power, of the Contractor;

Principal's Approvals means the Approvals to be obtained by the Principal, as set out in Item 19(c);

Principal's Representative means the person nominated in Item 2A of Annexure Part A or any other person appointed by the Principal from time to time under subclause 22.3;

Privacy Act means the *Privacy Act 1988* (Cth)

Progress Certificate has the meaning in subclause 37.2;

Project means the project identified in Item 7A of which the Works form part;

Proportionate Liability Legislation means:

(a) Part 4 of the *Civil Liability Act 2002* (NSW);

(b) Part IVAA of the *Wrongs Act 1958* (Vic);

(c) Part 2 of the *Civil Liability Act 2003* (Qld);

(d) Part 1F of the *Civil Liability Act 2002* (WA);

(e) section 72 of the *Development Act 1993* (SA) and Part 3 of the *Law Reform (Contributory Negligence and Apportionment of Liability) Act 2001* (SA);

(f) section 3 of the *Wrongs Act 1954* (Tas);

(g) section 141 of the *Building Act 2004* (ACT) and Chapter 7A of the *Civil Law (Wrongs Act) 2002* (ACT);

(h) Part IV of the *Law Reform (Miscellaneous Provisions) Act 1956* (NT); and

(i) Part IVA of *the Competition and Consumer Act 2010* (Cth);

Provisional Sum means any Provisional Sum or prime cost amount specified in Item 12A;

Public Liability Policy means a policy of insurance taken out pursuant clause 17;

QBCC Act means the means the *Queensland Building and Construction Commission Act 1991* (Qld);

Qualifying Cause of Delay means:

(a) the following causes of delay whether occurring before, on or after the Date for Practical Completion:

(i) a Principal-caused Delay;

(ii) a breach of the Contract by the Principal;

(iii) a Variation Directed under clause 36 or a deemed Variation expressly provided for in this Contract, other than a Variation requested by the Contractor under subclause 36.3 or a Variation that is necessary due to the Contractor's default; and

(iv) suspension by the Principal or the Superintendent under subclause 33.1(a)(i) as long as the suspension is not caused by any act, default or omission by the Contractor of any of the

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Contractor's Personnel; and

(b) the following causes of delay occurring on or before the Date for Practical Completion:

(i) a strike, lockout, demarcation or industrial dispute, which:

(A) concurrently affects the Site and the building industry on a State-wide or nationwide basis;

(B) is not specific to the Contractor, any associate or Related Body Corporate of the Contractor or the Site; and

(C) is beyond the reasonable control of the Contractor; and

(ii) a Change in Legislative Requirements;

(iii) delays resulting from the Contractor complying with its obligations under subclause 24.3(a);

(iv) Pre-existing Contamination which is the subject of a Direction issued by the Principal in accordance with subclause 25.6(c)(i); and

(v) an Inclement Weather Event;

Related Activities means works or services, performed or undertaken to be performed or undertaken by the Principal, contractors, consultants or suppliers of the Principal, or Authorities, either concurrently or sequentially with WUC at, on, over or adjacent to the Site or which may be connected to, associated with, ancillary to, or otherwise related or relevant to WUC;

Related Activities Contractors means any person engaged to perform the Related Activities;

Related Body Corporate has the meaning given in the Corporations Law;

Relevant Person has the meaning given in subclause 11.5(b);

Rock means rock located below the surface of the Site that:

(a) prevents the Contractor from excavating the Site using a 20 tonne excavator; and

(b) requires hammering to break up and remove,

as determined by the Principal or the Superintendent in accordance with clause 25.7(d);

Scope of Works the scope of works set out in Annexure Part D and includes the Works Documents;

Schedule of Rates the schedule of rates set out in Annexure Part J;

Scheme has the meaning given in clause 51.3;

Security means an irrevocable and unconditional bank guarantee, payable on demand, issued by an Australian trading bank registered pursuant to the *Banking Act 1959* (Cth) or other financial institution approved in writing by the Principal, and in the form prescribed by subclause 5.1A;

Selected Subcontract Work that work or the supply of those items subcontracted to a Selected Subcontractor pursuant to subclause 9.3;

Selected Subcontractor has the meaning in subclause 9.3;

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40

Separable Portion means a portion of the Works identified as such in the Contract or by the Principal pursuant to clause 4;

Site means the lands and other places to be made available and any other lands and places made available to the Contractor by the Principal for the purpose of the Contract, including the lands and places at the address set out in Item 7B;

Site Construction Group means the group established pursuant to subclause 23.6;

SOP Act means the relevant security of payment law of the State or Territory in which WUC or any part thereof is being carried out, specifically being either the *Building and Construction Industry (Security of Payment) Act 2009* (ACT)*; Construction Contracts (Security of Payments) Act 2004* (NT)*; Building Industry Fairness (Security of Payment) Act 2017* (Qld)*; Building and Construction Industry Security of Payment Act 2009* (SA)*; Building and Construction Industry Security of Payment Act 2009* (Tas); *Building and Construction Industry Security of Payment Act 1999* (NSW); *Building and Construction Industry Security of Payment Act 2002* (Vic)*;* or *Construction Contracts Act 2004* (WA) or such other Act or Acts which replace these Acts;

Stated Purpose means:

(a) in respect of any part of the Works (including materials forming part of the Works), the purpose stated in this Contract in respect of that part or those materials (including the purpose of meeting all of the requirements of the relevant Authorities and enabling the registration of the plan of subdivision of the Works (or any other relevant Authority approvals or certification and) in accordance with the relevant Approvals);

(b) *Not Used*.

(c) the Works (including materials forming part of the Works) must be of a quality, and constructed in a manner, which ensures that:

(i) the Works can withstand the natural elements and other natural processes which have the potential otherwise to cause the Works to fail or to develop Defects;

(ii) the services to be provided as part of the Works (including, sewer, water supply, stormwater drainage, electricity and telecommunications) meet the service requirements for the Project as a whole (including the requirements of the relevant Authorities); and

(iii) the occurrence of Defects within the Works is minimised;

Subcontractor Warranties means the warranties from subcontractors for those parts of the Works and for the respective durations specified in Annexure Part H;

subsidiary has the same meaning as in the *Corporations Law*;

Superintendent means the person stated in Item 5 as the Superintendent or other person from time to time appointed in writing by the Principal to be the Superintendent and notified as such in writing to the Contractor by the Principal and, so far as concerns the functions exercisable by a Superintendent's Representative, includes a Superintendent's Representative;

Superintendent's Representative means the person identified as such in Item 5A of Annexure Part A and any person or replacement appointed in writing by the Superintendent under clause 21;

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Survey Mark in clause 26 means a survey peg, bench mark, reference mark, signal, alignment, level mark or any other mark for the purpose of setting out, checking or measuring WUC;

Tax means any income (including payroll), land, indirect and other taxes, excise, levies (including portable long service leave levies, workplace health and safety levies and other similar levies), imposts, deductions, charges, duties, compulsory loans and withholdings, including Withholding Payments, financial institutions duty, debits tax or other taxes whether incurred by, payable by return or passed on to another person and includes any interest, penalties, charges, fees, fines or other amounts imposed in respect of any of the above, but does not include GST;

Temporary Works means work used in carrying out and completing WUC, but not forming part of the Works;

Test has the meaning in subclause 30.1 and includes examine and measure;

the Works means the whole of the work to be carried out and completed in accordance with the Contract, including Variations Directed pursuant to a Variation Order, which by the Contract is to be handed over to the Principal;

Variation has the meaning in clause 36;

Variation Order means a written Direction by the Principal entitled 'Variation Order' pursuant to subclause 36.1;

WHS Law means all statutes, regulations, statutory instruments, subordinate legislation, codes of practice and standards (including those of the Commonwealth of Australia and of the State or Territory where WUC is being carried out) dealing with or relevant to health and safety in workplaces and of workers and others who may be affected by the carrying out of WUC, and includes any Approvals, permits, licences, Directions or requirements of an authority exercising regulatory powers in respect of such matters;

WHS Regulations means the *Work Health and Safety Regulations 2011* (Cth).

Withholding Payments has the meaning given in Schedule 1 of the *Taxation Administration Act 1953* (Cth);

work includes the provision of materials;

Works Documents means the drawings, specifications and other documents that describe the Works and which are listed in the Scope of Works; and

WUC (from 'work under the Contract') means the work which the Contractor is or may be required to carry out and complete under the Contract as detailed in the Contract Documents (including the Scope of Works) and includes Variations Directed pursuant to a Variation Order, remedial work, demolition work, project management functions, Construction Plant and Temporary Works and all work ancillary to that set out above necessary for the Contractor to comply with its obligations under the Contract including anything which can be reasonably inferred from the Contract even though not expressly stated.

1.2 Interpretation

In the Contract:

(a) references to days mean calendar days and references to a person include an individual, firm or a body, corporate or unincorporate;

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(b) time for doing any act or thing under the Contract shall, if it ends on a day which is not a Business Day, be deemed to end on the next following Business Day;

(c) clause headings and subclause headings in these General Conditions of Contract shall not form part of these General Conditions and shall not be used in the interpretation of the Contract;

(d) words in the singular include the plural and words in the plural include the singular, according to the requirements of the context. Words importing a gender include every gender and other parts of speech and grammatical forms of a word or phrase defined in the Contract have a corresponding meaning;

(e) communications between the Principal, the Superintendent and the Contractor shall be in the English language;

(f) measurements of physical quantities shall be in legal units of measurement of the jurisdiction in Item 8;

(g) unless otherwise provided, prices are in the currency in Item **Error! Reference source not found.**(a) and payments shall be made in that currency at the place in Item **Error! Reference source not found.**(b);

(h) specifying anything in the Contract after the word "includes" or "for example" or similar expressions does not limit what else is included unless there is express wording to the contrary;

(i) a reference to time is to local time in the capital city of the jurisdiction stated in Item 8 of Annexure Part A;

(j) an expression importing a person includes any company, partnership, joint venture, association, Corporation or other body corporate, any government agency and an individual;

(k) a reference to anything (including, but not limited to, any right) includes a part of that thing but nothing in this subclause 1.2(k) implies that performance of part of an obligation constitutes performance of the obligation;

(l) a reference to a part, clause, party, annexure, exhibit or schedule is a reference to a part and clause of, and a party, annexure, exhibit and schedule to, the Contract and a reference to the Contract includes any annexure, exhibit and schedule;

(m) a reference to any legislation includes all delegated legislation made under it and amendments, consolidations, replacements or re-enactments of it;

(n) a reference to a document includes all amendments or supplements to, or replacements or novations of, that document;

(o) a reference to a party to a document includes that party's successors and permitted assigns;

(p) no provision of the Contract will be construed adversely to a party solely on the ground that the party was responsible for the preparation of the Contract or that provision;

(q) a covenant or agreement on the part of 2 or more persons binds them jointly and severally;

(r) a reference to an agreement other than the Contract includes an undertaking, deed, agreement or legally enforceable arrangement or understanding whether or not in writing;

(s) a reference to an asset includes all property of any nature, including, but not limited to, a business, and all rights, revenues and benefits;

(t) a reference to a document includes any agreement or contract in writing, or any certificate, notice, instrument or other document of any kind; and

(u) a reference to a body, other than a party to the Contract (including, without limitation, an institute, association or authority), whether statutory or not:

(i) which ceases to exist; or

(ii) whose powers or functions are transferred to another body,

is a reference to the body which replaces it or which substantially succeeds to its powers or functions.

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1.3 Governing Law

(a) The Law governing the Contract and its interpretation is the Law of the State or Territory stated in Item 8 of Annexure Part A.

(b) The parties irrevocably submit to the non-exclusive jurisdiction of the courts of the State or Territory stated in Item 8 of Annexure Part A and the courts of appeal from them in respect of any proceedings arising out of or in connection with the Contract.

(c) Each party irrevocably and unconditionally waives any objection to the venue of any legal process in such a court on the basis that the process has been brought in an inconvenient forum.

1.4 Deleted Text

If any text is struck out, the text is deleted from these General Conditions of Contract. No reference is to be made to that text. The presence of the struck out text is not to be relied on as an aid to interpreting or construing this Contract. Underlined text has been added to these General Conditions of Contract.

2 Nature of Contract

2.1 Performance and payment

(a) The Contractor must carry out and complete WUC in accordance with the Contract and Directions authorised by the Contract.

(b) If WUC has commenced before the Execution Date the provisions of this Contract will apply retrospectively to the relevant WUC.

(c) Subject to clause 37, the Principal must pay the Contractor the Contract Sum in accordance with the Contract.

2.1A No adjustment to Contract Sum

The Contractor acknowledges and agrees that:

(a) the Contract Sum represents its full and complete payment, and includes an allowance for:

(i) all matters and things necessary for the performance and completion of WUC in accordance with the Contract;

(ii) all of the Contractor's obligations under the Contract; and

(iii) without limiting this subclause 2.1A(a):

(A) anything that a Competent Contractor would have anticipated would be part of, or involved in, WUC; and

(B) anything required to perform WUC in accordance with Legislative Requirements,

including insurances which the Contractor is required to effect and maintain under the Contract, all Construction Plant and Temporary Works, labour, transportation (including freight charges) and all Taxes relating to WUC; and

(b) except as expressly provided for in the Contract:

(i) the Contractor is not entitled to any adjustment in the Contract Sum or to additional payment under the Contract or arising out of or in connection with WUC; and

(ii) the Contract Sum and any rates or prices included in the Contract are not subject to adjustment for rise and fall in respect of any site allowance or by reason of fluctuations in exchange rates or changes in the cost of labour and materials, or for any other matter, even where the Contractor is entitled to an extension of time to the Date for Practical Completion.

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2.2 Bill of quantities and Schedule of Rates

(a) The Bill of Quantities and Schedule of Rates are only to be used for the purposes of:

(i) valuing Provisional Sum work or items as contemplated under subclause 3.1;

(ii) valuing Variations under subclause 36.4; and

(iii) assessing payment claims under clause 37.

(b) The Contractor acknowledges and agrees that:

(i) except as provided for in subclause 2.2(a), the Bill of Quantities and the Schedule of Rates are not to be relied on, or referred to, as an aid in interpreting or construing the Contract;

(ii) the Bill of Quantities and the Schedule of Rates do not in any way limit or reduce the Contractor's obligation to perform WUC in accordance with the Contract nor any other obligation of the Contractor under the Contract; and

(iii) the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of, or in connection with any quantities or other information contained in the Bill of Quantities or the Schedule of Rates, or any errors, inaccuracies or omissions in such quantities or other information.

2.3 Priced bill of quantities

[Not used]

2.4 Quantities

[Not used]

2.5 No adjustment for actual quantities – Bill of Quantities and Schedule of Rates

Without limiting subclause 2.2, where the actual quantity of an item required to perform the Contract is greater or less than the quantity shown in the Bill of Quantities, the Schedule of Rates or any other document or drawing forming part of the Contract (including the Works Documents), or is omitted from the quantities shown in the Bill of Quantities, the Schedule of Rates or any other document or drawing forming part of the Contract (including the Works Documents), there shall be no adjustment to the Contract Sum nor any EOT.

2A Warranties

2A.1 Contractor's warranties

Without limiting the generality of subclause 2.1, the Contractor represents and warrants to the Principal that the Contractor:

(a) is and at all times will be suitably qualified and experienced, and will perform WUC with the degree of professional skill, care and diligence which could be reasonably expected of a Competent Contractor;

(b) will carry out and complete WUC in accordance with the Works Documents and Scope of Works so that the Works (and each component of the Works), when completed, will:

(i) be fit for the Stated Purpose; and

(ii) comply with all the requirements of the Contract including:

(A) all Legislative Requirements*;*

(B) Good Construction Practices; and

(C) all relevant industry standards, codes and guidelines;

(c) has examined and carefully checked all information, data, representations, statements or documents made, or supplied to the Contractor, by the Principal or any other person whether or not on behalf of the Principal, in relation to WUC or the Works (including all information,

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data, representations, statements or documents with respect to the Site) and is satisfied that such information, data, representations, statements or documents are suitable, appropriate and adequate for their intended purpose and the purpose of enabling the Contractor to perform WUC in accordance with the Contract;

(d) has not relied, and will not rely, upon any information, data, representation, statement or document referred to in subclause 2A.1(c)

(e) where required by clause 51, is accredited under the Scheme established by the FW Act at the Execution Date and will remain accredited under the Scheme while carrying out WUC;

(f) subject to clause 9, will engage and retain subcontractors who are suitably qualified and experienced and, without limiting any other obligation of the Contractor under the Contract, will coordinate the activities of the subcontractors so that the Works are executed in a proper and workmanlike manner;

(g) has examined the Contract, the Site and its surroundings including the Environment, existing services and all other information relevant or necessary to determine the Contract Sum;

(h) has examined and relied solely upon its own assessment, skill, expertise and enquiries in respect of all information relevant to the risks, contingencies and other circumstances having an effect on determining the Contract Sum;

(i) has examined the condition of the roads to the Site, including access to the Site and any other conditions affecting transportation, disposal, handling and storage of materials and equipment required for or in the course of WUC; and

(j) has made full and adequate allowance in the Contract Sum for the costs of:

(i) all matters and things necessary for the performance and completion of WUC in accordance with the Contract; and

(ii) complying with all of the Contractor's obligations under the Contract; and

(k) The Contractor has examined and carefully checked and has relied soley on its own assessment, expertise and enquiries in respect of , all Approvals and/or the requirements of any Authority, relating to the WUC, having an effect on determining the Contract Sum or on the Contractor achieving Practical Completion by the Date for Practical Completion.

2A.2 Warranties unaffected

The Contractor acknowledges that the warranties in subclause 2A.1 and all other obligations and liabilities of the Contractor under the Contract will remain unaffected notwithstanding any one or more of the following:

(a) any receipt or review of, or comment or Direction on, any documents by the Principal or the Superintendent;

(b) any information, data, representation, statement or document made, or supplied to the Contractor, by the Principal or any other person whether or not on behalf of the Principal, in relation to WUC or the Works (including all information, data, representation, statement or document with respect to the Site);

(c) any Variation; or

(d) any receipt, review, comment, rejection or expression of satisfaction or dissatisfaction by or on behalf of the Principal or the Superintendent whether under this Contract or otherwise with:

(i) any of the Contractor's selection of subcontractors;

(ii) any of the Contractor's material, plant or equipment selections used in the Works; or

(iii) the execution of any WUC.

2A.3 Reliance

The Contractor acknowledges that the Principal:

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(a) has relied on each of the warranties, acknowledgements, agreements and representations given in this clause 2A and clause 8; and

(b) would not have entered into the Contract but for those warranties, acknowledgements, agreements and representations.

3 Provisional sums

3.1 Direction to perform Provisional Sum Work or item

A Provisional Sum included in the Contract shall not itself be payable by the Principal but where pursuant to a Direction from the Principal the work or item to which the Provisional Sum relates is carried out or supplied by the Contractor, the work or item shall be priced by the Superintendent under subclause 36.4 and where the amount priced by the Superintendent for that work or item differs from the amount of the Provisional Sum set out in Item

12A applicable to that work or item, the difference shall be added to or deducted from the Contract Sum.

Where any part of such work or item is carried out or supplied by a subcontractor, the Superintendent shall allow the amount payable by the Contractor to the subcontractor for the work or item, disregarding:

(a) any damages payable by the Contractor to the subcontractor or vice versa; and

(b) any deduction of cash discount for prompt payment,

plus an amount for profit and attendance calculated by using the percentage thereon stated in Item 12 or elsewhere in the Contract, or, if not so stated, as determined by the Superintendent.

3.2 Deletion of Provisional Sum work or item

If work or any item to which a Provisional Sum relates is deleted from the Contract:

the Contract Sum will be reduced by the relevant Provisional Sum set out in Item

(a) 12A applicable to the deleted work or item;

(b) the Principal may engage another Contractor to carry out the deleted work or item; and

(c) the Principal will not be liable upon any Claim by the Contractor arising out of, or in any way in connection with, the deletion of the work or item to which the Provisional Sum relates.

4 Separable Portions

(a) If the 'Separable Portion' sections of Annexure Part A have been completed, the performance of WUC and the Works is divided into Separable Portions.

(b) Separable Portions may be Directed by the Principal after the Execution Date, who shall clearly identify for each, the:

(i) portion of the Works;

(ii) Date for Practical Completion; and

(iii) respective amounts for Security (calculated pro-rata according to the ratio of the Superintendent's valuation of the Separable Portion to the Contract Sum) and liquidated damages.

(c) References in the relevant definitions and clauses to:

(i) liquidated damages;

(ii) Practical Completion;

(iii) the Date for Practical Completion;

(iv) the Date of Practical Completion;

(v) Certificate of Practical Completion; and

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(vi) Defects Liability Period,

will apply separately (as necessary) to each Separable Portion and references to the Works or WUC within those definitions and clauses will mean so much of the Works or WUC (as applicable) as is comprised in the relevant Separable Portion.

5 Security

5.1 Provision

(a) Security shall be provided by the Contractor in accordance with Item 13 for the purpose of ensuring the due and proper performance of the Contract and any other contracts that the Contractor has with the Principal.

(b) Without limiting the Principal's rights under subclause 39.2, the Contractor shall not be entitled to lodge any Claim for payment until it has submitted Security in accordance with this clause 5.

5.1A Form of Security

(a) The Principal may, in its sole discretion, approve or disapprove of the form of the Security and the financial institution giving it.

(b) The unconditional undertaking in the form of Annexure Part C is approved.

5.2 Conversion of Security

Without limiting the unconditional nature of the Security, the Principal may demand, receive and use the proceeds of, and otherwise have recourse to, the Security where:

(a) the Principal asserts a right to the payment of money by the Contractor under, arising out of, or in connection with the Contract, any other contract with the Principal or otherwise at Law relating to WUC;

(b) the Principal has given the Contractor notice in writing for the period stated in Annexure Part A or, if no period is stated, 5 days, of the Principal's intention to have recourse to the Security; and

(c) the period stated in Annexure Part A or, if no period is stated, 5 days, has elapsed since the notice was given.

The Contractor must not institute any proceedings, or exercise any right or take any steps to injunct or otherwise restrain:

(d) the financial institution that issued the Security from paying the Principal pursuant to the Security;

(e) the Principal from taking any steps for the purpose of making a demand under the Security or receiving payment under the Security, or otherwise exercising its rights under the Security; or

(f) the Principal using the money received under the Security,

even where the Contractor disputes the Principal's right to payment pursuant to clause 42.

In the event the Principal exercises its right of recourse to the Security, the Contractor must, within 5 days of the Principal exercising its right of recourse, provide the Principal with further Security to ensure that the total amount of the Security held by the Principal is at least equal to the amount specified in Item 13 of Annexure Part A.

5.3 Change of security

[Not used]

5.4 Reduction and release

Upon the issue of the Certificate of Practical Completion the Principal's entitlement to Security (other than in Item 13(e)) shall be reduced to the amount in Item 13(f) and the reduction shall be released and returned within 14 days to the Contractor.

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The Principal's entitlement to Security in Item 13(e) shall cease 14 days after incorporation into the Works of the plant and materials for which that Security was provided.

The Principal's entitlement otherwise to Security shall cease in accordance with subclause 37.4.

Upon the Principal's entitlement to Security ceasing in accordance with subclause 37.4, the Principal will release and return the Security to the Contractor.

5.5 Trusts and interest

[Not used]

5.6 Parent Company Guarantee

Where specified in Item 4B, the Contractor must procure the execution of a Parent Company Guarantee by the Parent Company and deliver the executed Parent Company Guarantee to the Principal within 5 days after the Execution Date.

The Contractor will not be entitled to lodge any Claim for payment until it has provided the Parent Company Guarantee in accordance with this subclause 5.6.

6 Evidence of Contract

[Not used]

7 Service of notices

7.1 Form of notice

A notice or other communication to a party under the Contract:

(a) must be in writing and comply with subclause 1.2(e);

(b) where the sender is the Contractor, must be signed by either the Contractor's Representative, an officer, authorised signatory or under the common seal of the Contractor;

(c) where the sender is the Principal, must be signed by either the Principal's Representative, an officer or authorised signatory, or under the common seal of the Principal; and

(d) must be:

(i) if intended for the Principal, addressed to the Principal's Representative as set out in Item 2A of Annexure Part A;

(ii) if intended for the Contractor, addressed as set out in Item 4 of Annexure Part A;

(iii) if intended for the Superintendent, addressed as set out in Item 6 of Annexure Part A,

or a substitute address notified to the sender by the party.

Any notice addressed to the Principal's Representative must be copied to the Superintendent also.

7.2 How notice must be given and when notice is received

A notice must be given by one of the methods set out in the table below.

A notice is regarded as given and received at the time set out in the table below.

However, if this means the notice would be regarded as given and received outside the period between 9.00 am and 5.00 pm (addressee's time) on a Business Day, then the notice will instead be regarded as given and received at 9.00 am (addressee's time) on the following Business Day.

A notice sent by facsimile is deemed legible unless the addressee telephones the sender within 2 hours after transmission is received or regarded as received and informs the sender it is not legible.

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Method of giving notice	When notice is regarded as given and received
By hand to the nominated address	When delivered to the nominated address
By pre-paid post to the nominated address	At 9.00am (addressee's time) on the second Business Day after the date of posting
By email to the nominated email address	When the email has been recorded as sent in the sender's email records, provided that: 1 the subject line of the email is in accordance with the requirements of item 2A or item 6, if applicable; 2 the email (including any attachments) does not exceed the file size specified in item 2A and item 6, if applicable; and 3 where an "out of office" or "delivery notification failure" reply or similar response is delivered to the computer from which the email was sent, the email will not be taken to be received and the sender must use an alternative method of sending the notice in accordance with this clause 7.
By facsimile to the nominated fax number	On receipt of a transmission report confirming successful transmission.

In this subclause 7.2, a reference to an addressee includes a reference to an addressee's officers, agents or employees.

8 Contract documents

8.1 Discrepancies

(a) Subject to subclauses 8.1(b) and 8.1B, if there is any inconsistency, conflict, ambiguity or discrepancy between any of the documents forming this Contract, then the order of precedence (in descending order of precedence) of the documents comprising the Contract in clause 5 of the Formal Instrument of Agreement shall apply to resolve the inconsistency, conflict, ambiguity or discrepancy, unless a different order of precedence imposes on the Contractor a greater or higher requirement, standard, level of services or scope, in which case that different order of precedence will apply.

(b) If there is any inconsistency, conflict, ambiguity or discrepancy between any of the Annexures referred to in the General Conditions of Contract, then the order of precedence (in descending order of precedence) of the Annexures (and any parts or sub-parts thereof) listed in Item 14 shall apply to resolve the inconsistency, conflict, ambiguity or discrepancy, unless a different order of precedence imposes on the Contractor a greater or higher requirement, standard, level of services or scope, in which case that different order of precedence will apply.

(c) If there is any inconsistency, conflict, ambiguity or discrepancy within any of the documents forming this Contract, then the provision which imposes a greater or higher requirement, standard, level of service or scope on the Contractor will prevail.

(d) Subject only to subclauses 8.1(a), 8.1(b), 8.1(c) and 8.1B, compliance with a requirement (whether general or specific) in any part of the Contract will not limit or in any way affect the Contractor's obligation to comply with any other requirement (whether general or specific) in any other part of the Contract. The Contract must therefore be read as a whole to determine the totality of the requirements applying to any aspect of WUC.

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(e) If the Contractor discovers, or becomes aware of, any inconsistency, conflict, ambiguity or discrepancy within or between any documents forming the Contract, then the Contractor must immediately notify the Superintendent in writing of that inconsistency, conflict, ambiguity or discrepancy, and the Contractor's proposed interpretation of the relevant documents to resolve the inconsistency, conflict, ambiguity or discrepancy having regard to the relevant principles set out in this subclause 8.1.

(f) If the Superintendent notifies the Contractor within 10 Business Days of receiving notice from the Contractor pursuant to subclause 8.1 that it does not accept the Contractor's interpretation, or if the Superintendent discovers any inconsistency, conflict, ambiguity or discrepancy within or between any documents forming the Contract, then:

(i) the Superintendent must inform the Contractor of the Superintendent's interpretation;

(ii) the Principal and the Contractor must meet with the Superintendent to discuss an agreed interpretation of the inconsistency, conflict, ambiguity or discrepancy; and

(iii) failing agreement by the Principal and Contractor within 5 Business Days of the meeting referred to in subclause 8.1, the Superintendent's interpretation will apply.

(g) The Contractor acknowledges and agrees that it has reviewed the documents forming part of the Contract and it is satisfied with the adequacy to perform its obligations under the Contract, including the performance of WUC.

(h) Except as provided in subclause 8.1A, the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to an EOT or to make any Claim, and releases the Principal from any Claim) arising out of or in connection with any inconsistency, conflict, ambiguity or discrepancy within or between any documents forming the Contract, or any action or interpretation of the Principal or the Superintendent under subclause 8.1.

8.1A Works Documents and Inaccuracies in Works Documents

(a) Without limiting the warranties in subclause 2A.1 or any other provision of this Contract, the Contractor acknowledges and agrees that:

(i) the Works Documents are not a definitive description of the Works, and will not limit or affect the Contractor's general obligation to perform WUC and to do all things that might reasonably be expected of the Contractor from time to time as necessary or appropriate to secure the proper and timely performance of WUC in accordance with this Contract;

(ii) the Works Documents may contain inaccuracies, omissions or errors;

(iii) it has reviewed the Works Documents and it is satisfied with the adequacy to perform its obligations under the Contract, including the performance of WUC;

(iv) subject to subclause 8.1A(b):

(A) the Contractor has made full and adequate allowance in the Contract Sum for the costs of all matters and things necessary for the performance and completion of WUC in accordance with the Contract including costs of dealing with inaccuracies, omissions and errors contained in the Works Documents; and

(B) the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to an EOT or to make any Claim, and releases the Principal from any Claim) arising out of or in connection with any inaccuracies, omissions or errors contained in the Works Documents.

(b) If there is a Material Omission in the Works Documents which necessitates a change to WUC or the Works then, to the extent that such change to WUC or the Works causes the Contractor to incur more or less cost than otherwise would have been incurred, such change will be deemed to be a Variation and the difference in cost shall be assessed by the Superintendent under subclause 36.4 and added to or deducted from the Contract Sum.

(c) For the purpose of subclause 8.1A(b), a 'Material Omission' means:

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(i) a material omission of an item of work from; or

(ii) a material misdescription of an item of work in,

the Works Documents that could not have been reasonably anticipated by a Competent Contractor performing work in the nature of WUC as being an item of work that would comprise part of WUC or the Works having regard to:

(iii) the Site, the Environment and all the information provided by, or on behalf of, the Principal; and

(iv) having undertaken those things which the Contractor represents it has done under subclauses 8.1A(a)(iii), 8.1A(a)(iv)(A) and 25.4.

8.1B Dimensions

Where any discrepancy exists between figured and scaled dimensions, the figured dimensions shall prevail.

8.2 Principal-supplied documents

The Principal will supply to the Contractor the documents (including the Works Documents) and number of copies thereof, both stated in Item 15.

Documents (including the Works Documents) supplied by the Principal to the Contractor::

(a) will remain the Principal*'s* property and must be returned to the Principal on written demand; and

(b) must not, without the prior written approval of the Principal, be used, copied nor reproduced for any purpose other than the execution of WUC.

8.3 Contractor-supplied documents

The Contractor must supply to the Superintendent the documents (including the As-built Documents) and number of copies thereof, as stated elsewhere in the Contract. If the number of copies is not stated, the Contractor must supply 5 copies of each document

In relation to documents (including the As-built Documents) required to be submitted by the Contractor to the Superintendent or the Principal:

(a) the Superintendent and the Principal shall not be required to check, review or comment upon such documents for errors, omissions, inconsistencies, ambiguities, discrepancies or compliance with the Contract;

(b) notwithstanding clause 20, any Superintendent's or Principal's review, comment or acknowledgment or approval in respect of those documents provided by the Contractor will not reduce or limit the Contractor's obligations or relieve the Contractor from responsibility for the Contractor's errors or omissions or departure from the requirements of the Contract; and

(c) if the Contract requires the Contractor to obtain the Superintendent's Direction about such documents, the Superintendent shall give, within the time stated in Item 16, the appropriate Direction, including reasons if the documents do not comply with the Contract and any proposed amendments.

If the Contractor disagrees with an amendment Directed by the Superintendent pursuant to subclause 8.3(c), the Contractor may:

(d) refer the matter for dispute resolution in accordance with clause 42; and

(e) proceed with WUC in accordance with the documents that the Superintendent has advised do not comply with the Contract.

Where the Contractor proceeds with WUC in accordance with subclause 8.3(e), the Contractor:

(f) does so entirely at the Contractor's own risk and will not be entitled to any Claim arising out of or in connection with having done so; and

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(g) must, if it is subsequently determined under clause 42 that the documents do not comply with the Contract, immediately replace and rectify any WUC or part of the Works that do not comply with the Contract and amend and resubmit the relevant documents at the Contractor's sole cost and expense.

Copies of documents supplied by the Contractor shall be the Principal's property and can be used for any purpose related to the Works or the Project, including the use, repair, maintenance or alteration of the Works.

8.4 Availability

The Contractor shall keep available to the Superintendent and the Principal:

(a) on Site, one complete set of documents affecting WUC and supplied by a party or the Superintendent; and

(b) at the place of manufacture or assembly of any significant part of WUC off Site, a set of the documents affecting that part.

8.5 Confidential information

Each party must keep confidential such documents, samples, models, patterns and other information supplied by the other party and which are clearly identified as confidential.

Either party may disclose such confidential information of the other party which:

(a) at the time of disclosure, is in the public domain, but not as a result of a breach of this subclause 8.5;

(b) is required to be disclosed for the purposes of performing its obligations under this Contract;

(c) is necessary for the purpose of obtaining any Approval;

(d) is required to be made in relation to any procedure for discovery of documents and any proceeding before any court, tribunal or regulatory body;

(e) is required to be disclosed to its professional advisers or financial advisers;

(f) is required to be disclosed by Law (including any WHS Law, except that this does not permit disclosure under section 275(4) of the PPS Law unless section 275(7) of the PPS Law applies) or any applicable stock exchange listing rules; and

(g) is necessary to be disclosed to give effect to the licences of the Intellectual Property Rights granted to it under the Contract.

Other than as set out above, any such confidential information of a party shall not be copied or disclosed by the other party to any person except with the prior written approval of the first mentioned party. If required in writing by a party, the other party shall enter into a separate agreement not to disclose to anyone else any confidential matter even after Final Certificate or termination of the Contract. If so required by the Contractor, the Principal shall ensure that the Superintendent also enters into such an agreement.

The obligations in this subclause 8.5 shall survive expiry or termination of the Contract.

The Contractor shall ensure that its subcontractors comply with this subclause 8.5.

8.6 Media*

The Contractor must not disclose any information concerning the Project for distribution through any communications media without the Principal's prior written approval (which approval may be given or withheld by the Principal in its absolute discretion and may be subject to conditions on that approval). The Contractor must refer to the Principal any enquiries from any media concerning the Project.

9 Assignment and subcontracting

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9.1 Assignment

(a) The Contractor must not, without the Principal's prior written approval (including terms) assign the Contract or any payment or any other right, benefit or interest under the Contract.

(b) Any change in the effective management or control of the Contractor, including transfer (other than a transfer on the Australian Securities Exchange) of more than 20 per cent of the issued shares of the Contractor, will be deemed an assignment for the purposes of clause 9.1(a).

(c) The Principal may at any time and at its sole discretion assign any right, benefit or interest under the Contract to any person or entity without the Contractor's consent, notwithstanding that the relevant right, benefit or interest may not otherwise be assignable as a matter of law and whether or not that right, benefit or interest is severable from the other rights and obligations provided under the Contract.

(d) The Principal may at any time and at its sole discretion novate this Contract to the Department of Defence without the consent of the Contractor. For the purpose of giving effect to this clause 9.1(d), the Contractor hereby irrevocably and unconditionally appoints the Principal as its agent and attorney, and the Principal accepts such appointments, to sign any document or documents for and on behalf of the Contractor that may reasonably be required to effect such novation of this Contract, including without limitation a novation agreement, without seeking any further instructions or consent from the Contractor.

9.2 Subcontracting generally

The Contractor may subcontract any part of WUC, but not the whole of WUC. The Contractor must not without the Superintendent's prior written approval (which shall not be unreasonably withheld):

(a) subcontract or allow a subcontractor to subcontract any work described in Item 17; or

(b) allow a subcontractor to assign a subcontract or any payment or any other right, benefit or interest under a subcontract.

With a request for approval, the Contractor must give the Superintendent written particulars of the work to be subcontracted and the name and address of the proposed subcontractor and documentation which confirms the qualifications of the officers and employees of the proposed subcontractor who will be undertaking the work. The Contractor must give the Superintendent other information which the Superintendent reasonably requests, including the proposed subcontract documents without prices.

Within 14 days of the Contractor's request for approval, the Superintendent shall give the Contractor written notice of the approval or the rejection of the Contractor's request for approval to subcontract.

Each subcontract must include:

(c) provision that the subcontractor shall not assign nor subcontract without the Contractor's written consent; and

(d) provisions which are necessary to enable the Contractor to fulfil the Contractor's obligations to the Principal.

9.3 Selected Subcontract Work

If the Principal specifies work forming part of WUC to be Selected Subcontract Work and notifies the Contractor of one or more Selected Subcontractors for that particular work, the Contractor must subcontract that work to a Selected Subcontractor and thereupon give the Superintendent written notice of that Selected Subcontractor's name.

If no subcontractor in the Principal's notice will subcontract to carry out the Selected Subcontract Work, the Contractor shall provide a list for the written approval of the Superintendent.

9.3A Termination of Selected Subcontract

The Contractor must:

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(a) not terminate a subcontract for Selected Subcontract Work without the Principal's written consent;

(b) notify the Superintendent in writing of the Contractor's intention to terminate a subcontract for Selected Subcontract Work as soon as practicable and provide the reasons for its decision; and

(c) engage a replacement subcontractor with appropriate professional qualifications and membership of appropriate professional associations when a subcontract for Selected Subcontract Work has been terminated or frustrated.

If a Selected Subcontractor repudiates or abandons a subcontract or it is terminated by the Selected Subcontractor, the Contractor must immediately notify the Superintendent of that fact. The Superintendent shall promptly issue a Direction as to the manner of completing the Selected Subcontract Work. With the Contractor's consent, the Superintendent may Direct the Contractor to perform Selected Subcontract Work, otherwise the Superintendent will Direct the Contractor:

(d) to choose another subcontractor from a list of subcontractors approved by the Principal; or

(e) to enter into a subcontract with a subcontractor chosen by the Superintendent and agreed to by the Contractor.

The Contractor will not be obliged to enter into a subcontract with a subcontractor referred to in subclause 9.3A(d) against whom the Contractor raises reasonable objection.

The Contractor will, as soon as practicable, enter into a subcontract with the subcontractor so chosen and notify the Superintendent accordingly.

9.4 Novation

When Directed by the Principal, the Contractor, without being entitled to compensation, shall promptly execute a deed of novation in the form of Annexure Part E, such deed being between the Principal, the Contractor and the subcontractor or Selected Subcontractor stated in Item 18 for the particular part of WUC.

9.5 Contractor's responsibility

Despite any other provision of the Contract:

(a) the Contractor will be liable to the Principal for the acts, defaults and omissions of the Contractor's subcontractors (including Selected Subcontractors) and employees and agents of the Contractor's subcontractors as if they were those of the Contractor;

(b) approval to subcontract and any subcontract entered into by the Contractor will not relieve the Contractor from any liability or obligation under the Contract and will not create or impose any obligation or liability on the Principal; and

(c) the Principal will have no obligation or liability to the Contractor for any act, omission, default, breach of contract or insolvency of a subcontractor of the Contractor (including Selected Subcontractors).

9.6 Subcontractor warranties

The Contractor must give the Superintendent 2 originals and 2 copies of all Subcontractor Warranties and must ensure that the Principal and persons claiming through the Principal and its successors and assigns have the benefit of the Subcontractor Warranties and are able to directly enforce the Subcontractor Warranties against the subcontractors.

Each of the Subcontractor Warranties must be:

(a) for the duration as set out in the list of Subcontractor Warranties; and

(b) on terms which are reasonably and commercially obtainable.

The Contractor acknowledges that the Superintendent may, by written notice to the Contractor at any time before the Date of Practical Completion, amend the list of Subcontractor Warranties by adding or deleting subcontractors. The Contractor must use its

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best endeavours to obtain a warranty from any subcontractor added to the list of Subcontractor Warranties.

The Contractor must use its best endeavours to provide any other Subcontractor Warranties not set out in the list of Subcontractor Warranties in a form which is reasonably and commercially obtainable.

If the Contractor fails to procure warranties in accordance with this clause 9.6, the Contractor is deemed to personally provide the Principal the same warranty for the same duration on the same terms and conditions as the Contractor was obliged to procure under this clause 9.6.

10 Intellectual property rights

10.1 Warranties and Indemnities

The Principal warrants that, unless otherwise provided in the Contract, design, materials, documents and methods of working, each specified in the Contract or provided or Directed by the Principal or the Superintendent shall not infringe the Intellectual Property Rights of any Person. Unless otherwise provided in the Contract, the Principal shall indemnify the Contractor against any claim or loss brought against, suffered or incurred by, the Contractor as a result of the design, materials, documents and methods of working provided or Directed by the Principal or the Superintendent infringing the Intellectual Property Rights of any person.

The Contractor warrants that:

(a) the Contractor owns or is entitled to use, the Intellectual Property Rights in any design, equipment, materials, documents, methods of working or other deliverables provided or used by, or on behalf of, the Contractor in the performance of WUC; and

(b) the Contractor is entitled to grant the licence required by clause 10.2.

The Contractor shall indemnify the Principal against any claim or loss brought against, suffered or incurred by, the Principal as a result of the design, equipment, materials, documents, methods of working or other deliverables provided or used by or on behalf of the Contractor in the performance of WUC infringing the Intellectual Property Rights of any person.

10.2 Intellectual Property Rights granted to Principal

The Contractor grants to the Principal a non-exclusive, perpetual, irrevocable, assignable, sublicensable, royalty-free licence (including the right to sub-licence on the same terms) to use the Intellectual Property Rights in any design, equipment, materials, documents, methods of working and other deliverable provided to the Principal by or on behalf of the Contractor in the performance of WUC for any purpose related to the Works or the Project including:

(a) completing the design, construction and testing of the Works;

(b) operating, maintaining, repairing, upgrading, extending, altering, selling or financing the Works; and

(c) any future use of the Site.

10.3 Moral Rights

(a) The Contractor must obtain from the Contractor's Personnel irrevocable consent to all or any acts or omissions (whether occurring before or after the date the consent is given) in respect of all works made or to be made by the Contractor's Personnel during the course of their involvement in WUC, including any design, equipment, materials, documents, methods or working or other deliverable provided to the Principal that would otherwise be contrary to any present or future Moral Rights.

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(b) The consent must be legally binding and must acknowledge that such consent is a genuine consent given under Part IX of the *Copyright Act 1968* (Cth) and has not been induced by duress or any false or misleading statement.

(c) The form and content of any consent which the Contractor proposes to obtain in accordance with clause 10.3(a) must first be approved by the Principal, such approval not to be unreasonably withheld. The Contractor must provide all reasonable assistance requested by the Principal in respect of any communication between the Principal and the Contractor's Personnel.

(d) The Contractor must indemnify the Principal, its assignees, licensees, successors in title and persons authorised by the Principal, and any of their officers, employees, agents and contractors (**'Authorised Persons'**), against all claims, cost, expense, damage or loss that the relevant Authorised Persons suffers or incurs arising out of a failure by the Contractor to comply with this clause 10.3.

10.4 Survival of rights

The rights and obligations of the parties under this clause 10 survive expiry or termination of the Contract

11 Legislative requirements

11.1 Compliance

The Contractor must perform and complete WUC in accordance with all Legislative Requirements (including, to the extent permissible by Law, complying with any obligation or requirement which a Legislative Requirement places on the Principal as though it had been placed on the Contractor).

The Contractor, upon finding that a Legislative Requirement is at variance with the Contract, shall promptly give the Superintendent written notice thereof. The Superintendent shall Direct the Contractor as to how the inconsistency must be addressed in accordance with the principles contained in clause 8.1.

The Contractor shall indemnify the Principal and the directors, officers, employees and agents of the Principal from any action, claim, demand, cost or expense arising out of, or in connection with, any breach of a Legislative Requirement by the Contractor.

11.2 Changes

If a Legislative Requirement:

(a) necessitates a change:

(i) to the Works;

(ii) to so much of WUC as is identified in Item 19(b);

(iii) being the provision of services by a municipal, public or other statutory authority in connection with WUC; or

(iv) in a fee or charge or payment of a new fee or charge;

(b) comes into effect after the Execution Date; and

(c) could not reasonably have been anticipated prior to the Execution Date by a Competent Contractor performing work in the nature of WUC,

('**Change in Legislative Requirements**'),

then to the extent that such Change in Legislative Requirements causes the Contractor to incur more or less cost than otherwise would have been incurred, the difference shall be assessed by the Superintendent under subclause 36.4 and added to or deducted from the Contract Sum.

The Contractor shall use all reasonable endeavours to minimise or mitigate the effects of a Change in Legislative Requirements.

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11.3 Approvals

(a) The Contractor must, at its own cost:

(i) obtain all Approvals (other than the Principal's Approvals) which are necessary for the performance of WUC or the Works before the commencement of WUC on Site;

(ii) do all things necessary to keep such Approvals valid and effective;

(iii) take all steps necessary to renew, extend or amend such Approvals when appropriate;

(iv) provide evidence to the Principal that it has obtained and continues to maintain all such Approvals if requested at any time by the Principal ;

(v) without limiting subclause 11.3(a)(iv), at all times ensure that it has provided to the Principal a copy of the current version of each Approval required to be obtained and maintained under this subclause 11.3;

(vi) immediately notify, and copy to, the Principal all notices, requisitions and other correspondence relevant to WUC received in respect of such Approvals by the Contractor or any subcontractor; and

(vii) use reasonable endeavours to assist the Principal in obtaining any Principal's Approvals, including providing any documents or information requested by the Principal.

(b) The Contractor must, to the extent permitted by Law, indemnify and hold harmless the Principal against any Claim against, or loss suffered or incurred by, the Principal arising out of, or in connection with, the Contractor failing to obtain an Approval, not complying with an Approval (including any Principal's Approval) or causing the Principal to be in breach of an Approval (including any Principal's Approval).

11.4 Documents evidencing approvals

The Contractor must give the Principal copies of Approvals or other documents issued to the Contractor or any of the Contractor's subcontractors by any Authorities in respect of WUC or the Works within 7 days of receipt or upon request and in any event as a condition of Practical Completion.

11.5 Proportionate Liability Legislation

(a) To the extent permitted by Law, the operation of the Proportionate Liability Legislation in relation to any right, obligation or liability of a party, in respect of this Contract, whether those rights, obligations or liabilities are sought to be enforced in Contract, in tort or pursuant to any statute, and any Claim, is excluded.

(b) To the extent that the operation of the Proportionate Liability Legislation cannot be excluded as contemplated by subclause 11.5(a), where any loss or damage sustained by the Principal is wholly or partly caused by:

(i) any act or omission involving a failure to exercise reasonable care;

(ii) negligence;

(iii) breach of any contractual or statutory duty; or

(iv) any other wrongdoing,

of the subcontractors, consultants or other people engaged by the Contractor to act in connection with WUC ('**Relevant Person'**) (whether or not under the Principal's direction, supervision or control), then as a separate and independent obligation the Contractor covenants with the Principal that the Contractor:

(v) is solely liable for the whole of that loss or damage, regardless of any act or omission of any Relevant Person;

(vi) is solely liable for and assumes an obligation, at the request of the Principal, to prevent any Relevant Person from failing to take reasonable care; and

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(vii) to the extent permitted by Law:

(A) must not seek to apply the provisions of the Proportionate Liability Legislation in relation to any Claim by the Principal against the Contractor;

(B) must not seek to attribute responsibility to any other person (whether or not a party to the relevant proceedings);

(C) must indemnify the Principal against any loss or damage which the Principal is not entitled to recover from the Contractor because of the operation of those provisions, if and to the extent that the provisions of the Proportionate Liability Legislation are applied in relation to any Claim by the Principal against the Contractor;

(D) must procure each Relevant Person to covenant with the Contractor for the benefit of the Principal that it must not seek to apply the provisions of the Proportionate Liability Legislation in relation to any Claim by the Principal against the Contractor or by the Contractor against that Relevant Person; and

(E) must procure each Relevant Person to covenant with the Contractor for the benefit of the Principal on the terms of subclause 11.5(b)(vii)(A).

(c) The Contractor must procure that each Relevant Person, by the contracts between the Contractor and that Relevant Person (and any intermediate person), is and as between the Principal and the Contractor, will be deemed to be, the agent of the Contractor in respect of the carrying out of WUC, and:

(i) the Contractor will be directly liable to the Principal for any such failure to take reasonable care; and

(ii) to the extent permitted by Law, the Contractor and the Relevant Person will be jointly and severally liable to the Principal for any Claim in respect of any failure by that Relevant Person to take reasonable care.

12 Protection of people and property

Insofar as compliance with the Contract permits, the Contractor must:

(a) provide all things and take all measures necessary to protect people and property;

(b) avoid unnecessary interference with the passage of people and vehicles;

(c) prevent nuisance and unreasonable noise and disturbance;

(d) take full responsibility for the adequacy, stability and safety of all Temporary Works, Construction Plant, operations on Site and methods of construction and transportation; and

(e) establish and maintain and comply with emergency, safety and Security procedures applicable to WUC or the Works as may be notified to the Contractor by the Superintendent or required by WHS Law from time to time.

The Contractor must also ensure that its subcontractors and consultants comply with the obligations under paragraphs 12(a) to 12(c) and, to the extent applicable, paragraph 12(e).

If the Contractor or any of the Contractor's Personnel damage property, including public utilities and services and property on or adjacent to the Site, the Contractor must promptly rectify (or procure the rectification of) the damage, arrange temporary protection for the property (as may be necessary) and pay any compensation which the Law or this Contract requires the Contractor to pay.

If the Contractor fails to comply with an obligation under this clause 12, the Principal, after the Superintendent has given reasonable written notice to the Contractor and in addition to the Principal's other rights and remedies, may have the obligation performed by others. The cost thereby incurred shall be certified by the Superintendent as moneys due from the Contractor to the Principal.

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13 Urgent protection

If urgent action is necessary to protect WUC, other property or people and the Contractor fails to take the action, in addition to any other remedies of the Principal, the Superintendent may take the necessary action. If the action was action which the Contractor should have taken at the Contractor's cost, the Superintendent shall certify the cost incurred as moneys due from the Contractor to the Principal.

If time permits, the Superintendent shall give the Contractor prior written notice of the intention to take action pursuant to this clause 13.

14 Care of the work and reinstatement of damage

14.1 Care of WUC

Except as provided in subclause 14.3, the Contractor is responsible for care of:

(a) the whole of WUC from and including the date of commencement of WUC to 4:00 pm on the Date of Practical Completion, at which time responsibility for the care of the Works (except to the extent provided in subclause 14.1(b)) shall pass to the Principal; and

(b) outstanding work and items to be removed from the Site by the Contractor after 4:00 pm on the Date of Practical Completion until completion of outstanding work or compliance with clauses 29, 30 and 35.

Without limiting the generality of subclause 14.1(a), the Contractor is responsible for the care of unfixed items accounted for in a Progress Certificate, things in the course of transportation or delivery to the Site and the care and preservation of things entrusted to the Contractor by the Principal or brought onto the Site by subcontractors for carrying out WUC.

14.2 Reinstatement

If loss or damage, other than that caused by an Excepted Risk, occurs to WUC during the period of the Contractor's care, the Contractor shall, at its cost, rectify such loss or damage.

In the event of loss or damage being caused by any of the Excepted Risk*s* (whether or not in combination with other risks), the Contractor shall to the extent Directed by the Principal, rectify the loss or damage and such rectification shall be a deemed Variation. If loss or damage is caused by a combination of Excepted Risk*s* and other risks, the Superintendent in pricing the Variation shall assess the proportional responsibility of the parties.

14.3 Excepted risks

The Excepted Risks causing loss or damage, for which the Principal is liable, are:

(a) any negligent acts or omissions of the Superintendent, the Principal or its consultants, agents, employees or other contractors (not being employed by the Contractor) including Related Activities Contractors;

(b) war, invasion, acts of foreign enemies, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection or military or usurped power, martial law or confiscation by order of any Government or public authority;

(c) ionising radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel not caused by the Contractor or its subcontractors or either's employees or agents;

(d) use or occupation of any part of WUC by the Principal or its consultants, agents or other contractors (not being employed by the Contractor) (but does not include the proper exercise of the Principal's rights, duties or obligations under the Contract or the proper exercise of the Superintendent's functions under the Contract); and

(e) defects in the design of WUC, other than design provided by the Contractor.

15 Damage to persons and property

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15.1 Indemnity by Contractor

The Contractor shall indemnify the Principal and the directors, officers, employees and agents of the Principal from any action, Claim, demand, cost or expense arising from:

(a) the Contractor failing to comply with any of its obligations under or arising out of the Contract;

(b) the negligence of the Contractor;

(c) loss of or damage to any of the Principal's property, real or personal, including existing property in or upon which WUC is being carried out; or

(d) claims by any person against the Principal in respect of personal injury (which expression will include illness) or death or loss of, or damage to, any other property,

arising out of or as a consequence of the carrying out by the Contractor of WUC, or any activity for which the Contractor is responsible and which is directly or indirectly associated with WUC or the Works (including the remedying of any defect in the Works) but the Contractor's liability to indemnify the Principal shall be reduced proportionally to the extent that the act or omission of the Superintendent, the Principal or the agents or employees of the Principal contributed to the injury, death, loss or damage.

The Principal holds the benefit of the indemnities contained in subclause 15.1 for itself and on trust for each of its directors, officers, employees and agents.

This subclause 15.1 shall not apply to:

(e) exclude any other right of the Principal to be indemnified by the Contractor;

(f) things for the care of which the Contractor is responsible under subclause 14.1; and

(g) claims in respect of the right of the Principal to have WUC carried out.

15.2 Indemnity by Principal

[Not used]

15.3 Indemnity ongoing

Each indemnity given by the Contractor under the Contract is:

(a) a continuing obligation, separate and independent from the obligations of the Contractor under the Contract and survives termination or expiry of the Contract; and

(b) absolute and unconditional and unaffected by anything that might have the effect of prejudicing, releasing, discharging or affecting in any other way the liability of the Contractor under those indemnities.

16 Insurance of the Works

The Alternative in Item 20(a) applies.

Alternative 1: Contractor to insure

Before commencing WUC, the Contractor shall insure all the things referred to in subclause 14.1 against loss or damage resulting from any cause until the Contractor ceases to be responsible for their care.

Without limiting the generality of the obligation to insure, such insurance shall cover the Contractor's liability under subclause 14.2 and things in storage off Site and in transit to the Site but may exclude:

(a) the cost of making good fair wear and tear or gradual deterioration, but shall not exclude the loss or damage resulting therefrom;

(b) the cost of making good faulty design, workmanship and materials, but shall not exclude the loss or damage resulting therefrom;

(c) consequential loss of any kind, but shall not exclude loss of or damage to the Works;

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(d) damages for delay in completing or for the failure to complete the Works;

(e) loss or damage resulting from ionising radiations or Contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel resulting from any cause

The insurance cover shall be for an amount not less than the aggregate of the:

(f) Contract Sum;

(g) provision in Item 20(b) to provide for costs of demolition and removal of debris;

(h) provision in Item 20(c) for consultants' fees;

(i) value in Item 20(d) of any materials or things to be supplied by the Principal for the purposes of WUC; and

(j) additional amount or percentage in Item 20(e) of the total of the items referred to in sub-paragraphs (f) to (i) of this paragraph, for increases in the cost of labour and materials until completion of the reinstatement of the Works, or

the amount specified in Item 20(f), whichever is the greater.

Insurance shall be in the joint names of the parties, shall cover the parties and all subcontractors whenever engaged in WUC for their respective rights, interests and liabilities and, except where the Contract otherwise provides, shall be with an insurer and in terms both approved in writing by the Principal (which approvals shall not be unreasonably withheld).

The insurance shall be maintained until the Contractor ceases to be responsible under subclause 14.1 for the care of anything.

17 Public liability insurance

The Alternative in Item **Error! Reference source not found.**(a) applies.

Alternative 1: Contractor to insure

Before commencing WUC, the Contractor shall effect and maintain until the Final Certificate is issued, a Public Liability Policy. The policy must:

(a) be in the joint names of the parties;

(b) cover the:

(i) respective rights and interests; and

(ii) liabilities to third parties,

of the Principal, the Contractor, the Superintendent and subcontractors (and their agents and employees) from time to time, whenever engaged in WUC (and, at the election of the Principal, other parties including, without limitation, any tenant, purchaser or financier of the Project);

(c) cover the insured parties' respective liability to each other for loss or damage or destruction to property (other than property required to be insured by clause 16) and the death of or injury to any person (other than liability which the Law requires to be covered under a workers compensation insurance policy);

(d) be endorsed to cover the use of any Construction Plant not covered under a comprehensive or third party motor vehicle insurance policy;

(e) provide insurance cover for an amount in respect of any one occurrence of not less than the sum in Item **Error! Reference source not found.**(b); and

(f) be with an insurer and otherwise in terms both approved in writing by the Principal (which Approvals shall not be unreasonably withheld).

The Contractor must ensure that each of its subcontractors effects and maintains a policy of insurance on terms similar to those set out in this clause 17.

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18 Insurance of employees

Before commencing WUC, the Contractor shall insure against liability for death of or injury to persons employed, or deemed by a Legislative Requirement to be employed, by the Contractor, including liability by statute and at common law. The insurance cover shall be maintained until completion of all WUC (including remedial work).

Where permitted by Law, the insurance policy or policies shall be extended to provide indemnity for the Principal's statutory liability to the Contractor's employees.

The Contractor shall ensure that all subcontractors have similarly insured their employees.

19A Motor Vehicle Insurance

Before commencing WUC, the Contractor at its own cost shall effect insurance in respect of any motor vehicles used for the purposes of WUC:

(a) covering liability for death or personal injury of any person as required by Legislative Requirements; and

(b) covering loss to property for at least the amount specified in Item 21A of Annexure Part A for any one occurrence and unlimited in the aggregate.

The insurance cover shall be maintained whilst any motor vehicle is used for the purposes of WUC.

Cover will be extended to the Principal.

The Contractor shall ensure that all subcontractors similarly insure their motor vehicles.

19 Inspection and provisions of insurance policies

19.1 Proof of insurance

Before the Contractor commences WUC and whenever requested in writing by the Principal, the Contractor must provide evidence of such insurance required to be effected and maintained pursuant to the Contract to the satisfaction of, and for approval by, the Principal. Without limiting the foregoing, such evidence must include a copy of the relevant certificate of currency

Insurance shall not limit liabilities or obligations under other provisions of the Contract.

Any insurance policy to be effected or maintained pursuant to the Contract shall be in a form acceptable to the Principal with an insurer approved by the Principal.

19.2 Failure to produce proof of insurance

If after being so requested, the Contractor fails promptly to provide satisfactory evidence of compliance with clause 16, 17 or 18, then without prejudice to other rights or remedies, the Principal may insure and the cost thereof shall be certified by the Superintendent as moneys due and payable from the Contractor to the Principal. The rights given by this subclause 19.2 are in addition to any other right of the Principal under the Contract.

19.3 Notices from or to insurer

The Contractor shall ensure that each insurance policy contains provisions acceptable to the Principal which:

(a) requires the insurer to inform both parties in writing, whenever the insurer gives a party or a subcontractor a notice in connection with the policy;

(b) provides that a notice of Claim given to the insurer by either party, the Superintendent or a subcontractor shall be accepted by the insurer as a notice of Claim given by both parties, the Superintendent and the subcontractor; and

(c) requires the insurer, whenever the insuring party fails to maintain the policy, promptly to give written notice thereof to both parties and prior to cancellation of the policy.

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19.4 Notices of potential claims

The Contractor shall, as soon as practicable, inform the Principal in writing of any occurrence that may give rise to a claim under an insurance policy required by clause 16 or 17 and shall keep the Principal informed of subsequent developments concerning the claim. The Contractor shall ensure that subcontractors in respect of their operations similarly inform the parties.

On the occurrence of death or injury, damage to, loss or destruction of property or the use of property, arising out of an event, whether negligent or not, the Contractor shall claim against any insurance policies effected under clauses 16, 17 and 18, and diligently pursue its rights under those policies unless the Contractor elects to settle the claim without claiming on any policy of insurance.

19.5 Settlement of claims

Upon settlement of a claim under the insurance required by clause 16:

(a) to the extent that reinstatement has been the subject of a payment or allowance by the Principal to the Contractor, if the Contractor has not completed such reinstatement, insurance moneys received shall, if requested by either party, be paid into an agreed bank account in the joint names of the parties. As the Contractor reinstates the loss or damage, the Superintendent shall certify against the joint account for the cost of reinstatement; and

(b) to the extent that reinstatement has not been the subject of a payment or allowance by the Principal to the Contractor, the Contractor shall be entitled immediately to receive from insurance moneys received, the amount of such moneys so paid in relation to any loss suffered by the Contractor.

19.6 Cross liability

The insurance policies required by clauses 16, 17, 18 and 19A shall include a cross liability clause in which the insurer agrees to waive all rights of subrogation or action against any of the persons constituting the insured and for the purpose of which the insurer accepts the term 'insured' as applying to each of the persons constituting the insured as if a separate policy of insurance had been issued to each of them (subject always to the overall sum insured not being increased thereby).

19.7 Terms of Insurance policies

The insurance policies required by clauses 16 and 17:

(a) must provide that any breach of the insurance policies by an insured other than the Principal must not in any way prejudice or diminish any rights which the Principal has under the insurance policy;

(b) must provide that the insurance policy is primary with respect to the interests of the Principal and that any other insurances maintained by the Principal are excess to, and not contributory with, the insurance policy; and

(c) where the policies are issued by insurers without an address for service in Australia, a clause that the insurance policies are governed by the laws of Australia, consenting to the exclusive jurisdiction of Australian Courts, and appointing an address for service in Australia.

19.8 Information required for insurance

The Contractor shall promptly provide any information regarding the Contractor, its subcontractors or WUC reasonably requested by the Principal for the purposes of obtaining or renewing any insurance policy.

19.9 Compliance with insurance policies

The Contractor must comply with its obligations to disclose information under the insurance policies to the insurers.

The Contractor shall not do or omit to do anything which might prejudice its or the Principal's rights under the insurance policies.

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19.10 Deductible

(a) Subject to subclause 19.10(b), the Contractor shall pay any deductible payable under any insurance policy required by clause 16 or 17 in respect of insurance claims made by it.

(b) The Principal shall pay any deductible payable in relation to a claim made by it under any insurance required by clause 16 or 17 to the extent the loss or liability which the claim related to was caused by the Principal, its employees, contractors or agents.

(c) Notwithstanding subclause 19.10(b) above, the Contractor will pay all deductibles in respect of insurance claims made by the Principal where the claim against the Principal is based on its vicarious liability in relation to the acts or omissions of the Contractor or the Contractor's Personnel.

(d) The deductibles payable in respect of the insurances required to be effected and maintained by the Contractor under the Contract must not exceed the deductible limits set out in Annexure Part A.

19.11 Rating of insurers

The insurance required to be effected under the Contract shall be effected with an insurer which has a minimum Standard & Poor's credit rating of A- (or equivalent rating with another recognised rating agency).

19.12 Primary

The parties acknowledge that it is intended that the insurance policies to be effected and maintained under the Contract are primary and not secondary to the indemnities referred to in the Contract in respect of any claim, loss or liability to which such indemnities apply. However, no party is obliged to make a claim or institute proceedings against any insurer before enforcing any of its rights or remedies under any of the indemnities referred to in the Contract. The parties acknowledge to the other that if a claim is made under an insurance policy that extends protection to a relevant party, it is their intention that the insurer cannot require a party to exhaust any remedies referred to in the Contract before the insurer considers or meets the relevant claim.

20 Superintendent

The parties acknowledge that in the exercise of the Certification Functions of the Superintendent under the Contract, the Superintendent will act reasonably and in good faith.

Except where the Contract otherwise provides, the Superintendent may give a Direction orally but shall as soon as practicable confirm it in writing. If the Contractor in writing requests the Superintendent to confirm an oral Direction, the Contractor shall not be bound to comply with the Direction until the Superintendent confirms the oral Direction in writing.

The Contractor must give the Superintendent –

(a) access to the Site and WUC; and

(b) after reasonable notice to the Contractor, access to any place other than the Site where WUC is being carried out or materials are being prepared or stored; and

(c) all information relating to WUC as reasonably requested by the Superintendent,

for the purposes of discharging the functions of the Superintendent under the Contract.

The Contractor acknowledges that:

(d) the Superintendent is a representative of the Principal; and

(e) the Superintendent may discuss with and have regard to the views of the Principal in relation to the functions of the Superintendent under the Contract.

The Superintendent and the Principal do not assume any duty to advise the Contractor, supervise or control the Contractor's performance of WUC, to ensure the proper

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performance of any obligations of the Contractor or to exercise any discretion for the benefit of the Contractor.

In addition to and without limiting any other term or condition of this Contract, if the Contractor considers that any Direction given by the Superintendent is given in error or, although not stated to involve a Variation, in fact involves a Variation, the Contractor must, before complying with the Direction, notify the Superintendent of this fact.

20A Release

(a) The Contractor releases the Superintendent and any delegate appointed under clause 21 from all Claims which might be made by the Contractor in connection with or arising from the Contract.

(b) The Contractor acknowledges that:

(i) the release under clause 20A(a) is made for the benefit of and may be enforced, by the Superintendent and any delegate of the Superintendent appointed under clause 21 pursuant to any legislation permitting the enforcement of third party promises and at common law;

(ii) in accepting the release under clause 20A(a), the Principal is acting as agent of the Superintendent and any delegate of the Superintendent appointed under clause 21;

(iii) the Principal has entered into the Contract in reliance on the Contractor's warranty and representation that the release under clause 20A(a) is binding and effective on the Contractor and that it will make no Claims of any nature against the Superintendent or any delegate of the Superintendent appointed under clause 21; and

(iv) neither the Superintendent or any delegate of the Superintendent appointed under clause 21 owe to it any separate duty of care arising out of or in connection with the Contract.

21 Superintendent's Representative

The Superintendent may from time to time appoint individuals as the Superintendent's Representative to exercise delegated Superintendent's functions, provided that:

(a) no aspect of any function shall at any one time be the subject of delegation to more than one Superintendent's Representative;

(b) delegation shall not prevent the Superintendent exercising any function;

(c) the Superintendent immediately gives the Contractor written notice of respectively:

(i) the appointment, including the Superintendent's Representative's name and delegated functions; and

(ii) the termination of each appointment; and

(d) if the Contractor makes a reasonable objection to the appointment of a Superintendent's Representative, the Superintendent shall terminate the appointment.

21A Instructions Given by Superintendent

If the Contractor does not comply with an instruction given by the Superintendent under or in connection with this Contract then:

(a) the Superintendent may issue a notice to the Contractor requiring compliance within a reasonable time to be stated in the notice;

(b) if the Contractor does not comply therewith then the Principal may employ and pay others to execute any work whatsoever which may be necessary to give effect to such instructions of the Superintendent. Should the Principal engage others under this clause 21A(b), the Principal will notify the Contractor and have regard to the Contractor's obligations under the Australian Government Building and Construction OHS Accreditation Scheme, established under the FW Act, if applicable;

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(c) subject to subclause 21A(d), all costs and expenses and any loss or damage properly incurred or to be incurred by the Principal in so doing may be recovered by the Principal as a debt due to the Principal by the Contractor or may be deducted by the Principal from any monies which may then be or thereafter become payable to the Contractor by the Principal or from any Security furnished by the Contractor pursuant to this Contract;

(d) where the Principal has pursuant to subclause 21A(b) employed others to perform such work, then the Principal shall be entitled to recover from the Contractor the amount by which the amount paid to others to perform such work exceeds the amount which would have been payable by the Principal to the Contractor under the provisions of this Contract had that work been performed by the Contractor; and

(e) the Contractor shall remain responsible to the Principal for such work executed by others as if the same had been executed by the Contractor pursuant to this Contract. Should such work not be in accordance with this Contract, the Contractor may (in the name of the Principal) proceed against the person who actually executed that work to recover any loss or expense suffered by the Contractor consequent upon the rectification by the Contractor of any defect in the work executed by others provided that the Contractor shall have first indemnified the Principal against all costs and expenses of the Principal and the Contractor of and incidental to such proceedings.

21B Contractor's Acknowledgement

(a) The Contractor acknowledges that the Principal has retained, or may at any time in the future retain, consultants for the purposes of:

(i) considering;

(ii) assessing;

(iii) providing advice in relation to;

(iv) making recommendations in relation to;

(v) reporting on;

(vi) undertaking such other tasks as may be assigned to them in relation to,

any matter in connection with WUC including, without limitation, technical matters, matters of compliance with the Contract and claims for payment, (hereafter called "**Consultants' Matters**").

(b) The Principal agrees that it shall do all acts, matters and things necessary on its part to be done to ensure that any consultant retained for any purpose referred to in clause 21B(a) shall:

(i) liaise and consult with;

(ii) provide any assessment, advice or recommendation to;

(iii) report to;

(iv) otherwise keep fully informed,

the Superintendent in connection with any Consultants' Matter.

(c) Notwithstanding anything in this Contract to the contrary, and notwithstanding any principle of law or equity to the contrary, the Superintendent may, in the Superintendent's absolute discretion:

(i) adopt, either wholly or partially;

(ii) reject, either wholly or partially;

(iii) modify;

(iv) amend;

(v) seek other advice in relation to;

(vi) adopt any other course which the Superintendent considers appropriate in relation to,

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any assessment, advice, recommendation, report or other information received by the Superintendent from any consultant retained by the Principal in connection with any Consultants' Matter.

(d) In the event that the Superintendent adopts in any way or to any degree, or otherwise has regard to any extent to, any assessment, advice, recommendation, report or other information so provided to the Superintendent, then neither the Principal nor the Superintendent shall have any liability on any basis whatsoever to the Contractor arising out of or in connection with the action of the Superintendent in so adopting or having regard to any such assessment, advice, recommendation, report or other information.

(e) Subject to clause 34.5, the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of or in connection with any action of the Superintendent in so adopting or having regard to any such assessment, advice, recommendation, report or other information and this sub-clause may be pleaded in bar to any such claim, demand, suit, cause of action or proceeding.

(f) Nothing in this clause 21B shall entitle any consultant retained by the Principal to issue instructions to the Contractor or to otherwise fulfil any of the functions of the Superintendent pursuant to the terms of this Contract.

(g) The Contractor acknowledges that:

(i) no duty of care is assumed towards the Contractor by any consultant retained by the Principal; and

(ii) it does, and shall, not place any reliance upon:

(A) the fact that the Principal has retained, or may retain, consultants in connection with Consultants' Matters; or

(B) any assessment, advice, recommendation, report or other information provided by any consultant of which it may become appraised; and

(iii) nothing in this clause 21B or arising out of any retainer by the Principal of any consultant in connection with Consultants' Matters shall qualify, limit or otherwise affect the Contractor's primary, sole and exclusive responsibility to ensure that WUC is constructed to the quality standards required by the terms of this Contract.

22 Party representatives and Key Personnel

22.1 Contractor's representative

The Contractor must ensure that there is an individual appointed as the Contractor's Representative to personally supervise WUC, and to exercise the functions of the Contractor under the Contract.

A Direction given by the Principal, the Principal's Representative or the Superintendent to the Contractor's Representative is deemed to have been given to the Contractor. Matters within a Contractor's Representative's knowledge are deemed to be within the Contractor's knowledge.

The Contractor must immediately give the Superintendent written notice of the representative's name and any subsequent changes.

The Contractor's Representative will be maintained as one of the Key Personnel and subclause 22.2 shall apply with respect to the appointment and replacement of the Contractor's Representative.

The Contractor's Representative shall supervise WUC on behalf of the Contractor and represent the Contractor for all purposes of the Contract unless the Contractor advises the Principal in writing that some other person is to be the Contractor's Representative. The Contractor's Representative is authorised to negotiate with the Principal on behalf of the Contractor and to bind the Contractor contractually in respect of matters arising from the performance of WUC.

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The Contractor shall make suitable arrangements so that the Contractor's Representative it has nominated as responsible for organising the execution of the Works can be contacted by telephone during the period when WUC is being carried out on the Site and during the Defects Liability Period.

22.2 Key personnel

The Contractor shall engage the Key Personnel in the execution of WUC until the expiry of the Defects Liability Period, unless:

(a) the Principal, acting reasonably, approves the substitution, promotion or reassignment of a member of the Key Personnel;

(b) a member of the Key Personnel dies, retires or otherwise suffers from ill health; or

(c) a member of the Key Personnel resigns, other than to accept other employment with any other related entity of the Contractor.

The Contractor must promptly fill any vacancy in the Key Personnel with a person approved of in writing by the Principal (acting reasonably).

If the Principal or the Superintendent makes a reasonable objection to the appointment of an individual as the Contractor's Representative or other member of the Key Personnel, the Contractor must terminate the appointment and appoint another individual as the Contractor's Representative or other member of the Key Personnel, as applicable.

22.3 Principal's Representative

The Principal may from time to time appoint an individual as the Principal's Representative. The Principal's Representative may give Directions and carry out all functions of the Principal under the Contract as agent of the Principal.

The Principal may at any time revoke the appointment of the Principal's Representative or replace the Principal's Representative, in which event the Principal will notify the Contractor of that revocation or replacement, as the case may be.

Nothing in this subclause 22.3 limits the Principal's right to exercise any of the Principal's, or the Principal's Representative's, powers or functions under the Contract.

23 Control of Contractor's employees and subcontractors, the project and other contractors

23.1 Persons employed by the Contractor

The Contractor shall employ in activities connected with WUC only such persons or subcontractors as are careful, skilled and experienced in their respective trades and professions.

23.2 Removal

The Superintendent may Direct the Contractor to have removed, within a stated time, from the Site or from any activity connected with WUC, any person employed in connection with WUC who, in the Superintendent's opinion, is:

(a) performing WUC whilst under the influence of alcohol or illegal drugs;

(b) a risk to the safety of any person, property or the Environment; or

(c) incompetent, negligent or guilty of misconduct.

The person must not thereafter be employed on the Site or on activities connected with WUC without the prior written approval of the Superintendent, such approval not to be unreasonably withheld.

23.3 Work health and safety

(a) The Contractor must comply and ensure compliance with:

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(i) all WHS Law; and

(ii) all applicable policies relating to work health and safety.

(b) In the event of any inconsistency between the requirements of subclauses 23.3(a)(i) and 23.3(a)(ii), the Contractor will comply with that which imposes the higher level of work health and safety.

(c) The Contractor agrees and acknowledges that for the purposes of the WHS Law, in carrying out WUC:

(i) it is a person conducting a business or undertaking;

(ii) it has been authorised by the Principal to have management and control of the Site; and

(iii) it has been engaged by the Principal and has accepted appointment as the 'principal contractor' in relation to WUC.

(d) The Contractor must comply with all the duties and obligations imposed on a principal contractor under the WHS Law, including but not limited to:

(i) complying with its health and safety duties in relation to all WUC;

(ii) complying with the consultation, representation and participation requirements, including any consultation required with designers and manufacturers;

(iii) preparing safe work method statements for high risk construction work and ensuring that the high risk construction work is carried out in accordance with the safe work method statements;

(iv) complying with all relevant codes of practice approved under the WHS Law; and

(v) permitting entry to the Site to work health and safety entry permit holders.

(e) The Contractor further agrees to:

(i) comply with the WHS Law regarding high risk work;

(ii) comply with any Direction or requirement of the Principal or the Superintendent in relation to work health and safety in relation to WUC and acknowledges that such Direction shall not relieve the Contractor of its obligation to carry out WUC in accordance with the Contract or entitle the Contractor to an extension of time to the Date for Practical Completion or to any damages for delay;

(iii) if applicable, consult and co-operate with any designers in relation to an obligation imposed on the designer by WHS Law including as set out in subclause 23.3(f);

(iv) immediately notify the Principal of any notifiable incident as defined in the WHS Law; and

(v) not permit any act or omission that causes or may cause the Principal or the Contractor to not comply with the WHS Law.

(f) If applicable to WUC, for the purposes of the WHS Law, the requirements imposed on designers include but are not limited to:

(i) ensuring that, so far as is reasonably practicable, any structure (as defined in the WHS Law) comprising the Works is designed to be without risks to the health and safety of persons who use, construct or otherwise deal with it or who are in the vicinity of it;

(ii) ensuring the carrying out of any calculations, analysis, testing or examination required to ensure that the structure is designed without risks to the health and safety of persons;

(iii) giving adequate, current and relevant information to each person who is provided with the design for the purpose of giving effect to it, the results of the calculations, analysis, testing or examination referred in subclause 23.3(f)(ii) and

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any conditions necessary to ensure that the structure is without risks to health and safety when used for a purpose for which it was designed;

(iv) consulting with the Principal and the Superintendent about how to ensure that risks to health and safety relating to a design during WUC are eliminated so far as is reasonably practicable or, if it is not reasonably practicable to eliminate the risks, how to ensure that the risks are minimised so far as is reasonably practicable; and

(v) providing a safety report that meets the requirements of the WHS Law.

23.4 Record of injury

All injuries and treatments of any of the Contractor's employees or any of its subcontractors or their employees engaged in WUC shall be recorded by the Contractor and a copy of such record shall be provided to the Superintendent upon request.

23.5 Industrial relations

The Contractor shall be responsible for industrial relations with all persons for whom it is responsible whether employed by itself or its subcontractors and shall implement and maintain a best practice workplace relations program.

The Contractor and its subcontractors shall cooperate with the Principal's other contractors and their subcontractors and employees on the Site in order to maintain uniform industrial practice in accordance with the Contractor's practices on the Site.

Subject to the Contractor's entitlement to make a Claim for an EOT for delay resulting from the cause of delay stated in paragraph (b)(i) of the definition of Qualifying Cause of Delay, the Contractor shall not be entitled to make any Claim whether for payment, adjustment of the Contract Sum, EOT or otherwise in respect of any industrial action or other industrial relations matter and any cost and time consequences of any industrial action or other industrial relations matter shall be deemed to be included in the Contract Sum and the Date for Practical Completion.

23.6 Site Construction Group

(a) The Superintendent shall ensure that the Site Construction Group is established at the commencement of WUC and shall comprise:

(i) a representative of the Principal;

(ii) a representative of the Contractor;

(iii) a representative of the Superintendent;

(iv) a representative of each consultant as reasonably required by the Superintendent; and

(v) any other person reasonably required by the Superintendent or the Principal from time to time.

(b) The Contractor shall assist and co-operate with the Superintendent in the establishment and operation of the Site Construction Group.

(c) The functions of the Site Construction Group shall be to review the progress of WUC and attempt to agree any disputes which may arise between the Principal and the Contractor.

(d) The Site Construction Group must meet on a fortnightly basis and at any other times required by the Superintendent at the office of, or as otherwise notified by, the Superintendent.

(e) The Superintendent shall:

(i) convene and chair all meetings of the Site Construction Group; and

(ii) prepare and promptly provide minutes of the meetings of the Site Construction Group to the Principal and the Contractor and all other attendees.

(f) If requested by the Superintendent, a senior management representative of the Contractor shall attend any Site Construction Group meeting and provide such information and assistance

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reasonably required by a member of the Site Construction Group to fulfil the functions of the Site Construction Group.

(g) The parties shall each meet all costs of their respective personnel and involvement in the Site Construction Group.

(h) The parties acknowledge that the minutes of meeting prepared under this subclause 23.6 or matters stated or discussed at any Site Construction Group meeting will not constitute instructions or Directions to the Contractor for the purposes of the Contract.

23.7 Subcontractors attendance at meetings

In addition to the Contractor attending Site Construction Group meetings pursuant to subclause 23.6, the Contractor shall, at its cost, ensure that its subcontractors attend meetings as reasonably required by the Principal or the Superintendent.

23.8 Interaction with Related Activities

The Contractor must:

(a) plan, coordinate, program and integrate the performance of WUC (including the work of subcontractors) with the Related Activities;

(b) carry out WUC so as to avoid interfering with, disrupting or delaying the work of Related Activities Contractors;

(c) not issue any instruction to a Related Activities Contractor or do anything which may give rise to any claim by a Related Activities Contractor against the Principal;

(d) attend all coordination meetings called by the Principal to plan, review and determine coordinated activities of the management of interfaces (including access) between WUC and the Related Activities;

(e) notify the Principal of the reasonable precautions required to be taken by Related Activities Contractors to ensure that WUC is protected from accidental damage by such contractors; and

(f) indemnify the Principal against all claims by, or liability to, Related Activities Contractors arising out of, or in connection with, the Contractor's failure to comply with this subclause 23.8.

24 Site

24.1 Access

(a) Provided the Contractor has complied with subclause 19.1 and clause 5, the Principal shall before the expiry of the time in Item 22, give the Contractor access to the Site or sufficient of the Site for commencement of WUC on Site. If the Principal has not given the Contractor access to the whole Site, the Principal shall give the Contractor access to such further portions of the Site as may, from time to time, be necessary for carrying out WUC in accordance with the requirements of the Contract. Subject to subclause 39.7, delay by the Principal in giving possession shall not be a breach of the Contract.

(b) Notwithstanding the provisions of this subclause 24.1, if the Contractor is in breach of clause 5 or subclause 19.1, the Principal may refuse to give the Contractor access to the Site or any part of the Site until the Contractor has complied with the requirements of clause 5 and subclause 19.1.

(c) The Contractor acknowledges that it is not entitled to exclusive access to the Site while performing WUC and access to the Site will confer on the Contractor a right to only such use and control as is necessary to enable the Contractor to carry out WUC and shall exclude camping, residential purposes and any purpose not connected with WUC, unless approved by the Superintendent. In accessing the Site, the Contractor must comply with all reasonable Directions of the Principal.

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(d) If requested, the Contractor shall notify the Principal in writing of the names of each of its subcontractors, consultants, agents or advisers as a condition of those subcontractors, consultants, agents or advisers having access to the Site.

(e) If the Principal fails to provide access to the Site in accordance with this subclause 24.1 and the Contractor suffers delay, the period of delay will be treated as a Principal-caused Delay and the Contractor may be entitled to an EOT if the requirements of subclause 34.3 are satisfied, and extra costs under subclause 34.10 if the requirements of subclause 34.10 are satisfied.

(f) Except as expressly provided for in subclause 24.1(e), the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of, or in connection with, any failure by the Principal to provide access in accordance with the Contract or any delay in the Contractor accessing the Site or any Direction of the Principal pursuant to subclause 24.1(c).

24.2 Access for Principal and others

(a) The Principal and the Principal's employees, contractors (and their subcontractors), consultants and agents may at any time after reasonable notice to the Contractor have access to any part of the Site for any purpose.

(b) The Contractor acknowledges and agrees that:

(i) it is not entitled to exclusive access to the Site while performing WUC;

(ii) the Principal, any Authorities (and their respective employees, agents and contractors) and any person performing Works or services related or relevant to WUC or at the Site, may at any time have access to any part of the Site or WUC for any purpose;

(iii) the Contractor must not obstruct the Principal from accessing WUC or any place where materials and equipment are being prepared or stored; and

(iv) the Contractor must cause as little disturbance as possible, and not materially interfere with any occupiers of the Site.

(c) The Contractor shall permit persons engaged by the Principal to carry out work on the Site other than WUC and shall cooperate with them and coordinate the Contractor's work with their work.

(d) If requested by the Contractor, the Principal shall give to the Contractor the names and roles of the persons so engaged.

(e) The Principal and the Principal's employees and experts shall, at all times, comply with the Site safety and Security requirements of the Contractor.

(f) The Contractor shall at all reasonable times after reasonable notice give the Superintendent, the Principal and other persons authorised in writing by the Principal or by the Superintendent access to WUC.

(g) The Principal shall use reasonable endeavours to ensure that none of the persons given a right of access under this subclause 24.2 impede the Contractor whilst exercising that right of access.

(h) Without limiting the Contractor's liability under subclause 15.1(a), where the Contractor requires access for the purposes of WUC to private property which its owner, its occupier, the Contractor or the Principal considers to be at risk of damage by WUC, the Contractor must:

(i) assess the property before WUC begins at the property to record its condition;

(ii) along with the Principal and the relevant owner or occupier, indicate in writing that it is a complete and correct record; and

(iii) provide copies of the assessment record to the Principal.

24.3 Minerals, fossils and relics

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Valuable minerals, fossils, articles or objects of antiquity or of anthropological or archaeological interest, treasure trove, coins and articles of value found on the Site shall as between the parties be and remain the property of the Principal. Immediately upon the discovery of these things the Contractor shall:

(a) take precautions to prevent their loss, removal or damage; and

(b) give the Superintendent written notice of the discovery.

All costs so incurred by the Contractor shall be assessed by the Superintendent and added to the Contract Sum.

24.4 Access to adjoining properties

By entering into this Contract, the Contractor shall be deemed to have made arrangements for any access to, over, under, upon or for, use of any adjoining site or property (including any air space required in connection with WUC) which the Contractor may require for any purpose in the execution of WUC, and the Contractor shall be deemed to have accepted liability for and will indemnify the Principal in respect of any claim or any other form of relief arising out of the Contractor's access including any loss, expense or damage suffered or incurred by such arrangements including any loss, expense or damage suffered or incurred by the Principal directly or indirectly, as a result of any such use of any adjoining Site or property or of any failure on the part of the Contractor to make such arrangements for access, except to the extent such loss is caused by the Principal.

25 Site conditions

25.1 Scope

[Not used]

25.2 Notification

[Not used]

25.3 Deemed variation

[Not used]

25.4 Site

The Contractor acknowledges that it has had access to the Site and has carried out its own inspections of the Site and the improvements on the Site and conducted its own enquiries in order to establish, understand and satisfy itself as to the nature and status of the Site and the improvements on the Site and all risks and contingencies associated with the Site and the improvements on the Site.

Except as provided for in subclauses 25.6, 25.7 and 34.3, the Contractor accepts sole responsibility for and assumes the risk of all increased costs, losses and expenses and delays arising out of the physical conditions and characteristics of the Site and its surroundings (and any indirect or consequential costs, losses, expenses and delays) and including inclement weather, wind, water, atmospheric and sub-surface conditions and characteristics encountered in the execution of WUC.

25.5 Risks

Without limiting the generality of subclause 25.4, but subject to subclauses 25.6, 25.7 and 34.3, the Contractor's responsibilities and risks related to the physical conditions and characteristics of the Site and the improvements thereon and to the ground conditions as referred to in subclause 25.4 will include all costs associated with:

(a) removal of any material which is required to be removed in order to remove hazardous materials or conditions from the Site or in order that the Works to be completed as required by the documents forming the Contract, including the removal of asbestos from existing improvements;

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(b) except to the extent that the Scope of Works expressly provides otherwise, the handling, import, export, stockpiling and haulage of fill as may be required to complete WUC in accordance with the Contract;

(c) the location and adequacy of existing services, including all pipes, cables and plumbing;

(d) the adequacy and position of all load bearing and support structures;

(e) removal or relocation of any services or structures or execution of any work in relation to services or structures as required by the Superintendent or any Authorities; and

(f) all other physical conditions and characteristics of the Site above, on or below the surface which may affect the performance by the Contractor of its obligations under the Contract,

and it is agreed by the Contractor that the Contract Sum includes an allowance for all costs associated with the Contractor's risk and responsibilities pursuant to subclauses 25.4 and 25.5 and the Contractor will not be entitled to any Claim, EOT or any other form of relief in respect of the risks and responsibilities.

25.6 Pre-existing Contamination

(a) If during the performance of WUC, the Contractor becomes aware of any physical condition of the Site which may be Pre-existing Contamination and is required to be removed or remediated to enable the Contractor to perform WUC, the Contractor must, before disturbing the physical Site condition, give written notice of the physical Site condition to the Principal.

(b) Any notice required to be given pursuant to subclause 25.6(a) must be in writing and detail:

(i) the additional direct cost to the Contractor (if any) of removing or remediating the physical Site condition;

(ii) the impact (if any) that the removal or remediation of the physical Site condition would have on the Contractor achieving Practical Completion by the Date for Practical Completion; and

(iii) the obligations under this Contract that the Contractor would not be able to comply with (if any) if the Principal does not Direct the Contractor to remove or remediate the physical Site condition.

(c) Following receipt of a notice required to be given pursuant to subclause 25.6(a), if the physical Site condition is determined by the Principal to be Pre-existing Contamination, the Principal may (in the Principal's absolute discretion) either:

(i) Direct the Contractor to remove or remediate the Pre-existing Contamination as a Variation under clause 36; or

(ii) Direct the Contractor to not remove or remediate the Pre-existing Contamination.

(d) If the Principal Directs the Contractor to remove or remediate the Pre-existing Contamination under subclause 25.6(c)(i) in a Variation Order, then to the extent that performing the Variation causes the Contractor to incur more cost than otherwise would have been incurred, the Contract Sum will be increased by the difference:

(i) as agreed between the Principal and the Contractor; or

(ii) where the Principal and the Contractor cannot agree, as valued under subclause 36.4.

(e) If the Principal Directs the Contractor not to remove or remediate the Pre-existing Contamination under subclause 25.6(c)(ii), then the Principal may Direct the Contractor to perform WUC in an area not affected by the Pre-existing Contamination as a Variation under clause 36.

25.7 Rock

(a) This subclause 25.7 applies only if Item 22A indicates that this subclause applies.

(b) If during the performance of WUC, the Contractor becomes aware of any physical condition of the Site which may be Rock and is required to be removed or remediated to enable the

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Contractor to perform WUC, the Contractor must, before disturbing the physical Site condition, give written notice of the physical Site condition to the Principal.

(c) Any notice required to be given pursuant to subclause 25.7(a) must be in writing and detail:

(i) the Contractor's proposed approach for removing or remediating the physical Site condition including the method of excavating;

(ii) the additional direct cost to the Contractor (if any) of removing or remediating the physical Site condition, applying the applicable rates in the Schedule of Rates, or if there are no applicable rates in the Schedule of Rates, reasonable or market rates;

(iii) the impact (if any) that the removal or remediation of the physical Site condition would have on the Contractor achieving Practical Completion by the Date for Practical Completion;

(iv) the obligations under this Contract that the Contractor would not be able to comply with (if any) if the Principal does not Direct the Contractor to remove or remediate the physical Site condition; and

(v) a list of alternative approaches available to complete WUC without removing or remediating the physical Site condition and the additional direct cost, and impact on achieving Practical Completion by the Date for Practical Completion of these approaches applying the applicable rates in the Schedule of Rates, or if there are no applicable rates in the Schedule of Rates, reasonable or market rates.

(d) Following receipt of a notice required to be given pursuant to subclause 25.7(a), the Principal or the Superintendent may elect to visit the Site and assess the physical Site condition. If the physical Site condition is determined by the Principal or the Superintendent to be Rock, the Principal may (in the Principal's absolute discretion) either:

(i) Direct the Contractor to remove or remediate the Rock as a Variation under clause 36; or

(ii) Direct the Contractor to not remove or remediate the Rock.

(e) If the Principal Directs the Contractor to remove or remediate the Rock under subclause 25.7(d)(i) in a Variation Order, then to the extent that performing the Variation causes the Contractor to incur more cost than otherwise would have been incurred, the Contract Sum will be increased by the difference:

(i) as agreed between the Principal and the Contractor; or

(ii) where the Principal and the Contractor cannot agree, as valued under subclause 36.4.

(f) If the Principal Directs the Contractor not to remove or remediate the Rock under subclause 25.7(d)(ii), then the Principal may Direct the Contractor to perform WUC in an area not affected by the Rock as a Variation under clause 36.

25.8 Contamination

(a) Without limiting any other provision of this Contract, the Contractor must in performing WUC:

(i) comply with all Legislative Requirements and other requirements of this Contract for the protection of the Environment;

(ii) not bring on to, or produce on, the Site any contaminants, or otherwise cause Contamination, other than as required for WUC and in compliance with all relevant Legislative Requirements;

(iii) ensure that each of the Contractor's consultants or subcontractors or the employees or agents of any of these complies with the requirements referred to in this subclause 25.8(a); and

(iv) make good any Contamination caused by the Contractor or the Contractor's consultants or subcontractors or the employees or agents of any of these, whether or

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not it has complied with all Legislative Requirements or other requirements of the Contract for the protection of the Environment.

(b) The Contractor must comply with any Direction by the Principal or any Authorities in respect of Contamination caused by the Contractor or the Contractor's consultants or subcontractors or the employees or agents of any of these.

(c) The Contractor indemnifies and holds harmless the Principal for the full extent permitted by Law against:

(i) any liability to, or a claim by, a third party; and

(ii) all losses suffered or incurred by the Principal,

arising out of or in connection with any Contamination caused by the Contractor or the Contractor's consultants or subcontractors or the employees or agents of any of these or the Contractor's breach of this subclause 25.8.

26 Setting out the Works

26.1 Setting out

The Superintendent shall supply to the Contractor the data, survey marks and like information necessary for the Contractor to set out the Works and the survey marks specified in the Contract. The Contractor shall set out the Works, together with those survey marks specified in the Contract in an appropriate manner. After setting out and establishing levels for the Works, the Contractor shall submit to the Superintendent a certificate signed by a licensed surveyor stating that the setting out and levels are in accordance with the Contract and any information provided by the Principal or the Superintendent.

26.2 Errors in setting out

(a) The Contractor shall rectify every error in the position, level, dimensions or alignment of any WUC after promptly notifying the Superintendent and unless the Superintendent within 3 days Directs otherwise.

(b) Subject to subclause 26.2(c), the Contractor acknowledges that it shall not be entitled to any Claim, additional costs or an EOT or any other form of relief as a result of complying with its obligations under this subclause 26.2.

(c) If the error was caused by incorrect data, survey marks or information given by the Superintendent, the cost incurred by the Contractor in rectifying the error shall be assessed by the Superintendent and added to the Contract Sum.

26.3 Care of survey marks

(a) The Contractor shall keep in their true positions all survey marks.

(b) The Contractor shall reinstate any survey mark disturbed, after promptly notifying the Superintendent and unless the Superintendent within 3 days Directs otherwise.

(c) The Contractor acknowledges that it will not be entitled to any Claim, EOT or any other form of relief as a result of complying with its obligations under this subclause 26.3.

27 Cleaning up

The Contractor shall keep the Site and WUC clean and tidy and regularly remove rubbish and surplus material.

Within 14 days after the Date of Practical Completion, the Contractor shall remove Temporary Works and Construction Plant. The Superintendent may extend the time to enable the Contractor to perform remaining obligations.

If the Contractor fails to comply with the preceding obligations in this clause 27, the Superintendent may Direct the Contractor to rectify the non-compliance and the time for rectification.

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If:

(a) the Contractor fails to comply with such a Direction; and

(b) that failure has not been made good within 5 days after the Contractor receives written notice from the Superintendent that the Principal intends to have the subject work carried out by others,

the Principal may have that work so carried out and the Superintendent shall certify the cost incurred as moneys due from the Contractor to the Principal. The rights given by this paragraph are additional to any other rights and remedies.

28 Materials, labour and construction plant

Except where the Contract otherwise provides, the Contractor shall supply everything necessary for the proper performance of the Contractor's obligations and discharge of the Contractor's liabilities.

In respect of any materials, machinery or equipment to be supplied by the Contractor under or used in connection with the Contract, the Superintendent may Direct the Contractor to:

(a) supply to the Principal or the Superintendent prior to commencement of WUC particulars of the mode and place of manufacture, the source of supply, the performance capacities and other related information; and

(b) arrange reasonable inspection at such place or sources by the Superintendent, the Principal and persons authorised by the Principal.

The Superintendent may give the Contractor a written Direction not to remove materials or Construction Plant from the Site. Thereafter the Contractor shall not remove them without the Superintendent's prior written approval (which shall not be unreasonably withheld).

29 Quality

29.1 Quality of material and work

Unless otherwise provided the Contractor shall use suitable new materials and proper and tradesmanlike workmanship.

29.2 *Quality assurance

Prior to commencing WUC, if the Contract elsewhere requires quality assurance, the Contractor shall:

(a) plan, establish and maintain a conforming quality system; and

(b) ensure that the Superintendent has access to the quality system of the Contractor and subcontractors and suppliers so as to enable monitoring and quality auditing.

Any such quality system shall be used only as an aid to achieving compliance with the Contract and to document such compliance. Such system shall not discharge the Contractor's other obligations under the Contract.

29.3 Defective work

If the Superintendent becomes aware of work done or material or equipment provided by the Contractor which does not comply with the Contract, the Superintendent shall as soon as practicable give the Contractor written details thereof.

If the Contractor becomes aware of work done or material or equipment provided which is not in accordance with the Contract, the Contractor must notify the Superintendent in writing of such defective or non-conforming materials, equipment or work as soon as practically possible and in any event, before rectification, removal or replacement of the defective or nonconforming materials, equipment or work, except where such materials, equipment or work should be removed earlier for the safety or protection of any person.

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If the subject work, material or equipment has not been rectified, removed or replaced the Superintendent may Direct the Contractor to do any one or more of the following (including times for commencement and completion) at the Contractor's own cost:

(a) remove the material or equipment from the Site;

(b) demolish the work;

(c) reconstruct, replace or correct the work; and

(d) not deliver the material or equipment to the Site.

The Contractor must comply with the Superintendent's Direction under this subclause 29.3.

Notwithstanding that the Principal has not given a Direction under this subclause 29.3, the Contractor must promptly remove, demolish, reconstruct, replace or correct any work, material or equipment that is not in accordance with this Contract.

If:

(a) the Contractor fails to comply with such a Direction; and

(b) that failure has not been made good within 8 days after the Contractor receives written notice from the Superintendent that the Principal intends to have the subject work, material or equipment rectified, removed or replaced by others,

the Principal may have that work, material or equipment so rectified, removed or replaced and the Superintendent shall certify the cost incurred as moneys due from the Contractor to the Principal.

The Principal is not liable for, or in connection with, any claim (and the Contractor is not entitled to make any claim) arising out of or in connection with the Contractor complying with the Contractor's obligations under this subclause 29.3.

29.4 Acceptance of defective work

(a) Instead of a issuing a Direction pursuant to subclause 29.3, the Principal may Direct the Contractor that the Principal elects to accept the subject work, material or equipment whereupon there shall be a deemed Variation.

(b) In the event of a deemed Variation under subclause 29.4(a), any resulting increase or decrease in the value to the Principal of the Works and any other loss suffered by the Principal shall be valued under subclause 36.4 and the Contract Sum will be adjusted accordingly.

29.5 Timing

The Superintendent may give a Direction pursuant to this clause at any time before the issue of the Final Certificate.

29.6 Generally

The Contractor shall not be entitled to rely upon any inspections or Tests carried out by the Principal.

Nothing in this clause 29 shall prejudice any other right which the Principal may have against the Contractor arising out of the failure of the Contractor to provide material, equipment or work in accordance with the Contract.

The Principal shall not be obliged to give a Direction pursuant to subclause 29.4 to assist the Contractor.

30 Examination and testing

30.1 Tests

At any time before the issue of the Final Certificate, the Superintendent may Direct that any WUC be tested or inspected or both. The Contractor shall give such assistance and samples and make accessible such parts of WUC as may be Directed by the Superintendent.

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30.2 Covering up

The Superintendent may Direct that any part of WUC shall not be covered up or made inaccessible without the Superintendent's prior written Direction and the Contractor must comply with this Direction.

30.3 Who conducts

Tests shall be conducted as provided elsewhere in the Contract or by the Superintendent or a person (which may include the Contractor) nominated by the Superintendent.

30.4 Notice

The Superintendent or the Contractor (whichever is to conduct the Test) shall give reasonable written notice to the other of the date, time and place of the Test. If the other does not attend, the Test may nevertheless proceed.

30.5 Delay

Without prejudice to any other right, if the Contractor or the Superintendent delays in conducting a Test, the other, after giving reasonable written notice of intention to do so, may conduct the Test.

30.6 Completion and results

On completion of the Tests, the Contractor shall make good WUC so that it fully complies with the Contract.

Results of Tests shall be promptly made available by each party to the other and to the Superintendent.

30.7 Costs

Costs in connection with testing pursuant to this clause 30 shall be borne by the Principal except where the Contract otherwise provides or the Test is consequent upon, or reveals a failure of the Contractor to comply with the Contract (including this clause 30).

30.8 Generally

The obligations of the Contractor in relation to the quality and suitability of the Works or any part of the Works or otherwise in respect of the Works shall not in any way be diminished by reason of the carrying out of any Tests pursuant to this clause 30. The Contractor shall not be entitled to any Claim, EOT or any other form of relief due to any delay in the progress of the Works resulting from complying with the requirements of this clause 30 or any act permitted by this clause 30 by either the Principal or the Contractor.

31 Working hours

If the working hours and working days on the Site are not stated elsewhere in the Contract, they shall be as notified by the Contractor to the Superintendent before commencement of work on Site. They shall not be varied without the Superintendent*'s* prior written approval, except when, in the interests of safety of persons or property, the Contractor finds it necessary to carry out WUC otherwise, whereupon the Contractor shall give the Superintendent written notice of those circumstances as early as possible.

32 Programming

The Contractor shall give the Superintendent reasonable advance notice of when the Contractor needs information, materials, documents or instructions from the Superintendent or the Principal.

The Principal and the Superintendent shall not be obliged to give any information, materials, documents or instructions earlier than the Principal or the Superintendent, as the case may be, should reasonably have anticipated at the Execution Date.

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A Construction Program is a written statement showing in diagrammatic form the major activities in WUC and the dates by which, or the times within which, the various stages or portions of WUC are to be carried out or completed including when key decisions are to be made and information provided.

The Contractor shall give to the Superintendent a Construction Program, and thereafter a revised and updated Construction Program, within the time and in the form Directed by the Superintendent.

The Construction Program must:

(a) be drawn as a critical path network in the form of a time scaled bar chart:

(i) showing key dates, working and non-working days, float, logic links and constraints; and

(ii) on a weekly basis with each week ending on the Sunday evening,

(b) which network consists of appropriate activities or tasks numbered in a sequential logical order and of sufficiently small duration to represent accurately the Contractor's proposed method of completing the Works;

(c) have the critical path clearly marked;

(d) take into account the requirements and the program constraints set out in this Contract;

(e) include a project plan, being a brief description of how WUC is to be undertaken;

(f) include a schedule of development activities, incorporating a "level 1" (as that term is customarily understood in the construction industry) degree of detail;

(g) include the activities undertaken by subcontractors of the Contractor;

(h) take into account the programmes (of "level 1") of the Related Activities Contractors; and

(i) also include, in respect of all activities, sufficient detail to enable the Superintendent to reasonably assess any claim for an EOT submitted by the Contractor in accordance with subclause 34.3.

The Contractor shall not, without reasonable cause, depart from a Construction Program.

The furnishing of a Construction Program by the Contractor, or any review, comment, request or approval by the Principal or the Superintendent in respect of any Construction Program, will not:

(j) relieve the Contractor of any obligations under the Contract including the obligation not to depart, without reasonable cause, from an earlier Construction Program;

(k) constitute acceptance of the Construction Program or a Direction by the Principal to accelerate, disrupt, prolong or vary any or all WUC; or

(l) constitute a claim for an EOT or entitle the Contractor to any EOT.

33 Suspension

33.1 Principal's or Superintendent's suspension

The Principal or the Superintendent may Direct the Contractor to suspend the carrying out of the whole or part of WUC (including any Separable Portion) for such time as the Principal or the Superintendent thinks fit, if the Principal or the Superintendent is of the opinion that it is necessary:

(a) because of an act, default or omission of:

(i) the Superintendent, the Principal or its employees, consultants, agents or other contractors (not being engaged by the Contractor); or

(ii) the Contractor, a subcontractor or either's employees or agents;

(b) for the protection or safety of any person or property;

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(c) to comply with a court order; or

(d) if required by the Department of Defence.

33.2 Contractor's suspension

If the Contractor wishes to suspend the carrying out of the whole or part of WUC, otherwise than pursuant to subclause 39.9, the Contractor shall obtain the Principal's and the Superintendent's prior written approval. The Principal and the Superintendent may approve the suspension and may impose conditions of approval.

33.3 Recommencement

As soon as the Principal or the Superintendent becomes aware that the reason for any suspension no longer exists, the Principal or the Superintendent shall Direct the Contractor to recommence suspended WUC as soon as reasonably practicable.

The Contractor may recommence WUC suspended pursuant to subclause 33.2 or 39.9 at any time:

(a) for suspension under subclause 33.2, before the expiry of the period of suspension approved by the Principal or the Superintendent; or

(b) for suspension under subclause 39.9, before the Principal remedies the breach in accordance with subclause 39.9,

after reasonable notice to the Principal or the Superintendent.

33.4 Cost

The Contractor shall bear the cost of suspension pursuant to paragraphs (a)(ii), (b) and (c) of subclause 33.1 and subclause 33.2, but if:

(a) the Principal made the protection, safety or court order necessary pursuant to paragraph (b) or (c) of subclause 33.1 or the suspension was required by the Department of Defence pursuant to paragraph (d) of subclause 33.1; and

(b) the Contractor otherwise incurs more or less cost than otherwise would have been incurred,

the difference shall be assessed by the Superintendent and added to or deducted from the Contract Sum. The Contractor must take all reasonable steps to mitigate the costs arising from any suspension under this clause 33.

34 Time and progress

34.1 Progress

(a) Without limiting subclause 34.1(b), the Contractor shall proceed with WUC with due diligence, expedition and without delay.

(b) The Contractor shall ensure that WUC reaches Practical Completion by the Date for Practical Completion.

34.2 Notice of delay

As soon as the Contractor reasonably considers that anything may cause delay to WUC, the Contractor must promptly give the Superintendent written notice of that cause, the estimated delay and any proposals for mitigating the potential for delay of WUC.

34.3 Claim

(a) Subject to subclause 34.4(a) and subclauses 34.5(a) to 34.5(f), if:

(i) a cause described in paragraph (a) or (b) of the definition of Qualifying Cause of Delay occurs on or before the Date for Practical Completion and the Contractor is or will be delayed in reaching Practical Completion by that cause; or

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(ii) a cause described in paragraph (a) of the definition of Qualifying Cause of Delay occurs after the Date for Practical Completion and the Contractor is or will be delayed in reaching Practical Completion by that cause,

the Contractor shall be entitled to such extension of time for carrying out WUC (including reaching Practical Completion) as the Superintendent assesses ('**EOT**'), provided that the Contractor gives the Superintendent, within 14 days of when the Contractor should reasonably have become aware of that causation occurring, a written Claim for an EOT endorsed with the words 'EOT Claim' and evidencing the facts of causation and of the delay to WUC (including extent).

(b) If a Qualifying Cause of Delay continues for a period longer than 14 days from the time it commenced the Contractor may amend any EOT Claim submitted to the Superintendent in accordance with subclause 34.3(a).

34.4 Assessment

(a) It is a condition precedent to any entitlement to an EOT that:

(i) the Contractor must submit a written EOT Claim with all necessary supporting documentation to the Superintendent in accordance with subclause 34.3, together with an updated Construction Program;

(ii) the activities delayed must be activities of WUC that are on the critical path;

(iii) the Superintendent is satisfied that completion of the Works has actually been delayed due to a Qualifying Cause of Delay; and

(iv) the Contractor has taken all reasonable steps to minimise the delay and no reprogramming or alteration of sequences of activities or other method could avoid the delay.

(b) Where more than one event causes concurrent delays and the cause of at least one of those events, but not all of them, is not a cause of delay listed in paragraph (a) or (b) of the definition of Qualifying Cause of Delay, then to the extent that the delays are concurrent, the Contractor is not entitled to an EOT.

(c) Notwithstanding the preceding paragraph the Contractor shall be entitled to an EOT if the concurrent delay occurs after the Date for Practical Completion and the cause of the delay is one or more of the events listed in paragraph (a) of the definition of Qualifying Cause of Delay.

34.5 Extension of time

(a) If the Contractor is entitled to an EOT the Superintendent must, within 28 days of receipt of the EOT Claim, grant an extension of time as follows:

(i) subject to subclause 34.5(a)(iii), in the case of a cause of delay listed in paragraph (a) or (b) of the definition of Qualifying Cause of Delay which occurs on or before the Date for Practical Completion, the extension of time will be limited to the actual delay in achieving Practical Completion caused by the relevant cause of delay;

(ii) subject to subclause 34.5(a)(iii), in the case of a cause of delay listed in paragraph (a) of the definition of Qualifying Cause of Delay which occurs after the Date for Practical Completion, the extension of time will be limited to the actual delay in achieving Practical Completion caused by the relevant cause of delay;

(iii) where, prior to the issue of a Variation Order, the Contractor has advised the Principal in a Variation quotation or otherwise of the impact that the proposed Variation (including in respect of a Change in Legislative Requirements), will, or is likely to, have on the Date for Practical Completion, the extension of time will not exceed the amount of time advised by the Contractor in the Variation particulars provided pursuant to subclause 36.2 or otherwise; and

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(iv) the Principal will reduce any extension to the Date for Practical Completion otherwise available to the extent that the Contractor contributed to the delay or failed to take all reasonable steps necessary to minimise the consequences of the delay.

(b) If within the 28 days the Superintendent does not grant an EOT or the full EOT claimed, the Superintendent must before the expiration of the 28 days give the Contractor written notice in writing of the reason.

(c) In determining a reasonable extension of time for an event causing delay, the Superintendent must have regard to whether the Contractor has taken all reasonable steps to preclude the occurrence of the cause and minimise the consequences of the delay.

(d) Even if the Contractor is not entitled to or has not claimed an EOT, the Principal may, in its absolute discretion, but is not obliged to do so, at any time and from time to time before issuing the Final Certificate, Direct an EOT in the interests of the Principal notwithstanding that the Contractor has not submitted, or is not entitled to submit, an EOT Claim, and there shall be no additional payment to the Contractor because of the granting of such EOT. The Contractor acknowledges that the mechanism in this subclause 34.5(d) is a discretionary right of the Principal which may be exercised by the Principal for the sole benefit of the Principal and does not:

(i) impose any obligations on the Principal;

(ii) to the maximum extent permitted by law, give rise to any duty to act in good faith; or

(iii) in any way constitute a waiver or relaxation of any of the requirements under this subclause 34.5 or subclauses 34.2, 34.3 or 34.4.

(e) A delay by the Principal or the failure of the Superintendent to grant a reasonable EOT or to grant an EOT within 28 days, does not cause the Date for Practical Completion to be set at large but nothing in this paragraph will prejudice any right of the Contractor to damages.

(f) If the Contractor fails to give a notice in accordance with subclause 34.2, or a written claim for an EOT in the form or within the time prescribed under subclause 34.3(a) or the conditions precedent in subclause 34.4 are not met:

(i) the Principal is not liable on any Claim by the Contractor; and

(ii) the Contractor is absolutely barred from making any Claim against the Principal,

arising out of, or in any way in connection with, the relevant period of delay and the cause of delay.

34.5A Qualifying causes of delay

The Contractor bears all risk of delay to the progress of WUC except for any Qualifying Cause of Delay.

34.6 Practical completion

(a) The Contractor must give the Superintendent at least 14 days written notice of the date upon which the Contractor anticipates that Practical Completion will be reached.

(b) When the Contractor is of the opinion that Practical Completion has been reached, the Contractor must in writing request the Superintendent to confirm a time for inspection of the Works, which must be:

(i) no earlier than 2 Business Days; and

(ii) no later than 7 Business Days,

after the date of service of the request.

(c) As soon as practicable after receiving confirmation of the time of the inspections to be undertaken by the Superintendent, the Contractor must issue to the Principal a written invitation to attend the relevant inspection.

(d) Within 10 Business Days after receiving the request referred to clause 34.6(b), the Superintendent must give the Contractor and the Principal either a Certificate of Practical

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Completion evidencing the Date of Practical Completion or written reasons for not doing so, including (if applicable) details of any additional work that is required before a Certificate of Practical Completion can be issued.

(e) If the Superintendent is of the opinion that Practical Completion has been reached, the Superintendent may issue a Certificate of Practical Completion even though no request has been made.

(f) If the Superintendent gives notice under clause 34.6(d) that additional works are required, then the Contractor must complete those works in accordance with the requirements of the Contract and on completion of those works the procedure under this clause 34.6 (except clause 34.6(a)) will again apply.

(g) The issue of a Certificate of Practical Completion shall not constitute approval of any work or other matter nor shall it prejudice any Claim by the Principal.

(h) Prior to and as a condition precedent of the granting of a Certificate of Practical Completion, the Contractor shall (at its own cost, and in a manner approved by the Principal), assign full right, title and interest in and to any part of the Works in respect of which property has not already passed to the Principal.

34.7 Liquidated damages

If WUC does not reach Practical Completion by the Date for Practical Completion, the Superintendent shall certify, as due and payable to the Principal, liquidated damages at the liquidated damages rate set out in Item 24 for every day after the Date for Practical Completion to and including the earliest of the Date of Practical Completion or termination of the Contract or the Principal taking WUC out of the hands of the Contractor.

If an EOT is Directed after the Contractor has paid or the Principal has set off liquidated damages, the Principal shall forthwith repay to the Contractor such of those liquidated damages as represent the days the subject of the EOT.

The payment of liquidated damages will not relieve the Contractor from its obligations to complete WUC or from any of its obligations and liabilities under the Contract. Liquidated damages shall become due upon the issue of a notice by the Superintendent setting out the amount of liquidated damages payable by the Contractor to the Principal.

The Principal may recover the amount of liquidated damages:

(a) on demand from the Contractor; or

(b) by deducting such amount from any amount certified by the Superintendent under subclause 37.1 or from any Security held under clause 5,

after the elapse of the Date for Practical Completion, even though Practical Completion has not occurred.

The Contractor acknowledges that all sums payable by the Contractor to the Principal pursuant to this subclause 34.7 represent the Principal's genuine pre-estimate of the damages likely to be suffered by it if the Works do not reach Practical Completion by the Date for Practical Completion and such sums shall not be construed as a penalty.

34.8 Bonus for early practical completion

[Not used]

34.9 Acceleration of the Works

(a) The Principal may in its absolute discretion by notice in writing (expressly identified as an acceleration direction) Direct the Contractor to:

(i) alter the sequence of activities comprising WUC; or

(ii) accelerate the progress of any one or more activities comprising WUC,

or both ('**Acceleration Direction**'), so as to complete such activities by a date earlier than the date shown on the approved Construction Program or to overcome the effects of a delay.

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(b) Subject to clause 34.9(f), within 5 days of receipt by the Contractor of an Acceleration Direction under this clause 34.9 (or any longer time the Principal may prescribe), the Contractor must supply to the Principal in writing its advice as to the extent to which the Contractor is reasonably able to comply with the Acceleration Direction together with the assessed total cost of carrying out the Acceleration Direction supported by evidence of costs including subcontract quotations.

(c) Subject to clause 34.9(d), the Contractor must not begin to carry out any Acceleration Direction unless the total scope and cost of the Acceleration Direction has been agreed with the Principal and the Principal has Directed the Contractor in writing to proceed to execute the agreed scope of the Acceleration Direction for the agreed total cost.

(d) Even where no agreement has been reached as to the total cost, the Principal may Direct the Contractor in writing to proceed with the execution of the Acceleration Direction specifically noting on the Acceleration Direction that it is to proceed without agreement as to its total cost. In these circumstances, subject to clauses 34.9(f) and 34.9(g), the total cost of the Acceleration Direction is to be determined in accordance with clause 36.4 (for the purpose of which the measures taken by the Contractor pursuant to the Acceleration Direction will be deemed to be a Variation pursuant to a Variation Order).

(e) The Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make any Claim) arising out of or in connection with any Direction to accelerate WOC which is not the subject of both:

(i) an Acceleration Direction issued in accordance with this clause 34.9; and

(ii) a Direction by the Principal under clause 34.9(c) or 34.9(d) (as applicable).

(f) The Contractor is not entitled to recover any costs resulting from an Acceleration Direction if in the Principal's opinion the need for the Acceleration Direction was due to the WUC being behind schedule through causes for which the Contractor is responsible. In all other circumstances of an Acceleration Direction, the Contractor is only entitled to payment of the additional costs incurred as a result of complying with an Acceleration Direction if the Contractor clearly demonstrates to the Principal's satisfaction that the costs:

(i) were reasonable and necessarily incurred; and

(ii) are substantiated.

(g) The Contractor's entitlement to an EOT and costs under this Contract for a delay in the performance of WUC will be reduced proportionately to the extent that the measures taken pursuant to an Acceleration Direction are intended to overcome some or all of that delay.

34.10 Delay damages

For every day the subject of an EOT for a Compensable Cause and for which the Contractor gives the Superintendent a Claim for delay damages pursuant to subclause 41.1, damages assessed and certified by the Superintendent to a maximum amount per day stated in Item 26A shall be due and payable to the Contractor.

The Contractor will not be entitled to make any Claim for payment or compensation in relation to any delay or disruption costs which could have been reasonably avoided by the Contractor if the Contractor had taken appropriate steps or actions to mitigate the extent and quantum of costs of such delay.

Nothing in this subclause 34.10 will oblige the Principal to pay extra costs for delay or disruption which have already been included in the value of a Variation or any other payment under the Contract or oblige the Principal to pay any extra costs for any cause of delay other than a Compensable Cause.

34.11 Contractor acknowledgment

Except to the extent expressly set out in subclauses 34.3 and 34.10, the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make any Claim) arising out of or in connection with any delay or disruption to WUC or the Works howsoever arising.

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The Contractor's entitlements under subclauses 34.3 and 34.10 are the absolute limit on the Contractor's entitlement to any Claim for, in relation to or arising out of delay or disruption to WUC or the Works and the Contractor forever releases the Principal from any liability in excess of those entitlements (whether arising in contract, at law, in equity, in tort (for negligence or otherwise), by statute or otherwise).

35 Defects liability

The Defects Liability Period shall commence on the Date of Practical Completion at 4:00 pm and continue for the period stated in Item **Error! Reference source not found.**.

The Contractor must carry out rectification at times and in a manner causing as little inconvenience to the occupants or users of the Works as is reasonably possible and otherwise in accordance with the Directions of the Superintendent or the Principal.

As soon as possible after the Date of Practical Completion, the Contractor must, at its own cost, rectify all Defects existing at the Date of Practical Completion.

During the Defects Liability Period, the Superintendent or the Principal may give the Contractor a Direction to rectify a Defect which:

(a) must identify the Defect and the date for completion of its rectification; and

(b) may state a date for commencement of the rectification and whether there shall be a separate Defects Liability Period therefor (not exceeding that in Item **Error! Reference source not found.**, commencing at 4:00 pm on the date the rectification is completed and governed by this clause 35).

and the Contractor must, at its own cost, comply with such Direction.

If no timetable is provided by the Superintendent or the Principal (as the case may be), Defects must be rectified as soon as practicable after notification.

If the rectification is not commenced or completed by the stated dates or otherwise in accordance with this clause 35, the Principal may have the rectification carried out by others but without prejudice to any other rights and remedies the Principal may have. The cost thereby incurred will be certified by the Superintendent as moneys due and payable to the Principal.

36 Variations

36.1 Directing variations

The Contractor shall not vary WUC except as Directed by the Principal in a Variation Order.

The Principal, before the Date of Practical Completion, may Direct the Contractor to vary WUC by any one or more of the following:

(a) increase, decrease, substitute or omit any part (including a Separable Portion);

(b) change the character or quality;

(c) change the levels, lines, positions or dimensions;

(d) carry out additional work; or

(e) demolish or remove material or work no longer required by the Principal,

('**Variation**').

If the Contractor considers that compliance with a Variation Order is beyond the general scope of the Contract, it shall notify the Principal of this fact prior to commencement of the work the subject of the Variation Order. Commencement of the work by the Contractor shall constitute an acceptance by the Contractor that the Variation Order is within the general scope of the Contract.

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No Variation, either alone or in combination with other Variations, will invalidate this Contract. Subject to this clause 36, the Principal's entitlement to Direct a Variation is unlimited and is not subject to any restriction under any principle of Law including the restrictions as to the nature, extent, value or timing of the Variation which may be Directed.

The Contractor acknowledges and agrees that if a Variation Directed pursuant to a Variation Order under this clause 36 omits or decreases any part of WUC, the Principal may thereafter carry out this omitted work either itself or by engaging another contractor.

36.2 Proposed variations

(a) The Principal may give the Contractor written notice of a proposed Variation.

(b) The Contractor shall within 5 Business Days after receiving the notice referred to in clause 36.2(a), notify the Principal whether the proposed Variation can be effected, together with, if it can be effected, the Contractor's detailed quotation for the proposed Variation, which must include:

(i) the effect on the Construction Program (including the Date for Practical Completion); and

(ii) the cost (including all time-related and delay costs or damages, if any) of the proposed Variation having regard to the accepted tender submission and the effect on any applicable warranty, and any cost savings arising from the proposed Variation.

The Principal may Direct the Contractor to provide supporting materials with the quotation (which may include measurements or other evidence of cost) and may Direct the Contractor to provide any other relevant information related to carrying out the proposed Variation.

The Contractor must bear its own costs of compliance with this subclause 36.2.

The Contractor acknowledges that it will not be entitled to claim any delay costs or delay damages in respect of a Variation proposed under this clause 36.2 unless details of those costs or damages were included in the Contractor's detailed quotation.

The Contractor acknowledges that the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make any Claim) arising out of or in connection with any proposed Variation except where such Variation is expressly Directed or confirmed pursuant to a Variation Order.

36.3 Variations for convenience of contractor

If the Contractor requests the Principal to Direct a Variation for the convenience of the Contractor, the Principal may, but shall not be obliged to, do so. The Direction shall be written and may be conditional. Unless the Direction provides otherwise, the Contractor shall not be entitled to any extra time or extra money in respect of the Variation or anything arising out of the Variation which would not have arisen had the Variation not been approved.

36.4 Pricing

The Superintendent shall, as soon as possible, price each Variation using the following order of precedence:

(a) prior agreement;

(b) applicable rates or prices in the Contract and the accepted tender submission (if any);

(c) if subclause 36.6 applies, in accordance with subclause 36.7; and

(d) reasonable rates or prices, which shall include a reasonable amount for profit and overheads,

and:

(e) if any Variation Directed pursuant to a Variation Order under this clause 36 omits or decreases any part of WUC (including a Separable Portion), the Contractor will not be entitled to any amount for loss of profit and overheads in respect of that omitted or decreased WUC; and

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(f) if the valuation relates to extra costs incurred by the Contractor for delay or disruption, the valuation shall include a reasonable amount for overheads but shall not include profit or loss of profit.

That price shall be added to or deducted from the Contract Sum.

Unless otherwise Directed by the Principal the value of each Variation shall be determined prior to commencement of the work the subject of a Variation Order.

36.5 Variation Order requirement

(a) The Contractor acknowledges that the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make any Claim) arising out of or in connection with any Variation to the Works except where it is expressly Directed pursuant to a Variation Order issued in writing by the Principal pursuant to this clause 36.

(b) If the Contractor is of the opinion that it has been required to carry out a Variation, but the Principal has not given a written instruction for a Variation in the form of a Variation Order identifying the work as constituting a Variation, the Contractor shall give written notice to the Principal of:

(i) its opinion; and

(ii) the effect which the Contractor anticipates that the Variation will have on:

(A) the Construction Program;

(B) the Contract Sum; and

(C) the Date for Practical Completion.

(c) If the Contractor does not give the notice referred to in subclause 36.5(b) prior to commencing work on the Variation, the Contractor shall not be entitled to have the valuation of the Variation determined under subclause 36.4 or to make any Claim whether for payment, adjustment of the Contract Sum, EOT or otherwise in respect of the Variation. Any cost and time consequences of the Variation shall be deemed to be included in the Contract Sum and the Date for Practical Completion.

36.6 Daywork

If a Variation relates to work which is on the critical path and the Contractor is Directed by the Principal, the Contractor must carry out the work the subject of the Variation as Daywork pending determination of the scope and cost of the Variation and agreement on a detailed quotation in respect of the Variation between the parties.

The Contractor must:

(a) carry out the Daywork in an efficient manner; and

(b) after the Direction, each day provide the Principal with a written report signed by the Contractor which:

(i) records particulars of all resources used by the Contractor for the execution of the Daywork; and

(ii) includes the particulars and copies of time sheets, wages sheets, invoices, receipts and other documents evidencing the cost of the Daywork.

The Principal may Direct the manner in which matters are to be recorded.

36.7 Valuation of Daywork

In determining the value of work which the Principal instructed was to be carried out as Daywork, the Superintendent will have regard to:

(a) the amount of wages and allowances paid or payable by the Contractor at:

(i) the rates pertaining at the site at the time as established by the Contractor to the reasonable satisfaction of the Superintendent; or

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(ii) other reasonable rates approved by the Superintendent;

(b) the amount of hire charges in respect of plant approved by the Superintendent for use on the work in accordance with the hiring rates and conditions:

(i) agreed between the Superintendent and the Contractor; or

(ii) failing agreement, reasonably determined by the Superintendent;

(c) the reasonable amounts paid for services, subcontracts and professional fees;

(d) the actual cost to the Contractor at the Site of all materials supplied and required for the subject work; and

(e) an amount for profit and overheads.

36.8 Incorporation of Daywork costs into variation detailed quotation

When providing a detailed quotation for an item of work which was subject to a Direction of the Principal under subclause 36.6, the Contractor must include the cost and effect on time of any Daywork undertaken in the detailed quotation to enable the Principal to assess the total cost and time effect of the Variation prior to approval.

37 Payment

37.1 Progress claims

(a) The Contractor shall claim payment progressively at the time stated for submission of payment claims in Item 28.

(b) An early progress claim shall be deemed to have been made on the date for making that claim.

(c) If the time for any progress claim falls due on a day which is not a Business Day, the Contractor shall submit the claim on the next Business Day.

(d) Each progress claim shall be given in writing to the Superintendent and shall include the following:

(i) details of the value of WUC carried out by the Contractor in the performance of the Contract to that time (including an itemised breakdown showing the Contractor's calculation of such amount) together with all amounts then otherwise due to the Contractor arising out of or in connection with the Contract or for any alleged breach thereof;

(ii) the total amount previously certified pursuant to this subclause 37.1;

(iii) a written report on the progress made in carrying out the Works during the preceding period since the last progress report in a form approved by the Principal and containing as much detail as the Principal reasonably requires;

(iv) the amount of the Contract Sum being claimed by the Contractor;

(v) statutory declarations required under clause 38; and

(vi) separate identification of work attracting GST and work which does not attract GST.

(e) The Contractor agrees with the Principal that a progress claim (including the Final Payment Claim) is submitted to the Superintendent under this clause 37 is received by the Superintendent as agent for the Principal including for the purposes of the SOP Act.

(f) Notwithstanding anything else in this Contract, the Contractor will not be entitled to make any payment claim or be entitled to receive payment in respect of any invoice submitted to the Principal unless:

(i) the Security has been provided by the Contractor and continues to be maintained in accordance with this Contract;

(ii) where the provision of a Parent Company Guarantee is required in accordance with subclause 5.6, a Parent Company Guarantee executed by the Parent Company has been provided by the Contractor to the Principal;

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(iii) the Contractor has complied with its obligations under subclause 19.1;

(iv) the Contractor has provided all documents which are required to have been provided;

(v) the Contractor has complied with its obligations under subclause 8.3 which are required to have been complied with;

(vi) the Contractor has provided the statutory declarations required by subclause 38.1; and

(vii) the Contractor has complied with all of its other obligations under this Contract which are required to have been complied with.

(g) If the Contractor has not satisfied the conditions in subclause 37.1(f) at the time of submitting a payment claim to the Principal for payment, then:

(i) the payment claim will be deemed to have been invalidly submitted under this clause 37;

(ii) the Principal will not be obliged to include in any progress certificate any amount included in the payment claim; and

(iii) the Principal will not be liable to pay any amount included in the payment claim.

37.2 Certificates

The Superintendent shall, within 10 Business Days after receiving such a progress claim, assess the claim as agent of the Principal including (if applicable) for the purposes of the SOP Act and issue to the Principal and the Contractor:

(a) a Progress Certificate identifying the progress claim to which it relates evidencing the Superintendent's opinion of the moneys due from the Principal to the Contractor pursuant to the progress claim and reasons for any difference ('Progress Certificate'); and

(b) a certificate identifying the progress claim to which it relates evidencing the Superintendent's assessment of moneys due from the Contractor to the Principal pursuant to the Contract.

If the Contractor does not make a progress claim in accordance with subclause 37.1, the Superintendent may issue the Progress Certificate with details of the calculations and shall issue the certificate in paragraph (b) of this subclause 37.2.

The Contractor must advise the Principal in writing within 6 Business Days of submitting a progress claim if the Superintendent fails to issue a progress certificate in respect of the progress claim.

If the Superintendent does not issue the Progress Certificate within 10 Business Days of receiving a progress claim in accordance with subclause 37.1, that progress claim shall be disputed in its entirety.

Subject to subclauses 38.1 and 37.1(f) & (g) and the preceding paragraph, the Principal shall within 15 Business Days after the Principal receives the Contractor's progress claim, pay to the Contractor the balance of the Progress Certificate after setting off such of the certificate in paragraph (b) of this subclause 37.2 as the Principal elects to set off. If that setting off produces a negative balance, the Contractor shall pay that balance to the Principal within 15 Business Days of receiving written notice thereof.

Neither a Progress Certificate nor a payment of moneys shall be evidence that the subject WUC has been carried out satisfactorily. Payment other than Final Payment shall be payment on account only.

At any time and from time to time, the Superintendent may by a further certificate correct any error which has been discovered in any previous certificate, other than a Certificate of Practical Completion or Final Certificate.

37.3 Unfixed plant and materials

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The Principal shall not be liable to pay for unfixed plant and materials which are not incorporated in the Works unless:

(a) they are listed in Item 29 ;

(b) the Contractor provides the additional Security in Item 13(e); and

(c) the Contractor satisfies the Superintendent that the subject plant and materials have been paid for by the Contractor, properly stored and protected, labelled the sole and exclusive property of the Principal and insured.

Upon payment to the Contractor and the release of any additional Security in paragraph (b) of this subclause 37.3, the subject plant and materials shall be the unencumbered property of the Principal.

37.4 Final payment claim and certificate

Within 28 days after the expiry of the last Defects Liability Period, the Contractor shall give the Superintendent a written Final Payment Claim endorsed 'Final Payment Claim' being a progress Claim together with all other Claims whatsoever in connection with the subject matter of the Contract including all Claims which the Contractor considers exist under or arising out of any alleged breach of the Contract whether or not such Claims have been made at any time previously. All such Claims, which have not already been barred, shall be barred after the expiration of the period for lodging a 'Final Payment Claim'.

Within 10 Business Days of the Contractor's Final Payment Claim, or where the Contractor fails to provide such Claim, the expiration of the period for lodging the Final Payment Claim, the Superintendent shall issue to both the Contractor and the Principal a Final Certificate evidencing the moneys finally due and payable between the Contractor and the Principal on any account whatsoever in connection with the subject matter of the Contract.

Those moneys certified by the Superintendent as due and payable shall be paid by the Principal or the Contractor, as the case may be, within 15 Business Days after the Principal receives the Final Payment Claim.

Within 28 days after the end of the Defects Liability Period after request by the Contractor (and subject to rectification by the Contractor of all and any Defects and any rights of the Principal to call on the Security under this Contract), the Principal shall release to the Contractor any Security held by the Principal.

37.5 Interest

Interest in Item 30 shall be due and payable after the date of default in payment.

37.6 Other moneys due

The Principal may elect that moneys due and owing otherwise than in connection with the subject matter of the Contract also be due to the Principal pursuant to the Contract.

37.7 Set-off by the Principal

The Principal may deduct from moneys due to the Contractor any money due or which may become due from the Contractor to the Principal (including liquidated damages under subclause 34.7) under the Contract, any other contract with the Principal or otherwise and if those moneys are insufficient, the Principal may have recourse to Security under the Contract.

The Principal's entitlement to set off or deduct will not be affected by:

(a) whether the Contractor has reached Practical Completion or not; or

(b) the existence of a Dispute or Disputes in relation to the Principal's right to set off or deduct or the amount which the Principal intends to set off or deduct.

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38 Payment of workers and subcontractors

38.1 Workers and subcontractors

The Principal will not be obliged to make a payment to the Contractor under subclauses 37.1 or 37.3 in connection with a progress claim or a Final Payment Claim unless the Contractor has provided to the Superintendent with the payment claim or the Final Payment Claim:

(a) a statutory declaration (in the form set out in Annexure Part I) that all workers of the Contractor and of the subcontractors employed on WUC have at the date of delivery of such statutory declaration to the Superintendent been paid all moneys due and payable to them;

(b) a statutory declaration that all consultants engaged on WUC have at the date of delivery of such statutory declaration to the Superintendent been paid all moneys due and payable to them; and

(c) a statutory declaration that all subcontractors engaged on WUC have at the date of delivery of such statutory declaration to the Superintendent been paid all moneys due and payable to them.

Documentary evidence and statutory declarations, except where the Contract otherwise provides, shall be to the Superintendent's satisfaction.

38.1A Security of payment

(a) The Contractor must:

(i) promptly and without delay give the Principal and the Superintendent a copy of any notice that the Contractor receives from a subcontractor; and

(ii) ensure that each subcontractor promptly and without delay gives the Principal and the Superintendent a copy of any notice that the subcontractor receives from another party,

under any section of the SOP Act.

(b) If within the time allowed under the SOP Act for the service of a 'payment schedule' by the Principal, the Principal does not:

(i) serve the payment schedule itself; or

(ii) notify the Contractor that the Superintendent does not have authority from the Principal to issue the payment schedule on its behalf,

then a payment certificate provided by the Superintendent under subclause 37.2(a) constitutes a 'payment schedule' provided by the Superintendent as agent for the Principal.

(c) If the Principal becomes aware that any subcontractor is entitled to suspend work (which forms part of WUC) under any section of the SOP Act, the Principal may (at its absolute discretion) pay the subcontractor such money as is or may be owing to the subcontractor in respect of work forming part of WUC, and any amount paid by the Principal is a debt due to the Principal from the Contractor and the Principal may set off any such amount from any amounts due to the Contractor.

(d) The Contractor shall indemnify the Principal against all damage, expense (including lawyers' fees and expenses on a solicitor/client basis), loss or liability of any nature suffered or incurred by the Principal arising out of:

(i) a suspension by a subcontractor of work which forms part of WUC under any section of the SOP Act;

(ii) a failure by the Contractor to comply with its obligations under subclause 38.1A(a); and

(iii) a notice or claim under SOP Act or any other Law being served on the Principal in connection with a Subcontractor exercising a lien or charge over the Works.

(e) For the purposes of this subclause 38.1A, a reference to:

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(i) a subcontractor refers to any party engaged by the Contractor, its subcontractors or any other party to carry out work which forms party of WUC; and

(ii) work refers to work which the Contractor is or may be required to execute or provide under the Contract and includes equipment, services (including design work), materials, plant and temporary Works.

(f) If the Contractor applies for adjudication of a payment dispute under the SOP Act and the SOP Act provides for a Nominating Authority to appoint an adjudicator, the Nominating Authority is the Chapter of The Institute of Arbitrators and Mediators Australia in the relevant jurisdiction.

(g) The Contractor shall, with each claim for payment submitted under the SOP Act, provide to the Superintendent the following:

(i) a statutory declaration by the Contractor or, where the Contractor is a Corporation, by a duly authorised representative of the Contractor who is in a position to know the facts declared, that all workers who have at any time been employed by the Contractor on WUC have at the date the statutory declaration is provided, been paid all moneys due and payable to them in respect of their employment on WUC; and

(ii) documentary evidence that, at the date the statutory declaration is provided, all workers, contractors, subcontractors and consultants who have been employed by a subcontractor of the Contractor have been paid all moneys due and payable to them in respect of their employment on WUC.

38.2 Withholding payment

[Not used]

38.3 Direct payment

Before Final Payment, the Principal, if not aware of a relevant relation-back day (as defined in the Corporations Law) may pay unpaid moneys the subject of subclause 38.1 or 38.1A directly to a worker or a subcontractor where:

(a) permitted by law;

(b) given a court order in favour of the worker or subcontractor; or

(c) requested in writing by the Contractor.

Such payment and a payment made to a worker or subcontractor in compliance with a Legislative Requirement shall be deemed to be payment on account of the Contract Sum and will therefore reduce the total amount due to the Contractor by the amount paid pursuant to this subclause 38.3.

38.4 Passing of title

All rights, title and ownership in each part of the materials, equipment constituting part of the Works passes to the Principal upon the earlier of:

(a) installation of that part of the Works on the Site; or

(b) payment by the Principal in relation to that part of the Works.

39 Default or insolvency

39.1 Preservation of other rights

If a party breaches (including repudiates) the Contract, nothing in this clause 39 shall prejudice the right of the other party to recover damages or exercise any other right or remedy.

39.2 Contractor's default

If the Contractor commits a substantial breach of the Contract, the Principal may, by hand or by certified post, give the Contractor a written notice to show cause.

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Substantial breaches include, but are not limited to:

(a) failing to:

(i) provide Security;

(ii) provide evidence of insurance;

(iii) comply with a Direction of the Superintendent pursuant to subclause 29.3;

(iv) use the materials or standards of work required by the Contract;

(v) proceed with the Works in a competent manner;

(vi) proceed with due expedition and without delay;

(vii) accelerate the progress of WUC (where such a requirement arises as a result of the operation of clause 34); or

(viii) provide a Construction Program or any revision of it in breach of clause 32;

(b) wrongful suspension of work;

(c) substantial departure from a Construction Program without reasonable cause or the Superintendent's approval;

(d) the Contractor commits or suffers an Insolvency Event ;

(e) in respect of clause 38, knowingly providing documentary evidence or a statutory declaration containing an untrue statement;

(f) failing to comply with the Building Code in breach of clause 48;

(g) any breach of clause 11 by the Contractor; and

(h) any other breach of the Contract which is in the reasonable opinion of the Superintendent, material and significant.

39.3 Principal's notice to show cause

A notice under subclause 39.2 shall state:

(a) that it is a notice under clause 39 of these General Conditions of Contract;

(b) the alleged substantial breach;

(c) that the Contractor is required to show cause in writing why the Principal should not exercise a right referred to in subclause 39.4;

(d) the date and time by which the Contractor must show cause (which shall not be less than 5 Business Days after the notice is received by the Contractor); and

(e) the place at which cause must be shown.

39.4 Principal's rights

If the Contractor fails to show reasonable cause by the stated date and time, the Principal may by written notice to the Contractor:

(a) take out of the Contractor's hands the whole or part of the work remaining to be completed and suspend payment unless or until it becomes due and payable pursuant to subclause 39.6; or

(b) terminate the Contract.

39.5 Take out

The Principal shall complete or procure completion of work taken out of the Contractor's hands and may:

(a) use materials, equipment and other things intended for WUC; and

(b) without payment of compensation to the Contractor:

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(i) take possession of, and use such of the Construction Plant and other things on or in the vicinity of the Site as were used by the Contractor; and

(ii) contract with such of the Contractor's subcontractors and consultants,

as are reasonably required by the Principal to facilitate completion of WUC.

If the Principal takes possession of Construction Plant or other things, the Principal shall maintain them and, subject to subclause 39.6, on completion of the work, shall return such of them as are surplus.

The Superintendent shall keep records of the cost of completing the work.

The Contractor shall assign to the Principal all such sub-contracts, supply agreements, hiring agreements, documents and other things as may be stipulated by the Superintendent. The Contractor shall also make all Construction Plant of its suppliers and subcontractors available to the Principal subject to being able to obtain agreement with those suppliers and subcontractors. The Principal shall pay the relevant supplier and subcontractors the normal commercial rates for the hire of that Construction Plant.

If the Contractor does not complete the transfer or assignment of those items or documents, the Contractor hereby unconditionally and irrecoverably appoints the Principal as the Contractor's attorney for and on behalf of the Contractor to do, perform and execute such things and documents as may be necessary or desirable to transfer or assign such things, agreements or arrangements.

39.6 Adjustment on completion of work taken out

When work taken out of the Contractor's hands has been completed, the Superintendent shall assess the cost thereby incurred and shall certify as moneys due and payable accordingly the difference between that cost (showing the calculations therefor) and the amount which would otherwise have been paid to the Contractor if the work had been completed by the Contractor.

If the Contractor is indebted to the Principal, the Principal may retain Construction Plant or other things taken under subclause 39.5 until the debt is satisfied. If after reasonable notice, the Contractor fails to pay the debt, the Principal may sell the Construction Plant or other things and apply the proceeds to the satisfaction of the debt and the costs of sale. Any excess shall be paid to the Contractor.

39.7 Principal's default

If the Principal commits a substantial breach of the Contract, the Contractor may, by hand or by certified post, give the Principal a written notice to show cause.

Substantial breaches include, but are not limited to:

(a) failing to:

(i) [not used];

(ii) [not used];

(iii) rectify inadequate Contractor's access to the Site if that failure continues for longer than the time stated in Item 31; or

(iv) make a payment which is not the subject of a Dispute and which is due and payable pursuant to the Contract; and

(b) the Superintendent not giving a Certificate of Practical Completion or reasons as referred to in subclause 34.6.

39.8 Contractor's notice to show cause

A notice given under subclause 39.7 shall state:

(a) that it is a notice under clause 39 of these General Conditions of Contract;

(b) the alleged substantial breach;

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(c) that the Principal is required to show cause in writing why the Contractor should not exercise a right referred to in subclause 39.9;

(d) the date and time by which the Principal must show cause (which shall not be less than 5 Business Days after the notice is received by the Principal); and

(e) the place at which cause must be shown.

39.9 Contractor's rights

If the Principal fails to show reasonable cause by the stated date and time, the Contractor may, by written notice to the Principal, suspend the whole or any part of WUC.

The Contractor shall remove the suspension if the Principal remedies the breach.

The Contractor may, by written notice to the Principal, terminate the Contract, if within 28 days of the date of suspension under this subclause, the Principal fails:

(a) to remedy the breach; or

(b) if the breach is not capable of remedy, to make other arrangements to the reasonable satisfaction of the Contractor.

Damages suffered by the Contractor by reason of the suspension shall be assessed by the Superintendent, who shall certify them as moneys due and payable to the Contractor.

39.10 Termination

If the Contract is terminated pursuant to subclause 39.4(b) or 39.9, the parties' remedies, rights and liabilities shall be the same as they would have been under the law governing the Contract had the defaulting party repudiated the Contract and the other party elected to treat the Contract as at an end and recover damages.

Upon termination of the Contract, the Contractor shall immediately return to the Principal any property of the Principal in the possession of the Contractor, its employees, agents or subcontractors.

If the Contract is wrongfully terminated by a party, the other party, having elected to terminate the Contract shall then only be entitled to recover damages in respect of the wrongful termination of the Contract and shall not be entitled to Claim on a quantum meruit basis.

39.11 Insolvency

If a party commits or suffers an Insolvency Event then, where the other party is:

(a) the Principal, the Principal may, without giving a notice to show cause, exercise its rights under subclause 39.4; or

(b) the Contractor, the Contractor may, without giving a notice to show cause, exercise the right under subclause 39.9.

The rights and remedies given by this subclause 39.11 are additional to any other rights and remedies and notwithstanding 39.2(d). They may be exercised notwithstanding that there has been no other breach of contract.

39.12 Consequences of termination by Principal

In the event that the Contract is terminated pursuant to subclauses 39.4(b) or 39.11, the Principal may employ any other person, firm or Corporation (referred to as 'Replacement Contractor') to complete the Works in accordance with the terms of the Contract.

The Principal shall be required to mitigate reasonably the cost for completion of the Works but may make such expenditures as in the Principal's sole judgment will best accomplish the timely completion of the Works, provided that the Principal shall not be required or expected to mitigate any such cost by terminating, repudiating or renegotiating any contract entered into between the Contractor and any subcontractor.

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The Principal, as soon as practicable after termination, shall determine the total expenses incurred and accrued by the Principal in connection with the termination of the Contract (including all legal fees and expenses on an indemnity basis) in the completion of the Works over and above the estimated Contract Sum had the Contractor performed the Works in accordance with the Contract. The total expenses referred to in the preceding sentence shall include all additional amounts charged by any Replacement Contractor to complete the Works and any additional overhead reasonably incurred by the Principal to effect such takeover and completion of the Works. The Contractor will be liable for such additional amounts charged by the Replacement Contractor or otherwise incurred by the Principal as a debt due from the Contractor to the Principal.

The Principal's entitlements under this subclause 39.12 are in addition to any other rights of the Principal under the Contract or at common law.

39.13 Termination for the Principal's convenience

Notwithstanding anything in this Contract, the Principal may at any time, after giving 14 days' notice, terminate this Contract for any reason by giving the Contractor a notice of termination which refers to this subclause 39.13 irrespective of whether it or the Contractor are in breach of the Contract at the time of termination.

If the Principal terminates the Contract under this subclause 39.13, the Contractor will be entitled to be paid:

(a) the Contract Sum attributable to WUC performed as at the date of termination;

(b) the costs, if any, necessarily incurred in protecting WUC and leaving the Site in a clean and safe condition; and

(c) the Contractor's reasonable demobilisation costs,

less the aggregate of all previous payments allocated to WUC. Any sums due to the Principal from the Contractor accruing prior to the date of termination will be deducted from the amount to be paid to the Contractor under this Contract.

The Contractor is not entitled to any compensation, including consequential loss, as a result of the exercise of the right under this subclause 39.13. If the Principal's purported termination under any clause of this Contract is ineffective, it is not a breach of the Contract, but is considered to be an exercise of the right of termination under this subclause 39.13.

40 Termination by frustration

[Not used]

41 Notification of claims

41.1 Notices of other claims

Except for claims for:

(a) an EOT under subclause 34.3;

(b) payment under subclause 37.1; or

(c) a Variation expressly Directed under subclause 36.1 in a Variation Order,

the Contractor must give the Superintendent the notices required by subclause 41.2 if it wishes to make a Claim against the Principal in respect of any Direction by the Superintendent or any other matter (including a breach of the Contract by the Principal) under, arising out of, or in any way in connection with, WUC or the Contract, including anything in respect of which:

(d) it is otherwise given an express entitlement under the Contract; or

(e) the Contract provides that the Contract Sum will be increased.

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41.2 Prescribed Notices

The notices referred to in subclause 41.1 are:

(a) a written notice within 14 days of the first occurrence of the Direction or other fact, matter or thing upon which the Claim is based expressly specifying:

(i) that the Contractor proposes to make a Claim; and

(ii) the Direction or other fact, matter or thing upon which the Claim will be based; and

(b) a written Claim within 30 days of giving the written notice under paragraph (a) of subclause 41.2, which shall include:

(i) particulars concerning the Direction or other fact, matter or thing upon which the Claim is based;

(ii) the legal basis for the Claim, whether based on a term of the Contract or otherwise, and if based on a term of the Contract, clearly identifying the specific term;

(iii) the facts relied upon in support of the Claim in sufficient detail to permit verification; and

(iv) details of the amount claimed and how it has been calculated.

41.3 Continuing events

If the Direction or fact, matter or thing upon which the Claim under subclause 41.1 is based or the consequences of the Direction or fact, matter or thing are continuing, the Contractor shall continue to give the information required by paragraph (b) of subclause 41.2 every 28 days after the written Claim under subclause 41.1 was submitted or given to the Superintendent, until after the Direction or fact, matter or thing upon which the Claim is based has, or the consequences thereof have, ceased.

41.4 Time bar

If the Contractor fails to comply with subclause 41.1:

(a) the Principal will not be liable (so far as it is possible to exclude liability) on any Claim by the Contractor; and

(b) the Contractor is absolutely barred from making any Claim against the Principal,

arising out of, or in any way in connection with, the relevant Direction or matter (as applicable) to which subclause 41.1 applies.

41.5 Other provisions unaffected

Nothing in subclauses 41.1 to 41.4 limits the operation or effect of any other provision of the Contract which requires the Contractor to give notice to the Superintendent in order to preserve an entitlement to make a Claim against the Principal.

42 Dispute resolution

42.1 Notice of dispute

If a difference or Dispute (together called a 'Dispute') between the parties arises in connection with the subject matter of the Contract, including a Dispute concerning:

(a) a Superintendent's Direction; or

(b) a Claim:

(i) in tort;

(ii) under statute;

(iii) for restitution based on unjust enrichment or other quantum meruit; or

(iv) for rectification or frustration,

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or like Claim available under the law governing the Contract,

then either party shall, by hand or by certified mail, give the other and the Superintendent a written notice of Dispute adequately identifying and providing details of the Dispute.

Notwithstanding the existence of a Dispute, the parties shall, subject to clause 39 and subclause 42.4, continue to perform the Contract.

42.2 Site Construction Group referral

If a party delivers a notice of Dispute to the other party and the Superintendent the parties must first attempt to resolve the Dispute at the next meeting of the Site Construction Group.

42.3 Conference

(a) If a party delivers a notice of Dispute to the other party and the Superintendent and that dispute has not been able to be resolved at the meeting of the Site Construction Group referred to in subclause 42.2, then:

(i) within 10 Business Days of that Site Construction Group meeting, senior representatives of the parties at Project level must meet and use reasonable endeavours acting in good faith to resolve the Dispute by joint discussions; and

(ii) if the Dispute is not resolved in accordance with subclause 42.3(a)(i), the Dispute shall be referred to the respective Dispute Resolution Executives of the parties specified in Item 32 who must meet within 20 Business Days of that Site Construction Group meeting, and use reasonable endeavours acting in good faith to resolve the Dispute by joint discussions.

If the Dispute is not resolved in accordance with subclause 42.3(a)(ii), either party may submit to the exclusive jurisdiction of the courts of the State or Territory in which the Site is located.

(b) Subject to agreement between the parties' respective representatives referred to in subclause 42.3(a)(i) or (ii) (as applicable), if a Dispute relates to a valuation under clause 36.4 the parties may engage an independent quantity surveyor to provide an opinion regarding the valuation the subject of the Dispute, in which case:

(i) the engagement of the quantity surveyor will not limit the operation of this clause 42.3;

(ii) any opinion provided by the quantity surveyor will be for the parties' consideration only and will not bind the parties; and

(iii) the costs of engaging the quantity surveyor will be shared equally between the parties,

unless otherwise agreed in writing by the parties.

42.4 Summary relief

Nothing herein shall prejudice the right of a party to institute proceedings to enforce payment due under the Contract or to seek injunctive or urgent declaratory relief.

43 Waiver of conditions

[Not used]

44 Taxes other than GST

(a) Subject to subclauses 44(b) and 44(c), the Contractor:

(i) must pay all Taxes arising out of or in connection with this Contract and any transaction evidenced or contemplated by it; and

(ii) indemnifies and holds harmless the Principal against any Taxes payable by the Principal arising out of or in connection with this Contract and any transaction evidenced or contemplated by it, that are discharged or otherwise satisfied by the Principal.

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(b) The Contractor's liability to pay all Taxes under subclause 44(a)(i) does not include a liability to pay income tax of the Principal.

(c) The Contractor acknowledges and agrees that if the Principal is required to make a Withholding Payment (as defined in the Taxation Administration Act 1953 (Cth)) from any amount payable to the Contractor, the Principal will pay the Contractor the balance of the amount payable after deduction of the amount of the Withholding Payment.

45 GST

45.1 Definition and interpretation

In this clause 45:

GST means goods and services tax or similar value added tax levied or imposed in Australia pursuant to the *GST law* or otherwise on a supply;

GST Act means *A New Tax System (Goods and Services Tax) Act 1999* (Cth);

GST law has the same meaning as in the *GST Act*;

Tax Invoice includes any document or record treated by the Commissioner of Taxation as a tax invoice or as a *document* entitling a recipient to an input tax credit.

Words used in this clause 45 which have a defined meaning in the *GST law* have the same meaning as in the *GST law unless* the context otherwise indicates.

45.2 Adjustment for GST

(a) Unless expressly included, the consideration for any supply under or in connection with this Contract does not include *GST*.

(b) To the extent that any supply made under or in connection with this Contract is a taxable supply, the consideration for that supply is increased by an amount determined by the supplier, not exceeding the amount of that consideration (or its market value) multiplied by the rate at which *GST* is imposed in respect of the supply.

(c) If an adjustment event occurs following a determination under subclause 45.2(b):

(i) the supplier must make a further determination under subclause 45.2(b) of the amount of consideration payable; and

(ii) if the *GST* component of that consideration differs from the amount originally determined, the amount of the difference must be paid by, refunded to or credited to the recipient, as the case may be.

(d) Any amount referred to in this Contract which is relevant in determining a payment to be made by one party to the other, including any amount of income, revenue, loss, cost or expense, is to be expressed exclusive of *GST* unless indicated otherwise.

(e) If a party to this Contract is entitled to be reimbursed for an expense or outgoing incurred in connection with this Contract, then the amount of the reimbursement will be net of any input tax credit which may be claimed by the party being reimbursed in relation to that expense or outgoing.

45.3 Tax Invoices

The supplier must issue a *Tax Invoice* to the recipient of a supply to which subclause 45.2 applies prior to the date on which payment of the *GST* inclusive consideration determined under subclause 45.2 is due. In respect of payments to be made to the Contractor pursuant to subclause 37, the Contractor must issue a *Tax Invoice* to the Principal within 5 Business Days of receipt of a payment certificate, for an amount certified in the payment certificate.

46 General

46.1 Costs and expenses

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Each party shall pay its own legal costs and expenses in respect of the negotiation, preparation, completion and stamping of the Contract.

46.2 Prohibition and enforceability

(a) Any provision of, or the application of any provision of, the Contract or any right, power, authority, discretion or remedy which is prohibited in any jurisdiction is, in that jurisdiction, ineffective only to the extent of that prohibition.

(b) Any provision of, or the application of any provision of, the Contract which is void, illegal or unenforceable in any jurisdiction does not affect the validity, legality or enforceability of that provision in any other jurisdiction or of the remaining provisions in that or any other jurisdiction.

(c) Where a clause is void, illegal or unenforceable, it shall be read down, or if incapable of being read down, it may be severed without affecting the enforceability of the other provisions in the Contract.

46.3 Waivers

(a) Waiver of any right arising from a breach of the Contract or of any right, power, authority, discretion or remedy arising upon default under the Contract shall be in writing and signed by the party granting the waiver.

(b) A failure or delay in exercise, or partial exercise, of:

(i) a right arising from a breach of the Contract; or

(ii) a right, power, authority, discretion or remedy created or arising upon default under the Contract,

shall not result in a waiver of that right, power, authority, discretion or remedy.

(c) A party shall not be entitled to rely on a delay in the exercise or non-exercise of a right, power, authority, discretion or remedy arising from a breach of the Contract or on a default under the Contract as constituting a waiver of that right, power, authority, discretion or remedy.

(d) A party shall not rely on any conduct of another party as a defence to exercise of a right, power, authority, discretion or remedy by that other party.

(e) This subclause 46.3 may not itself be waived except by writing.

46.4 Cumulative rights

The rights, powers, Authorities, discretions and remedies arising out of or under the Contract are cumulative and do not exclude any other right, power, authority, discretion or remedy of any party.

46.5 Further action

Each party must do all things and execute all further documents necessary to give full effect to the Contract.

46.6 Counterparts

(a) The Contract may be executed in any number of counterparts.

(b) All counterparts, taken together, constitute one instrument.

(c) A party may execute the Contract by signing any counterpart.

46.7 To the extent not excluded by law

The rights, duties and remedies granted or imposed under the provisions of the Contract operate to the extent not excluded by law.

46.8 Attorneys

Each of the attorneys executing the Contract states that the attorney has no notice of the revocation of the power of attorney appointing that attorney.

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46.9 Relationship of the parties

Nothing in this Contract:

(a) will be construed as creating an agency, partnership or joint venture between the Contractor and the Principal;

(b) gives the Contractor authority to bind the Principal in any way; or

(c) imposes any fiduciary duties on a party in relation to the other party.

47 Privacy

47.1 Application of this clause

This clause applies only where the Contractor deals with personal information when, and for the purpose of performing its obligations under the Contract.

47.2 Obligations

The Contractor acknowledges that it is a 'contracted service provider' within the meaning of section 6 of the Privacy Act, and agrees in respect of the performance of the Contractor's obligations under the Contract:

(a) to use or disclose personal information obtained during the course of performing its obligations under this Contract only for the purposes of fulfilling its obligations under this deed;

(b) not to do any act or engage in any practice that would breach an IPP contained in section 14 of the Privacy Act, which if done or engaged in by an agency, would be a breach of that IPP;

(c) to carry out and discharge the obligations contained in the IPPs as if it were an agency under the Privacy Act;

(d) to notify individuals whose personal information the Contractor holds, that complaints about acts or practices of the Contractor may be investigated by the Privacy Commissioner, the Information Commissioner or the Freedom of Information Commissioner who has power to award compensation against the Contractor in appropriate circumstances;

(e) not to use or disclose personal information or engage in an act or practice that would breach section 16F of the Privacy Act (direct marketing), an NPP (particularly NPPs 7 to 10) or an APC, where that section, NPP or APC is applicable to the Contractor, unless:

  (i) in the case of section 16F – the use or disclosure is necessary, directly or indirectly, to discharge an obligation under this Contract; or

  (ii) in the case of an NPP or an APC – where the activity or practice is engaged in for the purpose of discharging, directly or indirectly, an obligation under this Contract, and the activity or practice which is authorised by this deed is inconsistent with the NPP or APC;

(f) to disclose in writing to any person who asks, the content of the provisions of the Contract that are inconsistent with an NPP or an APC binding a Party to this Contract;

(g) to immediately notify ASIC if the Contractor becomes aware of a breach or possible breach of any of the obligations contained in, or referred to in, this clause whether by the Contractor or any subcontractor of the Contractor;

(h) to comply with any Directions, guidelines, determinations or recommendations of the Privacy Commissioner, the Information Commissioner and/ or the Freedom of Information Commissioner in relation to WUC to the extent that they are not inconsistent with the requirements of this clause; and

(i) to ensure that any employee of the Contractor who is required to deal with personal information for the purposes of the Contract is made aware of the obligations of the Contractor set out in this clause.

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47.3 Subcontracts

The Contractor must ensure that any subcontract entered into by the Contractor for the purpose of fulfilling its obligations under the Contract contains provisions to ensure that the subcontractor has the same awareness and obligations as the Contractor has under this clause including the requirement in relation to subcontracts.

47.4 Definitions

In this clause the terms 'agency', 'approved privacy code' (**APC**), 'Information Privacy Principles' (**IPPs**), and 'National Privacy Principles' (**NPPs**) have the same meaning as they have in section 6 of the Privacy Act, and 'personal information', which also has the meaning it has in section 6 of the Privacy Act, means:

'information or an opinion (including information or an opinion forming part of a database), whether true or not and whether recorded in a material form or not, about an individual whose identity is apparent, or can reasonably be ascertained, from the information or opinion'.

47.5 Publicity

The Contractor must not, nor permit any of employees, agents or representatives to:

(a) issue any press or publicity release; or

(b) publish or otherwise disclose any photograph or other information,

concerning the terms of this contract or the nature of the Works or the Project without the express prior written consent of the Principal, consent not to be unreasonably withheld or delayed.

48 Building Code

(a) Where so indicated in Item 10, theContractor must comply with the Building Code 2016 (**Building Code**). A link to the Building Code is available at http://www.fwbc.gov.au/building-code. The balance of this clause 48 only applies, if Item 10 indicates that the Building Code does apply to the WUC.

(b) **Building Code Definitions:**

ABCC	means the body referred to in subsection 29(2) of the Act.
ABC Commissioner	means the Australian Building and Construction Commissioner referred to in subsection 15(1) of the Act.
Act	means the *Building and Construction Industry (Improving Productivity) Act 2016*.
Building Code	means the *Code for the Tendering and Performance of Building Work 2016*, which is available at https://www.legislation.gov.au/Details/F2016L01859.
Building Contractor	has the same meaning as in the Act.
Building Industry Participant	has the same meaning as in the Act.
Building Work	has the same meaning as in subsection 3(4) of the Building Code.
Commonwealth Funded Building Work	means Building Work in items 1-8 of Schedule 1 of the Building Code.

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Enterprise Agreement	has the same meaning as in the *Fair Work Act 2009*.
Exclusion Sanction	has the same meaning as in subsection 3(1) of the Building Code.
Subcontractor	means a Building Contractor or Building Industry Participant who the Contactor has entered, or proposes to enter, into a subcontract with to undertake any of the Works.
Works	means Commonwealth Funded Building Work that is the subject of this Contract.

(c) The Contractor:

(i) declares as at the date of commencement of this Contract in relation to the WUC; and

(ii) must ensure that during the term of this Contract in relation to the WUC:

that it and its Subcontractors:

(iii) comply with the Building Code;

(iv) are not covered by an Enterprise Agreement that does not meet the requirements of section 11 of the Building Code;

(v) are not subject to an Exclusion Sanction;

(vi) have not had an adverse decision, direction or order made by a court or tribunal for a breach of the Act, a designated building law, work health and safety law or competition and consumer law and failed to comply with the decision, direction or order;

(vii) will only use products in relation to the Works that comply with the relevant Australian standards published by, or on behalf of, Standards Australia;

(viii) unless approved otherwise by the ABC Commissioner, are not excluded from performing Building Work funded by a state or territory government; and

(ix) comply with the Workplace Relations Management Plan approved by the ABCC in accordance with Part 6 of the Building Code that applies to the WUC.

(d) Compliance with the Building Code does not relieve the Contractor from responsibility to perform this Contract, or from liability for any defect in the WUC arising from compliance with the Building Code.

(e) The Contractor must notify the ABCC of any breach or suspected breach of the Building Code as soon as practicable but no later than 2 working day after becoming aware of the breach or suspected breach and of the steps proposed to be taken to rectify the breach.

(f) The Contractor acknowledges the powers and functions of the ABC Commissioner and the ABCC under the Act and the Building Code and will ensure that it and its Subcontractors comply with any requests made by the ABCC and the ABC Commissioner within those powers and functions, including but not limited to requests for entry under section 72 of the Act, requests to interview any person under section 74 of the Act, requests to produce records or documents under sections 74 and 77 of the of the Act and requests for information concerning matters relating to the Building Code under subsection 7(c) of the Building Code.

(g) The Contractor must only enter into a subcontract for any of the WUC where:

(i) the Subcontractor has submitted a declaration of compliance, including the further information outlined in Attachment A to the declaration of compliance, in substantively the same form as the model declaration of compliance applicable to contractors and subcontractors in relation to the Building Code; and

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(ii) the subcontract with the Subcontractor contains clauses in substantively the same form as the model contract clauses applicable to contractors and subcontractors in relation to the Building Code.

(h) The Contractor must provide the Commonwealth with any Subcontractor's declaration of compliance referred to in subclause (g) above on request.

49 Equal employment opportunity

49.1 The Contractor to comply with its obligations under the Act

The Contractor must comply with its obligations, if any, under the *Equal Opportunity for Women in the Workplace Act 1999* (Cth) (the **Act**).

49.2 Limitation on permitted subcontractors

The Contractor must not enter into a subcontract under this Contract with a subcontractor named by the Director of Equal Opportunity for Women in the Workplace as an employer currently not complying with the Act.

49.3 Subcontracts to contain certain provisions

Any subcontract must include a provision which requires the subcontractor to notify the Equal Opportunity for Women in the Workplace Agency of any failure to comply with the Act.

50 Engagement of illegal workers prohibited

50.1 Interpretation

For the purposes of this clause an 'illegal worker' is a person who:

(a) has unlawfully entered and remains in Australia;

(b) has lawfully entered Australia, but remains in Australia after his/her visa has expired; or

(c) is working in breach of his/her visa conditions.

50.2 Prohibition on employers

The Contractor must ensure that all its employees, agents and any other persons engaged by the Contractor to carry out WUC, including those engaged by any subcontractor are at all times:

(a) Australian citizens; or

(b) in the case of persons who are not Australian citizens, not illegal workers.

50.3 Removal of illegal workers

The Contractor must remove or cause to be removed any illegal worker from any involvement in the carrying out WUC and arrange for their replacement at no cost to the Principal immediately once it becomes aware of the involvement of the illegal worker. The Contractor must immediately notify the Principal of the involvement of the illegal worker and of the removal.

50.4 No entitlement

For the avoidance of doubt, compliance with the Contractor's obligations under this clause will not give rise to an entitlement to Claim any delay or otherwise excuse the Contractor from compliance with its obligations under this Contract.

50.5 The Contractor to provide evidence of compliance

(a) When requested by the Principal, the Contractor will provide evidence that it has taken all reasonable steps to ensure that it has complied and is complying with its obligations under this clause, including in relation to any subcontractors.

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(b) The Contractor must provide to the Principal evidence referred to in subparagraph (a) within 5 Business Days of receiving the Principal's request.

51 Accreditation scheme

51.1 Application

For the avoidance of any doubt, this clause 51 only applies if :

a. the Works are not prescribed building work (as defined in section 24 of the Fair Work (Building Industry – Accreditation Scheme) Regulations 2005 (Cth)); and

b. Item 11 indicates that the Scheme does not apply.

51.2 Definitions

In this clause 'building work' has the same meaning as defined in the FW Act.

51.3 Accreditation

(a) Subject to the exclusions specified in the Fair Work (Building and Construction Industry – Accreditation Scheme) Regulations 2005 (Cth), the Contractor must maintain accreditation under the Australian Government Building and Construction OHS Accreditation Scheme (the **Scheme**) established by the FW Act while building work is carried out.

(b) The Contractor must comply with all conditions of Scheme accreditation.

52 PPSA

52.1 Definitions

In this clause 52:

'Security Interest' has the meaning given to it in the PPS Law.

'Transaction Document' means:

(a) this Contract;

(b) any guarantee by which any person guarantees the Contractor's compliance with its obligations under any of the Transaction Documents;

(c) agreements between the Contractor and its subcontractors;

(d) any agreement which the Principal and the Contractor agree is a Transaction Document for the purposes of this Contract;

(e) any agreement or instrument created under any of the above documents; and

(f) each document entered into for the purpose of amending, novating, restating or replacing any of the above documents.

52.2 Enforcement of liquid assets

The parties agree that paragraphs (a) to (r) inclusive of Section 115 of the PPSA do not apply to this Contract or the transactions contemplated under this Contract.

52.3 Application of PPS Law

If one party (the "Secured Party") determines that a Transaction Document (or a transaction in connection with it) is or contains a Security Interest in favour of the Secured Party, the other party (the "Grantor") agrees to do anything (such as obtaining consents, signing and producing documents, getting documents completed and signed and supplying information) which is requested by the Secured Party and which is reasonably necessary for the purposes of:

(a) ensuring that the Security Interest is enforceable, perfected (including, where possible, by control in addition to registration) and otherwise effective;

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(b) enabling the Secured Party to apply for any registration, or give any notification, in connection with the Security Interest so that the Security Interest has the priority required by the Secured Party. This includes registration under the PPSA for whatever collateral class the Secured Party thinks appropriately, acting reasonably; and

(c) enabling the Secured Party to exercise rights in connection with the Security Interest.

52.4 Specific obligations

For the avoidance of doubt:

(a) the Principal intends to register any Security Interest the Principal acquires in any Works or materials and equipment immediately upon title in that Works or materials and Equipment passing to the Principal in accordance with subclause 38.4 and the Security Interest arising; and

(b) the Contractor must assist the Principal to register and / or improve that Security Interest by:

(i) removing any Security Interest the Contractor has in the relevant Works or materials and equipment; and

(ii) ensuring that all Subcontractors remove any Security Interest the subcontractors have in the relevant Works or materials and equipment.

52.5 General

The Principal and the Contractor acknowledge that nothing in this clause 52:

(a) affects (or will require either party to amend any Transaction Document so as to affect) the time at which title in any of the Works or materials and equipment passes in accordance with subclause 38.4; or

(b) relieves either party of any obligation under this Contract.

53 Additional clauses specific to States and Territories

This Contract is subject to the additional clauses to the General Conditions of Contract set out in Annexure Part L to the extent that this Contract, WUC or the Works are to be performed in the relevant jurisdictions referred to in Annexure Part L.

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Part A

Annexure to the
Australian Standard General Conditions of Contract
AS 4000 – 1997

This Annexure shall be completed and issued as part of the tender documents and, subject to any amendments to be incorporated into the Contract, is to be attached to the General Conditions of Contract and shall be read as part of the Contract.

Item		
1	Principal (clause 1) *****	Defence Housing Australia ABN 72 968 504 934
2	[Not used]	
2A	Principal's Representative (subclause 22.3)	Gulliver Coote Suite 2 Level 2/287 Elizabeth Street Sydney NSW 2001 email: gully.coote@dha.gov.au The subject line of all notices sent by email from the Contractor to the Principal's Representative must begin with the following: "**PROC-46448**" Emails (including any attachments) must not exceed the file size of 4 MB.
3	Contractor (clause 1)	Group One Pty Ltd - 24 124 956 154
	ACN	124 956 154
4	Contractor's address and email address	Unit 5/45-51 Grimwade Street, Mitchell, ACT, 2911 email: s47F [redacted]
4A	Contractor's Representative (subclause 22.1)	
4B	Parent Company Guarantee required (subclause 5.6)	No
4C	Parent Company (clause 1)	Not applicable.
5	Superintendent (clause 1)	Northrop Consulting Engineers Pty. Ltd.

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		Is Superintendent a DHA employee? No
	ABN	81 094 433 100
5A	Superintendent's Representative (clause 1)	s47F
6	Superintendent's address and email address	Level 6, 224 Bunda Street Canberra ACT 2608 email: s47F The subject line of all notices sent by email from the Contractor to the Superintendent must begin with the following: "PROC-46448" Emails (including any attachments) must not exceed the file size of 4 MB.
6A	Contract Sum (clause 1)	s22 [redacted]
7	a) Date for Practical Completion (clause 1) OR	
	b) Period of time for Practical Completion (clause 1)	See details in the Separable Portion sections below, pages 102 and 104.
7A	Project of which WUC form part (clause 1)	Civil and Infrastructure works to support the construction of 30 dwellings at the Site, Academy Close Campbell ACT
7B	Project/site address	Block 3 Section 65 Campbell ACT Is the Site located on a Defence base? No

† If applicable, delete and instead complete equivalent *Item* in the *separable portions* section of the Annexure Part A

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8	Governing law (subclause 1.3)	Australian Capital Territory
9	a) Currency (subclause 1.2(g))	Australian dollars
	b) Place for payments (subclause 1.2(g))	The Office of the Principal. Email invoices to : ppginvoicessydney@dha.gov.au or 26 Brisbane avenue, Barton, ACT, 2600
	c) Place of business of bank	If nothing stated, the place nearest to where the Site is located
10	Building Code 2013 Clause 48	The Building Code does not apply to the WUC.
11	FSC Accreditation Scheme Clause 51.	The Contractor **is not** required to be an FSC Accredited contractor for the WUC. Therefore for the FSC Accreditation scheme **does not** apply for the purposes of Clause 51.
12	Provisional Sum, percentage for profit and attendance to assist with pricing provisional sums (clause 3)	Not used.
12A	Provisional Sums (Clause 3)	The Provisional Sum Items are set out in the table below;

BOQ Ref		unit	s47G(1)(a)	s22
006	Compliance and Audit Testing as Directed by the PAP (PS)	PS	[redacted]	[redacted]
007	Additional Work as Directed by the PAP (PS)	PS		
13	Works by the Service Authority to existing services (PS)	PS		
204A	Disposal excess topsoil offsite (PQ)	m3		
206	Unsuitable Material (PQ)	m3		
302	Removal of Unsuitable Material from Trenches (PQ)	Item		

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			s47G(1)(a)	s22
405.1	Works by the Sewer Authority to existing sewer services (PS)	PS	[redacted]	[redacted]
503.2	Extra over per meter depth in excess of 1.45m (PQ)	Item	[redacted]	[redacted]
604	Allowance for network of subsoil drainage to remediate groundwater (PQ)	Item	[redacted]	[redacted]
7.06	Installation of NBN Pit and Pipe for Telecommunications (PQ)	No	[redacted]	[redacted]
802.1	Works by the Water Authority to existing water services (PS)	PS	[redacted]	[redacted]
2002	Evoenergy - Temporary works to re-route existing mains to maintain network after site disconnection (PS)	Item	[redacted]	[redacted]
2201	masonry retaining walls Type 1 Stone Wall (PS)	m2	[redacted]	[redacted]
2202	masonry retaining walls Type 2 Adbri Block (PS)	m2	[redacted]	[redacted]
2203	Masonry Retaining Wall Type 3 Concrete Sleeper (PS)	m2	[redacted]	[redacted]
2205	Type 2 fencing 1.8m High Pailing fence (PS)	Lm	[redacted]	[redacted]
			[redacted]	[redacted]
		Total	[redacted]	[redacted]

13 Contractor's security

a)	[Not used]	.....
b)	Amount or percentage of Contract Sum (subject to clause 5)	5% of the Contract Sum (to be provided by three unconditional and irrevocable bank guarantees). Two bank guarantee are required for Separable Portion 1 (valued at 2.5% each) and One bank Guarantee is required for Separable Portion 2 (valued at 5%) refer to the details set out below in SP1 and SP2.
c)	[Not used]	
d)	Time for provision (clause 5)	on Execution Date
e)	Additional Security for unfixed plant and materials (subclauses 5.4 and 37.3)	*Nil.*
f)	Contractor's security upon Certificate of Practical Completion is reduced to (subclause 5.4)	50% of the amount in item 13(b), however if there are outstanding or insufficiently rectified defects in the reasonable opinion of the Principal, the Principal may retain this 50% of the Security until all the defects are rectified and the Contractor has requested the reduction

† If applicable, delete and instead complete equivalent *Item* in the *separable portions* section of the Annexure Part A

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		of the relevant portion of the Security.
14	Order of precedence – Annexures or Parts (or sub parts) (subclause 8.1(b)) or	1.Academy Civil Works Documentation (As set out in Annexure D SOW) 2. DHA annexure D Scope of works 3.Works Approval for WUC 4. Balance of Annexures
15	Principal-supplied documents (subclause 8.2)	Document No. of copies 3.NCA Works Approval for WUC (Already Provided) If nothing stated, 1 copies of the drawings, specification, Bill of Quantities or Schedule of Rates (if any)
16	Time for Superintendent's Direction about documents (subclause 8.3)	14 days
17	Subcontract work requiring approval (subclause 9.2)	Not applicable.
18	Novation (subclause 9.4)	Subcontractor Particular part of WUC .... Selected Subcontractor Particular part of WUC ....
19	Legislative Requirements / Approvals	
	a) [Not used]	....
	b) Identified WUC (subclause 11.2(a)(ii))	....
	c) Principal's Approvals (subclause 1.1)	1.NCA Works Approval 2.TCCS Works Authorization letter 3.Approvals to proceed with works by; • Icon Water

† If applicable, delete and instead complete equivalent *Item* in the *separable portions* section of the Annexure Part A

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		• EvoEnergy • NBN (already provided) • Jemena Gas
20	Insurance of the Works (clause 16)	
	a) Alternative applying	Alternative 1
	If Alternative 1 applies	
	b) Provision for demolition and removal of debris	Nil
	c) Provision for consultants' fees	Nil
	d) Value of materials or things to be supplied by the Principal	Nil
	e) Additional amount or percentage	Nil OR 7.5% of the total of paragraphs (f) to (i)in clause 16 16
	f) Amount of cover	$20,000,000
21	Public liability insurance (clause 17)	
	a) Alternative applying	Alternative 1
	If Alternative 1 applies	
	b) Amount per occurrence shall be not less than	$10,000,000
21A	Amount of motor vehicle insurance covering loss to property must be not less than (clause 19A)	$10,000,000
21B	Deductible limits (subclause 19.10)	Nil
21C	Key Personnel (subclauses 1.1)	s22 [redacted]
22	Time for giving access (subclause 24.1)	7 days after the later of the Execution Date and the date all of the Conditions Precedent (if any) are satisfied or waived in accordance with the Formal Instrument of

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		Agreement .....
22A	Rock (subclause 25.7)	The entitlement for the Contractor to claim the cost of excavation and removal of Rock under subclause 25.7: Does not apply [✓] Does apply [ ] If nothing indicated, subclause 25.7 does not apply.
23	Qualifying causes of delay Causes of delay for which EOTs will be granted (page 3, paragraph (b)(iii) of clause 1 and subclause 34.3)	[Not used]
24	Liquidated damages, rate (subclause 34.7)	s22
25	[Not used]	
26	Delay damages, other Compensable Causes	[Not used]
26A	Maximum amount of delay damages (subclause 34.10)	Not Applicable
27	Defects Liability Period (clause 35)	SP1- 12 months SP2- 3 months
28	Progress Claims (subclause 37.1)	
	a) Times for progress Claim*s*	Claims to be made by the 2nd Tuesday of each month for WUC WUC completed to Contract requirements, up to the 30th day of each month in accordance with clause 37.1.
	OR	
	b) Stages of WUC for progress Claims	....

† If applicable, delete and instead complete equivalent *Item* in the *separable portions* section of the Annexure Part A

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		....
29	Unfixed plant and materials for which payment Claims may be made (subclause 37.3)	Nil
30	Interest rate on overdue payments (subclause 37.5)	At the interest rate as published by the Reserve Bank: • Indicator Lending Rates - F5; and • Lending rates; Large business; Weighted-average rate on credit outstanding; Variable'. per annum
31	Time for Principal to rectify inadequate access (subclause 39.7)	14 days
32	Names and contact details of Dispute Resolution Executives (clause 42.3(a)(ii))	s22 [redacted] DHA National Manager Development And Construction. s22 [redacted], Group One Pty Ltd

.....
[redacted]

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Separable Portion 1

Separable portion 1 (SP1) (clause 4)	**1. Academy Close Civil Works:** All documented WUC with the exclusion of Sparable portion 2 as outlined.in the scope of works.....
Description of separable portion (clause 4)	.... For amount of contract sum attributable to Separable Portions See Item 6 A.

Item

7	a) Date for Practical Completion for Separable Portion (subclause 1.1)	.....
	OR	
	b) Period of time for Practical Completion (subclause 1.1)	20 Weeks from the date on which the Principal gives the Contractor Site access (in writing) under clause 24.1.
13	Contractor's security	
	a) [Not used]	
	b) Amount or percentage of Contract Sum for this Separable Portion 5% (clause 5)	**5**% of the SP1 Contract Sum (to be provided by two unconditional and irrevocable bank guarantees equal to 2.5% of the SP1 Contract Sum each).
	c) [Not used]	
	d) Time for provision (clause 5)	on Execution Date
	e) Additional security for unfixed plant and materials (subclauses 5.4 and 37.2)	*Not used*
	f) Contractor's security upon Certificate of Practical Completion is reduced to (subclause 5.4)	50% of the amount in item 13(b) subject to the proviso in Item 13 b page 97.
	[Not used]	

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Separable Portion 1

24	Liquidated damages, rate (subclause 34.7) for the Separable Portion	s22
25	[Not used]	
26	[Not used]	
26A	Maximum amount of delay damages (subclause 34.10)	

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Separable Portion 2

Separable portion 2 (SP2)

(clause 4)

2. Final Landscape and Pavement Works post dwelling construction.

being 40mm Asphaltic top coat and Final Street Verge landscaping

Ref

1. 40mm Asphalt -
2. Stage 1 Dry Grass
3. Stage 1 Trees

s22 [redacted]

Item		
7	a) Date for Practical Completion for Separable Portion (subclause 1.1)	.....
	OR	
	b) Period of time for Practical Completion (subclause 1.1)	22 days from Site access being given under Clause 24.1 . DHA will give 4 weeks written notice of completion of dwelling construction for the asphalt re-establishment)
13	Contractor's security	
	a) [Not used]	
	b) Amount or percentage of Contract Sum for this Separable Portion 5% (clause 5)	5% of the SP2 Contract Sum (to be provided by one unconditional and irrevocable bank guarantee).
	c) [Not used]	
	d) Time for provision (clause 5)	on Execution Date
	e) Additional security for unfixed plant and materials (subclauses 5.4 and 37.2)	Not used
	f) Contractor's security upon Certificate of Practical Completion is reduced to (subclause 5.4)	0% of the amount in item 13(b) subject to the proviso in Item 13 b page 97. Security to be returned on completion of the DLP period (Item 27).
	[Not used]	
24	Liquidated damages, rate (subclause 34.7) for the Separable	s22 [redacted]

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Separable Portion 2

	Portion
25	[Not used]
26	[Not used]
26A	Maximum amount of delay damages (subclause 34.10)

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Part B

This form may also be used where the *Principal* is required to provide an unconditional undertaking, by substituting *Principal* for *Contractor* and vice versa, wherever occurring

Annexure to the
Australian Standard General Conditions of Contract
AS 4000 – 1997

Deletions, amendments and additions

The Contractor acknowledges and agrees that the General Conditions of AS4000 (The Contract) has been significantly amended by DHA. See page 9.

A marked up version of the Contract against the original Australian Standard, is available after a request to DHA Procurement.

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Approved form of unconditional undertaking

(clause 5 – Security)

At the request of ..... ('the Contractor') and in consideration of ..... ('the Principal') accepting this undertaking in respect of the contract for.....('the Contract')

.....

ACN.....(`the Financial Institution') unconditionally and irrevocably undertakes to pay on demand any sum or sums which may from time to time be demanded by the Principal to a maximum aggregate sum of.....

.....($.....) ('Sum')

The undertaking will come into full force and effect from the date of this undertaking and is to continue until notification has been received from the Principal that this undertaking is no longer required by the Principal or until this undertaking is returned to the Financial Institution or until payment to the Principal by the Financial Institution of the whole of the Sum.

This undertaking and the obligations of the Financial Institution under this undertaking are not released, discharged or otherwise affected by anything which, but for this provision, might have that effect including:

- any variation (with or without the knowledge or consent of the Financial Institution) to any provisions of the Contract or the works or services required to be performed by the Contractor under the Contract, or in any acts or things to be performed under or in connection with the Contract; or
- any breach of the Contract by the Contractor or the Principal.

Should the Financial Institution be notified in writing, purporting to be signed by or on behalf of the Principal that the Principal desires payment to be made of the whole or any part or parts of the Sum, it is unconditionally agreed that the Financial Institution will make the payment or payments to the Principal forthwith without reference to the Contractor and notwithstanding any notice given by the Contractor not to pay same.

The Sum secured by this undertaking will be automatically reduced by any payment made by the Financial Institution to the Principal under this undertaking.

Provided always that the Financial Institution may at any time without being required so to do pay to the Principal the Sum less any amount or amounts it may previously have paid under this undertaking and thereupon the liability of the Financial Institution hereunder shall immediately cease.

Executed as a deed poll

[***Drafting Note: Financial Institution to insert appropriate execution clause***.]

Dated at.....this .....day of.....20.....

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Scope of Works

1. General description

The Contractor will provide all works and services in connection with the civil works at Academy Close, Campbell ACT and as set out specifically below.

However, the Contractor acknowledges that the works and services listed below:

(a) are not a definitive description of the Works; and

(b) will not limit or affect the Contractor's general obligation to perform WUC and to do all things that might reasonably be expected of the Contractor from time to time as necessary or appropriate to secure the proper and timely performance of WUC in accordance with this Contract.

2. Detailed description.

The detailed description and requirements for the balance of this scope of work is set out in the following pages entitled "Part 2 of Annexure D detailed description of scope of works for Academy Close Civil works, being separable portions 1 and 2. The WUC is divided into 2 Separable Portions.

3. Works Documents

The relevant Works Documents detailing WUC and the Works are referenced in the table below. They will be attached as Schedule 1 to Annexure Part D. The Contractor acknowledges that it had been provided with a copy of all Works Documents prior to the receipt by it of this Contract for execution.

By its execution of the Contract, the Contractor confirms receipt of and the opportunity to examine all the documents listed below and agrees that they form part of the Contract.

1. Contract Works Drawings

Drawing	Drawing Title	Revision	Date
C000	Cover Sheet, Drawing Index and Locality Plan	8	14.05.20
C001	Standard Notes	8	14.05.20
C005	Standard Details	5	14.05.20
C006	Retaining Wall Details Sheet 1	1	07.07.20
C007	Retaining Wall Details Sheet 2	1	07.07.20
C010	Concept Erosion, Sediment and Pollution Control Plan	10	14.05.20
C010A	Concept Erosion, Sediment and Pollution Control Details	8	14.05.20
C011	Landscape Management and Protection Plan	11	01.07.20
C012	Concept Temporary Traffic Management Plan - General Construction	8	14.05.20
C013	Concept Temporary Traffic Management Plan - Part Lane Closure	8	15.04.20
C020	Turning Templates	9	14.05.20
C021	Turning Templates	9	14.05.20
C050	General Arrangement Plan	8	14.05.20
C070	Existing Services Plan	9	15.05.20
C071	Existing Services Demolition	6	14.05.20
C072	Combined Services Sheet 1 of 4	9	14.05.20

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C073	Combined Services Sheet 2 of 4		9	14.05.20
C074	Combined Services Sheet 3 of 4		9	14.05.20
C075	Combined Services Sheet 4 of 4		9	14.05.20
C080	Demolition Plan		4	14.05.20
C110	Grading Plan Sheet 01 of 04		9	26.05.20
C111	Grading Plan Sheet 02 of 04		8	14.05.20
C112	Grading Plan Sheet 03 of 04		9	26.05.20
C113	Grading Plan Sheet 04 of 04		8	14.05.20
C115	Bulk Earthworks Volumnes Plan		1	02.06.20
C120	Site Works and Pavement Plan Sheet 1 of 4		16	01.07.20
C121	Site Works and Pavement Plan Sheet 2 of 4		11	01.07.20
C122	Site Works and Pavement Plan Sheet 3 of 4		12	01.07.20
C123	Site Works and Pavement Plan Sheet 4 of 4		12	09.07.20
C125	Off-Site Works Plan Sheet 1 of 4		8	14.05.20
C126	Off-Site Works Plan Sheet 2 of 4		8	14.05.20
C127	Off-Site Works Plan Sheet 3 of 4		6	14.05.20
C128	Off-Site Works Plan Sheet 4 of 4		6	14.05.20
C130	Typical Cross Section		10	03.06.20
C140	Road Long Sections	Ch:00.000 - CH280.000	7	14.05.20
C141	Road Long Sections	Ch:280.000 - CH280.000	7	14.05.20
C150	Detailed Cross Sections	Sheet 1 of 4	6	14.05.20
C151	Detailed Cross Sections	Sheet 2 of 4	6	14.05.20
C152	Detailed Cross Sections	Sheet 3 of 4	6	14.05.20
C153	Detailed Cross Sections	Sheet 4 of 4	6	14.05.20
C160	Concept Stormwater Management Plan Key Plan Sheet 1 of 4		10	14.05.20
C161	Concept Stormwater Management Plan Sheet 2 of 4		9	14.05.20
C162	Concept Stormwater Management Plan Sheet 3 of 4		9	14.05.20
C163	Concept Stormwater Management Plan Sheet 4 of 4		9	14.05.20
C165	Stormwater Details Sheet 1 of 2		4	14.05.20
C166	Stormwater Details Sheet 2 of 2		4	14.05.20
C170	Water Plan Key Plan Sheet 1 of 4		7	01.07.20
C171	Water Plan Sheet 2 of 4		8	01.07.20
C172	Water Plan Sheet 3 of 4		7	01.07.20
C173	Water Plan Sheet 4 of 4		7	01.07.20
C176	Exiting Water Long Section		4	14.05.20
C177	Exiting Water Cross Section 1 of 2		5	14.05.20
C178	Exiting Water Cross Section 2 of 2		5	14.05.20
C180	Sewer Plan Key Plan Sheet 1 of 4		7	14.07.20

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C181	Sewer Plan Sheet 2 of 4	7	14.07.20
C182	Sewer Plan Sheet 3 of 4	7	14.07.20
C183	Sewer Plan Sheet 4 of 4	7	14.07.20
C190	TCD Plan	1	01.07.20
C200	Proposed Gas Plan	1	01.07.20
E001	Electrical Cover Sheet, Legend and Schedule	3	29.05.20
E002	Electrical Site Plan	4	29.05.20
E300	Single Line Diagram	1	29.05.20
AYCA-1YRFQF	Site Plan - Pit and Pipe Design	1	10.06.20
	Landscape Drawings		
3715 F102	Landscape Details Hardscape	C	08.07.20
3715F203	Wall and Fence Layout Plan	D	08.07.20
3715D101	Cover Sheet and Key Plan	A	10.06.20
3715D102	Legends	A	10.06.20
3715D201	Surfaces Finishes Plan Area 1	A	10.06.20
3715D202	Surfaces Finishes Plan Area 2	A	10.06.20
3715D301	Planting Plan Area 1	A	10.06.20
3715D302	Planting Plan Area 2	A	10.06.20
3715D401	Setout Plan Area 1	A	10.06.20
3715D402	Setout Plan Area 2	A	10.06.20
3715D403	Detailed Setout Plan Pocket Parks 1 & 2	A	10.06.20
3715D501	Finish Levels Plan Area 1	A	10.06.20
3715D501	Finish Levels Plan Area 2	A	10.06.20
3715D601	Fence Staging Plan	A	10.06.20
3715D701	Landscape Details	A	10.06.20
3715F401	Landscape Details Softscape	A	10.06.20
3715F401	Landscape Details Hardscape	A	10.06.20
3715F403	Landscape Details Hardscape	A	10.06.20

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2. Reference Material for the Contractors Information - *(Works Documents continued)*

a. AMC- Binder1
b. C9336 - Proposed Residential Development - Block 3 Section 65 Campbell - Geo Investigation
c. NCA- Decision-Notice

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ANNEXURE D: SCOPE OF WORKS

Civil Works

Academy Close, Campbell ACT

(Fairbairn Ave & Truscott Street, Campbell)

b. Preamble

Defence Housing Australia (DHA) are developing a land holding located at Fairbairn Ave and Truscott Street in Campbell. The development is a re-development of the site know as Academy Close.

The site, which has an area of 2.75Ha, is being redeveloped to accommodate 30 residential dwellings for Defence personnel. DHA intend to deliver the development works via two construction packages, a Civil Works package that includes all of the works typical to those required for a residential land sub-division and a housing construction package.

This package is for the whole of the Civil Works that are required to deliver the completed, fully serviced land lots, ready for the commencement of the dwelling construction works.

A Works Approval application (WA101918) has been received from the NCA.

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The construction plans to form part of the Contract have been approved by National Capital Authority (NCA). As such the following scope of is based on the approved documentation.

The offsite works authority approval will follow the planning approval and is expected to be in parallel to the contract negotiation period.

As the amended plans are finalised, and when Transport Canberra and City Services (TCCS) and Icon Water release the Letter of Design Review (LDR) / Water and Sewer approval, the Contractor will be required to submit any adjustments to their contract price to accommodate differences between the original tender documents and the modified documents if any. Where applicable, the Contractor will be required to apply the rates submitted in the original tender submission so as to calculate the adjusted final lump sum price for the contract.

c. General Terms

The work included in the contract comprises the provision of all plant, labour and materials of whatever kind necessary for the complete and proper construction of the 30 Lot residential development.

The Contractor acknowledges that the works and services listed below:

a) Are not necessarily a definitive description, and that other work in connection (WIC) with the described works may be required to achieve those work; and
b) that the contractor understands and has allowed for such WIC; and
c) that any such WIC will not limit or affect the Contractor's general obligation to perform the Works Under Contract, and that the contractor can do all things that might reasonably be expected of the Contractor from time to time as necessary or appropriate to secure the proper and timely performance of WUC in accordance with this Contract.
d) That the Contractor is required to hold appropriate accreditation with all service authorities including Icon Water to undertake the full scope of works;
e) The contractor or nominated subcontractors are required to be suitable accredited to undertake Electrical Reticulation works for Evo-energy and construction of National Broadband Network infrastructure.

The contract amount will be Lump Sum amount, the contract does not make allowance for extras including but not limited to rise and fall, rock excavation, conduits obviously necessary but not specified or otherwise documented and matching to existing works.

THE LUMP SUM PRICE IS TO INCLUDE FOR EXCAVATION IN ALL TYPES OF MATERIAL INCLUDING EXCAVATION IN ROCK.

d. Form of Contract & Preliminary Requirements

The Contractor will be engaged on a Modified AS4000 (as amended by DHA) Contract.

The Site is defined as Block 3 Section 65 Campbell; and including the adjacent verges through to the adjacent road pavements where the contract documents indicate the limits of the works.

The Site Works are all those works that are required to obtain final Certification from Transport Canberra and City Services (TCCS) and Clearance Certificates as required from all Service Authorities and in accordance with the Development Consent, and are generally, but not limited to, the following;

The scope of works relates to works that are associated with the Civil Works, as defined on Civil and associated Construction documentation. Without limiting the contractor's assessment or obligations the following should be allowed for:

a) Site establishment and Management

    i) Preparation of a Site Identification Sign that incorporates the site plan (approx. size 1500x1000), DHA logo and details, together with the details and logos of the major

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project consultants. Details to be provided to DHA for approval prior to making and erecting the sign.

ii) Prepare and implement / maintain required Traffic Management Plans (TMP's) to the satisfaction of the NCA, TCCS and the DHA Superintendent. The TMP's must address earthmoving vehicles, trucks and machines, delivery and work vehicles entering and leaving site. They shall address areas for parking of site machinery, and visiting vehicles, location of site sheds. Refer to reference documents for current site access and temp fencing. The contractor is responsible for satisfying themselves as to the Temporary Traffic Management (TTM)requirements to satisfy their construction methodologies.

iii) Prepare and implement a Construction Management Plan (CMP) including Environmental, Safety and Quality to the satisfaction of TCCS and DHA Superintendent. The CMP shall include all issues related to this type of work and be specific to this site. Current Work Health Safety (WHS) legislation, regulation and authority directions shall be included.

iv) Installation and maintenance of environmental / erosion and sediment controls in accordance with the CMP and as approved by ACT EPA (approval to be undertaken by the contractor).

v) Liaison with representatives from the Principal and other relevant Authorities.

vi) All set out and survey requirements to complete the works.

vii) Maintaining all plant and equipment in accordance with relevant Standards.

viii) Ensure compliance with TCCS and other Authority standards, specifications and requirements for all aspects of works and compliance with the contract.

ix) Site establishment and provision of site amenities, including provision for sufficient off-street parking.

x) Supervision for the duration of the project.

xi) All temporary power and communication equipment required to conduct the works.

xii) Temporary delineation fencing (barrier mesh fencing or similar) sufficient to prevent access to the conservation area by personnel, plant and vehicles.

xiii) Temporary site fencing must be installed as detailed on the temp fencing layout plan.

xiv) No works to commence on site until approved Erosion and Sediment Controls are in place and have been inspected by Contractor's responsible person and Superintendent.

xv) Daily maintenance of sedimentation controls

xvi) The Contractor shall make allowance in the lump sum price to host one neighbourhood community liaison session (BBQ or Afternoon tea) days during the construction period.

xvii) The Contractor shall also make adequate allowance in the lump sum price to appease neighbours during the construction period where necessary. For example, this may come in the form of washing dust from neighbouring properties when complaints are received, these works will be at the discretion of DHA and Superintendent.

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xviii) An allowance for a water cart to be available 7 days a week is to be made in the lump sum price. The inclusion of 90 days of water cart hire is to be included. The use of this allowance will be based on agreement between DHA and the Contractor.

xix) A weekly site meeting will be held on a mutually agreed day, attended by the Principal and its representatives and Contractor's Supervisor and Project Manager.

xx) The contractor is to provide a weekly update of its construction program every meeting. This should be provided by way of a "statused" version of the contract program.

xxi) The Contractor must notify the Principal within 24 hours of any safety, environmental or other incidents on the site.

e. Civil Construction Works.

All works are to be constructed will be contained in the approved plans. These include, but are not limited to;

a) Civil Construction Drawings issue Northrop Plan Set;
b) Landscape Plans;
c) Icon Water Plans for Sewer and Potable Water;
d) Electrical Reticulation Plans prepared by Northrop;
e) Jemena (Gas) Plans;
f) NBN Plans; and
g) Structural Plans.

The works within the Contract include but may not be limited to;

- Compliance with all directions from Superintendent, NCA, TCCS, Evoenergy, Icon Water and other applicable authorities.
- Set out of road centrelines and /or calculations for GPS Machine Control. Contractor to provide Superintendent a copy of calculations in AutoCAD(.dwg) format prior to commencement.
- Earthworks for the works under the contract are to include but not be limited to;
  - Strip topsoil to on-site stockpile location agreed with the Principal for re-use.
  - Complete earthworks in accordance with civil construction drawings, including excavation and haulage to/from cut area(s).
  - All excess cut from bulk earthworks or other activities (detailed excavations, trench spoil etc) to be removed from site.
  - Excavation in rock and any import deemed to be required by the Contractor.
  - Excavation of any unsuitable material within road subgrade and replacement with select fill of CBR appropriate for the pavement design, as required. The Contractor must allow for disposal or re-use of any unsuitable material.
  - Any over-wet material that is not unsuitable must be stockpiled to dry for use in future stages.
  - Compact fill to layers in accordance with the geotechnical specification under Level 1 geotechnical supervision. In addition to the requirements of AS3798-2007, all "lot" fill to be placed to minimum 98% standard compaction.
  - Re-spread topsoil to roads and footpath areas.
  - Seed or hydromulch to disturbed areas
- Installation of stormwater drainage including Water Quality elements and drainage swales pollutant traps etc.
- Installation and testing of subsoil drainage.
- CCTV of all stormwater lines, as required by TCCS standards

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- Construction of road works including pavement, kerbs and gutters, verges, paths, pram ramps, street trees, street signs and line marking.
- Retaining walls to be constructed in accordance with construction drawings.
- Installation of all permanent fencing in accordance with landscape architects fencing plans.
- Installation of all service conduits required in footpath and road crossings. These include sewer, potable water, telecommunications, gas, electricity etc as applicable. The location and level of each end of each conduit and its appropriate service to be documented by Contractor's Surveyor. Results are to be forwarded to Superintendent in AutoCAD(.dwg) format.
- Installation of Electrical Reticulation including;

o High Voltage electricity supply and kiosk installation

o Street lighting

o Low voltage electricity supply

o Contractor surveyor will peg "Lot" frontages and proposed kiosk easement sites prior to installation of pillars and kiosk.

- Installation of sewer and potable water to Icon Water requirements. Including liaison with Icon Water and all testing.
- Installation of Gas supply works to the site. Contractor to liaise with Jemena (gas supplier) to arrange shared trenching where required.
- Installation of NBN to site. Contractor to undertaken NBN installation in accordance with NBN Construction requirement, including testing, inspection and rectification of defects. Contractor is to undertake rectification of defective works as identified by NBN inspection within 5 days (subject to extent of defects)
- Construction of footpath, concrete access ways and kerbs to be constructed in accordance with approved plans and MCC standards.
- Landscaping in accordance with approved plans and TCCS standards. Contractor is to advise Superintendent 3 days prior to delivery of trees, to enable inspection of product on delivery by Superintendent's representative for landscape works.
- Works as Executed Drawings. Contractor will provide work as executed information to the Superintendent as obtained during Construction by the Surveyor for incorporation in the WAE Plans to be prepared by the Contractors Surveyor.

3. Demobilization at the end of Contract.

- When all post construction erosion and sediment control measures have been installed, including but not limited to, footpath grassing, water quality basins, spray grassing of exposed areas, the Contractor shall remove all erosion screen fencing, site sheds, and building materials, make good any temporary access and site vehicle tracks, gravel and other non-soil stockpile areas.
- DHA representative and Superintendent will inspect the site on completion. Contractor to make good any deficient works.

GENERAL SPECIFICATIONS

DHA Civil and associated works, Academy Close, Campbell, ACT.

Please note: all contractor obligations in this annexure are to be included within the fixed price Contract Sum, unless otherwise specified.

1. TECHNICAL SPECIFICATION

The Technical Specification applying to the works described are:

a) Development Construction Specifications and standard drawings by TCCS Municipal Infrastructure Technical Specification (MITS) / Municipal Infrastructure technical Specifications (MITS)and any addenda included herein and related thereto;

b) Icon Water Contract, Standards, Specifications and requirements;

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c) Evoenergy Network Standards, Specifications and requirements;
d) Jemena standards, Specifications and requirements for gas reticulation;
e) Conditions contained within Works Approval (to be provided); Contract Specifications and Special Conditions as detailed herein;
f) Pavement Design prepared by Northrop;
g) Technical Specification (Landscape) prepared by DSB Landscape Architecture

2. PROTECTION OF THE WORKS

The Contractor shall make provision to properly barricade off the works to ensure public safety and to prevent vehicles from travelling over the works site as required by NCA and TCCS until the project is completed. The Contractor shall supply and maintain all barricades, signs and other materials necessary to protect the works.

3. PUBLIC UTILITIES

Prior to the commencement of these works, the Contractor shall ascertain the position and depth of all public utility or other services which may be interfered with during the excavation and/or construction of these works.

All damage caused in execution of works under this contract to any public utility shall be repaired at once and the Contractor shall arrange for all necessary work to be executed at his own expense to the satisfaction of the Superintendent.

4. QUANTITIES

All quantities listed in the Schedule of Quantities have been measured and confirmed. **No Claim** if the quantities provided by DHA are not correct. The quantities have been calculated from the works as shown or as implied on the contract drawings or in the specifications. Items in the Quantities marked with (PQ) or (Provisional) are provisional and shall be determined by joint survey once the full extent of the required works can be determined.

5. UTILITY SERVICES

Electricity - Evoenergy

All road crossing conduits, conduits in pathways and easements are to be laid in accordance with the approved plans and to the requirements and specifications of Evoenergy. All trenches are to be back filled and compacted to the requirements of Evoenergy at the time of works. Draft electrical reticulation plans are provided.

Telecommunications (NBN)

The Principal will enter into a contract with a suitably qualified telecommunication contractor to install telecommunication pit and pipe network. The Contractor shall liaise directly with the nominated contractor to ensure that the necessary street crossings, conduits are installed as the work proceeds. All trenches are to be back filled and compacted by the contractor to the requirements of relevant authority at the time of works. Approved NBN plans have been provided.

Gas - Jemena

The Contractor shall liaise directly with the local construction office of Jemena to ensure that the necessary street crossings and conduits are installed as the work proceeds. All trenches are to be back filled and compacted to the requirements of Jemena at time of works

6. SHARED SERVICES TRENCHING

Shared trenching is to be adopted for services. The width of the shared trench is to be as per the ACT Standard shared trench details such that the electricity cables, telecommunications ducts, and gas mains can be installed in the correct footpath allocations.

Complete all nominated gas infrastructure in accordance with Jemena requirements. Include all road crossings.

Complete all nominated electrical infrastructure in accordance with Evoenergy requirements. Include all road crossings.

The Contractor shall liaise directly with the location construction office of Evoenergy, Jemena and the “telecommunication contractor” to ensure that the necessary street crossings and reticulation are installed as the work proceeds. The Contractor shall co-ordinate the laying of all services within the shared trench.

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All testing, reporting and commissioning of electrical services is to be completed expeditiously to facilitate the timely release of the Notification of Arrangements.

The Contractor is to take all necessary steps to prevent interruption of electricity supply and telecommunication services to the surrounding properties.

The Project Manager shall arrange with the following service authorities to supply details of conduit and road crossing locations as the work proceeds so that they can be incorporated at the time of construction and prior to the completion of the road pavements.

Electricity	Evoenergy
Communications	NBN
Gas	Jemena
Water & Sewer	Icon water

Road crossing conduits, conduits in pathways and conduits for electricity to be laid in accordance with the requirements and Specification of Evoenergy.

The Contractor is to send a marked up copy of the Duct, Easement and Trenching drawing showing 'as installed' information, signed by the Contractor's Chartered Professional Engineer certifying the accuracy of the duct installation, to the Superintendent within five working days of the completion of the installation.

As the Contractor carries out the excavations required during trenching operations, Evoenergy, Jemena and "telecommunication contractor" field staff will confirm duct positions prior to accepting trenches and installing cables.

The Contractor will allow in the programming of the works for the expeditious and timely completion, connection and commissioning of the electrical works such that the applicable Notification of Arrangements for the electrical works within that stage can be released, without delay, by Evoenergy

The Contractor is therefore required to facilitate the completion and compilation of all data, test results and reports that may be required and forward this date to Evoenergy without delay.

The Contractor will be responsible for the excavation to alignment and depth of trenches, bedding and backfilling telecommunication trenches, to Authority requirements. All road crossing conduits and conduits in pathways and easements are to be laid in accordance with the Specification and the requirement of the relevant authority.

The Contractor will be responsible for the excavation to alignment and depth of trenches, bedding and installing of gas lines and backfilling these services to Jemena requirements. All road crossing conduits and conduits in pathways and easements are to be laid in accordance with the Specification and to be the requirement of Jemena.

The Contractor will be responsible for providing set out levels for finished ground levels, as required, for electrical, telecommunications and gas. Should the services not be finished to the correct ground or footpath level, or should the services settle or subside for whatever reason during the contract or maintenance period, the Contractor at their expense will adjust the services accordingly back to the correct levels.

7. ELECTRICAL

Contractors are responsible to ensure that the electrical sub-contractor provides any appropriate bonds to Evoenergy.

Prior to the commencement of works (or within 3 weeks of approval of electrical reticulation), the Contractor is to notify the Superintendent of the nominated electrical sub-contractor to enable completion of documentation with Evoenergy. Any delays in commencement of Evoenergy works due to failure of contractor to provide details of ASP1 will not be grounds for extension of time.

8. GEOTECHNICAL ENGINEERING

i) A pavement design was prepared by Northrop Engineers based on a geotechnical investigation by a geotechnical engineer.

ii) The Contractor shall pay for quality assurance testing associated with "Lot" filling operations and pavement construction. Any failures will be retested at the Contractors full expense.

iii) Any costs associated with Geotechnical requirements for backfilling of trenches etc. to TCCS or relevant service authorities requirements will be borne by the contractor and needs to be allowed for in the Contractors rates.

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iv) Level 1 and Level 2 Testing, certification and lot classification to be co-ordinated and allowed for the by Civil works contractor.

9. VALIDATION OF IMPORTED FILL

It is anticipated that suitable clean fill material will be available from the site where cutting is required.

In the event of shortfalls, and fill that has been approved by the Superintendent and Geotechnical Engineer is to be imported from sources outside of the site by the Contractor. This must be sampled and analysed by the contractors Geotechnical Engineer to validate the material as clean fill. If the material for importation is Virgin Excavated Natural Material (VENM) then a validation sampling density of 1 sample per 100m3 would be acceptable. All fill introduced to the site must undergo a contaminated site assessment and must be approved by the site Geotechnical Engineer and TCCS (if applicable). This assessment may consist of either:

a. A full site history of the source of the fill (if known) examining previous land uses or geotechnical reports associated with the source site to determine potential contamination; or

b. A chemical analysis of the fill where the site history of a preliminary contamination assessment indicates potential contamination or contamination of fill material; and

c. Must provide the Superintendent / TCCS with copies of validation certificate verifying the material to be used is free of contaminants and fit for purpose i.e. residential, commercial or industrial use.

The Contractor must at his own cost validate the imported fill and provide the Superintendent and TCCS with copies of validation certificates verifying the material to be used is free of contaminants and fit for purpose re use in residential, commercial or industrial use.

Records of the following must be submitted to the Northrop - monthly and at the completion of earth works if required.

a. Source (including the address and owner of the source site), nature and quantity of all incoming loads including the date, the name of the carrier, and the vehicle registration.

b. The results of a preliminary contamination assessment carried out on any fill material used in the development.

c. The results of any chemical testing of fill material.

d. No material is to be imported without the approval of Superintendent and in accordance with the TCCS Standards and Specifications.

10. BULK EARTHWORKS

Bulk earthworks on the site are to be carried out to achieve the best possible utilisation of material available. In the case that there is a surplus of excavated material to be either relocated on site or carted off site Contractor shall make his own arrangements for the disposal of any surplus material. The rate for carting the surplus material off site shall cover all applicable fees and charges associated with its disposal.

The tender is to provide details of volume of surplus material (including detailed excavation and trench spoil) to be stockpiled on site. Any material in excess of the nominated volume is to be carted off site at the full expense of the contractor.

Filling is to be placed, compacted and tested by a NATA Registered Laboratory so that on completion, a “lot” classification in accordance with AS2870-2011 can be given by the contractors Geotechnical consultant.

Bulk earthworks is to form part of the lump sum costs, and no variation will be applicable if additional material is to be imported.

11. NON CONFORMING PAVEMENTS

A pavement which does not conform to the general and specific requirements of the specification will be deemed to be nonconforming for either its entire area or such areas as can be delineated by geotechnical testing.

If a pavement is classed as nonconforming by the Superintendent or TCCS then the Contractor may elect to have further geotechnical testing, at their expense, undertaken by a geotechnical engineer approved by the

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Superintendent to determine compliance with the requirements of the Specification. The results of this testing shall include all testing that has been carried out on the nonconforming section or sections of road.

All nonconforming sections of the pavement shall be rectified by the Contractor in accordance with all the requirements of the specification at no cost to the Principal.

The Superintendent shall notify the Contractor and the Principal of all nonconforming areas within three days of written test results being made available to the Superintendent.

The Contractor shall state in writing within three days of notification by the Superintendent, the methods proposed to be utilised to ensure that the pavement meets the requirements of the Specification. It is the Contractor's responsibility for ensuring that the modified pavement meets the requirements of the Specification.

The cost of any nonconforming tests shall be deducted from Progress Claim Certificates and the Contract Sum.

Any pavement layer which has been placed by the Contractor which deteriorates from optimum moisture content, specified compaction or design thickness as a result of rainfall or other reasons, shall be rectified, re-compacted and re-trimmed to achieve the specified compaction and tolerances. The cost of this work shall be at the Contractor's expense.

12. DIVERTING WATER, DEWATERING

The Contractor at his own expense shall take all necessary action to divert any surface and/or subsoil water from interfering with the progress of the works. He shall keep these works free from such water and shall take all the reasonable measures to prevent any injury to works by water due to flood seepage or other causes.

At the same time the Contractor shall be responsible for any damage to adjacent properties caused by the concentration of water and shall take all precautions to avoid scouring or siltation downstream by using established soil conservation techniques.

Any work or material damaged by water from any source shall be taken up, replaced with fresh material and reconstructed by the Contractor at his own cost to the satisfaction of the Superintendent.

13. INSPECTIONS

The Contractor shall arrange for all inspections as required by NCA, TCCS, Icon Water and anyb other service authorities to be undertaken and shall also notify the Superintendent of the time of those inspections.

14. WATER AND SEWER CONSTRUCTION

Construction is required to be in accordance with Icon Water Requirements, Contract, Standards and Specifications.

The Contractor shall provide all testing required by Icon Water. All costs associated with testing shall be included in the lump sum.

Costs for connection works required to be done by Icon Water will be borne by the Principal.

15. CONTROL & SUPERVISION

The Contractor's representative shall be a qualified engineer or with equivalent qualifications and shall have had experience in executing work equal in nature and magnitude to the work in this Contract.

16. INTERPRETATION OF DRAWINGS

The Contractor shall check and ensure that any subcontractor checks all relevant dimensions on site prior to proceeding with the work. Under no circumstances shall dimensions be scaled from drawings. Any discrepancies shall be referred to the Superintendent for decision.

17. PUBLIC ROADWAYS

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Public Roadways adjacent to the site shall be maintained free of construction material at all times. All costs associated with this item are included in contract sum.

18. CONTAMINATION

It is possible during construction that unexpected finds of contamination may be found and require remediation – should unexpected finds of contamination be found these will need to be addressed accordingly.

During the performance of the work the contractor should stop work immediately if any contamination (discolouration, building rubble, asbestos pieces, ash) is found on any particular area of the site. The contractor shall immediately contact/advise the Superintendent and cease work at this location and implement precautionary measures to contain the material.

Every effort will be made to provide continuity of work, but this may be affected by the necessary testing and validation that may be required. The contractor will need a flexible approach to the work. No additional payment will be made for delays due to discontinuity of work.

Work sites are to be left clean and tidy to the satisfaction of the Project Manager/Superintendent, and if remediation occurs also to the hygienist. All material dropped on roads is to be regularly cleared by and at the Contractor's expense. All site construction fences are to be maintained at all time by the Contractor.

19. POLLUTION CONTROL – EROSION AND SEDIMENT CONTROL

Where operations involve excavation, filling or grading of land, or removal of vegetation, including ground cover, dust is to be suppressed, until such time as the soil is stabilised.

All topsoil, sand, aggregate, spoil or any other material shall be stored clear of any drainage line, easement, water body, stormwater drain, footpath, kerb or road surface.

Sediment and erosion control measures are to be adequately maintained during the works and must be specifically inspected and repaired/maintained before and after each and every storm event.

The Contractor will ensure that all applicable statutes are not breached.

All sediment and erosion control measures shall be maintained in a satisfactory working order throughout the contract or up until such time as the area that they protect is rehabilitated.

The contractor shall inspect the site regularly and following rainfall events to ensure that:

- Control measures operate effectively and to initiate repairs or maintenance as required.
- Spilled material is removed from temporary basins, silt fencing or traps when 10% capacity is trapped in the settling zone. All collected sediment is to be removed to areas where further pollution to downslope lands and waters is unlikely.
- Gravel or other materials are clean and have been reinstated or replaced to maintain effective performance.

All devices are to be inspected after each storm for structural damage or clogging by silt or other debris and to make prompt repairs or replacement.

20. INTERRUPTION TO EXISTING SERVICES

The Contractor is required to make enquiries to all Public Utilities and to determine the location & level of all services in the work area prior to commencement of works.

The Contractor shall take all precautions necessary to prevent damage to existing fencing, drainage structures, telephone and power lines, water mains and services, and/or other improvements during the construction period. Any damage caused by the Contractor shall be made good by the Contractor at his expense, or the Superintendent shall arrange for such damage to be made good by others and for the costs involved to be deducted from payments due to the Contractor. It is the Contractor's responsibility to establish what services or improvements exist or are under construction at the Site.

Any damage caused by the Contractor shall be notified immediately to the Superintendent and to the Public Utilities or persons concerned.

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21. CONNECTIONS TO EXISTING WORKS

Where the works are continuous with or adjacent to existing work, the Contractor is responsible for making the proper junction between the two sections and for making good any damage to the adjoining works. The Contractor shall confirm that the existing works conform in level and location with those shown on the Drawings before commencing any work on site. No claim will be considered consequent upon the Contractor failing to ensure that this condition is met.

22. ALLOWANCE FOR INCLEMENT WEATHER

The Contractor shall not be entitled to any payment arising from an extension of time due to bad weather.

The approval of any extensions of time due to bad weather will be at the sole discretion of the Superintendent.

23. GENERAL ON-SITE REQUIREMENTS

The Contractor shall have at all times one set of plans and specifications at the works site and shall make them available to the Superintendent if required.

The Contractor shall not exhibit or permit to be exhibited any advertisement on the site or on any land to which the Contractor has access under the Contract, unless the written permission of the Superintendent has been obtained.

Notice shall be given in an approved manner to the Superintendent for any required inspections. At least 48 hours' notice for such inspections is required. Notwithstanding the above, where it is necessary that representatives of the responsible local authority, Icon Water, EPA or a similar authority attend an inspection, sufficient notice shall be given to permit such arrangements to be made. A minimum notice of five working days is envisaged.

Where works require reinspection due to faulty workmanship or as a result of errors in construction all costs associated with the reinspection of the works by the Certifier or TCCS shall be paid by the Contractor.

24. SITE SHED

A shed must be made available on site for the use of meetings and storage of documents. The shed must have sufficient capacity for meetings with at least six (6) attendees.

25. POWER & WATER

The Contractor shall make arrangements and allow for electricity supply and water necessary for carrying out the works of this Contract.

26. SERVICES SEARCH

It is the Contractor's responsibility to make all necessary enquiries of service Authorities and 'Dial Before You Dig' to ascertain the type and location of all existing services infrastructure that exists adjacent to and within the project site.

The protection of, maintenance of and if necessary the adjustment of any existing services is to be allowed for by the Contractor in their pricing and programming of the works.

The Principal will not be responsible for any cost implications or time delays resulting from the existing services impeding the normal progress of works.

27. SURVEY SETOUT

The Principal shall provide the Contractor with a digital plan of centrelines, "lot" boundaries and sewer access chamber positions.

The Contractor shall carry out all survey set-out works from the information provided on the Drawings or subsequently provided by the Superintendent. The cost of all survey required during construction shall be deemed to be included in the Lump Sum Schedule.

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If the Contractor finds any variance between survey information supplied by the Principal and the Drawings, the Contractor shall be responsible to inform the Superintendent of this and will await the Superintendent's written advice before proceeding with the work.

The Contractor shall take every precaution not to disturb or destroy any boundary pegs, survey marks or stakes. Any boundary pegs, survey marks or stakes disturbed or destroyed shall be re-established at the entire cost of the Contractor.

The Contractor shall set out such line and level pegs as are necessary for the construction of the works as detailed in this specification. The Contractor shall continuously employ on the works a person approved by the Superintendent as capable of exercising control of line and level and the carrying out of the survey work involved. The Contractor shall make available as required by the Superintendent, survey crew, level staff and tape for the checking of line, level and distance.

28. LOT PEGGING

"Lots" are to be pegged by the Contractor for the purpose of positioning services. It will be the responsibility of the Contractor to care for and maintain all "lot" pegs.

29. WORKS-AS-EXECUTED DRAWINGS

The Contractor will engage a Project Surveyor to progressively prepare the Works-as-Executed drawings in relation to all aspects of the works.

It will be the Contractor's responsibility to liaise and arrange directly with the Project Surveyor to progressively carry out this Works-As-Executed survey upon completion of each part of the works.

30. NOT USED (Survey Marks)

31. DAMAGE TO PUBLIC ROADS AND PRIVATE PROPERTY

The use of public roads, the points of access to and crossing of public roads shall be minimised. Where public roads are used, the Contractor shall maintain these roads free of any loose earth, rock or other materials. Should such material be dropped on to public roads, it shall be promptly removed, the roads cleaned and any damage caused made good to the satisfaction of the Superintendent and the Authorities concerned without additional charge.

The Contractor is not required to carry out works on private property. The Contractor shall not enter private property without notification or the required permission, and shall restore the property and leave it in a neat and clean condition on completion of the works.

The Contractor shall prepare a dilapidation report prior to the commencement of works. The report shall cover all TCCS / NCA roads and public assets bounding the site, and shall include clear photos and descriptions of all infrastructure and improvements on both public and private property adjacent to the site. The Contractor shall submit four copies of the report to the Superintendent.

32. REGULATORY BODIES

All work done under this Contract, all material used and all equipment, appliances and machines installed shall conform in all respects with the requirements and regulations of Government Department of Statutory Authorities having control over or in any way regulating the works. All Local Government, EPA, WorkCover and Department of Natural Resources guidelines must be observed and the requirements fulfilled.

33. FINAL INSPECTION

The Contractor must ensure that at the time of final inspection all works are presented in a clean & tidy manner including pipes and pits cleaned of all silt & debris, footpaths trimmed, gutters and pavements swept and cleaned, grass seeding established and mown and all construction debris and surplus materials removed from site and disposed of.

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All costs associated with the presentation of the site for final inspection shall be included in the lump sum.

34. LANDSCAPE WORKS

The landscape works will be delivered in two stages;

Separable Portion 1 (SP1)- Landscaping Stage 1 comprising-

- Embellishment of pocket parks
- Truscott and Fairbaine Avenue
- 1 strip of turf (sediment control behind kerb)
- Reserve interface

Separable Portion 2 (SP2)- Landscaping Stage 2 comprising-

- Street trees final back of kerb turf and landscaping

Stage 1 and 2 Detailed Landscape packages have been provided.. Stage 2 landscaping will be in co-ordination with the nominated DHA house builder.

35. RETAINING WALLS AND FENCES

The contractor will be constructing all retaining walls as shown, perimeter fencing and some dividing fencing as shown on the plans.

36. FINAL WEARING COURSE

The Pavement will be delivered in two stages-

Separable Portion 1 stage 1- the bituminous scratch coat <9.5mm aggregate.

Separable Portion 2 stage 2- final 40mm wearing course- to be complete on finalisation of dwelling construction in co-ordination with the nominated DHA house builder. DHA must give the Contractor 4 weeks written notice of finalisation of Dwelling Construction. (During that 4 weeks the Contractor may commence the balance of the SP2 landscape works).

The objective of the two stage delivery is to ensure that the roads wearing surface is protected from the intensive dwelling construction activity.

37. SEPARABLE PORTIONS

a. **Separable Portion 1** (SP1) - All works included in the scope of works and the works documentation excluding Separable Portion 2 (SP2).

b. **Separable Portion 2** (SP2) -
   I. 40mm Asphalt -
   II. Stage 1 Dry Grass
   III. Stage 1 Trees

38. PRACTICAL COMPLETION AND DEFECTS LIABILITY PERIOD

- **Separable Portion 1** (**SP1**)- On the completion of all of the civil works (excluding those contained in Separable Portion 2) to the satisfaction of the Contract Superintendent.
- SP1 has a 12 months Defects Liability Period (**DLP**) period.

- **Separable Portion 2** (**SP2**)- On the completion of the final SP2 Landscaping and Pavement works to the satisfaction of the Contract Superintendent.
- SP2 has a 6 Months Defects Liability Period (**DLP**) Period.

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39. PROGRAM

DHA anticipate the following program

NCA Works Approval	June 2020
Service and Authority Approval	July 2020
SP1 Civil Works on Site -	August 2020-Feb 2021
Construction of Dwellings	March 2021-Feb 2022
SP 2 Final Seal and Asphalt Wearing Course Stage 2	Feb 2022

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SCHEDULE 1 TO ANNEXURE D – WORKS DOCUMENTS

Works Documents

The relevant Works Documents detailing WUC and the Works are referenced in the table below. They will be attached as Schedule 1 to Annexure Part D. The Contractor acknowledges that it has already received a copy of all the Works Documents prior to receiving this Contract for execution. By its execution of the Contract, the Contractor confirms receipt of and the opportunity to examine all the documents listed below. :

1. Contract Works Drawings

Drawing	Drawing Title	Revision	Date
C000	Cover Sheet, Drawing Index and Locality Plan	8	14.05.20
C001	Standard Notes	8	14.05.20
C005	Standard Details	5	14.05.20
C006	Retaining Wall Details Sheet 1	1	07.07.20
C007	Retaining Wall Details Sheet 2	1	07.07.20
C010	Concept Erosion, Sediment and Pollution Control Plan	10	14.05.20
C010A	Concept Erosion, Sediment and Pollution Control Details	8	14.05.20
C011	Landscape Management and Protection Plan	11	01.07.20
C012	Concept Temporary Traffic Management Plan - General Construction	8	14.05.20
C013	Concept Temporary Traffic Management Plan - Part Lane Closure	8	15.04.20
C020	Turning Templates	9	14.05.20
C021	Turning Templates	9	14.05.20
C050	General Arrangement Plan	8	14.05.20
C070	Existing Services Plan	9	15.05.20
C071	Existing Services Demolition	6	14.05.20
C072	Combined Services Sheet 1 of 4	9	14.05.20
C073	Combined Services Sheet 2 of 4	9	14.05.20
C074	Combined Services Sheet 3 of 4	9	14.05.20
C075	Combined Services Sheet 4 of 4	9	14.05.20
C080	Demolition Plan	4	14.05.20
C110	Grading Plan Sheet 01 of 04	9	26.05.20
C111	Grading Plan Sheet 02 of 04	8	14.05.20
C112	Grading Plan Sheet 03 of 04	9	26.05.20
C113	Grading Plan Sheet 04 of 04	8	14.05.20
C115	Bulk Earthworks Volumnes Plan	1	02.06.20
C120	Site Works and Pavement Plan Sheet 1 of 4	16	01.07.20
C121	Site Works and Pavement Plan Sheet 2 of 4	11	01.07.20
C122	Site Works and Pavement Plan Sheet 3 of 4	12	01.07.20
C123	Site Works and Pavement Plan Sheet 4 of 4	12	09.07.20

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C125	Off-Site Works Plan Sheet 1 of 4		8	14.05.20
C126	Off-Site Works Plan Sheet 2 of 4		8	14.05.20
C127	Off-Site Works Plan Sheet 3 of 4		6	14.05.20
C128	Off-Site Works Plan Sheet 4 of 4		6	14.05.20
C130	Typical Cross Section		10	03.06.20
C140	Road Long Sections	Ch:00.000 - CH280.000	7	14.05.20
C141	Road Long Sections	Ch:280.000 - CH280.000	7	14.05.20
C150	Detailed Cross Sections	Sheet 1 of 4	6	14.05.20
C151	Detailed Cross Sections	Sheet 2 of 4	6	14.05.20
C152	Detailed Cross Sections	Sheet 3 of 4	6	14.05.20
C153	Detailed Cross Sections	Sheet 4 of 4	6	14.05.20
C160	Concept Stormwater Management Plan Key Plan Sheet 1 of 4		10	14.05.20
C161	Concept Stormwater Management Plan Sheet 2 of 4		9	14.05.20
C162	Concept Stormwater Management Plan Sheet 3 of 4		9	14.05.20
C163	Concept Stormwater Management Plan Sheet 4 of 4		9	14.05.20
C165	Stormwater Details Sheet 1 of 2		4	14.05.20
C166	Stormwater Details Sheet 2 of 2		4	14.05.20
C170	Water Plan Key Plan Sheet 1 of 4		7	01.07.20
C171	Water Plan Sheet 2 of 4		8	01.07.20
C172	Water Plan Sheet 3 of 4		7	01.07.20
C173	Water Plan Sheet 4 of 4		7	01.07.20
C176	Exiting Water Long Section		4	14.05.20
C177	Exiting Water Cross Section 1 of 2		5	14.05.20
C178	Exiting Water Cross Section 2 of 2		5	14.05.20
C180	Sewer Plan Key Plan Sheet 1 of 4		7	14.07.20
C181	Sewer Plan Sheet 2 of 4		7	14.07.20
C182	Sewer Plan Sheet 3 of 4		7	14.07.20
C183	Sewer Plan Sheet 4 of 4		7	14.07.20
C190	TCD Plan		1	01.07.20
C200	Proposed Gas Plan		1	01.07.20
E001	Electrical Cover Sheet, Legend and Schedule		3	29.05.20
E002	Electrical Site Plan		4	29.05.20
E300	Single Line Diagram		1	29.05.20
AYCA-1YRFQF	Site Plan - Pit and Pipe Design		1	10.06.20
	Landscape Drawings			
3715 F102	Landscape Details Hardscape		C	08.07.20

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3715F203	Wall and Fence Layout Plan	D	08.07.20
3715D101	Cover Sheet and Key Plan	A	10.06.20
3715D102	Legends	A	10.06.20
3715D201	Surfaces Finishes Plan Area 1	A	10.06.20
3715D202	Surfaces Finishes Plan Area 2	A	10.06.20
3715D301	Planting Plan Area 1	A	10.06.20
3715D302	Planting Plan Area 2	A	10.06.20
3715D401	Setout Plan Area 1	A	10.06.20
3715D402	Setout Plan Area 2	A	10.06.20
3715D403	Detailed Setout Plan Pocket Parks 1 & 2	A	10.06.20
3715D501	Finish Levels Plan Area 1	A	10.06.20
3715D501	Finish Levels Plan Area 2	A	10.06.20
3715D601	Fence Staging Plan	A	10.06.20
3715D701	Landscape Details	A	10.06.20
3715F401	Landscape Details Softscape	A	10.06.20
3715F401	Landscape Details Hardscape	A	10.06.20
3715F403	Landscape Details Hardscape	A	10.06.20

2. Reference Material for the Contractors Information

d. AMC- Binder1
e. C9336 - Proposed Residential Development - Block 3 Section 65 Campbell - Geo Investigation
f. NCA- Decision-Notice

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PART E

Deed of Novation

(subclause 9.4)

This Deed made the ..... day of ..... 20..... between ..... ("Principal") of .....ACN ..... and

and..... ("the Contractor") of .....ACN .....
and..... ("the subcontractor") of .....ACN .....
and..... ("the Incoming Contractor") of .....ACN .....

witness that -

1 Upon receipt by the subcontractor of the sum certified by the Superintendent as owing under the prior contact prescribed in the Schedule hereto -

(a) the prior contract shall be discharged;

(b) the subcontractor shall release the Contractor from the further performance of the prior contract and from all claims and demands in connection with the prior contract;

(c) the Incoming Contractor shall punctually perform the obligations of the Contractor under the prior contract as far as they are not performed. The Incoming Contractor acknowledges itself bound by the provisions of the prior contract as if the Incoming Contractor had been named in the prior contract; and

(d) the subcontractor shall punctually perform like obligations and be bound to the Incoming Contractor as if the provisions of the prior contract were incorporated herein.

2 The Principal and subcontractor each warrant to the Incoming Contractor that -

(a) subcontract work carried out to the date hereof is in accordance with the provisions of the prior contract; and

(b) all claims and demands in connection with the prior contract have been made to the Contractor.

3 The Principal and subcontractor each indemnifies the Incoming Contractor from all claims and demands of the Contractor, Principal and subcontractor in connection with the prior contract.

4 A dispute or difference between

(a) the Principal and the subcontractor in connection with the Superintendent's certification of the sum owing under the prior contract; or

(b) the Incoming Contractor and the subcontractor in connection with Clause 1(c) or 1(d),

shall be resolved pursuant to the provisions of AS 4303-1995 General Conditions of Subcontract for Design and Construct which for the purposes of this Clause 4 are incorporated herein.

5 This Deed shall be governed by the Laws in force in the State or Territory stated in the provisions of the agreement between the Principal and Contractor and in the event that no State or Territory is so stated then in accordance with the Law for the time being in force in that State or Territory in which the Project is being carried out.

Schedule

Documents: .....

.....

.....

.....

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.....

In witness thereof the parties have executed this Deed of Novation by affixing their seals.

THE COMMON SEAL of (Principal)
was affixed to this document in the presence of:

.....
Secretary/Director

.....
Name (please print)

.....
Director

.....
Name (please print)

THE COMMON SEAL of (Contractor)
was affixed to this document in the presence of:

.....
Secretary/Director

.....
Name (please print)

.....
Director

.....
Name (please print)

THE COMMON SEAL of (subcontractor)
was affixed to this document in the presence of:

.....
Secretary/Director

.....
Name (please print)

.....
Director

.....
Name (please print)

THE COMMON SEAL of (Incoming Contractor)
was affixed to this document in the presence of:

.....
Secretary/Director

.....
Name (please print)

.....
Director

.....
Name (please print)

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PART F

[Not Used]

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Form of Parent Company Guarantee

This deed made the ..... day of ..... 20..... between ..... ("Principal") of .....ACN ..... and

and..... ("the Contractor") of .....ACN .....
and..... ("the Consultant") of .....ACN .....

witness that –

INTRODUCTION

A The Principal, at the request of the Guarantor, has agreed to enter into the Principal Agreement.

B It is a condition of the Principal's agreement that the Guarantor grants the guarantee and indemnities in this deed.

1 Definitions and interpretation

1.1 Definitions

The meanings of the terms used in this deed are set out below.

(a) 'Additional Amount' has the meaning given in clause 7.2.

(b) 'Authorisation' means any approval, authorisation, code of conduct, government policy, consent, exemption, filing, licence, notarisation, permit, registration, waiver and conditions attaching to any of them (as applicable) by any Authority, and includes any renewal of, or variation to, any of them.

(c) 'Authority' means any government or governmental, administrative, monetary, fiscal or judicial body, department, commission, authority, tribunal, agency or entity in any part of the world.

(d) 'Business Day' means a day other than a Saturday or Sunday or a day that is partly or wholly observed as a public holiday in the capital city of the Relevant Jurisdiction.

(e) 'Collateral Security' means any present or future Encumbrance, Guarantee or other document or agreement created or entered into by the Guarantor, the Obligor or any other person as security for, or to credit enhance, the payment of any of the Guaranteed Moneys.

(f) 'Default Interest Rate' has the meaning given in item 5 of Schedule 1.

(g) 'Dollars, A$ and $' means the lawful currency of the Commonwealth of Australia.

(h) 'Encumbrance' means an interest or power:

(i) reserved in or over an interest in any asset including any retention of title; or

(ii) created or otherwise arising in or over any interest in any asset under a bill of sale, mortgage, charge, lien, pledge, trust or power,

by way of, or having similar commercial effect to, security for the payment of a debt, any other monetary obligation or the performance of any other obligation, and includes any agreement to grant or create any of the above.

(i) 'GST' means the goods and services tax imposed under the GST Law.

(j) 'GST Law' has the same meaning as in A New Tax System (Goods and Services Tax) Act 1999 (Cth).

(k) 'Guarantee' means any guarantee, suretyship, letter of credit, letter of comfort or any other obligation:

(i) to provide funds (whether by the advance or payment of money, the purchase of or subscription for shares or other securities, the purchase of assets or services, or otherwise) for the payment or discharge of;

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(ii) to indemnify any person against the consequences of default in the payment of; or

(iii) to be responsible for,

any debt or monetary liability of another person or the assumption of any responsibility or obligation in respect of the insolvency or the financial condition of any other person but excludes this deed.

(l) 'Guaranteed Moneys' means all debts and monetary liabilities (whether actual, contingent or otherwise) which the Obligor (whether alone or with any other person) is, or at any time becomes, liable to pay to, or for the account of, the Principal [on any account/ under or in relation to the Principal Agreement] including by way of interest, fees, costs, indemnities, charges, Taxes or damages (whether for breach of contract or tort or incurred on any other ground), losses or on any other account.

(m) 'Guaranteed Obligations' means the liabilities and obligations (whether present or future, ascertained or unascertained, or actual, prospective, contingent or otherwise) of the Obligor to the Principal under or in relation to the Principal Agreement or any other document or agreement, but excluding the Guaranteed Moneys.

(n) 'Guarantor' has the meaning given in item 1 of Schedule 1.

(o) 'Indemnified Party' has the meaning given in clause 12.8.

(p) 'Notice' has the meaning given in clause 11.1.

(q) 'Obligor' has the meaning given in item 3 of Schedule 1.

(r) 'Officer' means:

(i) in relation to the Guarantor, a director or a secretary or a person notified to the Principal to be an authorised officer, of the Guarantor; and

(ii) in relation to the Principal, a director or a secretary or any other person appointed by the Principal to act as its authorised officer for the purposes of this deed

(s) 'Payment Currency' means the currency in which a payment is actually made.

(t) 'Power' means any right, power, authority, discretion or remedy conferred on the Principal by this deed or any applicable law.

(u) ' Principal' has the meaning given in item 2 of Schedule 1.

(v) 'Principal Agreement' has the meaning given in item 4 of Schedule 1.

(w) 'Project Document' means:

(i) this deed;

(ii) the Collateral Security;

(iii) the Principal Agreement; or

(iv) any agreement or document entered into or signed under this deed, the Collateral Security or the Principal Agreement.

(x) 'Relevant Currency' means the currency in which a payment is required to be made under the Principal Agreement and, if not expressly stated to be another currency, is Dollars.

(y) 'Relevant Jurisdiction' has the meaning given in item 6 of Schedule 1.

(z) 'Same Day Funds' means immediately available and freely transferable funds.

(aa) 'Surety' means a person, other than the Guarantor and the Obligor, who is or may be responsible for any of the Guaranteed Moneys under any present or future Collateral Security or otherwise.

(bb) 'Tax' means any income (including payroll), land, indirect and other taxes, GST, excise, levies (including portable long service leave levies, workplace health and safety levies and other similar levies), imposts, deductions, charges, duties, compulsory loans or withholdings, financial institutions duty, debits tax or other taxes whether incurred by, payable by return or passed on to another person and includes any interest, penalties, charges, fees, fines or other amounts imposed in respect of any of the above.

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1.2 Interpretation

(a) In this deed, unless expressly stated otherwise:

(i) the singular includes the plural and the plural includes the singular;

(ii) words of any gender include all genders;

(iii) other parts of speech and grammatical forms of a word or phrase defined in this deed have a corresponding meaning;

(iv) an expression importing a person includes any company, partnership, joint venture, association, corporation or other body corporate and any Authority as well as an individual;

(v) a reference to any thing (including any right) includes any part of that thing, but nothing in this clause 1.2(a)(v) implies that performance of part of an obligation constitutes performance of the entire obligation;

(vi) a reference to a part, clause, party, annexure, attachment, exhibit or schedule is a reference to a part and clause of, and a party, annexure, attachment, exhibit and schedule to, this deed;

(vii) a reference to any legislation includes all delegated legislation made under it and amendments, consolidations, replacements or re-enactments of any of them;

(viii) a reference to a document includes all amendments or supplements to, or replacements or novations of, that document;

(ix) a reference to a party to a document includes that party's successors and permitted assignees and that party's employees, agents, consultants and contractors;

(x) a promise on the part of 2 or more persons binds them jointly and severally;

(xi) a reference to an agreement other than this deed includes a deed and any legally enforceable undertaking, agreement, arrangement or understanding whether or not in writing;

(xii) a reference to an asset includes property of any nature, including a business, right, revenue and benefit;

(xiii) headings are for convenience only and do not affect the interpretation of this Contract; and

(xiv) no provision of this deed will be construed adversely to a party because that party was responsible for the preparation of this deed or that provision.

(b) A reference to a body, other than a party to this deed (including an institute, association or authority), whether statutory or not:

(i) which ceases to exist; or

(ii) whose powers or functions are transferred to another body,

is a reference to the body which replaces it or substantially succeeds to its powers or functions.

(c) Specifying anything in this deed after the words 'includes', 'including' or 'for example' or similar expressions does not limit what else is included.

(d) Where the day on or by which any thing is to be done is not a Business Day, that thing must be done on or by the next Business Day.

(e) Each of the obligations of the Guarantor under this deed is unconditional and irrevocable.

2 Acknowledgement by the Guarantor

(a) The Guarantor acknowledges it has received a copy of the Principal Agreement and understands the terms of the Principal Agreement.

3 Guarantee

3.1 General guarantee

The Guarantor guarantees to the Principal:

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(a) the payment of the Guaranteed Moneys; and

(b) the full and complete performance of the Guaranteed Obligations.

3.2 Guarantee payment

(a) If any of the Guaranteed Moneys are not paid when due, the Guarantor must immediately, on demand from the Principal, pay to the Principal the Guaranteed Moneys in the same manner and currency as the Guaranteed Moneys are or were required to be paid.

(b) A demand under clause 3.2(a) may be made at any time and from time to time.

4 Indemnity

4.1 General indemnity

(a) The Guarantor indemnifies the Principal against any claim, action, demand, damage, loss, liability, cost, charge, expense, outgoing or payment that the Principal pays, suffers, incurs, or is liable for in respect of any of the following:

(b) any failure by the Obligor to pay any of the Guaranteed Moneys when due or in the manner and currency in which they were required to be paid;

(c) any failure of the Obligor or the Guarantor or any other person to observe, perform or comply with any of the Guaranteed Obligations;

(d) any fact or circumstance not being as represented or warranted to the Principal by the Obligor or the Guarantor; and

(e) the Principal exercising its Powers consequent upon or arising out of any such failure, fact or circumstance.

4.2 Indemnity for avoidance of Guaranteed Moneys

(a) If any of the Guaranteed Moneys (or moneys that would have been Guaranteed Moneys had they not been irrecoverable) are irrecoverable by the Principal:

(i) from the Obligor; or

(ii) from the Guarantor on the footing of a guarantee,

the Guarantor, as a separate and principal obligation:

(iii) indemnifies the Principal against any loss suffered, paid or incurred by the Principal in relation to the non payment of that money; and

(iv) must pay the Principal an amount equal to that money.

(b) Clause 4.2(a) applies to the Guaranteed Moneys (or moneys that would have been Guaranteed Moneys had they not been irrecoverable) that are or may be irrecoverable irrespective of whether:

(i) the transactions or any of them relating to those moneys are void or illegal or avoided or otherwise unenforceable;

(ii) any matters relating to the Guaranteed Moneys are or should have been within the knowledge of the Principal;

(iii) they are or may be irrecoverable by reason of any event described in clause 10.1; and

(iv) they are or may be irrecoverable by reason of any other fact or circumstance.

4.3 Foreign currency indemnity

(a) If, at any time, the Payment Currency is not the Relevant Currency and the Principal receives or recovers any part of the Guaranteed Moneys or any amount payable by the Guarantor under this deed for any reason including:

(i) any judgment or order of any Authority;

(ii) any breach of the Principal Agreement;

(iii) the liquidation of the Obligor, the Guarantor or any Surety or any proof or claim in that liquidation; or

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(iv) any other thing into which the obligations of the Guarantor, Obligor or Surety may have become merged,

the Guarantor indemnifies the Principal against any shortfall between the amount payable in the Relevant Currency and the amount actually received or recovered by the Principal after the Payment Currency is converted into the Relevant Currency in accordance with clause 4.3(b).

(b) The Principal may itself or through its bankers purchase one currency with another, whether or not through an intermediate currency, whether spot or forward, in the manner and amounts and at the times it thinks fit.

4.4 Indemnity payment

(a) The Guarantor must immediately, on demand from the Principal, pay to the Principal all amounts that the Principal states are owing to it or any Indemnified Party under any indemnity under this deed.

5 Payment

5.1 Manner of payment

All payments to the Principal under this deed must be made:

(a) in Same Day Funds;

(b) in the Relevant Currency; and

(c) not later than 11.00am on the date specified in the demand from the Principal,

to the Principal's account specified by the Principal to the Guarantor or in any other manner as the Principal directs from time to time.

5.2 Payments in gross

All payments that the Guarantor is required to make under this deed must be without:

(a) any set-off, counterclaim, condition or legal formality such as protest or notice; or

(b) any deduction or withholding for any Tax or any other reason, unless the Guarantor is required to make a deduction or withholding by applicable law,

(c) and the Guarantor waives all privileges or rights which it may have as a guarantor, including any right to require the Principal to claim payment or to exhaust remedies against the Obligor or any other person.

5.3 Additional payments

If:

(a) the Guarantor is required to make a deduction or withholding in respect of Tax from any payment it is required to make to the Principal under this deed; or

(b) the Principal is required to pay any Tax in respect of any payment it receives from the Guarantor under this deed,

then the Guarantor:

(c) indemnifies the Principal against that Tax; and

(d) must pay to the Principal an additional amount that the Principal determines to be necessary to ensure that the Principal receives when due a net amount (after payment of any Tax in respect of each additional amount) that is equal to the full amount it would have received if a deduction or withholding or payment of Tax had not been made.

5.4 Taxation deduction procedures

If clause 5.3 applies, the Guarantor must pay the amount deducted or withheld to the appropriate Authority as required by law.

5.5 Amounts payable on demand

If any amount payable by the Guarantor under this deed is not expressed to be payable on a specified date, that amount is payable by the Guarantor on demand by the Principal.

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6 Representations and warranties

6.1 Representations and warranties

The Guarantor represents and warrants for the benefit of the Principal that:

(a) (**registration**) it is a corporation, registered (or taken to be registered) and validly existing under ***[ACT]***;

(b) (**corporate power**) it has the corporate power to own its assets and to carry on its business as it is now being conducted;

(c) (**authority**) it has power and authority to enter into and perform its obligations under this deed;

(d) (**authorisations**) it has taken all necessary action to authorise the execution, delivery and performance of this deed;

(e) (**binding obligations**) this deed constitutes its legal, valid and binding obligations and, subject to any necessary stamping and registration, is enforceable in accordance with its terms subject to laws generally affecting creditors' rights and to principles of equity;

(f) (**transaction permitted**) the execution, delivery and performance by it of this deed will not breach, or result in a contravention of:

(i) any law, regulation or Authorisation;

(ii) its constitution or other constituent documents; or

(iii) any Encumbrance or document that is binding upon the Guarantor or any asset of the Guarantor,

and will not result in:

(iv) the creation or imposition of any Encumbrance on any asset of the Guarantor;

(v) the acceleration of the date of payment of any obligation under any agreement that is binding upon the Guarantor or any of its Subsidiaries;

(g) (**solvency**) it is not insolvent and will not become insolvent on execution of this deed or by reason of its execution of this deed;

(h) (**not a trustee**) it does not enter into this deed as trustee of any trust or settlement; and

(i) (**commercial benefit**) the entering into and performance by it of its obligations under this deed is for its commercial benefit and is in its commercial interests.

6.2 Reliance by Principal

The Guarantor acknowledges that the Principal has entered into the Principal Agreement in reliance on the representations and warranties given under this deed.

7 Tax, costs and expenses

7.1 Tax

(a) The Guarantor must pay any Tax that is payable in respect of this deed (including in respect of the execution, delivery, performance, release, discharge, amendment, enforcement or attempted enforcement of this deed).

(b) The Guarantor must pay any fine, penalty or other cost in respect of a failure to pay any Tax described in clause 7.1(a) except to the extent that the fine, penalty or other cost is caused by the Principal's failure to lodge moneys received from the Guarantor within 5 Business Days before the due date for lodgement.

(c) The Guarantor indemnifies the Principal against any amount payable under clause 7.1(a) or clause 7.1(b).

7.2 GST

(a) Any reference in this clause 7.2 to a term defined or used in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth) is, unless the context indicates otherwise, a reference to that term as defined or used in that Act.

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(b) Unless expressly included, the consideration for any supply under or in connection with this deed does not include GST. To the extent that any supply made under or in connection with this deed is a taxable supply, subject to the receipt of a tax invoice, the recipient must pay, in addition to the consideration provided under this deed for that supply (unless it expressly includes GST) an amount (**Additional Amount**) equal to the amount of that consideration (or its GST exclusive market value) multiplied by the rate at which GST is imposed in respect of the supply. The recipient must pay the Additional Amount at the same time as the consideration to which it is referable.

(c) If a party is entitled under this deed to be reimbursed or indemnified by another party for a cost or expense incurred in connection with this deed, the reimbursement or indemnity payment must not include any GST component of the cost or expense for which an input tax credit may be claimed by the party being reimbursed or indemnified, or by its representative member.

8 Interest on overdue amounts

8.1 Payment of interest

The Guarantor must pay interest on any amount due and payable under this deed, but unpaid, at the Default Interest Rate.

8.2 Accrual of interest

The interest payable under clause 8.1 accrues from day to day from and including the due date for payment up to the actual date of payment, before and, as an additional and independent obligation, after any judgment, decree or order into which the liability to pay any amount under this deed becomes merged.

9 Saving provisions

9.1 No merger of security

(a) Nothing in this deed merges, extinguishes, postpones, lessens or otherwise prejudicially affects this deed, any other document or agreement or any Power.

(b) Nothing referred to in clause 9.1(a) in any way prejudicially affects any Power under this deed.

9.2 Exclusion of moratorium

To the extent not excluded by law, a provision of any legislation which at any time directly or indirectly:

(a) lessens or otherwise varies or affects in favour of a Guarantor any of the Guarantor's obligations under or any provision of this deed or any Collateral Security; or

(b) stays, postpones or otherwise prevents or prejudicially affects the exercise by the Principal of any Power,

is negatived and excluded from this deed and any Collateral Security and all relief and protection conferred on any Guarantor by or under that legislation is also negatived and excluded.

9.3 Conflict

Where any right, power, authority, discretion or remedy of the Principal under this deed or any Collateral Security is inconsistent with the powers conferred by applicable law then, to the extent not prohibited by that law, the powers conferred by applicable law are regarded as negatived or varied to the extent of the inconsistency.

9.4 Consent of Principal

(a) Whenever the doing of any thing by the Guarantor is dependent upon the consent or approval of the Principal, the Principal may withhold its consent or approval or give it conditionally or unconditionally in its absolute discretion unless expressly stated otherwise in this deed.

(b) Any conditions imposed on the Guarantor by the Principal under clause 9.4(a) must be complied with by the Guarantor.

9.5 Non avoidance

(a) If any payment, conveyance, transfer or other transaction relating to or affecting the Guaranteed Moneys or the Guaranteed Obligations is:

(i) void, voidable or unenforceable in whole or in part; or

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(ii) claimed to be void, voidable or unenforceable and that claim is upheld conceded or compromised in whole or in part,

the liability of the Guarantor under this deed and any Power is the same as if:

(iii) that payment, conveyance, transfer or transaction (or the void, voidable or unenforceable part of it); and

(iv) any release, settlement or discharge made in reliance on any thing referred to in clause 9.5(a)(iii),

had not been made and the Guarantor must immediately take all action and sign all documents necessary or required by the Principal to restore to the Principal this deed and any Encumbrance held by the Principal immediately before the payment, conveyance, transfer or transaction.

(b) Clause 9.5(a) applies whether or not the Principal knew, or ought to have known, of anything referred to in clause 9.5(a).

9.6 Principal obligation

This deed and each Collateral Security is:

(a) a principal obligation and is not to be treated as ancillary or collateral to any other right or obligation; and

(b) independent of and not in substitution for or affected by any other Collateral Security that the Principal may hold in respect of the Guaranteed Moneys, the Guaranteed Obligations or any obligations of the Guarantor, the Obligor or any other person.

9.7 No obligation to marshal

The Principal is not required to marshal or to enforce or apply under or appropriate, recover or exercise:

(a) any Encumbrance, Guarantee or Collateral Security or other document or agreement held, at any time, by the Principal; or

(b) any money or asset which the Principal, at any time, holds or is entitled to receive.

9.8 Continuing guarantee and indemnities

(a) The guarantee and each indemnity contained in this deed is a continuing obligation of the Guarantor, despite:

(i) any settlement of account; or

(ii) the occurrence of any other thing,

and remains in full force and effect until:

(iii) the Guaranteed Moneys and all other moneys owing, contingently or otherwise, under this deed, have been paid in full;

(iv) the Guaranteed Obligations and all other obligations owing, contingently or otherwise, under this deed, have been performed in full; and

(v) this deed has been finally discharged by the Principal.

(b) The guarantee and each indemnity contained in this deed is an additional, separate and independent obligation of the Guarantor and neither the guarantee nor any indemnity limits the generality of the guarantee or any other indemnity.

(c) The guarantee and each indemnity contained in this deed survives the termination of this deed.

10 Third party provisions

10.1 Unconditional nature of obligations

(a) This deed and the obligations of the Guarantor under this deed are absolute, binding and unconditional in all circumstances and are not released, discharged or otherwise affected by anything that but for this provision might have that effect, including:

(i) the grant to the Obligor, Guarantor, any Surety or any other person of any time, waiver, covenant not to sue or other indulgence;

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(ii) the release (including a release as part of any novation) or discharge of the Obligor, Guarantor, any Surety or any other person;

(iii) the cessation of the obligations, in whole or in part, of the Obligor, Guarantor, any Surety or any other person under any document or agreement;

(iv) the liquidation of the Principal or the Obligor, Guarantor, any Surety or any other person;

(v) any arrangement, composition or compromise entered into by the Principal, the Obligor, Guarantor, any Surety or any other person;

(vi) any forbearance or indulgence by the Principal towards the Obligor or the Guarantor whether as to payment, time, performance or otherwise;

(vii) any document or agreement being in whole or in part illegal, void, voidable, avoided, unenforceable or otherwise of limited force or effect;

(viii) any extinguishment, failure, loss, release, discharge, abandonment, impairment, compounding, composition or compromise, in whole or in part, of this deed or any other document or agreement;

(ix) any alteration, amendment, variation, supplement, renewal or replacement of this deed or any other document or agreement;

(x) the moratorium of other suspension of any Power;

(xi) the Principal exercising or enforcing, delaying or refraining from exercising or enforcing, or being not entitled or unable to exercise or enforce, any Power;

(xii) any transaction, agreement or arrangement that may take place with the Principal, the Obligor, Guarantor, any Surety or any other person;

(xiii) any payment to the Principal, including any payment that at the payment date or at any time after the payment date is, in whole or in part, illegal, void, voidable, avoided or unenforceable;

(xiv) the acceptance of the repudiation of, or termination of this deed or any other document or agreement;

(xv) any Guaranteed Moneys being irrecoverable for any reason;

(xvi) any assignment, novation, assumption or transfer of, or other dealing with, any Powers or any other rights or obligations under this deed or any other document or agreement; or

(xvii) any other act, omission, matter or thing whether negligent or not.

(b) Clause 10.1(a) applies irrespective of:

(i) the consent or knowledge or lack of consent or knowledge of the Principal, the Guarantor or any other person of any event described in clause 10.1(a) (and the Guarantor irrevocable waives any duty on the part of the Principal to disclose such information); or

(ii) any rule of law or equity to the contrary.

10.2 No competition

(a) Until the Guaranteed Moneys have been fully paid, the Guaranteed Obligations have been fully performed and this deed has been finally discharged, the Guarantor is not entitled to:

(i) be subrogated to the Principal;

(ii) claim or receive the benefit of any Encumbrance, Guarantee or other document or agreement of which the Principal has the benefit;

(iii) claim or receive the benefit of any moneys held by the Principal;

(iv) claim or receive the benefit of any Power;

(v) except in accordance with clause 10.2(b), either directly or indirectly prove in, claim or receive the benefit of any distribution, dividend or payment arising out of or relating to the liquidation of the Obligor or any Surety; or

(vi) make a claim or exercise or enforce any right, power or remedy (including under an Encumbrance or Guarantee or by way of contribution) against the Obligor or any Surety.

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(b) If required by the Principal, the Guarantor must prove in any liquidation of the Obligor or any Surety for all moneys owed to the Guarantor.

(c) All moneys recovered by the Guarantor must be received and held in trust by the Guarantor for the Principal to the extent of the unsatisfied liability of the Guarantor under this deed.

(d) The Guarantor must not do, or seek, attempt or purport to do, any thing referred to in clause 10.2(a).

11 Notices

11.1 Form of notice

A notice or other communication to a party under this deed (**notice**) must be:

(a) in writing and in English;

(b) signed by an Officer of the sender; and

(c) addressed as follows:

(i) if to the Guarantor, as set out in Item 1 of Schedule 1;

(ii) if to the Principal, as set out in Item 2 of Schedule 1,

or a substitute address notified to the sender by the party.

11.2 How notice must be given and when notice is received

(a) A notice must be given by one of the methods set out in the table below.

(b) A notice is regarded as given and received at the time set out in the table below.

(c) However, if this means the notice would be regarded as given and received outside the period between 9.00 am and 5.00 pm (addressee's time) on a Business Day, then the notice will instead be regarded as given and received at 9.00 am (addressee's time) on the following Business Day.

(d) A notice sent by facsimile is deemed legible unless the addressee telephones the sender within 2 hours after transmission is received or regarded as received and informs the sender it is not legible.

Method of giving notice	When notice is regarded as given and received
By hand to the nominated address	When delivered to the nominated address
By pre paid post to the nominated address	At 9.00am (addressee's time) on the second Business Day after the date of posting
By email to the nominated email address	When the email (including any attachment) comes to the attention of the recipient party or a person acting on its behalf.
By facsimile to the nominated fax number	On receipt of a transmission report confirming successful transmission.

12 General

12.1 Costs and expenses

The Guarantor must pay all costs and expenses of the Principal and any employee, Officer, agent or contractor of the Principal in relation to:

(a) the negotiation, preparation, execution, delivery, stamping, registration, completion, variation and discharge of this deed;

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(b) the enforcement, protection or waiver, or attempted or contemplated enforcement or protection, of any rights under this deed;

(c) the consent or approval of the Principal given under this deed; and

(d) any enquiry by any Authority involving the Guarantor,

including:

(e) any administration costs of the Principal in connection with the matters referred to in clauses 12.1(b) and 12.1(d); and

(f) any legal costs and expenses and any professional consultant's fees on a full indemnity basis.

12.2 Governing law and jurisdiction

(a) This deed is governed by the laws of the Relevant Jurisdiction.

(b) The parties irrevocably submit to the exclusive jurisdiction of the courts of the Relevant Jurisdiction and courts of appeal from them in respect of any proceedings arising out of or in connection with this deed.

(c) Each party irrevocably and unconditionally waives any:

(i) objection to the venue of any legal process on the basis that the process has been brought in an inconvenient forum; and

(ii) immunity in respect of its obligations under this deed that it may acquire from the jurisdiction of any court or any legal process for any reason including the service of notice, attachment before judgement, attachment in aid of execution or execution.

12.3 Severability and enforceability

(a) Any provision of this deed which is prohibited or unenforceable in any jurisdiction is ineffective as to that jurisdiction to the extent of the prohibition or unenforceability.

(b) This does not invalidate the remaining provisions of this deed nor affect the validity or enforceability of that provision in any other jurisdiction.

12.4 Waivers

(a) No party to this deed may rely on the words or conduct of any other party as a waiver of any right unless the waiver is in writing and signed by the party granting the waiver.

(b) In this clause 12.4:

(i) conduct includes delay in the exercise of a right;

(ii) right means any right arising under or in connection with this deed and includes the right to rely on this clause 12.4; and

(iii) waiver includes an election between rights and remedies, and conduct which might otherwise give rise to an estoppel.

12.5 Entire agreement and no reliance

(a) This deed supersedes all previous agreements in respect of its subject matter and embodies the entire agreement between the parties in respect of its subject matter.

(b) No reliance is to be placed by the Guarantor on any representation, promise or other inducement made or given or alleged to be made or given by the Principal prior to the date of execution of this deed.

12.6 Amendment to this deed

An amendment of any term of this deed must be in writing and signed by the parties.

12.7 Counterparts

This deed may be executed in any number of counterparts.

12.8 Effect of indemnities

(a) In the indemnities contained in clauses 4, 5.3 and 7.1, a reference to 'Principal' includes a reference to:

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(i) the Principal;

(ii) each Related Body Corporate of the Principal; and

(iii) the officers, directors and employees of the entities referred to in clauses 12.8(a)(i) and 12.8(a)(ii),

(each an **Indemnified Party**).

(b) The Principal holds the benefit of the indemnities in the clauses identified in clause 12.8(a) for itself and on trust for each other Indemnified Party.

(c) The Principal need not incur any cost or make any payment before enforcing any right of indemnity under clauses 4, 5.3 and 7.1.

12.9 Further assurance

The Guarantor must:

(a) when requested by the Principal, do or cause to be done anything that aids the exercise of any Power including the execution of any document or agreement;

(b) obtain and renew when necessary all Authorisations required under any law or document or agreement:

(i) to enable the Guarantor to perform the obligations of the Guarantor under this deed; or

(ii) for the validity or enforceability of this deed; and

(c) comply with the terms of the Authorisations referred to in clause 12.9(b).

12.10 Assignment

(a) The Principal may assign its rights under this deed without the consent of the Guarantor.

(b) The Guarantor may not assign any of its rights under this deed without the prior written consent of the Principal.

12.11 Agent for service of process

[This clause should be used where the proposed parent company is a foreign company. Delete this clause if the parent company is an Australian incorporated entity.]

Without prejudice to any other mode of service allowed under any relevant law, the Guarantor irrevocably:

(a) appoints ***[insert name of entity with Australian office address]*** of ***[insert Australian address]*** as its agent for service of process in relation to any proceedings before any of the courts of Australia or any of its states or territories;

(b) agrees that any process served on that agent is deemed to be served on the Guarantor; and

(c) agrees that failure by that agent to notify the Guarantor of the process will not invalidate the proceedings concerned.

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Schedule 1

Document details

Item	Issue	Detail
1	Guarantor	***[to be specified]***
	Address	***[to be specified]***
	Fax	***[to be specified]***
	Attention	***[to be specified]***
2	Principal	Defence Housing Australia ABN 72 968 504 934
	Address	26 Brisbane Avenue, Barton, ACT, 2603
	Fax	03 9288 0800
	Attention	***[to be specified]***
3	Obligor (Clause 1.1)	***[insert the name of the entity whose monetary liabilities and other obligations are to be guaranteed by the Guarantor]***
4	Principal Agreement (Clause 1.1)	The contract entered into by the Obligor and the Principal entitled ***[insert name of Principal Agreement including contract number]*** for ***[insert description of the services under the Principal Agreement]*** dated ***[insert date]***
5	Default Interest Rate (Clause 8.1)	***[to be specified]***%
6	Relevant Jurisdiction (Clause 12.2)	***[to be specified]*** ***[The Relevant Jurisdiction should generally be the same as the relevant jurisdiction governing the Principal Agreement. However, it may be appropriate in some circumstances to nominate a different jurisdiction. For example, it may be appropriate to nominate the jurisdiction where the assets of the Guarantor are held.]***

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Clause *Clause*

EXECUTED as a deed.

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

....
Director/Secretary Director

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

....
Director/Secretary Director

THE COMMON SEAL of)
[ ] was affixed in)
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Corporations Act in the presence of:)

....
Director/Secretary Director

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Clause *Clause*

Annexure to the Australian Standard General Conditions of Contract AS 4000 – 1997

PART H

Subcontractor Warranties and Form of Subcontractor Warranty

(Clause 9.6)

Subcontractor Warranties

[Drafting Note: Insert Subcontractor warranties below.]

1	***[insert component]***	***[insert]*** years unconditional materials and workmanship
2	***[insert component]***	***[insert]*** years unconditional materials and workmanship
3	***[insert component]***	***[insert]*** years unconditional materials and workmanship
4	***[insert component]***	***[insert]*** years unconditional materials and workmanship
5	***[insert component]***	***[insert]*** years unconditional materials and workmanship
6	***[insert component]***	***[insert]*** years unconditional materials and workmanship
7	***[insert component]***	***[insert]*** years unconditional materials and workmanship

Form of Subcontractor Warranty

This deed made the ..... day of ..... 20..... between ..... ("Warrantor") of .....ACN ..... and

and..... ("the Principal") of .....ACN .....
and..... ("the Contractor") of .....ACN .....

witness that -

INTRODUCTION

A The Warrantor is providing:

(a) equipment or materials ("Goods"); and

(b) works or services ("Services"),

(c) under a Subcontract dated [***insert***] (the "Subcontract") in connection with the [***insert***] ("Works").

B. The Warrantor has agreed to warrant the Goods and Services to the Principal and Contractor on the terms of this deed.

OPERATIVE PROVISIONS:

1 Warranty

The Warrantor warrants to the Principal and the Contractor that:

(a) (Goods) the Goods shall:

Clause *Clause*

(i) be of merchantable quality, free from defects and fit for their purpose (including utility, performance and appearance); and

(ii) conform to the requirements of the Subcontract; and

(b) (Services) the Services shall:

(i) be provided in a proper and workmanlike manner;

(ii) be free from defects and fit for their purpose; and

(iii) conform to the requirements of the Subcontract.

2 Rectification

The Warrantor agrees that it shall promptly, after notice from the Principal or Contractor requiring it to do so, at its own cost and expense replace, repair or otherwise rectify to the reasonable satisfaction of the Principal any of the Goods or Services which are found by the Principal or the Contractor during the period of **[*insert warranty period*]** from the Date of Practical Completion of the Works to:

(a) not comply with the warranty set out in Clause 1 of this deed; or

(b) show deterioration to an extent that, in the opinion of either the Principal or the Contractor, the Goods or Services require replacement, repair or rectification in order to achieve compliance with the warranty set out in Clause 1 of this deed.

3 Liability

The Warrantor shall indemnify the Principal and the Contractor for any loss, expense, cost or damage (including consequential loss or damage) arising from the Goods or Services failing to comply with the warranty set out in Clause 1 of this deed or the Warrantor failing to comply with any of its obligations under this deed.

4 General

The Warrantor agrees:

(a) (Interpretation of Warranty) the warranties in Clause 1 apply to all and every part of the Goods and Services whether supplied or installed by the Warrantor or others;

(b) (Other Rights Preserved) this deed does not limit or otherwise prejudice any other rights of the Principal or the Contractor against the Warrantor;

(c) (Consequential Damages) despite any limitations (express or implied) under this deed, if:

(i) any failure of the Goods and Services to comply with the warranties in Clause 1 would be reasonably expected to result in consequential damage to any of the Works; and

(ii) the Warrantor, after receiving notification of the failure or defects, does not diligently rectify the failure or defect,

(iii) the Warrantor shall be responsible for any consequential damage occurring after the time when the Warrantor should have rectified the Goods and Services;

(d) (Owner and Contractor Benefit Separately) each of the warranties and obligations of the Warrantor shall be capable of enforcement independently by each of the Principal and the Contractor and any acts or omissions or waiver by the Principal or the Contractor shall not prejudice the rights of the others;

(e) (Assignment) the Principal and the Contractor may assign, novate or otherwise deal with this deed or any of their rights and benefits under it in their absolute discretion and without the Warrantor's consent.

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Clause *Clause*

5 Interpretation

If any provision of this deed is legally invalid or unenforceable, it shall be severed or read down to the extent of the invalidity or unenforceability but so as to otherwise maintain as far as possible the full force and effect of this deed.

In this deed, a reference to the 'Principal' includes persons claiming through the Principal and the Principal's successors and assigns (including any subsequent purchaser of the property in respect of which the Goods and Services form part).

6 Manufacturer's Warranties

The Warrantor:

(a) (Provision by Warrantor) warrants to the Principal and the Contractor that it has annexed to this deed all related product warranties available on products incorporated into the Goods or Services by virtue of the fact that the manufacturer of the product has published the warranty in connection with purchasers and users of the product without regard to specific applications ("Manufacturer's Warranties"); and

(b) (Effect of Other Warranties) agrees that nothing in the Manufacturer's Warranties shall be taken to limit or otherwise prejudice the Warrantor's warranties or obligations under this deed.

7 GST

The parties agree that:

(a) with any payment of amounts payable under or in connection with this deed including without limitation, by way of indemnity, reimbursement or otherwise, the party paying the amount must also pay any GST in respect of the taxable supply to which the amount relates;

(b) the party receiving the payment will provide a tax invoice; and

(c) the payment of any amount referred to in paragraph (a) which is a reimbursement or indemnification of a cost, expense, loss or liability will exclude any part of the amount for which the other party can claim an input tax credit.

8 Rights of Principal

The entities comprising the Principal shall benefit from rights under this Deed jointly and severally.

The parties have signed, sealed and delivered this deed on the day and year mentioned above.

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

....

Director/Secretary Director

THE COMMON SEAL of)

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Clause *Clause*

[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

....
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THE COMMON SEAL of)
[ ] was affixed in)
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....
Director/Secretary Director

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Clause *Clause*

Annexure to the Australian Standard General Conditions of Contract AS 4000 – 1997

PART I

Form of Statutory Declaration

(subclause 38.1)

Statutory declaration in the matter of the Construction Contract for stage **[*insert*]** of the [***insert project name***] located at [***insert address/location***] dated **[*insert*]** ('**Contract**')

between

Defence Housing Australia ABN: 72 968 504 934 ('**Principal**')

and

[*insert name*] ABN: **[*insert ABN*]** ('**Contractor**')

Unless otherwise stated, capitalised terms in this statutory declaration have the same meaning given to them in the Contract.

I, *(insert full name)*

of: *(insert address)*

in **[*insert state/territory*]**, (*occupation)* make the following declaration under the *Statutory Declarations Act 1959* (Cth):

1 I am the representative of [***Name of Contractor and ACN to be inserted***] in the office bearer capacity of: (Position title of declarant) and I am in the position to know the facts attested to in this declaration.

2 This statutory declaration is made pursuant to clause 38.1 of the Contract in relation to the payment of a payment claim in respect of payment claim no. **[*insert*]** submitted by the Contractor.

3 All workers who have at any time been engaged by the Contractor or subcontractors have been paid all moneys due and payable to them for the performance of WUC and the supply of materials for use in WUC, with the exception of the subcontractors and suppliers and the respective amounts listed below: **[*insert names and addresses of workers, the amounts owing, and whether in respect of wages, holiday pay, allowances, etc*]**.

4 All subcontractors, consultants and suppliers to the Contractor have been paid all moneys due and payable to them for the performance of WUC and the supply of materials for use in WUC, with the exception of the subcontractors, consultants and suppliers and the respective amounts listed below: **[*insert names and addresses of subcontractors and suppliers, the amount owing and whether in respect of materials supplied, work performed, etc*]**.

5 All amounts which have been included in the calculation of previous payments paid by the Principal to the Contractor have been duly paid by the Contractor to the relevant subcontractors, consultants and suppliers.

6 Other than as set out in this declaration, no fees or wages are due and owing by the Contractor in respect of WUC for the period to which the payment claim relates.

7 I understand that a person who intentionally makes a false statement in a statutory declaration is guilty of an offence under section 11 of the *Statutory Declarations Act 1959* (Cth), and I believe that the statements in this declaration are true in every particular.

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	Clause		*Clause*
DECLARED at		)	
this [ ] day of [ ] before me:		)	
		)	
_____		)	
Signature of authorised witness		)	
		)	
_____		)	
Name of authorised witness (block letters)		)	
		)	
		)	
_____		)	
Address of authorised witness		)	
		)	
		)	
		)	_____
Capacity in which authorised witness takes the statutory declaration		)	Signature of declarant
		)	
Justice of the Peace */ Solicitor of [insert] holding a current practising certificate under [insert] *		)	
* Delete whichever is not applicable		)	

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Clause *Clause*

Annexure to the Australian Standard General Conditions of Contract AS 4000 – 1997

PART J

Schedule of Rates

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Clause *Clause*

Annexure to the Australian Standard General Conditions of Contract AS 4000 – 1997

PART K

Bill of Quantities

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Clause *Clause*

Annexure to the Australian Standard General Conditions of Contract AS 4000 – 1997

PART L

This Contract is subject to the additional clauses to the General Conditions of Contract set out in this Annexure Part L to the extent that this Contract, WUC or the Works are to be performed in the relevant jurisdictions below.

1 QBCC Act- n/a

(a) To the extent that WUC or the Works are performed in Queensland, the Contractor acknowledges that section 67K(2) of the QBCC Act provides that a building contract under which the contracting party is a special purpose vehicle or principal is subject to a condition that before practical completion of the works is reached, the total value of the following is to be not more than 5% of the contract price for the contract:

(1) all retention amounts for the contract that are being withheld;

(2) all securities for the contract given and still held.

(b) The parties agree that by initialling in the space provided below, it is expressly agreed between the parties that the Contract is not subject to the condition mentioned in section 67K(2) of the QBCC Act and that the Contractor will be bound by the terms in clause 5.

…….

Initials of Principal

……

Initials of Contractor

(c) Despite any other provision of this Contract, the parties agree that where:

(1) section 67N of the QBCC Act applies; and

(2) to the extent that this Contract provides that the total of all Security held by the Principal will exceed 2.5% of the Contract Sum after the Date of Practical Completion,

the amount of the excess does not relate to the need to correct Defects identified in the Defects Liability Period, but instead relates to the recovery by the Principal of any costs, damages, liabilities or other amounts which may become due and payable to the Principal by the Contractor under or in connection with this Contract, the Contractor's performance of this Contract or any breach of this Contract by the Contractor.

2 Compliance with Australian Capital Territory legislation

(a) The Contractor warrants that it has, and will hold, a valid licence when performing WUC, to the extent that it is required under the *Building Act 2004* (ACT).

(b) The Contractor warrants that it will comply with the requirements of the *Building Act 2004* (ACT) and *Construction Occupations (Licensing) Act 2004* (ACT) to the extent that it applies to WUC.

3 Building Work Contractors Act 1995 (SA) -n/a

The Contractor warrants that it has, and will hold, a valid licence when performing WUC, as required under the *Building Work Contractors Act 1995* (SA).

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		SUMMARY - DHA ACADEMY CLOSE			GROUP ONE Pty Ltd
PAY ITEM		DESCRIPTION			s22 [redacted]
0		Preliminaries			
1		Provision For Traffic			
2		Earthworks			
3		Underground services			
4		Sewerage			
5		Stormwater Drainage			
6		Subsoil Drains			
7		Gas			
8		Water Supply Mains			
9		Water Services			
10		Flexible Pavement Construction			
11		Concrete Kerbs, Footpaths & Minor Works			
12		Road Furniture			
13		Incidental Works			
14		Landscape			
15		Road Signs			
16		Pavement Marking			
17		Segmental Paving			
18		Street Lighting			
19		NBN Development Fee			
20		Evoenergy Standard & Miscellaneous Fee			
21		Icon Water Miscellaneous Fee			
22		Retaining Wall and Fencing			
		TOTAL LUMP SUM TENDER			
0		PRELIMINARIES			
001		Site establishment & maintenance site office and amenities	Item	1	
002		Authorities Fees			
002.01		All Authority Fees and charges	Item	1	
002.02		Not Used	Item	1	
002.03		Not Used	Item	1	
002.04		Not Used	Item	1	
002.05		Not Used	Item	1	
002.06		Not Used	Item	1	
003		Coordination of Construction of Services by Service Authorities	Item	1	
004		Survey Control	Item	1	
005		Other Establishment and Maintenance Charges Including Staging	Item	1	
006		Compliance and Audit Testing as Directed by the PAP (PS)	PS	1	
007		Additional Work as Directed by the PAP (PS)	PS	1	

s22 [redacted]

008		Work As Executed Information		
008.01		Work As Executed Information - Civil	Item	1
008.02		Work As Executed Drawings - Civil	Item	1
008.03		Work As Executed Information - Landscape	Item	1
008.04		Work As Executed Drawings - Landscape	Item	1
009		Project Signs	Item	1
010		Liaison and Co-ordination with adjoining works Contractors	Item	1
011		Registered Surveyor for Lot Pegging	Item	1
012		Geotechnical Engineer for Lot Classification	Item	1
013		Relocation / Adjustment to Existing Services		
		Works by the Service Authority to existing services (PS)	PS	1
014		Preparation of Contruction and Environmental Management Plan	Item	1
015		Dilapidation survey and report	Item	1
016		Demarcation Fencing	Item	1
017		Demolition of Existing structures	Item	1
		SUB-TOTAL PROVISION OF PRELIMINARIES		
1		PROVISION FOR TRAFFIC		
101		Provision for Traffic	Item	1
		SUB-TOTAL PROVISION OF TRAFFIC		
2		EARTHWORKS		
201		Protection of the Works	Item	1
202		Clearing and grubbing (incl tree removal)	ha	3
203		Removal of existing structures	Item	1
204		Removal and Stockpiling topsoil	m^3	3,80
204A		Disposal excess topsoil offsite (PQ)	m^3	12,60
205		Cut within Project Site		
			m^3	100
205a		As per bulk plan 6,513m3 tight - 3,805m3 bulked out Top Soil		
206		Unsuitable Material (PQ)	m^3	100
207		Imported Fill (PQ)	Item	1
208		Removal of General Solid Waste (PQ)		
308		Level 1 supervision, testing and reporting of works by Geotechnical Engineer as per the project specifications including slope stability certification (all works)	Item	1
		Validation Testing of Imported VENM		
		Validation Testing of Imported VENM is not necessary under ACT EPA current requirements - rate provided		
		SUB-TOTAL EARTHWORKS		
3		UNDERGROUND SERVICES		
301		Trenching for Service Authorities		
301.01		Gas only	m	100
301.02		Telstra only	m	35
301.03		Shared trench with electricity, gas and Telstra	m	740
302		Removal of Unsuitable Material from Trenches (PQ)	Item	1
303		Existing Services Location		
303.01		Sewer	Item	1
303.02		Stormwater	Item	1
303.03		Gas	Item	1
303.04		Electricity	Item	1
303.05		Water	Item	1
303.06		Telecommunications	Item	1
		SUB-TOTAL EXCAVATION & BACKFILLING		
4		Sewerage		

s22 [redacted]

401		Sewer Pipe		
401.1		uPVC - SN8 (Pipe diameter and depth of pipe TBC)	m	540
401.2		All works associated with construction sewer (bends, jointing, risers, end caps etc.)	Item	1
402		Maintenance Holes		
402.1		Standard 1050mm diameter maintenance hole	No	16
402.2		Extra over for depth in excess of 1.45m	Item	1
403		Additional Items for Maintenance Holes		
403.1		Class D gatic heavy duty cover	No	16
404		Rodding Points		
404.1		Rodding point for 150mm diameter pipe	No	30
405		Works by the Sewer Authority		
405.1		Works by the Sewer Authority to existing sewer services (PS)	PS	1
405.2		Works by the Contractor on existing sewer services, excluding works by the Sewer Authority	Item	1
406		CCTV Camera Testing	Item	1
407		Connect to Existing	No	1
		SUB-TOTAL SEWERAGE		
5		Stormwater Drainage		
		Stormwater Pipes		
501		uPVC-SN8		
501.1		225mm	m	370
501.2		All works associated with cosntruction of uPVC stormwater pipe (bends, jointing, end caps etc.	Item	1
502		RCP		
502.1		300 mm	m	205
502.2		375mm	m	130
502.3		450mm	m	145
502.4		525mm	m	8
503		1050mm diameter Manholes		
503.1		Standard 1050mm diameter cast in situ maintenance hole	No	13
503.2		Extra over per meter depth in excess of 1.45m (PQ)	Item	1
504		Standard Stormwater Sumps		
504.1		Standard single Type R Sump	No	16
504.2		Extra over Pay Item for depth in excess of 1.8m	Item	1
505		Grated Inlet Sumps		
505.1		V-grated pit	No	1
506		Scour Stops		
506.1		Provision for scour stops as required	Item	1
507		Provision of Stormchambers Onsite Detention and all associated construction costs	No	23
508		Not Used		
509		CCTV Camera Testing	Item	1
510		Connect new stormwater to existing and associated authority charges	Item	1
		SUB-TOTAL STORMWATER		
6		Subsoil Drains		
601		Subsoil Drains		
601.1		Installation of subsoil drains 150mm SN20 with sleeves.	m	825
602		High-end and intermediate Risers	No	15
603		Outlet to structure	No	15
604		Allowance for network of subsoil drainage to remediate groundwater (PQ)	Item	1
		SUB-TOTAL SUBSOIL DRAINS		
7		Gas		
7.01		Gas Meter Supply	No	30
7.02		Conduits		
7.02.01		Gas Conduits		

s22 [redacted]

7.02.02		All construction costs associated with installation of 100mm conduit	m	830
7.03		Telecommunications Conduits		
7.03.01		All construction costs associated with 50mm conduit	m	680
7.04		Electrical Conduits		
7.04.01		All construction costs associated with 100mm conduit and cabling	m	717
7.04.02		POE & MSB Sypply & Construct		
7.05		Installation of Electrical pillar	No	16
		SL Conduits		
7.06		Installation of NBN Pit and Pipe for Telecommunications (PQ)	No	16
7.06.01		P2 Pit		
		SUB-TOTAL GAS		
8		Water Supply Mains		
801		Water Pipe		
801.1		Construction of water main	m	555
801.2		All costs associated with construction of water main (connecitons, fittings, bends, thrust blocks , hydrants, sluice valves etc)	Item	1
802		Works by the Water Authority		
802.1		Works by the Water Authority to existing water services (PS)	PS	1
802.2		Works by the Contractor on exisiting water services, excluding works by the Water Authority	Item	1
803		Supply of all fittings, works and coordination with Icon Water for District Meter 01 as detailed in the drawings	Item	1
804		Supply of all fittings, works and coordination with Icon Water for District Meter 02 as detailed in the drawings	Item	0
805		Allowance for underboring of services underneath the existing bulk watermain, including requirements and attendance by Icon Water as directed by the Principal	Item	1
		SUB-TOTAL WATER SUPPLY MAINS		
9		Water Services		
901		Water Service Pipes		
901.1		Water ties	m	45
901.1		Water ties		
902		Water main to ready tap connector	Item	1
903		Installation of typical water services	Item	1
		SUB-TOTAL WATER SERVICES		
10		FLEXIBLE PAVEMENT CONSTRUCTION		
1001		Preparation of Cut Subgrade	m^2	2,800
1002		Base Material		
1002.01		Internal Road	m^3	225
1002.02		Entry/Exit	m^3	20
1003		Subbase Material		
1003.01		Internal Road	m^3	750
1003.02		Entry/Exit	m^3	35
1004		Match to existing Pavement	m	55
1005		Supply and Spray Primer, Primerbinder		
		Prime & Tack Coat Base Material	m^2	2,250
1006		40mm AC10 Wearing Course		
1006.01		Internal Roadway	Tonnes	38
		Stage 2 Asphalt after completion of houses (missing from BOQ	Tonnes	4
1006.02		Entry/Exit		
		SUB-TOTAL FELXIBLE PAVEMENT CONSTRUCTION		
11		CONCRETE KERBS, FOOTPATHS & MINOR WORKS		
1101		Kerb Works		
1101.1		Kerb and Gutter - Type MLBK	m	585

s22 [redacted]

1101.2		Kerb and Gutter - Type KG	m	300
		Kerb Only - Type KO	m	130
1101.3		Reinforced Open Channel Invert - Type ROCI	No	4
1101.4		Pram Crossing for 1.2m path width (PC)	No	2
1101.5		Pram Crossing for 1.5m path width (PC)		
1102		**Footpaths,Driveways, and General Paving Works**		
1102.1		Preparation of cut subgrade	m^2	1500
1102.2		Concrete footpath 100mm thick, N25 on 75mm DGB20, reinforced with SL82 Steel Mesh.	m^2	550
1102.3		Concrete footpath (offstreet) 100mm thick, N25 on 75mm DGB20, reinforced with SL82 Steel Mesh.	m^2	110
1102.4		Residential Concrete driveway 100mm thick N32 on 100mm DGB20, reinforced with SL82 mesh single layer.	m^2	620
1102.5		Concrete On-Street parking 150mm thick N32, on 100mm DGB20, reinforced with SL82 mesh single layer.	m^2	220
		Temorary pathway (Gravel) 1.5m(W)x240m		
		Entry/exit 150mm concrete		
		SUB-TOTAL CONCRETE KERBS, FOOTPATHS & MINOR WORKS		
12		**ROAD FURNITURE**		
12001		**Road Furniture**		
		SUB-TOTAL ROAD FURNITURE		
13		**INCIDENTAL WORKS - BY OTHERS**		
1301		**Incidental Works**		
		SUB-TOTAL INCIDENTAL WORKS		
14		**LANDSCAPE**		
1401		**Stage 1 Dry Grass**	**Item**	**1**
		Stage 1 Trees		
1402		**Stage 2 Dry Grass**		
		Stage 2 Trees	**Item**	**1**
		Stage 2 Garden Beds		
		Stage 2 planting		
		Consolidation	**Item**	**1**
		SUB-TOTAL LANDSCAPE		
15		**ROAD SIGNS**		
1501		**All signs as required**	**Item**	**1**
		SUB-TOTAL ROAD SIGNS		
16		**PAVEMENT MARKING**		
1601		**Set Out of Pavement Marking**	**Item**	**1**
1602		**Paint - Longitudinal Lines**		
1602.1		**All linemarking required**	**Item**	**1**
1603		**Long Life Material (LLM) - Longitudinal Lines**		
1603.1		**All linemarking requried**	**Item**	**1**
1604		**Long Life Material (LLM) - Transverse Lines, Symbols, Legends and Arrows**		
1604.1		**Zebra Crossing (PX)**	m^2	**8**
1605		**Installation of Retroreflective Raised Pavement Markers**		
1605.1		**All RRPM as required**	**Item**	**1**
		SUB-TOTAL PAVEMENT MARKING		
17		**SEGMENTAL PAVING**		
1701		**Segmantal Paving**		
		SUB-TOTAL SEGMENTAL PAVING		
18		**STREETLIGHTING**		
1801		**Lighting Columns, Outreach Arms, Lighting (luminaires/Watts)**		
1801.1		**Streetlighting as per electrical drawings**	**No**	**12**
1802		**Streetlighting Fees and Co-Ordination Costs**	**Item**	**1**

s22 [redacted]

1803		Supply and Lay Cable (PQ)		
1803.1		1 x 2c 16mm2 XLPE/PVC 90 Cu	m	450
1804		Supply and Install Streetlight Controller	Item	1
		SUB-TOTAL STREET LIGHTING		
19		NBN		
1901		NBN		
		All Costs associated with Communications supply, installation and approval not captured elsewhere	Item	1
		SUB-TOTAL NBN		
20		Evoenergy		
2001		Evoenergy	Item	
		All Costs associated with Communications supply, installation and approval not captured elsewhere		
2002		Evoenergy - Temporary works to re-route existing mains to maintain network after site disconnection (PS)	Item	1
		SUB-TOTAL EVOENERGY		
20		Icon Water		
2001		Icon Water Fees and Charges	Item	1
2002		Not Used	Item	1
		SUB-TOTAL ICON WATER		
22		Provisional Quantity Retaining Walls and Fencing		
2201		masonry retaining walls Type 1 Stone Wall (PQ)	m2	110
2202		masonry retaining walls Type 2 Adbri Block (PQ)	m2	720
2203		Masonry Retaining Wall Type 3 Concrete Sleeper (PQ)	m2	75
2204		Type 1 fencing Colorbond 1.8m (PQ)	Lm	270
2204		Colorbond gates		
2205		Type 2 fencing 1.8m High Pailing fence (PQ)	Lm	500
		Timber Gates	Item	0
2206		Type 4 fencing Stock Fence		
		SUB-TOTAL RETAINING WALL AND FENCING		

	SCHEDULE OF RATES ITEMS		
	Item	ourly rate (Inclusive of GST)	
68	5T Excavator (or similar size)	s22 [redacted]	
	14T Excavator (or similar size)		
	30T Excavator (or similar size)		
	Extra over for excavator hammer		
	Rigid tip truck (10T load minimum)		
	Truck and trailer for spoil cartage		
	Articulated dump truck (size to be nominated by contractor for consideration by tenderer team)		
	Scraper (model and make nominated by contractor for consideration by tenderer team)		
	Bulldozer (D9T Cat or equivalent)		
	Grader (model and make nominated by contractor for consideration by tenderer team)		
	Water truck for dust control (20,000L or similar as specified by tenderer)		
	12T smooth drum roller		
	15T padfoot roller		
	Hydrovac Truck		
	Removal and disposal of GSW Per Tonne		

UPDATED BUSHFIRE RISK ASSESSMENT REPORT

REDEVELOPMENT OF DEFENCE HOUSING'S

ACADEMY CLOSE ESTATE,
BLOCK 3, SECTION 65 DISTRICT OF CAMPBELL,

AUSTRALIAN CAPITAL TERRITORY

PREPARED FOR

DEFENCE HOUSING AUSTRALIA

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ABPP
Australian Bushfire
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ABN 48 935534 462
Bushfire Mitigation Consultants

UPDATED

BUSHFIRE RISK ASSESSMENT REPORT

FOR THE

REDEVELOPMENT OF THE EXISTING

DEFENCE HOUSING'S ACADEMY CLOSE ESTATE,

BLOCK 3, SECTION 65

DISTRICT OF CAMPBELL,

DIVISION OF CANBERRA CENTRAL

AUSTRALIAN CAPITAL TERRITORY

PREPARED FOR

DEFENCE HOUSING AUSTRALIA

Assessment Number	Document	Preparation Date	Issue Date	Directors Approval
B162890 - 5	Final	15.5.2017	21.07.2020	s22 [redacted]

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EXECUTIVE SUMMARY

Australian Bushfire Protection Planners Pty Limited has been commissioned by Defence Housing Australia to prepare an updated Bushfire Risk Assessment that determines the level of bushfire risk and the protection measures required to mitigate the risk to the proposed redevelopment of Defence Housing's 'Academy Close' residential estate on Block 3, Section 65, District of Campbell, Division of Canberra Central.

The advice contained within this report provides the bushfire planning principles to be used in the construction of the proposed redevelopment of the site.

Section 1 of this report outlines the background to the assessment and describes the site and details desk-top assessment of the site.

Section 2 of the report provides a description of the site and the precinct [study area] it is contained within. It examines the topography as well as the vegetation both within and external to the site.

Section 3 determines the bushfire risk to the proposed residential development by examining background information on the:

- Fire history of the area;
- Ignition and fire sources;
- Climate and weather;
- Wind and fire paths;
- Slope;
- Bushfire fuels;
- Assessment of the fuel hazard;
- Likelihood of each fire scenario;
- Description of the Asset Interface Classification;
- Risk statement; and
- Summary of the bushfire risk.

Section 3 examines the context of bushfire risk within the ACT.

Section 4 outlines a range of factors influencing bushfire risk and identifies the broad strategies to manage the risk and examines the two elements of risk – ***likelihood*** which is described as the chances of a bushfire occurring, and ***consequence***, the impact of the bushfire when it occurs.

Section 4 also undertakes an assessment of the potential bushfire risk to the proposed development and determines the level of risk. The details of the bushfire protection measures required to be put in place and fully implemented to reduce the level of risk to the new assets are provided in **Section 5**.

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Section 5 describes the measures for:

- The provision of Asset Protection Zones; access and water supplies; and
- Construction standards to the buildings.

Section 6 and examines the residual risk once the bushfire protection measures recommended are implemented.

The conclusions to the assessment are outlined in **Section 7** of the report. These include:

- The assessment undertaken in this report has found that the bushfire risk to the proposed redevelopment on the site, prior to the implementation, is extreme/high; and
- If the protection measures recommended in this report are fully implemented, the level of risk will reduce to high/moderate.

s22

[redacted]

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TABLE OF CONTENTS

EXECUTIVE SUMMARY……..... 3

TABLE OF CONTENTS ……..... 5

SECTION 1 – INTRODUCTION
1.1 Aim of this Report …….. 6
1.2 Objectives of this Report…….. 6
1.3 Scope of Work…….. 6
1.4 Proposed Facility …… 6

SECTION 2 – DESCRIPTION OF STUDY AREA
2.1 Study Area ……..... 10
2.2 Site Assessment ……..... 10
2.3 Existing Land Use..... 11
2.4 Adjoining Land Use..... ……..... 11
2.5 Topography ……..... 14
2.6 Vegetation within the Site …….. 15
2.7 Vegetation on land adjoining the Site..... 16
2.8 Ecological Constraints within & external to the Site..... 20

SECTION 3 – CONTEXT OF BUSHFIRE RISK ASSESSMENT..... 21

SECTION 4 – BUSHFIRE RISK ASSESSMENT
4.1 Introduction……..... 22
4.2 Management Strategies..... 23
4.3 Risk Assessment..... 23
4.4 Fire History.....……..... 24
4.5 Ignition/Fire Sources …… 25
4.6 Climate and Weather …… 25
4.7 Slope & Fire Paths…….. 27
4.8 Bushfire Fuels …… 30
4.9 Assessment of Fuel Hazard…….. 31
4.10 Likely Fire Scenarios…….. 32
4.11 Risk Statement …….. 33
4.12 Summary of Bushfire Risk …….. 35
4.13 Asset Interface Classification …….. 35

SECTION 5 – BUSHFIRE PROTECTION MEASURES
5.1 Provision of Asset Protection Zones…… 37
5.2 Review of Asset Protection Zones …… 38
5.3 Construction Standards to Buildings …….. 40
5.4 Access for Fire-fighting Operations …… 41
5.5 Water Supplies for Fire-Fighting Operations …… 43
5.6 Fuel Management Protocols …… 43

SECTION 6 – RESIDUAL RISK
6.1 Introduction…….. 44
6.2 Summary of Residual Bushfire Risk…… 44

SECTION 7 – CONCLUSION…….. 45

REFERENCES …….. 46

ATTACHMENT A – Email from ACT Fire & Rescue…… 47

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SECTION 1

INTRODUCTION

1.1 Aim of this Report.

Australian Bushfire Protection Planners Pty Limited has been commissioned by Defence Housing Australia to prepare an updated Bushfire Risk Assessment that determines the level of bushfire risk and the protection measures required to mitigate the risk to the proposed redevelopment of Defence Housing's 'Academy Close' residential estate on Block 3, Section 65, District of Campbell, Division of Canberra Central.

1.2 Objectives of the Report.

The objectives of the report are to:

- Identify the level of risk to the proposed residential redevelopment in accordance with best practice bushfire risk management, Australian Standard AS/NZS ISO 31000:2018 and the requirements of A.S. 38959 – 2018.

- Identify how levels of risk can be mitigated.

The Bushfire Risk Assessment will be undertaken to assess the potential bushfire risk and identify those protection measures required to mitigate the risk. This will include specific recommendations on fuel management, the location of Asset Protection Zones and any other measures to deemed necessary to protect the proposed development against the impact of a bushfire event in the vegetation on the land adjacent to the site.

1.3 Scope of Work.

The following is an outline of the scope of work undertaken in the assessment of bushfire risk to the proposed development:

- Identify and describe the study area environment;

- Establish the context of the bushfire risk;

- Identify measures that might assist to reduce bushfire risk;

1.4 Proposed Development.

Defence Housing Australia is proposing to demolish the existing housing stock within the Academy Close estate on Block 3, Section 65 Campbell and construct twenty two [22] single dwellings and eighteen [18] two storey duplex dwellings for Australian Defence Force Employees.

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The site contains a total area of 2.72 hectares and is currently used as housing for Australian Defence Force employees.

The site has a frontage of approximately 100 metres to Fairbairn Avenue and 130 metres to Truscott Street located to the south of Fairbairn Avenue and east of Truscott Street and contains existing detached dwellings and an internal road network.

The site is currently occupied by 22 single and double-storey dwellings which face a narrow sealed loop road wholly located within the site. There is a children's play area in the centre of the site.

A high pressure water pipeline is located along the western of the site while the eastern boundary is flanked by twin 132Kv overhead sub-transmission power lines.

Access to the site is via a single entry road off Truscott Street, to the west of the site.

Refer to Figure 1 – Survey Plan showing location of existing dwellings and contours on Page 7.

Refer to Figure 2 – Academy Close Masterplan on Page 8.

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Figure 1 – Survey Plan showing location of existing dwellings and contours

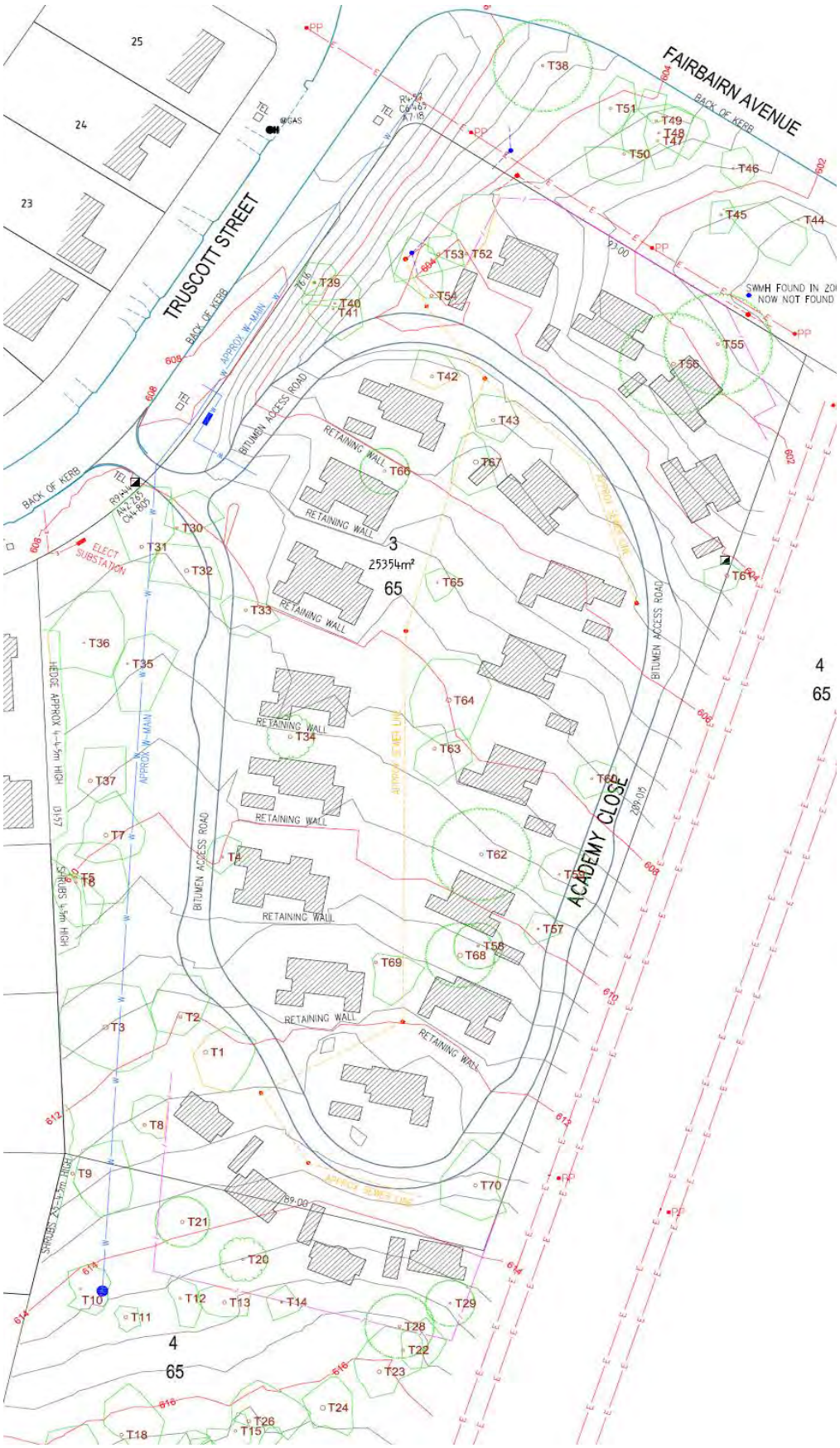

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Figure 2 – Academy Close Masterplan

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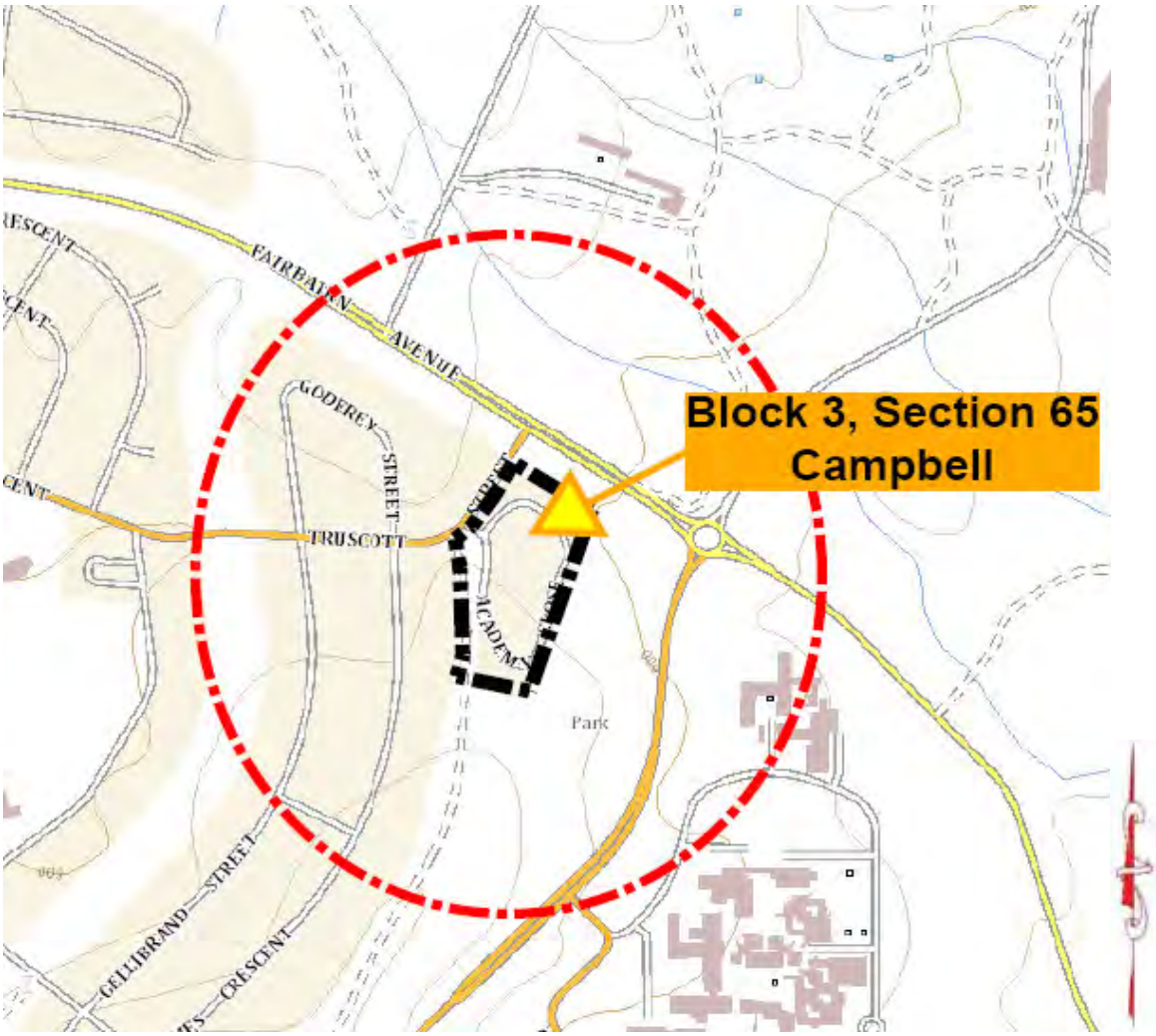
SECTION 2
DESCRIPTION OF THE BUSHFIRE STUDY AREA

2.1 The Study Area.

For the purpose of examining the potential bushfire risk to the site a study area has been established which includes the land surrounding the site for a distance of 300 metres. Figure 3 below provides a graphical representation of the 'Study Area'.

Figure 3 – Bushfire Risk Assessment Study Area.



2.2 Site Assessment.

Graham Swain undertook a desk-top assessment of the study area, including general knowledge of the location of the site and the landscape surrounding the site. This assessment reviewed the general topography and gradients of the land and vegetation classification within the site and study area.

The ACT Bushfire Prone Land Map, aerial photography and contour maps were also reviewed.

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2.3 Existing Land Use.

The site is currently occupied by 22 single and two storey dwellings housing Australian Defence Force personnel, internal access roads and landscaping on National Land which is zoned RZ1 - Suburban.

2.4 Adjoining Land Use.

Figure 4 on Page 12 provides an extract from the ACT Territory Plan which identifies that the land to the west of the site is zoned RZ1 – Suburban.

The land to the north of the development site contains the Fairbairn Avenue road corridor, beyond which Mt Ainslie Nature Park extends to the north.

To the east of the site the land contains a narrow corridor of Canberra Nature Park across which runs a power line easement of approximately 40 metre width containing two 132Kv power lines.

The land to the south of the development site forms part of the Canberra Nature Park. Northcott Drive extends along the eastern edge of the Nature Park.

Duntroon Military College occupies the land to the east of Northcott Drive.

Refer to Figure 4 – Copy of ACT Territory Plan on Page 12.

Refer to Figure 5 – Copy of ACT Bushfire Prone Land Map on Page 13.

Refer to Figure 6 – Copy of Aerial Photograph on Page 14.

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Figure 4 – Territory Plan.

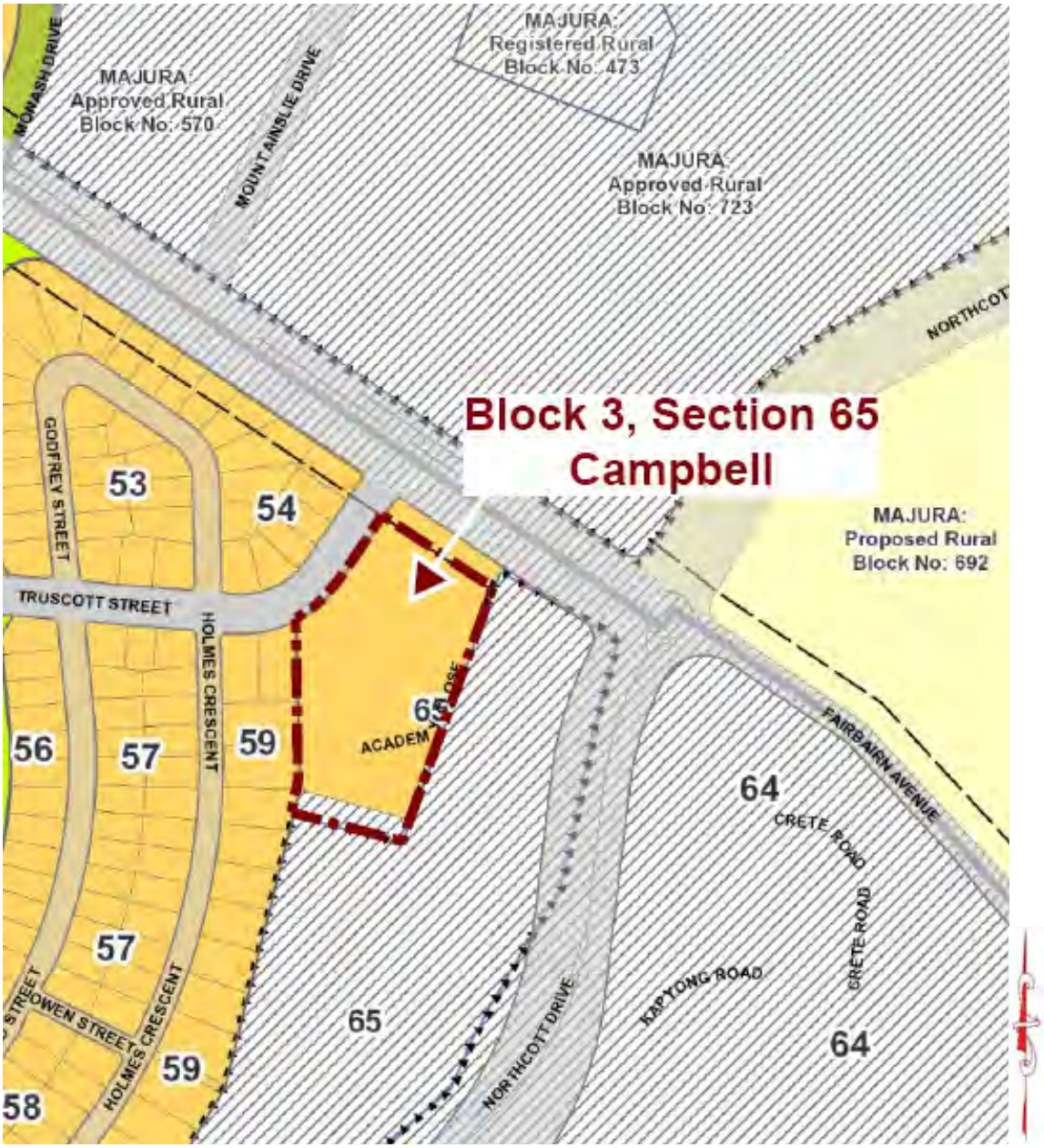

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Figure 5 – ACT Bushfire Prone Land Map - ESA.

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Figure 6 – Aerial Photograph of the development site and adjoining lands.

2.5 Topography.

The site is elevated at its southern end with a fall towards Fairbairn Avenue of approximately 12 metres and a cross-fall from Truscott Street to the eastern boundary of between 0 – 2 metres with the lowest point on the site being in the northeast corner, adjacent to Fairbairn Drive.

The land within the Nature Park to the east of the site falls to the northeast. The land to the south of the site, within the Nature Park, rises to the south.

The land to the northeast of the site, beyond the Fairbairn Drive corridor, falls to the southeast, running along the contours in a north-easterly direction while the land to the north and northwest of the site, beyond the road corridor, rises to the north and northwest across the adjacent Nature Park, towards Mt Ainslie. Refer to Figure 7 – Contour Plan on Page 15.

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Figure 7 – Contour Plan

2.6 Vegetation within the Site.

The vegetation on the development site includes managed gardens and managed lawns within the curtilage to the existing dwellings.

The western portion of the site, within that section of the site which contains the high pressure water main, contains woodland vegetation which is managed.

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2.7 Vegetation on land adjoining the Site.

Canberra Nature Park to the northwest, north and northeast of the site [beyond the Fairbairn Drive corridor] contains woodland vegetation.

Similarly, the Nature Park to the east and south of the site contains woodland vegetation.

The Powerline Easement adjoining the eastern boundary of the site contains grassland vegetation which is managed by periodic slashing. The woodland to the south of the site is also managed by periodic slashing of the grassland vegetation.

Refer to Site Photographs below.

Site Photograph 1 – Taken from Fairbairn Drive looking to the southwest showing the managed fire break adjacent to the eastern boundary of the site.

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Site Photograph 2 – Taken from Fairbairn Drive looking to the west showing the managed road verge to the northeast of the site.

Site Photograph 3 – Taken from the intersection of Truscott Street and Academy Close showing the managed woodland vegetation on the land within the western portion of the site.

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Site Photograph 4 – Taken from the intersection of Truscott Street and Academy Close looking to the northeast showing the managed vegetation on the land within the western portion of the site.

Site Photograph 5 – Taken from Academy Close showing the managed woodland vegetation on the land within the western portion of the site [on right].

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Site Photograph 6 – Taken from Academy Close looking to the northeast showing the Powerline Easement to the east of the site.

Site Photograph 7 – Taken from Academy Close looking to the northeast showing the Powerline Easement to the east of the site.

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2.8 Ecological Constraints found on the land within and external to the site.

Figure 8 below provides a copy of the ACTMAPi Woodland Vegetation Map which identifies that the Nature Park to the east and south of the site contains woodland vegetation.

Figure 8 – ACTMAPi Woodland Vegetation Map

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SECTION 3.

CONTEXT OF THE BUSHFIRE RISK ASSESSMENT

The ACT Government enacted the *Emergencies Act 2004,* as part of its response to the needs identified by the McLeod Inquiry to replace the *Bushfire Act 1936* and sets the legislative basis for bushfire related planning.

Resulting from the changes in legislation, the ACT Planning & Land Authority prepared *"Planning for Bushfire Risk Mitigation",* a guideline adopted under the Territory Plan, that provides guidance to mitigate adverse impacts from bushfires in the ACT.

The Guideline is one of many documents that informs planning and development in the ACT and is taken into account by the ACT Planning & Land Authority when determining development applications and is complementary to the ACT Emergency Services Authority's *Strategic Bushfire Management Plan,* a strategic document outlining measures for the Prevention, Preparedness, Response and Recovery from bushfire in the ACT.

A *Bushfire Prone Area* for the ACT was declared through the *Building Regulations* and came into effect on the 1st September 2004. Under the declaration, all parts of the ACT outside the defined urban area have been designated bushfire prone and the Authority, under Part A (Consideration of Land Use and Development Proposals) of the Territory Plan, can require a site specific bushfire risk assessment to be undertaken during the planning/design process.

This Bushfire Risk Assessment addresses this requirement and has been undertaken using the *Australian Standard for Risk Management* AS/NZS ISO 31000:2018 and A.S. 3959 - 2018.

This assessment determines the level of bushfire risk on the proposed development.

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SECTION 4

BUSHFIRE RISK ASSESSMENT – PROPOSED REDEVLOPMENT OF THE DHA ACADEMY CLOSE RESIDENTIAL ESTATE

4.1 Introduction.

The Australian Standard AS/NZS ISO 31000:2018 and the Emergency Management Australia (EMA) emergency risk management process provide the framework for establishing the context, analysis, evaluation, treatment, monitoring and communication of risk.

Risk has two elements: likelihood, the chances of a bushfire occurring and consequence, the impact of a bushfire when it occurs.

Bushfire risk is defined as the chance of a bushfire occurring that will have harmful consequences to human communities and the environment. Bushfire risk is usually assessed through consideration of the likelihood of ignition and consequences of a bushfire occurring. Risk reduction can be achieved by reducing the likelihood of a bushfire, the opportunity for a bushfire to spread or the consequence of a bushfire (on natural and built assets).

Bushfire management should have a clear objective to reduce both the likelihood of bushfires and reduce the negative impacts of bushfires. It should also consider the costs, inconvenience and dangers of measures taken to reduce the risk of bushfires.

The consequences of bushfire management activities and the failure to implement programs also need to be considered. A range of factors influence bushfire risk – these include:

- The likelihood of human and natural fire ignitions, as influenced by time, space and demographics;

- The potential spread and severity of a bushfire, as determined by fuel, topography and weather conditions;

- The proximity of assets vulnerable to bushfire fuels, and likely bushfire paths; and

- The vulnerability of assets including natural assets, or their capacity to cope with, and recover from bushfire.

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4.2 Management Strategies.

Broad strategies to manage bushfire risk include:

- Eliminate the bushfire risk (make the land-use decision first by asking the question about whether development should or should not proceed in a given area);

- Design or substitution (review boundary locations and shape, change the types of land-use policy);

- Engineering controls (infrastructure, building standards and landscaping) and

- Administration and organisation; (community preparedness measures).

4.3 Risk Assessment.

An assessment of bushfire risk must firstly define the problem. This involves the identification of the nature and scope of issues to be addressed and defining the possible boundaries for the assessment *(Emergency Risk Management – Applications Guide. (EMA Echo Press, 2000), and* AS/NZS ISO 31000:2018*).*

For the purpose of analysing fire risks that might emerge in the ACT, a dangerous and damaging fire has the potential to occur when the following conditions prevail:

- Continuous available fuel – fuel at moisture content sufficiently low to enable rapid combustion, arising from drought effects or the maturing and drying, of grasslands;

- Exposure of vulnerable assets. The 'catchment' for such fires may be within several hundred metres or many (60-70) kilometres from the asset/s;

- A combination of weather conditions that generate a forest or grass fire danger index of Very High (24) or greater. Typically in the ACT, prevailing adverse fire weather will have a strong northerly, through to south-westerly wind influence;

- A fire in the landscape which is not effectively suppressed.

The preliminary assessment of the risk to the DHA Academy Close residential estate was undertaken during the site assessment and previous site inspections and identified that the facility will be exposed to the risk of:

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- A north-westerly/northerly fire path, burning through the woodland vegetation on the Canberra Nature Park that extends to the northwest, north and northeast of the site – beyond the Fairbairn Drive road corridor;

- A north-easterly fire path, burning through the woodland vegetation on the Canberra Nature Park that extends to the northeast of the site – beyond the Fairbairn Drive road corridor;

- A south-easterly fire path, burning through the woodland vegetation on the Canberra Nature Park to the east and south of the site.

The following Risk Assessment and resultant recommendations seek to address the protection of the proposed development from the impact of unplanned fire events identified above by examining:

- Fire History;
- Exposure to possible ignition / fire sources;
- Vegetation type and likely fuel loads and fire hazards arising using the "Overall Fuel Hazard Guide" – Fourth Edition (DSE July 2010);
- The impact of climate and likely fire runs during severe fire danger periods;
- Wind effects; and
- The impact of surrounding land uses and fuel loads.

4.4 Fire History.

The Strategic Bushfire Management Plan for the ACT [version one] states: "*The ACT has a history of severe damaging bushfires with large areas burnt in the bushfire seasons of 1919/20; 1925/26; 1938/39; 1951/52; 1978/79; 1982/83; 1984/85; 2000/01 and in 2002/03".*

"Intervals between recorded severe fire seasons range from two years to twenty seven years". "Planning to reduce the likelihood and consequence of bushfires in the ACT must take into account the full range from small grass fires to landscape-wide severe fires".

Figure 1 of the *Strategic Bushfire Management Plan for the ACT - 2005* identifies the approximate location of major fires and shows that the site has not been impacted by a major fire event.

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4.5 Ignition / Fire Sources.

Causes of bushfires, including those in the ACT, are natural or human caused. Fires caused by humans can be categorised as:

- Malicious – including arson;

- Careless – such as escaped campfires, children and burning off without a permit; and
- Accidental – uncommon but includes motor vehicle and industrial accidents.

The only common natural cause of bushfires in the ACT is lightning. The majority of fire ignitions in the ACT are arson, and arson ignitions are correlated to the demographics of the ACT. People are the major source of bushfire ignitions and where people concentrate, bushfires occur most frequently. Most bushfires occur in or near the built-up areas of Canberra.

The largest areas burnt are attributed to lightning ignitions, which are dispersed across the landscape.

The causes of a bushfire that may impact the site are varied.

Accidental or malicious ignition of the vegetation within the Canberra Nature Park to the northwest, north and northeast of Fairbairn Drive and also adjacent to the site is possible as is the ignition of the vegetation along the road verges, the powerline easement during slashing/mowing operations.

4.6 Climate and Weather.

The ACT has a relatively dry, continental climate with warm to hot summers and cool to cold winters. The climate of Canberra is strongly influenced by a band of high pressure systems located around the globe at about 30 – 40S, known as the sub-tropical ridge.

During summer, the sub-tropical ridge is located over southern Australia resulting in warm to hot conditions with winds generally from the east through to northwest.

The average annual rainfall is 629 mm with an average of 108 rain days per year with rainfall reasonably evenly distributed throughout the year with the wettest month being October and the driest being June.

Rainfall tends to be influenced by cold fronts during the winter 6 months and thunderstorm activity during the summer 6 months. While rainfall in most years is reasonably reliable, drier than average years are closely related to ENSO events in the Pacific Ocean and all significant droughts have occurred in El Nino years and these years tend to be significant bushfire seasons as well.

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Rainfall across the ACT varies considerably, with much higher rainfall occurring in the ranges to the west and less rainfall to the east.
January is the hottest month with a mean daily maximum temperature of 27°C and an average of 10 days of 30°C or more with 2 days of 35°C or more. Canberra tends to get cooler easterly winds penetrating from the coast during many summer evenings which can sometimes bring cloud in with the moister air.

The highest recorded maximum temperature was 42.2^{o}C on February 1st 1968 followed closely by 41.4^{o}C on the previous day [31st January 1968]. Relative humidity in Canberra is around 37 – 40% at 3pm in summer.

The fire season in the ACT corresponds with the summer months' high temperatures and low rainfall, and can occur from September to April with a proclaimed bushfire danger period from October to March. There is significant variability from year to year. Fire seasons may be serious in three out of every 15 years, but this can vary considerably.

Extreme and uncontrollable bushfires typically occur when the fire danger rating is over 50, a rating of Extreme. Many of the major house loss events have occurred at fire danger ratings over 70, on a scale of 0 to 100.

Analysis of 1951 – 2004 meteorological records identified 105 days of Extreme fire danger from the Forest Fire Danger Index (FFDI) at Canberra airport. These were broken down into the following FFDI ratings:

- 61 days 50 – 59 FFDI;
- 25 days 60 – 69 FFDI;
- 9 days 70 – 79 FFDI;
- 4 days 80 – 89 FFDI; and
- 6 days 90 – 100.

Eighteen percent [18%] of January days had Very High FFDI and 2% of January days had Extreme FFDI.

The Very High and Extreme Forest Fire Danger conditions mainly occur between November and March *[Source SBMP for the ACT].*

[The (McArthur) Forest Fire Danger Index (FFDI) was developed in the 1960s by CSIRO scientist A.G. McArthur to measure the degree of danger of fire in Australian forests. The index combines a record of dryness, based on rainfall and evaporation, with daily meteorological variables for wind-speed, temperature and humidity. A fire danger rating of between 12 and 25 on the index is considered a "high" degree of danger, while a day having a danger rating of over 50 is considered an "Extreme" fire danger day.

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McArthur used the conditions of the Black Friday fires of 1939 as his example of a 100 rating. The FFDI on Black Saturday, 7th of February, 2018, reached as high as 180, the worst fire conditions ever recorded].

Canberra generally is not very windy with, on average, 25 days of strong winds a year. Late Winter/Spring tends to be the windiest time with just over half of these days [13 days] occurring in the four [4] months between August and November.

Wind is an important factor in bushfire behaviour as it influences the rate of spread of the fire front and spreads burning embers / sparks, providing ignition sources for spot fires ahead of the main fire front.

The proposed site is exposed to strong, hot and dry north-northwest and northerly wind influences which cause extreme to catastrophic fire weather conditions.

The site may be exposed to the influence of fires which burn under less intense southeast winds. Such fire events are normally more easily controlled by fire authorities.

4.7 Slope & Fire Paths.

Slope is a critically important factor when assessing fire risk and likely behaviour. The rate of fire propagation doubles up a slope of 10 degrees (18%) and increases almost fourfold up a slope of 20 degrees (40%). The rate of progress downslope tends to slow at a corresponding rate however wind direction in the lee of hills/ridgelines can cause fires to change direction unpredictably.

The topography of the land within the Canberra Nature Park to the northeast of Fairbairn Drive varies between upslope to the northwest to downslope to the northeast.

The topography of the land within Canberra Nature Park adjoining the site falls to the northeast/east and southeast, and rises to the southwest.

Figure 9 on Page 28 provides a diagram of the potential northwest and southeast fire paths.

Figure 10 on Page 29 provides a diagram of the potential northerly and southerly fire path.

Figure 11 on Page 30 provides a diagram of the potential northeast fire path.

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Figure 9 – Northwest and Southeast Fire Paths

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Figure 10 – North and South Fire Paths

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Figure 11 – Northeast Fire Path

4.8 Bushfire Fuels.

Fuel is a critical element in bushfire risk management, as it is the one factor relating to fire behaviour that can be managed.

There are four 'types' of fuel that contribute to bushfire hazard. They relate to the distribution and nature of combustible material within a vegetated environment and are defined by the Overall Fuel Hazard Guide – Fourth Edition (DSE July 2010), as

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- Bark;
- Elevated fuel load;
- Near Surface fine fuels; and
- Surface fine fuels;

Elevated material is defined as shrubs, heath and suspended material greater than 0.5 metres above ground. The level of bushfire hazard depends on fuel continuity, height, amount of dead material, foliage thickness and flammability of live foliage.

Flammability of vegetation is at the highest when composition is fine, it contains a lot of dead material, is dense vertically and horizontally and has low moisture content.

Surface fine fuels are defined as the litter bed and vegetation up to 0.5 metres above the ground. Grasses add to the surface fine fuels and therefore need to be taken into account when assessing the hazard. The risk is higher where greater depth and volume of litter and surface material are present.

Bark has the potential to travel significant distances in a fire situation (spotting) and act as a ladder between surface fuels and the forest crown. Bark contributes to fire hazard when it is loose and fibrous, present in large quantities and in long loose ribbon forms.

4.9 Assessment of Bushfire Fuel Hazard.

An overall Fuel Hazard for vegetation within the land adjoining the site can be determined using the DSE Overall Fuel Hazard Guide.

The fuel available to a fire burning on land adjacent to the site is created by the woodland within the Canberra Nature Park.

Therefore, the assessment of fuel hazard will be determined for unmanaged woodland vegetation.

(1) Woodland Vegetation:

Using the methodology provided within the NRE Overall Fuel Hazard Guide, the following Fuel Hazard observation was determined for the woodland vegetation within the Canberra Nature Park:

- ***Bark Hazard*** **:**

The grassy woodland vegetation includes Yellow Box-Red Gum, which has a smooth trunk and long ribbons of bark into the crown of the tree. Therefore this vegetation has a High Bark hazard.

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- ***Elevated Fuel Hazard*** **:**

Elevated fuel comprises shrub, heath and suspended material. The level of hazard depends on the fuel continuity (horizontal and vertical), height, and proportion of dead material, thickness of the foliage and twigs and flammability of the live foliage.

The flammability of the elevated fuel is highest when:

- The foliage, twigs and other fuel particles are very fine (e.g. maximum thickness 1-2 mm);
- The proportion of dead material is high;
- The fuels are arranged with a high level of density and horizontal and vertical continuity that promotes the spread of flame;
- The live foliage has low, live fuel moisture content.

The vegetation type and time lapse since the most recent fire substantially determines the level of elevated fuel hazard.

An estimated Elevated Fuel Hazard of high was determined woodland vegetation.

- ***Near Surface & Surface Fine Fuel Hazard*** **:**

Surface Fine Fuel Hazard is assessed by measuring litter-bed height. Near surface fuels – i.e. grass tussocks, dead bracken, low shrubs or low wiregrass up to 0.5m high – interact with surface litter to increase fire behaviour and therefore need to be considered when assessing Surface Fine Fuel Hazard and the next highest Surface Fine Fuel Hazard rating.

Due to the possible extent of the 'near-surface fuels' component of this vegetation an estimated Surface Fine Fuel Hazard of High was determined for this vegetation.

The Overall Fuel Hazard for the woodland vegetation [without management] is Very High.

4.10 Likely Fire Scenarios.

An assessment of the fire scenarios likely to impact the site has been undertaken, based on the potential fire paths identified on Figures 9, 10 and 11. This assessment assumes that the woodland vegetation within the Canberra Nature Park will not be managed to reduce/remove the fuel hazard.

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Scenario 1:
A fire starting in the woodland vegetation within the Canberra Nature Park to the northwest and to the north of Fairbairn Drive, spreading under north-westerly/northerly winds towards the northern boundary of the site.

This potential fire impact may occur if the woodland vegetation is not managed and a fire occurs during fire seasons when conditions are such that the grassland vegetation has cured to > 70%, the Fire Danger Index is Extreme (FDI > 50) and the prevailing wind is from the northwest and north.

Scenario 2:
A fire starting in the woodland vegetation within the Canberra Nature Park to the northeast of Fairbairn Drive, spreading under north-easterly winds towards the northern boundary of the site.

This potential fire impact may occur if the woodland vegetation is not managed and a fire occurs during fire seasons when conditions are such that the grassland vegetation has cured to > 70%, the Fire Danger Index is Extreme (FDI > 50) and the prevailing wind is from the northeast.

Scenario 3:
A fire burning under south-easterly wind influences, spreading through the woodland vegetation in the Nature Park to the east and south of the site.

This potential fire impact may occur if the vegetation in the Canberra Nature Park is not managed and a fire occurs during fire seasons when conditions are such that the grassland vegetation has cured to > 70%, the Fire Danger Index is Extreme (FDI > 50) and the prevailing wind is from the southeast.

4.11 Risk Statement.

Table 4 provides a statement of risk for the potential fire scenarios that may impact the site [prior to the implementation of the recommended mitigation measures being adopted / implemented] and assigns risk levels reflecting identified levels of likelihood and consequences for a fire occurrence which may occur if the vegetation is not managed to reduce the combustible fuels available to burn during severe fire weather conditions.

Table 1 provides a list of qualitative measures of consequence [or impact] whilst Table 2 provides a list of qualitative measures of likelihood – used to determine the level of risk in Table 4.

Table 3 provides a qualitative risk analysis matrix – used to determine the level of risk in Table 4.

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Table 1 – Qualitative Measures of Consequence [or Impact]

Level	Descriptor	Detail Description
1	Insignificant	No public safety injuries or impact to buildings
2	Minor	No public safety injuries – minor impact to buildings
3	Moderate	Burns and Respiratory problems – moderate damage to buildings
4	Major	Death of people exposed to radiant heat & major property damage
5	Catastrophic	Death of people exposed to radiant heat and total destruction of buildings

Table 2 – Qualitative Measures of Likelihood

Level	Descriptor	Detail Description
A	Almost Certain	Is expected to occur during severe fire danger periods
B	Likely	Will probably occur during severe fire danger periods
C	Possible	May occur during severe fire danger periods
D	Unlikely	Unlikely to occur during severe fire danger periods
E	Rare	Will rarely occur during severe fire danger periods

Table 3 – Qualitative risk analysis matrix – used to determine the level of risk in Table 4

Likelihood	Risk Rating				
	Consequences				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
A – almost certain	High	High	Extreme	Extreme	Extreme
B – likely	Moderate	High	High	Extreme	Extreme
C – possible	Low	Moderate	High	Extreme	Extreme
D – unlikely	Low	Low	Moderate	High	Extreme
E – rare	Low	Low	Moderate	High	High

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Table 4 – Bushfire Risk Register – Severe/Catastrophic Bushfire Event – if high levels of combustible fuels / unmanaged vegetation exist in the landscape adjoining the site.

The Risk What can happen?	The consequences & likelihood of an event happening Consequences	Likelihood	Consequence Rating	Likelihood Rating	Level of Risk
(1) Fire burning in the woodland vegetation in the Canberra Nature Park to the northwest & northwest of the site, spreading across the landscape under N.W and northerly winds	Major	Possible	4	C	Extreme
(2) Fire burning in the woodland vegetation in the Canberra Nature Park to the N.E. of the site, spreading across the landscape northeast winds	Major	Possible	4	C	Extreme
(3) Fire burning in the woodland vegetation in the Canberra Nature Park to the east and southeast of the site, spreading across the landscape under south-easterly/southerly winds	Moderate	Possible	3	C	High

4.12 Summary of Bushfire Risk.

No major bushfire has recently impacted the site however the risk remains that a significant fire event in the Canberra Nature Park burning under adverse fire weather conditions will present as an extreme level of risk to the site.

A fire in the Nature Park to the southeast and south of the site has the potential to spread rapidly to the northwest, under strong south-easterly winds.

Section 5 of this report examines the bushfire protection measures, derived from the ACT Bushfire Management Standards (ACT Strategic Bushfire Management Plan Version 3 – 2014) and A.S. 3959 – 2018.

4.13 Asset Interface Classification [AIC].

The ACT ESA & Rural Fire Service have developed a methodology for determining the classification of potential exposure of the urban edge to severe bushfires and introduces Asset Interface Classification [AIC], which is defined as the boundary between an asset and the bushfire paths that approach it. It is determined by an assessment of:

- The maximum fire size an asset may be subject to;
- The part of the fire [head, flank, back] an asset maybe subject to recognizing the major fire threat from the north and west;
- The fire run length criteria and the length of fire run.

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The following table provides an Asset Interface Classification [AIC], at a broader scale for the urban edge of Canberra;

Table 5: Asset Interface Classification

	Length of Fire Run to Asset Interface (through unmanaged vegetation)		
Aspect of Fire Run	<100	100 – 350	>350
N	**Secondary**	**Primary**	**Primary**
NW	**Secondary**	**Primary**	**Primary**
W	**Secondary**	**Primary**	**Primary**
SW	**Lee**	**Secondary**	**Primary**
S	**Lee**	**Secondary**	**Secondary**
SE	**Lee**	**Lee**	**Lee**
E	**Lee**	**Lee**	**Secondary**
NE	**Lee**	**Lee**	**Secondary**

An examination of the Asset Interface Classification at a precinct level for the site identifies the following results:

Table 6: Asset Interface Classification – DHA Academy Close Site.

	Length of Fire Run to Asset Interface (through unmanaged vegetation)		
Aspect of Fire Run	<100m	100 – 350m	>350m
Northwest & North: Unmanaged woodland vegetation			**Primary**
Northeast: Unmanaged woodland vegetation			**Primary**
East: Unmanaged woodland vegetation	**Lee**		
Southeast: Unmanaged woodland vegetation		**Lee**	
South: Unmanaged woodland vegetation		**Secondary**	

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SECTION 5

PROTECTION MEASURES TO BE IMPLEMENTED TO REDUCE THE BUSHFIRE RISK TO THE PROPOSED RESIDENTIAL DEVELOPMENT

5.1 Provision of Asset Protection Zones [APZs].

Table 7 identifies the widths of the Asset Protection Zones required to comply with the *Strategic Bushfire Management Plan for the ACT – Version 3 – 2014* and are based on the assumption that buildings [assets] are constructed to a standard which meets the specifications of A.S. 3959 – 2018 – *Construction of Buildings in Bushfire Prone Areas.*

Table 7 – Inner & Outer Asset Protection Zones to Assets - Strategic Bushfire Management Plan for the ACT – Version 3 – 2014.

Aspect of Fire Run	Length of Fire Run to Asset Interface (through unmanaged vegetation)			Required Asset Protection Zones	
	<100m	100 – 350m	>350m	IAPZ	OAPZ
Northwest & North: Unmanaged woodland vegetation			**Primary AIC**	30m	Minimum 200m
Northeast: Unmanaged woodland vegetation			**Primary AIC**	30m	Minimum 200m
East: Unmanaged woodland vegetation	**Lee AIC**			10m	Nil
Southeast: Unmanaged woodland vegetation		**Lee AIC**		10m	Nil
South: Unmanaged woodland vegetation		**Secondary AIC**		20m	100m

The *Strategic Bushfire Management Plan for the ACT – Version 3 – 2014* also provides recommendations on the provision of Asset Protection Zones to development utilising only an Inner Asset Protection Zone [IAPZ].

Table 8 identifies the widths of the Inner Asset Protection Zones to the site, without the application of an Outer Asset Protection Zone [OAPZ].

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Table 8 – Inner Asset Protection Zones to Assets - Strategic Bushfire Management Plan for the ACT – Version 3 – 2014.

Aspect of Fire Run	Length of Fire Run to Asset Interface (through unmanaged vegetation)			Required Inner Asset Protection Zones
	<100m	100 – 350m	>350m	IAPZ
Northwest & North: Unmanaged woodland vegetation			**Primary AIC**	60m
Northeast: Unmanaged woodland vegetation			**Primary AIC**	60m
East: Unmanaged woodland vegetation	**Lee AIC**			20m
Southeast: Unmanaged woodland vegetation		**Lee AIC**		20m
South: Unmanaged woodland vegetation		**Secondary AIC**		40m

5.2 Review of Asset Protection Zones [APZs].

A review of the Masterplan confirms that the building setback to the Fairbairn Drive boundary is nominated as 10 metres and the building setback to the eastern boundary is minimum 16.00 metres with a minimum 4.00 metre setback to the southern boundary.

A review of the available Asset Protection Zone to the northwest of the site confirms that the managed width of the Fairbairn Drive road corridor is 80 metres to the site boundary, plus the 10 metre wide building setback, as shown of the Masterplan. This satisfies the Inner Protection Zone width of Table 8, without the need for the provision of an Outer Asset Protection Zone.

Note: The provision of the 80 metre wide managed road corridor removes the need for a building setback of 10 metres to proposed Lots 1 – 3.

The width of the Asset Protection Zone to the north and northeast of the site is 70 metres, provided by the managed width of the Fairbairn Drive road corridor. This satisfies the Inner Protection Zone width of Table 8, without the need from the provision of an Outer Asset Protection Zone.

The setback to the proposed buildings to the eastern boundary is 16.00 metres – satisfying the Inner Asset Protection Zone as defined by Table 7. It is noted that the management of the Power Line Easement provides an additional 20 metre zone managed as an Outer Asset Protection Zone.

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A review of the Master Plan identifies that the blocks adjoining the southern boundary of the site have a 4.5 metre wide building setback plus the 21.77 metre wide land extension which is being added to the site.

Table 7 establishes that an Inner Asset Protection Zone of minimum 20 metres is required to the southern aspect of the site, plus the provision of a 100 metre wide managed Outer Asset Protection Zone – within Canberra Nature Park.

The alternative approach to the provision of an IAPZ/OAPZ is to provide a 40 metre wide Inner Asset Protection Zone that complies with Table 8.

This would comprise the 21.77 metre width of the acquired land area plus the 4.5 metre wide building setback with the remaining width (20 metres) located within the Canberra Nature Park. Refer to Page 40 which provides a copy of the Bushfire Operations Plan (BOP) for the Canberra Nature Park.

The BOP plan confirms that a 20 metre wide area to the south and east of the site is being managed to mitigate the risk to the site.

Figure 12 – Asset Protection Zone Plan

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Figure 13 – Extract from the ACTMAPI Bushfire Operations Plan over laid on the Site Plan.

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5.3 Construction Standards to Buildings:

The width of the Asset Protection Zones to the northwest, north and northeast of the site [Lots 1 – 3] reduce the radiant heat exposure on the future dwellings erected on the perimeter northern lots to not more than 12.5kW/m^2.

The width of the Inner Asset Protection Zone [16.00m] plus the managed Outer Asset Protection Zone [20m] in the Power Line Easement reduces the radiant heat exposure on the future dwellings erected on the perimeter northern lots [Lots 8 – 13 & Lots 19 & 20] to not more than 19kW/m^2.

The width of the recommended Asset Protection Zone [> 40m] to the south of the future dwellings erected on the Lots 20 – 23, adjoining the southern boundary of the site, reduces the radiant heat exposure on the future dwellings erected on the perimeter northern lots to not more than 12.5kW/m^2.

Therefore, for consistency, the level of construction to the future dwellings erected on the perimeter lots shall be BAL 19 pursuant to the specifications of A.S. 3959 – 2018 – *'Construction of Buildings in Bushfire Prone Areas'.* [Alternatively construction to NASH Standard *'Steel framed construction in Bushfire Prone Areas' is an acceptable solution for construction pursuant to the BCA – 2015'*].

The remaining dwellings shall be constructed to comply with BAL 12.5 pursuant to the specifications of A.S. 3959 – 2018 – *'Construction of Buildings in Bushfire Prone Areas'.* [Alternatively construction to NASH Standard *'Steel framed construction in Bushfire Prone Areas' is an acceptable solution for construction pursuant to the BCA – 2015'*].

Refer to Figure 14 – Plan of Bushfire Construction Standards on Page 42.

Note: The use of timber fencing is not recommended. If this type of fencing is required to be used the material should be similar to 'Ezy-Slat' metal fencing manufactured by Stratco.

5.4 Access for Fire-fighting Operations.

Access to the site is from Truscott Street via a private internal loop road network which provides a pavement width of 5.5 metres.

Table 10 of the ACT Bushfire Management Standards (*ACT Bushfire Management Plan – Version 3 – 2014*) provides *'Access Standards for Public Roads for New Estate Development'.* The document does not provide specifications for internal private road access to residential estates.

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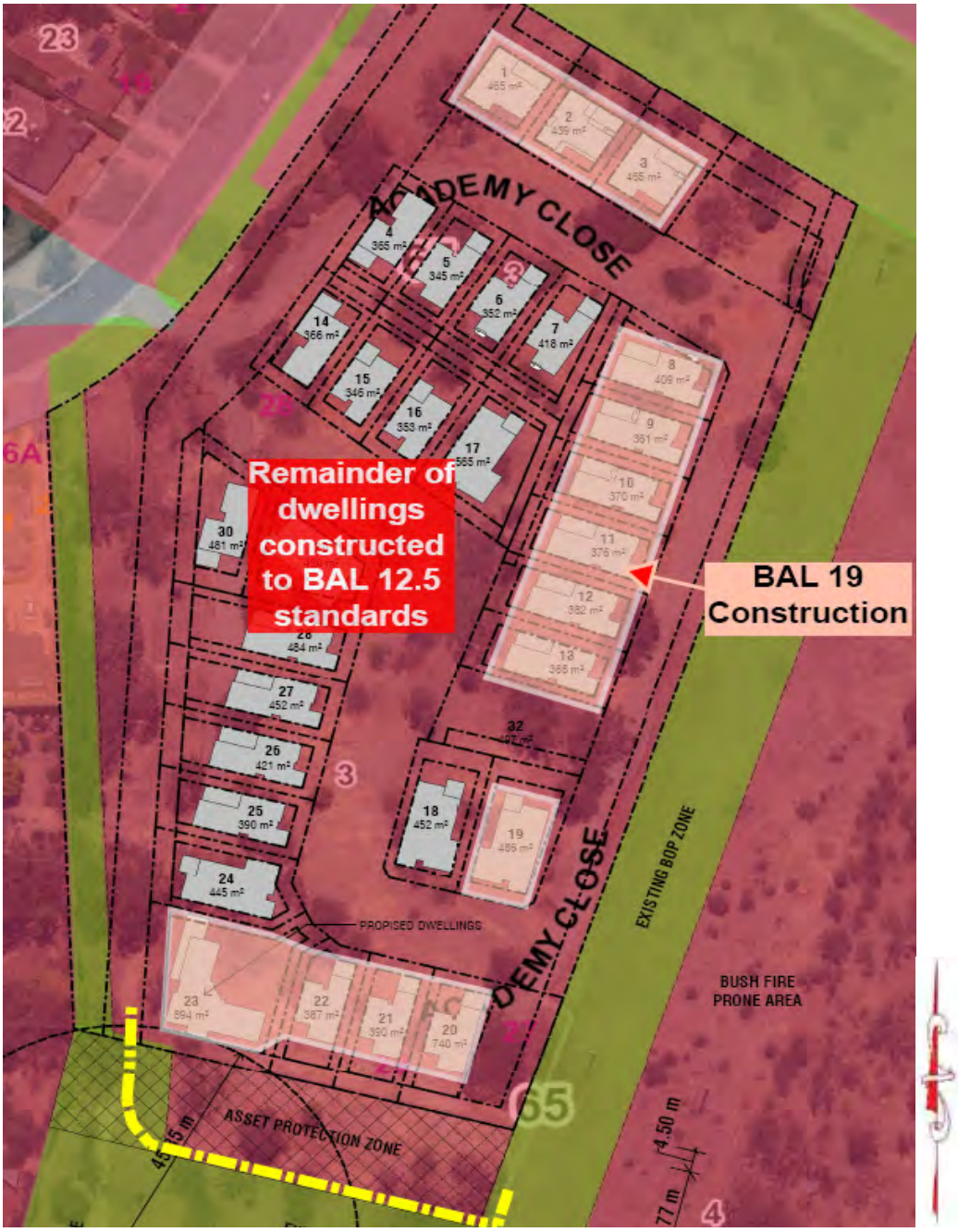
The proposed width of the internal road accommodates two-way traffic for fire appliances however it is recommended that the design principles of Table 10 be applied and that parking be provided in designated parking bays, clear of the pavement width.

A permanent fire trail, constructed to a formed width of 4.00 metres shall be provided on the outer edge of the Asset Protection Zone to the south of the site, with connection to the existing access track within the pipeline easement [to the west] and Power Line Easement [to the east].

Figure 14 – Plan of Bushfire Construction Standards.



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5.5 Water Supplies for Fire Fighting Operations.

A fire-fighting water supply shall be installed to comply with F6 and the standards agreed by ACTEW and ACT Fire & Rescue.

5.6 Fuel Management Protocols:

The management of the Inner Asset Protection Zones [IAPZ], where recommended in this report, shall comply with the management protocols as provided in Part 2 – Table 4 – Fuel Management Standards for Asset Protection Zones of the '*Strategic Bushfire Management Plan for the ACT – Version 3 – 2014'.*

Note: Access to hydrants, other water supplies and services must not be impeded by trees, street furniture or landscaping. Minimum height clearance for ACTF&R appliance is 4.5 metres.

Street trees and landscape planting shall be selected for low bark flammability characteristics.

Mature tree crown separation shall be 3 – 5 metres with > 3 metre fuel [vertical] gap to the crown. A small clump of trees is acceptable provided that a 5 metre wide crown separation is provided to adjacent single trees.

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SECTION 6

RESIDUAL RISK.

6.1 Introduction.

Table 9 evaluates the residual bushfire risk to the site, following the implementation of the recommended bushfire protection measures, and determines the vulnerability of the proposed development, the possible consequences and residual bushfire risk.

Table 9 – Bushfire Risk Register & Action Treatment Plan - post implementation of the recommended protection measures.

The Risk What can happen?	The consequences and likelihood of an event happening Consequences	Likelihood	Risk before mitigation	Strategy to reduce the risk	Consequences & Likelihood	Residual Level of Risk
(1) Fire burning in the woodland vegetation in the Canberra Nature Park to the northwest & northwest of the site, spreading across the landscape under N.W and northerly winds	Major	Possible	Extreme	Provision of APZs & construction standards to buildings	Moderate/ Possible	High
(2) Fire burning in the woodland vegetation in the Canberra Nature Park to the N.E. of the site, spreading across the landscape northeast winds	Major	Possible	Extreme	Provision of APZs & construction standards to buildings	Moderate/ Possible	High
(3) Fire burning in the woodland vegetation in the Canberra Nature Park to the east and southeast of the site, spreading across the landscape under south-easterly/southerly winds	Moderate	Possible	High	Provision of APZs & construction standards to buildings	Minor/ Possible	Moderate

6.2 Summary of Residual Bushfire Risk.

Table 9 provides an assessment of the residual level of risk to the proposed residential development and has been determined on the basis that the recommended bushfire construction standards have been implemented in the design and construction of the buildings.

The residual risk is deemed to be an acceptable outcome for the redevelopment of the site.

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SECTION 7

CONCLUSION

This risk assessment examines the potential bushfire risk to the proposed redevelopment of the residential landuse within the DHA Academy Close Estate within Block 3, Section 65, District of Campbell; Division of Canberra Central, ACT.

This report has examined the topography, vegetation and the fire-paths which are likely to present a threat to the proposed residential development and determined the level of risk prior to and the residual risk after the implementation of the recommended bushfire protection measures.

The level of residual risk to the development has been determined having regard to the assumption that the recommended bushfire protection measures are fully implemented, including the provision of a 40 metre wide Asset Protection Zone to the south of the future dwellings located adjacent to the southern boundary of the site.

The 40 metre wide Asset Protection Zone shall consist of a minimum 26 metre wide setback to the buildings from the southern boundary plus the 20 metre wide managed zone within the Canberra Nature Park, as shown on the ACTMAPi Bushfire Operations Plan (BOP).

There shall also be provided a fire access track on the outer edge of the Asset Protection Zone.

The Asset Protection Zone shall be maintained to the specifications provided in the *ACT Bushfire Management Standards (ACT Strategic Bushfire Management Plan –Version 3 – 2014).*

It is therefore concluded that the provision and maintenance of the recommended Asset Protection zones, fire-fighting access, water supplies and construction standards to the proposed buildings reduces the existing extreme level of bushfire risk to a high level of risk.

Graham Swain
Managing Director
Australian Bushfire Protection Planners Pty Limited.

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REFERENCES:

- Strategic Bushfire Management Plan for the ACT – Version 3 – 2014;
- Strategic Bushfire Management Plan for the ACT – 2019 – 2024;
- The Canberra Spatial Plan – ACT Planning & Land Authority – March 2004;
- *Australian Standard for Risk Management* A.S./N.Z.S. ISO 31000:2018 and A.S. 3959 - 2018;
- Emergency Risk Management – Applications Guide. (EMA) 2000);
- Overall Fuel Hazard Guide Fourth Edition – DSE. July 2010;
- National Capital Authority Development Control Plan 12 – 01, March 2012 [Superseded].

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ATTACHMENT A – Email from ACT Fire & Rescue:

s47F [redacted]

From: s22 [redacted] @act.gov.au> on behalf of ACTF&R Risk & Planning <ACTF-RRisk-Planning@act.gov.au>
Sent: Monday, 14 May 2018 1:37 PM
To: s47F [redacted]
Subject: RE: Academy Close - Campbell, ACT [SEC=UNCLASSIFIED]

Good afternoon s47F [redacted]

I have reviewed the report by s22 [redacted] titled "Bushfire risk assessment report Redevelopment of defence Housing's Academy Close estate Block 3, section 65 District of Campbell"

I agree with all the all the recommendations in the report. Please note, that he has classed the hydrant coverage as fire type F6. This means that you require hydrants to be located at 90m spacing with 25L/s flow.

Happy to discuss if needed

Regards

s22 [redacted]
ACT Fire & Rescue | Risk and Planning Section
9 Amberley Avenue Majura ACT 2601
Ph: 62078472
email : actf&rrisk&planning@act.gov.au

From: s47F [redacted] @dha.gov.au]
Sent: Tuesday, 8 May 2018 4:29 PM
To: ACTF&R Risk & Planning <ACTF-RRisk-Planning@act.gov.au>
Subject: Academy Close - Campbell, ACT

s22 [redacted] this is the "Draft Final" bushfire report from s22 [redacted] for our proposed redevelopment of our Academy Close site in Campbell, off Truscott St. This is an NCA site so we are in the process of finalising our Works Application to be lodged with the NCA this month. The site previously had 22 single & two storey detached houses, & we are planning on building 38 houses again single & two storey & probably mostly detached, but possibly some duplex style houses. The design plan in Graham's report is now superseded by the design attached here separately – but we are maintaining the Asset Protection Zone and fire trail which he says is required, and the rationale for where Graham nominates houses as BAL 19 & 12.5 will stay the same I imagine – the general concept of the design hasn't changed i.e. single road in & out (off Truscott St) with houses around the perimeter and houses internal to the perimeter.

Once you have reviewed let me know where we need to take it from here. I'm not all that familiar with how the A.C.T. works in terms of approvals & referrals and that sort of thing, but s22 [redacted] tells me that the NCA generally doesn't need (or want) to know about bushfire requirements in their Works Application process, but nevertheless, I'd like to address bushfire assessment/management in our application to them just so we cover off everything & in case they need us to gain approval or endorsement from ACT F&R.

Thanks.

s47F [redacted] | Development Manager
PPG | Defence Housing Australia

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ACT Geotechnical Engineers
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FortifyGeotech.com.au

11 March 2025

Our ref: AP/C09336-1

Client: PROJEX
Via email: s22 [redacted] @PROJEXBUILDING.COM.AU

Attention: s22 [redacted]

RESIDENTIAL DEVELOPMENT – ACADEMY CLOSE – BLOCK 3 SECTION 65 CAMPBELL ACT

Geotechnical Advice for Ground Vibration Management

1 INTRODUCTION

At the request of PROJEX, ACT Geotechnical Engineers Pty Ltd provided vibration monitoring services as part of civil works for the existing project being carried out at Block 3, Section 65, (20 Academy Close), Campbell, ACT.

ACT Geotechnical Engineers provided the use of one (1) vibration monitor, which was kept in front of the property 21 Truscott Street in Campbell to monitor ground vibrations coming from the active construction site.

Currently there exists no Australian Standard for assessment of building damage caused by vibrational energy, however, Appendix J of AS 2187.2 – 1993 recommends maximum peak particle velocities be measured at the ground surface. The standard states that structures which may be particularly susceptible to ground-borne vibration should be examined on an individual basis. It is suggested that in the absence of a particular site-specific study then a maximum peak particle velocity (PPV) of 8mm/s is used. AS 2187 applies an absolute vibration limit of 20mm/sec. Assuming multiple equipment types will be used on-site, and the vibration frequencies will be varied, then based on the most relevant available information and our experience, it is advised that vibration limits (PPV) of 8mm/sec be applied near bridges, substructures, retaining walls, residential premises, schools, hospital, and other buildings. Given that the civil works are adjacent to the existing road and services infrastructure and residential houses, we have adopted a maximum threshold PPV of 8mm/sec.

2 VIBRATION MONITORING RESULTS

The client (Projex) conducted the earthwork at the site on the morning of 7 March 2025 with the vibration monitor #7832 set up during the same period in the neighbourhood block (21 Truscott Street) near property boundary. The equipment continuously monitored ground vibrations until 8-10 passes completed for the compaction work being carried out with the full vibration potential of the vibratory roller. Figure 1 shows the site locality showing the approximate location of the active earthwork area and the location where the vibration monitoring is being carried out. The output of these readings is attached in Figure 2

The ground vibrations were generally negligible, with a maximum peak velocity of 0.21mm/sec. All ground vibrations were well below the recommended value of 8mm/sec.

3 CONCLUSIONS

The vibration monitoring shows that the civil works did not produce ground vibrations above the recommended peak velocity of 8mm/sec, and were in fact generally below 1mm/sec. It is assessed that the recorded ground vibrations are within the accepted threshold limits.

Should you require any further information regarding this report, please do not hesitate to contact our office.

Yours faithfully,

Fortify Geotech Pty Ltd

Written by:

Reviewed by:

s22

[redacted]

FIGURE 1: SITE LOCALITY

AP/C09336-1

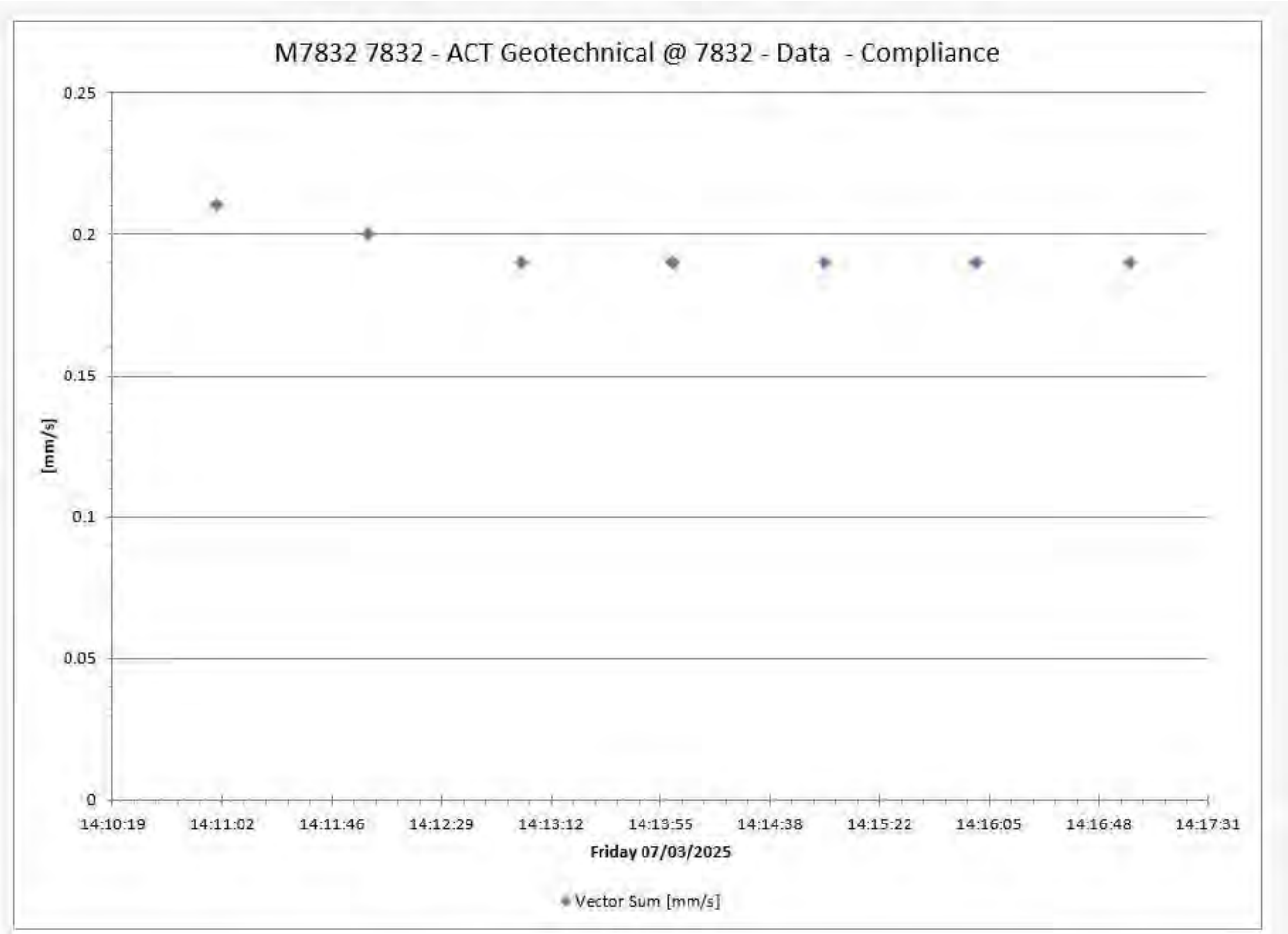

FIGURE 2: MONITORING RESULT | AP/C09336-1

ACT Geotechnical Engineers Pty Ltd

NORTHROP

PROPOSED RESIDENTIAL DEVELOPMENT BLOCK 3, SECTION 65, CAMPBELL, ACT

GEOTECHNICAL INVESTIGATION REPORT

JUNE 2018

ACT Geotechnical Engineers

ACT Geotechnical Engineers Pty Ltd
ACN 063 673 530

5/9 Beaconsfield Street, Fyshwick, ACT,2609
PO Box 9225, Deakin, ACT, 2600
Ph: (02) 6285 1547

25 June 2018
Our ref: SH/C9336

Northrop Consulting Engineers
2 Shea Street
Phillip ACT 2606

Attention: s22 [redacted]

PROPOSED RESIDENTIAL DEVELOPMENT
BLOCK 3, SECTION 65, CAMPBELL, ACT

GEOTECHNICAL INVESTIGATION REPORT

We are pleased to present our geotechnical investigation report for the proposed residential development at Block 3, Section 65, Campbell, ACT.

The report outlines the methods and results of exploration, describes site subsurface conditions, and provides recommendations for building footing design, excavation conditions, preparation of subgrades, stability of cut and fill batters, provides indicative design CBR values, and site drainage advice.

Should you require any further information regarding this report, please do not hesitate to contact our office.

Yours faithfully
ACT Geotechnical Engineers Pty Ltd

s22 [redacted]

NORTHROP

PROPOSED RESIDENTIAL DEVELOPMENT
BLOCK 3, SECTION 65, CAMPBELL, ACT

GEOTECHNICAL INVESTIGATION REPORT

JUNE 2018

NORTHROP

PROPOSED RESIDENTIAL DEVELOPMENT
BLOCK 3, SECTION 65, CAMPBELL, ACT

GEOTECHNICAL INVESTIGATION REPORT

TABLE OF CONTENTS

1 INTRODUCTION 1

2 SITE DESCRIPTION & GEOLOGY 1

3 INVESTIGATION METHODS 2

4 INVESTIGATION RESULTS 2

4.1 Subsurface Conditions 2
4.2 Groundwater 2
4.3 Laboratory Testing 3

5 DISCUSSION & RECOMMENDATIONS 4

5.1 Site Classification 4
5.2 Building Footings 4
5.3 Excavation Conditions & Use of Excavated Material 5
5.4 Stable Excavation Batters 5
5.5 Low Retaining Walls 6
5.6 Controlled Fill Construction 6
5.7 Pavement Subgrades 7
5.8 Earthquake Site Factor 7
5.9 Site Drainage 7

REFERENCES

FIGURE 1 - Site Locality
FIGURE 2 - Aerial Photograph and Borehole Locations
FIGURE 3 - Site Plan and Borehole Locations

APPENDIX A - Borehole Logs 1A to 5A
APPENDIX B - Laboratory Test Certificates
APPENDIX C - Definitions of Geotechnical Engineering Terms

NORTHROP

PROPOSED RESIDENTIAL DEVELOPMENT
BLOCK 3, SECTION 65, CAMPBELL, ACT

GEOTECHNICAL INVESTIGATION REPORT

1 INTRODUCTION

At the request of Northrop, ACT Geotechnical Engineers Pty Ltd carried out a geotechnical investigation for the proposed residential development, located at Block 3, Section 65, Campbell, ACT.

The project involves subdividing the site into 40 residential blocks of sizes between 270m^3 and 1180m^3. This subdivision will require cut-to-fill earthworks, ~400m of new roads, and installation of infrastructure.

The aim of the investigation was to:

(i) Identify subsurface conditions including the extent and nature of any fill materials, soil strata, bedrock type and depth, and groundwater presence.

(ii) Advise on excavation conditions and suitability of excavated material for use as structural fill.

(iii) Provide site classification to AS2870 "Residential Slabs & Footings".

(iv) Advise on suitable footings systems, founding depths, allowable bearing pressures and design parameters for ground slabs.

(v) Provide guidelines for construction of controlled fill platforms.

(vi) Advise on stable batter slopes and provide low retaining wall design parameters.

(vii) Provide Design Factors in accordance with AS1170.4.

(viii) Advise on site drainage and other geotechnical issues.

2 SITE DESCRIPTION & GEOLOGY

The 25,354m^2 site is bounded by Fairbairn Avenue to the north, Truscott Street to the west, an electricity easement to the east, and undeveloped bushland to the south. The site was formerly subdivided into 22 residential blocks which were occupied by single-storey residences which have recently been demolished. Figure 1 shows the site locality, while Figure 2 is a recent aerial photograph showing the site layout prior to demolition of the former houses and also shows the location of the boreholes. Figure 3 is a site plan of the proposed development.

The 1:100,000 Canberra & Environs Geology Map documents the area to be underlain by Silurian age, Deakin Volcanics bedrock which includes, rhyolite.

3 INVESTIGATION METHODS

The site investigation was conducted on 6 June 2018, comprising five boreholes, designated 1A to 5A, drilled by a backhoe with an auger attachment. The boreholes were drilled to the required depth of 3m or earlier due to refusal on bedrock at 1m/2.5m depth. The locations of the boreholes are shown on Figure 2, and the detailed borehole logs are included in Appendix A.

The borehole profiles were visually logged in accordance with the Unified Soil Classification System (USCS). Definitions of geotechnical engineering terms used in the report on the borehole logs, including a copy of the USCS chart, are provided in Appendix B.

4 INVESTIGATION RESULTS

4.1 Subsurface Conditions

Investigation borehole 1A to 5A found the subsurface profile to comprise:

Geological Profile	Typical Depth Interval	Description
FILL	0m to 0.1m/0.4m	SANDY CLAY & SANDY CLAY/CLAYEY SAND; medium and medium to high plasticity clay, fine to coarse sand, brown, orange-brown, dark brown, anthropogenic material, dry to moist, firm. Not encountered in borehole 4A.
ALLUVIUM	0.1m/0.4m to 0.6m	SANDY CLAY/CLAYEY SAND and SANDY CLAY; low to medium and medium to high plasticity clay, fine to coarse sand, red-brown, dry, stiff, dense. Only encountered in boreholes 2A and 3A.
RESIDUAL	0m/0.6m to 0.6m/1.3m	SANDY CLAY & GRAVELLY SANDY CLAY; medium and medium to high plasticity clay, fine to coarse sand, angular gravels up to 20mm size, yellow-brown, red-brown, some grey, dry, stiff, dense. Encountered in borehole 2A, 3A and 4A.
WEATHERED BEDROCK	Below 0.3m/1.3m	SANDSTONE; extremely weathered (EW) and highly weathered (HW), extremely weak and weak, fine to coarse grained, grey, white, dry.

Uncontrolled fill was encountered in all boreholes, except 4A, extending to 0.1m/0.4m depth. Given the site was formerly occupied by houses that have now been demolished, local uncontrolled fill could be deeper, due to old backfilled trenches, removed footings, ext. Bedrock was encountered in all boreholes below 0.3m/1.3m depth below existing ground surface levels. Auger refusal was encountered at 1m/2.5m depth in boreholes 2A to 5A while borehole 1A did not encounter auger refusal.

4.2 Groundwater

Groundwater was not encountered within the investigation depth of 3m. However, temporarily perched seepages are expected to be encountered at shallow depth, especially after rainfall.

4.3 Laboratory Testing

Three representative samples from 2A & 4A were taken for modified compaction and Soaked CBR Testing in a NATA laboratory. Results of the soaked CBR Testing are summarised in Table 1 below. The CBR test specimens were compacted to a nominal 95%ModMDD at about optimum moisture content, and soaked for four days prior to testing. Full details are provided on the NATA test certificates attached.

TABLE 1 - CBR Test Results Summary

Sample No.	2A/1D	4A/1D
Depth Interval	0.1m - 1.0m	0.1m - 1.0m
Material Description	ALLUVIUM; SANDY CLAY/CLAYEY SAND; low to medium plasticity clay, fine to coarse sand, red-brown, dry, stiff, dense.	RESIDUAL; GRAVELLY SANDY CLAY; medium plasticity clay, fine to coarse sand, angular gravels up to 20mm size, red-brown, grey, dry to moist, firm to stiff.
USCS	CL	CL
Standard Compaction		
Mod. Max. Dry Density (t/m^3)	1.90	2.07
Opt. Moisture Content (%)	13.0	8.0
Soaked CBR		
Placement Moisture Content (%)	12.9	8.2
Placement Density Ratio (%)	95.0	95.0
Post-Soak Density Ratio (%)	89.0	94.5
Swell After Soak (%)	7.0	0.5
CBR Value (4-day soak) (%)	2.0	20

5 DISCUSSION & RECOMMENDATIONS

5.1 Site Classification

The upper (low to high plasticity) soils are moderately reactive in terms of potential shrink-swell movements that may occur due to seasonal ground moisture changes. The characteristic ground surface movement "Y_s", as defined by AS2870 for the range of extreme dry to extreme wet moisture conditions is estimated to be between 10mm and 40mm. The site is therefore expected to be Class "S" (slightly reactive) or Class "M" (moderately reactive). Following the site earthworks, test holes must be dug on each lot to establish individual site classifications for the proposed dwellings.

5.2 Building Footings

AS2870 provides "deemed-to-comply" footing/slab designs, which for a Class "S" and "M" site includes stiffened rafts, stiffened footing slabs, waffle rafts, and strip and/or pad footings with above ground floors. Footings and slabs should be in accordance with the principles of AS2870 (Reference 2).

For structures founded at existing grade, footings, including thickened sections of slabs forming footings should be founded below the uncontrolled fill material. A general suitable founding depth of at least 0.1m/0.4m is expected. Shallow footings could be also founded in any newly placed controlled fill following removal of the uncontrolled fill (see Section 5.6).

Recommended allowable end-bearing pressures for various footing systems and likely foundation materials are provided in Table 2.

TABLE 2
Recommended Allowable End-Bearing Pressures for Footings

Foundation Material Type	Depth Below Existing Surface Level	Allowable End-Bearing Pressure			Allowable Shaft Adhesion on Bored Piers	
		Strips	Pads	Bored Piers	Downward Loading	Uplift
Newly Placed Controlled Fill	-	100kPa	125kPa	N.A	N.A	N.A
Dense & Stiff Alluvial & Residual Soils	0.1m/0.4m	125kPa	150kPa	200kPa	20kPa	10kPa
EW, EW/HW and HW Bedrock	0.3m/1.3m	500kPa	750kPa	1000kPa	100kPa	50kPa
HW/MW, MW and Less Weathered Bedrock	1m/>3m	1000kPa	1500kPa	2000kPa	200kPa	100kPa

All footings should be inspected and approved by an experienced geotechnical engineer to confirm the foundation material and design values, and to ensure the excavations are clean and stable.

Groundslabs can be constructed on the natural soils or newly placed controlled fill, following the removal of any uncontrolled fill. Groundslabs could also be founded on the existing fill, provided that it has been sufficiently proof-rolled. Following excavation to required level, slab areas on soil should be proof-rolled by a pad foot roller to check for any weak, wet or deforming soils that may require replacement. Suitable replacement fill should be compacted in not thicker than 150mm layers to not less than 95%ModMDD. If required for design of ground slabs, a modulus of subgrade reaction of 30kPa/mm can be assumed for a natural soil or controlled fill foundation.

5.3 Excavation Conditions & Use of Excavated Material

Proposed excavation depths have not been indicated but may be up to ~1.5m depth. Such excavations will be through firm fill material, stiff and dense alluvial and residual soils, and into weathered bedrock. The soils and weak rock are readily diggable by backhoe and medium sized excavator to ~1m/3m depth. MW bedrock is expected below 1m/3m depth, and would require ripping or rock hammering.

The low/medium plasticity alluvial soils and fill material can be used in controlled fill construction of building platforms. Any excavated bedrock can be used in controlled fill, provided rock particles are broken down to <75mm maximum size. The medium to high plasticity soils are not typically used in controlled fill construction, but could be used in non-structural applications such as landscaping. High plasticity clays can be used for clay capping.

If imported fill is required, a suitable select fill material would include a low or medium plasticity soil such as clayey sand or gravelly clayey sand, containing between 25% and 50% fines less than 0.075mm size (silt and clay), and no particles greater than 75mm size.

Permanent groundwater is not expected within excavation depths. However, temporary perched seepages could be present at shallower depth following rain, but should be readily controllable during construction.

5.4 Stable Excavation Batters

Temporary site excavations to 1.5m depth can be formed near vertical, although loose topsoil, slopewash and uncontrolled fill should be cut back at 1(H):1(V). If required and space allows, deeper temporary cuts can be formed at 1(H):1(V) or benched at 1.5m intervals in soils. A geotechnical engineer should inspect all cut batters during construction to confirm stability especially if groundwater is encountered, as this may reduce stability. Exposed temporary batters should be protected from the weather by black plastic pinned to the face with link-wire mesh, or similar.

Permanent cut & fill batter slopes should be formed at no steeper than 2(H):1(V). All soil cut and fill surfaces should be protected against erosion by topsoiling, grassing and shotcreting, stone pitching or other suitable methods. Alternatively permanent excavations can be supported by structural retaining walls.

5.5 Low Retaining Walls

Retaining walls constructed in open excavation, with the gap between the excavation face and the wall backfilled later, can be designed for an earth pressure distribution given by:

$$\sigma_h = (K\gamma' h) + Kq$$

where,

σ_h is the horizontal earth pressure acting on the back of the wall, in kPa

K is the dimensionless coefficient of earth pressure; this can be assumed to be 0.4 when the top of the wall is unrestrained horizontally, and 0.6 when the top of the wall is restrained (i.e. by building slabs etc.)

γ' is the effective unit weight of the backfill, and can be assumed to be 20kN/m^3 for a lightly compacted soil backfill

h is the height of the backfill, in metres

q is any uniform distributed vertical surcharge acting on the top of the backfill, in kPa

Apart from structural restraints such as floor slabs, resistance to overturning and sliding of retaining walls is provided by frictional and adhesive resistance on the base, and by passive resistance at the toe of the wall. For a natural soil or controlled fill foundation, an ultimate base friction factor (tanδ) of 0.4, base adhesion (c) of 50kPa, and allowable passive earth pressure coefficient Kp=2.5 can be used for calculation of sliding resistance. For a weak bedrock foundation, an ultimate base friction factor (tanδ) of 0.55, base adhesion (c), of 100kPa, and allowable passive earth pressure coefficient Kp=3.5 can be used.

Free-draining granular backfill or synthetic fabric drains should be installed behind all walls. These should connect to weep holes and/or a collector drain, and ultimately to the stormwater system. Granular backfill should be wrapped in a suitable filter fabric to minimise infiltration of silt/clay fines.

5.6 Controlled Fill Construction

For construction of any new fill foundation platforms and road subgrades, it is recommended that:

- Areas be fully stripped of any topsoil and uncontrolled fill. A general stripping depth of 0.1m/0.4m is expected (but could be locally deeper). Stripped foundations should be proof-rolled by a vibratory pad-foot roller of not less than 9 tonne static mass to check for any weak or wet areas that would require replacement. No fill should be placed until a geotechnical engineer has confirmed the suitability of the foundation.

- Controlled fill comprising suitable site excavated or imported materials of not greater than 75mm maximum particle size, be compacted in not greater than 150mm layers to not less than 95%ModMDD at about OMC.

- Fill placement and control testing be overviewed and certified by a geotechnical engineer at Level 1 or 2 involvement of AS3798 – 1996 "Guidelines on Earthworks for Commercial & Residential Developments" (Reference 3).

5.7 Pavement Subgrades

Pavement subgrades should be prepared as outlined in Section 5.6. Natural soil or controlled fill subgrades can be designed using a CBR value of 3%. This value is indicative based on the soaked CBR testing conducted on the soils. Exposed subgrades should be inspected by a geotechnical engineer to check the recommended design CBR value.

5.8 Earthquake Site Factor

The Geosciences website (Reference 4), lists the Canberra area as having an earthquake acceleration coefficient of 0.06.

Section 4.2 of AS1170.4 "Minimum Design Loads on Structures – Part 4: Earthquake Loads" (Reference 5) lists the site sub-soil classes to be considered in structural design. The site is classified as a "Class C_e – Shallow Soil Site".

5.9 Site Drainage

Suitable surface drainage should be provided to ensure rainfall run-off or other surface water cannot pond against buildings or pavements. Drainage should be provided behind all retaining walls, and subsoil drains should be installed along the upslope sides of access roads and carparks.

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REFERENCES

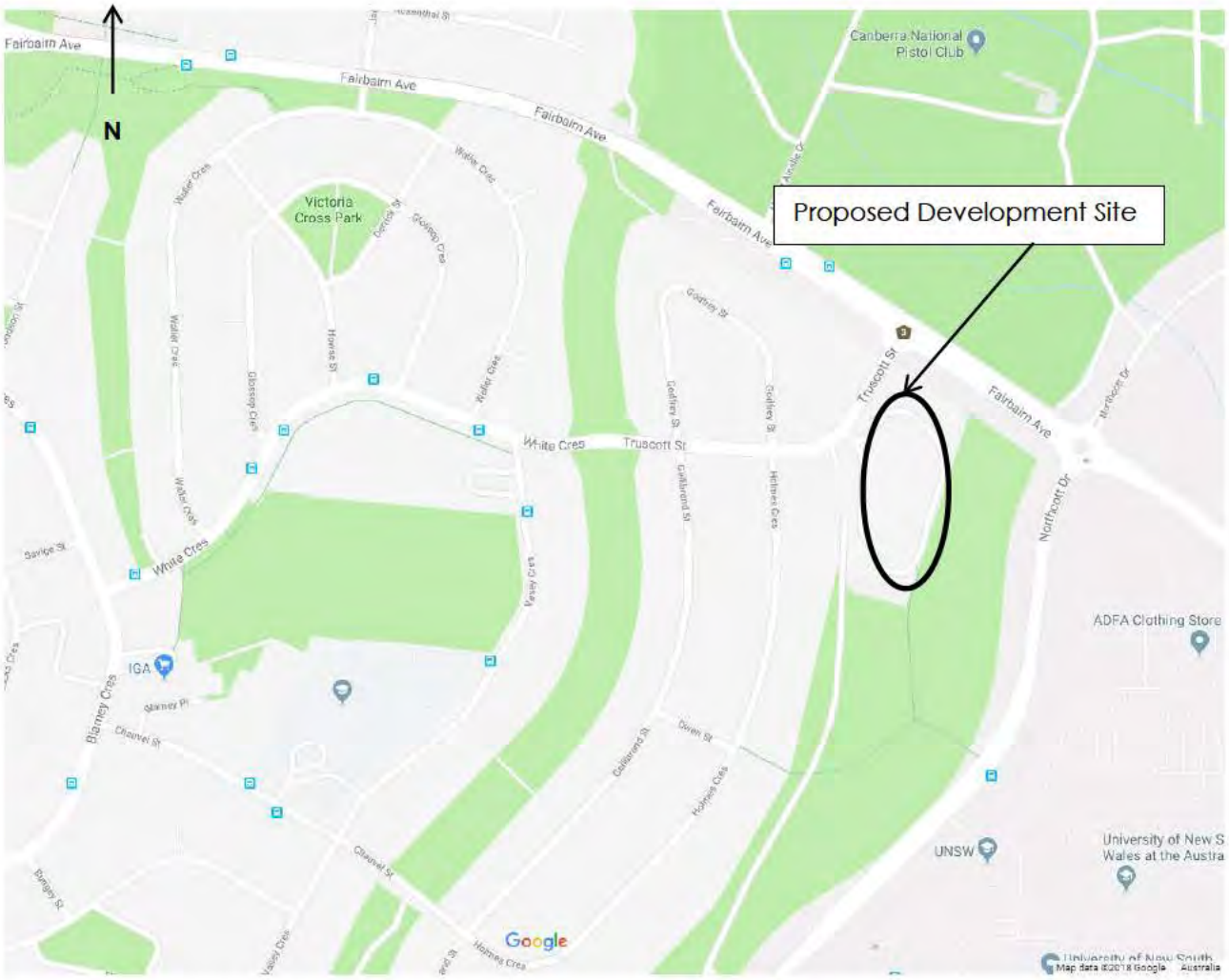
1 Abell, R.S., 1992, Canberra (1:100 000 scale geology map), Bureau of Mineral Resources, Commonwealth of Australia.

2 Standards Australia, "AS2870 – Residential Slabs & Footings", 2011.

3 AS3798, "Guidelines on earthworks for commercial and residential developments".

4 Geosciences website; http://www.ga.gov.au/darwin-view/hazards.xhtml# - accessed 25/3/2016

5 Standards Australia, "AS1170.4 – 2007 – Minimum Design Loads on Structures – Part 4 Earthquake Loads".



NORTHROP
BLOCK 3, SECTION 65, CAMPBELL
SITE LOCALITY

ACT Geotechnical Engineers Pty Ltd	**C9336**	**FIGURE 1**

LEGEND

Location of Boreholes - ⊗

NORTHROP
BLOCK 3, SECTION 65, CAMPBELL
AERIAL PHOTOGRAPH AND BOREHOLE LOCATIONS

ACT Geotechnical Engineers Pty Ltd	**C9336**	**FIGURE 2**

LEGEND

Location of Boreholes - ⊗

NORTHROP
BLOCK 3, SECTION 65, CAMPBELL
SITE PLAN AND BOREHOLE LOCATIONS

ACT Geotechnical Engineers Pty Ltd	C9336	FIGURE 3

APPENDIX A
Borehole Logs 1A to 5A

Borehole Log

Borehole No.	1A
Sheet	1 of 1
Job No.	C9336
Location	SEE REPORT
Collar Level	Not Known
Angle From Vertical	0°
Bearing	N.A.

CLIENT: NORTHROP

PROJECT: RESIDENTIAL DEVELOPMENT
ACADEMY CLOSE - BLOCK 3, SECTION 65 CAMPBELL

Equipment Type : JCB 3CX BACKHOE
Hole Diameter : 600mm

Samples	Water	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered		0.3			SANDY CLAY; medium to high plasticity clay, fine to coarse sand, brown, orange-brown, dry	FIRM		FILL
			1.0 2.0 3.0			EW RHYODACITE; fine to coarse grained, white, brown, grey, some yellow-brown, dry	EXTREMELY WEAK ROCK		EW BEDROCK
			3.2			BOREHOLE TERMINATED AT 3m			

Logged By : SH Date : 13/6/18 Checked By : Date :

BOREHOLE/EXCAVATION LOG C9336.GPJ ACT GEO.GDT 25/6/18

ACT Geotechnical Engineers

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Borehole Log

Borehole No.	2A
Sheet	1 of 1
Job No.	C9336
Location	SEE REPORT
Collar Level	Not Known
Angle From Vertical	0°
Bearing	N.A.

CLIENT: NORTHROP

PROJECT: RESIDENTIAL DEVELOPMENT
ACADEMY CLOSE - BLOCK 3, SECTION 65 CAMPBELL

Equipment Type : JCB 3CX BACKHOE
Hole Diameter : 600mm

Samples	Water	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure)	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered		0.1			SANDY CLAY; medium plasticity clay, fine to coarse sand, dark brown, some anthropogency, moist	FIRM		FILL
2A/1D			0.6		CL	SANDY CLAY/CLAYEY SAND; low to medium plasticity clay, fine to coarse sand, red-brown, dry	STIFF		ALLUVIUM
			1.0		CH	SANDY CLAY; medium to high plsticity clay, fine to coarse sand, red-brown, some grey, dry	STIFF		RESIDUAL
			1.3			EW RHYODACITE; fine to coarse grained, grey, white, dry	EXTREMELY WEAK		EW BEDROCK
			1.8			HW RHYODACITE; fine to coarse grained, grey, whtie ,dry.	WEAK		HW BEDROCK
			2.0						
			2.5			BOREHOLE TERMINATED AT 2.5m REFUSAL ON MW BEDROCK			
			3.0						
			3.2						

Logged By : SH Date : 13/6/18 Checked By : Date :

BOREHOLE/EXCAVATION LOG C9336.GPJ ACT GEO.GDT 25/6/18

ACT Geotechnical Engineers

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Borehole Log

Borehole No.	3A
Sheet	1 of 1
Job No.	C9336
Location	SEE REPORT
Collar Level	Not Known
Angle From Vertical	0°
Bearing	N.A.

CLIENT: NORTHROP

PROJECT: RESIDENTIAL DEVELOPMENT
ACADEMY CLOSE - BLOCK 3, SECTION 65 CAMPBELL

Equipment Type : JCB 3CX BACKHOE
Hole Diameter : 600mm

Samples	Water	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered					SANDY CLAY; medium to high plasticity, fine to coarse sand, anthropogency, red-brown, moist	FIRM		FILL
			0.4		CH	SANDY CLAY; medium to high plasticity, fine to coarse sand, red-brown, dry	STIFF		ALLUVIUM
			0.6		CL	GRAVELLY SANDY CLAY; medium plasticity clay, fine to coarse gravels, yellow-brown, dry	STIFF		RESIDUAL
			0.9			EW RHYODACITE; fine to coarse sand, yellow-brown, grey, white, dry	EXTREMELY WEAK		EW BEDROCK
			1.0						
			1.5			BOREHOLE TERMINATED AT 1.5m REFUSAL ON MW BEDROCK			
			2.0						
			3.0						
			3.2						

Logged By : SH Date : 13/6/18 Checked By : Date :

BOREHOLE/EXCAVATION LOG C9336.GPJ ACT GEO.GDT 25/6/18

ACT Geotechnical Engineers

ACT Geotechnical Engineers

Borehole Log

Borehole No.	4A
Sheet	1 of 1
Job No.	C9336
Location	SEE REPORT
Collar Level	Not Known
Angle From Vertical	0°
Bearing	N.A.

CLIENT: NORTHROP

PROJECT: RESIDENTIAL DEVELOPMENT
ACADEMY CLOSE - BLOCK 3, SECTION 65 CAMPBELL

Equipment Type : JCB 3CX BACKHOE
Hole Diameter : 600mm

Samples	Water	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
4A/1D	None Encountered		0.6		CL	GRAVELLY SANDY CLAY; medium plasticity clay, fine to coarse, red-brown, grey, dry to moist	FIRM TO STIFF		RESIDUAL
			1.0			EW RHYODACITE; fine to coarse grained, yellow-brown, grey, white, dry.	EXTREMELY WEAK		EW BEDROCK
						BOREHOLE TERMINATED AT 1m REFUSAL ON MW BEDROCK			
			2.0						
			3.0						
			3.2						

Logged By : SH Date : 13/6/18 Checked By : Date :

BOREHOLE/EXCAVATION LOG C9336.GPJ ACT GEO.GDT 25/6/18

ACT Geotechnical Engineers

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Borehole Log

Borehole No.	5A
Sheet	1 of 1
Job No.	C9336
Location	SEE REPORT
Collar Level	Not Known
Angle From Vertical	0°
Bearing	N.A.

CLIENT: NORTHROP

PROJECT: RESIDENTIAL DEVELOPMENT
ACADEMY CLOSE - BLOCK 3, SECTION 65 CAMPBELL

Equipment Type : JCB 3CX BACKHOE
Hole Diameter : 600mm

Samples	Water	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered		0.2			SANDY CLAY/CLAYEY SAND; medium plasticity, fine to coarse sand, brown, dark brown, anthropogency, dry to moist	FIRM TO STIFF		FILL
			0.6		CH	SANDY CLAY; medium to high plasticity, fine to coarse, red-brown, dry	STIFF		RESIDUAL
			1.0			EW DACITE; fine to coarse grained, white, grey, yellow-brown, dry	EXTREMELY WEAK		EW BEDROCK
			1.2			BOREHOLE TERMINATED AT 1.2m REFUSAL ON MW BEDROCK			
			2.0						
			3.0						
			3.2						

Logged By : SH Date : 13/6/18 Checked By : Date :

BOREHOLE/EXCAVATION LOG C9336.GPJ ACT GEO.GDT 25/6/18

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APPENDIX B
Laboratory Test Certificates

J & A GEOTECH TESTING PTY LTD

Unit 2/25 Dacre Street Mitchell ACT 2911

Certificate No 260678-260679

Test Certificate - California Bearing Ratio - CBR

Client	**ACT GEOTECHNICAL ENGINEERS PTY LTD**	Job No	**0010**
Principal		Date Tested	22.06.18
Project	Academy Close Block 3 Section 65	Tested By	D.J
Location	Campbell ACT	Date Checked	22.06.18
Test Procedures		Checked By	S.M

[•] AS 1289 6.1.1 [•] AS 1289 2.1.1 [•] AS 1289 2.1.4 [ ] AS 1289 5.1.1 [•] AS 1289 5.2.1
[ ] RMS T102 – CAn = ___ [ ] RMS T111 [ ] RMS T112 [ ] RMS T117 [ ] RMS T120 [ ] RMS T180 [ ] RMS 130 [ ] RMS T132

Sample Location		2A/1D	4A/1D	-	-
Level at Test Taken	BFL	0.1m-1.0m	0.1m-1.0m	-	-
Remoulding Parameters		**95%MMDD@OMC**	**95%MMDD@OMC**	-	-
Compactive Effort		Modified	Modified	-	-
Maximum Particle Size	mm	19.0	19.0	19.0	19.0
Percentage Oversize of Material	%	0.0	0.0	-	-
Oversize Material Included in Sample		[ ] Yes [•] No	[ ] Yes [•] No	[ ] Yes [ ] No	[ ] Yes [ ] No
Maximum Dry Density	t/m^3	1.90	2.07	-	-
Optimum Moisture Content	%	13.0	8.0	-	-
Dry Density Before Soak	t/m^3	1.80	1.97	-	-
Dry Density After Soak	t/m^3	1.68	1.96	-	-
Dry Density Ratio Before Soak	%	95.0	95.0	-	-
Dry Density Ratio After Soak	%	89.0	94.5	-	-
Moisture Ratio Before Soak	%	100.0	100.0	-	-
Moisture Content Before Soak	%	12.9	8.2	-	-
Soaking					
Period of Soak days		4	4	-	-
Surcharge kg		9.0	9.0	-	-
Swell%		7.0	0.5	-	-
Penetration Test					
Sample Moisture Content	%	12.8	8.9	-	-
Top 30 mm	%	27.1	12.3	-	-
Whole Sample	%	21.6	10.8	-	-
CBR Value		**2.0**	**20**	-	-
Penetration at Which CBR Determined mm		2.5	5.0	-	-
Curing Time	Hrs	24	24	-	-
LL Assessment Method?		Visual/Tactile	Visual/Tactile	-	-
Material Classification: Sampled by client received on 13.06.18		**Clayey Sand**	s22 [redacted]		-

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

Accredited for compliance with ISO/IEC 17025-Testing.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/nation[redacted] standards.

NATA Accredited Laboratory Number: 19979

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APPENDIX C
Engineering Terms and Definitions

DESCRIPTION AND CLASSIFICATION OF SOILS

The methods of description and classification of soils used in this report are based on the Australian Standard 1726 – 1993, Geotechnical site investigations. In general, descriptions cover the following properties – soil type, colour, secondary grain size, structure, inclusions, strength or density and geological description.

Soil types are described according to the predominating particle size, qualified by the grading of other particles present (e.g. sandy clay) on the following basis:

Classification	**Particle Size**
Clay	Less than 0.002mm
Silt	0.002mm to 0.06mm
Sand	0.06mm to 2.00mm
Gravel	2.00mm to 60.00mm
Cobbles	60mm (63mm) to 200mm
Boulders	>200mm

Soils are also classified according to the Unified Soil Classifications System which is included in this Appendix. Rock types are classified by their geological names.

Cohesive soils are classified on the basis of strength either by laboratory testing or engineering examination. The terms are defined as follows:

Consistency	**Shear Strength su(kPa) (Representative Undrained Shear)**	
Very soft	< 12	<2 (~SPT "N")
Soft	12 - 25	2-4
Firm	25 - 50	4-8
Stiff	50 – 100	8-15
Very Stiff	100 – 200	15-30
Hard	> 200	>30

Non-cohesive soils are classified on the basis of relative density, generally from the results of in-situ standard penetration tests as below:

Term	**Relative Density (%)**	**SPT Blows/300mm 'N'**
Very loose	< 15	<4
Loose	15-35	4-10
Medium dense	35-65	10-30
Dense	65-85	30-50
Very Dense	>85	>50

SAMPLING

Sampling is carried out during drilling to allow engineering examination (and laboratory testing where required) of soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are generally taken by one of two methods:

1. Driving or pushing a thin walled sample tube into the soil and withdrawing with a sample of soil in a relatively undisturbed state.

2. Core drilling using a retractable inner tube (R.I.T.) core barrel.

Such samples yield information on structure and strength in additions to that obtained from disturbed samples and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Details of the type and method of sampling are given in the report.

PENETRATION TESTING

The relative density of non-cohesive soils is generally assessed by in-situ penetration tests, the most common of which is the standard penetration test. The test procedure is described in Australian Standard 1289 “Testing Soils for Engineering Purposes” Testing Soils for Engineering Purposes” – Test No. F3.1.

The standard penetration test is carried out by driving a 50mm diameter split tube penetrometer of standard dimensions under the impact of a 63 kg hammer having a free fall of 750mm.

The “N” value is determined as the number of blows to achieve 300mm of penetration (generally after disregarding the first 150mm penetration through possibly disturbed material). The results of these tests can be related empirically to the engineering properties of the soil.

The test is also used to provide useful information in cohesive soils under certain conditions, a good quality disturbed sample being recovered with each test. Other forms of in situ testing are used under certain conditions and where this occurs, details are given in the report.

DEFINITIONS OF ROCK, SOIL, AND DEGREES OF CHEMICAL WEATHERING

GENERAL DEFINITIONS – ROCK AND SOIL

ROCK In engineering usage, rock is a natural aggregate of minerals connected by strong and permanent cohesive forces.

Note: Since "strong" and "permanent" are subject to different interpretations, the boundary between rock and soil is necessarily an arbitrary one.

SOIL In engineering usage, soil is a natural aggregate of mineral grains which can be separated by such gentle mechanical means as agitation in water, can be remoulded and can be classified according to the Unified Soil Classification System. Three principal classes of soil recognized are:

Residual soils: soils which have been formed in-situ by the chemical weathering of parent rock. Residual soil may retain evidence of the original rock texture or fabric or, when mature, the original rock texture may be destroyed.

Transported soils: soils which have been moved from their places of origin and deposited elsewhere. The principal agents of erosion, transport and deposition are water, wind and gravity. Two important types of transported soil in engineering geology and materials investigations are:

Colluvium – a soil, often including angular rock fragments and boulders, which has been transported downslope predominantly under the action of gravity assisted by water. The principle forming process is that of soil creep in which the soil moves after it has been weakened by saturation. It may be water borne for short distances.

Alluvium – a soil which has been transported and deposited by running water. The larger particles (sand and gravel size) are water worn.

Lateritic soils: soils which have formed in situ under the effects of tropical weathering include all reddish residual and non residual soils which genetically form a chain of material ranging from decomposed rock through clay to sesqui-oxide rich crusts. The term does not necessarily imply any compositional, textural or morphological definition; all distinctions useful for engineering purposes are based on the differences in geotechnical characteristics.

ROCK WEATHERING DEFINITIONS

Extremely Weathered (EW)	Rock substance affected by weathering to the extent that the rock exhibits soil properties, i.e. it can be remoulded and can be classified according to the Unified Classification System, but the texture of the original rock is still evident.
Highly Weathered (HW)	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance and other signs of the chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock usually as a result of iron leaching or deposition. The colour and strength of the original fresh rock substance is no longer recognisable.
Moderately Weathered (MW)	Rock substance affected by weathering to the extent that staining extends throughout the whole of the rock substance and the original colour of the fresh rock is no longer recognisable.
Slightly Weathered (SW)	Rock substance affected by weathering to the extent that partial staining or discolouration of the rock substance, usually by limonite, has taken place. The colour and texture of the fresh rock is recognisable.
Fresh (Fr)	Rock substance unaffected by weathering.

The degrees of rock weathering may be gradational. Intermediate stages are described by dual symbols with the prominent degree of weathering first (e.g. EW-HW).

The various degrees of weathering do not necessarily define strength parameters as some rocks are weak, even when fresh, to the extent that they can be broken by hand across the fabric, and some rocks may increase in strength during the weathering process.

Fresh drill cores of some rock types, such as basalt and shale may disintegrate after exposure to the atmosphere due to slaking, desiccation, expansion or contraction, stress relief or a combination of any of these factors.

AN ENGINEERING CLASSIFICATION OF SEDIMENTARY ROCKS

This classification system provides a standardised terminology for the engineering description of the sandstone and shales in the Sydney area, but the terms and definitions may be used elsewhere when applicable. Where other rock types are encountered, such as in dykes, standard geological descriptions are used for rock types and the same descriptions as below are used for strength, fracturing and weathering.

Under this system rocks are classified by Rock Type, Strength, Stratification Spacing, Degree of Fracturing and Degree of Weathering. These terms do not cover the full range of engineering properties. Descriptions of rock may also need to refer to other properties (e.g. durability, abrasiveness, etc) where these are relevant.

ROCK TYPE DEFINITIONS

ROCK TYPE	DEFINITION
Conglomerate:	More than 50% of the rock consists of gravel sized (greater than 2mm) fragments.
Sandstone:	More than 50% of the rock consists of sand sized (0.06 to 2mm) grains.
Siltstone:	More than 50% of the rock consists of silt-sized (less than 0.06mm) granular particles and the rock is not laminated.
Claystone:	More than 50% of the rock consists of silt or clay sized particles and the rock is not laminated.
Shale:	More than 50% of the rock consists of silt or clay sized particles and the rock is laminated.

Rocks possessing characteristics of two groups are described by their predominant particle size with reference also to the minor constituents, e.g. clayey sandstone, sandy shale.

STRATIFICATION SPACING

Term	Separation of Stratification Planes
Thinly Laminated	< 6mm
Laminated	6mm to 20mm
Very thinly bedded	20mm to 60mm
Thinly bedded	60mm to 0.2m
Medium bedded	0.2m to 0.6m
Thickly bedded	0.6m to 2m
Very thickly bedded	> 2m

DEGREE OF FRACTURING

This classification applies to diamond drill cores and refers to the spacing of all types of natural fractures along which the core is discontinuous. These include bedding plane partings, joints and other rock defects, but exclude known artificial fractures such as drilling breaks.

Term	Description
Fragmented:	The core is comprised primarily of fragments of length less than 20mm, and mostly of width less than the core diameter
Highly Fractured:	Core lengths are generally less than 20mm – 40mm with occasional fragments.
Fractured:	Core lengths are mainly 30mm – 100mm with occasional shorter and longer section.
Slightly Fractured:	Core lengths are generally 300mm – 1000mm with occasional longer sections and occasional sections of 100mm – 300mm.
Unbroken:	The core does not contain any fracture.

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index (Is 50) and refers to the strength of the rock substance in the direction normal to the bedding. The test procedure is described by the International Society of Rock Mechanics.

Term	Point Load Index Is(50) MPa	Field Guide	Approx qu MPa*
Extremely Weak:	0.03	Easily remoulded by hand to a material with soil properties.	0.7
Very Weak:	0.1	May be crumbled in the hand. Sandstone is “sugary” and friable.	2.4
Weak:	0.3	A piece of core 150mm long x 50mm dia. May be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.	7
Medium Strong:	1	A piece of core 150mm long x 50mm dia. can be broken by hand with considerable difficulty. Readily scored with knife.	24
Strong: (SW)	3	A piece of core 150mm long x 50mm dia. core cannot be broken by unaided hands, can be slightly scratched or scored with knife.	70
Very Strong (SW)	10	A piece of core 150mm long x 50mm dia. may be broken readily with hand held hammer. Cannot be scratched with pen knife.	240
Extremely Strong (Fr)	>10	A piece of core 150mm long x 50mm dia. is difficult to break with hand held hammer. Rings when struck with a hammer.	>240

The approximate unconfined compressive strength (qu) shown in the table is based on an assumed ration to the point load index of 24:1. This ratio may vary widely.

Unified Soil Classification System (Metricated)
Data for Description Indentification and Classification of Soils

MAJOR DIVISIONS			DESCRIPTION: Group Symbol	Graphic Symbol	TYPICAL NAME	DESCRIPTIVE DATA
COARSE GRAINED SOILS: More than 50% by dry mass, less than 60mm is greater than 0.06mm.	GRAVELS	More than 50% of coarse grains are greater than 2.0mm	GW		Well graded gravels and gravel-sand mixtures, little or no fines	Give typical name, indicate approximate percentages of sand and gravel, maximum size, angularity, surface condition and hardness of the coarse grains, local or geological name and other pertinent descriptive information, symbols in parenthesis. For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics. EXAMPLE: Silty Sand, gravelly, about 20% hard, angular gravel particles, 10mm maximum size, rounded and sub angular sand grains coarse to fine, about 15% non-plastic fines with low dry strength, well compacted and moist in place, light brown alluvial sand, (SM)
			GP		Poorly graded gravels and gravel-sand mixtures, little or no fines	
	GRAVELLY SOILS		GM		Silty gravels, gravel-sand-silt mixtures	
			GC		Clayey gravels gravel-sand-clay mixtures	
	SANDS	More than 50% of coarse grains are greater than 2.0mm	SW		Well graded sands and gravelly sands, little or no fines	
			SP		Poorly graded sands and gravelly sands, little or no fines	
	SANDY SOILS		SM		Silty sand, sand-silt mixtures	
			SC		Clayey sands, sand-clay mixtures	
FINE GRAINED SOILS: More than 50% by dry mass, less than 60mm is less than 0.06mm	Liquid Limit less than 50%		ML		Inorganic silts, very fine sands, rock flour, silty or clayey fine sands.	Give typical name, indicate degree and character of plasticity, amount and maximum size of coarse grains, colour in wet condition, odour if any, local or geological name and r pertinent descriptive information, symbols in parenthesis. For undisturbed soil add information on structure, stratification, consistancy in undisturbed and remoulded states, moisture and drainage conditions. EXAMPLE Clayey Silt, brown, low plasticity, small percentage of fine sand, numerous vertical root-holes, firm and dry in place, till, (ML).
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.	
			OL		Organic silts and organic silty clays of low plasticity	
	Liquid Limit more than 50%		MH		Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts.	
			CH		Inorganic clays of high plasticity, fat clays.	
			OH		Organic clays of medium to high plasticity.	
			Pt		Peat muck and other highly organic soils.	

FIELD IDENTIFICATION

Determine approximate percentages of material over 60mm size, maximum size, shape, surface texture, hardness of material; geological description identify on estimated percentage mass of the various fractions.

COARSE GRAINED SOILS — More than half of the material less than 60mm is large than 0.06mm — 0.06mm is about the smallest particle visible to the naked eye

Group Symbol	GRAVELS AND SANDS: GRADATIONS		NATURE OF FINES	DRY STRENGTH
GW	GOOD	Wide range in grain size	"Clean" materials (not enough fines to bond coarse grains)	None
GP	POOR	Predominantly one size or range of sizes		
GM	GOOD TO FAIR	"Dirty" materials (Excess of fines)	Fines are non-plastic (1)	None to medium
GC			Fines are plastic (1)	
SW	GOOD	Wide range in grain size	"Clean" materials (not enough fines to bond coarse grains)	None
SP	POOR	Predominantly one size or range of sizes		
SM	GOOD TO FAIR	"Dirty" materials (Excess of fines)	Fines are non-plastic (1)	None to medium
SC			Fines are plastic (1)	

FINE GRAINED SOILS — More than half of the material less than 60mm is less than 0.06mm

Group Symbol	SILT AND CLAY FRACTION: Fraction smaller than 0.20mm AS sieve size: DRY STRENGTH	DILATANCY	TOUGHNESS
ML	None to low	Quick to slow	None
CL	Medium to high	None to very slow	Medium
OL	Low to medium	Slow	Low
MH	Low to medium	Slow to none	Low to medium
CH	High to very high	None	High
OH	Medium to high	None to very slow	Low to medium

Readily identified by colour, odour, spongy feel and generally by fibrous texture — Pt*

LABORATORY CLASSIFICATION

Use the gradation curve of material passing 60mm for classification of fractions according to criteria given under "Major Division".

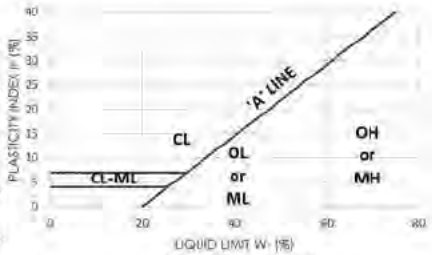
Group Symbol	% (2) < 0.06mm	PLASTICITY OF FINE FRACTION		
GW	0-5	-	>4	Between 1 and 3
GP	0-5	-	Fails to comply with above	
GM	12-50	Below 'A' line and Ip >7	-	-
GC	12-50	Above 'A' line and Ip > 7	-	-
SW	0-5	-	>6	between 1 and 3
SP	0-5	-	Fails to comply with above	
SM	12-50	Below 'A' line or Ip < 4	-	-
SC	12-50	Above 'A' line and Ip > 7	-	-
ML	More than 50% passing 0.06mm	Below 'A' line		
CL		Above 'A' line		
OL		Below 'A' line		
MH		Below 'A' line		
CH		Above 'A' line		
OH		Below 'A' line		

*Effervescence with H2O2

NOTES

1. Identify Fines by the method given for fine grained soils.
2. Borderline classifications occur when the percentage of fines (fraction smaller than 0.06mm size) is greater than 5% and less than 12%.

Borderline classifications require the use of dual symbols
eg SP-SM
GW-GC



PLASTICITY CHART
FOR CLASSIFICATION OF FINE GRAINED SOILS

ACT Geotechnical Engineers

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Ph: (02) 6285 1547
Fax: (02) 6285 1861

21 November 2018
Our ref: SH/C9336.2

Northrop Consulting Engineers
2 Shea Street
Phillip ACT 2606

Attention: s22 [redacted]

WATER EASEMENT
BLOCK 3, SECTION 65, CAMPBELL, ACT
GEOTECHNICAL INVESTIGATION REPORT

1 Introduction

At the request of Northrop Consulting Engineers, ACT Geotechnical Engineers Pty Ltd carried out a geotechnical investigation of the existing Water Easement along Block 3, Section 65, Campbell, ACT.

The aim of the investigation was to assess the compaction of the trench backfill and determine the material used to backfill the trench.

The water easement runs parallel to Truscott Street and then runs along the western boundary of Block 3, Section 65.

The 1:100,000 Canberra, Queanbeyan & Environs Geology Map documents the area to be underlain by Silurian age Deakin Volcanics bedrock which includes, rhyolite and rhyodacite.

To establish the subsurface conditions, five (5) test pits, designated 1T to 5T, were excavated using an excavator with a bucket to 0.8m/0.9m depth, then excavated using a hydrovac. The test pit locations in relation to the proposed site plan are shown on Figure 1 attached. The subsurface profiles were logged in terms of the Unified Soil Classification System (USCS) and the logs are attached to this report.

2 Subsurface Conditions

Investigation test pits 1T to 5T, found a subsurface profile comprising:

Geological Profile	Typical Depth Interval	Description
TOPSOIL FILL	0m to 0.1m	SILTY SAND; fine to medium sand, low plasticity silt, dark brown, grass roots at surface, dry, loose.
BACKFILL	0.1m to 1.1m/2.6m	CLAYEY SANDY GRAVEL & GRAVELLY CLAYEY SAND; angular volcanic and quartz gravel to 60mm size, fine to coarse sand, low plasticity clay, brown, white, dark brown, some boulders to 100mm size, concrete fragments, dry, dense, becoming less compacted above the water main.
SAND COVER	1.1m/2.6m to 1.2m/2.8m	SAND; fine to coarse sand, dark brown, brown, 100mm/200mm thick covering the water main.

The trench backfill of the existing water main for test pits for test pits 1T and 2T appeared to comprise excavated, broken-down weathered bedrock consistent with the bedrock found in the geotechnical investigation conducted in June 2018. The backfill material for 3T to 5T comprised of a clayey material which may have been imported when constructing the hill.

Dynamic Cone Penetrometer (DCP) tests were taken at each test pit location in accordance with AS1289.6.3.2 "Determination of the penetration resistance of a soil – 9kg dynamic cone penetrometer test". The DCP results are shown in Table 1 below, and show the backfill material to be dense.

TABLE 1 – DCP Testing Results

Depth from groundsurface (mm)	Blows per 100mm Penetration from Ground Surface				
	DCP1	DCP2	DCP3	DCP4	DCP5
100	14	14	18	1	9
200	28	26	27	15	23
300	24	24	24	18	21
400	21	33	18	26	18
500	31	20	19	27	12
600	24	10	19	20	10
700	24	10	12	24	8
800	29	7	8	20	10
900	30	6	11	16	11
1000	20	5	11	11	15
1100	7	4	11	14	8
1200	8	3	7	11	9
1300	10	5	6	9	12
1400	14	5	17	9	10
1500	15	6	13	10	14

3 Excavation Conditions & Use of Excavated Material

Excavation through the trench backfill will comprise dense fill to ~500mm above the trench where the backfill material has not been compacted due to the size of the water main. Some large boulders were present in the backfill material and a void within the backfill material in test pit 1 was observed. All of the backfill material are readily diggable by backhoe and medium sized excavator, provided excavation has been approved by Icon water.

The low/medium plasticity soils can be used in controlled fill construction of building platforms, provided rock particles are broken down to <75mm maximum size. The silty topsoil is not usually used in controlled fill construction but can be used for other uses such as landscaping.

4 Controlled Fill Construction

For construction of any new fill foundation platforms and road subgrades, it is recommended that:

- Areas be fully stripped of any topsoil and uncontrolled fill. For road pavements, uncontrolled fill must be removed to at least 600mm below design subgrade level. Stripped foundations should be proof-rolled by a vibratory pad-foot roller of not less than 9 tonne static mass to check for any weak or wet areas that would require replacement. No fill should be placed until a geotechnical engineer has confirmed the suitability of the foundation.

- Controlled fill comprising suitable site excavated or imported materials of not greater than 75mm maximum particle size, be compacted in not greater than 150mm layers to not less than 95%ModMDD at about OMC.

- Fill placement and control testing be overviewed and certified by a geotechnical engineer at Level 1 or 2 involvement of AS3798 – 1996 "Guidelines on Earthworks for Commercial & Residential Developments" (Reference 3).

5 Stable Excavation Batters

Temporary site excavations to 1.5m depth can be formed near vertical, although the trench backfill should be cut back at 1(H):1(V) for safety. If required and space allows, deeper temporary cuts can be formed at 1(H):1(V) or benched at 1.5m intervals in soils. A geotechnical engineer should inspect all cut batters during construction to confirm stability especially if groundwater is encountered, as this may reduce stability. Exposed temporary batters should be protected from the weather by black plastic pinned to the face with link-wire mesh, or similar.

Permanent cut & fill batter slopes should be formed at no steeper than 2(H):1(V). All soil cut and fill surfaces should be protected against erosion by topsoiling, grassing and shotcreting, stone pitching or other suitable methods. Alternatively permanent excavations can be supported by structural retaining walls.

6 Pavement Subgrades

Pavement subgrades should be prepared as outlined in Section 7. Natural or controlled fill subgrades can be designed using a CBR value of 5%. Exposed subgrades should be inspected by a geotechnical engineer to check the recommended design CBR value.

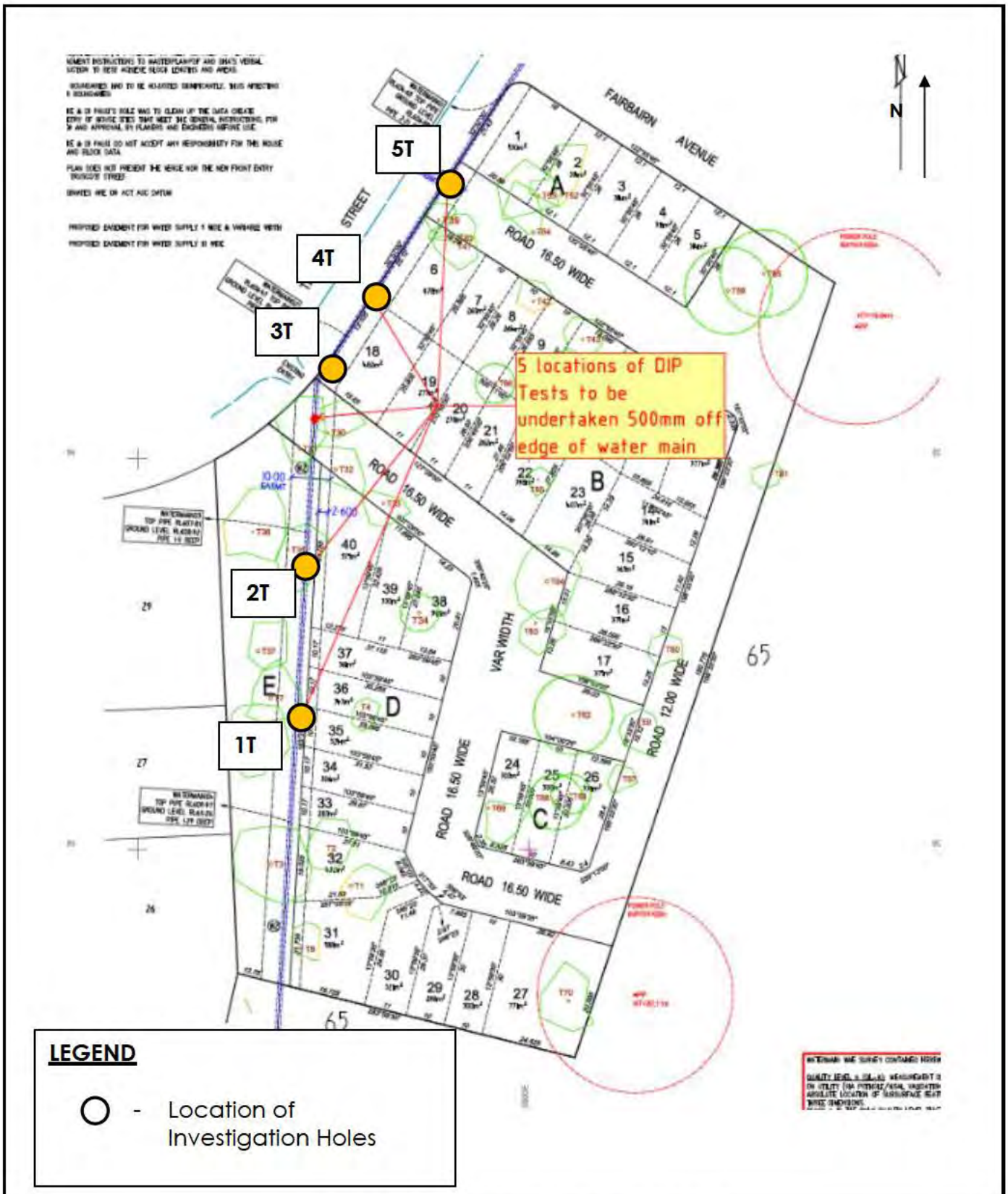
7 Site Drainage

Suitable surface drainage should be provided to ensure rainfall run-off or other surface water cannot pond against buildings or pavements. Positive drainage must be installed behind retaining walls, and subsoil drains must be installed along the upslope sides of pavements

Should you require any further information regarding this report, please do not hesitate to contact our office.

Yours faithfully
ACT Geotechnical Engineers Pty Ltd
s22 [redacted]

Attachments: - Figure 1 & Log 1A to 5A



NORTHROP CONSULTING ENGINEERS
WATER EASEMENT – BLOCK 3, SECTION 65, CAMPBELL
SITE PLAN AND LOCATION OF TEST PITS

ACT Geotechnical Engineers Pty Ltd	**C9336.2**	**FIGURE 1**

Borehole Log

Borehole No.	1T
Sheet	1 of 1
Job No.	C9336.2

CLIENT: NORTHROP

PROJECT: EXISTING WATER MAIN BLOCK 3, SECTION 65, CAMPBELL

Location : SEE REPORT

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : MINI EXCAVATOR WITH BUCKET
Hole Diameter :

Samples	Water	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure)	Consistency or Relative Density	Field Test Results (Dynamic Cone Penetrometer Test Results in Blows per 100mm)	Geological Profile
	None Encountered		0.1		SM	SILTY SAND; fine to medium sand, low plasticity fines, dark brown, grass roots at surface, dry	LOOSE	DCP 14	TOPSOIL FILL
			1.0		GP	CLAYEY SANDY GRAVEL; angular volcanic gravels up to 20mm size, fine to coarse sand, low plasticity clay, pale brown, white, boulders up to 100mm size, some voids, dry	DENSE	28, 24, 21, 31, 24, 24, 29, 30, 20, 7	FILL
			1.1		SP	SAND; fine to coarse, dark brown, dry	LOOSE	8	
			1.2			BOREHOLE TERMINATED AT 1.2m WATER MAIN AT 1.2m		10, 14, 15	
			2.0						
			3.0						

Logged By : SH Date : 21/11/18 Checked By : Date :

BOREHOLE/EXCAVATION LOG C9336.2.GPJ ACT GEO.GDT 23/11/18

ACT Geotechnical Engineers

ACT Geotechnical Engineers

Borehole Log

Borehole No.	2T
Sheet	1 of 1
Job No.	C9336.2
CLIENT:	NORTHROP
PROJECT	EXISTING WATER MAIN BLOCK 3, SECTION 65, CAMPBELL
Location :	SEE REPORT
Collar Level :	Not Known
Angle From Vertical :	0°
Bearing :	N.A.
Equipment Type :	MINI EXCAVATOR WITH BUCKET
Hole Diameter :	

Samples	Water	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure)	Consistency or Relative Density	Field Test Results (Dynamic Cone Penetrometer Test Results in Blows per 100mm)	Geological Profile
	None Encountered		0.1		SM	SILTY SAND; fine to medium sand, low plasticity fines, dark brown, grass root at surface, dry to moist	LOOSE TO MEDIUM DENSE	DCP 14	TOPSOIL FILL
					GP	CLAYEY SANDY GRAVEL; angular volcanic gravels up to 20mm size, fine to coarse sand, low plasticity clay, pale brown, white, dry, voids	DENSE	26	FILL
								24	
								33	
								20	
								10	
								10	
								7	
								6	
			1.0					5	
								4	
								3	
			1.3					5	
					SP	SAND; fine to coarse, brown, dry	LOOSE	5	
			1.4						
						BOREHOLE TERMINATED AT 1.4m WATER MAIN AT 1.4m		6	
			2.0						
			3.0						

Logged By : SH	Date : 21/11/18	Checked By :	Date :

BOREHOLE/EXCAVATION LOG C9336.2.GPJ ACT GEO.GDT 23/11/18

ACT Geotechnical Engineers

ACT Geotechnical Engineers

Borehole Log

Borehole No.	3T
Sheet	1 of 1
Job No.	C9336.2
Location	SEE REPORT
Collar Level	Not Known
Angle From Vertical	0°
Bearing	N.A.

CLIENT: NORTHROP

PROJECT: EXISTING WATER MAIN
BLOCK 3, SECTION 65, CAMPBELL

Equipment Type : MINI EXCAVATOR WITH BUCKET
Hole Diameter :

Samples	Water	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure)	Consistency or Relative Density	Field Test Results (Dynamic Cone Penetrometer Test Results in Blows per 100mm)	Geological Profile
	None Encountered		0.1		SM	SILTY SAND; fine to medium sand, low plasticity fines, dark brown, grass roots at surface, dry to moist	LOOSE TO MEDIUM DENSE	DCP 18	TOPSOIL FILL
					GP	CLAYEY SANDY GRAVEL; angular volcanic gravels up to 30mm size, fine to coarse sand, low plasticity clay, pale red, grey, dry	DENSE	27, 24, 18, 19, 19, 12, 8, 11, 11, 11, 7, 6	FILL
			1.0						
			1.3		SP	SAND; fine to coarse, brown, dry	LOOSE	17, 13	
			1.5			BOREHOLE TERMINATED AT 1.5m WATER MAIN AT 1.5m			
			2.0						
			3.0						

Logged By : SH Date : 21/11/18 Checked By : Date :

BOREHOLE/EXCAVATION LOG C9336.2.GPJ ACT GEO.GDT 23/11/18

ACT Geotechnical Engineers

ACT Geotechnical Engineers

Borehole Log

Borehole No.	4T
Sheet	1 of 1
Job No.	C9336.2

CLIENT: NORTHROP

PROJECT: EXISTING WATER MAIN BLOCK 3, SECTION 65, CAMPBELL

Location : SEE REPORT

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : MINI EXCAVATOR WITH BUCKET
Hole Diameter :

Samples	Water	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure)	Consistency or Relative Density	Field Test Results (Dynamic Cone Penetrometer Test, Results in Blows per 100mm)	Geological Profile
	None Encountered		0.1		SM	SILTY SAND; fine to medium sand, low plasticity fines, dark brown, grass roots at surface, dry	LOOSE	DCP 1	TOPSOIL FILL
			1.0		GP	CLAYEY SANDY GRAVEL; angular volcanics and quartz up to 30mm size, fine to coarse sand, low to medium plasticity clay, dark brown, some boulders up to 100mm size, dry	DENSE	15, 18, 26, 27, 20, 24, 20, 16, 11, 14, 11, 9, 9, 10	FILL
			1.9		SP	SAND; fine to coarse sand, brown, dry	LOOSE		
			2.0						
			2.1			BOREHOLE TERMINATED AT 2.1m WATER MAIN AT 2.1m			
			3.0						

Logged By : SH Date : 21/11/18 Checked By : Date :

BOREHOLE/EXCAVATION LOG C9336.2.GPJ ACT GEO.GDT 23/11/18

ACT Geotechnical Engineers

ACT Geotechnical Engineers

Borehole Log

Borehole No.	5T
Sheet	1 of 1
Job No.	C9336.2

CLIENT: NORTHROP

PROJECT: EXISTING WATER MAIN BLOCK 3, SECTION 65, CAMPBELL

Location : SEE REPORT

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : MINI EXCAVATOR WITH BUCKET
Hole Diameter :

Samples	Water	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure)	Consistency or Relative Density	Field Test Results (Dynamic Cone Penetrometer Test Results in Blows per 100mm)	Geological Profile
	None Encountered		0.1		SM	SILTY SAND; fine to medium sand, low plasticity fines, dark brown, grass roots at surface, dry	LOOSE	DCP 9	TOPSOIL FILL
					SC	GRAVELLY CLAYEY SAND; fine to coarse sand, low to medium plasticity fines, angular volcanic gravels up to 40mm size, brown, some boulders up to 100mm size, concrete fragments, dry	DENSE	23, 21, 18, 12, 10, 8, 10, 11, 15, 8, 9, 12, 10, 14	FILL
			1.0						
			2.0						
			2.6		SP	SAND; fine to coarse sand, dark brown dry	LOOSE		
			2.8			BOREHOLE TERMINATED AT 2.8m WATER MAIN AT 2.8m			
			3.0						

Logged By : SH Date : 21/11/18 Checked By : Date :

ACT Geotechnical Engineers

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BOREHOLE/EXCAVATION LOG C9336.2.GPJ ACT GEO.GDT 23/11/18

Geotechnical Engineers ACT

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ACN 063 673 530

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PO Box 9225, Deakin, ACT, 2609
Ph: (02) 6285 1547

15 May 2021
Our ref: JH/11483

DHA
Via email: s22 [redacted]

Attention: s22 [redacted]

Academy Close Subdivision, Campbell, ACT
GEOTECHNICAL ASSESSMENT OF SITE MATERIAL

1. Introduction

At the request of DHA, ACT Geotechnical Engineers Pty Ltd inspected the northern fill area stripped surface material as part of the proposed subdivision works associated with the new development, Academy Close, Campbell ACT.

The purpose of the inspection on the 7 and 10 May 2021, was to assess the extent of the existing uncontrolled fill across the site.

2. Material Assessment

The majority of block 1 to 6 have had the existing fill already removed as part of the controlled fill foundation preparation by Group one. However, there is a Geotechnical investigation report C9336 undertaken in 2018 on behalf of Northrop engineers, that identifies existing fill on the site varying form 0.2m to 0.5m. This report has been supplied as supplementary information.
Four strip trenches were excavated across the blocks, generally in a north to south direction (see Figure 1)
The strip trenches exposed, consists mainly of Natural materials, and some areas of uncontrolled fill varying from 0.2m to 0.7m. These depths are based on the additional quantity/ depth that will need to be removed from either the foundation of fill areas (shown in green) or from the cut areas (shown in red) once the bulk earthworks levels are achieved.
Please note that at the southern entry road off Truscott St, will need further investigation as the existing slope indicates up to 1.2m to 1.5m of fill (see photo 2)

3. Recommendations

The exposed materials that are within the proposed house blocks are to be removed and stockpiled, to expose natural alluvial soils that can then be proof rolled to confirm there is no weakness or deformation prior to the commencement of controlled filling.
The uncontrolled fill and slope wash can be blended and re-incorporated into the controlled fill placement.
Areas the have <0.3m of existing fill depth after the bulk earthworks cut levels are completed, can be cross ripped and recompacted at 95%ModMMDD.

Note: the investigation is limited to the areas viewed within the strip trenches and is not considered a comprehensive assessment of the extent or depth of existing fill, nor does not accommodate any further existing trenches or foundation that are found during the bulk earthworks.

Should you require any further information, please contact our office.

Yours faithfully
ACT Geotechnical Engineers Pty Ltd
s22 [redacted]

ACT Geotechnical Engineers

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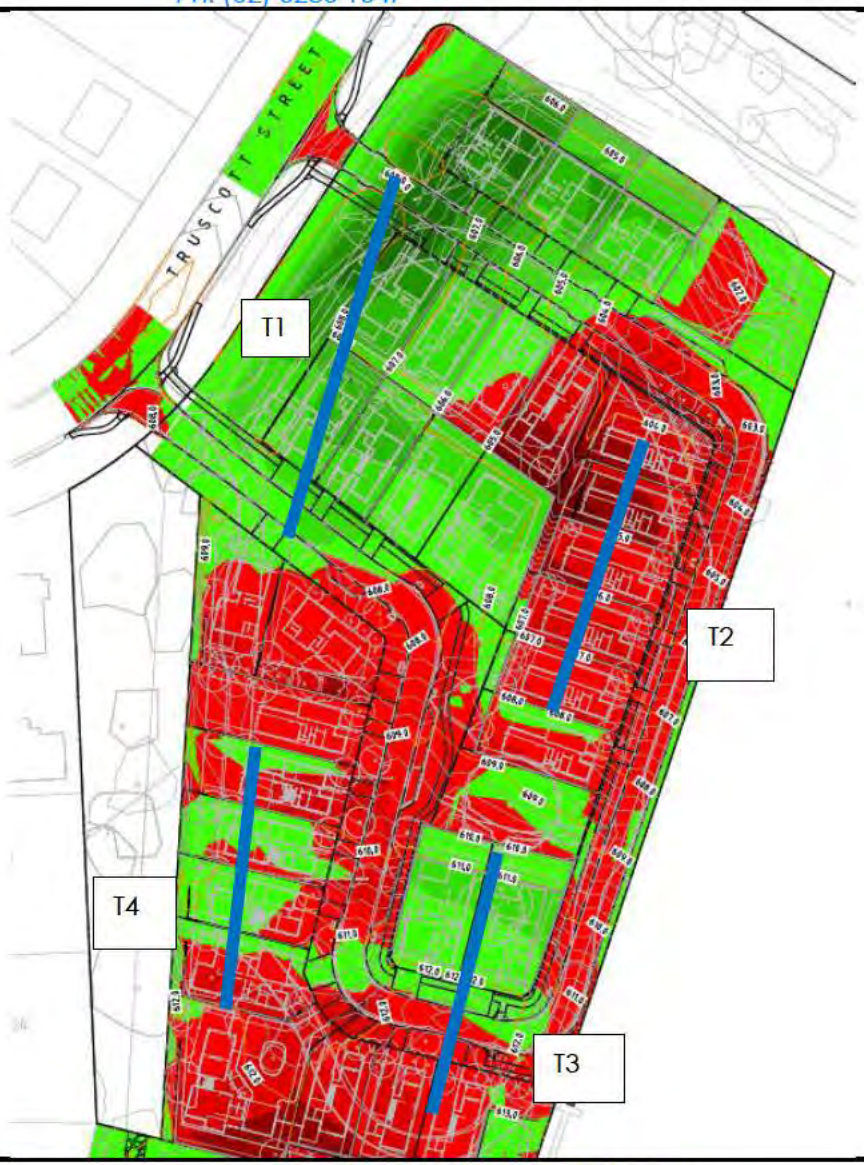
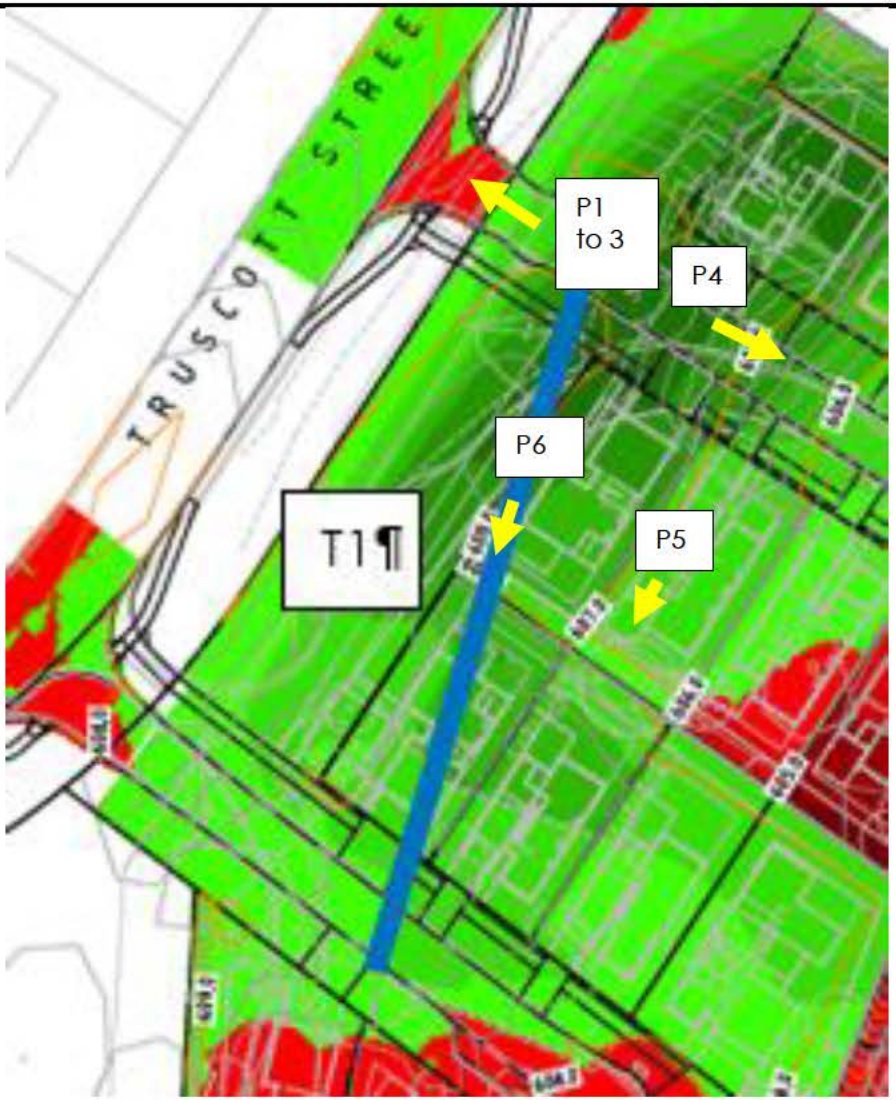
Ph: (02) 6285 1547



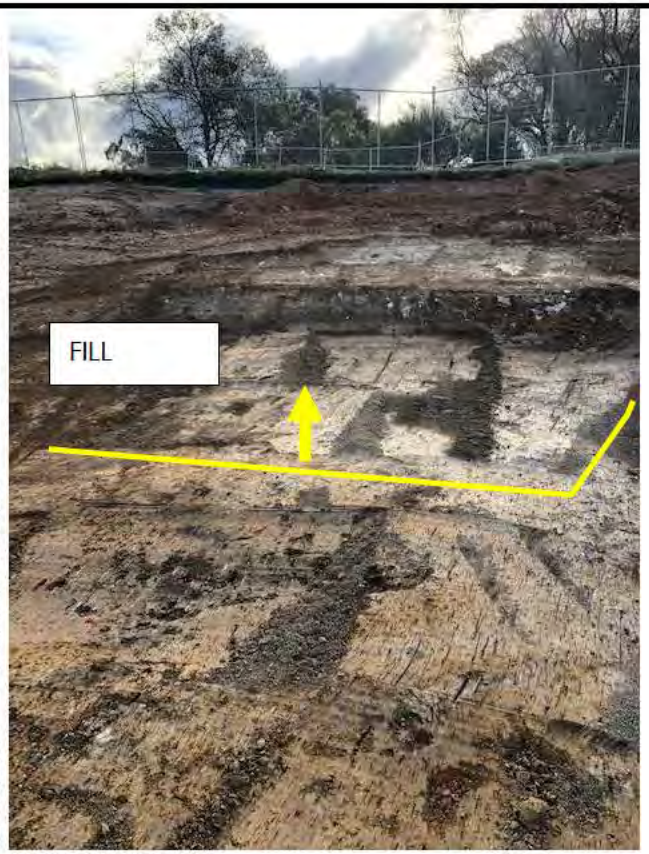
Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1


TRUSCOTT STREET
P1
to 3
P4
P6
P5
T1¶

P1

P2, TRENCH INDICATES UP TO 1.2M TO 1.5M OF FILL



P3

Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

P4, BLOCKS 4 TO 6 STRIPPED TO NATURAL

P5, SOUTH END OF BLOCK 5 SHOWING 0.6M OF EXISTING FILL

P6, TRENCH THROUGH BLOCKS 14 AND SOTH ENRTY ROAD EXPOSED NATURAL MATERIALS

Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

Academy Close Subdivision

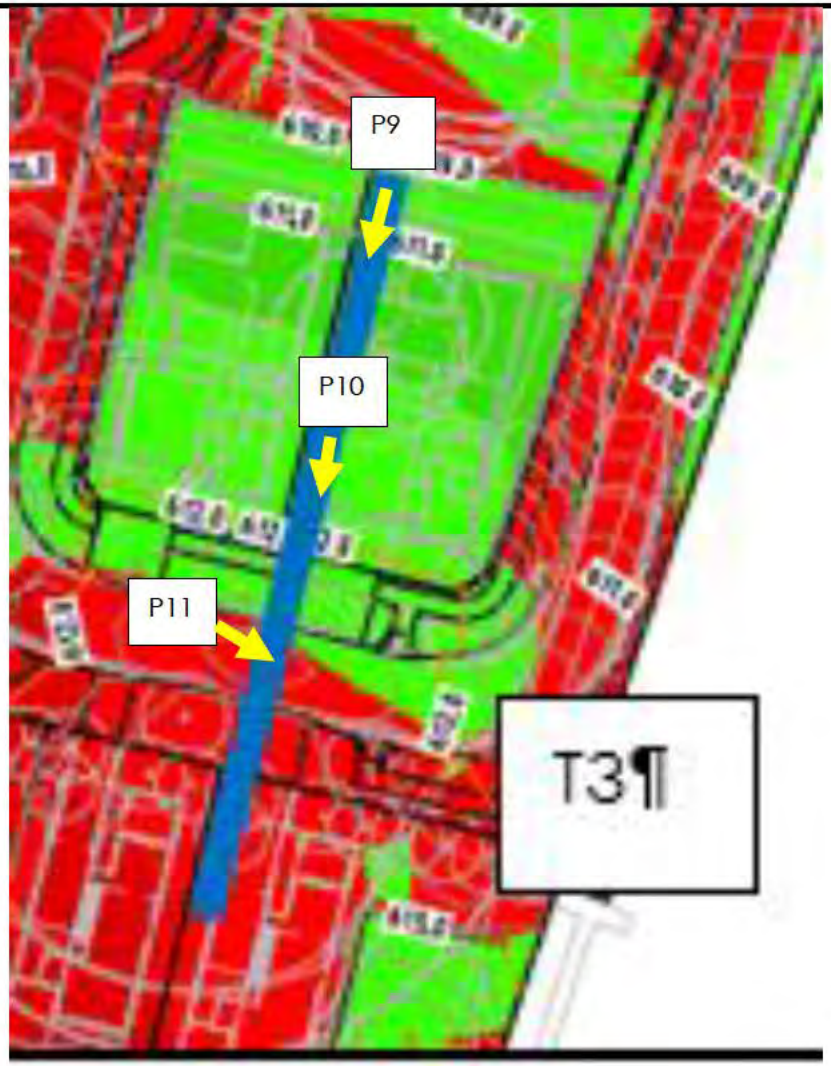
ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

P7
CUT AREA WITH <0.3M EXISTING ONCE CUT COMPLETE
BLOCKS 8 TO 11

P8
BLOCK 12, SHOWING EXISTING BUILDERS RUBBLE (BRICK AND CONCRETE) AND SUBSOIL PIPES TO BE REMOVED, ANY REMAINING EXISTING FILL TO BE RIPPED AND RECOMPAATCED IF <0.3M IN DEPTH

Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1



Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

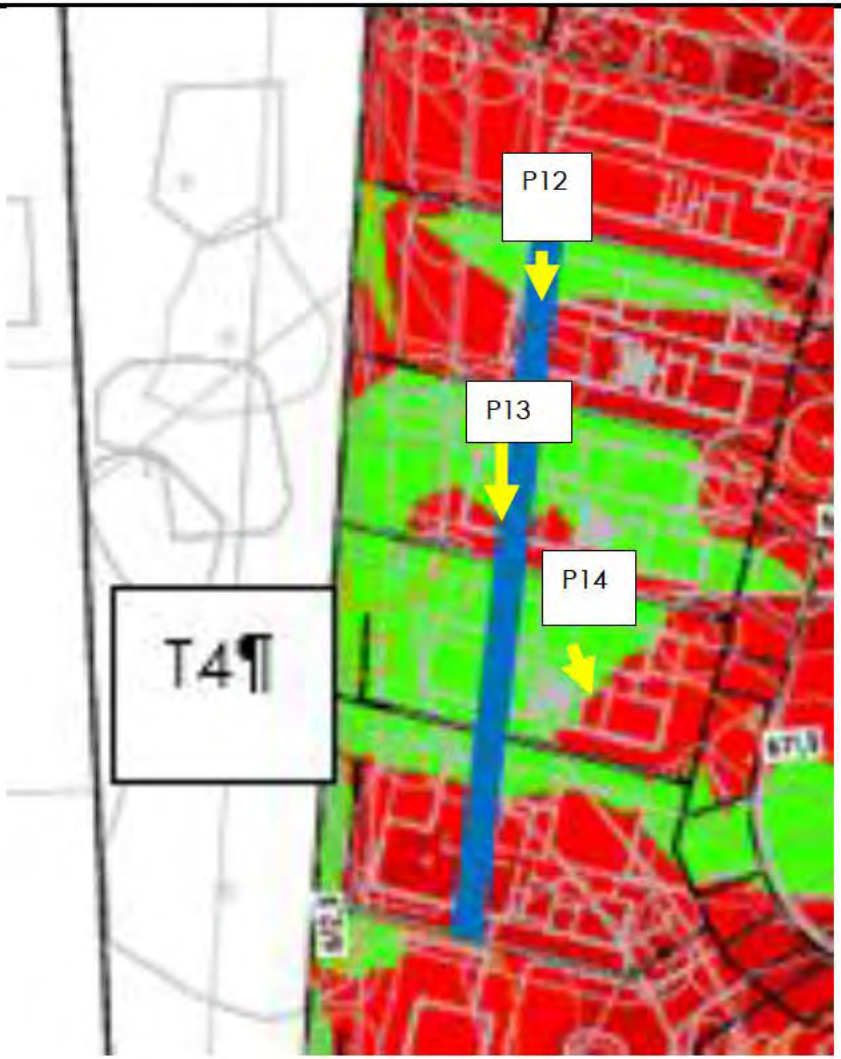
P9
BLOCK 18/19
NATURAL
MATERIAL NORTH
END

P10
BLOCK 18/19 NATURAL
MATERIAL AND <0.3M
OF EXISTING FILL, MID
TO SOUTH END

P11
BLOCK 18/19 AND ENTRY
ROAD
UP TO ~0.5M FILL

Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1



Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

P12
BLOCK 27, UP TO 0.3M OF EXISTING FILL AT FILL AREA OF BLOCK

P13
BLOCK 25 AND 26, UP TO 0.3M OF EXISTING FILL AT CUT/FILL AREA OF BLOCK, DUE TO RETAINING WALL STEP

P14
BLOCK 24 AND 25, CUT AREA OF BLOCK, WITH EXISTING CONCRETE FOOTINGS, TIMBER POSTS AND TREE ROOTS THAT REQUIRE REMOVAL

Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

Geotechnical Engineers ACT

ACT Geotechnical Engineers Pty Ltd
ACN 063 673 530

5/9 Beaconsfield St, Fyshwick, ACT, 2600
PO Box 9225, Deakin, ACT, 2609
Ph: (02) 6285 1547

4 March 2021
Our ref: JH/11483

DHA
Via email: s22[redacted]

Attention: Jonathon

Academy Close Subdivision, Campbell, ACT
GEOTECHNICAL ASSESSMENT OF SITE MATERIAL

1. Introduction

At the request of DHA, ACT Geotechnical Engineers Pty Ltd undertook a site material assessment as part of the proposed subdivision works associated with the new development, Academy Close, Campbell ACT.

The purpose of the inspection was to assess the suitability of the existing materials for re-use in the construction.

2. Subsurface conditions and Material Assessment

A site walk over of the site material was observed on 19 January 2021. The existing site showed that there is little topsoil if any on the previously removed building envelopes. Other areas have recently had tree removal undertaken, with remnant mulched materials and roots still present on and in the ground.
On the 26 February 2021, sampling at 22 locations across the site was undertaken using a push tube to a nominal depth of 500mm from the existing surface. The subsurface conditions were visually logged, and summarised into three material types; topsoil, fill and natural.
The materials summary is included in Table 1 below
The silty sand, topsoil encountered is generally in a poor condition and potentially contaminated with other materials due to the previous demolition and clearing activities.
The gravelly clayey sand, sandy gravelly clay, clayey gravel, Fill encountered is considered to be uncontrolled fill, and would need to be stripped from any fill foundations, but is considered suitable for reuse as controlled fill on the site, provided that it has <5% of organic material, and after compaction the maximum particle size is ≤100mm.
The Natural Alluvial and residual materials, gravelly silty sand, clayey sand, sandy clay, silty sandy gravel, encountered are considered suitable for reuse as controlled fil, providing the silty sand and sandy gravel materials are blended with the other materials to provide a more cohesive fill material.

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Table 1 **Academy Close Material assessment**

	Test location 1	Test location 2	Test location 3	Test location 4	Test location 5	Test location 6	Test location 7	Test location 8	Test location 9
	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)
Topsoil	0.0-0.05		0.0-0.1	0.0-0.1			0.0-0.1	0.0-0.1	
Fill	0.05-0.25	0.0-0.2	0.1-0.2	0.1-0.5	0.0-0.3	0.0-0.1		0.1-0.3	0.0-0.3
Natural	0.25-0.5	0.2-0.5	0.2-0.5		0.3-0.5	0.1-0.5	0.1-0.5	0.3-0.5	0.3-0.5
Bedrock									

	Test location 10	Test location 11	Test location 12	Test location 13	Test location 14	Test location 15	Test location 16	Test location 17	Test location 18
	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)	Depth (m)
Topsoil		0.0- < 0.05	0.0- < 0.05		0.0-0.05	0.0-0.1	0.0-0.05	0.0-0.15	
Fill	0.0-0.3	0.05-0.3	0.05-0.15		0.05-0.3		0.05-0.3		0.0-03
Natural	0.3-0.5	0.3-0.5	0.15-0.5	0.0-0.5		0.1-0.5	0.3-0.5	0.15-0.5	0.3-0.5
Bedrock	0.5				0.3-0.5				

	Test location 19	Test location 20	Test location 21	Test location 22
	Depth(m)	Depth(m)	Depth(m)	Depth(m)
Topsoil	0.0-0.05 Mulch	0.0-0.05	0.0- < 0.05	0.0- < 0.05
Fill				
Natural	0.05-0.15	0.05-0.5	0.05-0.5	
Bedrock	0.15-0.5			0.05-0.5

Note:

- Topsoil Must be stripped - not suitable for re-use
- Fill Must be stripped - suitable for re-use
- Natural/bedrock – does not need to be stripped

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3. Recommendations

It is assessed that the existing topsoil material onsite is of a marginal quality and of a small volume. Based on the current undulating site conditions it would be recommended that the initial stripping of the site (after any remaining tree stumps etc. have been grubbed) is undertaken using equipment such as excavators to efficiently remove the grass, topsoil and other deleterious materials from the surface to a nominal depth of 50mm, and deeper where topsoil is anticipated to be thicker (se Figure 1)
Areas that have existing fill that are required to have new controlled fill (>0.4m) to be placed, should be removed and then re-incorporated into the new fill placement.
Controlled fill should be undertaken in accordance with AS 3798 Guidelines on earthworks for commercial and residential developments.

Should you require any further information, please contact our office.

Yours faithfully
ACT Geotechnical Engineers Pty Ltd
s22
[redacted]

ACT Geotechnical Engineers

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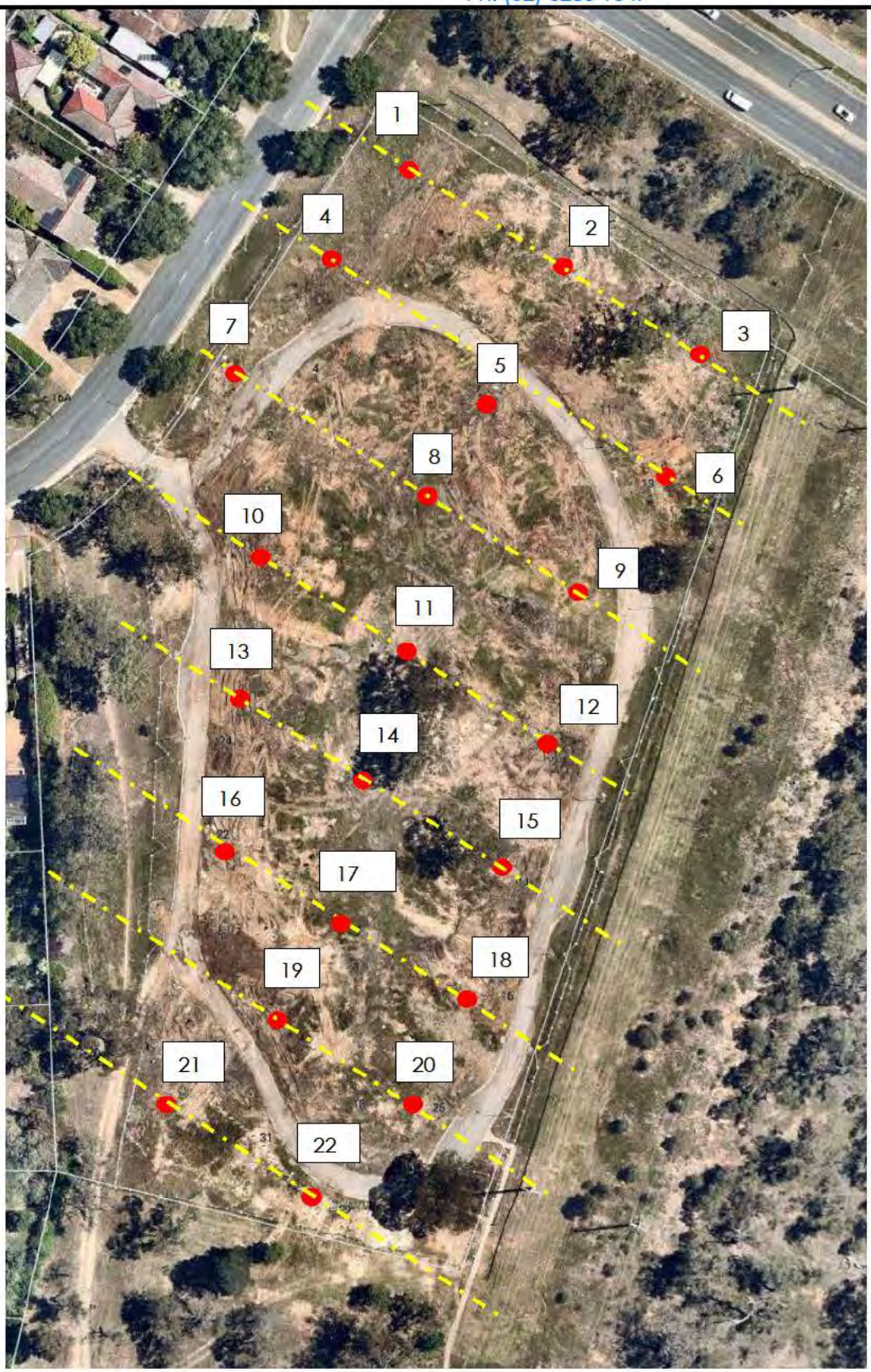
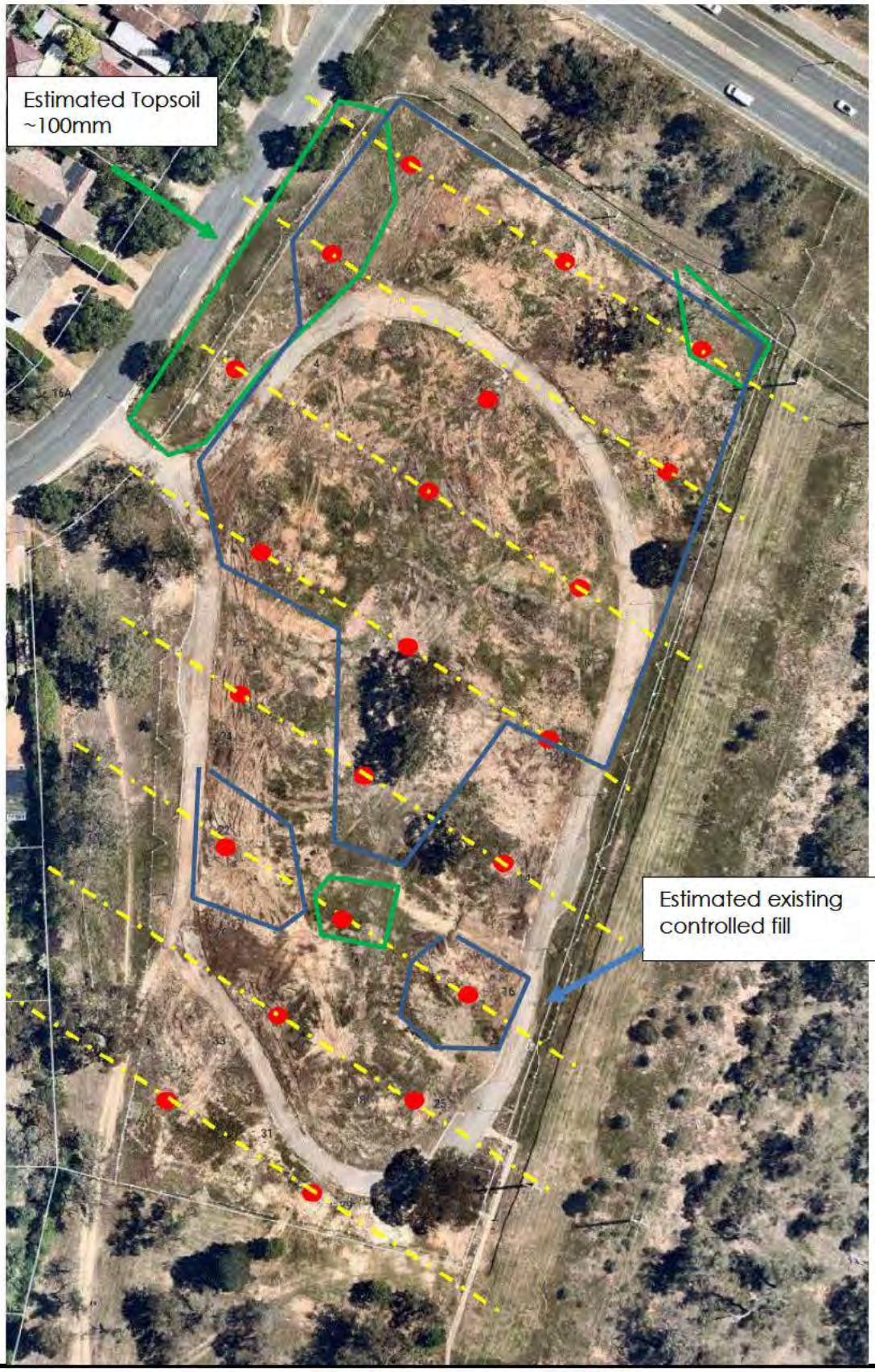


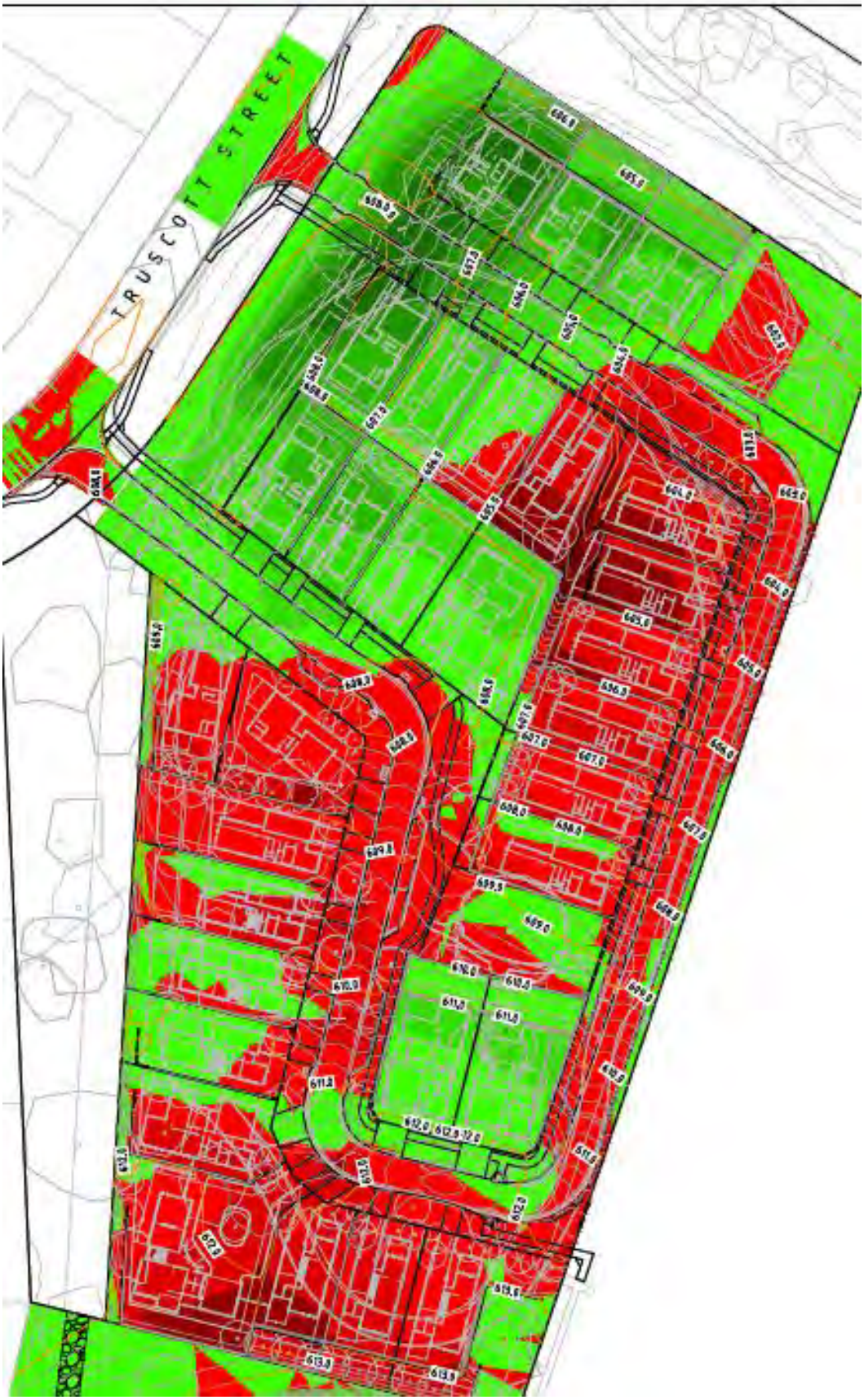
Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1



Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483 FIGURE 1



Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483 FIGURE 1

Geotechnical Engineers ACT

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PO Box 9225, Deakin, ACT, 2609
Ph: (02) 6285 1547

25 February 2023
Our ref: JH/11483-1

Northrop
Via email: s22 [redacted]

Attention: s22 [redacted]

Academy Close Subdivision, Campbell, ACT
GEOTECHNICAL ASSESSMENT OF CURRENT SITE CONDITIONS

1. Introduction

At the request of Northrop on behalf of DHA, ACT Geotechnical Engineers Pty Ltd inspected the current site conditions as part of the proposed subdivision works associated with the new development, Academy Close, Campbell ACT.

The purpose of the inspection on the 6 February 2023, was to assess the current state of the site and provide comment on the following
Items which would be of interest are:

- Is the condition of the ground suitable or would it need replacing.
- Is the subsurface suitable or will it require replacing.
- Other items as recommended by ACT Geotech
- Rock exposed in fill on northern boundary.

2. Site Assessment

Photo identification and description of condition

1. Looking east across blocks 14 to 16, placed controlled fill in suitable condition.
2. Looking east across blocks 4 to 6, placed controlled fill in suitable condition
3. Looking east across blocks 1 to 3 and access road, placed controlled fill on blocks in suitable condition.
    a. Noting some surface erosion that will require a proof roll to assess if fill moisture affected. minimum rip and recompact to remove rutting, possibly some rework of upper fill layers if moisture affected.
4. Looking east across blocks 1 to 3 along the northern boundary where the retaining wall is yet to be constructed and then completion of controlled fill as backfill to the wall. Placed imported controlled fill with oversize rock in batter face. The rocks that did not breakdown during the fill placement had been pushed to the edge to be removed in the next stage of work. The face of the fill will need to be excavated as part of the retaining wall construction and removal of the oversized rock will be part of the process.
5. Looking south across blocks 6 and 7, placed controlled fill in suitable condition at the front of block 6, block 7 is in cut.
    a. Noted witnessed erosion in background of the face of cut at step up to blocks 16 and 17. No immediate action as retaining walls yet to be constructed and backfilled.
6. Looking east at corner of access road. Erosion and excess materials evident form rain events. Rework to subgrade required to meet TCCS specs.
7. Looking South along access road on east side of site. Erosion and excess materials evident form rain events. Rework to subgrade required to meet TCCS specs.
8. Looking south west across blocks 18 to 19. Controlled fill in suitable condition.
9. Looking south east across blocks 20 to 22 in cut. Suitable condition
    a. Not this is typical for all block in cut.
10. Looking north along access road. Erosion and excess materials evident form rain events. Rework to subgrade required to meet TCCS specs.

In general, it is considered that the current controlled fill blocks are compliant, but would recommend that when work recommences, we undertake a proof roll to confirm.

It is noted that the controlled fill report is yet to be completed as it was understood remaining work to be done at the northern end of the site. Based on the supplied drawing that shows the easement that is along the northern end of the site, it is recommended survey pegging 1m beyond the footprint to check the limit of the existing competent controlled fill to ensure the proposed housing footprint is completed. We can then issue the controlled fill report based on the work undertaken by Group one. If the remaining fill is only in the noted easement there is not a requirement for this area to be undertaken as controlled fill. It could be back filled in accordance with the TCCS specs.

The cut blocks are in a suitable condition for housing construction.

The access road will need some rework to ensure the subgrade is complaint with the TCCS specs, before continuing with the remaining infrastructure and pavements.

Should you require any further information, please contact our office.

Yours faithfully,

ACT Geotechnical Engineers Pty Ltd

s22

[redacted]

Geotechnical Engineers

ACT Geotechnical Engineers Pty Ltd
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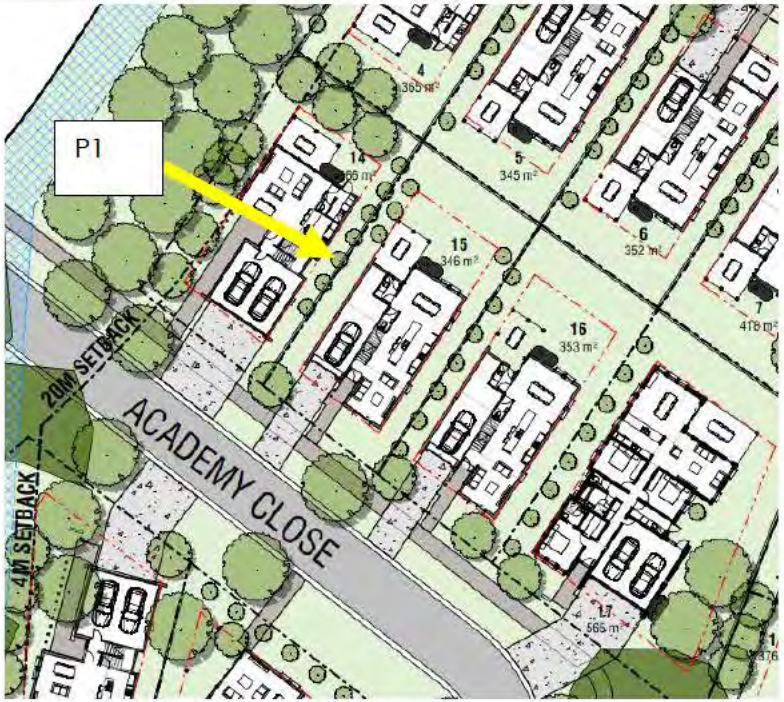
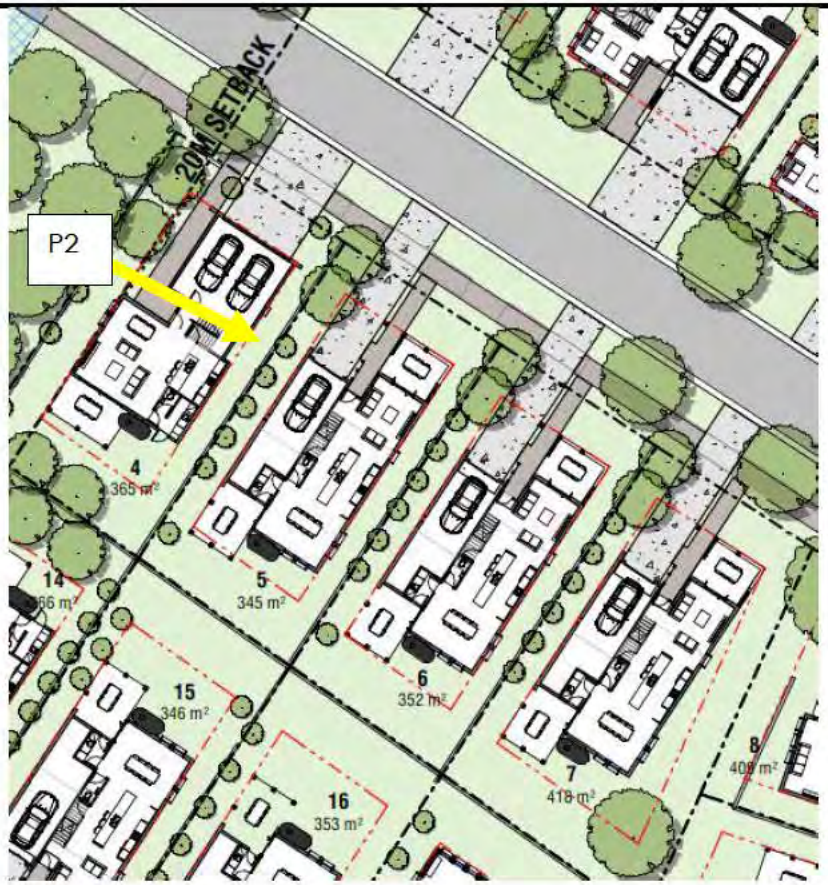
P1



Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	**C11483**	**FIGURE 1**

P2


20M SETBACK
P2
4
365 m²
5
345 m²
6
352 m²
7
418 m²
8
14
15
346 m²
16
353 m²

P3

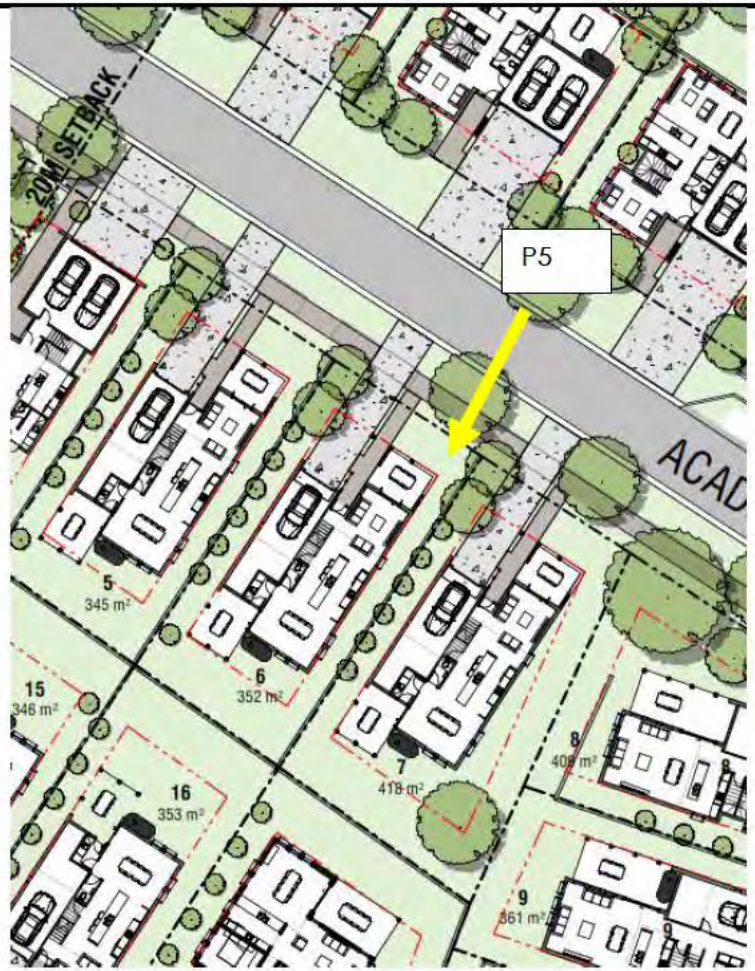
Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

P5



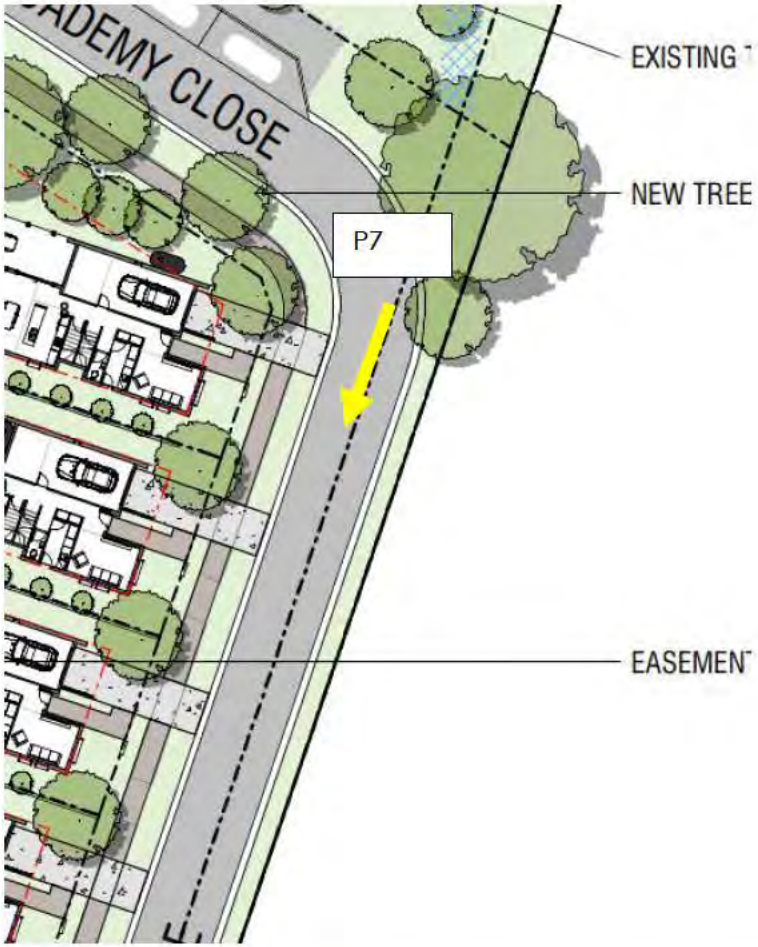
Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

P6

Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1



Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

P8

Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

P9

Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

Academy Close Subdivision

ACT Geotechnical Engineers Pty Ltd	C11483	FIGURE 1

BCA certifiers

BUILDING APPROVAL

PROJECT NUMBER: 220729.01
DATE: 08 November 2022
PROJECT DETAILS: Campbell Block 3 Section 65
PROJECT DESCRIPTION: Bulk Excavation, Civil works & new retaining walls

BCA Certifiers Australia Pty Ltd
ACT COLA LIC Number: 200714
ABN: 58 119 755 734

220729.01
08 November 2022

DHA
35 Hinder Street
Gungahlin ACT 2913

Dear s22

Re:	Campbell Block 3 Section 65
Address:	Academy Close, Campbell ACT 2612
Owner:	DHA
Description:	Bulk Excavation, Civil works and construction of new retaining walls
Building Classification:	10b

Attached is the Building Approval for the building work at the above site to be carried out in accordance with the following conditions of approval. A copy has been forwarded to the Construction Occupations Registrar in accordance with section 28 of the Building Act.

APPROVAL PERIOD

This building approval is valid until the end of the earliest of the following:

- 3 years beginning on the day of its issue;
- Any development period applying to the building work.

APPROVAL CONDITIONS

Building work is to be carried out in accordance with the following:

- The ACT Building Act 2004;
- The Building Code of Australia 2019 Amendment 1;
- The advice outlined in this Building Approval letter;
- The stamped Building Approval plans enclosed in this package numbered 1 to 1;
- All entity requirements enclosed in the approval documents including, EVO ENERGY (Electrical), JEMENA Gas, ICON Water, and Transport Canberra and City Services;
- Any changes to the approval documents MUST be approved by BCA Certifiers prior to construction.

PUBLIC SAFETY

- Ensure adequate public safety is provided at all times. Protection shall be provided to public spaces and footpaths from debris, dropped materials, equipment storage or any other activity associated with construction work on the site.
- Hoisting of building materials or equipment over areas used by the public is not permitted without the prior consent of the Building Controller.
- All materials and equipment are to be kept to the leased area. Any proposal to use unleased Territory land is to be lodged with Access Canberra and include a site plan with proposed safety measures. A license agreement for the use of unleased Territory land must be in place prior to the event and must be continuous for the life of the project.

APPENDICES TO THIS BUILDING APPROVAL:

- Appendix A provides advice in order to achieve compliance with the BCA;
- Appendix B outlines the inspection stages that are required for the project.
- Appendix C outlines the certificates that are required to be submitted to BCA Certifiers so an application for Certificate of Occupancy can be made.

If you have any enquires our office can be contacted on (02) 6173 4600.

s22 [redacted]

APPENDIX A – COMPLIANCE ADVICE

CONSTRUCTION

- Stormwater drainage is to comply with Part 3.5.3 of the 2019 BCA - Volume Two, Amendment 1 and be designed and constructed in accordance with AS 3500.3:2018.
  Note: BCA Clause 3.5.3.5 Downpipes - size and installation states the spacing between downpipes must not be more than 12 m and must be located as close as possible to valley gutters and, if the downpipe is more than 1.2 m from a valley, provision for overflow must be made.
- Subsoil and surface drainage is to comply with Part 3.1.3 of the 2019 BCA - Volume Two, Amendment 1.
  Note: The height of a slab-on-ground above external finished surfaces must be not less than 150mm above finished ground level, 50mm above paved or concreted areas and the external finished surfaces must be drained to move surface water away from the building and graded to give a slope of not less than 50mm over the first 1m from the building.
- Natural ground levels at boundaries and easements shall not be altered. Site cuts are to be retained and stabilised.
- The top level of the sewerage service yard gully shall be located a minimum of 150mm below the lowest fixture level and a minimum of 75mm above ground level.

APPENDIX B – CERTIFICATION / DOCUMENTATION REQUIRED

The builder is to notify BCA Certifiers upon reaching each inspection stage outlined below by booking an inspection on our website using the following link BCA Certifiers - Book Inspection.

A minimum of 24 hour' notice is required for inspection bookings.

The builder is not to proceed beyond an inspection stage until written approval to proceed has been given by BCA Certifiers.

- Footings
- Final

APPENDIX C – CERTIFICATION / DOCUMENTATION REQUIRED

All certification is required to include the following minimum information. Note, Certificates without this information will not be accepted:

- Company letterhead including all company contact details (address, email, phone number);
- Addressed to the Builder of the project;
- Company ABN / ACN;
- Reference to the **BCA 2019 Amendment 1** and **ALL relevant** BCA clauses applicable clauses that apply to the relevant trades work;
- References to all Australian Standards applicable to the relevant trades work. **Note, The version / year of the Australian Standard referred to must be the version / year which is referenced by the BCA 2019 Amendment 1;**
- Signed and dated by a suitably qualified person / director of the company once the work has been completed onsite;
- Include the suitably qualified person signing the certificates qualifications / experience.

A list of required certificates will be provided by BCA Certifiers Australia Pty Ltd.
The list is subject to change throughout the duration of construction.

Note: ALL Plumbing and Electrical work MUST be inspected and cleared by the ACT Planning and Land Authority (ACTPLA). To avoid delays with the issue of the Certificate of Occupancy, please ensure that the Plumbing and Electrical works have been cleared.
ACTPLA can be contacted on the following phone numbers:

ACTPLA Electrical Section: (02) 6207 7775,

ACTPLA Plumbing Section: (02) 6207 6907.

Foundation Maintenance and Footing Performance: A Homeowner's Guide

CSIRO

BTF 18
replaces
Information
Sheet 10/91

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the homeowner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

Soil Types

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The table below is Table 2.1 from AS 2870, the Residential Slab and Footing Code.

Causes of Movement

Settlement due to construction

There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction, but has been known to take many years in exceptional cases.

These problems are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTF 19) deals with these problems.

Erosion

All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

Saturation

This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume – particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

Seasonal swelling and shrinkage of soil

All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

Shear failure

This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.
- In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

GENERAL DEFINITIONS OF SITE CLASSES

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites with only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes
H	Highly reactive clay sites, which can experience high ground movement from moisture changes
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes
A to P	Filled sites
P	Sites which include soft soils, such as soft clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soils subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise

Tree root growth
Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

Unevenness of Movement

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins where the sun's heat is greatest.

Effects of Uneven Soil Movement on Structures

Erosion and saturation
Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpends).

Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

Seasonal swelling/shrinkage in clay
Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.

Trees can cause shrinkage and damage

As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

Movement caused by tree roots
In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

Complications caused by the structure itself
Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

Effects on full masonry structures
Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

Effects on framed structures
Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation cause a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

Effects on brick veneer structures
Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem.
Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.
- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870.

AS 2870 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

Prevention/Cure

Plumbing
Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible, and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

Ground drainage
In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

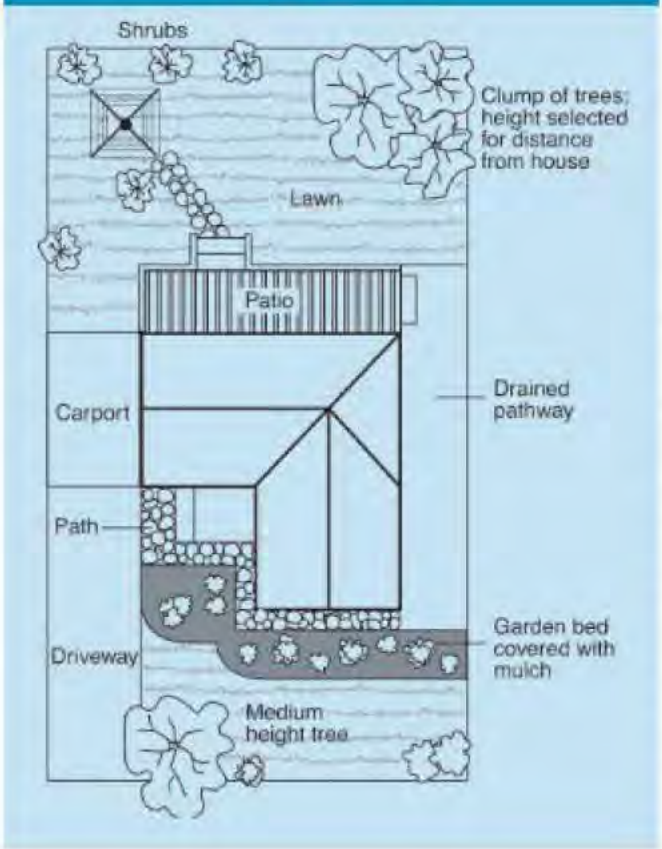
Protection of the building perimeter
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly	<5 mm	2
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired	5–15 mm (or a number of cracks 3 mm or more in one group)	3
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted	15–25 mm but also depend on number of cracks	4

Gardens for a reactive site



should extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill from it (see BTF 19).

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

Condensation

In buildings with a subfloor void such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

Warning: Although this Building Technology File deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

The garden

The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

Existing trees

Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

Information on trees, plants and shrubs

State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information. For information on plant roots and drains, see Building Technology File 17.

Excavation

Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

Remediation

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the homeowner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

This BTF was prepared by John Lewer FAIB, MIAMA, Partner, Construction Diagnosis.

The information in this and other issues in the series was derived from various sources and was believed to be correct when published.

The information is advisory. It is provided in good faith and not claimed to be an exhaustive treatment of the relevant subject.

Further professional advice needs to be obtained before taking any action based on the information provided.

Distributed by

CSIRO PUBLISHING PO Box 1139, Collingwood 3066, Australia

Freecall 1800 645 051 Tel (03) 9662 7666 Fax (03) 9662 7555 www.publish.csiro.au

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Important Asbestos Advice for ACT homes built before 1985

Asbestos is hazardous but it can be managed safely.

Follow the three steps for managing materials containing asbestos (MCAs) in your home.

Step 1. Identify where MCAs may be in your home

When was your house built?

- **If your house was built before 1985,** the table below gives you an indication of where you are likely to find MCAs in your home. There is also a diagram on the back of this sheet showing where MCAs are commonly found.
- **If your house was built after 1985,** it is unlikely to contain MCAs.
- If in doubt, assume that materials DO contain asbestos.

Common locations of MCAs in ACT homes*

(Percentage (%) of properties sampled where asbestos was detected)

Location	Pre 1965	1965–1979	1980–1984	1985–now[1]
Eaves	86%	92%	40%	0%
Garage/shed	80%	70%	15%	0%
Bathroom	54%	75%	50%	0%
Laundry	75%	80%	50%	0%
Kitchen	52%	23%	15%	0%

**Results of 2005 Asbestos Survey of over 600 ACT Homes. [1]One MCA was found in a 1985 house supporting roof tiles on a gable end.*

Step 2. Assess the risk

Visually check the condition of the MCA – is it cracked, broken, etc?

- If it's in good condition and left undisturbed, it does not pose a health risk.
- If you suspect it is not in good condition, arrange for appropriate maintenance or removal by a qualified person.

Step 3. Manage safely

Make sure you remember to:

- Keep an eye on MCAs to make sure they remain in good condition.
- Consider removal of the MCA by a qualified person, when renovating or doing home repairs.
- Inform tradespeople working on your home of the location of any possible MCAs.
- Engage a qualified person if you decide to obtain a professional asbestos report on MCAs in your home.

For further information or advice on managing asbestos or home renovations visit the asbestos website www.asbestos.act.gov.au or call 13 22 81.

Asbestos Awareness.
Helping everyone breathe easier.

Common locations of materials containing asbestos in ACT homes

If your house was built before 1985, some of the materials it was built from probably contain asbestos.

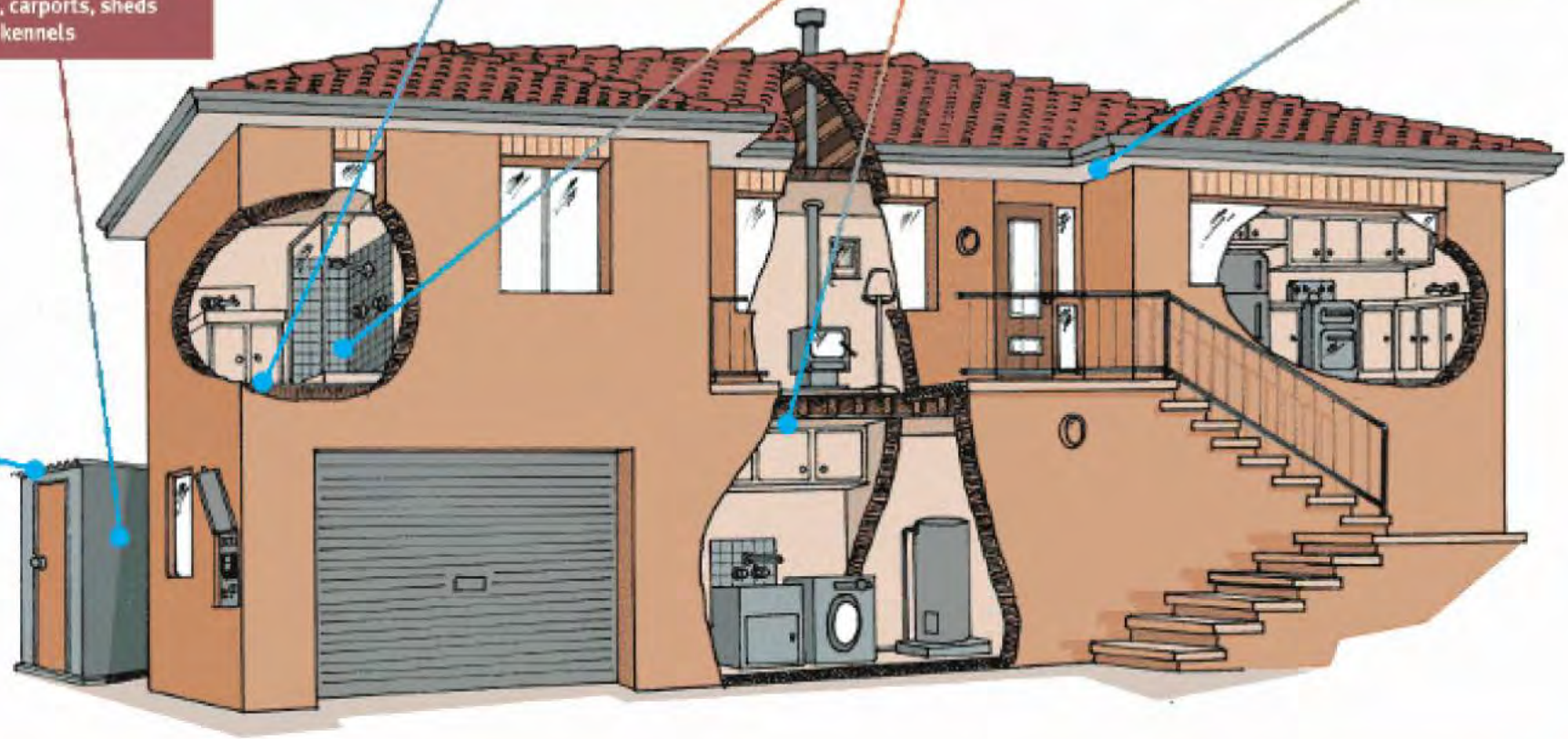
Garages, carports, sheds and dog kennels

Wet areas including wall and ceiling lining

Wet areas including wall and ceiling lining

Eaves

Corrugated asbestos roofing



Asbestos Awareness.
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BCA certifiers
ABN 58 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

DEFENCE HOUSING AUSTRALIA

ACADEMY CLOSE, CAMPBELL - BUILDING APPROVAL
CIVIL ENGINEERING WORKS PACKAGE

LOCALITY PLAN
NOT TO SCALE

DRAWING LIST

NUMBER	TITLE
C000	COVER SHEET, DRAWING INDEX & LOCALITY PLAN
C001	STANDARD NOTES
C005	STANDARD CIVIL DETAILS
C006	RETAINING WALL DETAILS SHEET 1 OF 4
C007	RETAINING WALL DETAILS SHEET 2 OF 4
C008	RETAINING WALL DETAILS SHEET 3 OF 4
C008A	RETAINING WALL DETAILS SHEET 4 OF 4
C009	SERVICE PENETRATION RETAINING WALL
C050	GENERAL ARRANGEMENT PLAN SHEET 1 OF 4
C050A	GENERAL ARRANGEMENT PLAN SHEET 2 OF 4
C050B	GENERAL ARRANGEMENT PLAN SHEET 3 OF 4
C050C	GENERAL ARRANGEMENT PLAN SHEET 4 OF 4
C051	RETAINING WALL PLAN SHEET 1 OF 3
C052	RETAINING WALL PLAN SHEET 2 OF 3
C053	RETAINING WALL PLAN SHEET 2 OF 3
C054	RETAINING WALL SECTION SHEET 1 OF 4
C055	RETAINING WALL SECTION SHEET 2 OF 4
C056	RETAINING WALL SECTION SHEET 3 OF 4
C057	RETAINING WALL SECTION SHEET 4 OF 4
C060	NORTHERN BLOCKS CROSS SECTIONS SHEET 1 OF 2
C061	NORTHERN BLOCKS CROSS SECTIONS SHEET 2 OF 2
C070	EXISTING SERVICES PLAN
C071	EXISTING SERVICES TO BE REMOVED/DEMOLISHED
C072	COMBINED NEW SERVICES PLAN KEY PLAN SHEET 1 OF 4
C073	COMBINED NEW SERVICES PLAN SHEET 2 OF 4
C074	COMBINED NEW SERVICES PLAN SHEET 3 OF 4
C075	COMBINED NEW SERVICES PLAN SHEET 4 OF 4
C080	DEMOLITION PLAN
C110	GRADING KEY PLAN - SHEET 1 OF 4
C111	GRADING PLAN - SHEET 2 OF 4
C112	GRADING PLAN - SHEET 3 OF 4
C113	GRADING PLAN - SHEET 4 OF 4
C115	BULK EARTHWORKS VOLUMES PLAN SHEET 1
C116	BULK EARTHWORKS VOLUMES PLAN CUT/FILL LEVELS SHEET 1 OF 4
C117	BULK EARTHWORKS VOLUMES PLAN CUT/FILL LEVELS SHEET 2 OF 4
C118	BULK EARTHWORKS VOLUMES PLAN CUT/FILL LEVELS SHEET 3 OF 4
C119	BULK EARTHWORKS VOLUMES PLAN CUT/FILL LEVELS SHEET 4 OF 4
C120	SITE WORKS AND PAVEMENT KEY PLAN SHEET 1 OF 4
C121	SITE WORKS AND PAVEMENT PLAN SHEET 2 OF 4
C122	SITE WORKS AND PAVEMENT PLAN SHEET 3 OF 4
C123	SITE WORKS AND PAVEMENT PLAN SHEET 4 OF 4
C125	OFF-SITE WORKS AND PAVEMENT PLAN SHEET 1 OF 5
C126	OFF-SITE WORKS AND PAVEMENT PLAN SHEET 2 OF 5
C127	OFF-SITE WORKS AND PAVEMENT PLAN SHEET 3 OF 5
C128	OFF-SITE WORKS AND PAVEMENT PLAN SHEET 4 OF 5
C129	OFF-SITE WORKS AND PAVEMENT PLAN SHEET 5 OF 5
C130	TYPICAL CROSS SECTIONS
C140	ROAD LONG SECTIONS ACADEMY CLOSE CH:00.000 – CH:280.000
C141	ROAD LONG SECTIONS ACADEMY CLOSE CH:280.000 - CH:451.230
C150	DETAILED ROAD CROSS SECTIONS ACADEMY CLOSE CH:00.000 - CH:100.000
C151	DETAILED ROAD CROSS SECTIONS ACADEMY CLOSE CH:120.000 – CH:220.000
C152	DETAILED ROAD CROSS SECTIONS ACADEMY CLOSE CH:240.000 – CH:340.000
C153	DETAILED ROAD CROSS SECTIONS ACADEMY CLOSE CH:360.000 - CH:440.000
C160	STORMWATER MANAGEMENT KEY PLAN SHEET 1 OF 4
C161	STORMWATER MANAGEMENT PLAN SHEET 2 OF 4
C162	STORMWATER MANAGEMENT PLAN SHEET 3 OF 4
C163	STORMWATER MANAGEMENT PLAN SHEET 4 OF 4
C165	STORMWATER DETAILS SHEET 1 OF 2
C166	STORMWATER DETAILS SHEET 1 OF 2
C170	WATER PLAN KEY PLAN SHEET 1 OF 4
C171	WATER PLAN SHEET 2 OF 4
C172	WATER PLAN SHEET 3 OF 4
C173	WATER PLAN SHEET 4 OF 4
C176	EXISTING 1050mm WATER MAIN LONG SECTION CH:00.000 - CH:263.093
C177A	EXISTING WATER MAIN CROSS SECTIONS SHEET 1 OF 2
C177A	EXISTING WATER MAIN CROSS SECTIONS SHEET 2 OF 2
C179	Ø150 WATER TIE LONG SECTION
C180	SEWER KEY PLAN SHEET 1 OF 4
C181	SEWER PLAN SHEET 2 OF 4
C182	SEWER PLAN SHEET 3 OF 4
C183	SEWER PLAN SHEET 4 OF 4
C190	TCD PLAN OFFSITE WORKS
C201	SERVICE RELOCATION PLAN
C240	PERMANENT WATER MAIN PROTECTION SITE PLAN
C241	PERMANENT WATER MAIN PROTECTION
C300	EXISTING DN1050 WATER MAIN AND RETAINING WALL PLAN SHEET 1 OF 3
C301	EXISTING DN1050 WATER MAIN AND RETAINING WALL PLAN SHEET 2 OF 3
C302	EXISTING DN1050 WATER MAIN AND RETAINING WALL PLAN SHEET 3 OF 3
ES01	EXTERNAL SERVICES PLAN
ES02	EXTERNAL SERVICES PLAN WITH PLANTING
ES03	EXTERNAL SERVICES WATER METER DETAIL

DRAWN: R.CRADDY
DESIGNED: R.CRADDY
JOB MANAGER: D.FIELD
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
9	TCCS DESIGN REVIEW	TE		DF	09.10.20
A	CONSTRUCTION	RC	NG	DF	17.05.21
B	CONSTRUCTION v2	RC	NG	DF	29.04.22
C	BUILDING APPROVAL	KPVK		DF	12.07.22
D	BUILDING APPROVAL	KPVK		DF	14.07.22
E	CONSTRUCTION	RC		DF	29.07.22

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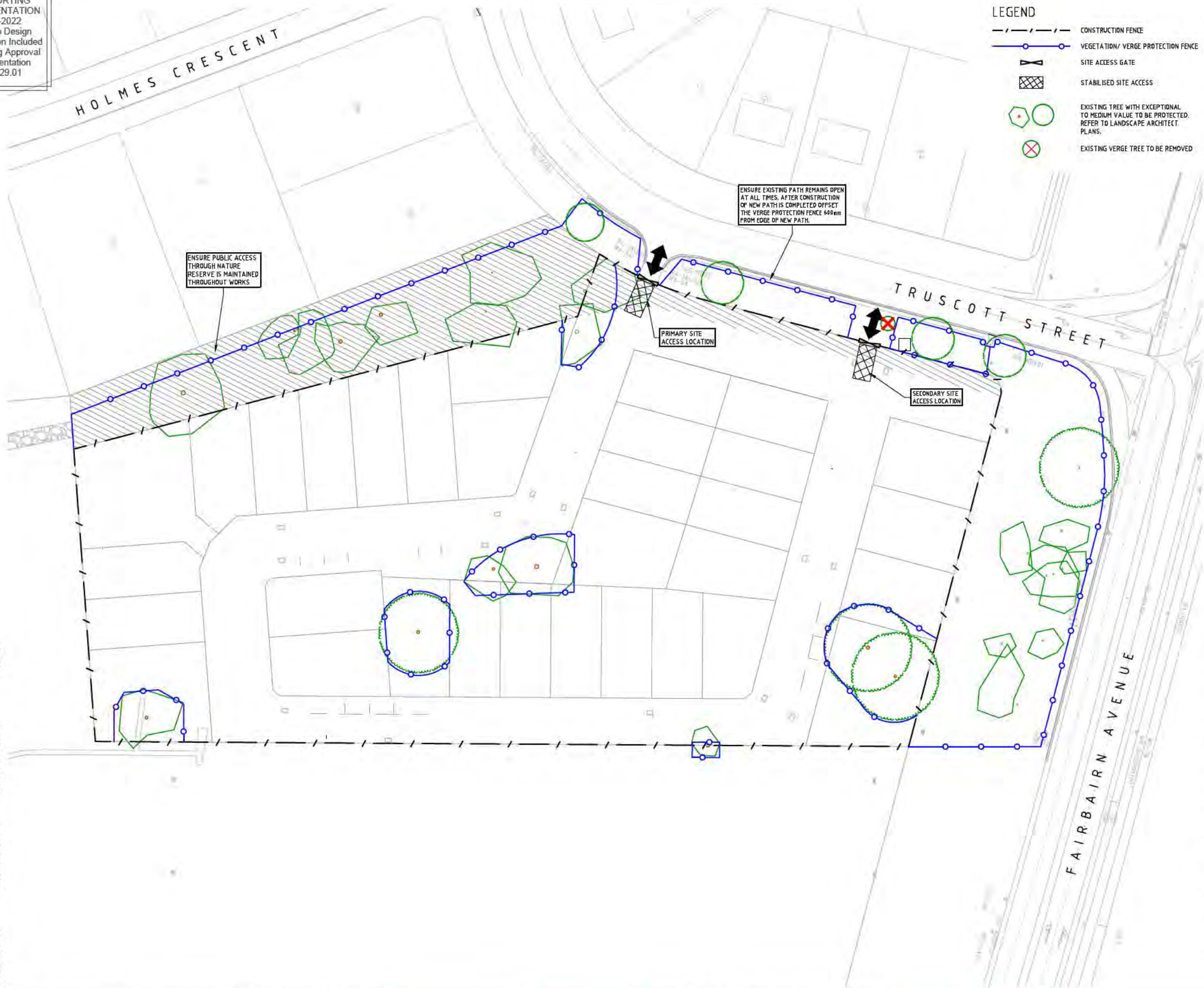
PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
COVER SHEET, DRAWING INDEX
AND LOCALITY PLAN

JOB NUMBER CR172699
DRAWING NUMBER C000
REVISION E
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 53 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



LEGEND

- CONSTRUCTION FENCE
- VEGETATION/ VERGE PROTECTION FENCE
- SITE ACCESS GATE
- STABILISED SITE ACCESS
- EXISTING TREE WITH EXCEPTIONAL TO MEDIUM VALUE TO BE PROTECTED. REFER TO LANDSCAPE ARCHITECT PLANS.
- EXISTING VERGE TREE TO BE REMOVED

NOTES

GENERAL

1. INSTALL ALL PROTECTIVE MEASURES PRIOR TO COMMENCING CONSTRUCTION WORKS. ADVISE DESIGN REVIEW AND COORDINATION (DRC) OF TCCS IN WRITING THAT THE PROTECTIVE MEASURES HAVE BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED LMPP.
2. ALL VERGE VEGETATION INCLUDING GRASS SHALL BE PROTECTED AND RETAINED UNO ON THE DRAWINGS. ROUTINELY WATER TO RETAIN VEGETATION IN GOOD CONDITION.
3. A SUITABLY QUALIFIED LANDSCAPE ARCHITECT OR HORTICULTURIST SHALL BE ENGAGED BY THE CONTRACTOR TO OVERSEE ALL MAJOR WORK IN THE VERGE.
4. CONSTRUCTION MATERIAL SHALL NOT BE STORED ON VERGES OR PUBLIC OPEN SPACES
5. CAR PARKING OR EQUIPMENT PARKING SHALL NOT BE PERMITTED ON VERGES OR ADJACENT PARKLAND
6. SITE SHEDS, STORAGE SHEDS, SITE AMENITIES OR BILLBOARDS SHALL NOT BE ERECTED ON VERGES OR PUBLIC OPEN SPACES WITHOUT THE PRIOR WRITTEN APPROVAL OF THE MANAGER, TRANSPORT CANBERRA AND TRAFFIC SERVICES (TCCS) FOR THE USE OF VERGES, PUBLIC OPEN SPACES OR UNLEASED TERRITORY LAND.

PROTECTIVE FENCING

1. ALL TEMPORARY PROTECTIVE FENCES SHALL BE IN ACCORDANCE WITH THE APPROVED LMPP
2. FENCE OFF TREES, PLANTINGS AND GRASS MARKED FOR RETENTION TO ENCLOSE THE STREET VERGE, PUBLIC OPEN SPACE OR UN-LEASED TERRITORY LAND AREA.
3. THE STANDARD LOCATIONS FOR FENCING SHALL BE:
   - FOR EACH TREE ALONG ITS DRIP-LINE
   - 1.2m OFFSET TO THE BACK OF THE KERB FOR THE FULL FRONTAGE OF THE LEASE, ALONG THE PROPERTY BOUNDARY AND ALONG APPROVED DRIVEWAY ACCESS TO ENSURE THAT THE VERGE IS COMPLETELY ENCLOSED.
4. FENCING SHALL BE ERECTED BEFORE THE COMMENCEMENT OF ANY SITE WORKS, SHALL BE REMAIN IN PLACE THROUGHOUT THE WORKS AND REMOVED PRIOR TO RESTORATION OF THE VERGE.
5. USE TEMPORARY 1800mm CONTINUOUS MESH FENCE SUPPORTED BY STEEL POSTS WITH CONCRETE BASES UNLESS OTHERWISE APPROVED IN WRITING BY TCCS.
6. MAINTAIN ALL EXISTING FOOTPATHS AND PROVIDE SAFE PEDESTRIAN MOVEMENT AT ALL TIMES.
7. WHERE A CONSTRUCTED FOOTPATH/CYCLEWAY EXISTS IN THE VERGE, OFFSET FENCING 600mm EACH SIDE.
8. IF THERE IS NO CONSTRUCTED FOOTPATH/CYCLEWAY PROVIDE A FENCED CLEARWAY 1800mm WIDE FOR PEDESTRIAN ACCESS ALONG THE ENTIRE FRONTAGE
9. FENCING SHALL NOT BE REMOVED FOR THE SERVICE INSTALLATION UNLESS OTHERWISE APPROVED IN WRITING FROM TCCS. ENSURE ALL TREES ARE ADEQUATELY PROTECTED BEFORE COMMENCING TRENCHING. ON COMPLETION RETURN THE FENCE TO ORIGINAL ALIGNMENT

SERVICES AND UTILITIES

1. SERVICES AND UTILITIES SHALL BE LAID ONLY IN THE LOCATIONS SHOWN ON THE DRAWINGS. TRENCHING ACROSS THE VERGE SHALL BE UNDERTAKEN ONLY WHERE SHOWN ON THE DRAWINGS
2. UNLESS OTHERWISE SHOWN ON THE DRAWINGS NO TRENCHING SHALL BE CARRIED OUT WITHIN THE DRIP LINE OF ANY TREE
3. THE NUMBER OF VERGE CROSSINGS SHALL BE MINIMISED. WHERE PRACTICAL AND PERMITTED SHARED TRENCHING SHALL BE ADOPTED
4. TRENCHES SHALL BE LOCATED MIDWAY BETWEEN TREES

SITE ACCESS

1. SITE ACCESS SHALL ONLY BE VIA THE ACCESS POINTS SHOWN ON THE DRAWINGS.
2. PRIOR WRITTEN APPROVAL FOR ALTERNATIVE OR ADDITIONAL ACCESS POINTS SHALL BE OBTAINED THROUGH TCCS.
3. NEW ACCESS POINTS SHALL BE LOCATED MIDWAY BETWEEN EXISTING TREES WHERE SPACE IS ADEQUATE. DO NOT LOCATE ANY ACCESS WITHIN THE DRIP LINE OF ANY TREE.

WORKING NEAR TREES

1. ALL TREES LOCATED IN THE ROAD RESERVE, PUBLIC OPEN SPACE AND UNLEASHED TERRITORY LAND SHALL BE PROTECTED FROM DISTURBANCE, DAMAGE OR DESTRUCTION. PRIOR WRITTEN AUTHORISATION FROM TCCS IS REQUIRED FOR ANY DISTURBANCE, DAMAGE OR DESTRUCTION OF ANY TREE OR LANDSCAPE ASSET.
2. EXISTING CANOPY CLEARANCES SHALL NOT BE ALTERED. CROWNS AND APEX OF CANOPIES SHALL NOT BE ALTERED OR REDUCED
3. ENSURE LIFTING EQUIPMENT AND LOAD CAN CLEAR HEIGHT AND WIDTH OF TREE CANOPY WITHOUT DAMAGE TO CROWN. ENSURE CONSTRUCTION EQUIPMENT CAN PASS BENEATH LOWEST LIMB.
4. DO NOT EXCAVATE OR OTHERWISE DISTURB THE SURFACE LAYER WITHIN THE DRIP-LINE OF ANY TREE WITHOUT THE PRIOR WRITTEN APPROVAL OF TCCS.
5. DO NOT SEVER ROOTS >30mm DIAMETER CLOSER THAN HALFWAY FROM THE DRIP-LINE TO THE TRUNK.
6. HAND EXCAVATE TO A DEPTH OF 300mm TO LOCATE ROOTS BEFORE COMMENCING MACHINE EXCAVATION.
7. CUT ROOTS CLEANLY WITH EQUIPMENT SPECIFICALLY DESIGNED FOR PRUNING ROOTS.
8. PROTECT ANY EXPOSED ROOTS FROM DESICCATION. KEEP LIGHTLY WATERED OR COVER WITH MOIST HESSIAN. AFTER REPLACEMENT OF TOPSOIL REGULARLY WATER TREES UNTIL REESTABLISHED.

CONDITION AND RESTORATION

1. PRIOR TO COMMENCEMENT NOTIFY TCCS OF COMMENCEMENT OF WORK AND UNDERTAKE A JOINT CONDITION SURVEY.
2. AT THE COMPLETION OF WORK ENSURE THAT THE CONDITION OF ALL VEGETATION IS CONSISTANT WITH THE INITIAL CONDITION SURVEY.
3. UNDERTAKE A JOINT CONDITION SURVEY AT COMPLETION OF WORKS AND IMPLEMENT ANY DIRECTIVE FROM TCCS.
4. IF THE GRASS COVER REQUIRES IMPROVEMENT LIGHTLY CULTIVATE THE SOIL TO 50mm. ADD 50mm OF TYPE 9B TOPSOIL AND GRADE EVENLY. ADD NPK FERTISER AT 40g/m². LAY TURF. WATER AND MAINTAIN UNTIL ESTABLISHED.
5. DAMAGED TREES SHALL BE ASSESSED BY TCCS AND REPAIRED OR REPLACED BY THE CONTRACTOR AS DIRECTED.

NOT FOR CONSTRUCTION

DRAWN: R.CRADDY
DESIGNED: R.CRADDY
JOB MANAGER: D.FIELD
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
9	DRAFT WORKS APPROVAL	JC		DF	30.04.20
10	WORKS APPROVAL	JC		DF	14.05.20
11	TEMPORARY PATHWAY	JC		DF	01.07.20
12	TCCS DESIGN REVIEW	TE		DF	09.10.20
13	FOR INFORMATION	RC		DF	19.11.20
14	TCCS DESIGN REVIEW v2	RC		DF	20.11.20

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close
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0 5 10 15 20 25m PLAN SCALE 1:500 @ A1

NORTHROP
Canberra
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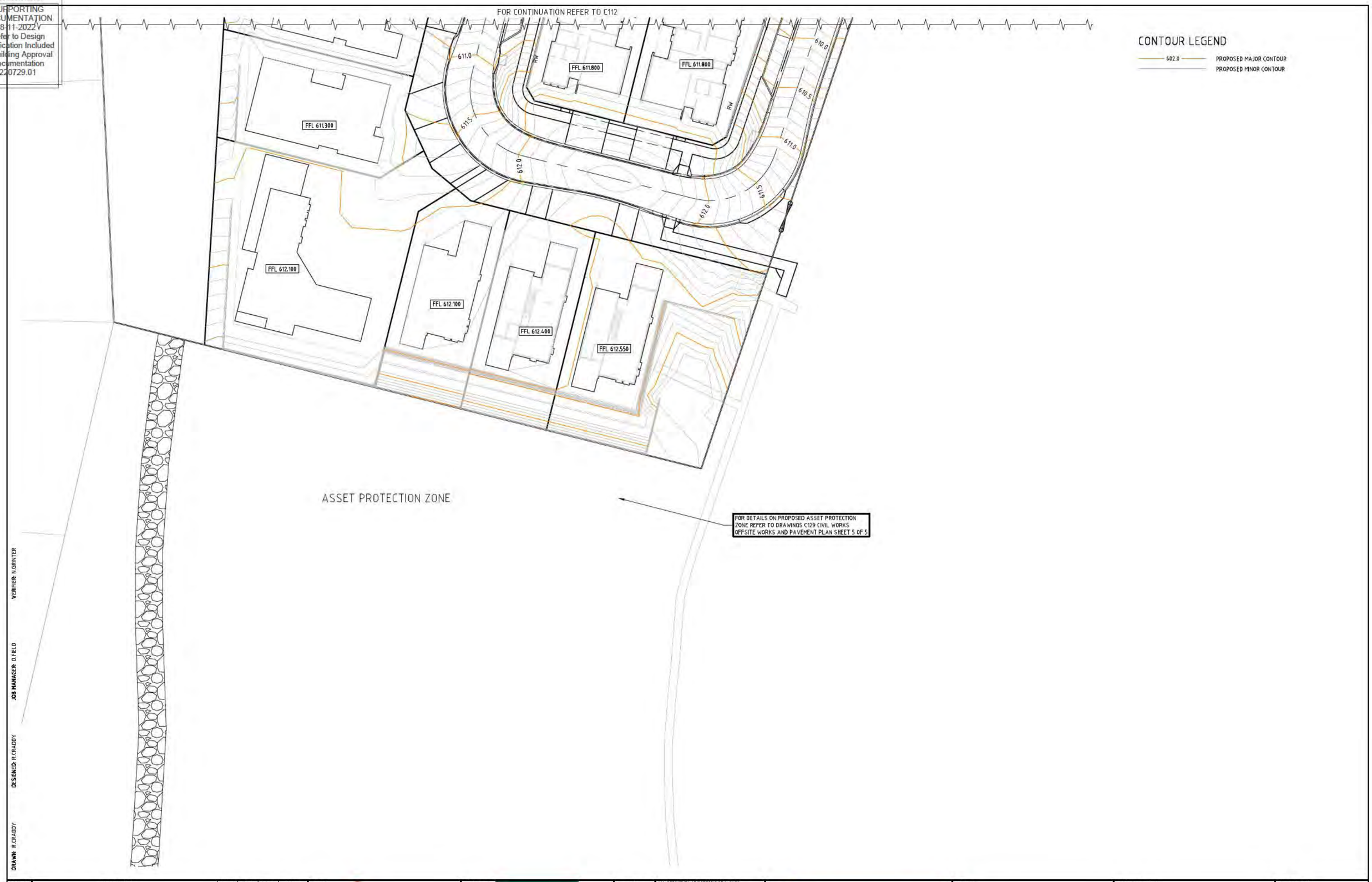
Email canberra@northrop.com.au ABN 81 094 433 800

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
LANDSCAPE MANAGEMENT
AND PROTECTION PLAN

JOB NUMBER: CR172699
DRAWING NUMBER: C011
REVISION: 14
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



DRAWN: R.CRADDY DESIGNED: R.CRADDY JOB MANAGER: D.FIELD VERIFIER: N.GRINTER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
9	FOR COMMENT	RC		DF	02.02.21
A	CONSTRUCTION	RC	NG	DF	05.02.21
B	UPDATE	RC		DF	09.03.21
C	CONSTRUCTION v2	RC	NG	DF	17.05.21
D	CONSTRUCTION v3	RC	NG	DF	30.03.22
E	CONSTRUCTION v4	RC	NG	DF	29.04.22

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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0 2.5 5.0 7.5 10.0 12.5m PLAN SCALE 1:250 @ A1

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1883
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS GRADING PLAN SHEET 4 OF 4

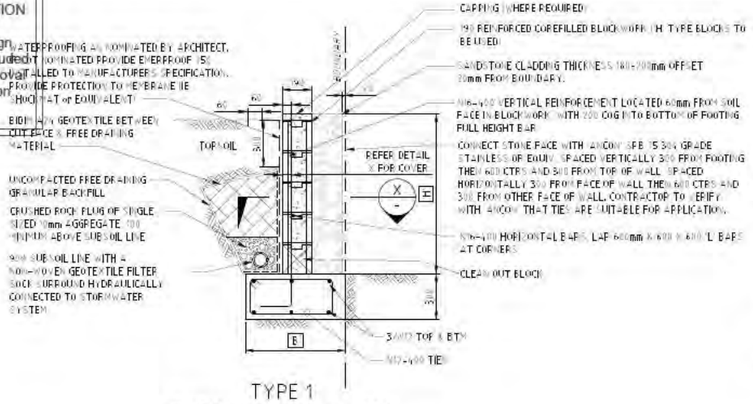
JOB NUMBER: CR172699

DRAWING NUMBER: C113

REVISION: E

DRAWING SHEET SIZE = A1

BCA certifiers
ABN 53 158 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



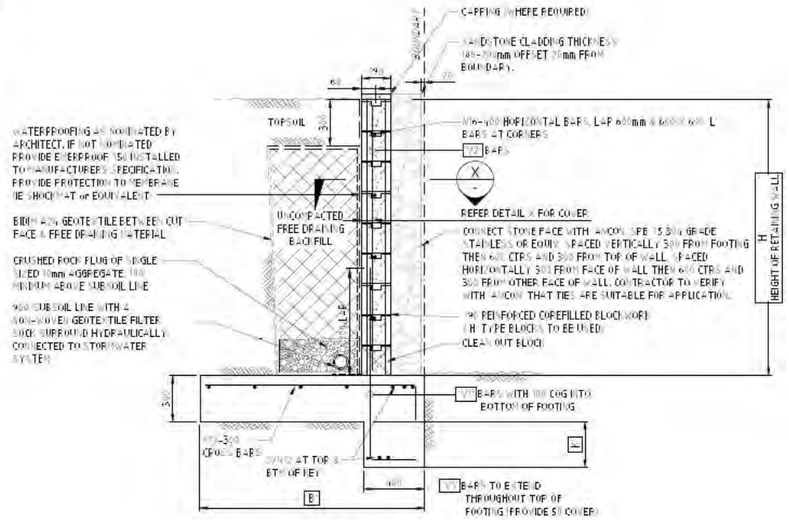
TYPE 1
TYPICAL HEIGHT to 1000

RETAINING WALL SCHEDULE	
HEIGHT 'H'	FOOTING WIDTH 'B'
600	600
800	800
1000	1000

FOR φ' = 30° & 100kPa BEARING

RETAINING WALL NOTES:

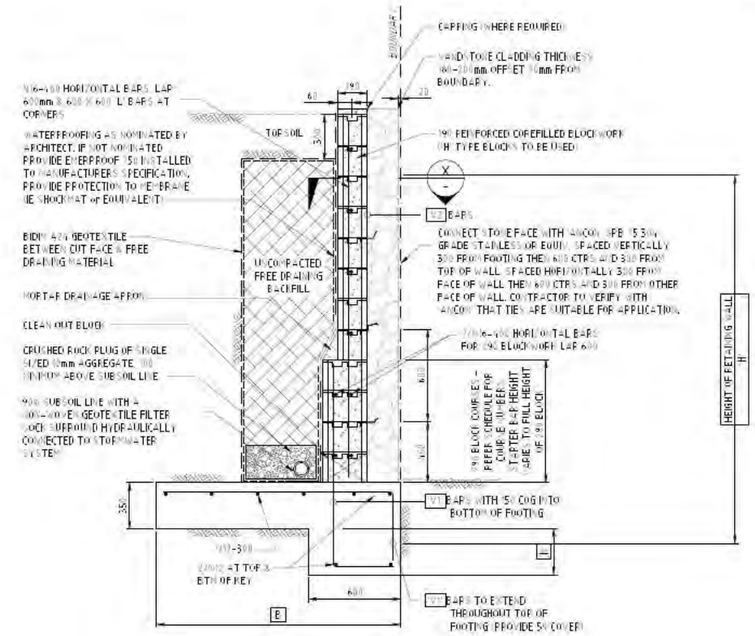
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- ALL BLOCK TO BE RETAINING WALL 'H' BLOCKS.
- ALL CORE FILLING TO BE 32MPA (N20) 10mm AGGREGATE BLOCKWORK MIX
- JOINTS IN WALLS TO BE AT MAXIMUM OF 6m CTS
- LOADINGS FOR 1.8m HIGH FENCES HAVE BEEN INCLUDED IN DESIGN OF WALL. LOADINGS FOR HANDRAILS & BALUSTRADES HAVE NOT BEEN INCLUDED IN DESIGN OF WALL. REFER TO ENGINEER IF THESE ARE REQUIRED.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION. CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.



TYPE 2
TYPICAL HEIGHT 1200 to 1800

RETAINING WALL SCHEDULE				
HEIGHT 'H'	'B'	'K'	'V1' BARS	'V2' BARS
1200	1200	[illegible]	N16 @ 400	N16 @ 200
1400	1400	300	N16 @ 400	N16 @ 200
1600	1600	300	N16 @ 400	N16 @ 200
1800	1800	300	N16 @ 400	N16 @ 200

FOR φ' = 30° & 100kPa BEARING

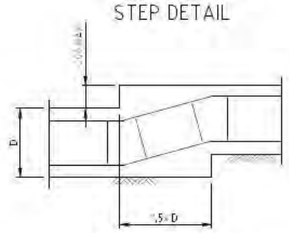


TYPE 3
TYPICAL HEIGHT 2000 to 3200

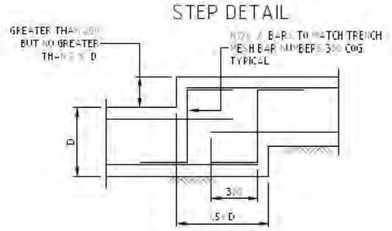
RETAINING WALL SCHEDULE					
HEIGHT 'H'	COURSES of 190 BLOCK	'B'	'K'	'V1' BARS	'V2' BARS
2000	5	2200	300	N16 @ 400	N16 @ 200
2200	5	2300	300	N16 @ 400	N16 @ 200
2400	6	2500	300	N16 @ 400	N16 @ 200
2600	6	2700	300	N16 @ 400	N16 @ 200
2800	7	2900	400	N20 @ 400	N16 @ 200
3000	7	3000	400	N20 @ 300	N16 @ 200
3200	7	3000	400	N20 @ 300	N16 @ 200

FOR φ' = 30° & 100kPa BEARING

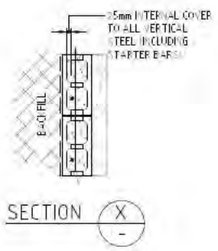
TYPE 'C' FOOTING
STEP DETAIL



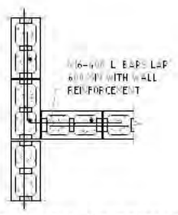
TYPE 'B' FOOTING
STEP DETAIL



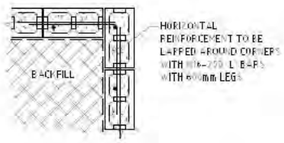
TYPE 'A' FOOTING



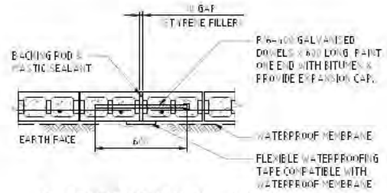
SECTION X



BLOCKWORK JUNCTION DETAIL



BLOCKWORK CORNER DETAIL



BLOCKWORK DOWEL JOINT
for RETAINING WALL

PROVIDE JOINTS AT 6m MAXIMUM CTS. CONFIRM ALL JOINT LOCATIONS WITH STRUCTURAL ENGINEER.

VERIFIER: M.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: D.FIELD
DRAWN: J.CLANCY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	FOR CONSTRUCTION v2	F.C	M.G	D.F	[illegible]
C	FOR CONSTRUCTION v3	F.C	M.G	D.F	19.05.21
D	FOR CONSTRUCTION v4	F.C	M.G	D.F	[illegible]
E	FOR CONSTRUCTION v5	F.C	M.G	D.F	[illegible]
F	FOR CONSTRUCTION v6	F.C	M.G	D.F	[illegible]
G	FOR CONSTRUCTION v7	F.C	M.G	D.F	[illegible]

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close
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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
RETAINING WALL DETAILS
SHEET 1 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C006
REVISION: G
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 158 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

CONTOUR LEGEND

602.0 PROPOSED MAJOR CONTOUR
PROPOSED MINOR CONTOUR

FOR CONTINUATION REFER TO C112

DRAWN: R.CRADDY
DESIGNED: R.CRADDY
JOB MANAGER: D.FIELD
VERIFIER: N.GRINTER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
9	FOR COMMENT	RC		DF	02.02.21
A	CONSTRUCTION	RC	NG	DF	05.02.21
B	UPDATE	RC		DF	09.03.21
C	CONSTRUCTION v2	RC	NG	DF	17.05.21
D	CONSTRUCTION v3	RC	NG	DF	30.03.22
E	CONSTRUCTION v4	RC	NG	DF	29.04.22

CLIENT
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ARCHITECT
Academy Close CAMPBELL
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0 2.5 5.0 7.5 10.0 12.5m PLAN
SCALE 1:250 @ A1

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1803
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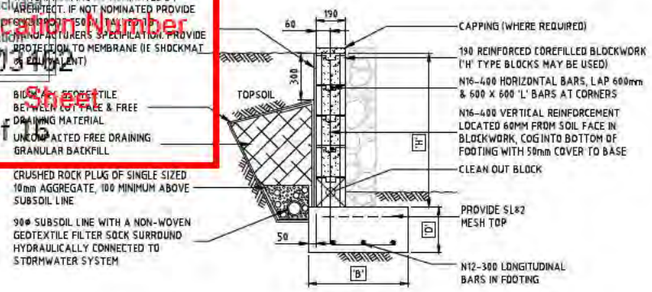
PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
GRADING PLAN
SHEET 2 OF 4

JOB NUMBER CR172699
DRAWING NUMBER C111
REVISION E
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 53 158 755 798
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Inclusion in Building Approval Documentation
Supplementary Number
Sheet
4 of 4
203442
220729

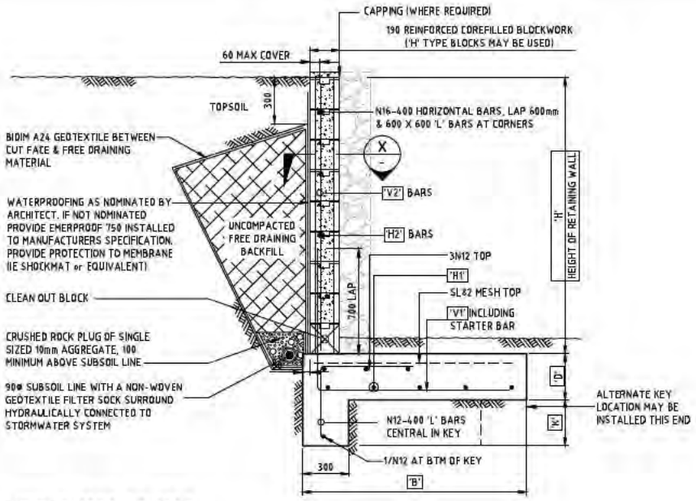


HEIGHT to 1000

RETAINING WALL NOTES:
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION, CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.

RETAINING WALL SCHEDULE		
HEIGHT 'H'	FOOTING WIDTH 'B'	FOOTING DEPTH 'D'
600	500	300
800	600	300
1000	750	300

FOR ø' = 30° & 100kPa BEARING

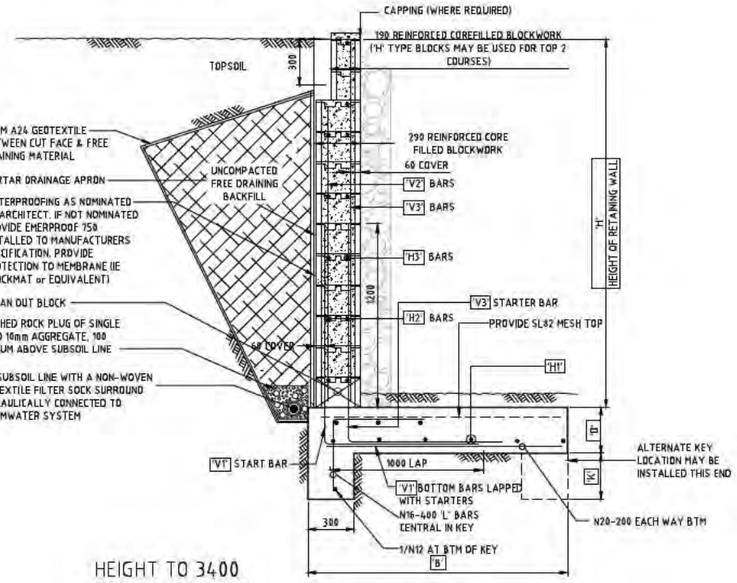


HEIGHT 1200 TO 1800

RETAINING WALL NOTES:
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION, CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.

RETAINING WALL SCHEDULE							
HEIGHT 'H'	FOOTING DEPTH 'D'	'B'	'K'	'V1' BARS	'V2' BARS	'H1' BARS	'H2' BARS
1200	300	1000	100	N16 @ 400	N16 @ 400	N16 @ 400	N16 @ 400
1400	300	1200	100	N16 @ 400	N16 @ 400	N16 @ 400	N16 @ 400
1600	300	1500	200	N16 @ 400	N16 @ 400	N16 @ 400	N16 @ 400
1800	300	1700	250	N16 @ 200	N16 @ 200	N16 @ 200	N16 @ 200

FOR ø' = 30° & 125kPa BEARING

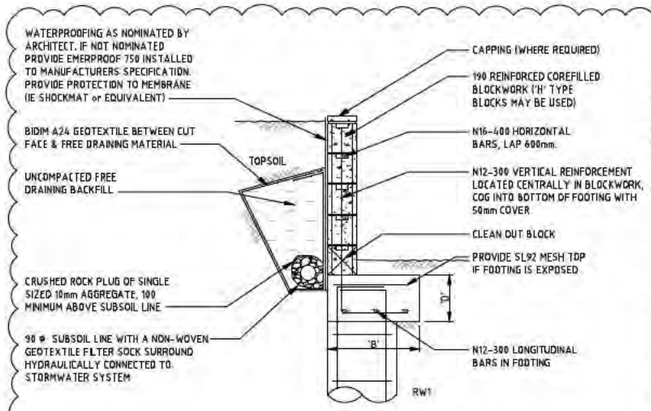


HEIGHT TO 3400

RETAINING WALL NOTES:
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION, CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.

RETAINING WALL SCHEDULE									
HEIGHT 'H'	FOOTING DEPTH 'D'	'B'	'K'	'V1' BARS	'V2' BARS	'V3' BARS	'H1' BARS	'H2' BARS	'H3' BARS
2000	300	1500	300	N16 @ 200	N16 @ 200	N16 @ 400	N16 @ 200	N16 @ 200	N20 @ 400
2200	350	2000	300	N16 @ 200	N16 @ 200	N16 @ 400	N16 @ 200	N16 @ 200	N20 @ 400
2400	350	2200	300	N16 @ 200	N16 @ 200	N16 @ 400	N16 @ 200	N16 @ 200	N20 @ 400
2600	350	2400	300	N20 @ 200	N20 @ 200	N16 @ 400	N16 @ 200	N16 @ 200	N20 @ 400
2800	350	2500	400	N20 @ 200	N20 @ 200	N16 @ 400	N20 @ 200	N20 @ 200	N20 @ 400
3000	350	2750	400	N20 @ 200	N20 @ 200	N16 @ 400	N20 @ 200	N20 @ 200	N20 @ 400
3200	350	3000	450	N24 @ 200	N24 @ 200	N16 @ 400	N20 @ 200	N20 @ 200	N20 @ 400
3400	350	3200	450	N24 @ 200	N24 @ 200	N16 @ 400	N20 @ 200	N20 @ 200	N20 @ 400

FOR ø' = 30° & 150kPa BEARING



HEIGHT to 1000 PIERED RETAINING WALL

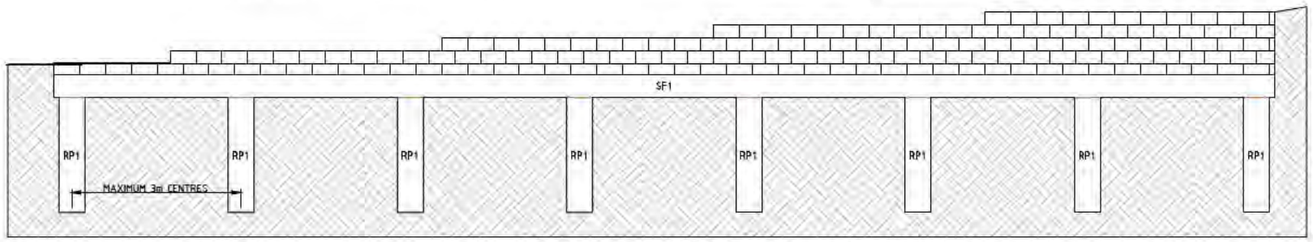
RETAINING WALL NOTES:
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- LOADINGS FOR HANDRAILS, BALUSTRADES & FENCES HAVE NOT BEEN INCLUDED IN DESIGN OF WALL. REFER TO ENGINEER IF THESE ARE REQUIRED.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION, CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.

RETAINING WALL RW1 SCHEDULE		
HEIGHT 'H'	FOOTING WIDTH 'B'	FOOTING DEPTH 'D'
600	400	300
800	500	300
1000	600	400

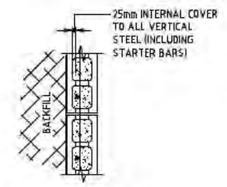
FOR ø' = 30° & 100kPa BEARING

s22

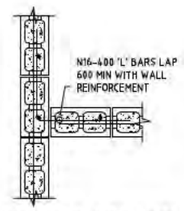
- FOUNDATION SCHEDULE -			
MARK	SIZE	COMMENT(S)	REINFORCEMENT RATE
RETAINING			
RP1	450 DIA	SOCKET MIN 2m BELOW FOOTING AND TO AT LEAST 0.5m BELOW INVERT OF WATERPIPE, @3m CTS	4N16 + R6 TIES @450 CTS



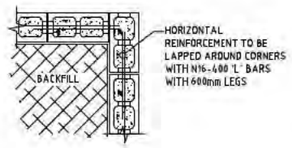
TYPICAL PIERED RETAINING WALL SPACING



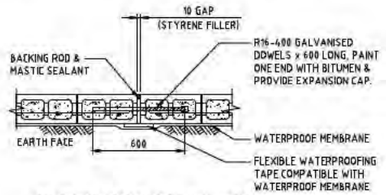
SECTION X



BLOCKWORK JUNCTION DETAIL



BLOCKWORK CORNER DETAIL



BLOCKWORK DOWEL JOINT for RETAINING WALL

PROVIDE JOINTS AT 8m MAXIMUM CTS. CONFIRM ALL JOINT LOCATIONS WITH ARCHITECT

VERIFIER: N.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: D.FIELD
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	FOR CONSTRUCTION	RC	NG	DF	07.07.22
B	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close
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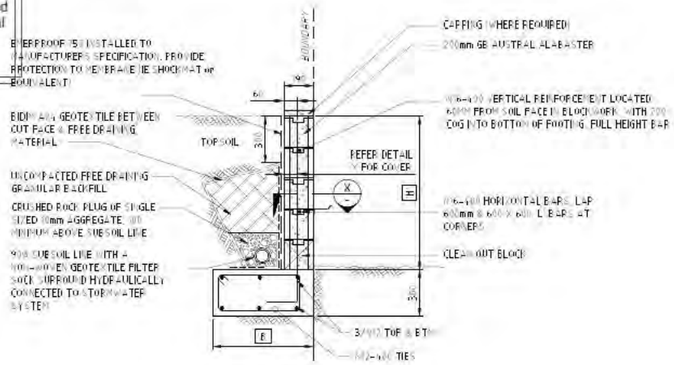
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS RETAINING WALL DETAILS SHEET 4 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C008A
REVISION: B
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 53 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



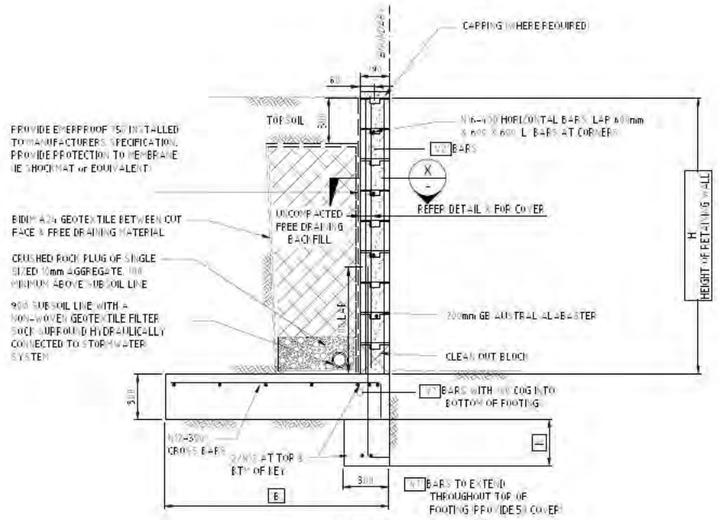
TYPE 4
TYPICAL HEIGHT to 1000

RETAINING WALL SCHEDULE	
HEIGHT 'H'	FOOTING WIDTH 'B'
600	600
800	800
1000	1000

FOR σ' = 30° & 100kPa BEARING

RETAINING WALL NOTES:

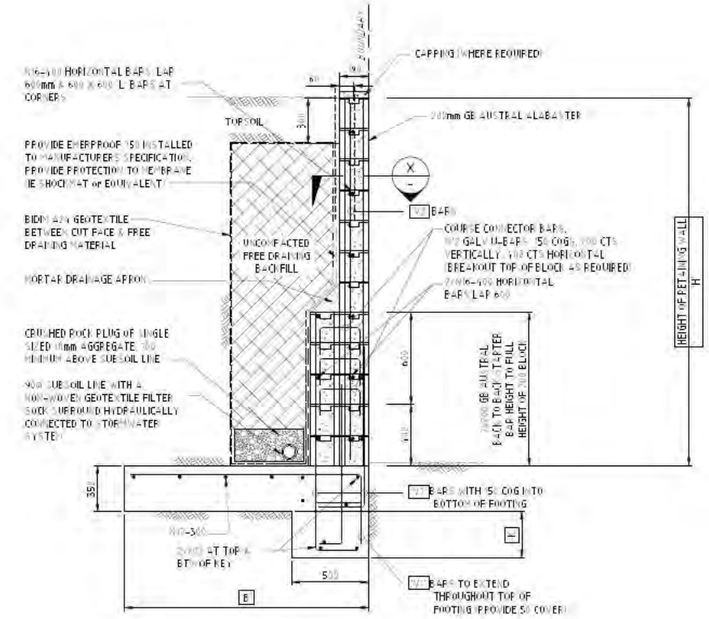
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- ALL BLOCK TO BE RETAINING WALL H BLOCKS.
- ALL CORE FILLING TO BE 32MPA (MIN) 10mm AGGREGATE BLOCKWORK MIX.
- JOINTS IN WALLS TO BE AT MAXIMUM OF 8m CTS.
- LOADINGS FOR 1.8m HIGH FENCES HAVE BEEN INCLUDED IN DESIGN OF WALL.
- LOADINGS FOR HANDRAILS & BALUSTRADES HAVE NOT BEEN INCLUDED IN DESIGN OF WALL. REFER TO ENGINEER IF THESE ARE REQUIRED.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS & STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION. CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.



TYPE 5
TYPICAL HEIGHT 1200 to 1800

RETAINING WALL SCHEDULE				
HEIGHT 'H'	'B'	'K'	'V1' BARS	'V2' BARS
1200	1200	6	N16 @ 200	N16 @ 200
1400	1400	300	N16 @ 200	N16 @ 200
1600	1600	300	N16 @ 200	N16 @ 200
1800	1800	300	N16 @ 200	N16 @ 200

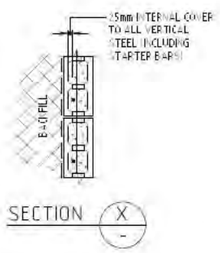
FOR σ' = 30° & 100kPa BEARING



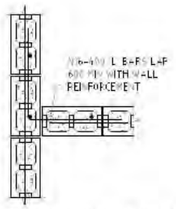
TYPE 6
TYPICAL HEIGHT 2000 to 3200

RETAINING WALL SCHEDULE					
HEIGHT 'H'	COURSES of 2x200 BLOCK	'B'	'K'	'V1' BARS	'V2' BARS
2000	5	2000	300	N16 @ 200	N16 @ 200
2200	5	2200	300	N16 @ 200	N16 @ 200
2400	6	2400	300	N16 @ 200	N16 @ 200
2600	6	2600	300	N16 @ 200	N16 @ 200
2800	7	2800	400	N20 @ 200	N16 @ 200
3000	7	3000	400	N20 @ 200	N16 @ 200
3200	7	3200	400	N20 @ 200	N16 @ 200

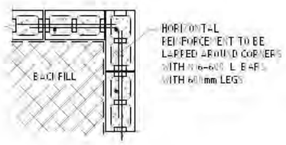
FOR σ' = 30° & 100kPa BEARING



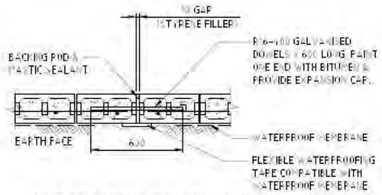
SECTION X



BLOCKWORK JUNCTION DETAIL

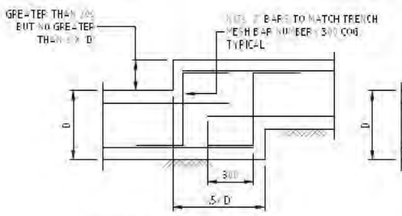


BLOCKWORK CORNER DETAIL

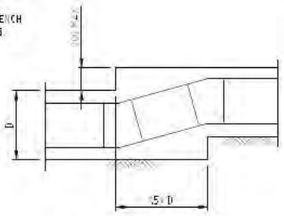


BLOCKWORK DOWEL JOINT
for RETAINING WALL

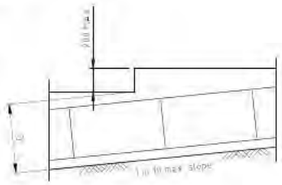
PROVIDE JOINTS AT 6m MAXIMUM CTS. CONFIRM ALL JOINT LOCATIONS WITH STRUCTURAL ENGINEER.



TYPE 'A' STEP DETAIL



TYPE 'B' STEP DETAIL



TYPE 'C' STEP DETAIL

VERIFIER: M.GRIFFITH
JOB MANAGER: D.FIELD
DESIGNED: D.FIELD
DRAWN: J.CLANCY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	FOR CONSTRUCTION	RC	MG	DF	05.07.22
B	FOR CONSTRUCTION v2	RC	MG	DF	11.08.22
C	FOR CONSTRUCTION v3	RC	MG	DF	19.08.22
D	FOR CONSTRUCTION v4	RC	MG	DF	06.09.22
E	FOR CONSTRUCTION v5	RC	MG	DF	23.09.22
F	FOR CONSTRUCTION v6	RC	MG	DF	06.10.22

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close
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Ph (02) 6285 1822 Fax (02) 6285 1803
Email canberra@northrop.com.au ABN 81 094 433 100

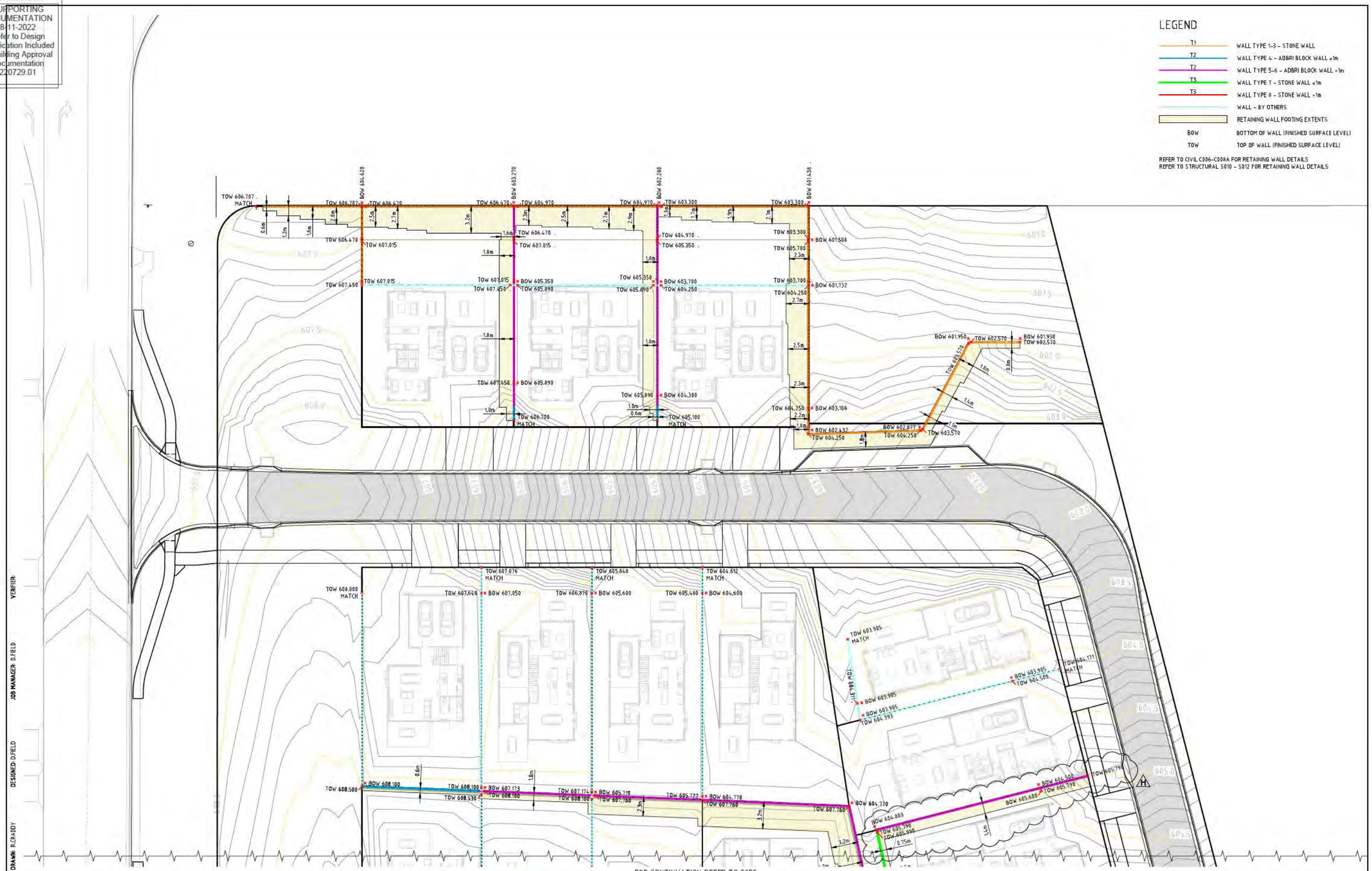
PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
RETAINING WALL DETAILS
SHEET 3 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C008
REVISION: F
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 118 755 754

SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: D.FIELD
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
C	CONSTRUCTION v3	RC	NG	DF	29.04.22
D	CONSTRUCTION v4	RC	NG	DF	11.05.22
E	FOR INFORMATION	RC		DF	27.05.22
F	CONSTRUCTION v5	RC	NG	DF	06.07.22
G	RFI RESPONSE	RC	NG	DF	13.07.22
H	RFI RESPONSE	RC	NG	DF	22.07.22

CLIENT
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ARCHITECT
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0 2 4 6 8 10m
PLAN
SCALE 1:200 @ A1

NORTHROP
Canberra
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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
RETAINING WALL PLAN
SHEET 1 OF 3

JOB NUMBER CR172699
DRAWING NUMBER C051
REVISION H
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

FOR CONTINUATION REFER TO C051

FOR CONTINUATION REFER TO C053

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	CONSTRUCTION v2	RC	NG	DF	11.02.22
C	CONSTRUCTION v3	RC	NG	DF	29.04.22
D	FOR INFORMATION	RC		DF	27.05.22
E	CONSTRUCTION v4	RC	NG	DF	06.07.22
F	RFI RESPONSE	RC	NG	DF	13.07.22
G	RFI RESPONSE	RC	KPVK	DF	22.07.22

DRAWN: R.CRADDY
DESIGNED: D.FIELD
JOB MANAGER: D.FIELD
VERIFIER:

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ARCHITECT
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0 2 4 6 8 10m
PLAN
SCALE 1:200 @ A1

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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
RETAINING WALL PLAN
SHEET 2 OF 3

JOB NUMBER CR172699
DRAWING NUMBER C052
REVISION G
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

DRAWN: R.CRADDY
DESIGNED: D.FIELD
JOB MANAGER: D.FIELD
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
B	CONSTRUCTION v2	RC	NG	DF	11.02.22
C	CONSTRUCTION v3	RC	NG	DF	29.04.22
D	FOR INFORMATION	RC		DF	27.05.22
E	CONSTRUCTION v4	RC	NG	DF	06.07.22
F	RFI RESPONSE	RC	NG	DF	13.07.22
G	RFI RESPONSE	RC	NG	DF	22.07.22

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0 2 4 6 8 10m PLAN
SCALE 1:200 @ A1

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Ph (02) 6285 1822 Fax (02) 6285 1863
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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
RETAINING WALL PLAN
SHEET 3 OF 3

JOB NUMBER CR172699
DRAWING NUMBER C053
REVISION G
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
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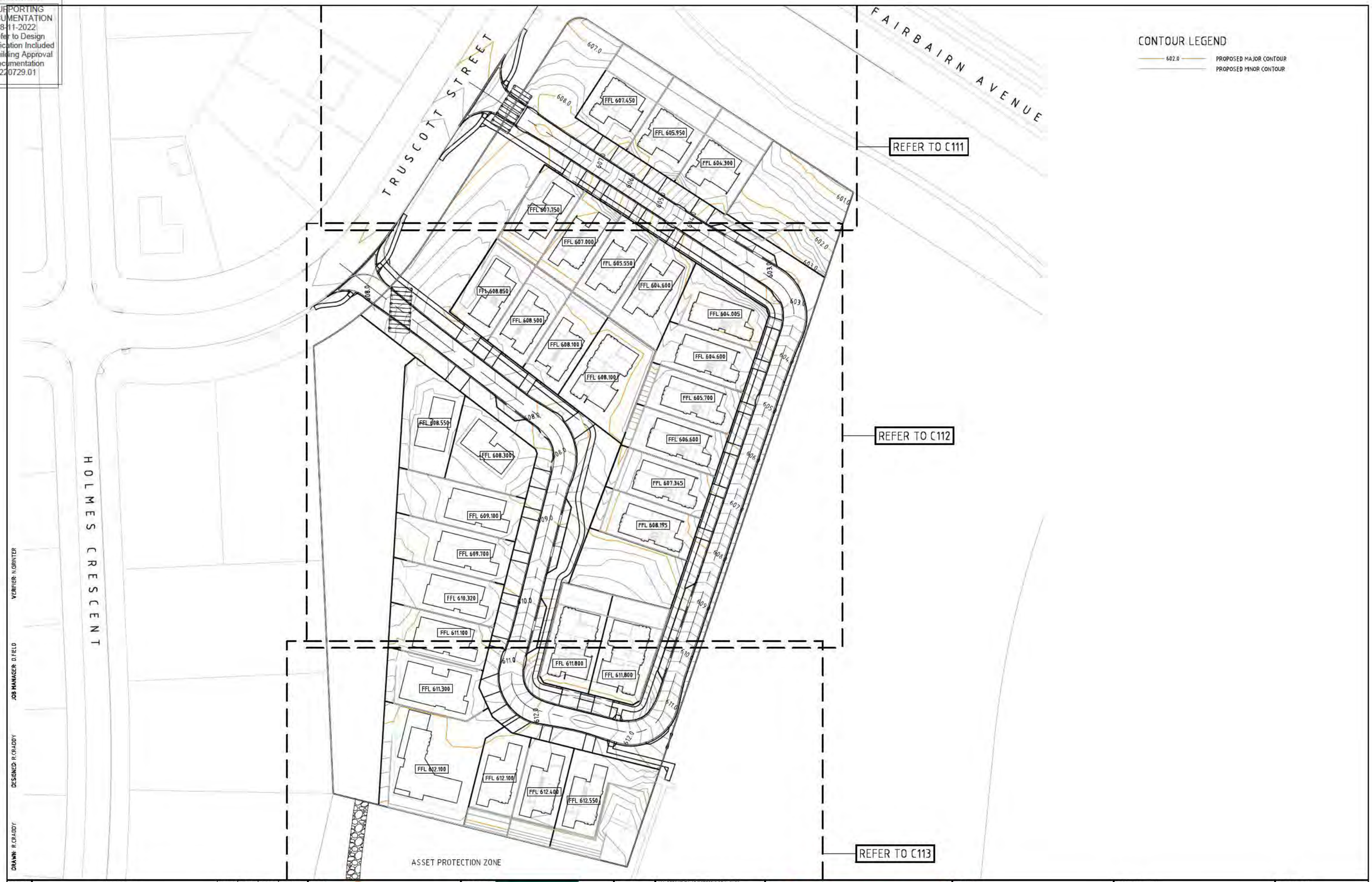
220729.01



REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
9	WORKS APPROVAL	JC		DF	26.05.20
10	FOR COMMENT	RC		DF	02.02.21
A	CONSTRUCTION	RC	NG	DF	05.02.21
B	CONSTRUCTION v2	RC	NG	DF	17.05.21
C	CONSTRUCTION v3	RC	NG	DF	30.03.22
D	CONSTRUCTION v4	RC	NG	DF	29.04.22

DRAWN: R.CRADDY
DESIGNED: R.CRADDY
JOB MANAGER: D.FIELD
VERIFIER: N.GRINTER

CLIENT
DHA Defence Housing Australia
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ARCHITECT
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0 5 10 15 20 25m PLAN
SCALE 1:500 @ A1

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
GRADING KEY PLAN
SHEET 1 OF 4

JOB NUMBER CR172699
DRAWING NUMBER C110
REVISION D
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 159 755 784
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

GENERAL

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH SPECIFICATIONS AND OTHER CONSULTANTS' DRAWINGS.
G2. THE WEATHERPROOFING OF THE BUILDING IS THE ARCHITECT / BUILDER'S RESPONSIBILITY. THIS INCLUDES, BUT IS NOT LIMITED TO THE SPECIFICATION AND FIXING DETAILS OF CLADDING, SHEETING, FLASHING, MEMBRANES, STEPS, SETDOWNS, RECESSES, CONDENSATION MEASURES.
G3. ALL DISCREPANCIES SHALL BE REFERRED TO THE CIVIL ENGINEER AND RESOLVED BEFORE PROCEEDING WITH THE WORK.
G4. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS. REFER TO ARCHITECTURAL DRAWINGS FOR CONFIRMATION OF ALL RL'S. ALL LEVELS ARE IN METRES (m) AND DIMENSIONS ARE IN MILLIMETRES (mm).
G5. ALL WORKMANSHIP, TESTING, MATERIALS AND PERFORMANCE ARE TO BE IN ACCORDANCE WITH THESE SPECIFICATIONS, THE WORK HEALTH AND SAFETY ACT 2011, ENFORCED BY THE WORKCOVER AUTHORITY AND CURRENT RELEVANT AUSTRALIAN STANDARDS.
G6. PROPRIETARY ITEMS SPECIFIED SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS. DO NOT VARY SPECIFIED PROPRIETARY PRODUCTS WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.
G7. THESE DRAWINGS AND ISSUED WRITTEN INSTRUCTIONS DURING THE COURSE OF THE CONTRACT DEPICT THE COMPLETE STRUCTURE. THEY DO NOT DESCRIBE A WORK METHOD, THE ARRANGEMENT, DESIGN AND INSTALLATION OF TEMPORARY WORKS REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.
G8. THE DETERMINATION OF A SAFE WORK METHOD REMAINS THE RESPONSIBILITY OF THE CONTRACTOR. ANY ELEMENT WHICH POSES AN UNACCEPTABLE LEVEL OF SAFETY RISK TO CONSTRUCT SHALL BE REFERRED TO THE STRUCTURAL ENGINEER. TEMPORARY BRACING AND SUPPORT OF STRUCTURE IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE MAINTAINED DURING ALL STAGES OF CONSTRUCTION.
G9. NOTES ON ANY DRAWING APPLY TO ALL DRAWINGS IN THE SET UNLESS NOTED OTHERWISE.
G10. ALL ARCHITECTURAL FITMENTS SUCH AS GLAZING, PARTITIONS, CEILINGS ETC. SHOULD ALLOW FOR THE SHORT AND LONG TERM MOVEMENT OF STRUCTURAL ELEMENTS. FOR BEAMS AND SLABS, BEARING LESS THAN 0mm AN ALLOWANCE OF AT LEAST 15mm SHOULD BE MADE. CONSULT ENGINEER WHERE SPANS EXCEED 6m.
G11. THE BUILDER SHALL PROVIDE CERTIFICATION OF ANY DESIGN AND CONSTRUCT COMPONENT BY A CHARTERED PROFESSIONAL ENGINEER (CPEng).
G12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL SERVICES IN THE VICINITY OF THE WORKS. ANY SERVICES SHOWN ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL SERVICES PRIOR TO COMMENCING AND SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED TO SERVICES AS WELL AS ANY LOSS INCURRED AS A RESULT OF THE DAMAGE TO ANY SERVICE.
G13. THE METHOD OF CONSTRUCTION AND THE MAINTENANCE OF SAFETY DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE BUILDER. IF ANY STRUCTURAL ELEMENT PRESENTS DIFFICULTY IN RESPECT TO SAFETY THE MATTER SHALL BE REFERRED TO NORTHROP CONSULTING ENGINEERS FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.
G15. NO CHANGES IN ANY STRUCTURAL ELEMENT SHALL BE MADE WITHOUT WRITTEN APPROVAL FROM NORTHROP CONSULTING ENGINEERS. IF THERE IS A DISCREPANCY THEN FOR TENDER PURPOSES ALLOW FOR THE MOST EXPENSIVE OPTION. NORTHROP CONSULTING ENGINEERS SHALL BE CONTACTED TO CONFIRM PRIOR TO CONSTRUCTION.
G16. NO CHANGES IN ANY STRUCTURAL ELEMENT SHALL BE MADE WITHOUT WRITTEN APPROVAL FROM NORTHROP CONSULTING ENGINEERS.
G17. NORTHROP CONSULTING ENGINEERS ACCEPTS NO RESPONSIBILITY FOR ANY WORK NOT INSPECTED OR NOT APPROVED BY NORTHROP CONSULTING ENGINEERS DURING CONSTRUCTION.
G18. BUILDER TO ALLOW TO SEPARATELY ENGAGE NORTHROP ENGINEERS FOR CONSTRUCTION PHASE ADVICE, INSPECTIONS AND ANY NECESSARY CHANGES IN DOCUMENTATION DURING CONSTRUCTION. CONSULT NORTHROP DURING TENDER FOR PRICING ALLOWANCES.

CONSTRUCTION PHASE SERVICES - WITNESS POINTS

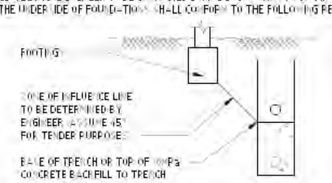
AP1. OBTAIN NORTHROP CONSULTING ENGINEERS' WRITTEN INSTRUCTION AT THE FOLLOWING HOLD POINTS:
- PREPARATION OF FOUNDING MATERIAL (INCLUDING PIER BORE HOLES).
- REINFORCEMENT PRIOR TO PLACEMENT OF CONCRETE or COREFILLING OF BLOCKWORK.
- STEEL AND TIMBER FRAME INSPECTION PRIOR TO SHEETING.

AP2. PROVIDE MINIMUM 48 HOURS NOTICE FOR ANY REQUIRED INSPECTIONS.

FOUNDATIONS

F1. ASSUMED ALLOWABLE BEARING CAPACITY:
- PAD FOOTINGS = 100 kPa
- STRIP FOOTINGS = 100 kPa
- SLABS ON GROUND = 100 kPa

THE ABOVE BEARING PRESSURES TO BE CONFIRMED BY A GEOTECH DURING CONSTRUCTION.
F2. A GEOTECHNICAL REPORT HAS NOT BEEN CARRIED OUT.
F3. THE SLAB AND FOOTINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH AS 2870-2011 FOR CLASS M SITE. A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO BE CONTACTED DURING EXCAVATION TO CONFIRM THE SITE CLASSIFICATION.
F4. THE UNDERSIDE OF FOUNDATIONS SHALL CONFORM TO THE FOLLOWING REGULATED LOCATIONS:



F5. WRAP ALL SERVICE PENETRATIONS IN DAMP PROOFING.
F6. THE BASE OF ALL PIER HOLES SHALL BE FREE OF WATER AND CLEANED OF LOOSE MATERIAL OR DEBRIS PRIOR TO PLACEMENT OF CONCRETE. ALLOW TO PROVIDE TEMPORARY LINERS AT DEEMED NECESSARY.

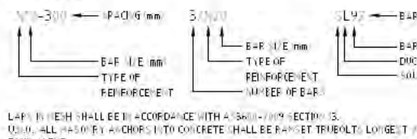
CONCRETE

C1. CARRY OUT ALL CONCRETE WORK IN ACCORDANCE WITH AS3600-2009 AND NATIONAL CONCRETE STANDARD.
C2. CONCRETE PROPERTIES AND COVER TO REINFORCING:

COVER TO REINFORCEMENT					
ELEMENT		CONCRETE STRENGTH f'c (MPa)	MAXIMUM 56 DAY DRY SHRINKAGE	COVER (mm)	
EXPOSED PIERS		25	1000 um	50	
SLABS ON GROUND	EXTERNAL AND MEMBRANE	32	650 um	TOP 30	BTM 30
STRIP FOOTINGS		25	1000 um	45	
PAD FOOTINGS		25	1000 um	45	
WALLS (INCLUDING DOWEL AND BLOCKWORK)		32	650 um	50	
SUSPENDED SLABS	EXTERNAL	40	650 um	TOP 30	BTM 30

MAXIMUM AGGREGATE SIZE = 20mm (U.N.O.)
SLUMP DURING PLACING = 80mm ±10mm
NO ADMIXTURES SHALL BE USED IN THE CONCRETE MIX UNLESS APPROVED BY NORTHROP CONSULTING ENGINEERS IN WRITING.
C3. CONTRACT ALL CONCRETE, INCLUDING FOOTINGS, AND VIBRATE USING MECHANICAL VIBRATORS.
C4. CONCRETE PROFILES:
- SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
- NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN SHOWN IN THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF NORTHROP CONSULTING ENGINEERS.
- PROVIDE DRIP GROOVES AT ALL EXPOSED EDGES, CHAMFERS, DRIP GROOVES, REGLETS etc. TO ARCHITECT'S DETAIL.

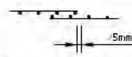
C5. ALL PENETRATIONS TO HAVE 2x12mm TRIMMER BARS TOP AND BOTTOM TO EACH FACE, U.O.N. EXTEND TRIMMERS 400mm BEYOND PENETRATION.
C6. REINFORCEMENT QUALITY AND NOTATION:
ALL REINFORCING BARS SHALL BE GRADE 500N TO AS/NZS 4671:2001 AND ALL MESH SHALL BE GRADE 500L TO AS/NZS 4671:2001 UNLESS NOTED OTHERWISE. CLASS L REINFORCEMENT SHALL NOT BE USED.
REINFORCEMENT LABELS:



C7. LAP IN MESH SHALL BE IN ACCORDANCE WITH AS3600-2009 SECTION 13.
C8. USE ALL MASONRY ANCHORS INTO CONCRETE SHALL BE RAWLSTUD BOLTS LONGEST VERSION OF APPROVED EQUIVALENT.
C9. CURING OF ALL CONCRETE TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF 7 DAYS UNLESS SPECIFIED OTHERWISE. APPROVED SPRAY CURING COMPOUND THAT COMPLY WITH AS3799-1990 MAY BE USED WHERE FLOOR FINISHES WILL NOT BE AFFECTED. POLYTHENE SHEETING OR WET HESSIAN MAY BE USED TO RETAIN CONCRETE MOISTURE WHERE PROTECTED FROM WIND AND TRAFFIC. CURING IS TO COMMENCE IMMEDIATELY AFTER CONCRETE PLACEMENT.

SLAB ON GROUND - RESIDENTIAL

RSG1. RESIDENTIAL SLABS ON GROUND SHALL BE IN ACCORDANCE WITH AS2870-2011.
RSG2. THE SITE OF THE WORKS SHALL BE STRIPPED OF ALL GRASS, ROOTS, VEGETABLE MATTER AND COMPRESSIBLE TOPSOIL.
RSG3. THE GROUND BELOW SLABS SHALL BE PROOF ROLLED WITH AN APPROVED HEAVY COMPACTOR. ALL SOFT SPOTS ENCOUNTERED SHALL BE REMOVED AND REPLACED WITH COMPACTED CRUSHED ROCK OR APPROVED FILL IN ACCORDANCE WITH AS3798-2007 & AS3798-2007.
RSG4. CLEAN GRANULAR FILL UP TO 600mm MAY BE PLACED UNDER THE SLAB IN ACCORDANCE WITH THE PROVISIONS OF AS2870-2011 PART 6.6. FILLING SHALL BE COMPACTED IN 150mm THICK LAYERS BY MECHANICAL ROLLER.
RSG5. TERMITE PROTECTION SHALL BE PROVIDED AS REQUIRED BY AS3660.1-2000 AND THE LOCAL STATUTORY AUTHORITY.
RSG6. SLABS SHALL BE LAID ON A 0.20mm POLYTHENE MEMBRANE CONTINUOUS, LAPPED 200mm MINIMUM AND TAPED AT JOINTS. PROTECTED AND SERVICE PIPE PENETRATIONS.
RSG7. BEAM AND STRIP FOOTING REINFORCEMENT SHALL ACHIEVE THE REQUIRED COVER AS NOTED IN CONCRETE SPECIFICATION.
RSG8. TRENCH MESH SHALL BE LAID CONTINUOUSLY AND SHALL BE SPLICED WHERE NECESSARY WITH A LAP OF 600mm.
RSG9. TRENCH MESH SHALL BE OVERLAPPED BY THE WIDTH OF MESH AT CORNERS AND INTERSECTIONS AND THE ENDS OF TRENCH MESH SHALL TERMINATE WITH A CROSS BAR.
RSG10. MESH SHALL BE PLACED NEAR THE TOP OF THE SLAB AND SHALL ACHIEVE THE REQUIRED COVER. MESH SHALL BE LAPPED A MINIMUM OF TWO WIRES PLUS 25mm AND SHALL BE SET OUT SUCH THAT NO MORE THAN THREE THICKNESSES OF MESH OCCUR AT ANY LOCATION.



RSG11. HOT WATER HEATING PIPES MAY BE EMBEDDED IN THE SLAB IF THE THICKNESS IS INCREASED BY 25mm AND LAID ON TOP OF MESH OR IF THE SLAB THICKNESS IS INCREASED BY 25mm AND THE MESH SIZE IS INCREASED BY ONE SIZE (eg FROM SL82 MESH TO SL92 MESH).
RSG12. THE GROUND SURROUNDING THE SLAB SHALL HAVE ITS SURFACE AT LEAST 150mm LOWER THAN THE SLAB SURFACE AND BE GRADED AWAY FROM THE SLAB EDGE TO THE SITE DRAINAGE SYSTEM.
RSG13. ADDITIONAL FLOODING REQUIREMENTS FOR CLASS M HAZ SITES:
CLASS M HAZ SITES: THE BASE OF TRENCHES SHALL BE TURFED AWAY FROM THE BUILDING. TRENCHES SHALL BE BACKFILLED WITH CLAY IN THE TOP 500mm WITHIN 1.5m OF THE BUILDING AND THE CLAY COMPACTED. WHERE PIPES PASS UNDER THE FOOTING SYSTEM THE FULL DEPTH OF THE TRENCH SHALL BE BACKFILLED WITH CLAY or CONCRETE. THE SURFACE DRAINS TO REMOVE GROUND WATER SHALL NOT BE USED WITHIN 1.5m OF THE BUILDING UNLESS NOTED OTHERWISE.

NOTE:
WHERE RETAINING WALL FOOTING MAY LOAD ANY PROPOSED OR EXISTING SERVICES, ALLOW TO PROVIDE ONE x 450 DIA CONCRETE PIER EITHER SIDE OF SERVICE TO FINISH 300mm BELOW BEDDING OF SERVICE. PIER TO BE 25MPa CONCRETE WITH BARS AT 450 CTRS VERTICALLY. 10mm CIRCULAR TIE BARS AT 450 CTRS PERPENDICULAR TO THE PIER HOLE.

CONCRETE MASONRY

CM1. MASONRY CONSTRUCTION IS TO CONFORM TO AS3700-2011.
- MORTAR CLASSIFICATION = M3
- DURABILITY CLASSIFICATION OF BUILT IN COMPONENTS = R
- DURABILITY GRADE OF EXTERNAL MASONRY UNITS = PROTECTED

CM2. THE CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH OF THE MASONRY UNITS SHALL BE 15MPa OR GREATER.
CM3. BED UNITS IN FRESHLY PREPARED MORTAR UNIFORMLY TO ENSURE CEMENT LINE AND LAID IN THE RATIO OF 1:6 OR 1:4:15 CONFORMING TO AS3700-2011.
CM4. GROUT FILL FOR BLOCKWORK:
- COMPRESSIVE STRENGTH = 20MPa
- MAXIMUM AGGREGATE SIZE = 10mm
- SLUMP = 215mm
- MINIMUM PORTLAND CEMENT CONTENT = 330kg/m³
- COMPACT THE GROUT USING A MECHANICAL VIBRATOR AT CONTROL OF CONSTRUCTION JOINTS IN SLABS.

CM5. CONTROL JOINTS IN REINFORCED WALLS SHALL BE PROVIDED AS FOLLOWS:
CLASS A: 8 - 5m MAX CTS.
CLASS B: 5m MAX CTS UP TO 6m HIGH WALL, 3.9m MAX CTS 6.1m TO 6.5m HIGH WALL.
CLASS H: 4.5m MAX CTS UP TO 6m HIGH WALL, 3.9m MAX CTS 6.1m TO 6.5m HIGH WALL.
- JOINTS TO BE 4.5m MINIMUM FROM CORNERS.
- JOINTS TO BE 4.5m MAXIMUM FROM CORNERS.
- WHERE THE HEIGHT OF THE WALL CHANGES BY MORE THAN 25% AT THE POSITION OF THE CHANGE.
- WHERE THE WALL CHANGES IN THICKNESS.
- AT CONTROL OF CONSTRUCTION JOINTS IN SLABS.
- AT JUNCTIONS OF WALLS CONSTRUCTED OF DIFFERENT MASONRY MATERIAL.

CM6. PROVIDE SHORT VERTICAL TIES ACROSS JOINTS IN REINFORCED WALLS EQUIVALENT TO SET 3-5 AT 400 CTS VERTICALLY IN EACH FACE OF THE BLOCK.
CM7. CONTROL JOINTS IN REINFORCED WALLS SHALL BE PROVIDED AT 15.0m CENTRES. PROVIDE 20mm LONG DOWELS PAINT ONE END WITH BITUMEN & PROVIDED EXPANSION CAP.
CM8. THE BOTTOM COURSE OF ALL REINFORCED BLOCKWORK SHALL CONSIST OF U-SHAPED BLOCKS TO ENABLE CLEANOUT AND TYING OF STEEL.
- FULLY BED FACE SHELLS ONLY.
- CLEAN OUT ALL CORES AFTER EACH DAY'S LAYING.
- ENSURE STARTER BARS ARE CORRECTLY LOCATED IN FOOTINGS.

CM9. MASONRY TIES SHALL BE HOT DIP GALVANISED WITH MINIMUM COATING MASS OF 300g/m² AND HEAVY DUTY CLASSIFICATION FOR CAVITIES UP TO 65mm WIDE & HEAVY DUTY FOR CAVITIES OVER 65mm WIDE. ANY FACE FIXED TIES SHALL BE FIXED USING 2 SCREW FIXINGS AND SHALL NOT BE NAILED.
CM10. THE TOP COURSE OF ALL FREESTANDING HOLLOW BLOCK MASONRY SHALL CONSIST OF SOLID CAPPING BLOCKS.
CM11. SPACING OF MASONRY TIES:
- ADJACENT TO WINDOWS AND RETURN WALLS = 300mm VERTICAL AND HORIZONTAL.
- SOLID MASONRY = 450mm VERTICAL AND HORIZONTAL.
- OTHERWISE = 600mm VERTICAL AND HORIZONTAL.

CM12. NON-LOAD BEARING HOLLOW BLOCK WALLS SHALL FINISH 20mm SHORT OF SLAB SOFFIT AND SHALL BE FASTENED TO THE SOFFIT USING MEXT - SLIDING TIES OR APPROVED EQUIVALENT AT 400mm CENTRES U.O.N.
CM13. LOAD BEARING HOLLOW BLOCK WALLS SHALL BE CAPPED WITH MEXT GRAPHITE GREASED SLIP JOINT OVER TOP COURSE OF BLOCKWORK.
CM14. WHERE MASONRY ABUTS STRUCTURAL STEEL OR PARTS AS A RETURN WALL OR THE PARTS INSTALL HEAVY DUTY TIES - MEXT MAXIMUM 400 CTS, NOT FIX TIES TO STEELWORK.
CM15. MINIMUM COVER TO REINFORCEMENT FROM THE INSIDE FACE OF THE FACE SHELL IS TO BE 25mm.
CM16. AIR ENTRAINING AGENTS, PLASTICISERS, ETC. ARE TO BE NOT USED WITHOUT PRIOR WRITTEN PERMISSION FROM NORTHROP CONSULTING ENGINEERS.
CM17. MATERIALS INCLUDING MORTAR, CONCRETE AND GROUT SHALL COMPLY WITH SECTION 1 OF AS3700-2011. MASONRY UNITS SHALL COMPLY WITH AS/NZS 4455.1-2010. WALL TIES SHALL COMPLY WITH AS/NZS 2699.1-2000.
CM18. MASONRY SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 7 OF AS3700-2011.
CM19. DO NOT CONSTRUCT UNREINFORCED NON-LOAD BEARING REINFORCED MASONRY WALLS ON SUSPENDED CONCRETE SLABS UNTIL SLAB HAS BEEN STRIPPED AND DE-PROPPED.
CM20. ALL LINTELS SUPPORTING BLOCKWORK ARE TO BE HOT DIP GALVANISED WITH MINIMUM COATING MASS OF 300g/m². PROVIDE LINTEL TO EACH WALL LEAF. DO NOT CUT ON SITE. BEEF LINTELS 50mm CLEAR OF DOOR HEADS AND WINDOW FRAMES. PACK MORTAR BETWEEN THE ANGLE UPSTAND AND SUPPORT MASONRY UNITS.
MINIMUM BEARING EACH END OF LINTELS:
- SPANS 2000 TO 1800mm = 200mm BEARING EACH END.
- SPANS 1800 TO 3000mm = 300mm BEARING EACH END.

PROPPING OF LINTELS:
TO PREVENT DEFLECTION OF EXCESSIVE ROTATION TEMPORARILY PROP PROPRIETARY COLD-FORMED LINTELS UNTIL THE MASONRY REACHES ITS REQUIRED STRENGTH. MINIMUM PROPPING PERIOD IS TO BE 7 DAYS.

VERIFIER: M GRITTER
JOB MANAGER: D.FIELD
DESIGNED: D.FIELD
DRAWN: J.CLANCY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
-	WORKS APPROVAL	JC		DF	[illegible]
A	FOR CONSTRUCTION	RC	AG	DF	[illegible]
B	FOR CONSTRUCTION	RC	AG	DF	[illegible]
C	FOR CONSTRUCTION	RC	AG	DF	[illegible]
D	FOR CONSTRUCTION	RC	AG	DF	[illegible]
E	FOR CONSTRUCTION	RC	AG	DF	[illegible]

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NOT TO SCALE

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PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
RETAINING WALL DETAILS
SHEET 2 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C007
REVISION: E
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 169 795 784
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH TCCS MIS AND MITS GUIDELINES. THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

CIVIL NOTES

1. UNLESS NOTED OTHERWISE CARRY OUT ALL WORKS IN ACCORDANCE WITH THE CURRENT VERSION OF THE TCCS, MUNICIPAL INFRASTRUCTURE DESIGN STANDARDS AND THE MUNICIPAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
2. CONTRACTOR TO OBTAIN SERVICES CLEARANCES FROM ALL RELEVANT AUTHORITIES PRIOR TO COMMENCING WORKS. UNDERTAKE ALL NECESSARY TEMPORARY WORKS TO PROTECT & MAINTAIN EXISTING SERVICES DURING CONSTRUCTION. RESTORE ALL SERVICES AT THE COMPLETION OF THE WORKS.
3. CONTRACTOR IS TO DESIGN, OBTAIN APPROVALS AND CARRY OUT REQUIRED TEMPORARY TRAFFIC CONTROL PROCEDURES.
4. CONTRACTOR IS TO CHECK WITH RELEVANT AUTHORITIES TO ENSURE WORKS ARE CLEAR OF EXISTING SERVICES.
5. RESTORE ALL PAVED, GRASSED AND LANDSCAPED AREAS OUTSIDE THE BOUNDARY DAMAGED BY THE WORKS TO THEIR ORIGINAL CONDITION ON COMPLETION OF WORKS.
6. CONFIRM LEVELS ON SITE, IF ANY DISCREPANCIES CHECK WITH THE SUPERVISING ENGINEER.
7. ALL REQUIRED RELEVANT AUTHORITY APPROVALS ARE TO BE OBTAINED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

EARTHWORKS

1. ALLOW FOR EXCAVATION IN ALL MATERIALS AS FOUND (U.N.O.).
2. INSTALL AGREED POLLUTION CONTROL MEASURES IN ACCORDANCE WITH THE ENVIRONMENTAL PROTECTION AGREEMENT REQUIREMENTS.
3. REMOVE ALL VEGETATION, GRASSING, BUILDER'S DEBRIS AND CONCRETE & BITUMEN PAVING AND SPOIL OFF SITE TO AN APPROVED LOCATION. STRIP TOPSOIL AND STOCKPILE FOR LATER REUSE.
4. REMOVE ALL TREES AND ROOTS EXCEPTING THOSE INTENDED FOR RETENTION. GRUB OUT ROOTS AND STUMPS UNDER 300mm DIAMETER TO MINIMUM DEPTH OF 500mm BELOW THE PLATFORM LEVEL. FILL GRUB HOLES AND OTHER VOIDS WITH GENERAL FILL AND COMPACT IN 150mm COMPACTED THICKNESS LAYERS TO THE LEVELS SHOWN ON THE DRAWINGS.
5. WHERE THERE IS INSUFFICIENT EXCAVATED MATERIAL SUITABLE FOR FILLING OR UNDERGRADE REPLACEMENT, IMPORT FILL TO SPECIFICATION NOTED BELOW.
6. FILL MATERIALS TO BE PLACED IN MAXIMUM 200mm LAYERS, EACH LAYER COMPACTED TO THE NOMINATED DENSITY AND MOISTURE CONTENT.

   IMPORT FILL TO MAKE UP ANY SHORTFALL. IMPORTED FILL TO COMPLY WITH FOLLOWING SPECIFICATION:
   MAXIMUM SIZE 75mm
   PASSING 5 SIEVE, NEVER NOT GREATER THAN 15%
   PLASTICITY INDEX – LESS THAN 15%
   CBR – NO LESS THAN 8.
   FREE OF ORGANIC MATTER AND LUMPS OF CLAY.
7. PROOF ROLL THE EXPOSED SURFACE WITH AT LEAST A 9 TONNE ROLLER IN THE PRESENCE OF THE ENGINEER TO DETERMINE THE INTEGRITY OF THE EXPOSED SURFACE. CARRY OUT REPLACEMENT AS NECESSARY TO ACHIEVE THE REQUIRED COMPACTION.
8. EXCAVATE AND REPLACE MOISTURE SUBGRADE IN SELECT MATERIAL FROM EXCAVATION, PLACED IN 200mm LAYERS, WITH EACH LAYER COMPACTED TO 95% MODIFIED UNSUITABLE MATERIAL TO BE SPOILED FROM SITE.
9. UNDERTAKE CUT-FILL OPERATIONS TO ESTABLISH ALL LEVELS INDICATED.
10. COMPACT THE EXPOSED SURFACE LAYERS TO THE FOLLOWING CONDITIONS:

    95% STANDARD COMPACTION STD FOR:
    – UNBALANCED EARTHWORKS UP TO THE LEVEL AT WHICH TOPSOIL IS,
    – ALL FILL AREAS AND PAVEMENTS 150 FROM THE TOP OF THE PAVEMENT
    – SPOIL WHICH IS BEING RE-USED ON SITE (EXCLUDING UNSUITABLE MATERIAL),
    – UNDERGRADE LAYER OF ALL PAVEMENT TYPES AND PROFILES.

    100% STANDARD COMPACTION STD FOR:
    – ALL LAYERS UNDER ALL KERB PROFILE,
    – FILL AREAS AND PAVEMENTS 150 FROM THE TOP OF THE PAVEMENT
    – ALL SELECT FILL MATERIAL LAYERS, REGARDLESS OF PAVEMENT DEPTH
    – UNDERGRADE LAYER OF ALL PAVEMENT TYPES AND PROFILES.

    OPTIMAL MOISTURE CONTENT MATERIAL TO BE +/- 2% DURING COMPACTION.
11. MATERIALS WHICH FROM EXCAVATION CAN BE USED FOR ENGINEERING FILL ON THE FOLLOWING CONDITIONS:

    TOPSOIL IS EXCLUDED TOPSOIL MAY BE USED IN LANDSCAPE BATTERS.
    FILL MATERIALS MAY BE USED PROVIDED DELETERIOUS MATERIALS ARE REMOVED.
    MEDIUM HIGH PLASTICITY SANDY CLAYS, RESIDUAL SOILS, ARE THOROUGHLY MIXED WITH GRANULAR SOILS.
    HIGHLY WEATHERED ROCK, MODERATELY WEATHERED ROCK IS BROKEN DOWN TO PARTICLES WITH A SIZE OF GREATER THAN 100mm. BIGGER PARTICLES MUST BE EXCLUDED.

TESTING:

12. UNDERTAKE THE FOLLOWING TESTING BY NATA REGISTERED LABORATORY:
    COMPACTION TESTS – NOT LESS THAN 1 TEST PER 100m² PER EACH SUCCESSIVE ODD LAYER.
    TESTS TO BE TAKEN ON EXPOSED SURFACE LAYERS (e.g. 1, 3, 5 & EACH SUCCESSIVE ODD LAYER TO OBTAIN REPRESENTATIVE CROSS SECTION.
    CBR TESTS TO CONFIRM IN-SITU UNDERSTRENGTH OF CUT & FILL SUBGRADES.
13. FILL TO BE CERTIFIED BY AN APPROPRIATELY QUALIFIED ENGINEER TO LEVEL 1 STANDARD AS DEFINED IN AS 3798.
    STOCKPILED TOPSOIL TO BE SPREAD IN LANDSCAPE BATTERS TO FINISH LEVEL. ALL EXCESS TOPSOIL & FILL MATERIAL TO BE SPOILED FROM SITE IN A LEGAL MANNER.
14. STABILISE ALL EXCAVATION FACES IN ACCORDANCE WITH TCCS UNITS REQUIREMENTS.
15. CONTROL ALL RAINWATER & GROUNDWATER SEEPAGE BY PUMPING. COMPLY WITH ALL PROVISIONS OF THE ENVIRONMENT PROTECTION AGREEMENT RELATING TO DISPOSAL OF SITE WATER.
16. TOLERANCES LEVELS = +15mm –0mm

POLLUTION, EROSION & SEDIMENT CONTROL

GENERAL

1. THE CONTRACTOR MUST ENTER INTO AN ENVIRONMENT PROTECTION AGREEMENT WITH THE EPA.
2. ENSURE THAT ALL ENVIRONMENT PROTECTION WORKS ARE IN PLACE BEFORE COMMENCING CONSTRUCTION ON THE SITE.
3. LIAISE AS NECESSARY WITH THE EPA AND OBTAIN AGREEMENT TO THE ADEQUACY OF THE PROTECTION WORKS.
4. KEEP A COPY OF THE EPA SIGNED EROSION AND SEDIMENT CONTROL PLAN ON SITE AT ALL TIMES. DISPLAY IN A PROMINENT LOCATION.
5. LOCATE ALL PROTECTION WORKS WHOLLY WITHIN THE SITE UNLESS OTHERWISE PRE-APPROVED.
6. CONSTRUCT AND MAINTAIN PROTECTION WORKS IN ACCORDANCE WITH THE ENVIRONMENT PROTECTION GUIDELINES FOR CONSTRUCTION AND LAND DEVELOPMENT IN THE ACT 2000 AND THE NSW BLUE BOOK AS APPROPRIATE.
7. ASSIGN A DESIGNATED PARKING AREA. ALL WORKERS VEHICLES ARE TO BE PARKED IN LEGAL PARKING ZONE. WHERE POSSIBLE VEHICLES TO BE PARKED WITHIN THE BLOCK.
8. MINIMISE DISTURBANCE OF THE EXISTING SURFACE AND VEGETATION.

SPOIL MANAGEMENT

1. DESIGNATE AN AREA ON SITE FOR CONCRETE TRUCK WASH-DOWN.
2. BRICK CUTTING TO OCCUR ON SITE WITHIN THE MATERIALS AND WASTE STORAGE AREA.
3. SPOIL TO BE DISPOSED OF APPROPRIATELY TO AN APPROVED LOCATION OFF SITE.

SEDIMENT CONTROLS AND STORMWATER

1. MAINTAIN STRICT SITE ACCESS CONTROL WITH A STABILISED ACCESS POINT THAT ALL VEHICLES MUST USE.
2. AT THE END OF EACH DAY OR WHEN DIRT OCCURS OR PRIOR TO ANY RAIN EVENT, REMOVE ANY SEDIMENT FROM PUBLIC ROAD ADJACENT TO THE WORK AREA. DO NOT WASH INTO THE STORMWATER SYSTEM.
3. MAINTAIN SUCH VEGETATIVE COVER AS PRACTICAL, PARTICULARLY BENEATH DRAINAGE LINES, FENCE OFF BUFFER AREAS TO PREVENT DISTURBANCE.
4. PROTECT ALL CUT AND FILL BATTERS FROM RUN-OFF AND STABILISE IMMEDIATELY AFTER CONSTRUCTION.
5. USE CONTOUR PLOUGHING AND/OR SURFACE ROUGHENING OF FINISHED LANDFORM TO SLOW WATER FLOW DURING RAIN EVENT.
6. INSTALL SILT FENCES ON THE LOW SIDE OF ANY STOCKPILE.
7. INSTALL PERMANENT DRAINAGE FACILITIES AT AN EARLY STAGE.
8. FILTER SOCKS TO BE INSTALLED AT ALL OPEN PITS AND KERB SIDE INLETS PROGRESSIVELY AS CONSTRUCTION PROCEEDS.
9. PROVIDE PROTECTION TO NEW DRAINAGE INLETS IMMEDIATELY ON CONNECTION TO THE DRAINAGE SYSTEM.
10. ESTABLISH ALTERNATIVE STABLE DRAINAGE SYSTEMS THROUGH THE SITE WHILE PERMANENT FACILITIES ARE BEING INSTALLED.
11. USE DIVERSION STRUCTURES TO CONVEY RUNOFF TO A STABLE DISPOSAL AREA.
12. STABILISE AND GRASS ALL DIVERSION SWALES AND DRAINS. WHERE MAJOR TEMPORARY DRAINAGE PATHS ARE CREATED CONSTRUCT HAY BALE WEIRS WRAPPED IN BIDDIM ACROSS THE ENTIRE FLOW PATH AND AT 15m INTERVALS.
13. STABILISE AND GRASS ALL DIVERSION SWALES AND DRAINS.
14. INSTALL SEDIMENT TRAPS AT DRAINAGE INLETS AND OTHER POINTS OF DISCHARGE FROM AREAS OF DISTURBANCE.
15. UNDERTAKE VEGETATIVE STABILISATION MEASURES IMMEDIATELY AFTER COMPLETION OF FINAL LAND FORMING.
16. PLACE HAY BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE HAY TO FILL ANY GAPS BETWEEN BALES. – ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
17. EMBED EACH BALE INTO THE GROUND 150mm–200mm AND ANCHOR WITH TWO 1.2m T-BAR PICKETS OR STAKES. ANGLE FIRST STAR PICKET/STAKE IN EACH BALE TOWARDS PREVIOUSLY LAID BALE. DRIVE 600mm INTO THE GROUND AND, WHERE STAR PICKETS PROTRUDE ABOVE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.

SAFETY IN DESIGN

CIVIL SAFETY REPORT

REFER TO SAFETY IN DESIGN SHEET CR172699d01 FOR ADDITIONAL INFORMATION ON SAFETY IN DESIGN ELEMENTS ON THE PROJECT.

THE METHOD OF CONSTRUCTION AND THE MAINTENANCE OF SAFETY DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE BUILDER.

IF ANY CIVIL ELEMENT UNDER OUR DESIGN REMAINS AN UNMANAGEABLE RISK IN RESPECT TO SAFETY, THE MATTER SHALL BE REFERRED TO NORTHROP CONSULTING ENGINEERS THROUGH THE APPROPRIATE CHANNELS FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.

POLLUTION, EROSION & SEDIMENT CONTROL

INSPECTIONS AND MAINTENANCE SCHEDULE

RECORD MAINTENANCE ACTIVITIES AND DETAILS TO PROVIDE TO EPA.

1. DAILY
   - CHUTES, BARRELS, WHEELBARROWS AND OTHER EQUIPMENT TO BE FIXED TO THE SITE WASH-DOWN AREA.
   - REMOVE ANY SEDIMENT FROM PUBLIC ROAD ADJACENT TO THE WORK AREA. DO NOT WASH INTO THE STORMWATER SYSTEM.
   - SUPPRESS DUST BY REGULAR SPRAYING OF WATER AND COVERING AND SECURING VEHICLE LOADS ENTERING/EXITING SITE.
   - MAINTAIN AND INSPECT POLLUTION CONTROL MEASURES DURING CONSTRUCTION AND UNTIL FULL STABILISATION. REPAIR AND REINSTATE WORKS AS NEEDED.
2. MONTHLY
   - MAINTAIN AND INSPECT STABILISED SITE ACCESS POINTS.
   - MAINTAIN AND INSPECT HAY BALES. REPLACE AS REQUIRED IF DEGRADED OR DAMAGED.

AIR QUALITY

1. SUPPRESS DUST BY THE INCLUDING FOLLOWING METHODS WHERE APPLICABLE:
   - STAGE WORKS TO LIMIT THE EXTENT OF EXPOSED AND UNPROTECTED AREAS.
   - REGULAR SPRAYING OF WATER.
   - COVER AND SECURE VEHICLE LOADS ENTERING/EXITING SITE.
   - USE AN ENVIRONMENTALLY FRIENDLY CHEMICAL SPRAY TO BIND SOIL TOGETHER THROUGH STABILISING DISTURBED SOIL.
   - RESTRICT SPEED OF VEHICLES ON SITE.
   - COVER STOCKPILES TO PROTECT FROM THE WIND.
2. IMPLEMENT MEASURES TO LIMIT AIR POLLUTION BY VEHICLE AND PLANT CORNING ON OR PASSING THROUGH THE SITE.
3. MAINTAIN POLLUTION CONTROL MEASURES DURING CONSTRUCTION AND UNTIL FULL STABILISATION. MONTHLY INSPECT EACH WEEK AND AFTER SIGNIFICANT RAINFALL EVENTS. REPAIR AND REINSTATE WORKS AS NEEDED TO MAINTAIN PROTECTION. RECORD MAINTENANCE ACTIVITIES AND DETAILS AND PROVIDE TO EPA FOR INSPECTION WHEN REQUESTED.

FIRE

1. BURNING OF WASTE MATERIALS MUST NOT BE UNDERTAKEN.
2. FIRE MAY BE PERMITTED FOR GENERAL HEATING PURPOSES, IF IN A BRAZIER OR CONSTRUCTED FIREPLACE USING SEASONED UNTREATED TIMBER.

NOISE

1. ENSURE ALL CONSTRUCTION WORK THAT GENERATES AUDIBLE NOISE TAKES PLACE ONLY WITHIN THE PRE-APPROVED OPERATING HOURS FOR THE PROJECT: MONDAY TO SATURDAY, BETWEEN 7AM AND 6PM.

CONCRETE PAVEMENTS

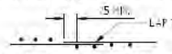
1. THIS SECTION REFERS TO CIVIL CONCRETE WORKS AND DOES NOT INCLUDE STRUCTURAL ELEMENTS SUCH AS BUILDINGS, BELOW GROUND STRUCTURES OR RETAINING WALLS.
2. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 CURRENT EDITION WITH AMENDMENTS EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
3. CONCRETE QUALITY AND REINFORCING COVER
   ALL REQUIREMENTS OF THE CURRENT ACUE CONCRETE SPECIFICATION DOCUMENT SHALL APPLY TO THE FOR WORK. REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

ELEMENT	CONCRETE STRENGTH f'c (MPa)	SPECIFIED SLUMP	NOMINAL AGGREGATE SIZE	MAX 56 DAY DRYING SHRINKAGE	COVER (mm)
KERB AND PATHS	25	80	20	650(micron)	TOP 40
FITT AND VEHICULAR PAVEMENTS	32	80	20	650(micron)	TOP 40

4. CONCRETE PROPERTIES SHALL BE VERIFIED FROM NORMAL CLASS AS FOLLOWS:
   4.1. MINIMUM CEMENT CONTENT 350 kg/m³
   4.2. MAXIMUM 56 DAY SHRINKAGE STRAIN AS NOMINATED ABOVE
   4.3. PRIOR TO COMMENCEMENT CONCRETE SUPPLIER TO PROVIDE DRYING SHRINKAGE TEST RESULTS FROM PRODUCTION ASSESSMENT AS EVIDENCE THAT SPECIFIED DRYING SHRINKAGE LIMITS CAN BE ACHIEVED USING NORMAL MIX DESIGN.
5. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON WIRE STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
6. CEMENT TYPE SHALL BE ABOVE SPECIFICATION TYPE SL.
7. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 3798. TEST CYLINDERS ARE TO BE KEPT ON SITE.
8. ALL COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE CIVIL ENGINEER FOR REVIEW.
9. ALL CONCRETE IS TO BE CONTINUOUSLY CURED FOR A MINIMUM PERIOD OF 10 DAYS AFTER PLACING. CURING TO COMMENCE IMMEDIATELY AFTER FINISHING. SPRAY ON CURING COMPOUNDS TO COMPLY WITH AS3799.
10. PLACE CONCRETE CONTINUOUSLY BETWEEN CONSTRUCTION JOINTS SHOWN ON PLAN. DO NOT BREAK OR INTERRUPT SUCCESSIVE POUR SUCH THAT COLD JOINTS OCCUR. ANY REVISIONS OR ADDITIONS TO CONSTRUCTION JOINTS SHOWN ON PLAN REQUIRE APPROVAL FROM THE CIVIL ENGINEER.
11. FALLS IN SLAB AS SHOWN ON PLAN MAINTAIN MINIMUM SLAB THICKNESS AS SHOWN.
12. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY THE DESIGN ENGINEER.
13. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENOUS MASS COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS.

CONCRETE PAVEMENTS (CONT)

1. FABRIC SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING DETAIL:

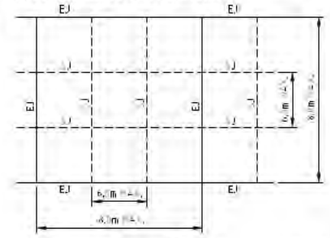


   FOLLOWING THE FABRIC SHALL BE THE REFERENCE NUMBER FOR FABRIC TO AS3735.
2. POLYETHYLENE SHEET SHALL BE PLACED BELOW ALL CONCRETE PAVEMENTS.
3. ALL PENETRATIONS TO HAVE 200 TRIMMER BARS TOP AND BOTTOM TO EACH FACE (U.O.) EXTEND TRIMMERS 300 BEYOND PENETRATION. MAINTAIN 75mm COVER TOP AND BOTTOM. THIS INCLUDE PENETRATIONS INTO EXISTING CONCRETE PAVEMENTS.
4. FORMWORK CLASS SHALL BE IN ACCORDANCE WITH AS3610.
5. SURFACE FINISHES:

ELEMENT	FINISH/FORM CLASS
STORMWATER PIT	OFF FORM
PAVEMENTS	MACHINE FLOAT – BROOM FINISH
KERBS	STEEL FLOAT – TROWEL

PAVEMENT JOINTS

1. PROVIDE 10mm BITUFLEX BETWEEN NEW CONCRETE WORKS AND EXISTING STRUCTURES.
2. LOCAL AUTHORITY REQUIREMENTS SHALL TAKE PRECEDENCE WITHIN THE PUBLIC ROAD RESERVE.
3. DOWELS TO BE PLACED ON PROPRIETARY CRADLES TO ENSURE CORRECT SPACING AND ALIGNMENT.
4. PEDESTRIAN PAVEMENTS
   ALL PEDESTRIAN PAVEMENTS ARE TO BE JOINTED AS FOLLOWS (U.O.O.) ON THE DESIGN DRAWING.
5. EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX. 6.0m CENTRES EVERY 6 PANELS FOR A 1.5m PATHWAY.
6. WEAKENED PLANE JOINTS (SAWN OR TOOL JOINTS) ARE TO BE LOCATED AT A MAX. SPACING OF 1.5m (WIDTH OF THE PAVEMENT).
7. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.
8. VEHICULAR PAVEMENTS
   ALL VEHICULAR PAVEMENTS TO BE JOINTED AS FOLLOWS (U.O.O.) ON THE DESIGN DRAWINGS.
9. TIED DEVELOPED CONSTRUCTION JOINTS SHOULD GENERALLY BE LOCATED LONGITUDINALLY AT A MAX. OF 4.5m CENTRES.
10. SAWN JOINTS SHOULD GENERALLY BE LOCATED LATERALLY AT A MAX. OF 6.0m CENTRES WITH DOWELED EXPANSION JOINTS AT MAX. 6.0m CENTRES.
11. TYPICAL VEHICULAR PAVEMENT JOINT DETAIL



12. WHERE EXPANSION JOINTS SHALL BE FORMED FROM 10mm BITUFLEX FOR FULL DEPTH OF SECTION.
13. WHERE EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, TANGENT POINTS OF CURVES / CORNERS AND AT 2m MAX. CENTRES.
14. WHERE TOOLED JOINTS TO BE 10 (3mm) WIDE AND LOCATED AT MAX. 3m CENTRES.
15. INTEGRAL KERB JOINTS SHALL MATCH THE LOCATION OF PAVEMENT JOINTS.

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
H	WORKS APPROVAL	RC		DF	[illegible]
G	DRAFT WORKS APPROVAL	JC		DF	[illegible]
F	WORKS APPROVAL	JC		DF	[illegible]
D	TCCS DESIGN REVIEW	RC		DF	[illegible]
C	CONSTRUCTION	RC	JG	DF	[illegible]
B	CONSTRUCTION	RC	JG	DF	[illegible]

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PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS STANDARD NOTES

JOB NUMBER: CR172699
DRAWING NUMBER: C001
REVISION: B
DRAWING SHEET SIZE = A1

DRAWN: R.CRAIDIO | DESIGNED: R.CRAIDIO | JOB MANAGER: D.FIELD | VERIFIER: J.GRIFFITH

BCA certifiers
ABN 58 118 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

FOR CONTINUATION REFER TO C111

CONTOUR LEGEND

602.0 — PROPOSED MAJOR CONTOUR
PROPOSED MINOR CONTOUR

FOR CONTINUATION REFER TO C113

DRAWN: R.CRADDY
DESIGNED: R.CRADDY
JOB MANAGER: D.FIELD
VERIFIER: N.GRINTER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
10	FOR COMMENT	RC		DF	02.02.21
A	CONSTRUCTION	RC	NG	DF	05.02.21
B	UPDATE	RC		DF	09.03.21
C	CONSTRUCTION v2	RC	NG	DF	17.05.21
D	CONSTRUCTION v3	RC	NG	DF	30.03.22
E	CONSTRUCTION v4	RC	NG	DF	29.04.22

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0 2.5 5.0 7.5 10.0 12.5m
PLAN
SCALE 1:250 @ A1

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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
GRADING PLAN
SHEET 3 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C112
REVISION: E
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

VERIFIER: N.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: F.CF-LOOY
DRAWN: F.CF-LOOY

PAVEMENT LEGEND

NOTE:
AC PAVEMENTS TO BE CONSTRUCTED UP TO THE PRIME COAT PRIOR TO HOUSING CONSTRUCTION. PROVIDE COLD MIX TRANSITION (40x40) TO EDGES OF PAVEMENT TO PROTECT KERBS AND ALLOW SMOOTH ACCESS.
AC WEARING COURSE IS TO BE PLACED AFTER HOUSING CONSTRUCTION HAS BEEN COMPLETED.

ASPHALT ROAD
40mm AC10 WEARING COURSE
PRIME & TACK COAT BASE MATERIAL
100mm DGB20 BASE MATERIAL COMPACTED TO 100% STD
250mm DGS40 SUBBASE MATERIAL COMPACTED TO 100% STD
SUBGRADE MATERIAL COMPACTED TO 95% STD

ENTRY/EXIT
(REFER OFF SITE WORKS PLAN C125-C126)
150mm N32 CONCRETE
SL82 REINFORCEMENT (50mm TOP COVER)
BROOM FINISH
100mm DGS20 COMPACTED TO 100% STD
SUBGRADE COMPACTED TO 95% STD

PEDESTRIAN FOOTPATH
100mm N25 CONCRETE
BROOM FINISH
SL82 CENTRALLY PLACED
75mm DGB20 BASE MATERIAL COMPACTED TO 100% STD
SUBGRADE MATERIAL COMPACTED TO 95% STD

RESIDENT DRIVEWAY
100mm N32 CONCRETE
BROOM FINISH
SL82 CENTRALLY PLACED
100mm DGB20 BASE MATERIAL COMPACTED TO 100% STD
SUBGRADE MATERIAL COMPACTED TO 95% STD

ON STREET PARKING
150mm N32 CONCRETE
BROOM FINISH
SL82 50mm TOP COVER
100mm DGB20 BASE MATERIAL COMPACTED TO 100% STD
SUBGRADE MATERIAL COMPACTED TO 95% STD

OFFSITE PEDESTRIAN FOOTPATH
(REFER OFF SITE WORKS PLAN C125-C126)
100mm N25 CONCRETE
BROOM FINISH
SL82 CENTRALLY PLACED
75mm DGB20 BASE MATERIAL COMPACTED TO 100% STD
SUBGRADE MATERIAL COMPACTED TO 95% STD

EARTH BUND WITHOUT SWALE REFER TO C005 FOR DETAIL

KG — NEW KERB AND GUTTER
KO — NEW KERB ONLY
MLBK — NEW MODIFIED LAYBACK KERB
(T) — KERB TRANSITION
(M) — MATCH TO EXISTING LEVELS AND MAKE GOOD
— — WEAKENED PLANE JOINTING THROUGH DRIVEWAY FOR PEDESTRIAN PRIORITY. CONTRACTOR TO ALLOW FOR OTHER JOINTS IN RESIDENTIAL DRIVEWAY PAVEMENTS TO PREVENT CRACKING.

SERVICES LEGEND

EXISTING WATER MAIN
EXISTING WATER MAIN TO BE REMOVED
EXISTING FIRE HYDRANT
EXISTING STOP VALVE
PROTECTION OVER EXISTING 100DN WATER MAIN REFER TO ES01 FOR DETAILS

NOTES

ASPHALTIC CONCRETE (AC) MIX DESIGN

1. BITUMEN TO BE CLASS 320, UNLESS OTHERWISE NOTED.
2. EACH AC MIX TO SATISFY REQUIREMENTS OF THE STANDARD SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS.
3. CONTRACTOR TO PROVIDE DETAILS ON ALL MIX DESIGNS PRIOR TO COMMENCING WORK. DETAILS SHALL CONSIST OF RESULTS OF TRIAL BATCHES AND NATA TEST RESULTS OF SIMILAR MIXES AND LIST ALL MIX PROPERTIES SPECIFIED IN THE BASIC SPECIFICATION. NO ASPHALTIC WORK TO COMMENCE UNTIL WRITTEN APPROVAL OF ALL MIXES OBTAINED FROM SUPERINTENDENT.

GENERAL FILL

1. THICKNESS SPECIFIED IS MINIMUM REQUIRED. USE GENERAL FILL WON FROM EXCAVATION IF AVAILABLE OR IMPORTED FILL CBR ≥ 6 PLACED IN MAXIMUM 200mm LAYERS COMPACTED TO 95% MMDD. BETWEEN STRIPPED SURFACES AND NOMINATED PAVEMENT SUBGRADE LEVEL.

TESTING

ALLOW FOR FOLLOWING:
(REFER ALSO TO SPECIFICATION)

1. COMPACTION TESTS ON EACH PAVEMENT LAYER - ONE PER 500m²
2. TESTS VERIFYING ALL SPECIFIED MATERIAL PROPERTIES OF SELECT FILL, DGS - 20 AND DGB - 20 (1 SAMPLE FOR EACH PAVEMENT LAYER)
3. PLANT SAMPLES VERIFYING MIX PROPERTIES OF SUPPLIED ASPHALTIC CONCRETE. (ALLOW 6No)
4. DENSITY TESTS ON ASPHALTIC CONCRETE, SURFACING (ALLOW 6 No LOTS)
5. CONCRETE COMPRESSION & SLUMP TESTS. (ALLOW 18No).
6. SOAKED CBR TESTS TO VERIFY PAVEMENT SUBGRADE (6 No).

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
G	WORKS APPROVAL	JC		DF	01.07.20
F	DESIGN REVIEW	JW		DF	09.10.20
A	CONSTRUCTION	RC	NG	DF	05.02.21
B	CONSTRUCTION v2	RC	NG	DF	17.05.21
C	CONSTRUCTION v3	RC	NG	DF	30.03.22
D	CONSTRUCTION v4	RC	NG	DF	29.04.22

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0 5 10 15 20 25m PLAN SCALE 1:500 @ A1

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PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
SITE WORKS AND
PAVEMENT KEY PLAN
SHEET 1 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C120
REVISION: D
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 53 118 755 754

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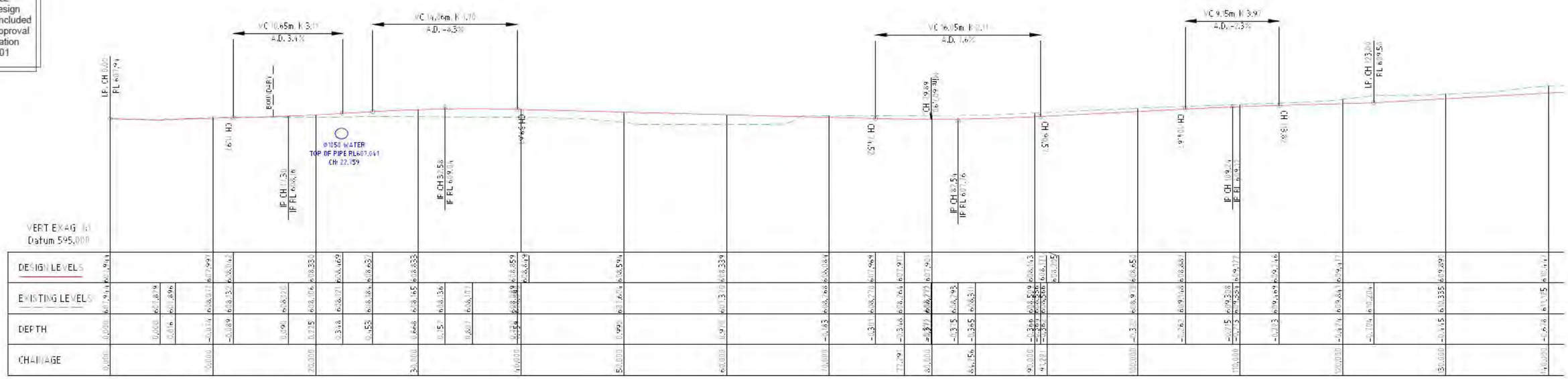
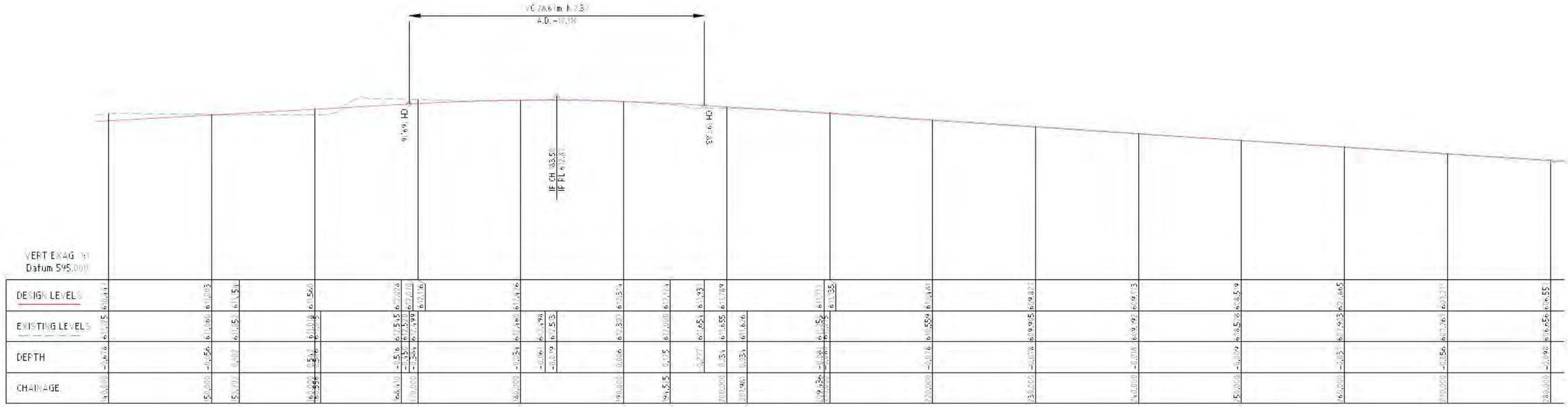


CL-ACADEMY CLOSE LONG SECTION



VERIFIER: M.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: R.CR-ADDY
DRAWN: R.CR-ADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
5	WORKS APPROVAL	RC		DF	13.04.19
6	DRAFT WORKS APPROVAL	JC		DF	30.04.20
7	WORKS APPROVAL	JC		DF	14.05.20
A	CONSTRUCTION	RC	MG	DF	05.02.21
B	CONSTRUCTION V2	RC	MG	DF	17.05.21
C	CONSTRUCTION V3	RC	MG	DF	29.04.22

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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
ROAD LONG SECTIONS
ACADEMY CLOSE
CH:00.000 - CH:280.00

JOB NUMBER
CR172699

DRAWING NUMBER
C140

REVISION
C

DRAWING SHEET SIZE = A1

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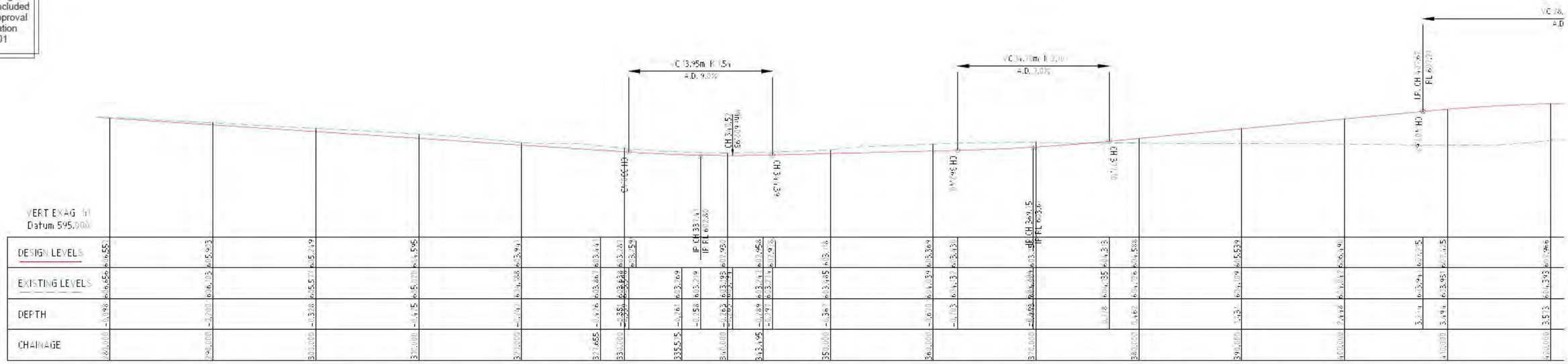

VERIFIER: M.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: F.CF-LOU
DRAWN: F.CF-LOU

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
5	WORKS APPROVAL	PC		DF	13.04.29
6	DRAFT WORKS APPROVAL	JC		DF	30.04.20
7	WORKS APPROVAL	JC		DF	14.05.20
8	CONSTRUCTION	PC	MG	DF	05.03.21
B	CONSTRUCTION V2	PC	MG	DF	17.05.21
C	CONSTRUCTION V3	PC	MG	DF	17.05.21

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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
ROAD LONG SECTIONS
ACADEMY CLOSE
CH:280.000 - CH:451.230

JOB NUMBER
CR172699

DRAWING NUMBER
C141

REVISION
C

DRAWING SHEET SIZE = A1

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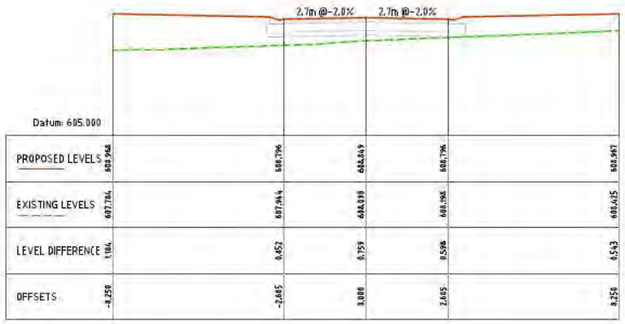

CH: 40.000

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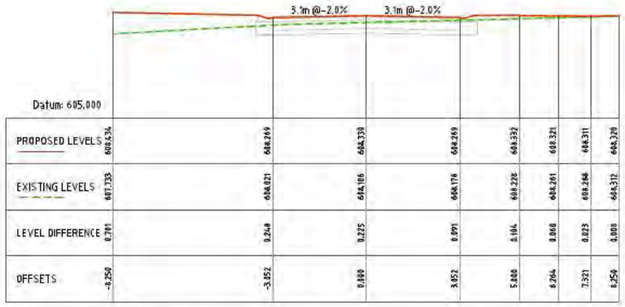

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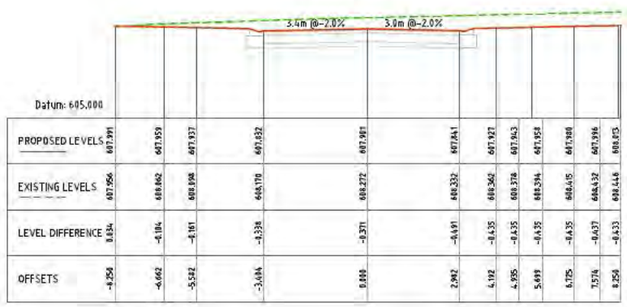

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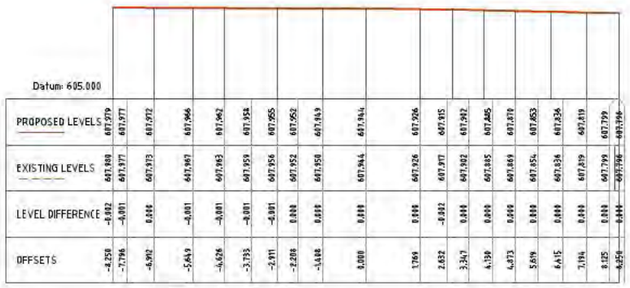

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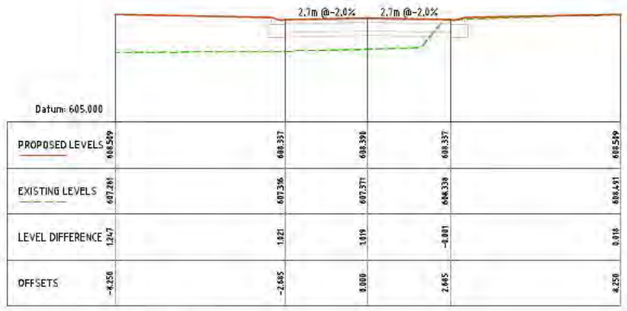

CH: 60.000

DRAWN: R.CRADDY
DESIGNED: R.CRADDY
JOB MANAGER: D.FIELD
VERIFIER: N.GRINTER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	WORKS APPROVAL	RC		DF	11.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20
A	CONSTRUCTION	RC	NG	DF	05.02.21
B	CONSTRUCTION v2	RC	NG	DF	17.05.21
C	CONSTRUCTION v3	RC	NG	DF	29.04.22

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ARCHITECT
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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
DETAILED ROAD
CROSS SECTIONS
CH:00.000 - CH:100.000

JOB NUMBER
CR172699

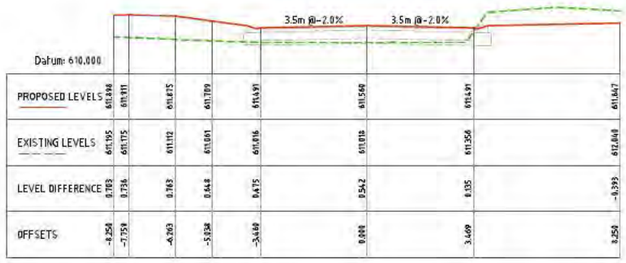
DRAWING NUMBER
C150

REVISION
C

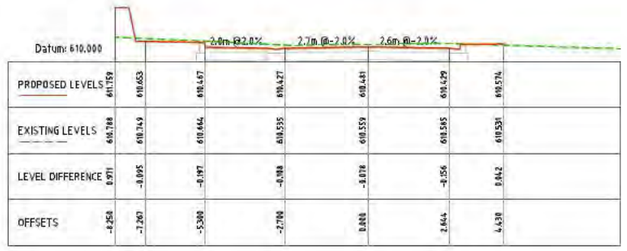
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 53 159 755 794

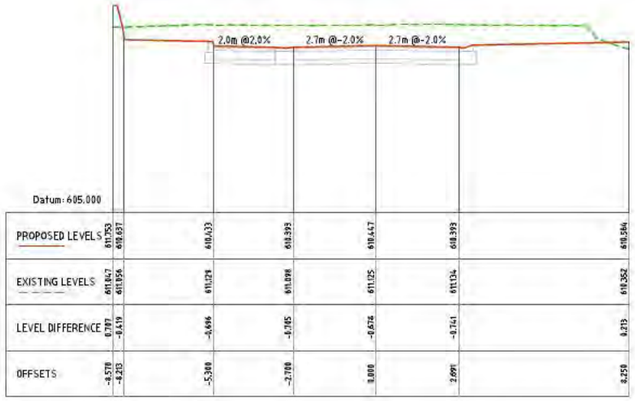
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



CH: 160.000

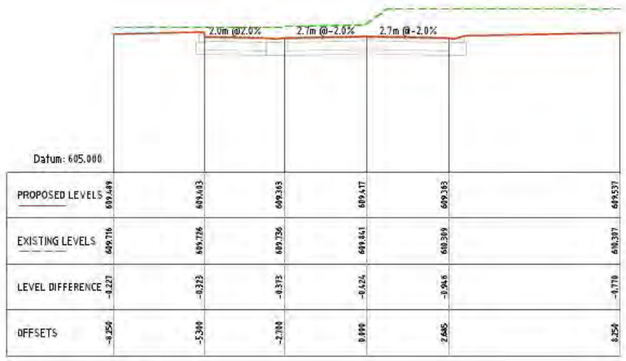


CH: 220.000



CH: 140.000

CH: 200.000



CH: 120.000

CH: 180.000

DRAWN: R.CRADDY
DESIGNED: R.CRADDY
JOB MANAGER: D.FIELD
VERIFIER: N.GRINTER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	WORKS APPROVAL	RC		DF	11.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20
A	CONSTRUCTION	RC	NG	DF	05.02.21
B	CONSTRUCTION v2	RC	NG	DF	17.05.21
C	CONSTRUCTION v3	RC	NG	DF	29.04.22

CLIENT
DHA Defence Housing Australia
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ARCHITECT
Academy Close
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0 1 2 3 4 5m PLAN
SCALE 1:100 @ A1

NORTHROP
Canberra
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Email canberra@northrop.com.au ABN 81 054 433 900

PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
DETAILED ROAD
CROSS SECTIONS
CH:120.000 - CH:220.000

JOB NUMBER
CR172699

DRAWING NUMBER C151
REVISION C

DRAWING SHEET SIZE = A1

BCA certifiers
ABN 53 159 755 794
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

Datum: 605.000

PROPOSED LEVELS	606.648	606.642	606.594	606.557	606.535	606.658
EXISTING LEVELS	607.131	607.847	606.737	606.656	606.629	606.612
LEVEL DIFFERENCE	-1.497	-1.165	-0.234	-0.098	-0.112	0.036
OFFSETS	-4.250	-1.570	-2.685	0.000	2.620	6.630

CH: 280.000

Datum: 605.000

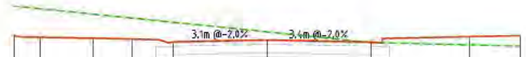
PROPOSED LEVELS	607.997	607.990	607.942	607.905	607.873	607.959
EXISTING LEVELS	606.139	608.114	607.987	607.903	607.873	607.753
LEVEL DIFFERENCE	-1.142	-2.164	-0.046	-0.037	0.000	0.206
OFFSETS	-4.250	-1.570	-2.685	0.000	2.620	6.630

CH: 260.000

Datum: 605.000

PROPOSED LEVELS	699.358	699.361	699.159	699.119	699.173	699.121	699.267
EXISTING LEVELS	699.353	699.329	699.278	699.224	699.192	699.145	699.053
LEVEL DIFFERENCE	-0.005	0.032	-0.119	-0.105	-0.018	-0.024	0.213
OFFSETS	-4.250	-1.570	-5.380	-2.700	0.000	2.620	6.630

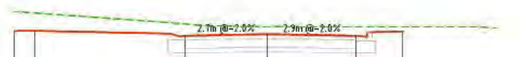
CH: 240.000



Datum: 600.000

PROPOSED LEVELS	603.977	603.833	603.816	603.800	603.845	603.959	603.889	603.938	603.862	603.838	603.870
EXISTING LEVELS	604.934	604.819	603.746	603.855	603.772	603.643	603.537	603.792	603.646	603.766	603.725
LEVEL DIFFERENCE	-0.957	-0.986	-0.938	-0.055	-0.073	-0.085	-0.038	-0.042	0.016	0.071	0.045
OFFSETS	-4.250	-1.570	-7.394	-4.493	-5.677	-4.617	-3.073	0.000	3.570	6.634	8.250

CH: 340.000



Datum: 600.000

PROPOSED LEVELS	604.938	604.846	603.887	603.901	603.883	604.822	
EXISTING LEVELS	604.677	604.628	604.273	604.188	604.089	604.069	
LEVEL DIFFERENCE	-0.039	-0.582	-0.385	-0.287	-0.206	-0.246	
OFFSETS	-4.250	-1.570	-2.685	0.000	2.692	6.630	

CH: 320.000

Datum: 600.000

PROPOSED LEVELS	695.397	695.364	695.196	695.243	695.197	695.342
EXISTING LEVELS	695.715	695.682	695.628	695.577	695.509	695.455
LEVEL DIFFERENCE	-0.318	-0.348	-0.435	-0.329	-0.312	-0.113
OFFSETS	-4.250	-1.570	-2.685	0.000	2.620	6.630

CH: 300.000

VERIFIER: N.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: R.CRADDY
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	WORKS APPROVAL	RC		DF	11.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
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A	CONSTRUCTION	RC	NG	DF	05.02.21
B	CONSTRUCTION v2	RC	NG	DF	17.05.21
C	CONSTRUCTION v3	RC	NG	DF	29.04.22

CLIENT: DHA Defence Housing Australia
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0 1 2 3 4 5m PLAN
SCALE 1:100 @ A1

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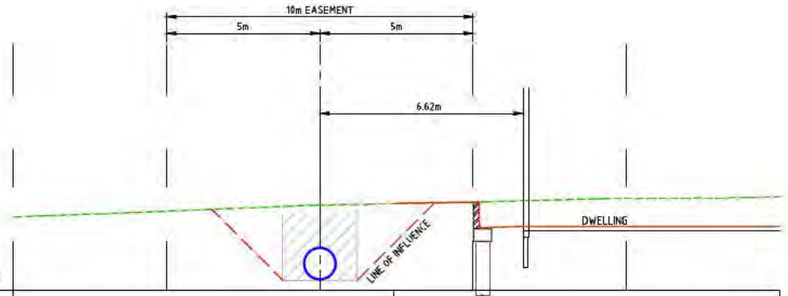
Email canberra@northrop.com.au ABN 81 054 433 100

PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
DETAILED ROAD
CROSS SECTIONS
CH:240.000 - CH:340.000

JOB NUMBER CR172699
DRAWING NUMBER C152
REVISION C
DRAWING SHEET SIZE = A1

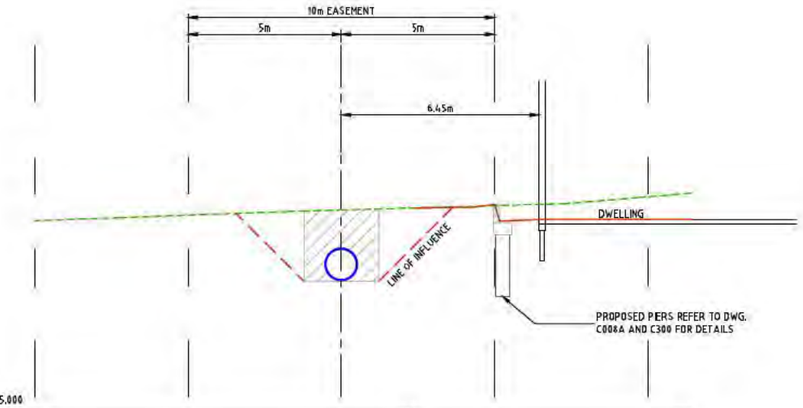
BCA certifiers
ABN 53 119 755 798
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
22072201
icon WATER
Application Number
203462
Sheet
8 of 16



Datum: 610.000

PROPOSED LEVELS				612.850			612.100
EXISTING LEVELS	612.61	612.60	612.79	612.838	612.89	613.01	613.07
LEVEL DIFFERENCE				0.011			-0.966
OFFSETS	-10.00	-5.00	0.00	2.388	5.00	10.00	15.00

Chainage 15.276

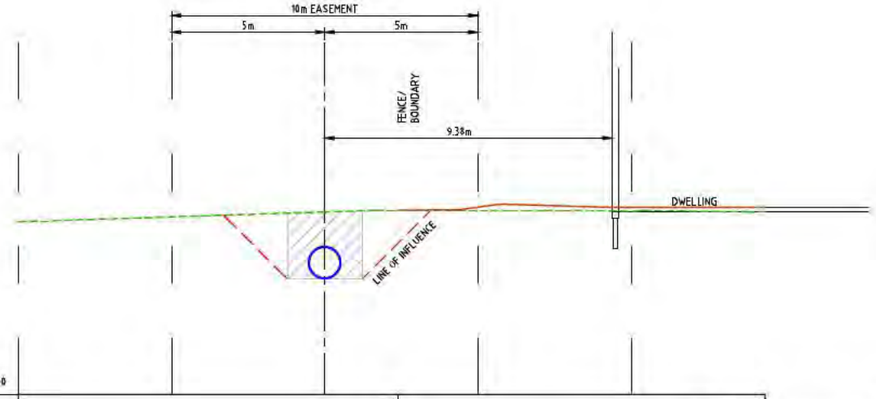


Datum: 605.000

PROPOSED LEVELS				611.673			611.300
EXISTING LEVELS	611.26	611.44	611.61	611.678	611.75	612.04	612.161
LEVEL DIFFERENCE				-0.006			-0.861
OFFSETS	-10.00	-5.00	0.00	2.366	5.00	10.00	11.442

Chainage 43.302

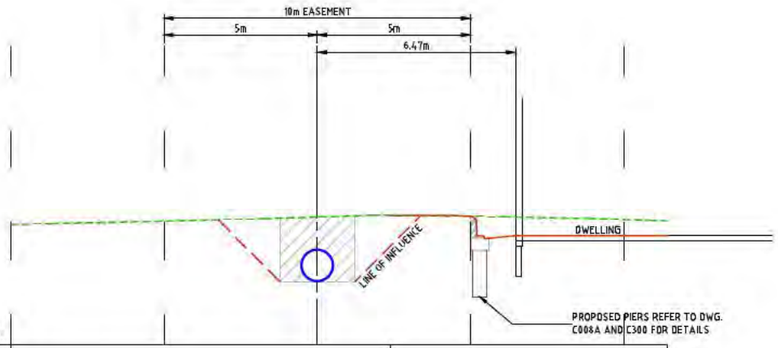
NOTE
REFER TO DRAWING C300-C302 FOR CHAINAGE



Datum: 605.000

PROPOSED LEVELS				611.004			[redacted]
EXISTING LEVELS	610.63	610.79	610.95	611.001	610.99	610.97	[redacted]
LEVEL DIFFERENCE				0.004			0.156
OFFSETS	-10.00	-5.00	0.00	2.384	5.00	10.00	14.367

Chainage 58.666



Datum: 605.000

PROPOSED LEVELS				609.288			608.550
EXISTING LEVELS	608.91	609.02	609.16	609.211	609.18	609.07	609.033
LEVEL DIFFERENCE				-0.082			-0.483
OFFSETS	-10.00	-5.00	0.00	2.379	5.00	10.00	11.413

Chainage 117.580

VERIFIER: N.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: R.CRADDY
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close

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0 1 2 3 4 5m PLAN
SCALE 1:100 @ A1

NORTHROP
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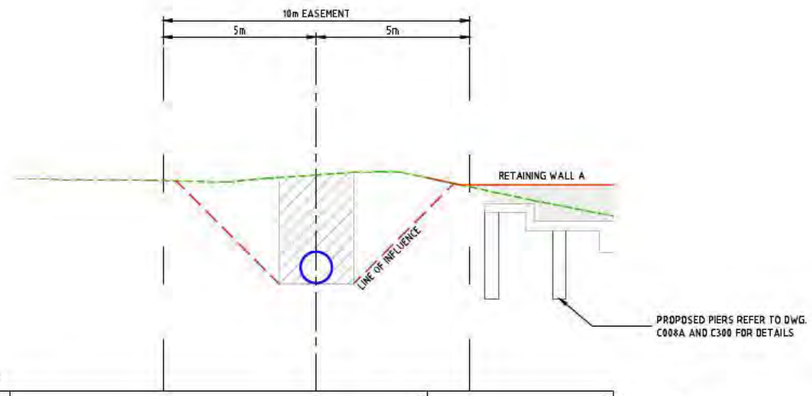
PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
EXISTING WATER MAIN
CROSS SECTIONS
SHEET 1 OF 2

JOB NUMBER: CR172699
DRAWING NUMBER: C177A
REVISION: 1
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 53 119 755 798
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220722-01
icon WATER
Application Number
203462
Sheet
9 of 16



Datum: 600,000

PROPOSED LEVELS				606.942		606.707
EXISTING LEVELS		606.85	607.05	606.939	606.64	605.689
LEVEL DIFFERENCE				0.003		1.018
OFFSETS	-10.00	-5.00	0.00	3.610	5.00	9.785

s22 [redacted]

Chainage 259.388

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: R.CRADDY
DRAWN: R.CRADDY

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia
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0 1 2 3 4 5m
PLAN
SCALE 1:100 @ A1

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
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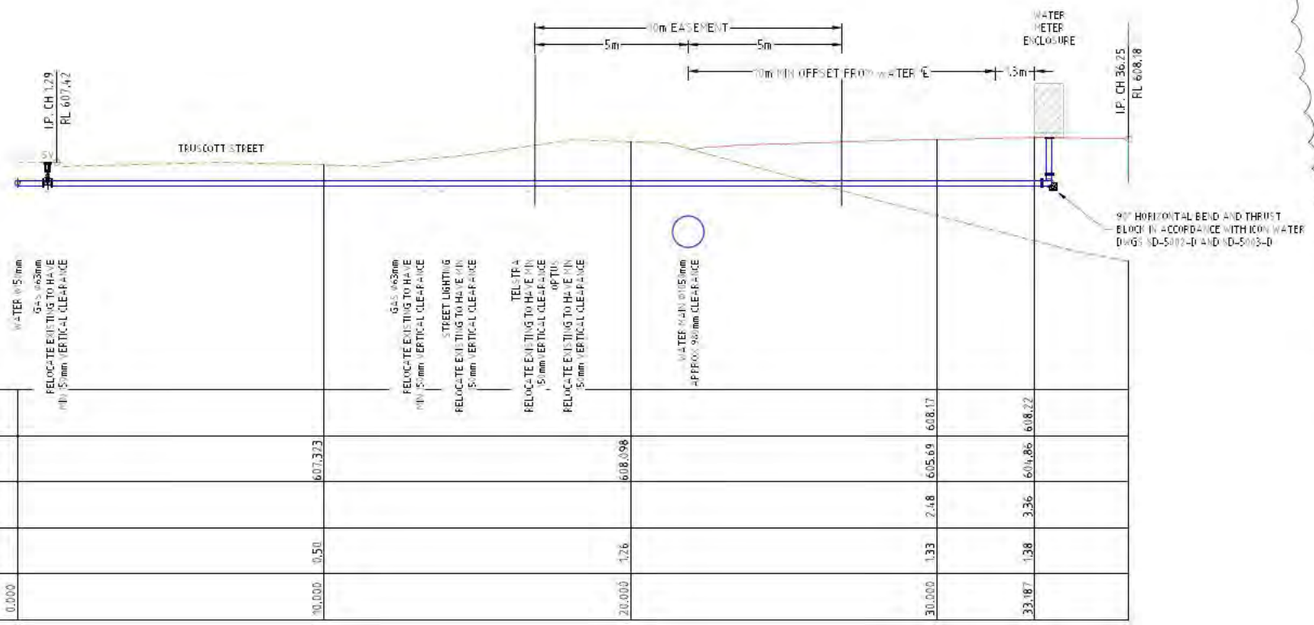
PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
EXISTING WATER MAIN
CROSS SECTIONS
SHEET 2 OF 2

JOB NUMBER CR172699
DRAWING NUMBER C177B
REVISION 1
DRAWING SHEET SIZE = A1

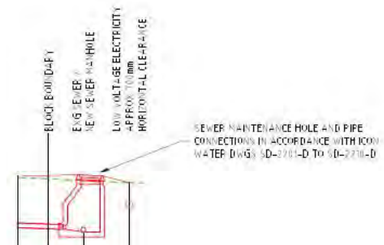
BCA certifiers
ABN 53 118 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



VERT EXAG 1:1
Datum 600.000

DESIGN LEVELS						608.17	608.22
EXISTING LEVELS		607.373	608.398			605.69	604.86
DEPTH BETWEEN SURFACES						2.48	3.36
DEPTH TO TOP OF WATER PIPE		0.50	1.26			1.33	1.38
CHAINAGE	0.000	10.000	20.000			30.000	33.187

NEW WATER TIE LONG SECTION



VERT EXAG 1:1
Datum 595.000

DESIGN LEVELS	600.84	600.87	600.89		
EXISTING LEVELS	600.80	600.75	600.71	600.62	
DEPTH BETWEEN SURFACES	0.04	0.12	0.18		
DEPTH TO TOP OF SEWER PIPE	1.51	1.58	1.69		
CHAINAGE	-2.134	-1.134	0.000	1.500	2.000

NEW SEWER TIE LONG SECTION

NOTE: REFER TO DRAWING ESW-ESW3 FOR WATER AND SEWER TIE DETAILS.

DRAWN: R.CE-UDY DESIGNED: R.CE-UDY JOB MANAGER: D.FIELD VERIFIER: M.GRUTER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ICON APPROVAL	RC		NG	03.06.22
2	ICON APPROVAL	RP VK		DF	16.08.22
3	ICON APPROVAL	RC	NG	DF	22.04.22
4	CONSTRUCTION	RC	NG	DF	29.04.22
B	DETAILED DESIGN	JC	RP VK	DF	19.01.22

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close Canberra
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0 1 2 3 4 5m PLAN
SCALE 1:100 @ A1

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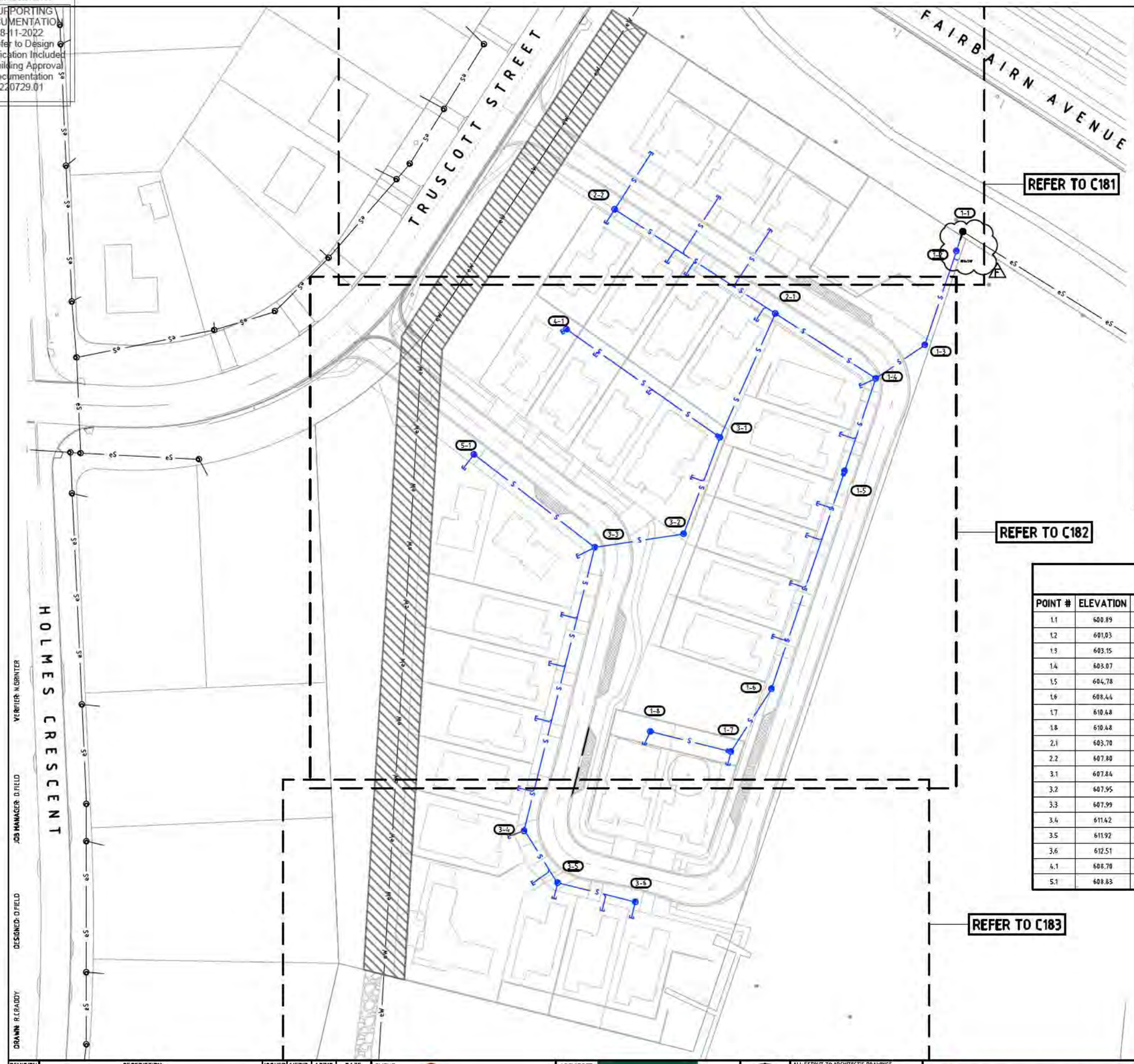
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
NEW WATER TIE
AND SEWER TIE
LONG SECTIONS

JOB NUMBER: CR172699
DRAWING NUMBER: C179
REVISION: B
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 53 158 755 794
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



LEGEND

EXISTING SERVICES

- SEWER MAIN
- SEWER MANHOLE HOLE

PROPOSED SERVICES

- SANITARY DRAIN
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D
- SEWER MANHOLE WITH EXTERNAL DROP DOWN STRUCTURE REFER TO ICON WATER STANDARD DRAWING SD-2202-D
- SEWER TIE CAP - REFER TO NOTE 1
- DRG + TAP — OVERFLOW RELIEF GULLY WITH TAP OVER - REFER TO NOTE 3
- SEWER MAIN (EXTERNAL)
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D (EXTERNAL)
- 10m WIDE WATER EASEMENT

REINSTATEMENT GENERALLY

1. UNLESS OTHERWISE DIRECTED REINSTATE ALL SURFACES DISTURBED BY THE WORKS WITH MINIMUM 100mm SITE TOP SOIL, DRY LAND GRASS, BITUMEN, STRAW MULCH.
2. CONSOLIDATE FOR 13 WEEKS ONCE HEALTHY SWARD ESTABLISHED.
3. REMOVE ALL EXCESS SOIL INCLUDING EXCESS TOPSOIL AND UNSUITABLE SUBGRADE FROM THE SITE UNLESS DIRECTED OTHERWISE.

GENERAL NOTES

1. ALL INTERNAL LOT SEWER SERVICE TIES ARE TO EXTEND AND BE CAPPED AT A MINIMUM OF 1m WITHIN THE INTERNAL LOT BOUNDARY. THE DESIGN OF THE INTERNAL LOT SANITARY NETWORK AND CONNECTION INTO THE SEWER SERVICE TIES IS TO BE UNDERTAKEN BY THE HYDRAULIC ENGINEER. PVC SERVICES SHALL BE SEALED WITH A SOLVENT CEMENTED END CAP OR SCREW CAP.
2. ALL INTERNAL LOT SEWER SERVICE TIES ARE TO BE 100mm SN8 FOR SEWER TIE CONNECTION INTO SEWER MAIN REFER TO ICON WATER STANDARD DRAWINGS SD-2005-D DETAIL '45 DEGREE JUMP UP DIRECT CONNECTION TO SEWER OUTSIDE LEASE - FOR SEWER DEPTHS LESS THAN 3500'. FOR SEWER TIE CONNECTION TO MANHOLE REFER TO ICON WATER STANDARD DRAWINGS SD-2006-D"SEWER TIE TO MAINTENANCE HOLE" DETAIL.
3. OVERFLOWRELIEF GULLY (ORG) LEVEL TO BE A MINIMUM OF 150mm LOWER THAN LOWEST FIXTURE LEVEL, AND 75mm ABOVE SURROUNDING GROUND LEVEL UNLESS CONCRETED. MINIMUM CONCRETED LEVEL 10mm.
4. CONTRACTOR SHALL ALLOW FOR ADDITIONAL EXCAVATION (INCLUDING ROCK) AND BACKFILL OF PIPES, FITTINGS AND ALL JUMP-UPS TO THE LOCAL AUTHORITY REQUIREMENTS, INCLUDING THOSE TO BRANCH DRAINS.
5. ALL BRANCH LINES SHALL BE GRADED AND/OR LOWERED TO AVOID PENETRATING FOOTING BEAMS UNLESS SHOWN OTHERWISE. THE CONTRACTOR SHALL ALLOW FOR ADDITIONAL PIPE LENGTHS AND WORK INCLUDING CONSTRUCTION OF ADDITIONAL INSPECTION OPENINGS AS REQUIRED BY THE LOCAL AUTHORITY.
6. CO-ORDINATE WITH STRUCTURAL DRAWINGS. NO STEEL REINFORCING BARS TO BE CUT WITHOUT PRIOR WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.
7. DRG GRATE LEVEL SHALL BE IN ACCORDANCE WITH AS 3500.2 CLAUSE 4.6.6.6 AND 4.6.6.7.
8. ALL SEWER MAINTENANCE HOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-2201-D AND SD-2202-D AND UNLESS NOTED OTHERWISE BE FITTED WITH A HEAVY DUTY GATTIC COVER.
9. NEW DRAINS TO BE CONSTRUCTED ARE SHOWN IN BLUE LINES. EXISTING DRAINS ARE SHOWN IN BLACK LINES. NEW AUTHORITY MAINS ARE SHOWN IN RED.
10. EXISTING DRAINS SHOWN "X'ed" IN RED ARE TO BE EXHUMED OR ABANDONED (AS NOTED) AND ENDS SHALL BE SEALED TO APPROVAL.

SEWER SETOUT

POINT #	ELEVATION	EASTING	NORTHING	STRUCTURE TYPE
1.1	600.89	213977.790	603246.664	1050 MANHOLE
1.2	601.03	213976.198	603241.923	1050 MANHOLE
1.3	603.15	213968.518	603219.048	1050 MANHOLE
1.4	603.07	213956.541	603210.866	1050 MANHOLE
1.5	604.78	213948.961	603188.287	1050 MANHOLE EXTERNAL VERTICAL DROP
1.6	608.44	213931.138	603135.201	1050 MANHOLE
1.7	610.48	213921.240	603119.906	1050 MANHOLE EXTERNAL VERTICAL DROP
1.8	610.48	213901.556	603124.807	1050 MANHOLE
2.1	603.70	213932.062	603226.720	1050 MANHOLE
2.2	607.80	213892.887	603252.092	1050 MANHOLE
3.1	607.84	213918.572	603196.461	1050 MANHOLE EXTERNAL VERTICAL DROP
3.2	607.95	213909.709	603172.972	1050 MANHOLE
3.3	607.99	213888.023	603169.699	1050 MANHOLE
3.4	611.42	213870.782	603100.588	1050 MANHOLE
3.5	611.92	213879.024	603087.947	1050 MANHOLE
3.6	612.51	213897.929	603083.262	1050 MANHOLE
4.1	608.70	213881.131	603222.879	1050 MANHOLE
5.1	608.83	213858.551	603192.388	1050 MANHOLE

SEWER DRAWING REFERENCES

CONSTRUCT STRUCTURES AND CONNECTIONS IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

- SD-2005-D - SEWERAGE NETWORK PROPERTY - CONNECTION DETAILS - SEWER TIES - SHEET 1 OF 2
- SD-2006-D - SEWERAGE NETWORK PROPERTY - CONNECTION DETAILS - SEWER TIES - SHEET 2 OF 2
- SD-2102-D - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL - GRANULAR AND CEMENT STABILISED EMBEDMENT DETAILS
- SD-2103-D - SEWERAGE AND WATER NETWORKS PIPE EMBEDMENT AND TRENCH FILL CONCRETE BEDDING AND EMBEDMENT DETAILS.
- SD-2106-D - SEWERAGE AND WATER NETWORKS MINIMUM PIPE COVER AND CLEARANCES STANDARD CONDITIONS AND APPLICATIONS
- SD-2107-D - SEWERAGE AND WATER NETWORKS WATER MAINS⊡TOⲤMETER AND SEWER TIE APPLICATIONS TRENCH EMBEDMENT AND BACKFILL DETAILS
- SD-2201-D - SEWERAGE NETWORK - CAST IN SITU MAINTENANCE HOLE - 1050 DIA. WITH BRANCHES - ARRANGEMENT AND DETAILS
- SD-2202-D - SEWERAGE NETWORK CAST IN SITU MAINTENANCE HOLE 1050 DIA. WITH EXTERNAL DROP ARRANGEMENT AND DETAILS
- SD-2204-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES 1050, 1200 AND 1500 DIA. COVERS AND SURROUNDS ARRANGEMENT AND FIXING DETAILS
- SD-2205-D - SEWERAGE NETWORK - PRECAST MAINTENANCE HOLES - FOR DEPTHS LESS THAN 6000mm - TYPICAL ARRANGEMENT AND BASE DETAILS
- SD-2206-D - SEWERAGE NETWORK - PRECAST MAINTENANCE HOLES FOR DEPTHS LESS THAN 1200mm - TYPICAL ARRANGEMENT
- SD-2207-D - SEWERAGE NETWORK - 1050 DIA. PRECAST MAINTENANCE HOLES - TYPICAL COMPONENTS - DETAILS
- SD-2208-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES - STANDARD OFFSETS AND BENCHING DETAILS
- SD-2209-D - SEWERAGE NETWORK - SEWER MAINTENANCE SHAFTS (SMS) AND RODDING POINTS - TYPICAL ARRANGEMENTS
- SD-2210-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES - PIPE CONNECTION DETAILS

DRAWN: R.READY
DESIGNED: D.FIELD
JOB MANAGER: D.FIELD
VERIFIER: N.GRINTER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	CONSTRUCTION	RC		DF	09.04.21
B	CONSTRUCTION v2	RC	NG	DF	21.05.21
C	CONSTRUCTION v3	RC	NG	DF	29.04.22
D	CONSTRUCTION v4	KPVK	NG	DF	26.06.22
E	BUILDING APPROVAL	BC	DF	KPVK	13.07.22
F	BUILDING APPROVAL	JC	KPVK	DF	21.07.22

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close

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0 5 10 15 20 25m PLAN
SCALE 1:500 @ A1

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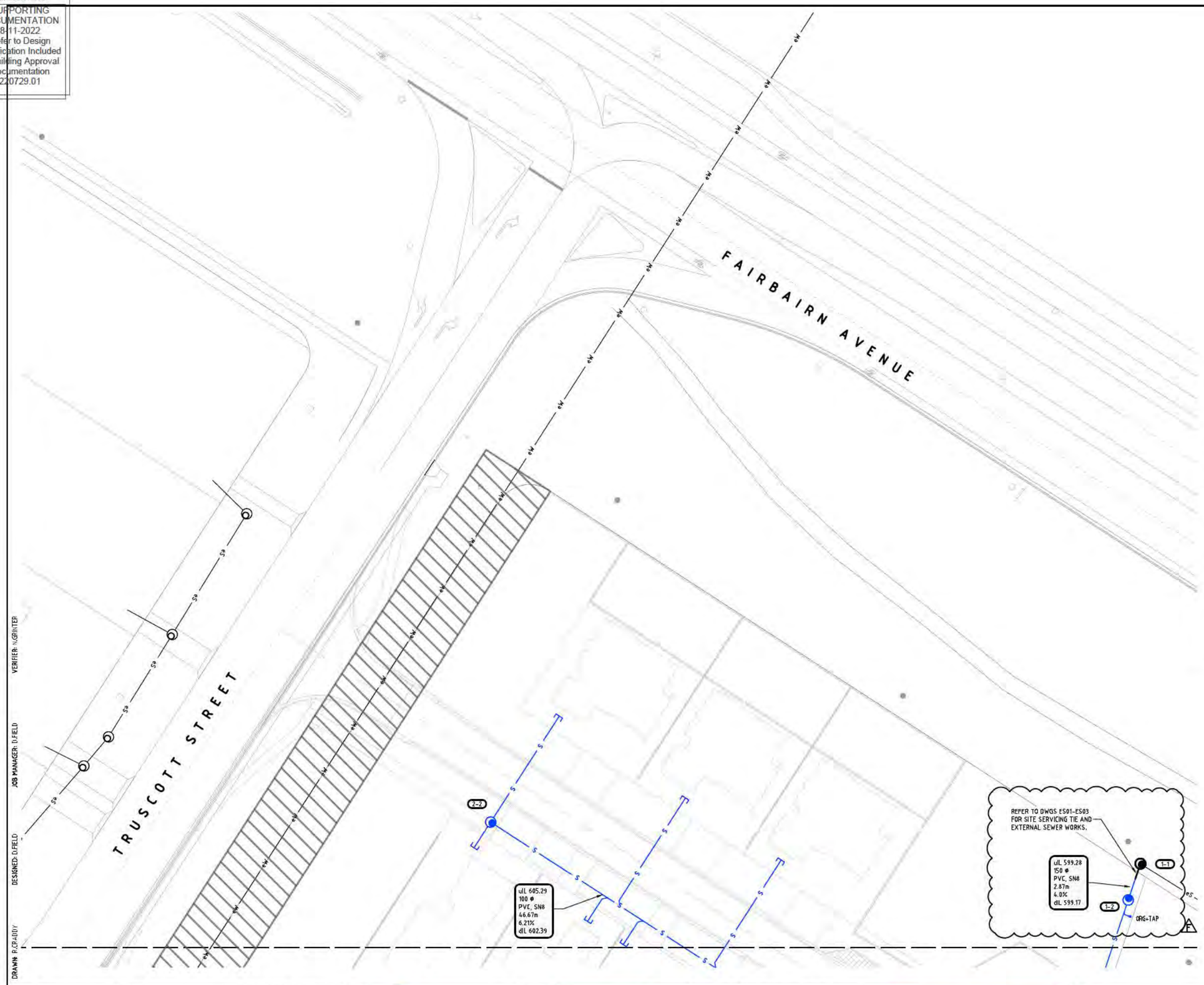
PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
SEWER PLAN
KEY PLAN
SHEET 1 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C180
REVISION: F
DRAWING SHEET SIZE = A1

BCA certifiers
ABN: 58 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



LEGEND

EXISTING SERVICES

- eS — SEWER MAIN
- SEWER MANHOLE HOLE

PROPOSED SERVICES

- S — SANITARY DRAIN
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D
- SEWER MANHOLE WITH EXTERNAL DROP DOWN STRUCTURE REFER TO ICON WATER STANDARD DRAWING SD-2202-D
- SEWER TIE CAP - REFER TO DWG. C180 NOTE 1
- ORG + TAP — OVERFLOW RELIEF GULLY WITH TAP OVER - REFER TO DWG. C180 NOTE 3
- S — SEWER MAIN (EXTERNAL)
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D (EXTERNAL)
- 10m WIDE WATER EASEMENT

SEWER SETOUT

POINT #	ELEVATION	EASTING	NORTHING	STRUCTURE TYPE
1.1	600.89	213977.790	603246.664	1050 MANHOLE
1.2	601.03	213976.198	603241.923	1050 MANHOLE
1.3	603.15	213968.518	603219.048	1050 MANHOLE
1.4	603.07	213956.541	603210.866	1050 MANHOLE
1.5	604.78	213948.961	603188.287	1050 MANHOLE EXTERNAL VERTICAL DROP
1.6	608.44	213931.138	603135.201	1050 MANHOLE
1.7	610.48	213921.240	603119.906	1050 MANHOLE EXTERNAL VERTICAL DROP
1.8	610.48	213901.556	603124.807	1050 MANHOLE
2.1	603.70	213932.062	603226.720	1050 MANHOLE
2.2	607.80	213892.887	603252.092	1050 MANHOLE
3.1	607.84	213918.572	603196.461	1050 MANHOLE EXTERNAL VERTICAL DROP
3.2	607.95	213909.709	603172.972	1050 MANHOLE
3.3	607.99	213888.023	603169.699	1050 MANHOLE
3.4	611.42	213870.782	603100.588	1050 MANHOLE
3.5	611.92	213879.024	603087.947	1050 MANHOLE
3.6	612.51	213897.929	603083.262	1050 MANHOLE
4.1	608.70	213861.131	603222.879	1050 MANHOLE
5.1	608.83	213858.551	603192.388	1050 MANHOLE

VERIFIER: N.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: D.FIELD
DRAWN: R.CRAIDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	CONSTRUCTION	RC		DF	09.04.21
B	CONSTRUCTION v2	RC	NG	DF	21.05.21
C	CONSTRUCTION v3	RC	NG	DF	29.04.22
D	CONSTRUCTION v4	KPVK	NG	DF	26.06.22
E	BUILDING APPROVAL	BC	DF	KPVK	13.07.22
F	BUILDING APPROVAL	JC	KPVK	DF	21.07.22

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close CAMPBELL
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0 2.5 5.0 7.5 10.0 12.5m PLAN
SCALE 1:250 @ A1

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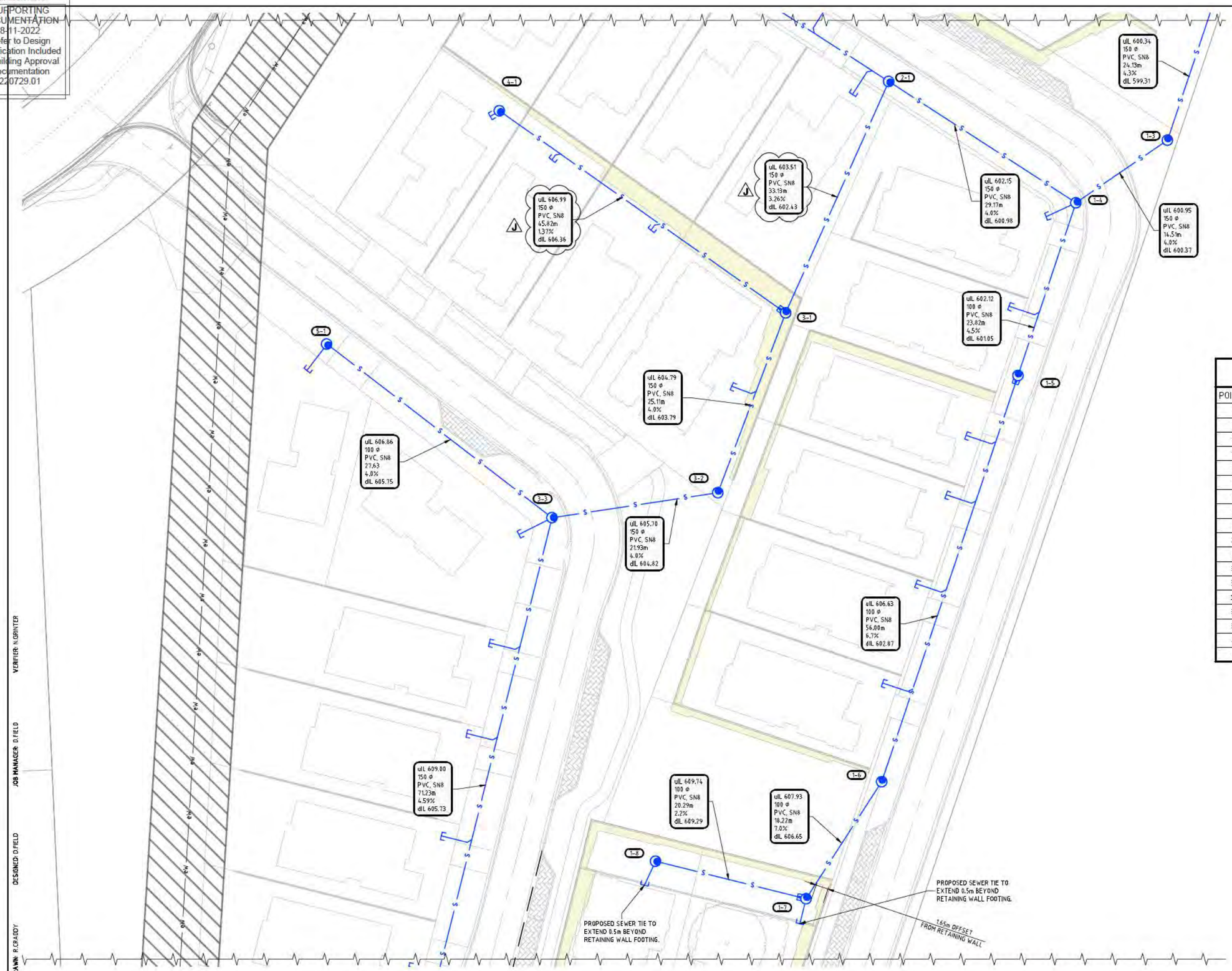
Ph (02) 6285 1822 Fax (02) 6285 1803
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: SEWER PLAN
SHEET 2 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C181
REVISION: F
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



LEGEND

EXISTING SERVICES

- SEWER MAIN
- SEWER MANHOLE HOLE

PROPOSED SERVICES

- SANITARY DRAIN
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D
- SEWER MANHOLE WITH EXTERNAL DROP DOWN STRUCTURE REFER TO ICON WATER STANDARD DRAWING SD-2202-D
- SEWER TIE CAP - REFER TO DWG. C180 NOTE 1
- ORG + TAP — OVERFLOW RELIEF GULLY WITH TAP OVER - REFER TO DWG. C180 NOTE 3
- SEWER MAIN (EXTERNAL)
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D (EXTERNAL)
- 10m WIDE WATER EASEMENT

SEWER SETOUT

POINT #	ELEVATION	EASTING	NORTHING	STRUCTURE TYPE
1.1	600.89	213977.790	603246.664	1050 MANHOLE
1.2	601.03	213976.198	603241.923	1050 MANHOLE
1.3	603.15	213968.518	603219.048	1050 MANHOLE
1.4	603.07	213956.541	603210.866	1050 MANHOLE
1.5	604.78	213948.961	603188.287	1050 MANHOLE EXTERNAL VERTICAL DROP
1.6	608.44	213931.138	603135.201	1050 MANHOLE
1.7	610.48	213921.240	603119.906	1050 MANHOLE EXTERNAL VERTICAL DROP
1.8	610.48	213901.556	603124.807	1050 MANHOLE
2.1	603.70	213932.062	603226.720	1050 MANHOLE
2.2	607.80	213892.887	603252.092	1050 MANHOLE
3.1	607.84	213918.572	603196.461	1050 MANHOLE EXTERNAL VERTICAL DROP
3.2	607.95	213909.709	603172.972	1050 MANHOLE
3.3	607.99	213888.023	603169.699	1050 MANHOLE
3.4	611.42	213870.782	603100.586	1050 MANHOLE
3.5	611.92	213879.024	603087.947	1050 MANHOLE
3.6	612.51	213897.929	603083.262	1050 MANHOLE
4.1	608.70	213881.131	603222.879	1050 MANHOLE
5.1	608.83	213858.551	603192.388	1050 MANHOLE

VERIFIER: N.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: D.FIELD
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
E	CONSTRUCTION v5	RC	NG	DF	29.04.22
F	CONSTRUCTION v4	KPVK	NG	DF	26.06.22
G	CONSTRUCTION v5	RC	NG	DF	06.07.22
H	BUILDING APPROVAL	BC	DF	KPVK	13.07.22
I	BUILDING APPROVAL	JC	KPVK	DF	21.07.22
J	RFI RESPONSE	RC		DF	29.07.22

CLIENT: DHA Defence Housing Australia

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0 2.5 5.0 7.5 10.0 12.5m PLAN SCALE 1:250 @ A1

NORTHROP
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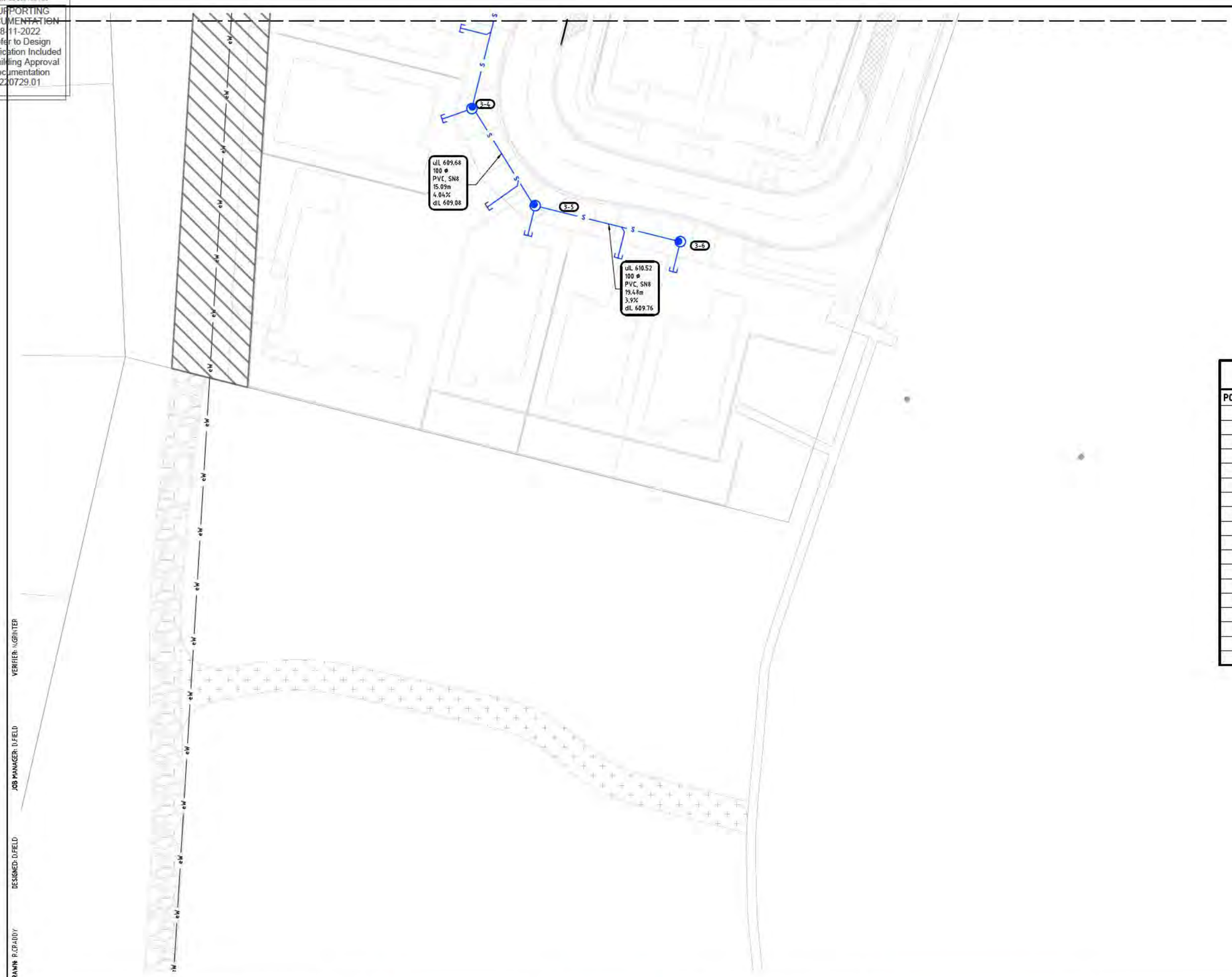
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1883
Email canberra@northrop.com.au ABN 81 054 433 900

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: SEWER PLAN
SHEET 3 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C182
REVISION: J
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



LEGEND

EXISTING SERVICES

- SEWER MAIN
- SEWER MANHOLE HOLE

PROPOSED SERVICES

- SANITARY DRAIN
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D
- SEWER MANHOLE WITH EXTERNAL DROP DOWN STRUCTURE REFER TO ICON WATER STANDARD DRAWING SD-2202-D
- SEWER TIE CAP – REFER TO DWG. C180 NOTE 1
- DRG + TAP — OVERFLOW RELIEF GULLY WITH TAP OVER – REFER TO DWG. C180 NOTE 3
- SEWER MAIN (EXTERNAL)
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D (EXTERNAL)
- 10m WIDE WATER EASEMENT

SEWER SETOUT

POINT #	ELEVATION	EASTING	NORTHING	STRUCTURE TYPE
1.1	600.89	213977.790	603246.664	1050 MANHOLE
1.2	601.03	213976.198	603241.923	1050 MANHOLE
1.3	603.15	213968.518	603219.048	1050 MANHOLE
1.4	603.07	213956.541	603210.866	1050 MANHOLE
1.5	604.78	213948.961	603188.287	1050 MANHOLE EXTERNAL VERTICAL DROP
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3.5	611.92	213879.024	603087.947	1050 MANHOLE
3.6	612.51	213897.929	603083.262	1050 MANHOLE
4.1	608.70	213881.131	603222.879	1050 MANHOLE
5.1	608.83	213858.551	603192.388	1050 MANHOLE

DRAWN: R.CRAIDY DESIGNED: D.FIELD JOB MANAGER: D.FIELD VERIFIER: N.GRINTER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	CONSTRUCTION	RC		DF	09.04.21
B	CONSTRUCTION v2	RC	NG	DF	21.05.21
C	CONSTRUCTION v3	RC	NG	DF	29.04.22
D	CONSTRUCTION v4	KPVK	NG	DF	26.06.22
E	BUILDING APPROVAL	BC	DF	KPVK	13.07.22
F	BUILDING APPROVAL	JC	KPVK	DF	21.07.22

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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0 2.5 5.0 7.5 10.0 12.5m PLAN
SCALE 1:250 @ A1

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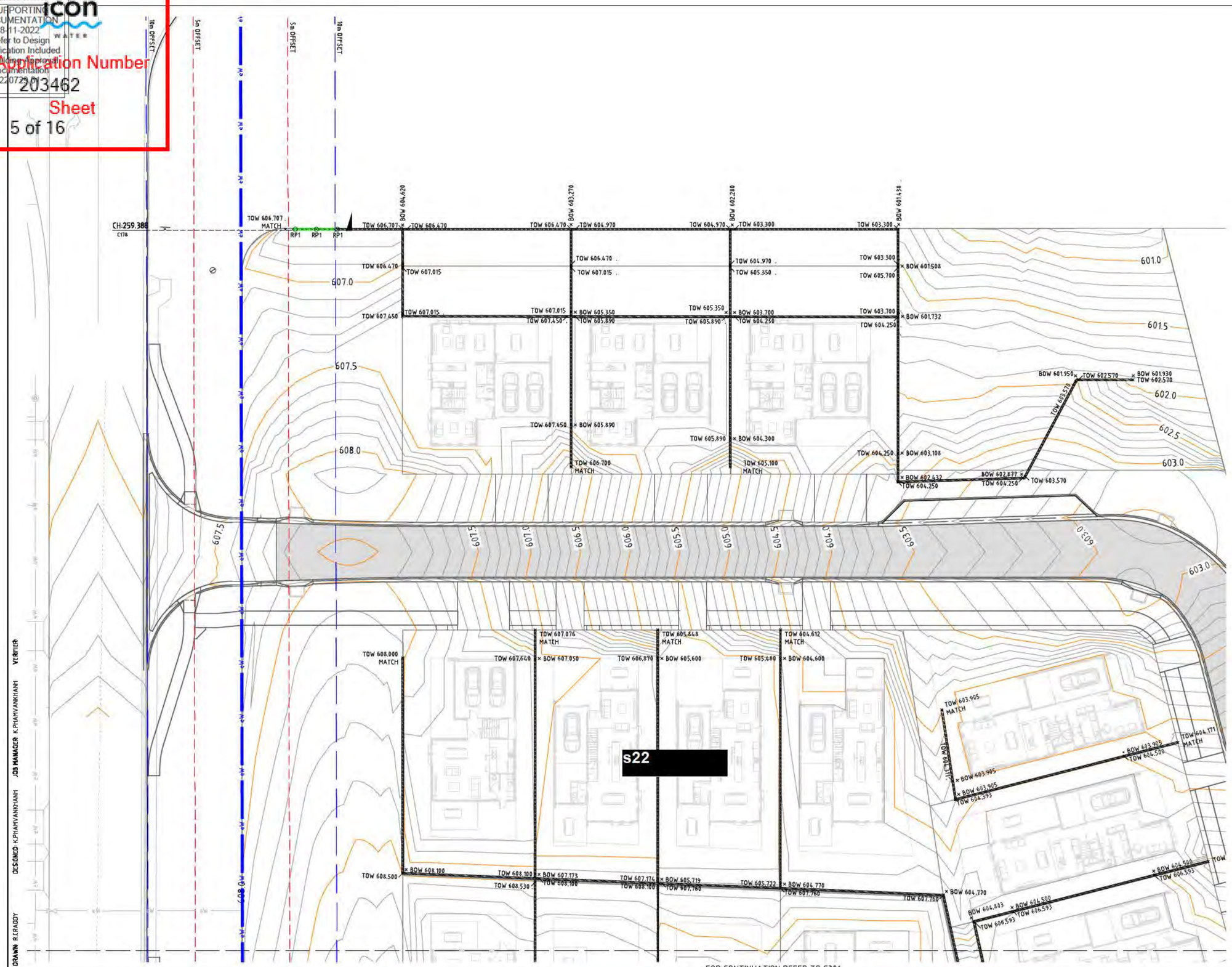
PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: SEWER PLAN
SHEET 4 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C183
REVISION: F
DRAWING SHEET SIZE = A1

BCA certifiers
ABN: 58 119 755 798
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation 22072201
Application Number
203462
Sheet
5 of 16

icon WATER



LEGEND

- WATER MAIN
- ø1050mm WATER MAIN
- ø1050mm WATER MAIN 5m OFFSET
- ø1050mm WATER MAIN 10m OFFSET
- PROPOSED RETAINING WALL WITHIN 10m OFFSET
- RP1 — PROPOSED RETAINING WALL PIER - REFER TO DWG. C008A FOR DETAILS.
- BOW — BOTTOM OF WALL (FINISHED SURFACE LEVEL)
- TOW — TOP OF WALL (FINISHED SURFACE LEVEL)
- 602.0 — PROPOSED MAJOR CONTOUR (0.5m INTERVAL)
- PROPOSED MAJOR CONTOUR (0.1m INTERVAL)

DRAWN R.CRADDY DESIGNED K.PHAMVANKHANH JOB MANAGER K.PHAMVANKHANH VERIFIER

FOR CONTINUATION REFER TO C301

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia

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0 2 4 6 8 10m PLAN SCALE 1:200 @ A1

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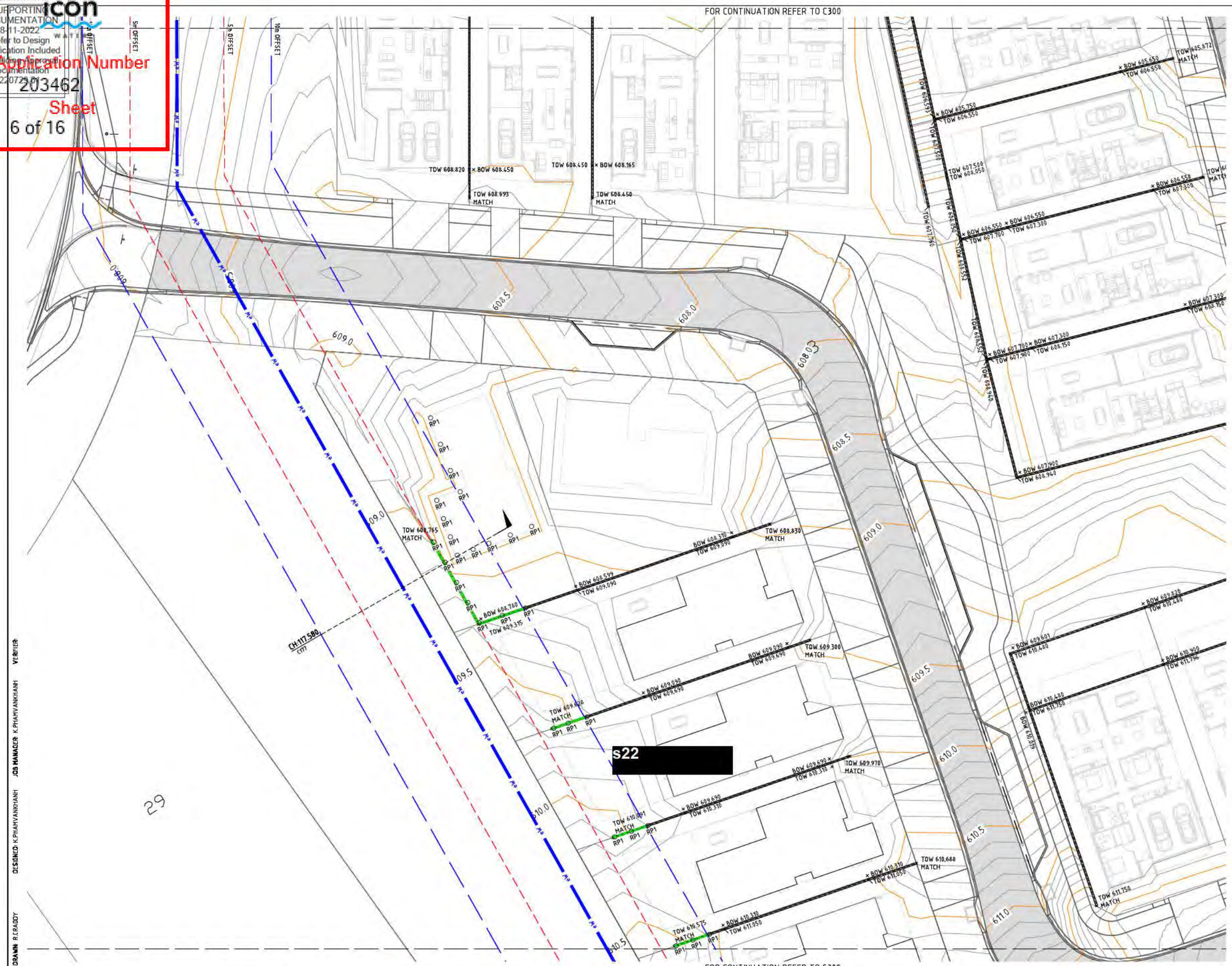
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXISTING DN1050 WATERMAIN AND RETAINING WALL PLAN
SHEET 1 OF 3

JOB NUMBER: CR172699
DRAWING NUMBER: C300
REVISION: 1
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 119 755 798
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
22072201
icon water
Application Number
203462
Sheet
6 of 16



LEGEND

aW	WATER MAIN
eW	ø1050mm WATER MAIN
	ø1050mm WATER MAIN 5m OFFSET
	ø1050mm WATER MAIN 10m OFFSET
	PROPOSED RETAINING WALL WITHIN 10m OFFSET
RP1	PROPOSED RETAINING WALL PIER - REFER TO DWG. C008A FOR DETAILS.
BOW	BOTTOM OF WALL (FINISHED SURFACE LEVEL)
TOW	TOP OF WALL (FINISHED SURFACE LEVEL)
602.0	PROPOSED MAJOR CONTOUR (0.5m INTERVAL)
	PROPOSED MAJOR CONTOUR (0.1m INTERVAL)

DRAWN R.CRADDY DESIGNED K.PHAMVANKHANH JOB MANAGER K.PHAMVANKHANH VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	BUILDING APPROVAL	KPVK		DF	12.07.22

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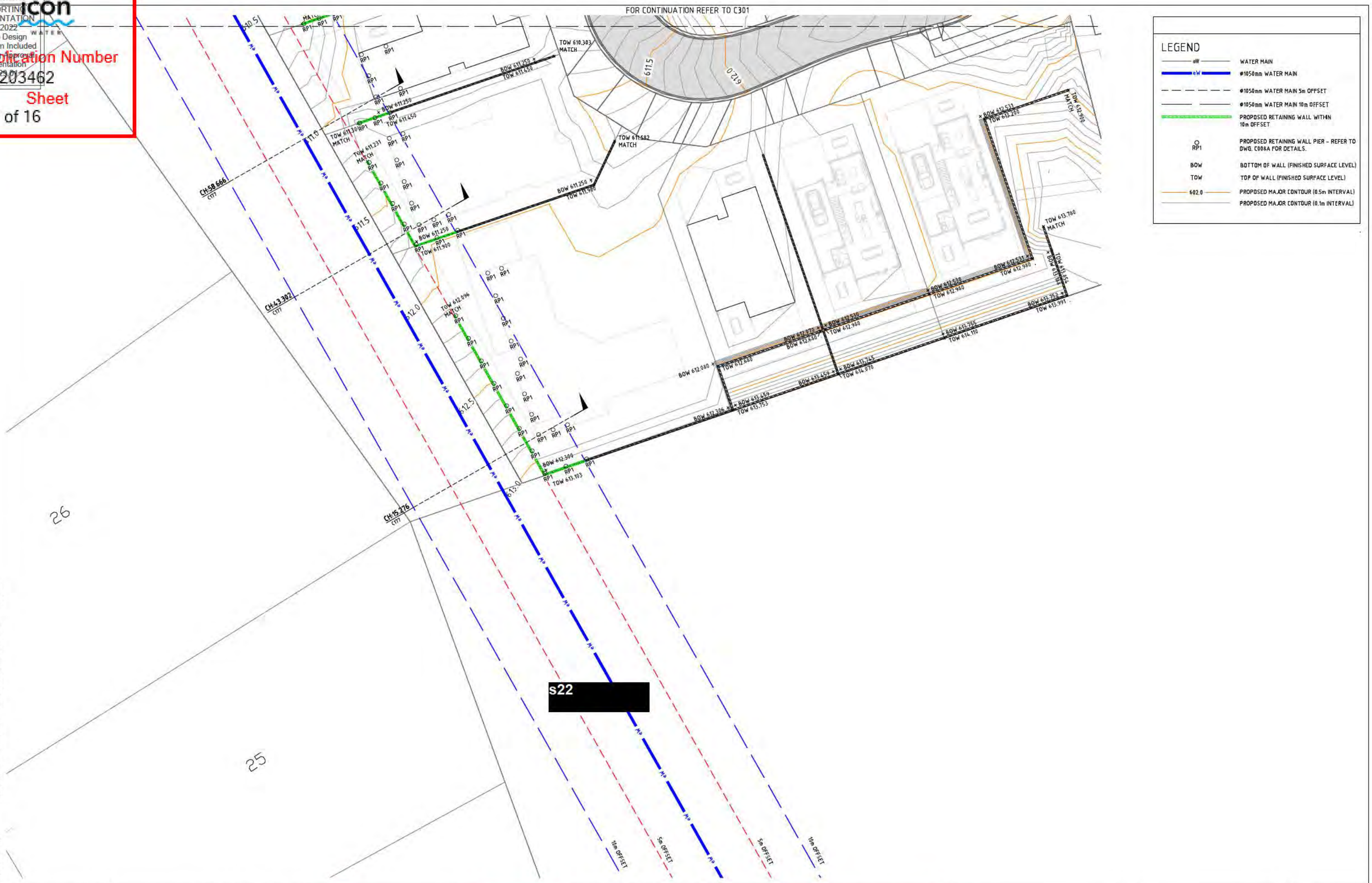
PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
EXISTING DN1050 WATERMAIN AND RETAINING WALL PLAN
SHEET 2 OF 3

JOB NUMBER CR172699
DRAWING NUMBER C301
REVISION 1
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 118 755 798
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
22072201
Application Number
203462
Sheet
7 of 16

icon WATER



DRAWN R.CRAUDDY DESIGNED K.PHAMVANKHANH JOB MANAGER K.PHAMVANKHANH VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	BUILDING APPROVAL	KPVK		DF	12.07.22

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ARCHITECT: Academy Close CAMPBELL

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0 2 4 6 8 10m PLAN
SCALE 1:200 @ A1

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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
EXISTING DN1050 WATERMAIN AND RETAINING WALL PLAN
SHEET 3 OF 3

JOB NUMBER CR172699
DRAWING NUMBER C302
REVISION 1
DRAWING SHEET SIZE = A1

BCA certified
ABN. 58 535 755 724
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

DEFENCE HOUSING AUSTRALIA

ELECTRICAL SERVICES

LEGEND

LIGHTING

G1 — 24W, 3228 LUMENS, 4000K POST-TOP LUMINAIRE WITH ASYMMETRIC, SIDE-THROW BEAM IN BLACK FINISH. MOUNTED BY POST-TOP FITTER ON 4.5M HIGH GALVANISED STEEL POLE. EQUAL TO WE-EF VFL530 LED

POWER

MAIN SWITCHBOARD (MSB)

DISTRIBUTION BOARD (DB)

E — FUSED SERVICE PIT EQUAL TO EVOENERGY STANDARD

COMMUNICATIONS/MATV

PDH — NBNCo. PROPERTY DISTRIBUTION HUB

C — NBNCo. COMMUNICATIONS PIT

CONDUITS/CABLES

E — INDICATIVE ROUTE OF UNDERGROUND ELECTRICAL SERVICE WITHIN HD-UPVC CONDUIT

C — INDICATIVE ROUTE OF UNDERGROUND NBNCo. CONDUITS

HV — EXISTING OVERHEAD HIGH VOLTAGE CABLING

INDICATIVE ROUTE OF STREET LIGHTING CABLING WITHIN HD-UPVC CONDUIT

ABBREVIATIONS

POE POINT OF ENTRY

SPECIFICATION

- THE BUILDER SHALL PROVIDE ALL CUT-OUTS AND ASSOCIATED MAKE GOOD OF WALL AND FLOORS FOR THE INSTALLATION OF LIGHT FITTINGS AND OTHER ELECTRICAL SERVICES.
- IN UNDERTAKING THESE WORKS, THE CONTRACTOR SHALL COORDINATE THE WORKS WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS AND THE WORK OF ALL OTHER TRADES.
- ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL SUPPLY AUTHORITY SERVICE AND INSTALLATION RULES, WORKCOVER (NSW), AS/NZS 3000, AS/NZS 3008, AS/NZS 3439 AND THE CURRENT ISSUE OF THE BUILDING CODE OF AUSTRALIA (BCA). ONLY SKILLED LABOUR SHALL BE EMPLOYED IN THE EXECUTION OF THESE WORKS AND SUCH LABOUR SHALL BE EMPLOYED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ELECTRICAL CONTRACTORS LICENSING ACT.
- THE CONTRACTOR SHALL PROCURE FROM THE RELEVANT AUTHORITIES CERTIFICATES INDICATING THE SATISFACTORY INSTALLATION OF THE ELECTRICAL SERVICES. ALL AUTHORITY FEES AND CHARGES SHALL BE PAID BY THE CONTRACTOR.
- THE CONTRACTOR SHALL VISIT THE SITE DURING THE TENDER PERIOD AND MAKE THEM SELVES AWARE AND INCLUDE IN THEIR SUBMISSION ALL SITE CONDITIONS THAT MAY AFFECT THERE UNDERTAKING OF THE WORKS.
- ALL SUBCIRCUIT WIRING SHALL BE MINIMUM 2.5mm^2 MULTI-STRAND COPPER TWIN AND EARTH; PVC INSULATED AND SHEATHED. ALL CABLING SHALL BE CONCEALED.
- ALL SUBCIRCUIT WIRING SHALL BE 20AMP RATED GENERALLY.
- UNLESS INDICATED OTHERWISE, ALL SUBCIRCUITS SHALL BE LOADED TO A MAXIMUM OF 60% OF THE PROTECTION DEVICE RATING.
- UNLESS INDICATED OTHERWISE, THE NUMBER OF LUMINAIRES CONNECTED TO ANY FINAL SUBCIRCUIT SHALL NOT EXCEED 20.
- UNLESS INDICATED OTHERWISE, THE NUMBER OF GENERAL PURPOSE OUTLETS (GPO'S) CONNECTED TO ANY FINAL SUBCIRCUIT SHALL NOT EXCEED 16 (I.E. 8 DOUBLES).
- PROVIDE SEPARATE DEDICATED CIRCUITS FOR EQUIPMENT AND APPLIANCES SUCH AS HOTWATER UNITS AND MECHANICAL PLANT, CAPTIVE OUTLETS AND ISOLATORS FOR THE CONNECTION OF FIXED EQUIPMENT.
- UNLESS NOMINATED OTHERWISE, ALL GENERAL PURPOSE OUTLETS AND SWITCHES SHALL BE CLIPSAL 2000 SERIES OR APPROVED EQUAL AND BE WHITE IN COLOUR.
- THE FINISHED INSTALLATION LOADS SHALL BE EQUALLY BALANCED ACROSS ALL PHASES OF THE INSTALLATION.
- EQUIPMENT AND CABLING THAT IS NOT TO BE RE-USED IN THE NEW INSTALLATION SHALL BE MADE SAFE, DISCONNECTED AND REMOVED BACK TO NEAREST POINT OF SUPPLY, SUCH AS DISTRIBUTION BOARD OR FLOOR DISTRIBUTOR.
- THE CONTACTOR SHALL SUPPLY AND INSTALL NEW LUMINAIRES AS INDICATED ON THE DRAWINGS. THE INSTALLATION OF LUMINAIRES SHALL INCLUDE ALL ASSOCIATED CONTROLS AND ALL NECESSARY MOUNTING BRACKETS, HARDWARE AND TRIMMINGS ETC. FOR THE INSTALLATION OF LUMINAIRES.
- GENERALLY ALL LIGHT SHALL BE CONTROLLED BY RECESSED 360 DEGREE MOTION DETECTORS THAT INCLUDE A MINIMUM OF 30 MINUTE DELAY OFF TIME.
- THE CONTRACTOR SHALL SUPPLY AND INSTALL NEW EMERGENCY AND EXIT LIGHTS AND, WHERE NECESSARY ASSOCIATED TESTING FACILITIES.
  EXIT SIGNS SHALL BE COMPLETE WITH THE 'RUNNING MAN' LEGEND.
  EXISTING EXIT SIGNS RE-USED FOR THIS INSTALLATION SHALL HAVE THEIR LEGENDS CHANGED TO 'RUNNING MAN' LEGEND.
  LABEL ALL EMERGENCY LIGHTS AND EXIT SIGNS AND CARRY OUT A 12 MONTH TEST ON THE COMPLETED INSTALLATION AND RECORD THE RESULTS IN THE LOG BOOK. WHERE EXISTING, THE ONSITE LOG BOOK SHALL BE UPDATED. PROVIDE NEW LOG BOOK WHERE NO LOG BOOK EXISTS ON SITE.
- ALL NEW LUMINAIRES SHALL BE CLEANED PRIOR TO PRACTICAL COMPLETION.
- EXISTING LUMINAIRES REMOVED AND NOT RE-USED FOR THE WORKS SHALL BE RETURNED TO THE BUILDER OR OWNER.
- UNLESS INDICATED OTHERWISE, SUPPLY TO THIS INSTALLATION SHALL BE TAKEN FROM THE EXISTING INSTALLATION. THE CONTRACTOR SHALL INCLUDE TO MODIFY THE EXISTING BASEMENT HOUSE LIGHT AND POWER DISTRIBUTION BOARD TO ACCOMMODATE THE NEW WORKS. PROVIDE NEW APPROPRIATELY RATED SINGLE POLE RESIDUAL CURRENT CIRCUIT BREAKERS FOR ALL NEW CIRCUITS.
- WHERE WORK IS TO BE UNDERTAKEN ON A SWITCHBOARD THAT DOES NOT HAVE EXISTING INDIVIDUAL CIRCUIT RCD PROTECTION INSTALLED, THE CONTRACTOR SHALL ALLOW TO REPLACE ALL FINAL SUB CIRCUIT BREAKERS WITH NEW SINGLE POLE RCD'S OF THE SAME MANUFACTURE AS THE CIRCUIT BREAKERS WITHIN THE EXISTING SWITCHBOARD.
- PROVIDE NEW TYPED UPDATED DISTRIBUTION BOARD SCHEDULE AT THE DISTRIBUTION BOARD.
- PRIOR TO INSTALLING PLANT AND EQUIPMENT ON SITE, THE CONTRACTOR SHALL VERIFY THAT ALL PLANT AND EQUIPMENT FITS WITHIN THE ALLOCATED SPACE AND THAT APPROPRIATE ACCESS FOR THE INSTALLATION OF EQUIPMENT IS AVAILABLE.
- THE CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL OUTLETS WITH THE LATEST EDITIONS OF THE ARCHITECTS DETAILED ELEVATIONS, SECTIONS AND JOINERY DETAILS.
- THE CONTRACTOR SHALL PROVIDE ALL CABLE ENCLOSURE AND SUPPORT SYSTEMS, INCLUDING CABLE BASKETS, CATENARY WIRES, CONDUITS AND SKIRTING DUCTS FOR THE WORKS.
- THE CONTRACTOR SHALL PROVIDE APPROPRIATELY RATED IP56 RATED ISOLATORS FOR ALL PERMANENTLY CONNECTED EQUIPMENT INSTALLED BY OTHER TRADES. FINAL CONNECTIONS TO EQUIPMENT WILL BE UNDERTAKEN BY THE RESPECTIVE TRADE CONTRACTOR. THE CONTRACTOR SHALL CONFIRM THE SIZE AND LOCATION OF THE ISOLATOR REQUIRED WITH THE RESPECTIVE TRADE CONTRACTOR, PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL OBTAIN, IN WRITING, STRUCTURAL ENGINEERS APPROVAL PRIOR TO UNDERTAKING ANY CHASING OR CORING OF EXISTING STRUCTURAL BUILDING ELEMENTS. PAY ALL COSTS ASSOCIATED WITH GAINING STRUCTURAL ENGINEERS APPROVAL.
- ALTERNATIVE EQUIPMENT SHALL NOT BE INSTALLED UNLESS PRIOR WRITTEN APPROVAL HAS BEEN GRANTED BY THE SUPERINTENDENT OR THE PRINCIPAL. ANY SUCH APPROVAL MAY BE CONDITIONAL.
- PRIOR TO PRACTICAL COMPLETION THE CONTRACTOR SHALL PROVIDE 'AS-BUILT' DRAWINGS IN AUTOCAD VERSION 2010 (OR LATER VERSION).
- THE CONTRACTOR SHALL WARRANT THE INSTALLATION AGAINST FAULTY WORKMANSHIP AND MATERIALS FOR A PERIOD OF TWELVE (12) MONTHS FROM THE DATE THAT PRACTICAL COMPLETION IS GRANTED.
- ALL EQUIPMENT AND OUTLETS SHALL BE LABELLED BY MEANS OF MACHINE PRINTED CLEAR ADHESIVE LABELS.
- TEST AND COMMISSION THE INSTALLATION AND INCLUDE TEST RESULTS IN THE MAINTENANCE MANUAL. TESTS SHALL INCLUDE INSULATION RESISTANCE, EARTH RESISTANCE, POLARITY, CONTINUITY AND PHASE ROTATION TESTS.

SAFETY IN DESIGN

- PURSUANT TO REGULATION 295(1) OF THE WORK HEALTH AND SAFETY (WHS) REGULATIONS 2011, SO FAR AS WE ARE REASONABLY AWARE AND BASED ON THE DESIGNS FOR WHICH WE HAVE BEEN COMMISSIONED, WE NOTE THE FOLLOWING HAZARDS RELATING TO THE DESIGN OF THE STRUCTURE SHOWN ON THESE DRAWINGS THAT:
  (a. CREATE A RISK TO THE HEALTH OR SAFETY OF PERSONS WHO ARE TO CARRY OUT ANY CONSTRUCTION WORK ON THE STRUCTURE OR PART; AND
  (b. ARE ASSOCIATED ONLY WITH THE PARTICULAR DESIGN AND NOT WITH OTHER DESIGNS OF THE SAME TYPE OF STRUCTURE.

RESIDUAL RISK	RECOMMENDED ACTIONS
ELECTROCUTION & ELECTRIC SHOCK	CONTRACTOR TO IMPLEMENT INDUSTRY GOOD PRACTICE SHUTDOWN PROCEDURES AND SAFE WORK METHOD STATEMENTS - NO LIVE WORKS - ISOLATION AND LOCK OUT TAGS ON ALL CIRCUITRY ASSOCIATED WITH WORKS - TESTING FOR ISOLATION
EXPOSURE TO ASBESTOS	ALL STAFF INVOLVED IN WORKS SHALL UNDERTAKE ASBESTOS AWARENESS TRAINING AND HAVE READ THE SITE ASBESTOS REGISTER ENGAGE A SPECIALIST ASBESTOS HANDLER TO REMOVE ASBESTOS IF REQUIRED
WORKING AT HEIGHTS	CONTRACTOR TO IMPLEMENT INDUSTRY GOOD PRACTICE AND SAFE WORK METHOD STATEMENTS
HOISTING HEAVY EQUIPMENT	CONTRACTOR TO IMPLEMENT INDUSTRY GOOD PRACTICE AND SAFE WORK METHOD STATEMENTS

- THE RISKS IDENTIFIED IN THIS SECTION ARE NOT AN ASSESSMENT OF ALL HAZARDS, AND DO NOT RELIEVE OTHER PARTIES OR STAKEHOLDERS OF THEIR RESPONSIBILITY UNDER THE WHS ACT 2011.
- HAZARDS WHICH ARE TYPICAL WORKPLACE HAZARDS MUST BE MANAGED BY PERSONS IN CONTROL OF THE WORKPLACE THROUGH A WHS SYSTEM TO MANAGE THE NORMAL RISK ASSOCIATED WITH CONSTRUCTION USE AND MAINTENANCE OF THE BUILDING.
- IF ANY ELEMENT UNDER OUR DESIGN PRESENTS AN UNMANAGEABLE RISK IN RESPECT TO SAFETY, THE MATTER SHALL BE REFERRED TO NORTHROP CONSULTING ENGINEERS THROUGH THE APPROPRIATE CHANNELS FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.

DRAWING SCHEDULE

NUMBER	TITLE
E001	COVER SHEET - LEGEND, SPECIFICATION AND DRAWING SCHEDULE
E002	SITE PLAN
E300	SINGLE LINE DIAGRAM

VERIFIER:
JOB MANAGER: KS
DESIGNED: PK
DRAWN: GS

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	GS		PK	19.03.18
2	PRELIMINARY	GS		LR	17.08.18
3	WORKS APPROVAL	EL		KS	29.05.20
A	FOR CONSTRUCTION	EC	KS	KS	25.05.21

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL
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NOT TO SCALE

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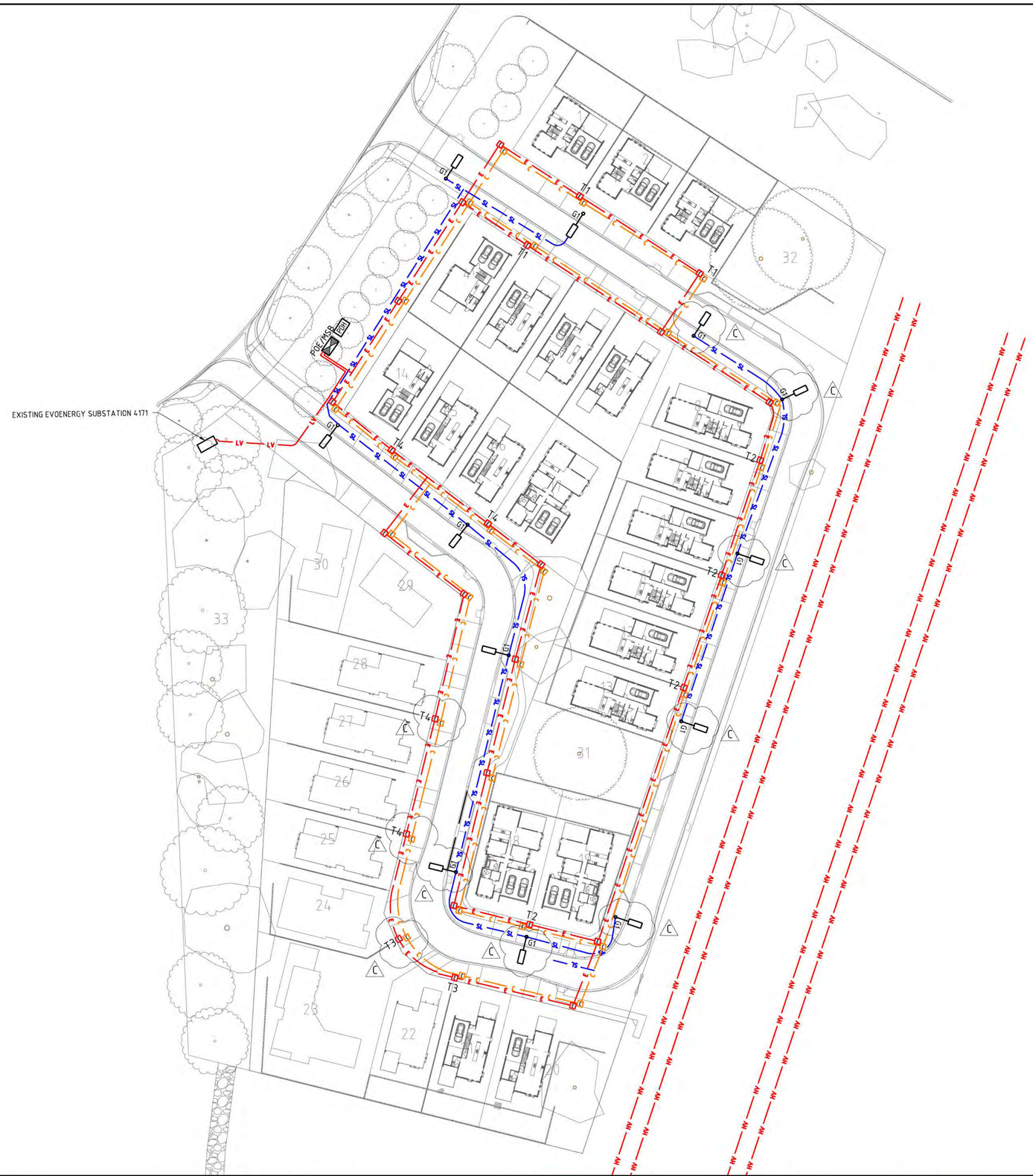
PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: ELECTRICAL SERVICES
COVER SHEET
LEGEND, SPECIFICATION AND DRAWING SCHEDULE

JOB NUMBER: CR172699
DRAWING NUMBER: E001
REVISION: A
DRAWING SHEET SIZE = A1

BCA certifiers
EBN. 06 139 793 754

SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01



LEGEND

LIGHTING

LP — 24W, 3228 LUMENS, 4000K POST-TOP LUMINAIRE WITH ASYMMETRIC, SIDE-THROW BEAM IN BLACK FINISH. MOUNTED BY POST-TOP FITTER ON 4.5M HIGH GALVANISED STEEL POLE. EQUAL TO WE-EF VFL530 LED

POWER

- MAIN SWITCHBOARD (MSB)
- DISTRIBUTION BOARD (DB)
- E — FUSED SERVICE PIT EQUAL TO EVOENERGY STANDARD

COMMUNICATIONS/MATV

- PDH — NBNCo. PROPERTY DISTRIBUTION HUB
- C — NBNCo. COMMUNICATIONS PIT

CONDUITS/CABLES

- E — INDICATIVE ROUTE OF UNDERGROUND ELECTRICAL SERVICE WITHIN HD-UPVC CONDUIT
- C — INDICATIVE ROUTE OF UNDERGROUND NBNCo. CONDUITS
- HV — EXISTING OVERHEAD HIGH VOLTAGE CABLING
- SL — INDICATIVE ROUTE OF STREET LIGHTING CABLING WITHIN HD-UPVC CONDUIT

ABBREVIATIONS

POE POINT OF ENTRY

THIS LIGHTING DESIGN MEETS THE REQUIREMENTS OF CATEGORY 11b AND 12 IN ACCORDANCE WITH AS/NZS 1158 - LIGHTING FOR ROADS AND PUBLIC SPACES.

THIS LIGHTING DESIGN COMPLIES WITH THE REQUIREMENTS OF AS 4282 - CONTROL OF OBTRUSIVE INTRUSIVE EFFECTS OF OUTDOOR LIGHTING.

DRAWN: EL
DESIGNED: PK
JOB MANAGER: KS
VERIFIER: KS

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	FOR CONSTRUCTION	EC	KS	KS	25.05.2021
B	FOR CONSTRUCTION	EL	KS	KS	29.04.2022
C	FOR CONSTRUCTION	RC	KS	KS	14.06.2022

CLIENT: DHA Defence Housing Australia

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0 5000 10000 15000 20000 25000

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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

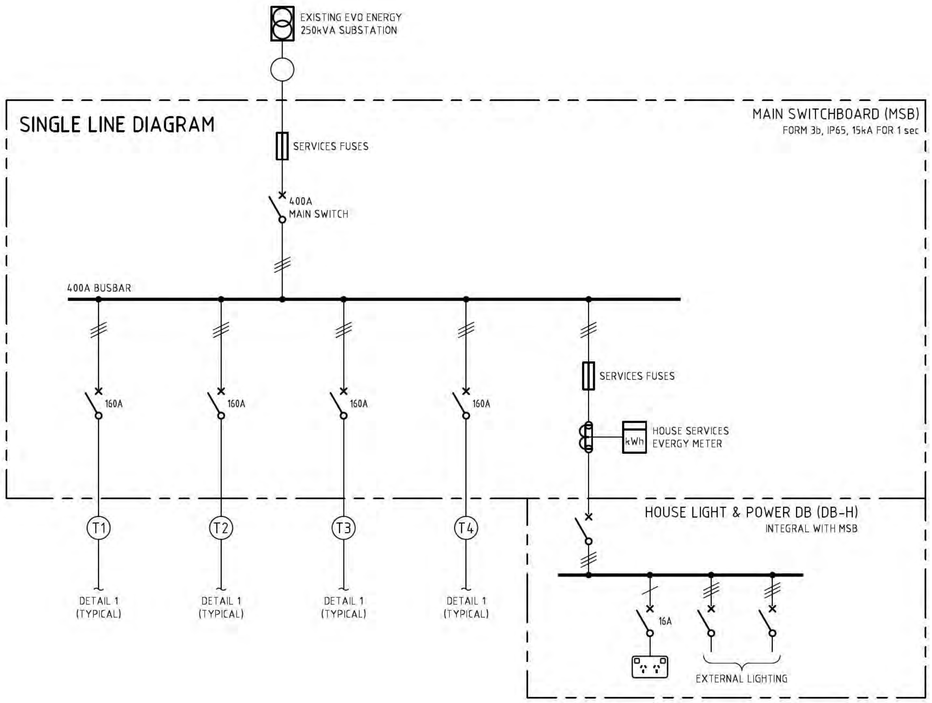
DRAWING TITLE
ELECTRICAL SERVICES
SITE PLAN

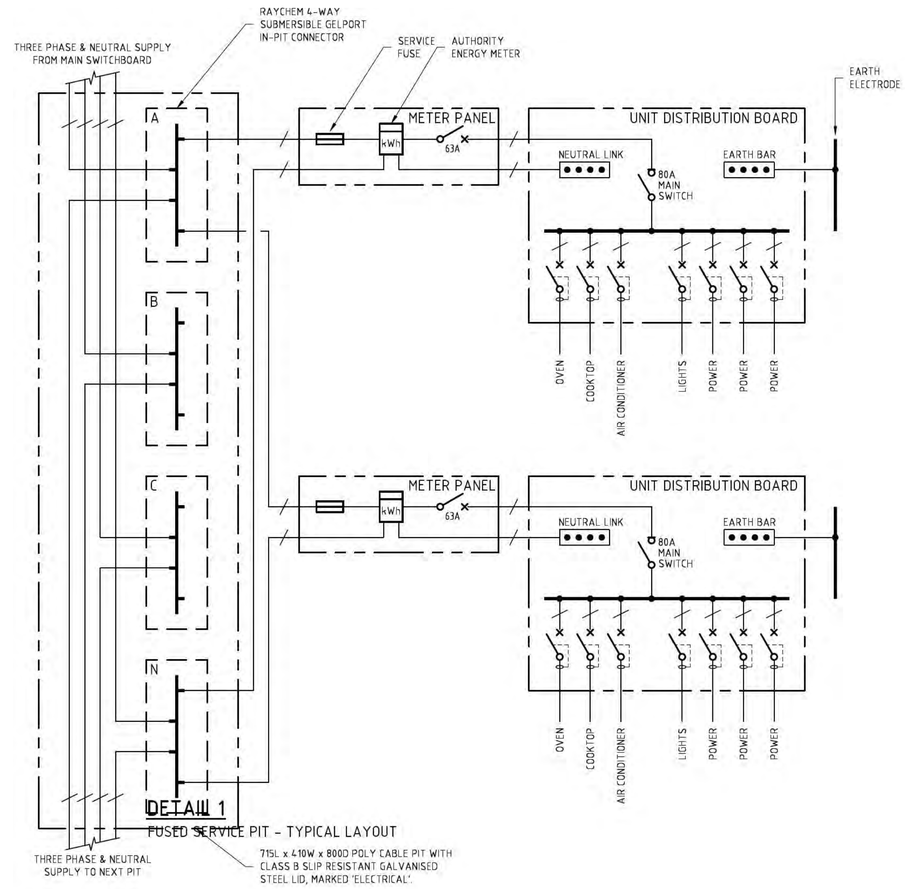
JOB NUMBER: CR172699
DRAWING NUMBER: E002
REVISION: C
DRAWING SHEET SIZE = A1

BCA certified
EAN: 9420170175754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

NOTE:

1. FOR LEGEND REFER DRAWING E001.





DETAIL 1
FUSED SERVICE PIT - TYPICAL LAYOUT

VERIFIER:
JOB MANAGER: KS
DESIGNED: PK
DRAWN: EL

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	WORKS APPROVAL	EL		KS	29.05.20
A	FOR CONSTRUCTION	EL	KS	KS	25.05.21

CLIENT: DHA Defence Housing Australia
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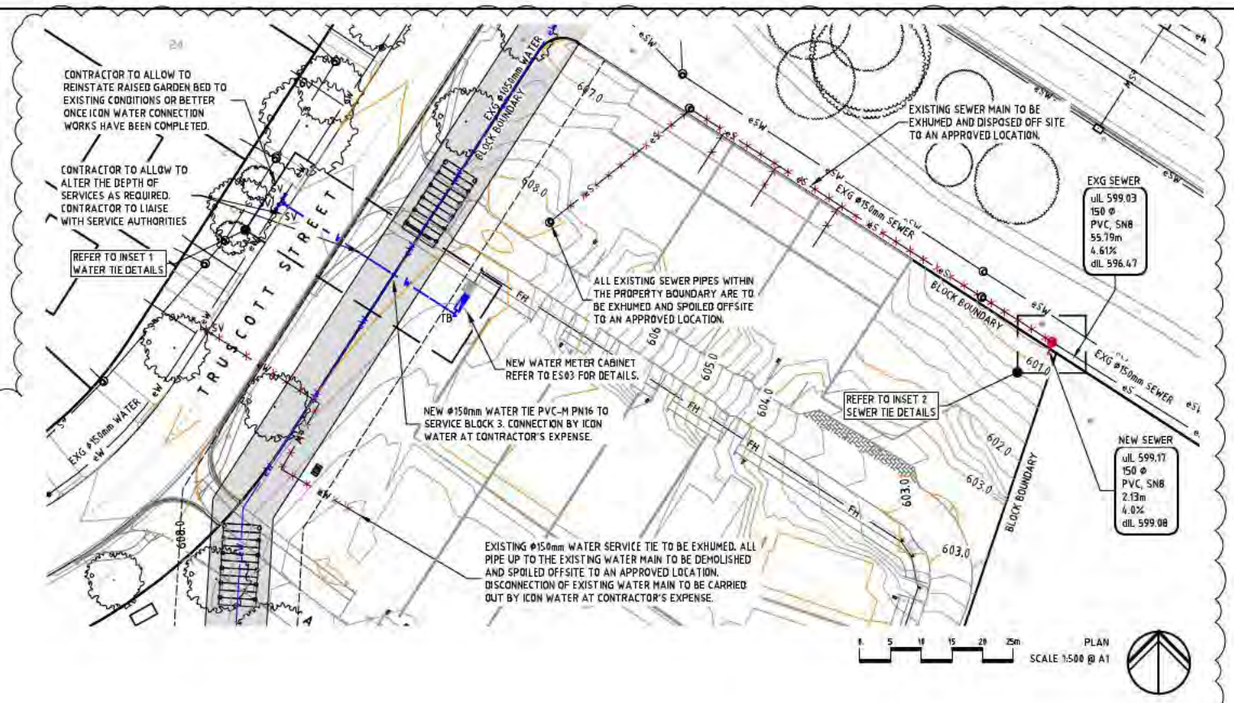
PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
ELECTRICAL SERVICES
SINGLE LINE DIAGRAM

JOB NUMBER: CR172699
DRAWING NUMBER: E300
REVISION: A
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 158 755 794
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

LOCALITY PLAN - NOT TO SCALE



LEGEND

EXISTING SERVICES

- eW — Φ1050 WATER MAIN
- eW — OTHER WATER MAIN/ TIES
- FIRE HYDRANT
- STOP VALVE
- eS — SEWER MAIN/ TIES
- SEWER MAINTENANCE HOLE
- VERGE TREE
- EXISTING CONTOUR (1m INTERVAL)

WARNING:
EXISTING SERVICES SHOWN ARE BASED ON INFORMATION PROVIDED BY SERVICE AUTHORITIES AND ARE ESTIMATES ONLY. UNDER NO CIRCUMSTANCES SHOULD THE LOCATIONS OF SERVICES SHOWN ON THIS PLAN BE RELIED UPON FOR ON SITE WORK. ALL INFORMATION MUST BE CONFIRMED IN THE FIELD.

NEW SERVICES

- W — WATER TIE
- S — SEWER MAIN
- SEWER MAINTENANCE HOLE
- X X X X X X — EXISTING SERVICE TO BE EXHUMED
- WATER METER CABINET (REFER TO ES03 FOR DETAILS)
- SV — DN150 STOP VALVE
- TB — THRUST BLOCK IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-5002-D AND SD-5003-D
- PROTECTION BRIDGE OVER EXISTING 1050DN WATER MAIN - REFER TO STRUCTURAL ENGINEERS DWGS FOR DETAIL
- 602.0 — DESIGN MAJOR CONTOUR (1m INTERVAL)
- DESIGN MINOR CONTOUR (0.2m INTERVAL)
- 10m WIDE WATER EASEMENT
- Φ1050mm WATER MAIN OFFSET (10m FROM PIPE CENTRELINE)

GENERAL NOTES

1. ALL WORK ON ICON WATER'S WATER SUPPLY AND SEWER MAINS TO BE CARRIED OUT IN ACCORDANCE WITH CURRENT ICON WATER'S DESIGN AND CONSTRUCTION STANDARDS, RELEASED 30 AUGUST 2019. ALL WORK ON STORMWATER MAINS TO BE CARRIED OUT IN ACCORDANCE WITH DESIGN STANDARDS FOR URBAN INFRASTRUCTURE WORKS.
2. CONNECTIONS AND OR DISCONNECTIONS OF SEWER AND WATER AT THE MAIN TO BE MADE BY ICON WATER AT THE CONTRACTORS EXPENSE. THE CONTRACTOR IS TO EXPOSE THE MAIN AT THE LOCATION OF THE CONNECTION/DISCONNECTION IN PREPARATION FOR THE WORK BY ICON WATER. ALL EXCAVATION IN THE VICINITY OF MAINS IS TO BE CARRIED OUT BY HAND.
3. ALTHOUGH THE POSITION OF EXISTING UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM AVAILABLE RECORDS, THE CONTRACTOR SHALL CONFIRM THE DEPTH AND LOCATION OF ALL SERVICES ON SITE BEFORE COMMENCING EXCAVATIONS.
4. CONTRACTOR TO CONFIRM DEPTH OF SEWER AND STORMWATER TIE POINTS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ADVISE THE DESIGN ENGINEER IF NOT IN ACCORDANCE WITH THE PLAN.
5. ALL LEVELS TO AUSTRALIAN HEIGHT DATUM (AHD). ALL COORDINATES ARE BASED ON THE CANBERRA LOCAL GRID SYSTEM.
6. ANY NON-METALLIC WATER SERVICE IS TO BE INSTALLED WITH TRACER WIRE AND TESTED.
7. THE CONTRACTOR MUST VISIT THE SITE OF WORKS BEFORE TENDERING AND MAKE ALLOWANCES ON HIS TENDER FOR ALL TOPOGRAPHIC CONSTRAINTS AFFECTING THE EXECUTION OF THE WORKS AND THE RESTORATION OF THE SITE.
8. THE CONTRACTOR SHALL REINSTATE ALL DISTURBED SURFACES TO MATCH EXISTING.
9. THE CONTRACTOR MUST SECURE ALL PERMITS, ARRANGE ALL CLEARANCES AND PAY ALL FEE'S REQUIRED TO COMPLETE THE PROJECT, PRIOR TO THE COMMENCEMENT OF WORK.
10. EXCESS EXCAVATED MATERIAL MATERIAL SHALL BE REMOVED FROM THE SITE AND DUMPED AT AN APPROVED SPOIL AREA.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE PREPARATION OF ALL NECESSARY TEMPORARY TRAFFIC MANAGEMENT PLANS AND THEIR APPROVAL.
12. WORK AS EXECUTED DRAWING AND TIE BOOK MUST BE SUBMITTED BEFORE CONNECTION. A REGISTERED DEPOSITED PLAN MUST ALSO BE SUBMITTED WHERE EASEMENTS ARE EXISTING OR NEW ON THE BLOCK. WORK AS EXECUTED DRAWINGS AND TIE BOOK DETAIL (A4 SIZE) ARE TO SHOW DIMENSIONED LOCATIONS OF TAPPING ONTO MAIN, WHERE SERVICE CROSSES FRONT BOUNDARY AND DISTANCE METER IS INSIDE THE BLOCK.
13. PROVISIONAL CERTIFICATE OF OPERATION WILL BE ISSUED WHEN HANDOVER INSPECTION IS PASSED AND ACCEPTABLE WORK AS EXECUTED DRAWING AND TIE BOOK RECORD HAS BEEN COMPLETED AND SUBMITTED TO ICON WATER.

REINSTATEMENT GENERALLY

1. UNLESS OTHERWISE DIRECTED REINSTATE ALL SURFACES DISTURBED BY THE WORKS WITH MINIMUM 100MM SITE TOP SOIL, DRY LAND GRASS, BITUMEN, STRAW MULCH.
2. CONSOLIDATE FOR 13 WEEKS ONCE HEALTHY SWARD ESTABLISHED.
3. REMOVE ALL EXCESS SOIL INCLUDING EXCESS TOPSOIL AND UNSUITABLE SUBGRADE FROM THE SITE UNLESS DIRECTED OTHERWISE.

WATER

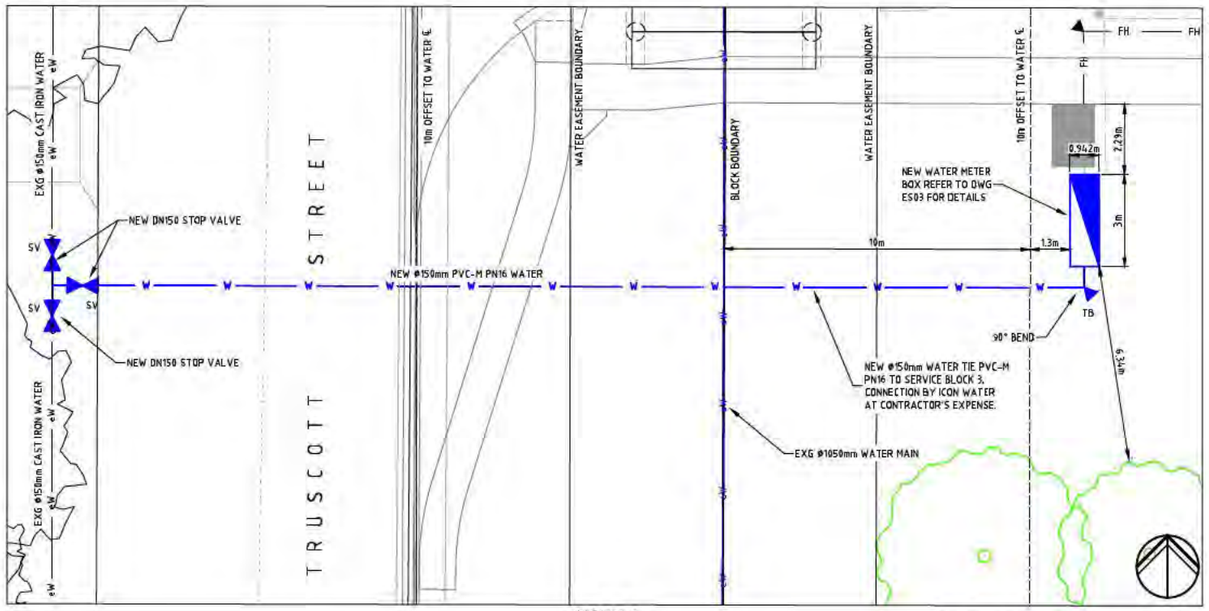
CONSTRUCT STRUCTURES AND CONNECTIONS IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

- ROAD VERGE DRAWINGS - DRAWING NOS. SEP4 - 01 TO 06, CHAPTER 4 (ROAD VERGES) (REFERENCE 10.15)
- SD-1102-D - BULK WATER, WATER & SEWERAGE - DESIGN SYMBOLS FOR PLANS AND TIE BOOKS
- SD-1103-D - BULK WATER, WATER & SEWERAGE - LINETYPES AND NOTATION FOR PLANS AND TIE BOOKS
- SD-2005-D - SEWERAGE NETWORK PROPERTY - CONNECTION DETAILS - SEWER TIES - SHEET 1 OF 2
- SD-2006-D - SEWERAGE NETWORK PROPERTY - CONNECTION DETAILS - SEWER TIES - SHEET 2 OF 2
- SD-2101-C - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL TYPICAL ARRANGEMENT
- SD-2102-D - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL - GRANULAR AND CEMENT STABILISED EMBEDMENT DETAILS
- SD-2201-D - SEWERAGE NETWORK - CAST IN SITU MAINTENANCE HOLE - 1050 DIA. WITH BRANCHES - ARRANGEMENT AND DETAILS
- SD-2204-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES 1050, 1200 AND 1500 DIA. COVERS AND SURROUNDS ARRANGEMENT AND FIXING DETAILS
- SD-2205-D - SEWERAGE NETWORK - PRECAST MAINTENANCE HOLES - FOR DEPTHS LESS THAN 6000mm - TYPICAL ARRANGEMENT AND BASE DETAILS
- SD-2206-D - SEWERAGE NETWORK - PRECAST MAINTENANCE HOLES FOR DEPTHS LESS THAN 1200mm - TYPICAL ARRANGEMENT
- SD-2207-D - SEWERAGE NETWORK - 1050 DIA. PRECAST MAINTENANCE HOLES - TYPICAL COMPONENTS - DETAILS
- SD-2208-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES - STANDARD OFFSETS AND BENCHING DETAILS
- SD-2209-D - SEWERAGE NETWORK - SEWER MAINTENANCE SHAFTS (SMS) AND RODDING POINTS - TYPICAL ARRANGEMENTS
- SD-2210-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES - PIPE CONNECTION DETAILS

SEWER

CONSTRUCT CONNECTIONS, BENDS ETC. IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

- ROAD VERGE DRAWINGS - DRAWING NOS. SEP4 - 01 TO 06, CHAPTER 4 (ROAD VERGES) (REFERENCE 10.15)
- SD-1102-D - BULK WATER, WATER & SEWERAGE - DESIGN SYMBOLS FOR PLANS AND TIE BOOKS
- SD-1103-D - BULK WATER, WATER & SEWERAGE - LINETYPES AND NOTATION FOR PLANS AND TIE BOOKS
- SD-2101-C - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL - TYPICAL ARRANGEMENT
- SD-2102-D - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL - GRANULAR AND CEMENT STABILISED EMBEDMENT DETAILS
- SD-3306-D - WATER SERVICE CONNECTIONS - DN20 TO DN40 METERS - BELOW GROUND INSTALLATIONS - ARRANGEMENT AND CONNECTION DETAILS



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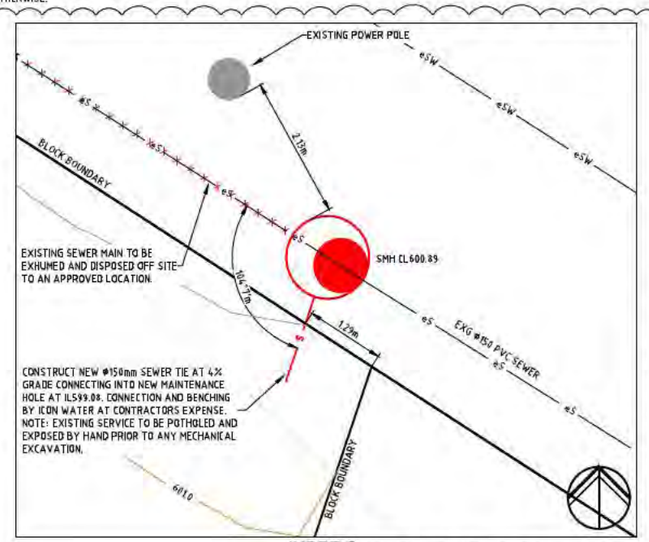

INSET 2
1:50 @A1

VERIFIER
JOB MANAGER D.FIELD
DESIGNED: N.GRINTER
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	ICON APPROVAL	RC		DF	07.05.21
4	ICON APPROVAL	RC		NG	06.07.21
5	ICON APPROVAL	KPVK		DF	18.03.22
6	ICON APPROVAL	RC		NG	22.04.22
A	CONSTRUCTION	RC	NG	DF	29.04.22
B	DETAILED DESIGN	JC	KPVK	DF	19.07.22

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL
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Email canberra@northrop.com.au ABN 81 094 433 188

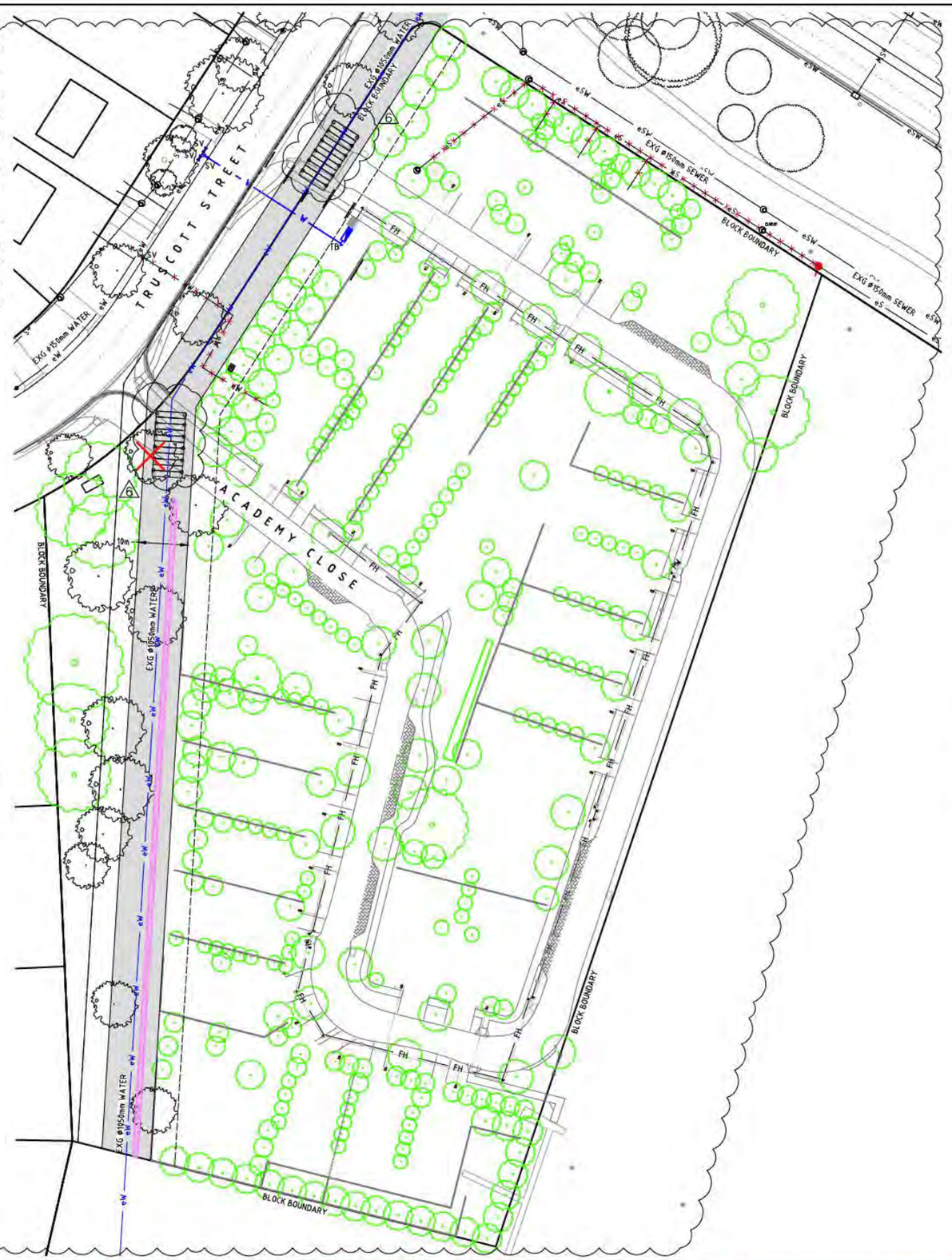
PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXTERNAL SERVICES PLAN

JOB NUMBER: CR172699
DRAWING NUMBER: ES01
REVISION: B
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 159 755 754
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

LOCALITY PLAN - NOT TO SCALE



LEGEND

EXISTING SERVICES

- eW — ø1050 WATER MAIN
- eW — OTHER WATER MAIN/ TIES
- FIRE HYDRANT
- STOP VALVE
- eS — SEWER MAIN/ TIES
- SEWER MAINTENANCE HOLE
- VERGE TREE

WARNING:
EXISTING SERVICES SHOWN ARE BASED ON INFORMATION PROVIDED BY SERVICE AUTHORITIES AND ARE ESTIMATES ONLY. UNDER NO CIRCUMSTANCES SHOULD THE LOCATIONS OF SERVICES SHOWN ON THIS PLAN BE RELIED UPON FOR ON SITE WORK. ALL INFORMATION MUST BE CONFIRMED IN THE FIELD.

PROPOSED SERVICES

- PLANTING LOCATION
- NOMINAL TREE TO BE REMOVED
- W — WATER TIE (REFER TO ES01 FOR DETAILS)
- S — SEWER MAIN (REFER TO ES01 FOR DETAILS)
- SEWER MAINTENANCE HOLE (REFER TO ES01 FOR DETAILS)
- X X X X X X — EXISTING SERVICE TO BE EXHUMED (REFER TO ES01 FOR DETAILS)
- WATER METER CABINET (REFER TO ES01 AND ES03 FOR DETAILS)
- SV — STOP VALVE (REFER TO ES01 FOR DETAILS)
- TB — THRUST BLOCK (REFER TO ES01 FOR DETAILS)
- PROTECTION BRIDGE OVER EXISTING 1050DN WATER MAIN - REFER TO STRUCTURAL ENGINEERS DWGS FOR DETAIL
- 10m WIDE WATER EASEMENT
- ø1050mm WATER MAIN OFFSET (10m FROM PIPE CENTRELINE)
- EARTH BERM (REFER TO DWG C005 FOR DETAILS)

GENERAL NOTES

1. ALL WORK ON ICON WATER'S WATER SUPPLY AND SEWER MAINS TO BE CARRIED OUT IN ACCORDANCE WITH CURRENT ICON WATER'S DESIGN AND CONSTRUCTION STANDARDS, RELEASED 30 AUGUST 2019. ALL WORK ON STORMWATER MAINS TO BE CARRIED OUT IN ACCORDANCE WITH DESIGN STANDARDS FOR URBAN INFRASTRUCTURE WORKS.
2. CONNECTIONS AND OR DISCONNECTIONS OF SEWER AND WATER AT THE MAIN TO BE MADE BY ICON WATER AT THE CONTRACTORS EXPENSE. THE CONTRACTOR IS TO EXPOSE THE MAIN AT THE LOCATION OF THE CONNECTION/DISCONNECTION IN PREPARATION FOR THE WORK BY ICON WATER. ALL EXCAVATION IN THE VICINITY OF MAINS IS TO BE CARRIED OUT BY HAND.
3. ALTHOUGH THE POSITION OF EXISTING UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM AVAILABLE RECORDS, THE CONTRACTOR SHALL CONFIRM THE DEPTH AND LOCATION OF ALL SERVICES ON SITE BEFORE COMMENCING EXCAVATIONS.
4. CONTRACTOR TO CONFIRM DEPTH OF SEWER AND STORMWATER TIE POINTS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ADVISE THE DESIGN ENGINEER IF NOT IN ACCORDANCE WITH THE PLAN.
5. ALL LEVELS TO AUSTRALIAN HEIGHT DATUM (AHD). ALL COORDINATES ARE BASED ON THE CANBERRA LOCAL GRID SYSTEM.
6. ANY NON-METALLIC WATER SERVICE IS TO BE INSTALLED WITH TRACER WIRE AND TESTED.
7. THE CONTRACTOR MUST VISIT THE SITE OF WORKS BEFORE TENDERING AND MAKE ALLOWANCES ON HIS TENDER FOR ALL TOPOGRAPHIC CONSTRAINTS AFFECTING THE EXECUTION OF THE WORKS AND THE RESTORATION OF THE SITE.
8. THE CONTRACTOR SHALL REINSTATE ALL DISTURBED SURFACES TO MATCH EXISTING.
9. THE CONTRACTOR MUST SECURE ALL PERMITS, ARRANGE ALL CLEARANCES AND PAY ALL FEE'S REQUIRED TO COMPLETE THE PROJECT, PRIOR TO THE COMMENCEMENT OF WORK.
10. EXCESS EXCAVATED MATERIAL MATERIAL SHALL BE REMOVED FROM THE SITE AND DUMPED AT AN APPROVED SPOIL AREA.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE PREPARATION OF ALL NECESSARY TEMPORARY TRAFFIC MANAGEMENT PLANS AND THEIR APPROVAL.
12. WORK AS EXECUTED DRAWING AND TIE BOOK MUST BE SUBMITTED BEFORE CONNECTION. A REGISTERED DEPOSITED PLAN MUST ALSO BE SUBMITTED WHERE EASEMENTS ARE EXISTING OR PROPOSED ON THE BLOCK. WORK AS EXECUTED DRAWINGS AND TIE BOOK DETAIL (A4 SIZE) ARE TO SHOW DIMENSIONED LOCATIONS OF TAPPING ONTO MAIN, WHERE SERVICE CROSSES FRONT BOUNDARY AND DISTANCE METER IS INSIDE THE BLOCK.
13. PROVISIONAL CERTIFICATE OF OPERATION WILL BE ISSUED WHEN HANDOVER INSPECTION IS PASSED AND ACCEPTABLE WORK AS EXECUTED DRAWING AND TIE BOOK RECORD HAS BEEN COMPLETED AND SUBMITTED TO ICON WATER.

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REINSTATEMENT GENERALLY

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2. CONSOLIDATE FOR 13 WEEKS ONCE HEALTHY SWARD ESTABLISHED.
3. REMOVE ALL EXCESS SOIL INCLUDING EXCESS TOPSOIL AND UNSUITABLE SUBGRADE FROM THE SITE UNLESS DIRECTED OTHERWISE.

WATER

CONSTRUCT STRUCTURES AND CONNECTIONS IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

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- SD-1103-D - BULK WATER, WATER & SEWERAGE - LINETYPES AND NOTATION FOR PLANS AND TIE BOOKS
- SD-2005-D - SEWERAGE NETWORK PROPERTY - CONNECTION DETAILS - SEWER TIES - SHEET 1 OF 2
- SD-2006-D - SEWERAGE NETWORK PROPERTY - CONNECTION DETAILS - SEWER TIES - SHEET 2 OF 2
- SD-2101-C - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL TYPICAL ARRANGEMENT
- SD-2102-D - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL - GRANULAR AND CEMENT STABILISED EMBEDMENT DETAILS
- SD-2201-D - SEWERAGE NETWORK - CAST IN SITU MAINTENANCE HOLE - 1050 DIA. WITH BRANCHES - ARRANGEMENT AND DETAILS
- SD-2204-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES 1050, 1200 AND 1500 DIA. COVERS AND SURROUNDS ARRANGEMENT AND FIXING DETAILS
- SD-2205-D - SEWERAGE NETWORK - PRECAST MAINTENANCE HOLES - FOR DEPTHS LESS THAN 6000mm - TYPICAL ARRANGEMENT AND BASE DETAILS
- SD-2206-D - SEWERAGE NETWORK - PRECAST MAINTENANCE HOLES FOR DEPTHS LESS THAN 1200mm - TYPICAL ARRANGEMENT
- SD-2207-D - SEWERAGE NETWORK - 1050 DIA. PRECAST MAINTENANCE HOLES - TYPICAL COMPONENTS - DETAILS
- SD-2208-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES - STANDARD OFFSETS AND BENCHING DETAILS
- SD-2209-D - SEWERAGE NETWORK - SEWER MAINTENANCE SHAFTS (SMS) AND RODDING POINTS - TYPICAL ARRANGEMENTS
- SD-2210-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES - PIPE CONNECTION DETAILS

SEWER

CONSTRUCT CONNECTIONS, BENDS ETC. IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

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DESIGNED: N.GORNTER
DRAWN: R.PADDY
JOB MANAGER: D.FIELD
VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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4	ICON APPROVAL	KPVK		NG	10.03.22
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0 5 10 15 20 25m
PLAN
SCALE 1:500 @ A1

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Ph (02) 6285 1822 Fax (02) 6285 1883
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXTERNAL SERVICES PLAN
WITH PROPOSED PLANTING

JOB NUMBER: CR172699
DRAWING NUMBER: ES02
REVISION: B
DRAWING SHEET SIZE = A1

BCA certifiers
ABN 58 158 755 794
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

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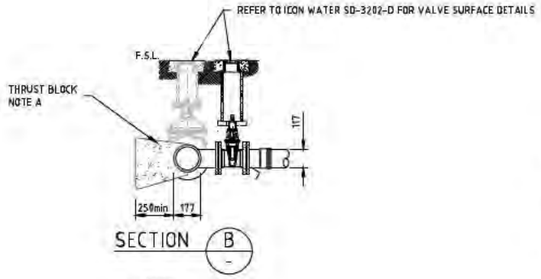
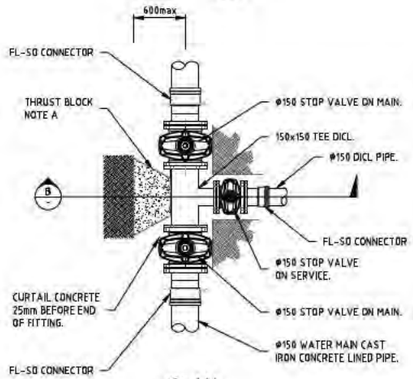


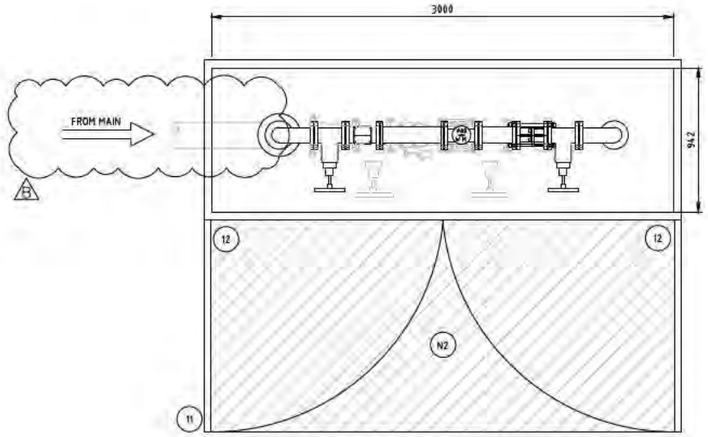
SECTION B



PLAN
NOT TO SCALE

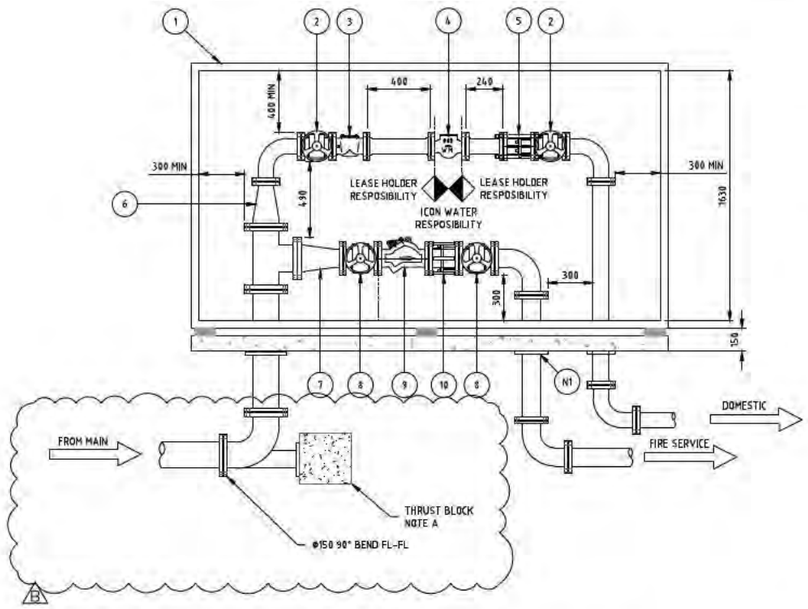
NOTES

a. THRUST BLOCK TO BE INSTALLED IN ACCORDANCE WITH ICON WATER SD-5002-D AND SD-5003-D



PARTS LIST

1	METER ENCLOSURE – POWDER COATED GALVANISED STEEL (NOTE 2 & 3)
2	80ø GATE VALVE FL-FL
3	80ø DIRT BOX STRAINER FL-FL
4	80ø WATER METER FL-FL
5	80ø DISMANTLING JOINT FL-FL (NOTE 7)
6	150ø – 80ø REDUCER FL-FL
7	150ø – 100ø REDUCER FL-FL
8	100ø GATE VALVE FL-FL
9	100ø BACKFLOW PREVENTION DEVICE FL-FL
10	100ø DISMANTLING JOINT FL-FL (SEE NOTE 7)
11	DOOR LOCK TO BE KEYED TO ICON WATER KEY SIGNAGE AS PER SD-1307-D
12	DOOR STOP MECHANISM FOR HOLDING DOORS OPEN



NOTES

N1 RISER PIPEWORK SHALL BE INSULATED AND NOT IN DIRECT CONTACT WITH STEEL OR CONCRETE SURFACE.

N2 CLEAR ZONE FOR ACCESS AND MAINTENANCE

NOTES

A. CONCRETE THRUST BLOCK, ANCHORS AND THRUST WALLS TO BE EITHER ENGINEERED FOR THE SPECIFIC PROJECT OR IN ACCORDANCE WITH SD-5002 AND SD-5003 AS APPROPRIATE.
B. REFER TO ICON WATER SPECIFICATION STD-SPE-M-006 FOR DETAILED PROPERTY SERVICE CONNECTION AND METERING REQUIREMENTS.
C. STOP VALVES (ON MAIN) ARE REQUIRED FOR PROPERTY SERVICE CONNECTIONS SIZED DN100 AND LARGER BY DEFAULT. ICON WATER WILL ADVISE (ON A PROJECT-BY-PROJECT BASIS) IF STOP VALVES ARE REQUIRED FOR SMALLER PROPERTY SERVICE CONNECTIONS.

STANDARD NOTES

1. RISER PIPEWORK SHALL BE INSULATED AND NOT IN DIRECT CONTACT WITH STEEL OR CONCRETE SURFACES.
2. METERING ENCLOSURES SHALL HAVE KNAUF "CLIMAFOAM XPS" INSULATION BOARDS INSTALLED TO ALL INTERNAL SURFACES (INCLUDING DOORS) OF 30mm min. THICKNESS. ALTERNATIVES SUCH AS BLOCK OR BRICK CONSTRUCTION ARE ACCEPTABLE IN LIEU OF GALVANISED.
3. THE ENCLOSURE FINISH COLOUR SHALL BE NOMINATED BY THE DESIGNER TO SUIT THE PREVAILING ARCHITECTURE / STREETSCAPE. THE FINISH COLOUR MUST BE SHOWN ON THE DESIGN DRAWINGS FOR ACCEPTANCE BY ICON WATER. OTHERWISE, THE DEFAULT FINISH SHALL BE G66 ENVIRONMENT GREEN TO AS2700.
4. WORKING CLEARANCES TO THE FRONT OF THE CABINET CAN BE MINIMISED IF ADEQUATE ACCESS CAN BE ACHIEVED WHILST DOORS OF THE STRUCTURE ARE OPEN.
5. ALL PIPEWORK AND TUBING OF SIZES DN50 AND SMALLER SHALL BE INSULATED TO PREVENT FREEZING. REFER TO ICON WATER'S APPROVED PRODUCTS LIST FOR ACCEPTABLE INSULATION.
6. CLEARANCE BETWEEN FLANGES AND PIPEWORK OR FIXED STRUCTURES TO BE DN + 150 (min. 300) TO ALLOW FOR MAINTENANCE.
7. DISMANTLING JOINTS ARE NOT REQUIRED IF MAINTENANCE CAN BE CARRIED OUT WITHOUT UNDUE FORCE BEING APPLIED TO ANY PIPEWORK OR FITTING.
8. REFER TO ICON WATER SPECIFICATION STD-SPE-M-006 FOR DETAILED PROPERTY SERVICE CONNECTION AND METERING REQUIREMENTS.

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: N.GRINTER
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	ICON APPROVAL	KPVK		DF	13.05.21
4	ICON APPROVAL	RC		NG	24.05.21
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B	DETAILED DESIGN	JC	KPVK	DF	19.07.22

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0 5 10 15 20 25m PLAN
SCALE 1:500 @ A1

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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

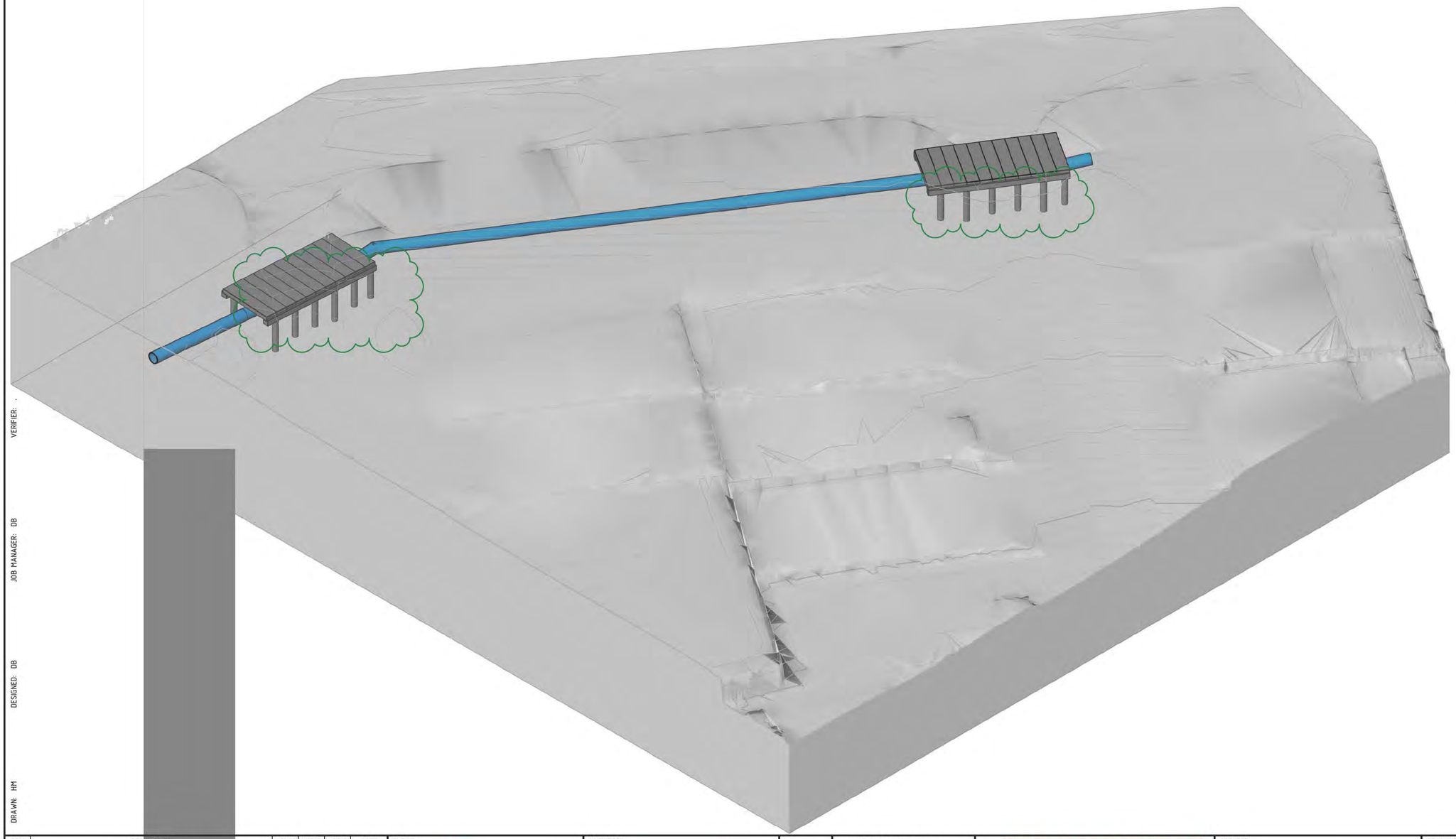
DRAWING TITLE
CIVIL WORKS
EXTERNAL SERVICES PLAN
WATER METER DETAIL

JOB NUMBER: CR172699
DRAWING NUMBER: ES03
REVISION: B
DRAWING SHEET SIZE = A1

BCA certifiers
ABN: 56 118 115 774
SUPPORTING DOCUMENTATION
8-11-2022
Refer to Design Certification Included in Building Approval Documentation
220729.01

DEFENCE HOUSING AUSTRALIA

ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT
STRUCTURAL DOCUMENTATION



- DRAWING LIST -

S001	COVER SHEET AND DRAWING LIST
S002	GENERAL NOTES SHEET 1
S003	GENERAL NOTES SHEET 2
S004	SOUTHERN WATERMAIN PROTECTION BRIDGE PLAN & DETAILS
S005	NORTHERN WATERMAIN PROTECTION BRIDGE PLAN & DETAILS

DRAWN: HM DESIGNED: DB JOB MANAGER: DB VERIFIER: -

NOT FOR CONSTRUCTION

REV	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUE FOR REVIEW	HM		DB	07.03.22
2	ISSUE FOR REVIEW	HM		DB	30.03.22
3	ISSUE FOR REVIEW	HM		DB	11.04.22
4	ISSUE FOR ICON APPROVAL	HM		DB	22.06.22

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SAP House, Level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Email: canberra@northrop.com.au
ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: STRUCTURAL WORKS COVER SHEET AND DRAWING LIST

JOB NUMBER: CR172699

DRAWING NUMBER: S001 REVISION: 4

DRAWING SHEET SIZE = A1

icon WATER

STATEMENT OF CONDITIONAL ACCEPTANCE

Application No: 203462 **Suburb:** Campbell **Block/Section** 3 / 65

Applcn Type: Multi residential (low rise residential) /New Construction Inclusions : Other, Retaining walls/fencing

Attached Plans
NCA-002-10-Site + Context Plan.pdf
SK01-4-PROPOSED NEW BUILDING FOOTPRINTS.pdf
CR172699-C000 Cover Sheet [C].pdf
CR172699-C008A [B].pdf
CR172699-C300 [1].pdf
CR172699-C301 [1].pdf
CR172699-C302 [1].pdf
CR172699-C177A [1].pdf
CR172699-C177B [1].pdf
Campbell S65 B3 In Principle IWDesAcc.pdf

Conditions of Acceptance
All Icon Water Valves, Hydrants, Meters and Maintenance Holes/Pits must have 24/7 access by Icon Water and Emergency Services. The developer must provide Icon Water 24/7 access to the construction site. The developer is to obtain Icon Water padlocks which must be installed in a daisy chain fashion at each entry and exit point of the construction site. No stockpiles, Temporary structures or equipment is to be located within the pipe protection envelope.
As per Criterion 1 - Easement and other access Clearances of the Planning and Development Regulation 2008. No structures are to be built over Icon Water easements, pipe protection envelopes or access passages without Icon Water's written approval. In accordance with this provision, access is to be maintained across land in these areas
Changes to the lease for use of the land and further development of the block may require development or augmentation to the water and/or sewer networks. Augmentation of the networks associated with further development of the block are to be funded by the developer. A charge under the Water and Sewerage Capital Contributions Code may apply. If multiple blocks are created, separate ties to sewer and water will also be required for each block. Separate access will be required through each block.
Icon Water assets shall be protected for the duration of the construction works from short term load shedding from construction machinery or vibration and groundwater ingress or infiltration. Any damage to Icon assets resulting from the construction works shall be repaired by Icon Water at the contractors expense. Access to Icon Water's assets including sewer structures, manholes, hydrants and valves is to be maintained for the duration of the construction works.
Lessee must install private sewer riser at the sewer tie to ground level as part of this approval
Location of the water meter is to be clear of driveways and footpaths with a 1m radius unhindered access maintained. If required, relocation of the water service is to be undertaken by Icon Water at the lessee's cost. Relocations further than 1.5m laterally require a Hydraulic plan to be approved by Icon prior to applying for the relocation. Evidence of this being performed and constructed is to be forwarded to Icon Water before the certificate of occupation is issued.
Protection of water and sewer networks to be in accordance with the attached checklist
Separate access to Icon Water assets located on the block is required through each ground level unit title in accordance with Icon Water access conditions.
Servicing of water and sewerage must be in accordance with Icon Water requirements. Design of External Services plans and Off Site Works must be approved by Icon Water Hydraulic Assets Acceptance section. Icon Water assets shall be protected for the duration of the construction works at all times from machinery, vibration and groundwater ingress or infiltration. All costs associated with repairing damage to Icon assets resulting from the construction works must be paid by the developer.

Please Note:

- Separate applications are required for ActewAGL electricity and gas networks.
- Any failure to accurately show existing or proposed structures may result in damage and costs for which the property owner will be liable. Damage to network assets must be reported to Icon Water.
- Utility conditions may also apply to minor structures and landscaping works that may not have been depicted in this document. Consultation with Icon Water is advised if such structures and landscaping are planned.
- Icon Water recommends setbacks provided for equipment access to water or sewerage network assets are kept free of obstruction by the property owner.
- Construction of works without the approval of Icon Water may result in connection to Icon Water's water and sewerage networks being denied and /or action being taken to require the property owner to remove non-compliant services (e.g. sanitary drains) or structures.

WARNING
Failure to comply with these conditions is likely to result in interference with an Icon Water sewer or water asset. Part 5 of the Utilities (Technical Regulation) Act 2014 applies, which indicates a person who interferes with a utility asset may be subject to prosecution. The current maximum penalty is 200 penalty units, imprisonment for two years, or both. In addition the land-holder can be ordered at their expense to stop the interference, which may involve removal of the building work or that part of the building work that is causing, or is likely to cause interference.

Comments:

Signed s22 **Date** 26 Jul 2022

For further information please phone Icon Water 6248 3111.

icon WATER

Application Number
2022-0[illegible]

Sheet
1 of 16

DHA - ACADEMY CLOSE RE-DEVELOPMENT

Academy Close, Campbell, ACT

AMC ARCHITECTURE+

SCALE: 1:500

DRAWING	REV	DATE	TITLE
NCA-002	10	17.06.2022	Site + Context Plan

GPO Box 1863, Canberra City ACT 2601
Suite 1.01, Level 1, 10 Hobart Place, Canberra City ACT 2601
T 02 6257 3000
AMCARCHITECTURE.COM

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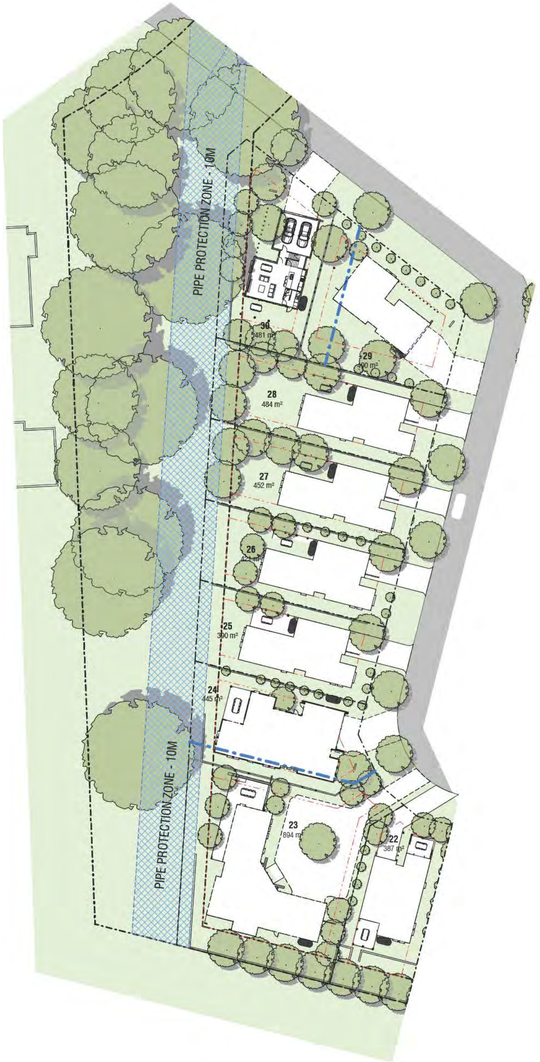
DHA - ACADEMY CLOSE RE-DEVELOPMENT

Academy Close, Campbell, ACT

AMC ARCHITECTURE+

KEY PLAN
Scale: 1 : 2000

SECTION 29 & 30
Scale: 1 : 200



PROPOSED NEW BUILDING FOOTPRINTS
Scale: 1 : 500

icon WATER

WATER AND SEWERAGE NETWORK

CONDITIONALLY ACCEPTED

The design depicted in this document has been assessed by Icon Water and complies with their water and sewerage network protection and access requirements subject to the conditions of Icon Water's 'statement of conditional acceptance'.

Signed s22 [redacted] Date 26 Jul 2022

Contact phone: 6248 3111

SECTION 23 & 24
Scale: 1 : 200

N

0 1 5 10m
SCALE: 1:100

DRAWING	REV	DATE	SCALE	TITLE
SK01	4	17.06.2022	As indicated	PROPOSED NEW BUILDING FOOTPRINTS

Unit 2 8-10 Hobart Place, Canberra City ACT 2600 T 02 6257 3222 F 02 6257 4190
AMCARCHITECTURE.COM.AU

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Application Number
203462
Sheet
3 of 16

icon WATER

DEFENCE HOUSING AUSTRALIA

ACADEMY CLOSE, CAMPBELL - BUILDING APPROVAL
CIVIL ENGINEERING WORKS PACKAGE

DRAWING LIST

NUMBER	TITLE
C000	COVER SHEET, DRAWING INDEX & LOCALITY PLAN
C008A	RETAINING WALL DETAILS SHEET 4 OF 4
C177A	EXISTING WATER MAIN CROSS SECTIONS SHEET 1 OF 2
C177B	EXISTING WATER MAIN CROSS SECTIONS SHEET 2 OF 2
C300	EXISTING DN1050 WATERMAIN AND RETAINING WALL PLAN SHEET 1 OF 3
C301	EXISTING DN1050 WATERMAIN AND RETAINING WALL PLAN SHEET 2 OF 3
C302	EXISTING DN1050 WATERMAIN AND RETAINING WALL PLAN SHEET 3 OF 3

LOCALITY PLAN
NOT TO SCALE

icon WATER

WATER AND SEWERAGE NETWORK

CONDITIONALLY ACCEPTED

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Signed s22 [redacted] Date 26 Jul 2022

Contact phone: 6248 3111

DRAWN: R.CRADDY DESIGNED: R.CRADDY JOB MANAGER: D.FIELD VERIFIER: N.GRINTER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	WORKS APPROVAL	JC		DF	14.05.20
9	TCCS DESIGN REVIEW	TE		DF	09.10.20
A	CONSTRUCTION	RC	NG	DF	17.05.21
B	CONSTRUCTION v2	RC	NG	DF	29.04.22
C	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL
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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

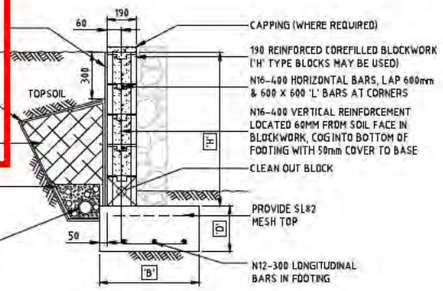
DRAWING TITLE: CIVIL WORKS
COVER SHEET, DRAWING INDEX
AND LOCALITY PLAN

JOB NUMBER: CR172699
DRAWING NUMBER: C000
REVISION: C
DRAWING SHEET SIZE = A1

icon WATER

Application Number 203462

Sheet 4 of 4



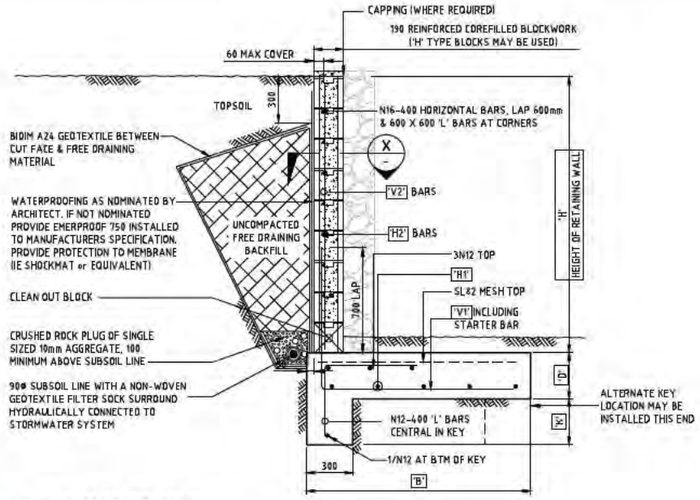
HEIGHT to 1000

RETAINING WALL NOTES:
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION, CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.

RETAINING WALL SCHEDULE

HEIGHT 'H'	FOOTING WIDTH 'B'	FOOTING DEPTH 'D'
600	500	300
800	600	300
1000	750	300

FOR ø° = 30° & 100kPa BEARING



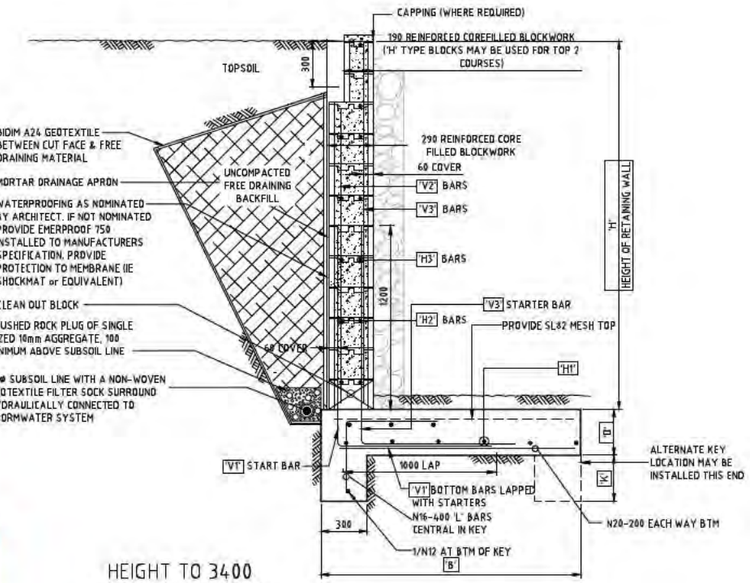
HEIGHT 1200 TO 1800

RETAINING WALL NOTES:
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION, CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.

RETAINING WALL SCHEDULE

HEIGHT 'H'	FOOTING DEPTH 'D'	'B'	'K'	'V1' BARS	'V2' BARS	'H1' BARS	'H2' BARS
1200	300	1000	[illegible]	N16 @ [illegible]	N16 @ [illegible]	N16 @ 400	N16 @ 400
1400	300	1200	[illegible]	N16 @ [illegible]	N16 @ [illegible]	N16 @ 400	N16 @ 400
1600	300	1500	200	N16 @ 400	N16 @ 400	N16 @ 400	N16 @ 400
1800	300	1700	250	N16 @ 200	N16 @ 200	N16 @ 200	N16 @ 200

FOR ø° = 30° & 125kPa BEARING



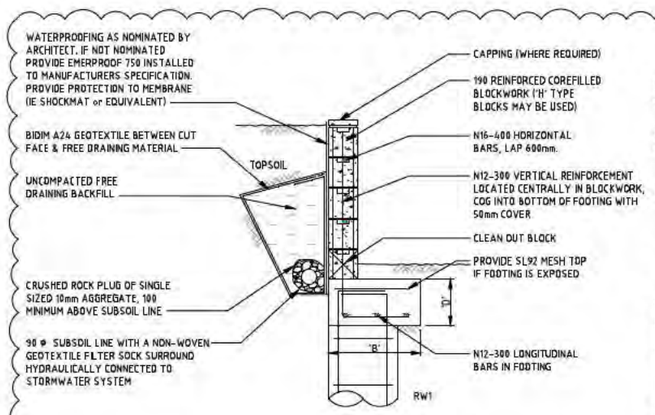
HEIGHT TO 3400

RETAINING WALL NOTES:
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION, CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.

RETAINING WALL SCHEDULE

HEIGHT 'H'	FOOTING DEPTH 'D'	'B'	'K'	'V1' BARS	'V2' BARS	'V3' BARS	'H1' BARS	'H2' BARS	'H3' BARS
2000	300	1500	300	N16 @ 200	N16 @ 200	N16 @ 400	N16 @ 200	N16 @ 200	N20 @ 400
2200	350	2000	300	N16 @ 200	N16 @ 200	N16 @ 400	N16 @ 200	N16 @ 200	N20 @ 400
2400	350	2200	300	N16 @ 200	N16 @ 200	N16 @ 400	N16 @ 200	N16 @ 200	N20 @ 400
2600	350	2400	300	N20 @ 200	N20 @ 200	N16 @ 400	N16 @ 200	N16 @ 200	N20 @ 400
2800	350	2500	400	N20 @ 200	N20 @ 200	N16 @ 400	N20 @ 200	N20 @ 200	N20 @ 400
3000	350	2750	400	N20 @ 200	N20 @ 200	N16 @ 400	N20 @ 200	N20 @ 200	N20 @ 400
3200	350	3000	450	N24 @ 200	N24 @ 200	N16 @ 400	N20 @ 200	N20 @ 200	N20 @ 400
3400	350	3200	450	N24 @ 200	N24 @ 200	N16 @ 400	N20 @ 200	N20 @ 200	N20 @ 400

FOR ø° = 30° & 150kPa BEARING



HEIGHT to 1000
PIERED RETAINING WALL

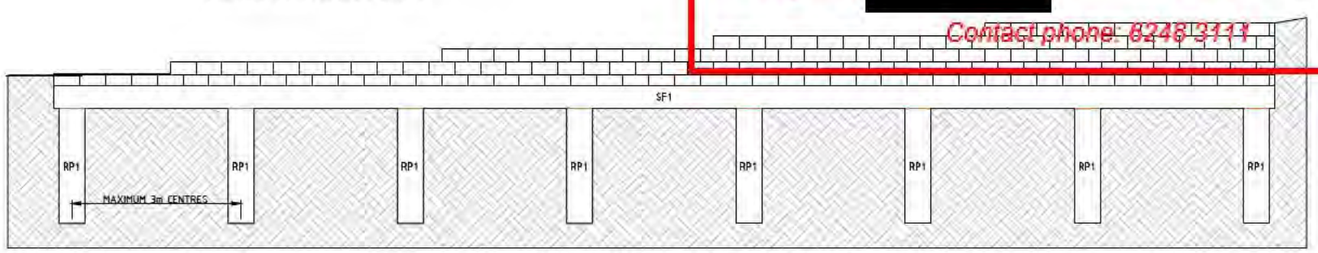
RETAINING WALL RW1 SCHEDULE

HEIGHT 'H'	FOOTING WIDTH 'B'	FOOTING DEPTH 'D'
600	400	300
800	500	300
1000	600	[illegible]

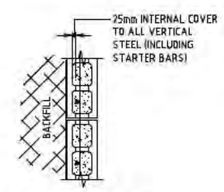
FOR ø° = 30° & 100kPa BEARING

FOUNDATION SCHEDULE

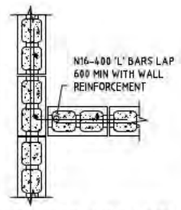
MARK	SIZE	COMMENT(S)	REINFORCEMENT RATE
RP1	450 DIA	SOCKET MIN 2m BELOW FOOTING INVERT OF WATERPIPE, @3m CTS	4N16 + R6 TIES



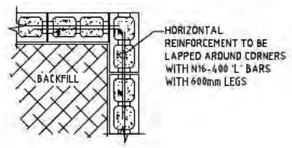
TYPICAL PIERED RETAINING WALL SPACING



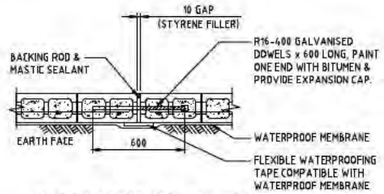
SECTION X



BLOCKWORK JUNCTION DETAIL



BLOCKWORK CORNER DETAIL



BLOCKWORK DOWEL JOINT
for RETAINING WALL

PROVIDE JOINTS AT 8m MAXIMUM CTS. CONFIRM ALL JOINT LOCATIONS WITH ARCHITECT

WATER AND SEWERAGE NETWORK

CONDITIONALLY ACCEPTED

The design depicted in this document has been assessed by Icon Water and complies with their water and sewerage network protection and access requirements subject to the conditions of Icon Water's 'statement of conditional acceptance'.

Signed s22 [redacted] Date 26 Jul 2022

Contact phone: 6248 3111

VERIFIER: N.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: D.FIELD
DRAWN: R.READY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	FOR CONSTRUCTION	RC	NG	DF	07.07.22
B	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close

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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS RETAINING WALL DETAILS SHEET 4 OF 4

JOB NUMBER: CR172699

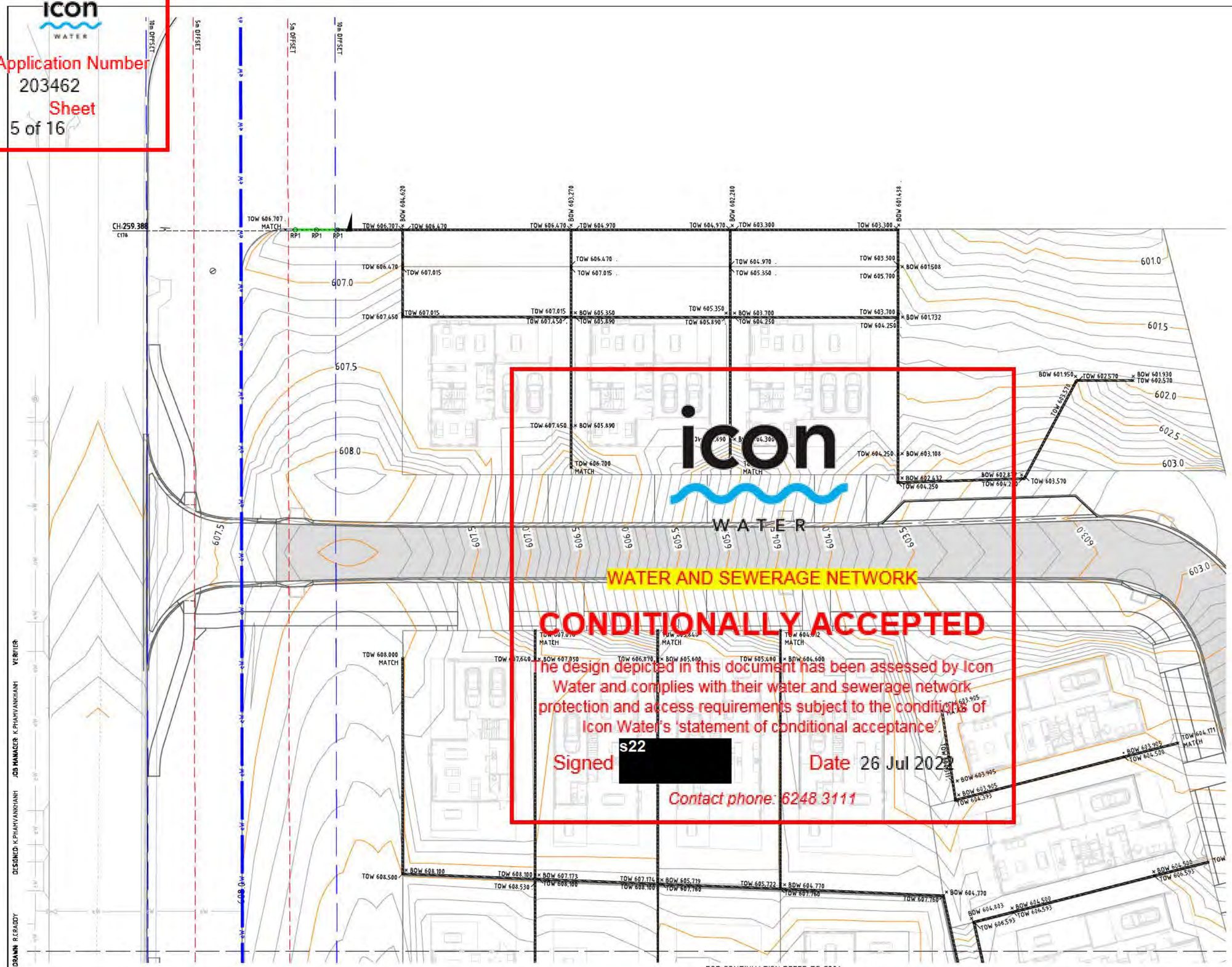
DRAWING NUMBER: C008A

REVISION: B

DRAWING SHEET SIZE = A1

icon WATER

Application Number
203462
Sheet
5 of 16



DRAWN R.CRADDY
DESIGNED K.PHANVANKHANH
JOB MANAGER K.PHANVANKHANH
VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL
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0 2 4 6 8 10m PLAN
SCALE 1:200 @ A1

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SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

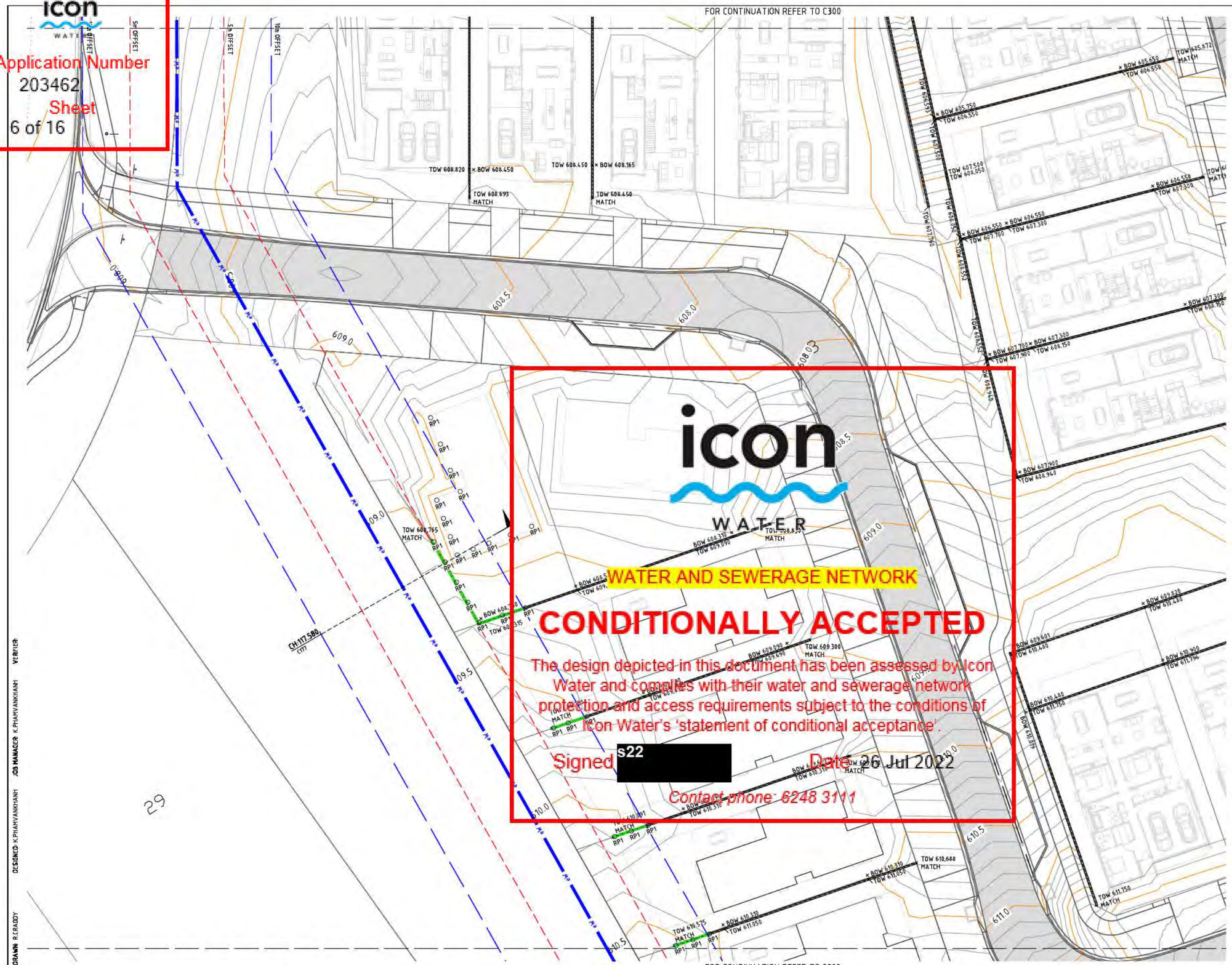
PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
EXISTING DN1050 WATERMAIN AND RETAINING WALL PLAN
SHEET 1 OF 3

JOB NUMBER CR172699
DRAWING NUMBER C300
REVISION 1
DRAWING SHEET SIZE = A1

Application Number
203462
Sheet
6 of 16

FOR CONTINUATION REFER TO C300



icon WATER

WATER AND SEWERAGE NETWORK

CONDITIONALLY ACCEPTED

The design depicted in this document has been assessed by Icon Water and complies with their water and sewerage network protection and access requirements subject to the conditions of Icon Water's 'statement of conditional acceptance'.

Signed s22 [redacted] Date 26 Jul 2022

Contact phone: 6248 3111

LEGEND

aW	WATER MAIN
eW	ø1050mm WATER MAIN
	ø1050mm WATER MAIN 5m OFFSET
	ø1050mm WATER MAIN 10m OFFSET
	PROPOSED RETAINING WALL WITHIN 10m OFFSET
RP1	PROPOSED RETAINING WALL PIER - REFER TO DWG. C008A FOR DETAILS.
BOW	BOTTOM OF WALL (FINISHED SURFACE LEVEL)
TOW	TOP OF WALL (FINISHED SURFACE LEVEL)
602.0	PROPOSED MAJOR CONTOUR (0.5m INTERVAL)
	PROPOSED MAJOR CONTOUR (0.1m INTERVAL)

FOR CONTINUATION REFER TO C302

DRAWN: R.CRADDY DESIGNED: K.PHAMVANKHANH JOB MANAGER: K.PHAMVANKHANH VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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0 2 4 6 8 10m PLAN SCALE 1:200 @ A1

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SAP House, level 6, 224 Bunda Street Canberra ACT 2608
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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS EXISTING DN1050 WATERMAIN AND RETAINING WALL PLAN SHEET 2 OF 3

JOB NUMBER: CR172699

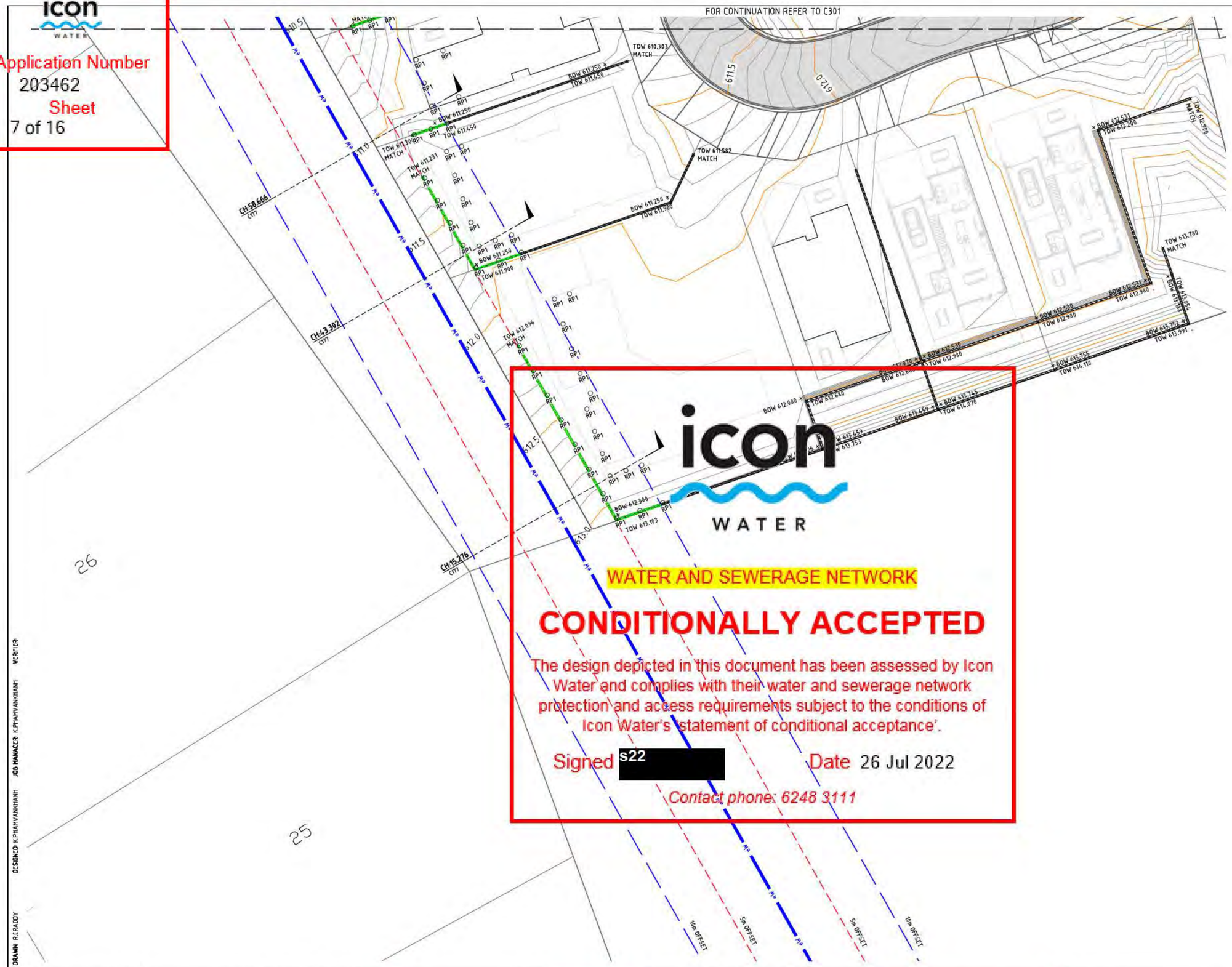
DRAWING NUMBER: C301 REVISION: 1

DRAWING SHEET SIZE = A1

icon WATER

Application Number
203462
Sheet
7 of 16

FOR CONTINUATION REFER TO C301



icon WATER

WATER AND SEWERAGE NETWORK

CONDITIONALLY ACCEPTED

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Signed s22 [redacted] Date 26 Jul 2022

Contact phone: 6248 3111

DRAWN R.CRADDY DESIGNED K.PHAMVANKHANH JOB MANAGER K.PHAMVANKHANH VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL

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0 2 4 6 8 10m PLAN SCALE 1:200 @ A1

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Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS EXISTING DN1050 WATERMAIN AND RETAINING WALL PLAN SHEET 3 OF 3

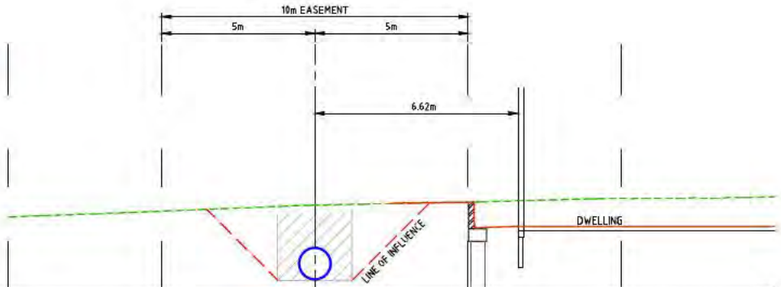
JOB NUMBER: CR172699

DRAWING NUMBER: C302 REVISION: 1

DRAWING SHEET SIZE = A1

icon WATER

Application Number
203462
Sheet
8 of 16



Datum: 610.000

PROPOSED LEVELS				612.850			612.100
EXISTING LEVELS	612.61	612.60	612.79	612.838	612.89	613.01	613.087
LEVEL DIFFERENCE				0.011			0.966
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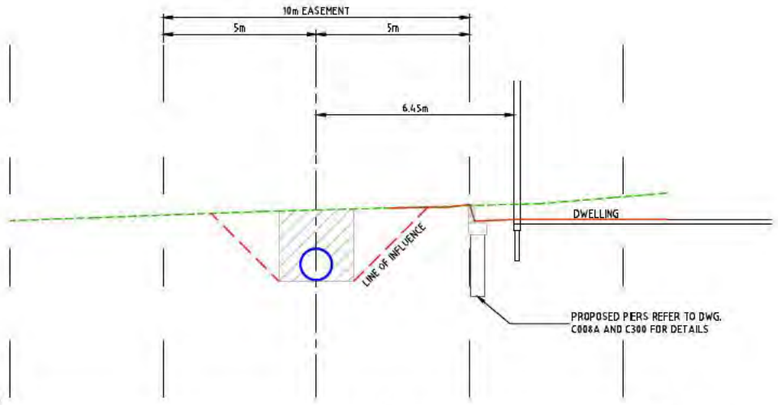
Chainage 15.276



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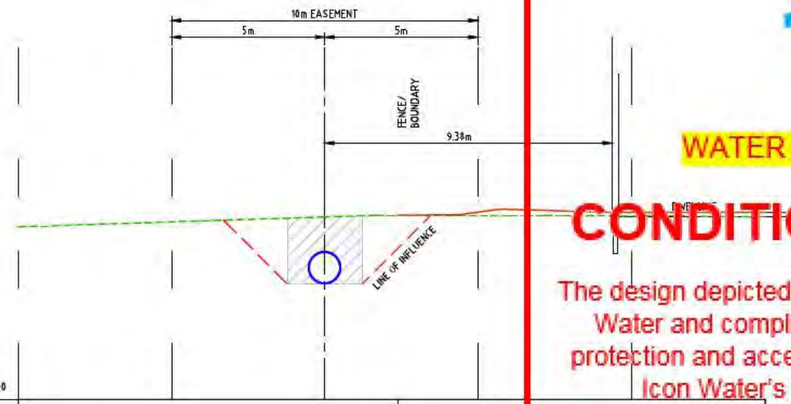
PROPOSED LEVELS				611.673			611.300
EXISTING LEVELS	611.26	611.44	611.61	611.678	611.75	612.04	612.161
LEVEL DIFFERENCE				-0.006			-0.861
OFFSETS	-10.00	-5.00	0.00	2.366	5.00	10.00	11.442

Chainage 43.30

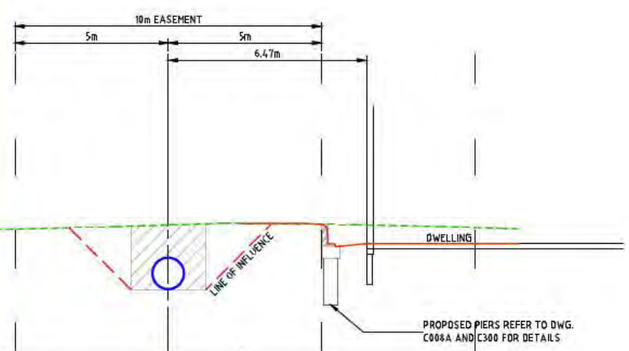
NOTE
REFER TO DRAWING C300-C302 FOR CHAINAGE



Datum: 605.000

PROPOSED LEVELS				611.004			
EXISTING LEVELS	610.63	610.79	610.95	611.001	610.99	610.[illegible]	610.[illegible]
LEVEL DIFFERENCE				0.004			0.156
OFFSETS	-10.00	-5.00	0.00	2.384	5.00	10.00	14.367

Chainage 58.666



PROPOSED LEVELS				609.208			608.550
EXISTING LEVELS	608.9[illegible]	609.02	609.16	609.211	609.18	609.07	609.033
LEVEL DIFFERENCE				-0.002			-0.433
OFFSETS	-10.00	-5.00	0.00	2.379	5.00	10.00	11.413

Chainage 117.580

icon WATER

WATER AND SEWERAGE NETWORK

CONDITIONALLY ACCEPTED

The design depicted in this document has been assessed by Icon Water and complies with their water and sewerage network protection and access requirements subject to the conditions of Icon Water's 'statement of conditional acceptance'.

Signed s22 [redacted] Date 26 Jul 2022

Contact phone: 6248 3111

VERIFIER: N.GRINTER
JOB MANAGER: D.FIELD
DESIGNED: R.CRADDY
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close
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0 1 2 3 4 5m PLAN SCALE 1:100 @ A1

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Canberra
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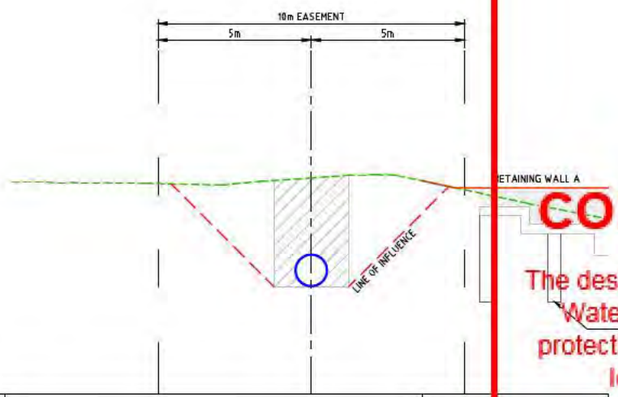
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXISTING WATER MAIN
CROSS SECTIONS
SHEET 1 OF 2

JOB NUMBER: CR172699
DRAWING NUMBER: C177A
REVISION: 1
DRAWING SHEET SIZE = A1



Datum: 600,000

PROPOSED LEVELS				606.942			606.707
EXISTING LEVELS		606.85	607.03	606.939	606.64		605.689
LEVEL DIFFERENCE				0.003			1.018
OFFSETS	-10.00	-5.00	0.00	3.610	5.00		9.705

Chainage 259.388

icon WATER

WATER AND SEWERAGE NETWORK

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Signed s22 Date 26 Jul 2022

Contact phone: 6248 3111

VERIFIER
JOB MANAGER D.FIELD
DESIGNED R.CRADDY
DRAWN R.CRADDY

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	BUILDING APPROVAL	KPVK		DF	12.07.22

CLIENT: DHA Defence Housing Australia
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0 1 2 3 4 5m PLAN SCALE 1:100 @ A1

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PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXISTING WATER MAIN
CROSS SECTIONS
SHEET 2 OF 2

JOB NUMBER: CR172699
DRAWING NUMBER: C177B
REVISION: 1
DRAWING SHEET SIZE = A1

Demolition Checklist

Sewer connection

Icon Water's requirements for demolition work which could potentially damage Icon Water's assets or result in discharge of stormwater, or other unapproved wastes (other than domestic sewage) to the Icon Water sewerage network.

The property owner (or their design or construction agent) is responsible for the following:

1. Where an Icon Water sewer main traverses a property or an Icon Water sewer main is outside the property boundary (and proposed demolition works may impact on the sewer main's pipe-protection-envelope), accurate sewer network survey plans must be obtained from Icon Water or from a registered surveyor. Sewer asset locations need to be shown on relevant demolition plans including manhole, boundary riser and tie location with off-set dimensions from site boundaries.

2. Recording the condition of manhole covers. Icon Water can be contacted on 6248 3111 to repair damaged components. A failure to identify any faults before demolition commences may result in the property owner (or their contractors) being held responsible to pay for the repair caused by a failure to adequately protect Icon Water's assets during the demolition or building construction works.

3. Engaging a licensed drainer to disconnect the internal sanitary drains before any demolition works commence. The discharge of debris, groundwater, stormwater or other unapproved liquid wastes (other than domestic sewage into the sewerage networks) is an offence under the *Utilities Act 2000*.

4. Identifying, flagging, barricading and protecting the sanitary drainage 'riser' (if installed) and manholes from demolition operations.

5. Where further construction works is planned, sanitary drains are to be temporarily sealed by capping no closer than three metres from the Icon Water tie. Excavation and capping is to be undertaken by licensed drainers at the customer's expense. The capping point is to be staked behind the cap and identified at ground level. Please note the subsequent building contractor will be required to make a new sanitary drainage connection at the designated tie (not at the temporary cap). This may require the removal of old jump-ups in the customer's sanitary drains. When the tie is exposed it is recommended to ask Icon Water to inspect the branch-line to ensure it is in good condition.

6. Where further construction work is not proposed to commence within 12 months from the date demolition commences, permanent disconnection may be required. Please consult Icon Water at this time for a definitive answer.

Demolition Checklist

Water supply

Icon Water's requirements for demolition works which could potentially damage Icon Water assets or result in contamination of the potable water supply.

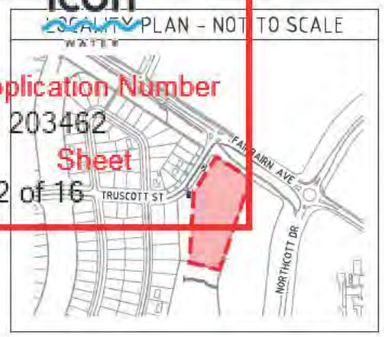
The property owner (or their design or construction agent) is responsible for the following:

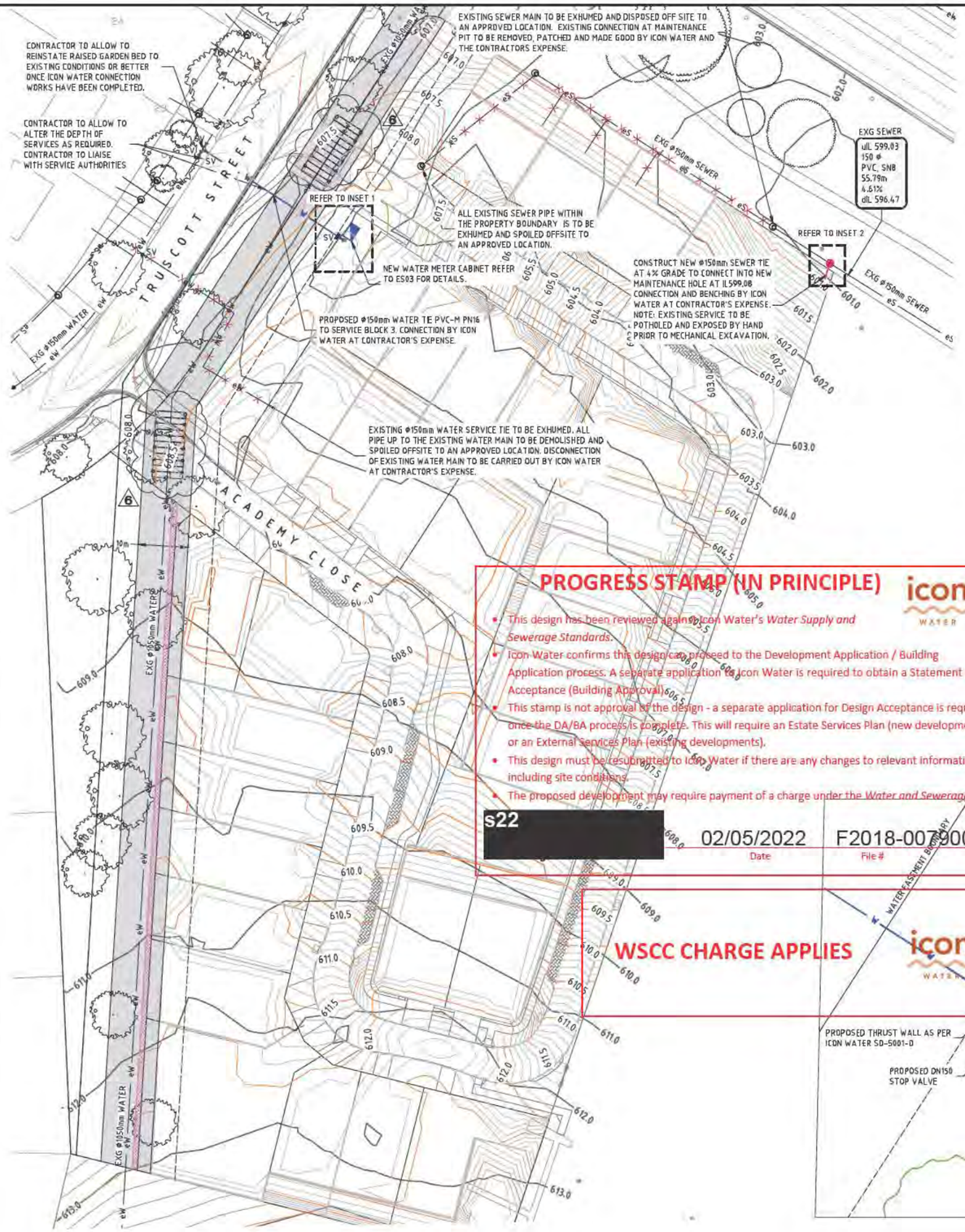
1. Where an Icon Water main traverses a property (and where an Icon Water main is outside the property boundary but proposed demolition works may impact on the water main's pipe-protection-envelope), accurate water network survey plans must be obtained from Icon Water or from a registered surveyor. Water asset locations need to be shown (including mains, valves and hydrants) on relevant demolition plans (with off-set dimensions to site boundaries).
2. Identifying the location of the Icon Water isolation valve and water meter on the site plan (with off-set dimensions from site boundaries).
3. Recording the condition of the water connection pipe, isolation valve, water meter, verge hydrants and verge network valves. Please contact Icon Water on 6248 3111 to repair damaged components. Failure to identify any faults before demolition works commence may result in the property owner (or their contractors) being held responsible to pay for the repair caused by a failure to adequately protect those assets during the demolition or building construction.
4. Engaging a licensed plumber to disconnect the internal plumbing service at the water meter before any demolition commences.
5. Where further construction works are planned, install a temporary hose cock adjacent to the meter. Retain the meter, meter box and hose cock for the duration of any building works. Identify, flag, barricade and protect the meter assembly from demolition operations and accidental damage. To avoid accidental wastage, turn off the isolation valve until required.
6. Where further construction works is not proposed to commence within 12 months from the date demolition commences, permanent disconnection and removal of the meter may be required. Please consult Icon Water at this time for a definitive answer.
7. Flagging and protecting network isolation valves and hydrants (on the verge) from demolition operations and accidental damage.
8. Advising Icon Water when demolition is complete. Icon Water may take the opportunity to install a new isolation valve and meter assembly to the current Icon Water standard.

Application Number
203462
Sheet
12 of 16

icon WATER

LOCALITY PLAN - NOT TO SCALE





LEGEND

EXISTING SERVICES

- eW — WATER MAIN/ TES
- FIRE HYDRANT
- STOP VALVE
- eS — SEWER MAIN/ TIES
- SEWER MANHOLE
- VERGE TREE
- 602.0 — EXISTING CONTOUR (1m INTERVAL)

WARNING:
EXISTING SERVICES SHOWN ARE BASED ON INFORMATION PROVIDED BY SERVICE AUTHORITIES AND ARE ESTIMATES ONLY. UNDER NO CIRCUMSTANCES SHOULD THE LOCATIONS OF SERVICES SHOWN ON THIS PLAN BE RELIED UPON FOR ON SITE WORK. ALL INFORMATION MUST BE CONFIRMED IN THE FIELD.

PROPOSED SERVICES

- W — WATER TIE
- W — WATER TIE OWNED BY ICON WATER (MAINTAINED BY LESSEE)
- EXISTING SERVICE TO BE EXHUMED
- WATER METER CABINET (REFER TO ES03 FOR DETAILS)
- SV — DN150 STOP VALVE
- THRUST WALL IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-5001-D
- TB — THRUST BLOCK IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-5002-D AND SD-5003-D
- CAPPING SLAB OVER EXISTING 1050DN WATER MAIN REFER TO STRUCTURAL FOR DETAIL
- S — SEWER MAIN
- SEWER MANHOLE
- 602.0 — DESIGN MAJOR CONTOUR (1m INTERVAL)
- DESIGN MINOR CONTOUR (0.2m INTERVAL)
- 10m WIDE WATER EASEMENT
- Ø1050mm WATER MAIN OFFSET (10m) FROM PIPE CENTRELINE
- EARTH BUND

GENERAL NOTES

1. ALL WORK ON ICON WATER'S WATER SUPPLY AND SEWER MAINS TO BE CARRIED OUT IN ACCORDANCE WITH CURRENT ICON WATER'S DESIGN AND CONSTRUCTION STANDARDS, RELEASED 30 AUGUST 2019. ALL WORK ON STORMWATER MAINS TO BE CARRIED OUT IN ACCORDANCE WITH DESIGN STANDARDS FOR URBAN INFRASTRUCTURE WORKS.
2. CONNECTIONS AND OR DISCONNECTIONS OF SEWER AND WATER AT THE MAIN TO BE MADE BY ICON WATER AT THE CONTRACTORS EXPENSE. THE CONTRACTOR IS TO EXPOSE THE MAIN AT THE LOCATION OF THE CONNECTION/DISCONNECTION IN PREPARATION FOR THE WORK BY ICON WATER. ALL EXCAVATION IN THE VICINITY OF MAINS IS TO BE CARRIED OUT BY HAND.
3. ALTHOUGH THE POSITION OF EXISTING UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM AVAILABLE RECORDS, THE CONTRACTOR SHALL CONFIRM THE DEPTH AND LOCATION OF ALL SERVICES ON SITE BEFORE COMMENCING EXCAVATIONS.
4. CONTRACTOR TO CONFIRM DEPTH OF SEWER AND STORMWATER TIE POINTS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ADVISE THE DESIGN ENGINEER IF NOT IN ACCORDANCE WITH THE PLAN.
5. ALL LEVELS TO AUSTRALIAN HEIGHT DATUM (AHD). ALL COORDINATES ARE BASED ON THE CANBERRA LOCAL GRID SYSTEM.
6. ANY NON-METALLIC WATER SERVICE IS TO BE INSTALLED WITH TRACER WIRE AND TESTED.
7. THE CONTRACTOR MUST VISIT THE SITE OF WORKS BEFORE TENDERING AND MAKE ALLOWANCES ON HIS TENDER FOR ALL TOPOGRAPHIC CONSTRAINTS AFFECTING THE EXECUTION OF THE WORKS AND THE RESTORATION OF THE SITE.
8. THE CONTRACTOR SHALL REINSTATE ALL DISTURBED SURFACES TO MATCH EXISTING.
9. THE CONTRACTOR MUST SECURE ALL PERMITS, ARRANGE ALL CLEARANCES AND PAY ALL FEE'S REQUIRED TO COMPLETE THE PROJECT, PRIOR TO THE COMMENCEMENT OF WORK.
10. EXCESS EXCAVATED MATERIAL MATERIAL SHALL BE REMOVED FROM THE SITE AND DUMPED AT AN APPROVED SPOIL AREA.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE PREPARATION OF ALL NECESSARY TEMPORARY TRAFFIC MANAGEMENT PLANS AND THEIR APPROVAL.
12. WORK AS EXECUTED DRAWING AND TIE BOOK MUST BE SUBMITTED BEFORE CONNECTION. A REGISTERED DEPOSITED PLAN MUST ALSO BE SUBMITTED WHERE EASEMENTS ARE EXISTING OR PROPOSED ON THE BLOCK. WORK AS EXECUTED DRAWINGS AND TIE BOOK DETAIL (A4 SIZE) ARE TO SHOW DIMENSIONED LOCATIONS OF TAPPING ONTO MAIN. WHERE SERVICE CROSSES FRONT BOUNDARY AND DISTANCE METER IS INSIDE THE BLOCK.
13. PROVISIONAL CERTIFICATE OF OPERATION WILL BE ISSUED WHEN HANDOVER INSPECTION IS PASSED AND ACCEPTABLE WORK AS EXECUTED DRAWING AND TIE BOOK RECORD HAS BEEN COMPLETED AND SUBMITTED TO ICON WATER.

REINSTATEMENT GENERALLY

1. UNLESS OTHERWISE DIRECTED REINSTATE ALL SURFACES DISTURBED BY THE WORKS WITH MINIMUM 100MM SITE TOP SOIL, DRY LAND GRASS, BITUMEN, STRAW MULCH.
2. CONSOLIDATE FOR 13 WEEKS ONCE HEALTHY SWARD ESTABLISHED.
3. REMOVE ALL EXCESS SOIL INCLUDING EXCESS TOPSOIL AND UNSUITABLE SUBGRADE FROM THE SITE UNLESS DIRECTED OTHERWISE.

WATER

CONSTRUCT STRUCTURES AND CONNECTIONS IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

- ROAD VERGE DRAWINGS - DRAWING NOS. SEP4 - 01 TO 06, CHAPTER 4 (ROAD VERGES) (REFERENCE 10.15)
- SD-1102-D - BULK WATER, WATER & SEWERAGE - DESIGN SYMBOLS FOR PLANS AND TIE BOOKS
- SD-1103-D - BULK WATER, WATER & SEWERAGE - LINETYPES AND NOTATION FOR PLANS AND TIE BOOKS
- SD-2005-D - SEWERAGE NETWORK PROPERTY - CONNECTION DETAILS - SEWER TIES - SHEET 1 OF 2
- SD-2006-D - SEWERAGE NETWORK PROPERTY - CONNECTION DETAILS - SEWER TIES - SHEET 2 OF 2
- SD-2101-C - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL TYPICAL ARRANGEMENT
- SD-2102-D - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL - GRANULAR AND CEMENT STABILISED EMBEDMENT DETAILS
- SD-2201-D - SEWERAGE NETWORK - CAST IN SITU MAINTENANCE HOLE - 1050 DIA. WITH BRANCHES - ARRANGEMENT AND DETAILS
- SD-2204-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES 1050, 1200 AND 1500 DIA. COVERS AND SURROUNDS ARRANGEMENT AND FIXING DETAILS
- SD-2205-D - SEWERAGE NETWORK - PRECAST MAINTENANCE HOLES - FOR DEPTHS LESS THAN 6000mm - TYPICAL ARRANGEMENT AND BASE DETAILS
- SD-2206-D - SEWERAGE NETWORK - PRECAST MAINTENANCE HOLES FOR DEPTHS LESS THAN 1200mm - TYPICAL ARRANGEMENT
- SD-2207-D - SEWERAGE NETWORK - 1050 DIA. PRECAST MAINTENANCE HOLES - TYPICAL COMPONENTS - DETAILS
- SD-2208-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES - STANDARD OFFSETS AND BENCHING DETAILS
- SD-2209-D - SEWERAGE NETWORK - SEWER MAINTENANCE SHAFTS (SMS) AND RODDING POINTS - TYPICAL ARRANGEMENTS
- SD-2210-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES - PIPE CONNECTION DETAILS

SEWER

CONSTRUCT CONNECTIONS, BENDS ETC. IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

- ROAD VERGE DRAWINGS - DRAWING NOS. SEP4 - 01 TO 06, CHAPTER 4 (ROAD VERGES) (REFERENCE 10.15)
- SD-1102-D - BULK WATER, WATER & SEWERAGE - DESIGN SYMBOLS FOR PLANS AND TIE BOOKS
- SD-1103-D - BULK WATER, WATER & SEWERAGE - LINETYPES AND NOTATION FOR PLANS AND TIE BOOKS
- SD-2101-C - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL - TYPICAL ARRANGEMENT
- SD-2102-D - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL - GRANULAR AND CEMENT STABILISED EMBEDMENT DETAILS
- SD-3306-D - WATER SERVICE CONNECTIONS - DN20 TO DN40 METERS - BELOW GROUND INSTALLATIONS - ARRANGEMENT AND CONNECTION DETAILS

PROGRESS STAMP (IN PRINCIPLE)

icon WATER

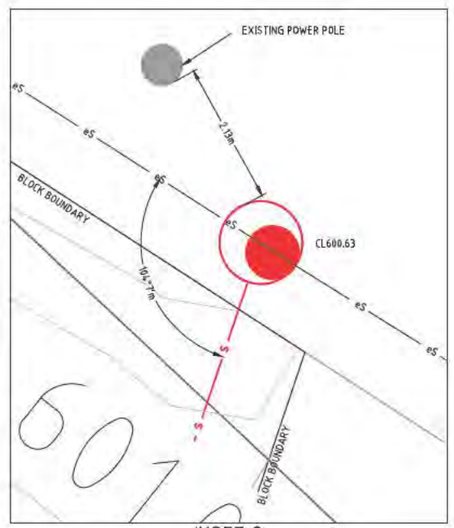
- This design has been reviewed against Icon Water's *Water Supply and Sewerage Standards*.
- Icon Water confirms this design can proceed to the Development Application / Building Application process. A separate application to Icon Water is required to obtain a Statement of Acceptance (Building Approval).
- This stamp is not approval of the design - a separate application for Design Acceptance is required once the DA/BA process is complete. This will require an Estate Services Plan (new developments) or an External Services Plan (existing developments).
- This design must be resubmitted to Icon Water if there are any changes to relevant information, including site conditions.
- The proposed development may require payment of a charge under the *Water and Sewerage*

s22 [redacted] 02/05/2022 Date F2018-007900 File #

WSCC CHARGE APPLIES

icon WATER

INSET 1
1:100 @A1



INSET 2
1:50 @A1

NOT FOR CONSTRUCTION

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNER: N.GRINTER
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ICON APPROVAL IN PRINCIPLE	RC		DF	20.10.20
2	ICON APPROVAL IN PRINCIPLE V2	NG		DF	12.04.21
3	ICON APPROVAL	RC		DF	07.05.21
4	ICON APPROVAL	RC		NG	06.07.21
5	ICON APPROVAL	KPVK		DF	18.03.22
6	ICON APPROVAL	RC		NG	22.04.22

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close
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0 5 10 15 20 25m PLAN SCALE 1:500 @ A1

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Canberra
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Email canberra@northrop.com.au ABN 81 094 433 100

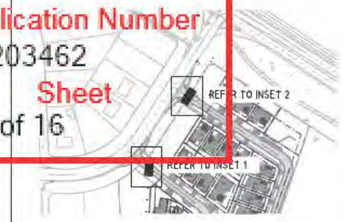
PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXTERNAL SERVICES PLAN

JOB NUMBER: CR172699
DRAWING NUMBER: ES01
REVISION: 6
DRAWING SHEET SIZE = A1

Application Number
203462
Sheet
13 of 16

LOCALITY PLAN - NOT TO SCALE



GENERAL LEGEND

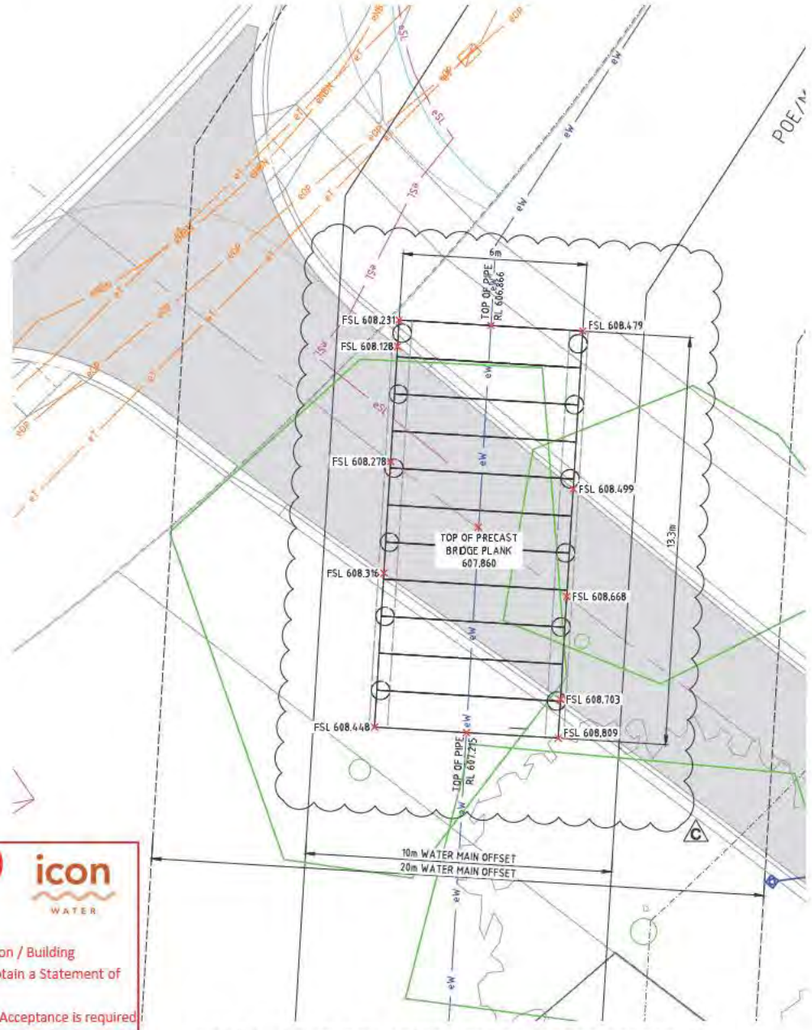
WATER MAIN PROTECTION BRIDGE
REFER TO STRUCTURAL ENGINEER PLANS FOR DETAILS

EXISTING SERVICES LEGEND

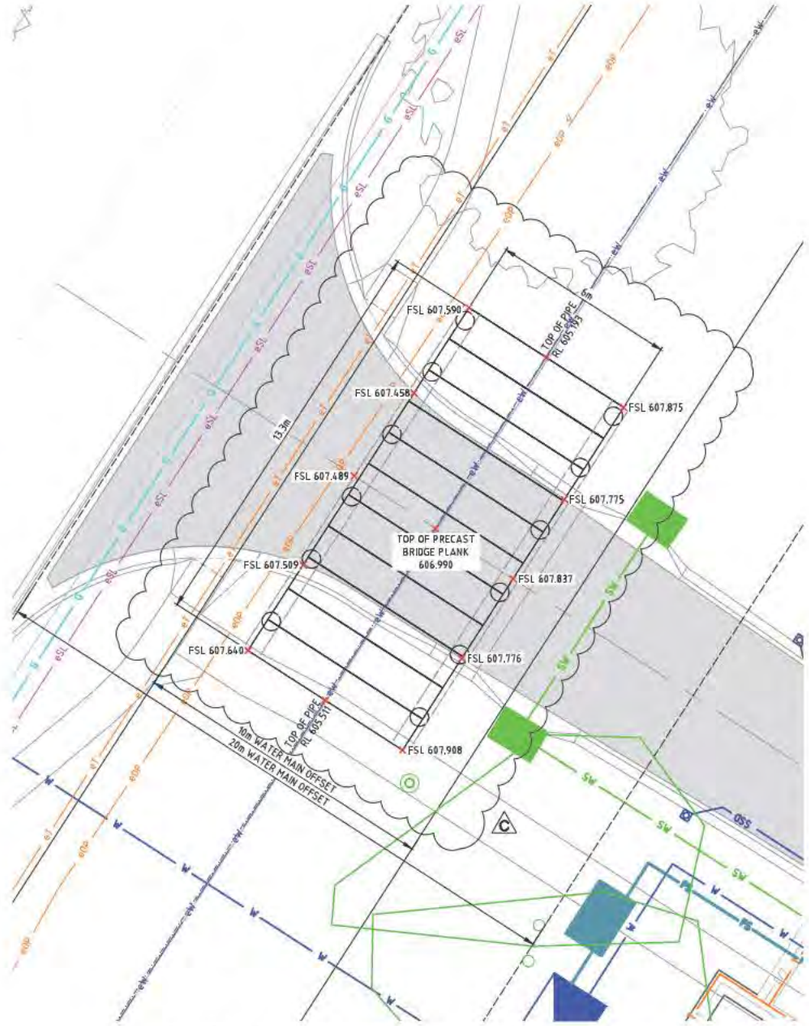
eSW	STORMWATER SERVICE
eS	SEWER SERVICE
eW	WATER SERVICE
eE	ELECTRICAL SERVICE
eSL	STREETLIGHT SERVICE
eG	GAS SERVICE
eT	TELSTRA SERVICE
eNBN	NBN SERVICE
eOP	OPTUS SERVICE
eTA	TRANSACT SERVICE

PROPOSED SERVICES LEGEND

SW	STORMWATER PIPE
S	SEWER PIPE
W	NEW WATER PIPE
E/T	SHARED TRENCH COMMS AND ELEC
FS	NEW FIRE SERVICE MAIN



INSET 1 - SOUTHERN ACCESS OFF TRUSCOTT STREET
(REFER TO STRUCTURAL ENGINEER PLANS FOR DETAILS)
1:100 @A1



INSET 2 - NORTHERN ACCESS OFF TRUSCOTT STREET
(REFER TO STRUCTURAL ENGINEER PLANS FOR DETAILS)
1:100 @A1

PROGRESS STAMP (IN PRINCIPLE)

icon WATER

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s22 [redacted] 02/05/2022 F2018-007900
Date File #

WSCC CHARGE APPLIES

icon WATER

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED:
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ICON APPROVAL	KPVK		DF	18.03.22
B	ICON APPROVAL (v2)	RC		NG	13.04.22
C	ICON APPROVAL (v3)	RC		NG	22.04.22

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close
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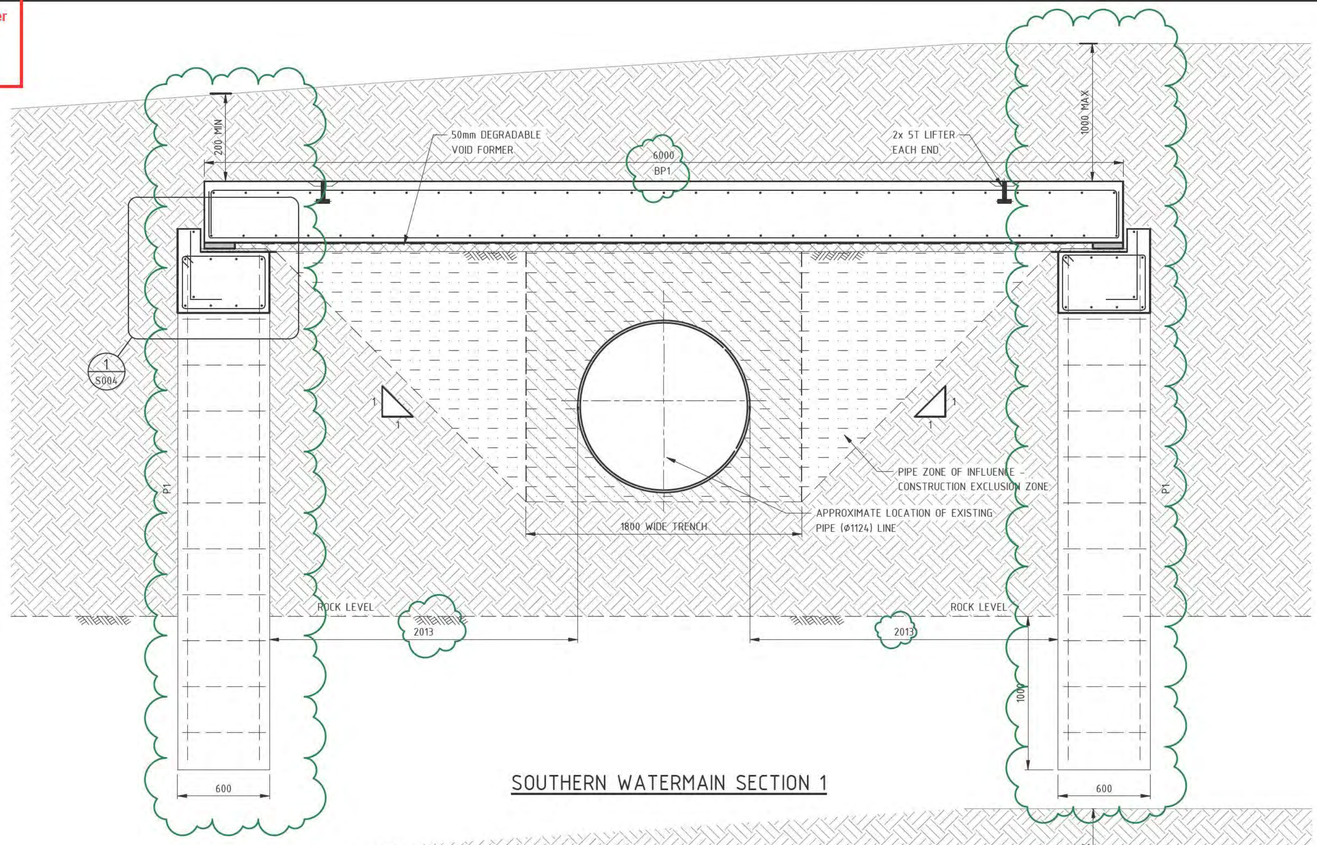
PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

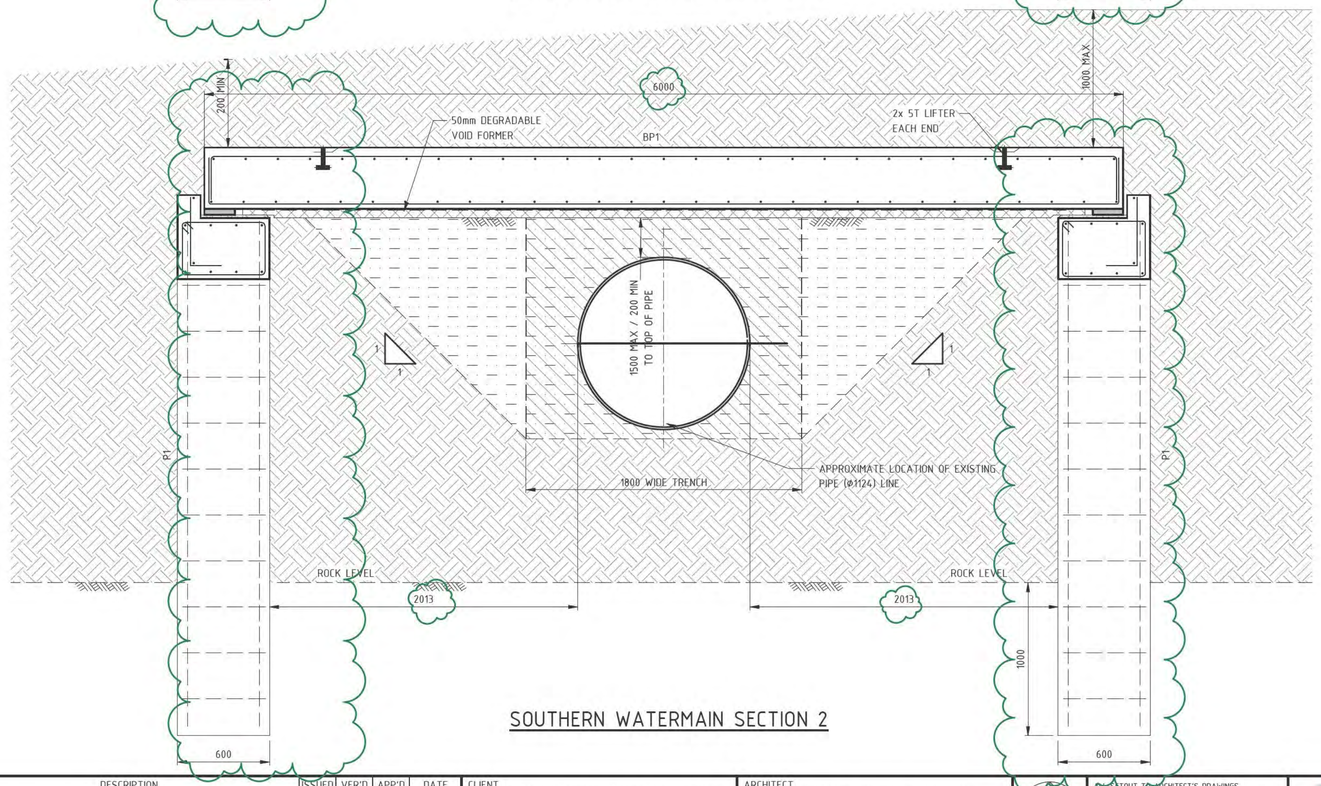
DRAWING TITLE: CIVIL WORKS
PERMANENT WATER MAIN
PROTECTION

JOB NUMBER: CR172699
DRAWING NUMBER: C241
REVISION: C
DRAWING SHEET SIZE = A1

icon WATER
Application Number
203462
Sheet
14 of 16



SOUTHERN WATERMAIN SECTION 1



SOUTHERN WATERMAIN SECTION 2

- FOUNDATION SCHEDULE -			
MARK	SIZE	COMMENT(S)	REINFORCEMENT RATE
BEAM			
BP1	1200W x 400D x 5900 L	PRECAST BRIDGE PLANK, ON HSC/3/200/40 BEARING STRIP EACH END. 10mm GAP BETWEEN PLANKS, 25mm GAP AT ENDS. PANEL APPROX WEIGHT 7.3T	N24-100 BTM, N16-200 TOP, N12-200 TIES
CB1	600W x 400D	CAPPING BEAM	4N24 TOP & BTM + N12-300 TIES
P1	600 DIA	SOCKET MIN 1m BELOW SOFFIT OF S/W PIPE AND MIN 1M INTO 1000 kPa WEATHERED ROCK.	8N16 + N10-300 TIES

GENERAL NOTES:

FOR STRUCTURAL SPECIFICATIONS REFER TO DRAWINGS S002 & S003

ALL PILING AND EXCAVATION WORKS TO BE MONITORED BY AN EXPERIENCED GEOTECHNICAL ENGINEER.

ALL CONSTRUCTION WORKS TO TAKE PLACE OUTSIDE ZONE OF INFLUENCE OF PIPE - EXCLUSION ZONE TO BE CLEARLY PEGGED ON SITE PRIOR TO PILING

TOP OF PIPE TO BE EXPOSED VIA HYDROVAC AND DEPTH CONFIRMED AT 4 LOCATIONS ACROSS BRIDGE PRIOR TO POURING CAPPING BEAM.

ICON WATER TO BE CONTACTED AND ADVISED OF CONSTRUCTION DATES FOR PILES AND PLANK LAYING; ICON TO BE ALLOWED ACCESS TO SITE DURING CONSTRUCTION.

WSCC CHARGE APPLIES

icon WATER

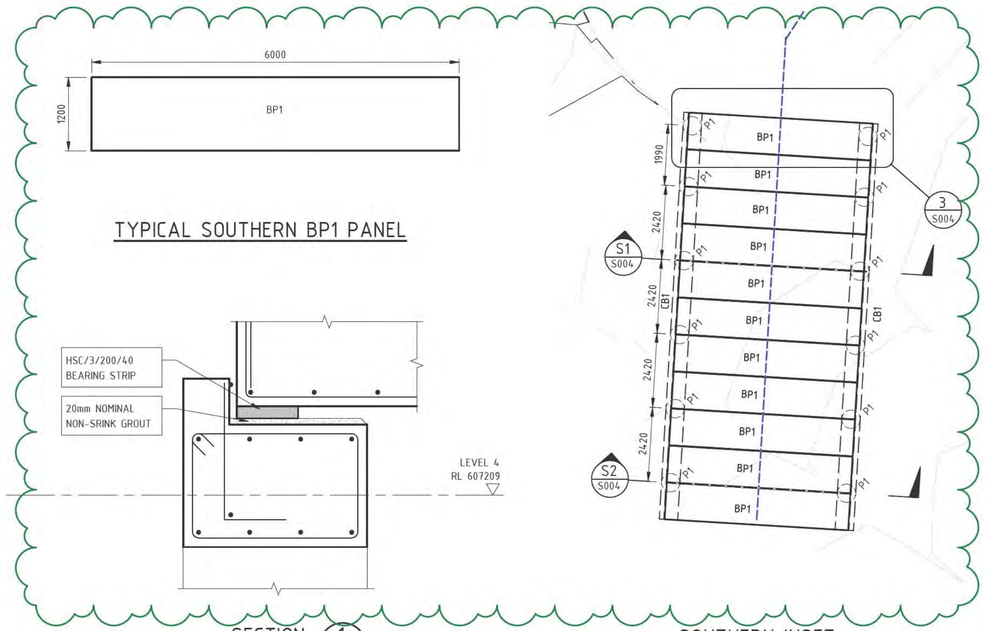
PROGRESS STAMP (IN PRINCIPLE)

icon WATER

- This design has been reviewed against Icon Water's *Water Supply and Sewerage Standards*.
- Icon Water confirms this design can proceed to the Development Application / Building Application process. A separate application to Icon Water is required to obtain a Statement of Acceptance (Building Approval)
- This stamp is not approval of the design - a separate application for Design Acceptance is required once the DA/BA process is complete. This will require an Estate Services Plan (new developments) or an External Services Plan (existing developments).
- This design must be resubmitted to Icon Water if there are any changes to relevant information, including site conditions.
- The proposed development may require payment of a charge under the *Water and Sewerage*

s22 [redacted]

02/05/2022 — Date
F2018-007900 — File #



SECTION 1 S004

SOUTHERN INSET

NOT FOR CONSTRUCTION

VERIFIER:
JOB MANAGER: DB
DESIGNED: DB
DRAWN: HM

REV	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUE FOR REVIEW	HM		DB	07.03.22
2	ISSUE FOR REVIEW	HM		DB	30.03.22
3	ISSUE FOR REVIEW	HM		DB	11.04.22

CLIENT: DEFENCE HOUSING AUSTRALIA

ARCHITECT: ACADEMY CLOSE CAMPELL

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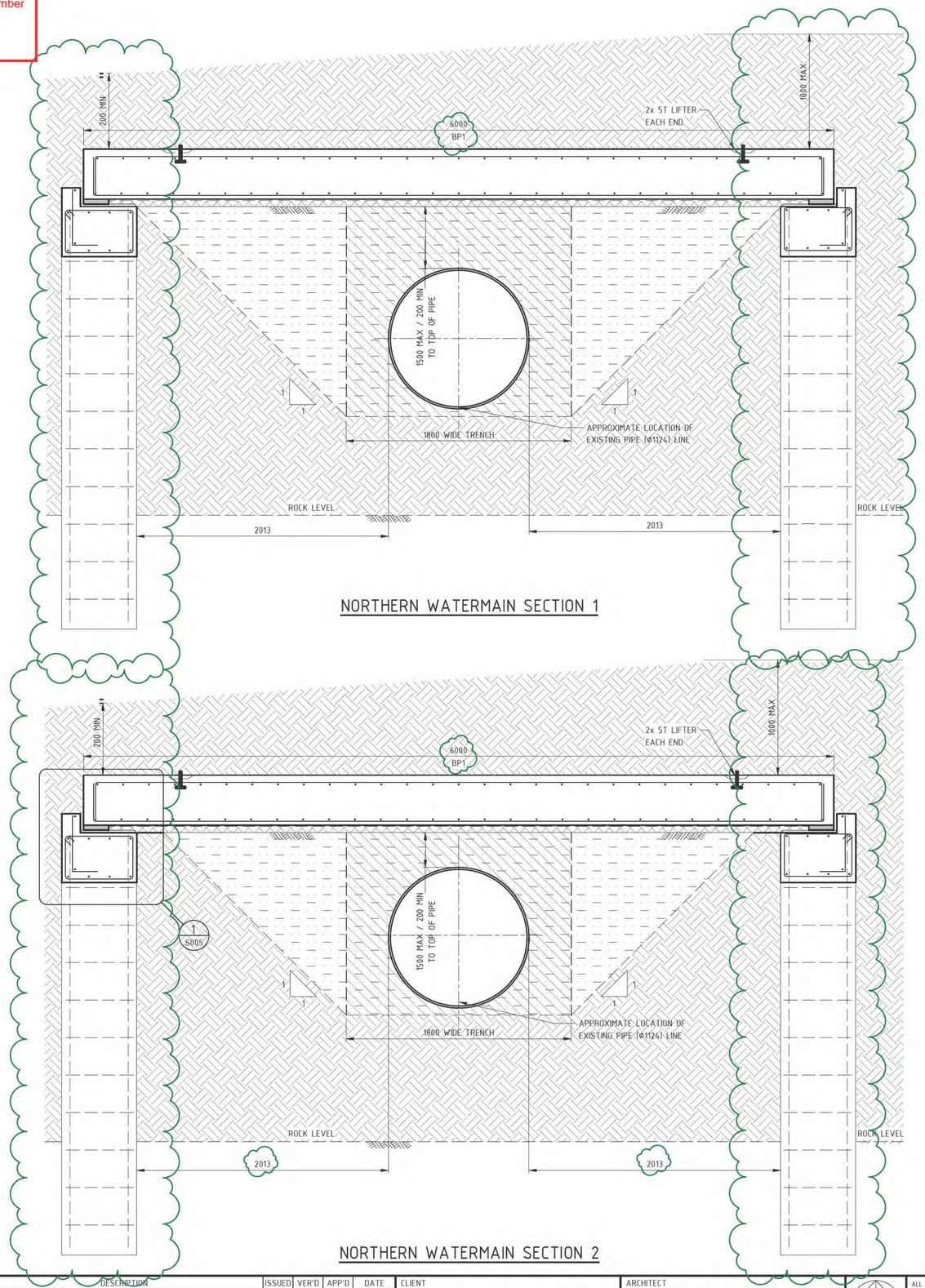
PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: STRUCTURAL WORKS
SOUTHERN WATERMAIN PROTECTION BRIDGE
PLAN & DETAILS

JOB NUMBER: CR172699
DRAWING NUMBER: S004
REVISION: 3
DRAWING SHEET SIZE = A1

Application Number
203462
Sheet
15 of 16



NORTHERN WATERMAIN SECTION 1

NORTHERN WATERMAIN SECTION 2

- FOUNDATION SCHEDULE -			
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BEAM			
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GENERAL NOTES:

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ALL PILING AND EXCAVATION WORKS TO BE MONITORED BY AN EXPERIENCED GEOTECHNICAL ENGINEER.

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TOP OF PIPE TO BE EXPOSED VIA HYDROVAC AND DEPTH CONFIRMED AT 4 LOCATIONS ACROSS BRIDGE PRIOR TO POURING CAPPING BEAM.

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WSCC CHARGE APPLIES

icon WATER

PROGRESS STAMP (IN PRINCIPLE)

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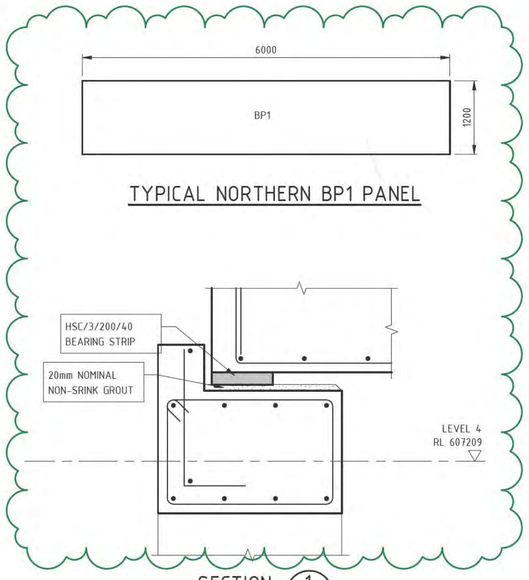
- The proposed development may require payment of a charge under the *Water and Sewerage*

s22 [redacted]

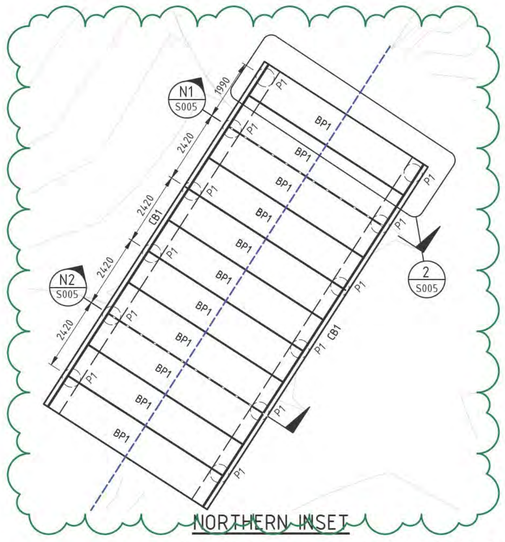
02/05/2022 F2018-007900

Date File #



TYPICAL NORTHERN BP1 PANEL

SECTION 1 S005



NORTHERN INSET

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CLIENT: DEFENCE HOUSING AUSTRALIA

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PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: STRUCTURAL WORKS
NORTHERN WATERMAIN PROTECTION BRIDGE
PLAN & DETAILS

JOB NUMBER: CR172699

DRAWING NUMBER: S005

REVISION: 3

DRAWING SHEET SIZE = A1

VERIFIER: -
JOB MANAGER: DB
DESIGNED: DB
DRAWN: HM

Small water meter installation guide for Plumbers and Developers

Application Number
203462
Sheet
16 of 16

Introduction

This guide sets out the minimum requirements that apply for new 20mm meter installations in the ACT.

These minimum requirements include:

- Ensure meter is on correct block and section.
- The water meter must be installed within 14 days of collection from Icon Water.
- Meters and services must not be installed in drive ways, retaining walls or footpaths (unless approval has been obtained from Icon Water - Development Services).
- Pressure reducing valves (PRV) must not be installed in the meter box.
- Risers installed upstream and downstream of the meter must be copper.
- Clearance requirements for the meter and meter box are provided in the diagram below.

Please refer to Icon Water standards for further details:

iconwater.com.au/Developers-and-Renovators/Water-and-Sewerage-Service-Standards-and-Guidelines

Failed installations

Make sure the following does not occur when installing the meter.

All newly installed meters will be inspected by Icon Water.

Incorrect box level

Incorrect meter height

No copper risers

PRV in box

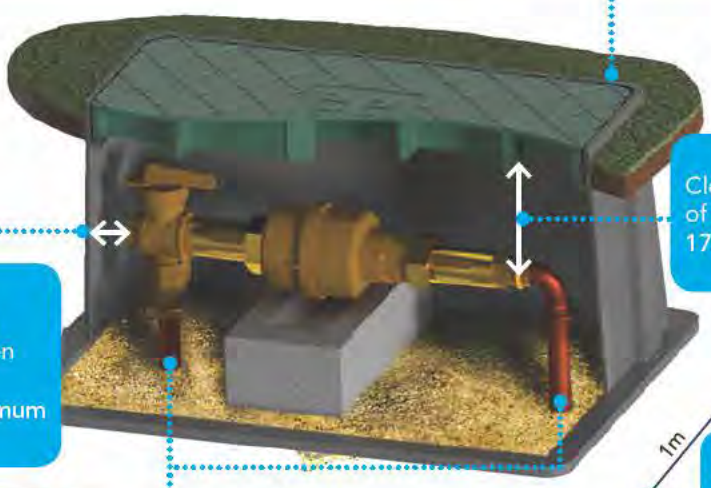
In driveway (unapproved)

No clearance for Ball valve

DN20 meter installation

This diagram shows the minimum required clearances for new meter installations.

Please check the ☑ following installation requirements.



☐ Top of meter box to be: flush with grass or paved area, or 50-100mm above garden beds.

☐ Clearance from centre of pipe to bottom of lid – 170 min – 240mm max

☐ Clearance between ball valve handle (in fully open or closed position) and meter box – 25mm minimum

☐ Provide 1m clearance around the meter box to enable Icon Water access for reading and maintenance

☐ No PRV in the box

☐ Copper risers up and down stream (min 300 mm)

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GPO Box 366 Canberra ACT 2601

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icon WATER

CIVIL WORKS LOCATION:	DEFENCE HOUSING AUSTRALIA BLOCK 3, SECTION 65 CAMPBELL, A.C.T
TOTAL WORKS AREA: APPROX. 2241m^2	
HOURS OF OPERATION: MONDAY–SATURDAY, BETWEEN 7A.M–6P.M	
CONTACT DETAILS	

COMPANY:	SITE MANAGER:	PROJECT MANAGER:
Name: TBC Ph: TBC	Name: TBC Ph: TBC	Name: TBC Ph: TBC

NOTE
REFER C010A FOR SEDIMENT AND EROSION CONTROL DETAILS.

NOTES

GENERAL:

- THE CONTRACTOR MUST ENTER INTO AN ENVIRONMENT PROTECTION AGREEMENT WITH THE EPA
- ENSURE THAT ALL ENVIRONMENT PROTECTION WORKS ARE IN PLACE BEFORE COMMENCING CONSTRUCTION ON THE SITE.
- LIAISE AS NECESSARY WITH THE EPA AND OBTAIN AGREEMENT TO THE ADEQUACY OF THE PROTECTION WORKS.
- KEEP A COPY OF THE EPA SIGNED EROSION AND SEDIMENT CONTROL PLAN ON SITE AT ALL TIMES: DISPLAY IN A PROMINENT LOCATION.
- LOCATE ALL PROTECTION WORKS WHOLLY WITHIN THE SITE UNLESS OTHERWISE PRE-APPROVED.
- CONSTRUCT AND MAINTAIN PROTECTION WORKS IN ACCORDANCE WITH THE "ENVIRONMENT PROTECTION GUIDELINES FOR CONSTRUCTION AND LAND DEVELOPMENT IN THE ACT" (2011) AND THE NSW BLUE BOOK AS APPROPRIATE.
- ASSIGN A DESIGNATED PARKING AREA. ALL WORKERS VEHICLES ARE TO BE PARKED IN LEGAL PARKING ZONES, WHERE POSSIBLE VEHICLES TO BE PARKED WITHIN THE BLOCK.
- MINIMISE DISTURBANCE OF THE EXISTING SURFACE AND VEGETATION.

SPOIL MANAGEMENT:

- DESIGNATE AN AREA ON SITE FOR CONCRETE TRUCK WASH-DOWNS.
- BRICK CUTTING TO OCCUR ON SITE WITHIN THE MATERIALS AND WASTE STORAGE AREA.
- SPOIL TO BE DISPOSED OF APPROPRIATELY TO AN APPROVED LOCATION OFF SITE.

NOISE:

- ENSURE ALL CONSTRUCTION WORK THAT GENERATES NOISE TAKES PLACE ONLY WITHIN THE PRE-APPROVED OPERATING HOURS FOR THE PROJECT: MONDAY TO SATURDAY, BETWEEN 7A.M AND 6P.M.

SEDIMENT CONTROLS AND STORMWATER:

- MAINTAIN STRICT SITE ACCESS CONTROL WITH A STABILISED ACCESS POINT THAT ALL VEHICLES MUST USE.
- AT THE END OF EACH DAY OR WHEN DIRT OCCURS OR PRIOR TO ANY RAIN EVENT, REMOVE ANY SEDIMENT FROM PUBLIC ROADS ADJACENT TO THE WORK AREA. DO NOT WASH INTO THE STORMWATER SYSTEM.
- MAINTAIN AS MUCH VEGETATIVE COVER AS PRACTICAL PARTICULARLY BESIDE MAIN DRAINAGE LINES. FENCE OFF BUFFER AREAS TO PREVENT DISTURBANCE
- PROTECT ALL CUT AND FILL BATTERS FROM RUN-OFF AND STABILISE IMMEDIATELY AFTER CONSTRUCTION.
- USE CONTOUR PLOUGHING AND/OR SURFACE ROUGHENING OF FINISHED LANDFORM TO SLOW WATER FLOW DURING RAIN EVENTS.
- INSTALL SILT FENCES ON THE LOW SIDE OF ANY STOCKPILE
- INSTALL PERMANENT DRAINAGE FACILITIES AT AN EARLY STAGE.
- FILTER SOCKS TO BE INSTALLED AT ALL OPEN PITS AND KERB SIDE SUMPS PROGRESSIVELY AS CONSTRUCTION PROCEEDS
- PROVIDE PROTECTION TO NEW DRAINAGE INLETS IMMEDIATELY ON CONNECTION TO THE DRAINAGE SYSTEM
- ESTABLISH ALTERNATIVE STABLE DRAINAGE SYSTEMS THROUGH THE SITE WHILE PERMANENT FACILITIES ARE BEING INSTALLED.
- USE DIVERSION STRUCTURES TO CONVEY RUN-OFF TO A STABLE DISPOSAL AREA.
- STABILISE AND GRASS ALL DIVERSION SWALES AND DRAINS. WHERE MAJOR TEMPORARY DRAINAGE PATHS ARE CREATED CONSTRUCT HAY BALE WEIRS (WRAPPED IN BIDDUM) ACROSS THE ENTIRE FLOW PATH AND AT 25M INTERVALS.
- STABILISE AND GRASS ALL DIVERSION SWALES AND DRAINS.
- INSTALL SEDIMENT TRAPS AT DRAINAGE INLETS AND OTHER POINTS OF DISCHARGE FROM AREAS OF DISTURBANCE.
- UNDERTAKE VEGETATIVE STABILISATION MEASURES IMMEDIATELY AFTER COMPLETION OF FINAL LAND FORMING.
- PLACE HAY BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE HAY TO FILL ANY GAPS BETWEEN BALES. – ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
- EMBED EACH BALE IN THE GROUND 75mm–100mm AND ANCHOR WITH TWO 1.2M STAR PICKETS OR STAKES. ANGLE FIRST STAR PICKET/STAKE IN EACH BALE TOWARDS PREVIOUSLY LAID BALE. DRIVE 600mm INTO THE GROUND AND. WHERE STAR PICKETS PROTRUDE ABOVE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.

INSPECTIONS AND MAINTENANCE SCHEDULE:

(RECORD MAINTENANCE ACTIVITIES AND DETAILS TO PROVIDE TO EPA.)

DAILY:

- CHUTES, BARRELS, WHEELBARROWS AND OTHER EQUIPMENT TO BE RINSED IN THE SITE WASH-DOWN AREA.
- REMOVE ANY SEDIMENT FROM PUBLIC ROADS ADJACENT TO THE WORK AREA. DO NOT WASH INTO THE STORMWATER SYSTEM.
- SUPPRESS DUST BY REGULAR SPRAYING OF WATER AND COVERING AND SECURING VEHICLE LOADS ENTERING/EXITING SITE.
- MAINTAIN AND INSPECT POLLUTION CONTROL MEASURES DURING CONSTRUCTION AND UNTIL FULL STABILISATION. REPAIR AND REINSTATE WORKS AS NEEDED.

MONTHLY:

- MAINTAIN AND INSPECT STABILISED SITE ACCESS POINTS.
- MAINTAIN AND INSPECT HAY BALES. REPLACE AS REQUIRED IF DEGRADED OR DAMAGED.

AIR QUALITY:

SUPPRESS DUST BY THE INCLUDING FOLLOWING METHODS WHERE APPLICABLE:

a. STAGE WORKS TO LIMIT THE EXTENT OF EXPOSED AND UNPROTECTED AREAS.
b. REGULAR SPRAYING OF WATER
c. COVER AND SECURE VEHICLE LOADS ENTERING/EXITING SITE
d. USE AN ENVIRONMENTALLY FRIENDLY CHEMICAL SPRAY TO BIND SOIL TOGETHER THUS STABILISING UNUSED SOIL
e. RESTRICT SPEED OF VEHICLES ONSITE
f. COVER STOCKPILES TO PROTECT FROM THE WIND

- IMPLEMENT MEASURES TO LIMIT AIR POLLUTION BY VEHICLES AND PLANT WORKING ON OR PASSING THROUGH THE SITE.
- MAINTAIN POLLUTION CONTROL MEASURES DURING CONSTRUCTION AND UNTIL FULL STABILISATION. ROUTINELY INSPECT EACH WEEK AND AFTER SIGNIFICANT RAINFALL EVENTS, REPAIR AND REINSTATE WORKS AS NEEDED TO MAINTAIN PROTECTION. RECORD MAINTENANCE ACTIVITIES AND DETAILS AND PROVIDE TO EPA FOR INSPECTION WHEN REQUESTED.

FIRE:

- BURNING OF WASTE MATERIALS MUST NOT BE UNDERTAKEN.
- FIRE MAY BE PERMITTED FOR GENERAL HEATING PURPOSES IF IN A BRAZIER OR CONSTRUCTED FIREPLACE, USING SEASONED, UNTREATED TIMBER.

TREE PROTECTION

GENERAL

- INSTALL ALL PROTECTIVE MEASURES PRIOR TO COMMENCING CONSTRUCTION WORKS, ADVISE TRANSPORT CANBERRA AND CITY SERVICES (AA) IN WRITING THAT THE PROTECTIVE MEASURES HAVE BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED LMPP.
- ALL VERGE VEGETATION INCLUDING GRASS SHALL BE PROTECTED AND RETAINED UNO ON THE DRAWINGS. ROUTINELY WATER TO RETAIN VEGETATION IN GOOD CONDITION.
- A SUITABLY QUALIFIED LANDSCAPE ARCHITECT OR HORTICULTURIST SHALL BE ENGAGED BY THE CONTRACTOR TO OVERSEE ALL MAJOR WORK IN THE VERGE.
- CONSTRUCTION MATERIAL SHALL NOT BE STORED ON VERGES OR PUBLIC OPEN SPACES.
- CAR PARKING OR EQUIPMENT PARKING SHALL NOT BE PERMITTED ON VERGES OR ADJACENT PARKLAND.
- SITE SHEDS, STORAGE SHEDS, SITE AMENITIES OR BILLBOARDS SHALL NOT BE ERECTED ON VERGES OR PUBLIC OPEN SPACES WITHOUT THE PRIOR WRITTEN APPROVAL OF THE MANAGER, TCCS, FOR THE USE OF VERGES, PUBLIC OPEN SPACES OR UNLEASED TERRITORY LAND.

PROTECTIVE FENCING

- ALL TEMPORARY PROTECTIVE FENCES SHALL BE IN ACCORDANCE WITH THE APPROVED LMPP.
- FENCE OFF TREES, PLANTINGS AND GRASS MARKED FOR RETENTION TO ENCLOSE THE STREET VERGE, PUBLIC OPEN SPACE OR UNLEASED TERRITORY LAND AREA.
- THE STANDARD LOCATIONS FOR FENCING SHALL BE:
- FOR EACH TREE ALONG ITS DRIP-LINE 1.2m OFFSET TO THE BACK OF THE KERB FOR THE FULL FRONTAGE OF THE LEASE, ALONG THE PROPERTY BOUNDARY AND ALONG APPROVED DRIVEWAY ACCESS TO ENSURE THAT THE VERGE IS COMPLETELY ENCLOSED.
- FENCING SHALL BE ERECTED BEFORE THE COMMENCEMENT OF ANY SITE WORKS, SHALL BE REMAIN IN PLACE THROUGHOUT THE WORKS AND REMOVED PRIOR TO RESTORATION OF THE VERGE.
- USE TEMPORARY 1800mm CONTINUOUS MESH FENCE SUPPORTED BY STEEL POSTS WITH CONCRETE BASES UNLESS OTHERWISE APPROVED IN WRITING BY TCCS.
- MAINTAIN ALL EXISTING FOOTPATHS AND PROVIDE SAFE PEDESTRIAN MOVEMENT AT ALL TIMES.
- WHERE A CONSTRUCTED FOOTPATH/CYCLEWAY EXISTS IN THE VERGE, OFFSET FENCING 600mm EACH SIDE.
- IF THERE IS NO CONSTRUCTED FOOTPATH/CYCLEWAY PROVIDE A FENCED CLEARWAY 1800mm WIDE FOR PEDESTRIAN ACCESS ALONG THE ENTIRE FRONTAGE
- FENCING SHALL NOT BE REMOVED FOR THE SERVICE INSTALLATION UNLESS OTHERWISE APPROVED IN WRITING FROM TCCS. ENSURE ALL TREES ARE ADEQUATELY PROTECTED BEFORE COMMENCING TRENCHING. ON COMPLETION RETURN THE FENCE TO ORIGINAL ALIGNMENT.

SERVICES AND UTILITIES

- SERVICES AND UTILITIES SHALL BE LAID ONLY IN THE LOCATIONS SHOWN ON THE DRAWINGS. TRENCHING ACROSS THE VERGE SHALL BE UNDERTAKEN ONLY WHERE SHOWN ON THE DRAWINGS.
- UNLESS OTHERWISE SHOWN ON THE DRAWINGS NO TRENCHING SHALL BE CARRIED OUT WITHIN THE DRIP LINE OF ANY TREE.
- THE NUMBER OF VERGE CROSSINGS SHALL BE MINIMISED. WHERE PRACTICAL AND PERMITTED SHARED TRENCHING SHALL BE ADOPTED.
- TRENCHES SHALL BE LOCATED MIDWAY BETWEEN TREES.

SITE ACCESS

- SITE ACCESS SHALL ONLY BE VIA THE ACCESS POINTS SHOWN ON THE DRAWINGS.
- PRIOR WRITTEN APPROVAL FOR ALTERNATIVE OR ADDITIONAL ACCESS POINTS SHALL BE OBTAINED THROUGH TCCS.
- NEW ACCESS POINTS SHALL BE LOCATED MIDWAY BETWEEN EXISTING TREES WHERE SPACE IS ADEQUATE. DO NOT LOCATE ANY ACCESS WITHIN THE DRIP LINE OF ANY TREE.

WORKING NEAR TREES

- ALL TREES LOCATED IN THE ROAD RESERVE, PUBLIC OPEN SPACE AND UNLEASED TERRITORY LAND SHALL BE PROTECTED FROM DISTURBANCE, DAMAGE OR DESTRUCTION. PRIOR WRITTEN AUTHORISATION FROM TCCS IS REQUIRED FOR ANY DISTURBANCE, DAMAGE OR DESTRUCTION OF ANY TREE OR LANDSCAPE ASSET.
- EXISTING CANOPY CLEARANCES SHALL NOT BE ALTERED, CROWNS AND APEX OF CANOPIES SHALL NOT BE ALTERED OR REDUCED.
- ENSURE LIFTING EQUIPMENT AND LOAD CAN CLEAR HEIGHT AND WIDTH OF TREE CANOPY WITHOUT DAMAGE TO CROWN. ENSURE CONSTRUCTION EQUIPMENT CAN PASS BENEATH LOWEST LIMB.
- DO NOT EXCAVATE OR OTHERWISE DISTURB THE SURFACE LAYER WITHIN THE DRIP-LINE OF ANY TREE WITHOUT THE PRIOR WRITTEN APPROVAL OF TCCS.
- DO NOT SEVER ROOTS >30MM DIAMETER CLOSER THAN HALFWAY FROM THE DRIP-LINE TO THE TRUNK.
- HAND EXCAVATE TO A DEPTH OF 300MM TO LOCATE ROOTS BEFORE COMMENCING MACHINE EXCAVATION.
- CUT ROOTS CLEANLY WITH EQUIPMENT SPECIFICALLY DESIGNED FOR PRUNING ROOTS.
- PROTECT ANY EXPOSED ROOTS FROM DESICCATION. KEEP LIGHTLY WATERED OR COVER WITH MOIST HESSIAN. AFTER REPLACEMENT OF TOPSOIL REGULARLY WATER TREES UNTIL REESTABLISHED.

CONDITION AND RESTORATION

- PRIOR TO COMMENCEMENT NOTIFY TCCS OF COMMENCEMENT OF WORK AND UNDERTAKE A JOINT CONDITION SURVEY.
- AT THE COMPLETION OF WORK ENSURE THAT THE CONDITION OF ALL VEGETATION IS CONSISTENT WITH THE INITIAL CONDITION SURVEY.
- PROVIDE CONTINUOUS CARE AND MAINTENANCE BY HORTICULTURAL PRACTICES OF SOFT LANDSCAPE ASSETS ON ROAD RESERVES, STREET VERGES, PUBLIC OPEN SPACE AND UNLEASED TERRITORY LAND ADJACENT TO THE DEVELOPMENT FOR THE DURATION OF THE WORKS (INCLUDING RESTORATION WORKS)
- GRASS AREAS SHALL HAVE A HEALTHY AND VIGOROUS GRASS SWARD APPROPRIATE TO THE AREA. IF THE STANDARD OF GRASS COVER IS TO BE IMPROVED, THE FOLLOWING REQUIREMENTS APPLY:–
  a. LIGHTLY CULTIVATE THE SOIL TO 25–50mm DEPTH (50mm MAXIMUM TO MINIMISE DAMAGE TO TREE ROOTS). CULTIVATE ONLY IN ONE DIRECTION, AVOID MAJOR TREE ROOTS AND KEEP A MINIMUM OF ONE METER (1.0m) AWAY FROM TREE TRUNKS.
  b. ADD TYPE 'B' TOPSOIL AT 25–50mm DEPTH. LEVEL THE TOPSOIL AND ADD NPK FERTILISER (EQUIVALENT TO MULTIGRO) AT 40g/m^2.
  c. LAY TURF OR SOW SEED OF SUITABLE DROUGHT TOLERANT SPECIES AS SPECIFIED IN THE ACT GOVERNMENT 'SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS' (ISSUE 1, REVISION 0, 2002). KEEP MOIST DURING ESTABLISHMENT.
- PLANT DAMAGE: DAMAGE TO TREES OR OTHER PLANTINGS TO BE RECTIFIED BY REPLACEMENT OR REHABILITATION AT CONTRACTORS EXPENSE AND TO THE SATISFACTION OF THE TCCS SPECIFICATION.

LEGEND

- EXISTING CONTOUR
- 1.8m HIGH STEEL MESH TEMPORARY SITE FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- OVERLAND FLOW DIRECTION
- STABILISED ACCESS
- SITE ACCESS
- EXISTING STORMWATER PIT WITH DROP INLET SEDIMENT TRAP
- EXISTING TREES TO BE RETAINED. REFER LANDSCAPE MANAGEMENT PLAN FOR TREE REMOVAL

NOT FOR CONSTRUCTION

DRAWN: F.CF-ADCV | DESIGNED: F.CF-ADCV | JOB MANAGER: D.FIELD | VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
5	FOR INFORMATION	RC		DF	04.09.18
6	FOR DISCUSSION	RC		DF	21.09.18
7	WORKS APPROVAL	RC		DF	11.04.19
8	WORKS APPROVAL	RC		DF	17.04.19
9	DRAFT WORKS APPROVAL	JC		DF	30.04.20
10	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close
THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD.

ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

0 5 10 15 20 25m PLAN SCALE 1:500 @ A1

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1803
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
CONCEPT EROSION, SEDIMENT AND POLLUTION CONTROL PLAN

JOB NUMBER: CR172699
DRAWING NUMBER: C010
REVISION: 10
DRAWING SHEET SIZE = A1

LETTER OF DESIGN REVIEW

Developer/Client: Defence Housing Australia

Address: Level 2/287 Elizabeth Street Sydney, NSW 2000

Contact: Gulliver Coote

Project Title: SUBURB Campbell BLOCK 65 SECTION 03 Off-Site Works Only.

Applicant: Northrop Consulting Engineers Pty Ltd

Address: SAP House, Level 6, 224 Bunda Street (PO Box 213)

Contact: s22 [redacted]

Dear Sir, Date: 10/12/2020.

On behalf of the Transport Canberra and City Services (TCCS) Directorate, this Letter of Design Review is issued to confirm acceptance of the Drawings and Documents listed in the Attachment A.

TCCS has carried out selective audits of certain elements of the design only from the documentation submitted. This letter of design review is therefore issued based on the Consultant's certification that each design element prepared by the Consultant complies with the design criteria and the standards. This letter addresses the following design components

Stormwater	X	Road Geometry		Parking		
Footpaths	X	TCD's	X	Verge Works		X
Driveways	X	Landscape	X	Is SMEC inspection required? SW-Tie Only	Yes	X
LMPP	X	Street Lighting			No	

This Letter is issued with the following conditions:

1. The issue of this Letter does not waive or diminish the continuing responsibilities of the Consultant with respect to the suitability and integrity of the design; nor does it absolve the Consultant of continuing obligations under the Standards.
2. Landscape Management and Protection Plan (LMPP) must be submitted and approved prior to the Letter of design Review is issued.
3. Should any road closure be proposed, this will be subject to a separate design approval from Roads ACT of a Temporary Traffic Management Plan.
4. Any proposed amendments, that impact on the integrity of the design, shall be resubmitted for assessment by Place Coordination prior to the implementation of such changes.
5. On the satisfactory completion of all design and construction activities, a Certificate of Operational Acceptance will be issued for the project on receipt of all relevant documents as specified in TCCS *Reference 07 - Requirements for Operational Acceptance Submission*.

Kind Regards,

s22 [redacted]

Development and Design Review| Transport Canberra and City Services **| ACT Government**

Note that the definition of the terms 'Consultant', 'Works' and 'Standards' shall be the same as that given in TCCS Reference Document 6.

Attachments:

Attachment A: Drawings and Documentation included in the Letter of Design Review

ATTACHMENT A

DRAWINGS AND DOCUMENTS INCLUDED IN THE LETTER OF DESIGN REVIEW

Civil Drawings

Drawing Number	Drawing Title	Revision at TCCS
C001	STANDARD NOTES	9
C005	STANDARD DETAILS	6
C011	LANDSCAPE MANAGEMENT & PROTECTION PLAN	14
C020	Vehicle Turning Template	10
C021	Vehicle Turning Template	10
C071	EXISTING SERVICES TO BE REMOVED/DEMOLISHED	7
C125	OFF-SITE WORKS PLAN - SHEET 1 OF 5	10
C126	OFF-SITE WORKS PLAN - SHEET 2 OF 5	10
C127	OFF-SITE WORKS PLAN - SHEET 3 OF 5	2
C128	OFF-SITE WORKS PLAN - SHEET 4 OF 5	8
C129	OFF-SITE WORKS PLAN - SHEET 5 OF 5	8
C160	CONCEPT STORMWATER MANAGEMENT PLAN KEY PLAN SHEET 1 OF 4	13
C165	STORMWATER DETAILS SHEET 1 OF 2	5
C190	TCD PLAN	3
3715-D301	Planting Plan Area 1	C
3715-F701	Landscape Details Softscape	B

Australian Government
National Capital Authority

Application Number: WA101918

s22 [redacted]
Defence Housing Australia
Unit 4 Cooyong Centre
BRADDON ACT 2612

Dear s22 [redacted]

Block 3 Section 65 Campbell (Academy Close)
Construction of 30 Residential Dwellings, Associated Landscaping and Civil Works

I refer to the works approval application, drawings and supporting information on the above works submitted to the National Capital Authority (NCA) for consideration on 19 May 2020. I also refer to further information submitted on 23 July 2020.

The NCA advises that:

> Works Approval is granted pursuant to Section 12(1)(b) of the *Australian Capital Territory (Planning and Land Management) Act 1988* for the construction of 30 residential dwellings, associated landscaping and civil works located at Block 3 Section 65 Campbell (Academy Close) as shown on the attached Drawing Schedule and as outlined in the supporting documentation submitted.
>
> The term "works" is defined in the Act to exclude anything done inside buildings or structures. Under the Act works approval may be given where the works are in accordance with the National Capital Plan. This works approval is given only on the basis of satisfaction that the works are in accordance with the National Capital Plan and does not constitute building approval. It does not constitute any form of warranty as to the structural sufficiency of the proposed works, as to safety of the works or as to safety of the performance of the works. It is the responsibility of the applicant to ensure the safety of the works and the safety of the performance of the works and to ensure that any approvals required under separate legislation are also obtained.

Please Note:

1. Ensure all relevant ACT Government approvals are obtained prior to commencement of works.

2. Prior to commencement of works, a separate application for temporary works must be submitted. The application for temporary works must include a Site Establishment Plan indicating the location of site sheds, materials stockpile and temporary fencing and TCCS authorisation of temporary traffic management plans. A Construction Environment Management Plan is to be submitted with the application for temporary works.

3. Temporary fencing installation is to be in accordance with *Australian Standard AS4687-2007 Temporary Fencing and Hoardings.*

4. Where works are conducted near existing trees, the applicant is to comply with Australian Standard 4970-2009: The Protection of Trees on Development Sites. Please note there should be no open excavation or trenching within the Tree Protection Zone (TPZ) of any tree as determined by AS4970-2009. Tree protection measures are to be implemented for any trees within or adjacent to the works area according to Section 4 of AS4970-2009.

5. Inner asset protection zones are to be in accordance with the recommendations contained in the Bushfire Risk Assessment Report (date 21 July 2020) prepared by Australian Bushfire Protection Planners Pty Ltd.

6. The pedestrian right-of-way must be maintained along the western boundary of the site, to allow direct pedestrian access from Truscott Street through to the Canberra Nature Reserve.

7. All outdoor lighting must be designed and sited to minimise light pollution. Outdoor lighting must use full cut-off light fittings.

8. All proposed tree species are to be of advanced stock.

<u>Works in proximity to the Mt Pleasant Nature Reserve</u>
The ACT Conservator requires the following measures to be taken where works are in proximity to the Mt Pleasant Nature Reserve.

1. Temporary fencing should be installed during construction to prevent vehicles accessing and parking in the reserve;

2. Construction rubbish and debris must not be permitted to blow into reserve and must be removed if occurs;

3. The Reserve must not be used for storage of any building materials;

4. If new incursions of weeds occur as a result of the development then these must be removed at the applicant's expense, during a three-year consolidation period;

5. Any landscaping should be entirely within the boundary of the development using species that will not spread into the reserve.

6. Improved permanent fencing meeting ACTPCS requirements should be installed along the reserve boundary between the reserve and Academy Close at the applicant's cost; and

7. Construction of a walking trail between Russell offices / ADFA / Duntroon at the applicant's expense should be included to protect and mitigate creation of informal paths by residents and consequent impacts on the natural values of the adjacent grassland and woodland.

The approved plans are available for download from your Works Approval eLodgement account. Should you have any query or need further advice on the matter please contact Anne Sara on (02) 6272 2988.

s22 [redacted]

DELEGATE OF THE NATIONAL CAPITAL AUTHORITY

08 September 2020

Approved Drawing Schedule for WA101918

Drawing Title	Drawing No.
Architecture	
Site & Context Plan	NCA-002(8)
Site Plan – Part 1	NCA-006(6)
Block Information and Housing Types and Outdoor Areas	NCA-004(5)
Site Plan – Part 2	NCA-007(5)
Site Plan – Part 3	NCA-008(5)
House Type 2 - Typical	NCA-102(7)
House Type 3	NCA-103(7)
House Type 5	NCA-105(7)
House Type 7	NCA-107(7)
House Type 7	NCA-107(8)
House Type 10 – Block 31	NCA-110(7)
House Type 10 – Block 31	NCA-111(7)
Street Elevations – Blocks 1-3 and 4-8	NCA-201(3)
Street Elevations – Blocks 8-14 and 18-19	NCA-202(3)
Street Elevations – Blocks 20-23 and 23-29	NCA-203(3)
Street Elevations – Blocks 15-18 and 29--30	NCA-204(3)
Street Elevations – House Types	NCA-205(3)
Material and Colour Sample Schedule	NCA-900(4)
Landscape Architecture	
Cover and Key Plan	3715-F101
Planting List	3715-F102
Overall Landscape Plan – Area 1	3715-F201
Overall Landscape Plan – Area 2	3715-F202
Wall and Fence Layout Plan	3715-F203
House Typology Plan	3715-F204
Typical House Landscape Treatment - Type 1	3715-F301
Typical House Landscape Treatment - Type 2	3715-F302
Typical House Landscape Treatment - Type 3	3715-F303
Typical House Landscape Treatment - Type 5	3715-F304
Typical House Landscape Treatment - Type 7	3715-F305
Typical House Landscape Treatment - Type 10	3715-F306
Typical Landscape Details - Softscape	3715-F401
Typical Landscape Details - Hardscape	3715-F402
Typical Landscape Details - Hardscape	3715-F403

Civil Drawings	
Cover Sheet, Drawing Index and Locality Plan	C000
Standard Notes	C001
Standard Details	C005
Concept Erosion, Sediment and Pollution Control Plan	C010
Concept Erosion, Sediment and Pollution Control Details	C010-A
Landscape Management and Protection Plan	C011
Concept Temporary Traffic Management Plan – General Construction	C012
Concept Temporary Traffic Management Plan – Part Lane Closure	C013
Vehicle Turning Templates	C020
Vehicle Turning Templates	C021
General Arrangement Plan	C050
Existing Services Plan	C070
Existing Services to be Removed / Demolished	C071
Combined New Services Plan – Sheet 1 of 4	C072
Combined New Services Plan – Sheet 2 of 4	C073
Combined New Services Plan – Sheet 3 of 4	C074
Combined New Services Plan – Sheet 4 of 4	C075
Demolition Plan	C080
Grading Plan – Sheet 1 of 4	C110
Grading Plan – Sheet 2 of 4	C111
Grading Plan – Sheet 3 of 4	C112
Grading Plan – Sheet 4 of 4	C113
Site Works and Pavement Plan – Sheet 1 of 4	C120
Site Works and Pavement Plan – Sheet 2 of 4	C121
Site Works and Pavement Plan – Sheet 3 of 4	C122
Site Works and Pavement Plan – Sheet 4 of 4	C123
Off- Site Works Plan – Sheet 1 of 4	C125
Off- Site Works Plan – Sheet 2 of 4	C126
Off- Site Works Plan – Sheet 3 of 4	C127
Off- Site Works Plan – Sheet 4 of 4	C128
Typical Cross Sections	C130
Road Long Sections Academy Close	C140
Road Long Sections Academy Close	C141
Detailed Cross Sections – Sheet 1 of 4	C150
Detailed Cross Sections – Sheet 2 of 4	C151
Detailed Cross Sections – Sheet 3 of 4	C152
Detailed Cross Sections – Sheet 4 of 4	C153
Concept Stormwater Management Plan Sheet 1 of 4	C160
Concept Stormwater Management Plan Sheet 2 of 4	C161
Concept Stormwater Management Plan Sheet 3 of 4	C162
Concept Stormwater Management Plan Sheet 4 of 4	C163
Stormwater Details Sheet 1 of 2	C165
Stormwater Details Sheet 2 of 2	C166
Water Plan Sheet 1 of 4	C170
Water Plan Sheet 2 of 4	C171
Water Plan Sheet 3 of 4	C172
Water Plan Sheet 4 of 4	C173
Existing 1050mm Water Main Long Section	C176
Existing Water Main Cross Sections	C177
Existing Water Main Cross Sections	C178
Sewer Plan Sheet 1 of 4	C180
Sewer Plan Sheet 2 of 4	C181
Sewer Plan Sheet 3 of 4	C182
Sewer Plan Sheet 4 of 4	C183

DHA HOUSING

Academy Close
Campbell, ACT

LANDSCAPE DOCUMENTATION

ISSUE FOR WORKS APPROVAL - DRAFT

JULY 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 19

s22 [redacted]

(NCA Delegate)

DRAWING LIST

3715-F101	COVER & KEY PLAN
3715-F102	PLANTING LIST
3715-F201	OVERALL LANDSCAPE PLAN - AREA 1
3715-F202	OVERALL LANDSCAPE PLAN - AREA 2
3715-F203	WALL & FENCE LAYOUT PLAN
3715-F204	HOUSE TYPOLOGY PLAN
3715-F301	TYPICAL HOUSE LANDSCAPE TREATMENT - TYPE 1
3715-F302	TYPICAL HOUSE LANDSCAPE TREATMENT - TYPE 2
3715-F303	TYPICAL HOUSE LANDSCAPE TREATMENT - TYPE 3
3715-F304	TYPICAL HOUSE LANDSCAPE TREATMENT - TYPE 5
3715-F305	TYPICAL HOUSE LANDSCAPE TREATMENT - TYPE 7
3715-F306	TYPICAL HOUSE LANDSCAPE TREATMENT - TYPE 10
3715-F401	TYPICAL LANDSCAPE DETAILS - SOFTSCAPE
3715-F402	TYPICAL LANDSCAPE DETAILS - HARDSCAPE
3715-F403	TYPICAL LANDSCAPE DETAILS - HARDSCAPE

GENERAL NOTES

THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS.

CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK OR MAKING ANY SHOP DRAWINGS. ANY DISCREPANCIES TO BE REFERRED TO THE LANDSCAPE ARCHITECT.

UNLESS SPECIFIED OTHERWISE LEVELS ARE IN METRES AND DIMENSIONS ARE IN MILLIMETRES.

VERIFY THE LOCATION OF ALL SERVICES AND ALL EXISTING STRUCTURES, PAVEMENTS, FENCES AND VEGETATION ON SITE PRIOR TO COMMENCEMENT OF WORKS.

REFER SURVEYOR AS NECESSARY. LAYOUT TO BE CONDUCTED BY REGISTERED SURVEYOR. CONTRACTOR WILL BE PROVIDED WITH DIGITAL COPY OF THE DRAWINGS.

SET-OUT ALL WORKS FOR APPROVAL BY THE LANDSCAPE ARCHITECT.

PROVIDE SAMPLES OF ANY SPECIFIED OR PREFERRED MATERIALS OR FINISHES (EG.BRICKS, PAVERS) FOR LANDSCAPE ARCHITECTS APPROVAL PRIOR TO PLACING ORDERS.

USE FIGURED DIMENSIONS - DO NOT SCALE FROM DRAWING.

COORDINATE ALL WORKS WITH OTHER TRADES.

STANDARDS

ALL CONSTRUCTION WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE 'STANDARD SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS' (TAMS).

ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH ENVIRONMENT ACT'S 'GUIDELINES FOR EROSION AND SEDIMENT CONTROL ON BUILDING SITES'.

CONFORM TO THE FOLLOWING STANDARDS:
AS 1428.1 - DESIGN FOR ACCESS AND MOBILITY PART 1 - ACCESS TO BUILDINGS

AS 1428.2 - DESIGN FOR ACCESS AND MOBILITY PART 2 - ENHANCED AND ADDITIONAL REQUIREMENTS - BUILDINGS AND FACILITIES

AS 1428.4 - DESIGN FOR ACCESS AND MOBILITY PART 4 - TACTILE INDICATORS

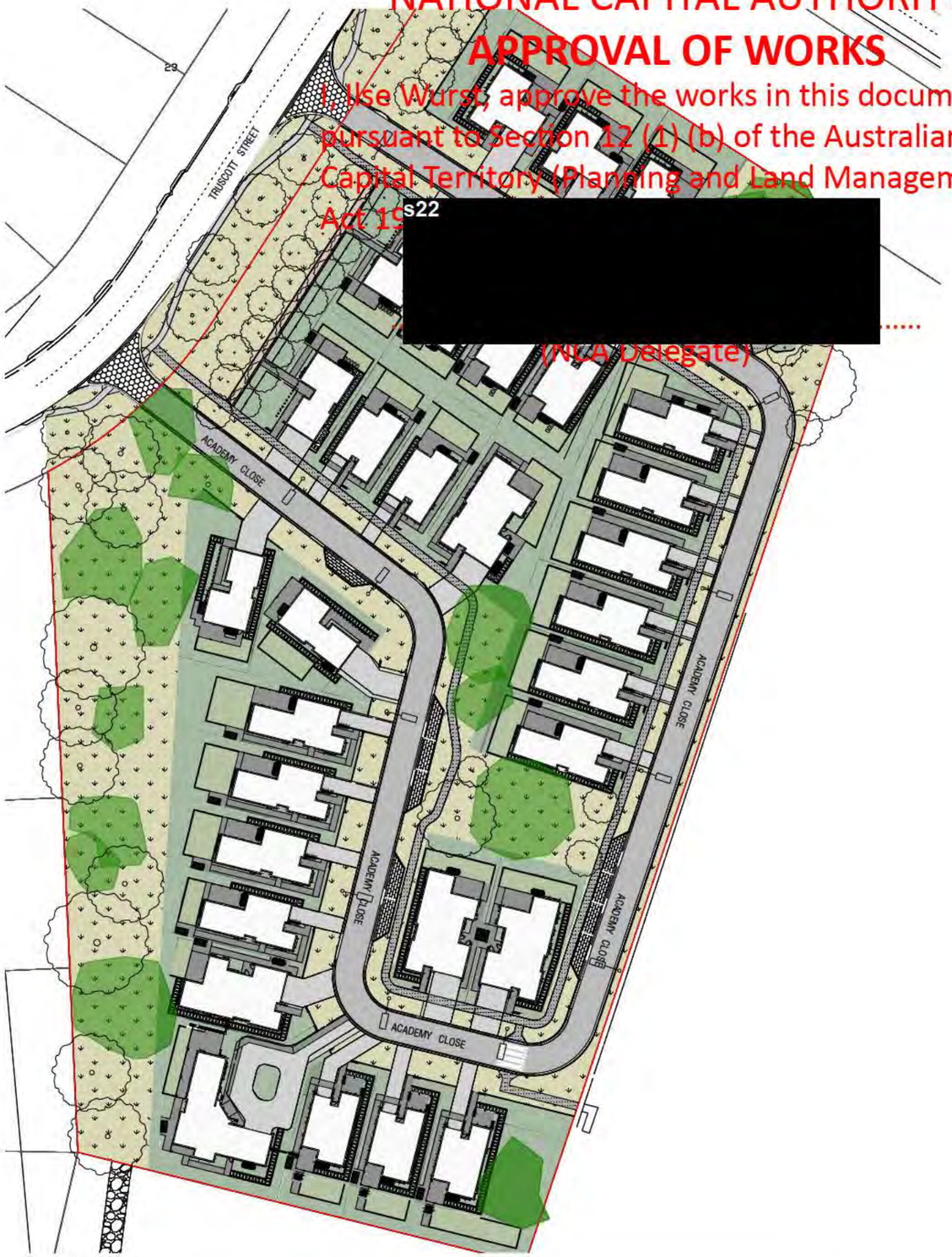
AS 2890.3 - PARKING FACILITIES PART 3 - BICYCLE PARKING FACILITIES

AS 2899 - PUBLIC INFORMATION SYMBOL SIGNS

AS 3661.1 - SLIP RESISTANCE OF PEDESTRIAN SURFACES

AS 4586 - SLIP RESISTANCE CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS

AS 1742 - TRAFFIC CONTROL DEVICES



NO.	DESIGN	DRAWN	CHECKED	VER'D	DATE	AMENDMENT / ISSUE
E	AH	AH	MR		24/07/2020	ISSUE FOR WORKS APPROVAL
D	AH	AH	MR		13/07/2020	ISSUE FOR WORKS APPROVAL - WATER TANK RELOCATION
C	AH	AH	MR		14/05/2020	ISSUE FOR WORKS APPROVAL
B	AH	AH	MR		12/05/2020	ISSUE FOR WORKS APPROVAL
A	AH	AH	MR		30/04/2020	ISSUE FOR WORKS APPROVAL - DRAFT

NOTES

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- DRAWINGS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION.
- DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
- USE FIGURED DIMENSIONS - DO NOT SCALE FROM DRAWING.
- CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK OR MAKING ANY SHOP DRAWINGS. ANY DISCREPANCIES TO BE REFERRED TO THE SUPERINTENDENT.
- PROVIDE SAMPLES OF ANY SPECIFIED OR PREFERRED MATERIALS OR FINISHES (EG.BRICKS, PAVERS) FOR SUPERINTENDENTS APPROVAL PRIOR TO PLACING ORDERS.

0 5 10 15 20 25m
1:500 @ A1 1:1000 @ A3

dsb Landscape Architects
Deakin Chambers
14 Hannah Place
Deakin ACT 2600
Tel 02 6285 1955
dsb@dsbla.com.au

Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

Drawing Title
COVER & KEY PLAN

Scale 1:500 @ A1 | Plot Date: | Sheet No.

Drg. No.
3715-F101 E

08 Sep, 2020

PLANTING LIST

TREE SPECIES

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
ACf	*Acer Fremanii 'Armstrong'*	October Glory Red Maple	50L	12.0m / 5.0m
BTp	*Betula pendula*	Silver Birch	100L	12.0m / 6.0m
CAh	*Callistemon 'Harkness'*	Harkness Bottlebrush	50L	5.0m / 3.0m
Emf	*Eucalyptus mannifera 'little spotty'*	Brittle Gum	50L	8.0m / 7.0m
Eme	*Eucalyptus melliodora*	Yellow Box	50L	25.0m / 20.0m
Ebl	*Eucalyptus blakelyi*	Red Gum	50L	20.0m / 15.0m
FRv	*Fraxinus velutina*	Velvet Ash	50L	12.0m / 10.0m
LQs	*Liquidambar styraciflua 'Slender Silhouette'*	Sweetgum	50L	2.0m / 10.0m
MEc	*Melia azedarach 'Caroline'*	White Cedar	100L	8.0m / 7.0m
PAp	*Parrotia persica*	Parrotia	100L	7.0m / 5.0m
Pcn	*Prunus cerasifera 'Nigra'*	Purple Leaf Cherry Plum	50L	4.0m / 4.0m

Trees shall be grown, containerised and supplied in accordance with MITS 09C and AS 2303.

Acer Fremanii 'Armstrong'
October Glory Red Maple

Betula pendula
Silver Birch

Callistemon 'Harkness'
Harkness Bottlebrush

Eucalyptus mannifera 'little spotty'
Brittle Gum

Eucalyptus melliodora
Yellow Box

Eucalyptus blakelyi
Red Gum

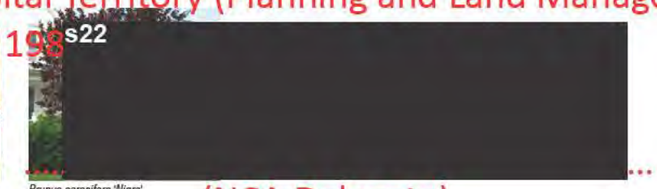
Fraxinus velutina
Velvet Ash

Lagerstroemia indica x L. Fauriei 'Biloxi'
Lagerstromia

Liquidambar styraciflua 'Slender Silhouette'
Sweetgum

Melia azedarach 'Caroline'
White Cedar

Parrotia persica
Parrotia


Prunus cerasifera 'Nigra'
Purple Leaf Cherry Plum

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 198s22
(NCA Delegate)

SHRUB SPECIES - HEDGES

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
CAv	*Callistemon viminalis 'Slim'*	Slim Bottlebrush	200mm	3.0m / 1.3m
DDv	*Dodonea viscosa 'Purpurea'*	Purple hop bush	200mm	3.0m / 1.5m
Gcg	*Grevillea 'Canberra Gem'*	Grevillea	200mm	2.0m / 2.0m
LTm	*Leptospermum morrisonii 'Burgundy'*	Tea Tree	200mm	3.0m / 1.5m
MGg	*Magnolia grandiflora 'Little Gem'*	Southern Magnolia	200mm	5.0m / 3.0m
PHf	*Photinia x fraser*	Photinia Red Robin	200mm	3.5m / 2.5m
PTt	*Pittosporum tenuifolium 'Screenmaster'*	Screen Master	200mm	3.5m / 2.0m

Callistemon viminalis 'Slim'
Slim Bottlebrush

Dodonea viscosa 'Purpurea'
Purple hop bush

Grevillea 'Hills Jubilee'
Grevillea

Leptospermum morrisonii 'Burgundy'
Tea Tree

Magnolia grandiflora 'Little Gem'
Southern Magnolia

Photinia x fraser
Photinia Red Robin

Pittosporum tenuifolium 'Screenmaster'
Screen Master

SHRUB SPECIES

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
BUr	*Bauera rubioides*	River Rose	140mm	1.0m / 1.0m
CRa	*Correa alba*	White Corres	140mm	1.0m / 1.0m
CWs	*Crowea exalata 'Southern Stars'*	Wax Flower	140mm	1.0m / 1.0m
Gfc	*Grevillea 'Firecracker'*	Grevillea	140mm	1.0m / 1.0m
Heg	*Hebe 'Emerald Green'*	Emerald Green Hebe	140mm	0.4m / 0.5m
LVm	*Lavandula 'Munstead'*	Dwarf Lavender	140mm	0.6m / 0.7m
WEb	*Westringia 'Blue Gem*	Costal Rosemary	140mm	1.0m / 1.0m

Bauera rubioides
River Rose

Correa alba
White Corres

Crowea exalata 'Southern Stars'
Wax Flower

Grevillea 'Firecracker'
Grevillea

Hebe 'Emerald Green'
Emerald Green Hebe

Lavandula 'Munstead'
Dwarf Lavender

Westringia 'Blue Gem'
Costal Rosemary

GRASS / STRAPPY SPECIES - (>0.7m)

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
Dlt	*Dianella tasmanica*	Tasman Flax Lily	140mm	1.0m / 1.0m
DTg	*Dietes grandiflora*	Dietes	140mm	0.9m / 1.5m
Fno	*Ficinia nodosa*	Knobby Club Rush	140mm	1.0m / 0.8m
LDl	*Lomandra 'Little Pal'*	Lomandra 'Little Pal'	140mm	0.8m / 0.5m

GRASS / STRAPPY SPECIES - (<0.7m)

Dla	*Dianella 'Aranda'*	Flax Lily	140mm	0.3m / 0.35m
FEg	*Festuca glauca*	Blue Fescue	140mm	0.3m / 0.3m
LPs	*Liriope 'Samantha*	Lillyturf	140mm	0.5m / 0.5m

Dianella tasmanica
Tasman Flax Lily

Dietes grandiflora
Dietes

Ficinia nodosa
Knobby Club Rush

Lomandra 'Little Pal'
Lomandra 'Little Pal'

Dianella 'Aranda'
Flax Lily

Festuca glauca
Blue Fescue

Liriope 'Samantha
Lilly Turf

GROUNDCOVER SPECIES

	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
CPg	*Carpobrotus glaucescens*	Pig Face	140mm	0.2m / 1.5m
Dsf	*Dichondra argentea 'Silver Falls'*	Dichondra	140mm	0.15m / 0.8m
Gpr	*Grevillea 'Poorinda Royal Mantle'*	Grevillea	140mm	0.2m / 2.0m
MYp	*Myoporum parvifolium*	Creeping Boobialla	140mm	0.1m / 1.5m
MYpp	*Myoporum parvifolium 'Purpurea'*	Purple Creeping Boobialla	140mm	0.1m / 1.5m
Vlh	*Viola hederacea*	Native Violet	140mm	0.2m / 0.4m
WEl	*Westringia 'Low Horizon'*	Coastal Rosemary	140mm	0.3m / 0.7m

Carpobrotus glaucescens
Pig Face

Dichondra argentea 'Silver Falls'
Silver Falls

Grevillea 'Poorinda Royal Mantle'
Grevillea

Myoporum parvifolium
Creeping boobialla

Myoporum parvifolium 'Purpurea'
Purple Creeping Boobialla

Viola hederacea
Native Violet

Westringia 'Low Horizon'
Coastal Rosemary

CLIMBER SPECIES

	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
Flp	*Ficus pumila*	Creeping Fig	140mm	N/A
HAv	*Hardenbergia violacea*	Native Lilac	140mm	N/A
TRj	*Trachelospermum jasminoides*	Star Jasmine	140mm	N/A

Ficus pumila
Creeping Fig

Hardenbergia violacea
Native Lilac

Trachelospermum jasminoides
Star Jasmine

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C	AH	AH	MR		24/07/2020	ISSUE FOR WORKS APPROVAL
B	AH	AH	MR		12/05/2020	ISSUE FOR WORKS APPROVAL
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Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

Drawing Title
PLANTING LIST

Scale | Plot Date: | Sheet No.

Drg. No.
3715-F102 C

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

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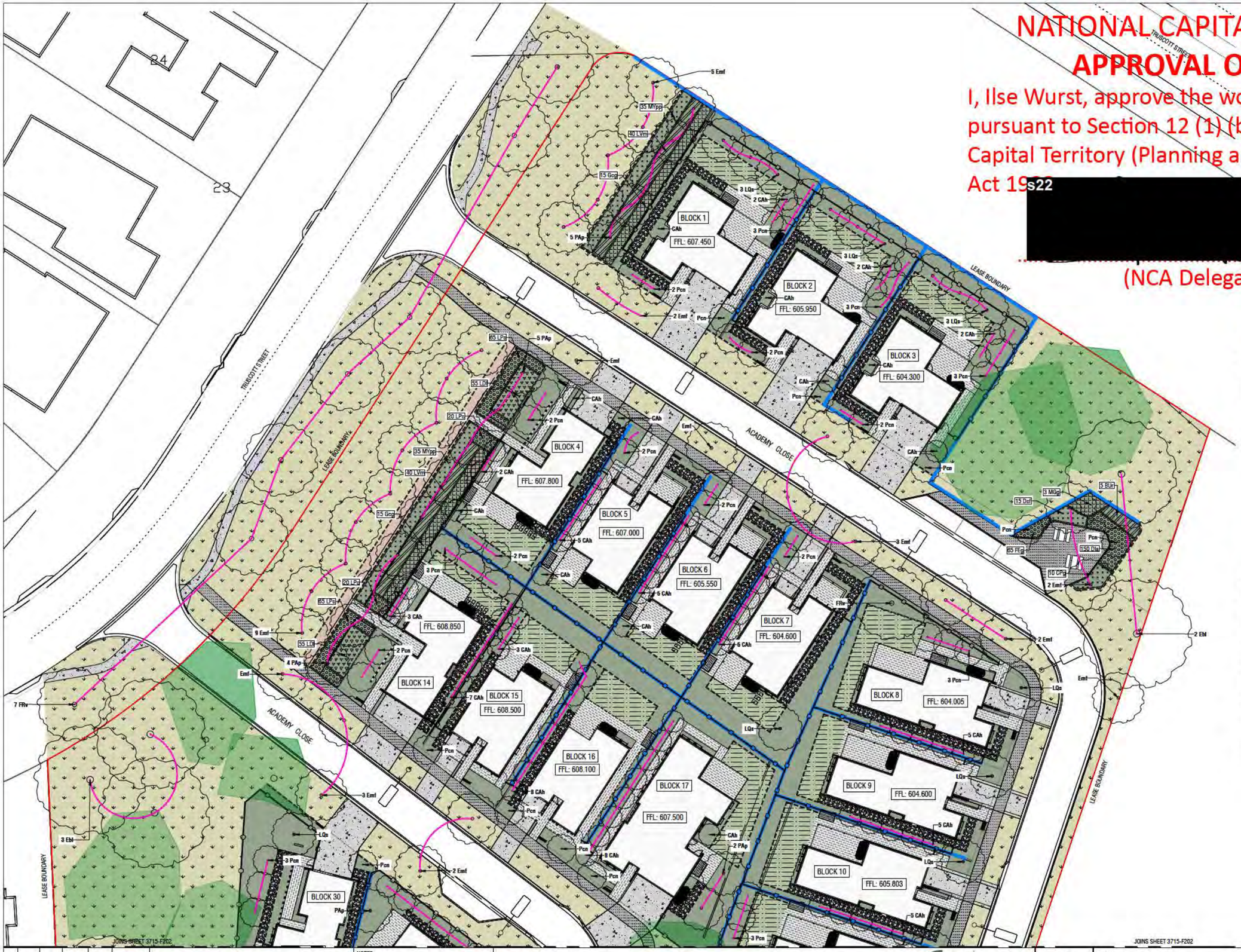
s22

(NCA Delegate)



LEGEND

- PLANTING BED — Excavated Planting Bed. Planting Within TPZ Of Existing Trees To Be Hand Excavated.
- IRRIGATED TURF — Refer To Detail.
- NON-IRRIGATED GRASS — Refer To Grassing Notes & Detail.
- COLOUR CONCRETE PAVING — 125 mm Thick Colour Concrete.
- UNIT PAVER — 400x400mm Galbraith.
- CONCRETE PAVING
- GRAVEL PAVING.
- Refer To Architect's Documentation.
- PICNIC TABLE SET — Refer To Architect's Documentation.
- CONCRETE EDGING — Refer To Detail.
- RETAINING WALL — Type varies, Refer To F203 Wall & Fence Layout Plan.
- FENCE — Type varies, Refer To F203 Wall & Fence Layout Plan.
- STEPPING STONE — 600x400mm Concrete Paver, Laid in 150mm Depth Decorative Pebble.
- STREET LIGHT — Refer To Engineer's Documentation.
- CLOTHES LINE — Refer To Architect's Documentation.
- MAILBOX — Refer To Architect's Documentation.
- LEASE BOUNDARY
- EXISTING STREET TREES TO BE RETAINED
- NEW TREE PLANTING
- HEDGE SPECIES
- SHRUB SPECIES
- GRASS / STRAPPY SPECIES (>0.7m)
- GRASS / STRAPPY SPECIES (<0.7m)
- GROUND COVER SPECIES

NOTE:
REFER TO TYPICAL HOUSE LANDSCAPE TREATMENT FOR INDIVIDUAL LOT PLANTING ARRANGEMENTS

NO.	DESIGN	DRAWN	CHECKED	VER'D	DATE	AMENDMENT / ISSUE
D	AH	AH	MR		24/07/2020	ISSUE FOR WORKS APPROVAL
C	AH	AH	MR		13/07/2020	ISSUE FOR WORKS APPROVAL - WATER TANK RELOCATION
B	AH	AH	MR		12/05/2020	ISSUE FOR WORKS APPROVAL
A	AH	AH	MR		30/04/2020	ISSUE FOR WORKS APPROVAL-DRAFT

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5 0 5 10m
1:250 @ A1 1:500 @ A3

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Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

Drawing Title
OVERALL LANDSCAPE PLAN
AREA 1

Scale 1:250 @ A1 | Plot Date: | Sheet No.

Drg. No.
3715-F201 D

08 Sep, 2020

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APPROVAL OF WORKS
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(NCA Delegate)

JOINS SHEET 3715-F201

BLOCK 29 FFL: 608.550
BLOCK 28 FFL: 609.100
BLOCK 27 FFL: 609.700
BLOCK 26 FFL: 610.320
BLOCK 25 FFL: 610.900
BLOCK 24 FFL: 611.100
BLOCK 23 FFL: 611.800
BLOCK 22 FFL: 612.100
BLOCK 21 FFL: 612.100
BLOCK 20 FFL: 612.400
BLOCK 19 FFL: 612.000
BLOCK 18 FFL: 612.000
BLOCK 13 FFL: 608.195
BLOCK 12 FFL: 607.600
BLOCK 11 FFL: 606.803
FFL: 608.100

ACADEMY CLOSE
LEASE BOUNDARY

LEGEND

- PLANTING BED — Excavated Planting Bed. Planting Within TPZ Of Existing Trees Is Hand Excavated.
- IRRIGATED TURF — Refer To Detail.
- NON-IRRIGATED GRASS — Refer To Grassing Notes & Detail.
- COLOUR CONCRETE PAVING — 125 thick Oxide Brown finish.
- UNIT PAVER — 400x400mm Quarzite.
- CONCRETE PAVING.
- CONCRETE EDGING — Refer To Detail.
- RETAINING WALL — Type varies, Refer To F203 Wall & Fence Layout Plan.
- FENCE — Type varies, Refer To F203 Wall & Fence Layout Plan.
- STEPPING STONE — 600x400mm Concrete Paver, Laid in 150mm Depth Decorative Pebble.
- STREET LIGHT — Refer To Engineer's Documentation.
- CLOTHES LINE — Refer To Architect's Documentation.
- MAILBOX — Refer To Architect's Documentation.
- LEASE BOUNDARY
- EXISTING STREET TREES TO BE RETAINED
- NEW TREE PLANTING
- HEDGE SPECIES
- SHRUB SPECIES
- GRASS / STRAPPY SPECIES (>0.7m)
- GRASS / STRAPPY SPECIES (<0.7m)
- GROUND COVER SPECIES

NOTE:
REFER TO TYPICAL HOUSE LANDSCAPE TREATMENT FOR INDIVIDUAL LOT PLANTING ARRANGEMENTS

NO.	DESIGN	DRAWN	CHECKED	VER'D	DATE	AMENDMENT / ISSUE
E	AH	AH	MR		24/07/2020	ISSUE FOR WORKS APPROVAL
D	AH	AH	MR		13/07/2020	ISSUE FOR WORKS APPROVAL - WATER TANK RELOCATION
C	AH	AH	MR		14/05/2020	ISSUE FOR WORKS APPROVAL
B	AH	AH	MR		12/05/2020	ISSUE FOR WORKS APPROVAL
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5 0 5 10m
1:250 @ A1 1:500 @ A3

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Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

Drawing Title
OVERALL LANDSCAPE PLAN
AREA 2

Scale 1:250 @ A1 | Plot Date: | Sheet No.
Drg. No. 3715-F202 E

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

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E	AH	AH	MR		24/07/2020	ISSUE FOR WORKS APPROVAL
D	AH	AH	MR		08/07/2020	ISSUE FOR WORKS APPROVAL - TYPE 1 FENCE MATERIAL CHANGE
C	AH	AH	MR		12/06/2020	ISSUE FOR TENDER
B	AH	AH	MR		12/05/2020	ISSUE FOR WORKS APPROVAL
A	AH	AH	MR		30/04/2020	ISSUE FOR WORKS APPROVAL-DRAFT

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0 5 10 15m
1:300 @ A1 OR 1:600 @ A3

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DHA HOUSING
ACADEMY CLOSE
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Client
AMC ARCHITECTURE

Drawing Title
WALL & FENCE LAYOUT PLAN

Scale 1:300 @ A1 | Plot Date: | Sheet No.

Drg. No.
3715-F203 E

08 Sep, 2020

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s22 [redacted]

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A	AH	AH	MR		30/04/2020	ISSUE FOR WORKS APPROVAL-DRAFT

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0 5 10 15m
1:300 @ A1 OR 1:600 @ A3

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Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

Drawing Title
HOUSE TYPOLOGY PLAN

Scale 1:300 @ A1
Plot Date:
Sheet No.
Drg. No.
3715-F204 B

08 Sep, 2020

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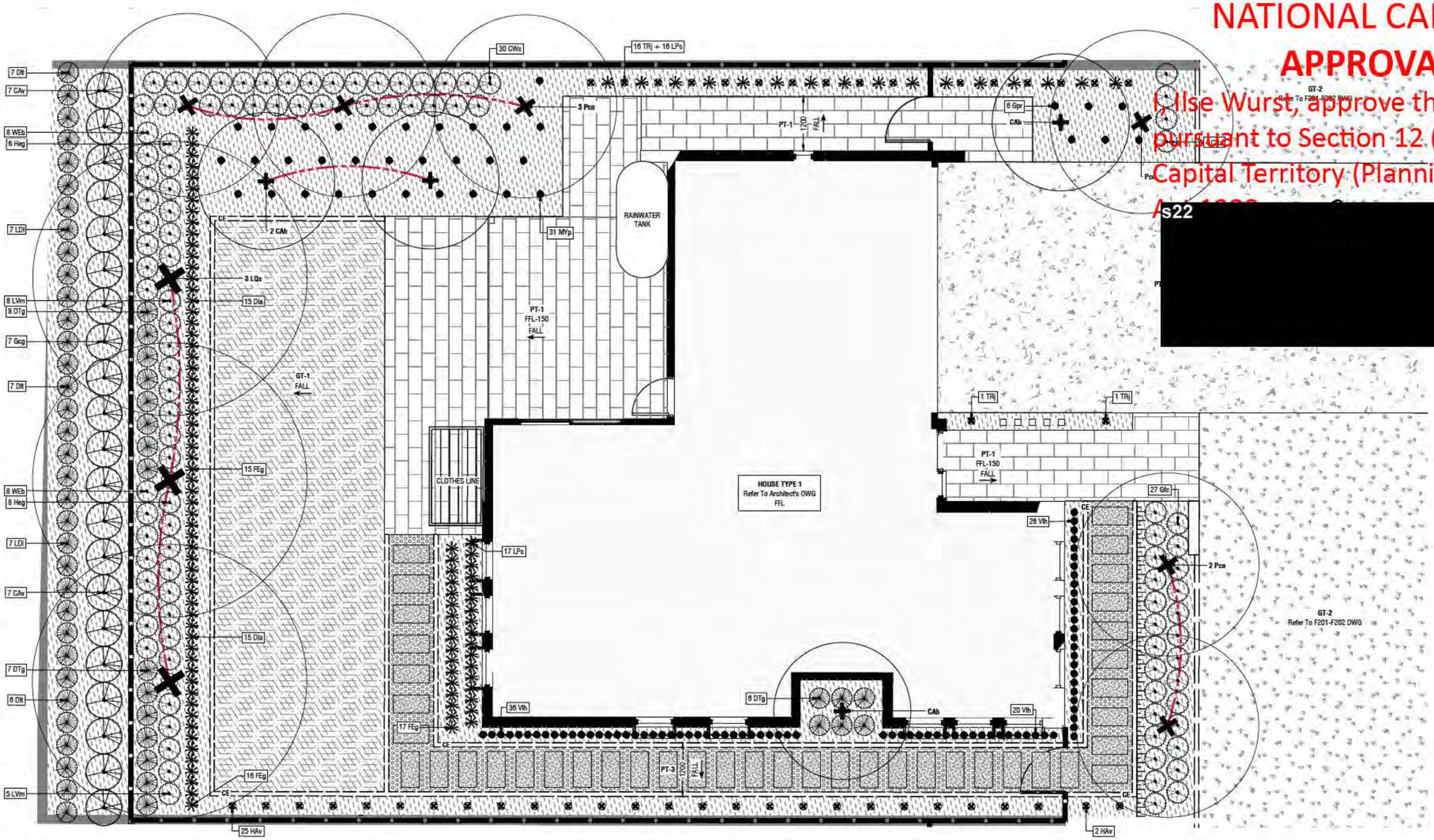

LEGEND

FOOTSCAPE

PLANTING BED
Excavated Planting Bed.
Planting Within The TPZ Of Existing Trees To Be Undisturbed

GT-1 IRRIGATED TURF
Refer To Grassing Details

GT-2 NON-IRRIGATED GRASS
Refer To Grassing Notes

TO BE RETAINED

(>1.0m)

SHRUB SPECIES (<1.0m)
Refer to Planting List

GRASS / STRAPPY SPECIES (>0.7m)
Refer to Planting List

GRASS / STRAPPY SPECIES - (<0.7m)
Refer to Planting List

GROUND COVER SPECIES
Refer to Planting List

CLIMBERS
Refer to Planting List

TOP OF BATTER
For Detailed Levels Refer To Engineers Documentation

HARDSCAPE

PT-1 UNIT PAVER
400x600mm, Charcoal.

PT-2 CONCRETE PAVING
Standard Grey, Broom Finish.

PT-3 STEPPING STONE
600x400mm Concrete Paver, Laid In Ø20mm River Pebble Mulch.

CE CONCRETE EDGING
Refer to details.

RETAINING WALL
Type varies. Refer To Details & F203 DWG.

FENCE
Type Varies. Refer to Details & F203 DWG

RAINWATER TANK
Refer To Civil's DWG.

NOTE:
Print Drawings in Colour

PLANTING LIST

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
TREE SPECIES				
ACf	*Acer Fremanii 'Armstrong'*	October Glory Red Maple	50L	12.0m / 5.0m
BTp	*Betula pendula*	Silver Birch	100L	12.0m / 6.0m
CAh	*Callistemon 'Harkness'*	Harkness Bottlebrush	50L	5.0m / 3.0m
Emf	*Eucalyptus mannifera 'little spotty'*	Brittle Gum	50L	8.0m / 7.0m
Eme	*Eucalyptus melliodora*	Yellow Box	50L	25.0m / 20.0m
Ebl	*Eucalyptus blakelyi*	Red Gum	50L	20.0m / 15.0m
FRv	*Fraxinus velutina*	Velvet Ash	50L	12.0m / 10.0m
LQs	*Liquidambar styraciflua 'Slender Silhouette'*	Sweetgum	50L	2.0m / 10.0m
MEc	*Melia azedarach 'Caroline'*	White Cedar	100L	8.0m / 7.0m
PAp	*Parrotia persica*	Parrotia	100L	7.0m / 5.0m
Pcn	*Prunus cerasifera 'Nigra'*	Purple Leaf Cherry Plum	50L	4.0m / 4.0m
Trees shall be grown, containerised and supplied in accordance with MITS 09C and AS 2303.				
SHRUB SPECIES - HEDGES				
CAv	*Callistemon viminalis 'Slim'*	Slim Bottlebrush	200mm	3.0m / 1.3m
DOv	*Dodonea viscosa 'Purpurea'*	Purple hop bush	200mm	3.0m / 1.5m
Gcg	*Grevillea 'Canberra Gem'*	Grevillea	200mm	2.0m / 2.0m
LTm	*Leptospermum morrisonii 'Burgundy'*	Tea Tree	200mm	3.0m / 1.5m
MGg	*Magnolia grandiflora 'Little Gem'*	Southern Magnolia	200mm	5.0m / 3.0m
PHf	*Photinia x fraser*	Photinia Red Robin	200mm	3.5m / 2.5m
PTt	*Pittosporum tenuifolium 'Screenmaster'*	Screen Master	200mm	3.5m / 2.0m

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
SHRUB SPECIES				
BUr	*Bauera rubioides*	River Rose	140mm	1.0m / 1.0m
CRa	*Correa alba*	White Corres	140mm	1.0m / 1.0m
CWs	*Crowea exalata 'Southern Stars'*	Wax Flower	140mm	1.0m / 1.0m
Gfc	*Grevillea 'Firecracker'*	Grevillea	140mm	1.0m / 1.0m
Heg	*Hebe 'Emerald Green'*	Emerald Green Hebe	140mm	0.4m / 0.5m
LVm	*Lavandula 'Munstead'*	Dwarf Lavender	140mm	0.6m / 0.7m
WEb	*Westringia 'Blue Gem*	Costal Rosemary	140mm	1.0m / 1.0m
GRASS / STRAPPY SPECIES - (>0.7m)				
Dlt	*Dianella tasmanica*	Tasman Flax Lily	140mm	1.0m / 1.0m
DTg	*Dietes grandiflora*	Dietes	140mm	0.9m / 1.5m
Fno	*Ficinia nodosa*	Knobby Club Rush	140mm	1.0m / 0.8m
LDl	*Lomandra 'Little Pal'*	Lomandra 'Little Pal'	140mm	0.8m / 0.5m
GRASS / STRAPPY SPECIES - (<0.7m)				
Dla	*Dianella 'Aranda'*	Flax Lily	140mm	0.3m / 0.35m
FEg	*Festuca glauca*	Blue Fescue	140mm	0.3m / 0.3m
LPs	*Liriope 'Samantha*	Lilyturf	140mm	0.5m / 0.5m

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
GROUNDCOVER SPECIES				
CPg	*Carpobrotus glaucescens*	Pig Face	140mm	0.2m / 1.5m
Dsf	*Dichondra argentea 'Silver Falls'*	Dichondra	140mm	0.15m / 0.8m
Gpr	*Grevillea 'Poorinda Royal Mantle'*	Grevillea	140mm	0.2m / 2.0m
MYp	*Myoporum parvifolium*	Creeping Boobialla	140mm	0.1m / 1.5m
MYpp	*Myoporum parvifolium 'Purpurea'*	Purple Creeping Boobialla	140mm	0.1m / 1.5m
Vlh	*Viola hederacea*	Native Violet	140mm	0.2m / 0.4m
WEl	*Westringia 'Low Horizon'*	Coastal Rosemary	140mm	0.3m / 0.7m
CLIMBER SPECIES				
Flp	*Ficus pumila*	Creeping Fig	140mm	N/A
HAv	*Hardenbergia violacea*	Native Lilac	140mm	N/A
TRj	*Trachelospermum jasminoides*	Star Jasmine	140mm	N/A

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B	AH	CP	MR		12/05/2020	ISSUE FOR WORKS APPROVAL
A	AH	CP	MR		30/04/2020	ISSUE FOR WORKS APPROVAL- DRAFT

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1 0 1 2m
1:50 @ A1 1:100 @ A3

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ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

Drawing Title
TYPICAL HOUSE LANDSCAPE TRETMENT
TYPE 1

Scale 1:50 @ A1 | Plot Date: | Sheet No.

Drg. No.
3715-F301 C

08 Sep, 2020

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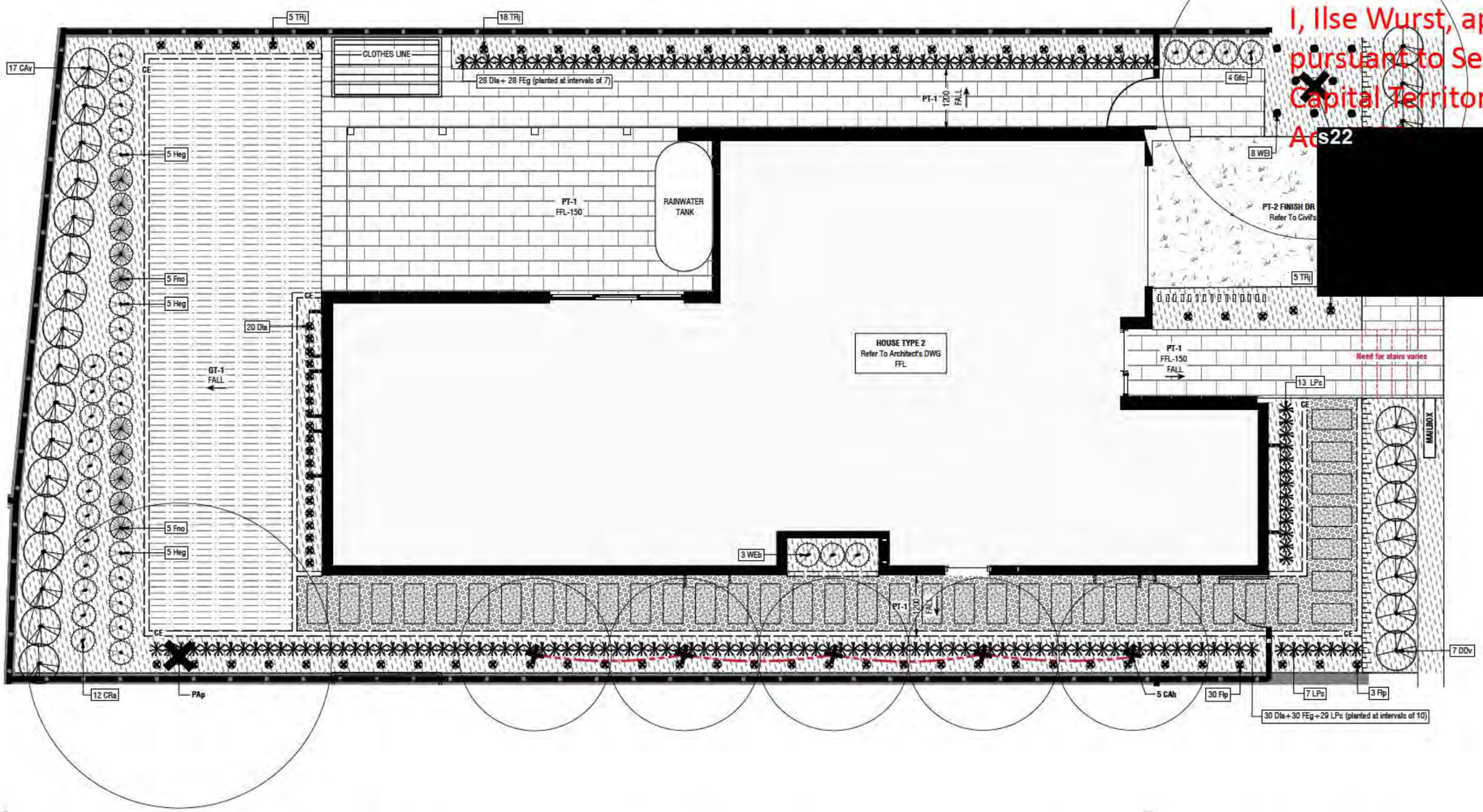

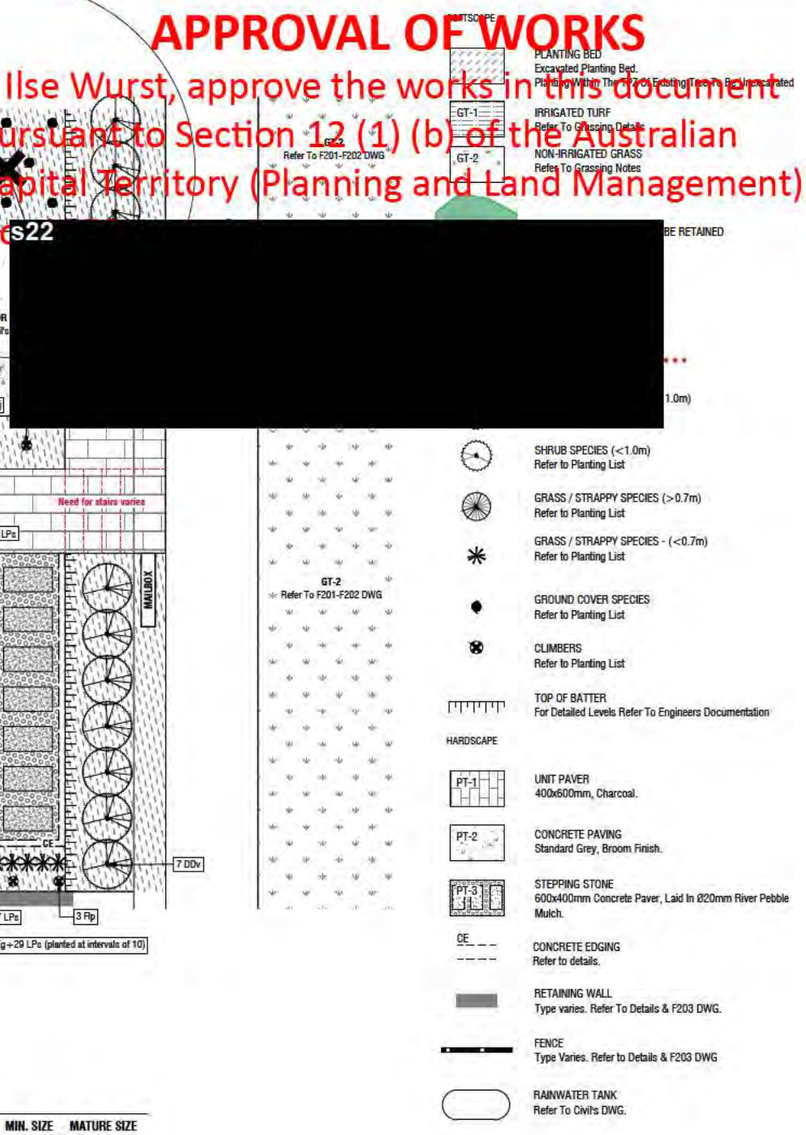

NOTE:
Print Drawings in Colour

PLANTING LIST

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
TREE SPECIES				
ACf	*Acer Fremanii 'Armstrong'*	October Glory Red Maple	50L	12.0m / 5.0m
BTp	*Betula pendula*	Silver Birch	100L	12.0m / 6.0m
CAh	*Callistemon 'Harkness'*	Harkness Bottlebrush	50L	5.0m / 3.0m
Emf	*Eucalyptus mannifera 'little spotty'*	Brittle Gum	50L	8.0m / 7.0m
Eme	*Eucalyptus melliodora*	Yellow Box	50L	25.0m / 20.0m
Ebl	*Eucalyptus blakelyi*	Red Gum	50L	20.0m / 15.0m
FRv	*Fraxinus velutina*	Velvet Ash	50L	12.0m / 10.0m
LQs	*Liquidambar styraciflua 'Slender Silhouette'*	Sweetgum	50L	2.0m / 10.0m
MEc	*Melia azedarach 'Caroline'*	White Cedar	100L	8.0m / 7.0m
PAp	*Parrotia persica*	Parrotia	100L	7.0m / 5.0m
Pcn	*Prunus cerasifera 'Nigra'*	Purple Leaf Cherry Plum	50L	4.0m / 4.0m
Trees shall be grown, containerised and supplied in accordance with MITS 09C and AS 2303.				
SHRUB SPECIES - HEDGES				
CAv	*Callistemon viminalis 'Slim'*	Slim Bottlebrush	200mm	3.0m / 1.3m
DDv	*Dodonea viscosa 'Purpurea'*	Purple hop bush	200mm	3.0m / 1.5m
Gcg	*Grevillea 'Canberra Gem'*	Grevillea	200mm	2.0m / 2.0m
LTm	*Leptospermum morrisonii 'Burgundy'*	Tea Tree	200mm	3.0m / 1.5m
MGg	*Magnolia grandiflora 'Little Gem'*	Southern Magnolia	200mm	5.0m / 3.0m
PHf	*Photinia x fraser*	Photinia Red Robin	200mm	3.5m / 2.5m
PTt	*Pittosporum tenuifolium 'Screenmaster'*	Screen Master	200mm	3.5m / 2.0m

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
SHRUB SPECIES				
BUr	*Bauera rubioides*	River Rose	140mm	1.0m / 1.0m
CRa	*Correa alba*	White Corres	140mm	1.0m / 1.0m
CWs	*Crowea exalata 'Southern Stars'*	Wax Flower	140mm	1.0m / 1.0m
Gfc	*Grevillea 'Firecracker'*	Grevillea	140mm	1.0m / 1.0m
Heg	*Hebe 'Emerald Green'*	Emerald Green Hebe	140mm	0.4m / 0.5m
LVm	*Lavandula 'Munstead'*	Dwarf Lavender	140mm	0.6m / 0.7m
WEb	*Westringia 'Blue Gem*	Costal Rosemary	140mm	1.0m / 1.0m
GRASS / STRAPPY SPECIES - (>0.7m)				
Dlt	*Dianella tasmanica*	Tasman Flax Lily	140mm	1.0m / 1.0m
DTg	*Dietes grandiflora*	Dietes	140mm	0.9m / 1.5m
Fno	*Ficinia nodosa*	Knobby Club Rush	140mm	1.0m / 0.8m
LDl	*Lomandra 'Little Pal'*	Lomandra 'Little Pal'	140mm	0.8m / 0.5m
GRASS / STRAPPY SPECIES - (<0.7m)				
Dla	*Dianella 'Aranda'*	Flax Lily	140mm	0.3m / 0.35m
FEg	*Festuca glauca*	Blue Fescue	140mm	0.3m / 0.3m
LPs	*Liriope 'Samantha*	Lilyturf	140mm	0.5m / 0.5m

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
GROUNDCOVER SPECIES				
CPg	*Carpobrotus glaucescens*	Pig Face	140mm	0.2m / 1.5m
Dsf	*Dichondra argentea 'Silver Falls'*	Dichondra	140mm	0.15m / 0.8m
Gpr	*Grevillea 'Poorinda Royal Mantle'*	Grevillea	140mm	0.2m / 2.0m
MYp	*Myoporum parvifolium*	Creeping Boobialla	140mm	0.1m / 1.5m
MYpp	*Myoporum parvifolium 'Purpurea'*	Purple Creeping Boobialla	140mm	0.1m / 1.5m
Vlh	*Viola hederacea*	Native Violet	140mm	0.2m / 0.4m
WEl	*Westringia 'Low Horizon'*	Coastal Rosemary	140mm	0.3m / 0.7m
CLIMBER SPECIES				
Flp	*Ficus pumila*	Creeping Fig	140mm	N/A
HAv	*Hardenbergia violacea*	Native Lilac	140mm	N/A
TRj	*Trachelospermum jasminoides*	Star Jasmine	140mm	N/A

NO.	DESIGN	DRAWN	CHECKED	VER'D	DATE	AMENDMENT / ISSUE
C	AH	CP	MR		24/07/2020	ISSUE FOR WORKS APPROVAL
B	AH	CP	MR		12/05/2020	ISSUE FOR WORKS APPROVAL
A	AH	CP	MR		30/04/2020	ISSUE FOR WORKS APPROVAL- DRAFT

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1 0 1 2m
1:50 @ A1 1:100 @ A3

dsb Landscape Architects
Deakin Chambers
14 Hannah Place
Deakin ACT 2600
Tel 02 6285 1955
dsb@dsbla.com.au

Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

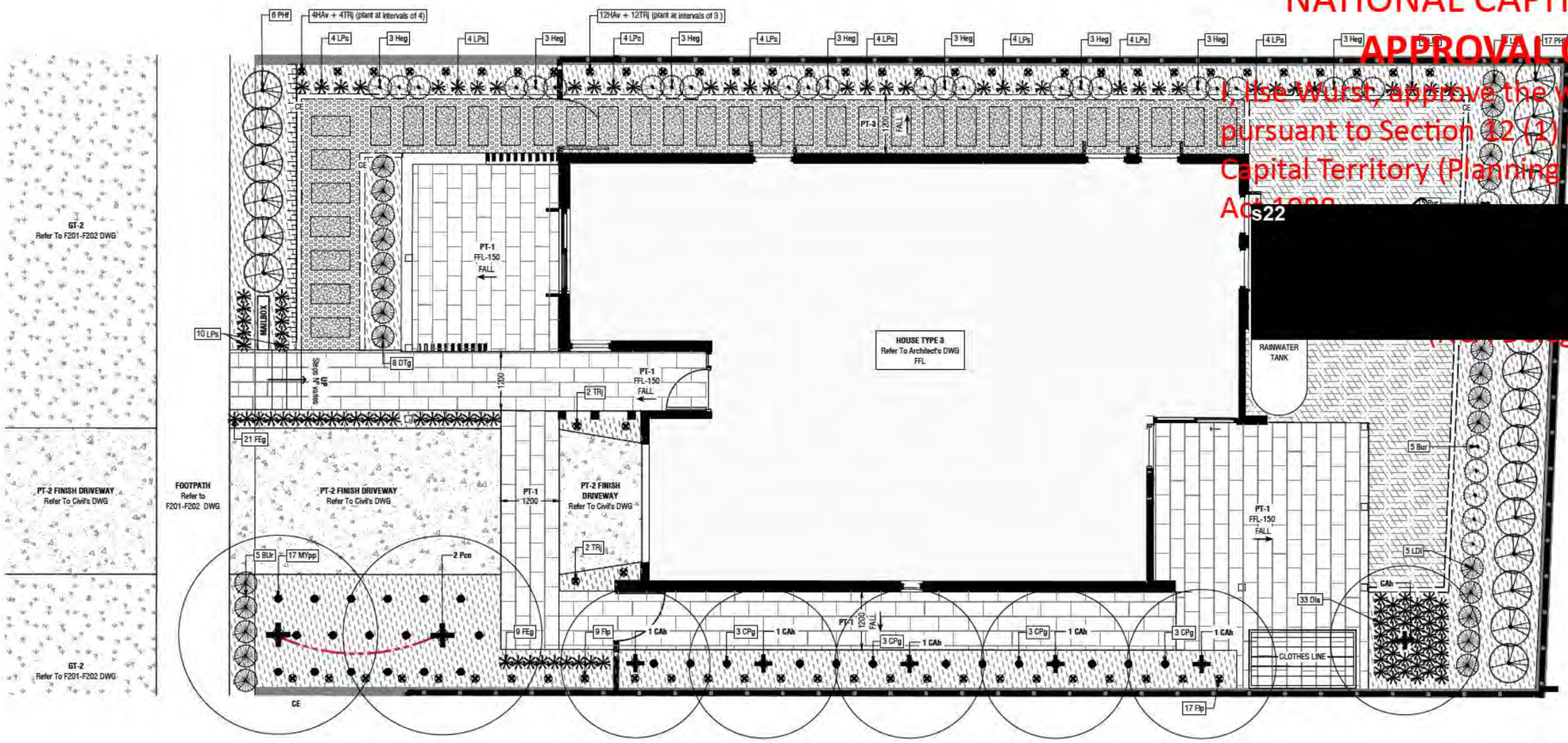
Drawing Title
TYPICAL HOUSE LANDSCAPE TRETMENT
TYPE 2

Scale 1:50 @ A1 | Plot Date: | Sheet No.

Drg. No.
3715-F302 C

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988
s22 [redacted]



LEGEND

SOFTSCAPE

- TREE TO BE RETAINED — Excavated Planting Bed. Planting Within The TPZ Of Existing Tree To Be Unexcavated
- SHRUB TO BE REMOVED — Refer To Grassing Details
- GROUNDCOVER TO BE REMOVED — Refer To Grassing Notes
- EXISTING STREET TREES TO BE RETAINED
- (>1.0m)
- SHRUB SPECIES (<1.0m) — Refer to Planting List
- GRASS / STRAPPY SPECIES (>0.7m) — Refer to Planting List
- GRASS / STRAPPY SPECIES - (<0.7m) — Refer to Planting List
- GROUND COVER SPECIES — Refer to Planting List
- CLIMBERS — Refer to Planting List
- TOP OF BATTER — For Detailed Levels Refer To Engineers Documentation

HARDSCAPE

- PT-1 — UNIT PAVER 400x600mm, Charcoal.
- PT-2 — CONCRETE PAVING Standard Grey, Broom Finish.
- PT-3 — STEPPING STONE 600x400mm Concrete Paver, Laid In Ø20mm River Pebble Mulch.
- CE — CONCRETE EDGING Refer to details.
- RETAINING WALL Type varies. Refer To Details & F203 DWG.
- FENCE Type Varies. Refer to Details & F203 DWG
- RAINWATER TANK Refer To Civil's DWG.

NOTE:
Print Drawings in Colour

PLANTING LIST

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
TREE SPECIES				
ACf	*Acer Fremanii 'Armstrong'*	October Glory Red Maple	50L	12.0m / 5.0m
BTp	*Betula pendula*	Silver Birch	100L	12.0m / 6.0m
CAh	*Callistemon 'Harkness'*	Harkness Bottlebrush	50L	5.0m / 3.0m
Emf	*Eucalyptus mannifera 'little spotty'*	Brittle Gum	50L	8.0m / 7.0m
Eme	*Eucalyptus melliodora*	Yellow Box	50L	25.0m / 20.0m
Ebl	*Eucalyptus blakelyi*	Red Gum	50L	20.0m / 15.0m
FRv	*Fraxinus velutina*	Velvet Ash	50L	12.0m / 10.0m
LQs	*Liquidambar styraciflua 'Slender Silhouette'*	Sweetgum	50L	2.0m / 10.0m
MEc	*Melia azedarach 'Caroline'*	White Cedar	100L	8.0m / 7.0m
PAp	*Parrotia persica*	Parrotia	100L	7.0m / 5.0m
Pcn	*Prunus cerasifera 'Nigra'*	Purple Leaf Cherry Plum	50L	4.0m / 4.0m
Trees shall be grown, containerised and supplied in accordance with MITS 09C and AS 2303.				
SHRUB SPECIES - HEDGES				
CAv	*Callistemon viminalis 'Slim'*	Slim Bottlebrush	200mm	3.0m / 1.3m
DOv	*Dodonea viscosa 'Purpurea'*	Purple hop bush	200mm	3.0m / 1.5m
Gcg	*Grevillea 'Canberra Gem'*	Grevillea	200mm	2.0m / 2.0m
LTm	*Leptospermum morrisonii 'Burgundy'*	Tea Tree	200mm	3.0m / 1.5m
MGg	*Magnolia grandiflora 'Little Gem'*	Southern Magnolia	200mm	5.0m / 3.0m
PHf	*Photinia x fraser*	Photinia Red Robin	200mm	3.5m / 2.5m
PTt	*Pittosporum tenuifolium 'Screenmaster'*	Screen Master	200mm	3.5m / 2.0m

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
SHRUB SPECIES				
BUr	*Bauera rubioides*	River Rose	140mm	1.0m / 1.0m
CRa	*Correa alba*	White Corres	140mm	1.0m / 1.0m
CWs	*Crowea exalata 'Southern Stars'*	Wax Flower	140mm	1.0m / 1.0m
Gfc	*Grevillea 'Firecracker'*	Grevillea	140mm	1.0m / 1.0m
Heg	*Hebe 'Emerald Green'*	Emerald Green Hebe	140mm	0.4m / 0.5m
LVm	*Lavandula 'Munstead'*	Dwarf Lavender	140mm	0.6m / 0.7m
WEb	*Westringia 'Blue Gem*	Costal Rosemary	140mm	1.0m / 1.0m
GRASS / STRAPPY SPECIES - (>0.7m)				
Dlt	*Dianella tasmanica*	Tasman Flax Lily	140mm	1.0m / 1.0m
DTg	*Dietes grandiflora*	Dietes	140mm	0.9m / 1.5m
Fno	*Ficinia nodosa*	Knobby Club Rush	140mm	1.0m / 0.8m
LDl	*Lomandra 'Little Pal'*	Lomandra 'Little Pal'	140mm	0.6m / 0.5m
GRASS / STRAPPY SPECIES - (<0.7m)				
Dla	*Dianella 'Aranda'*	Flax Lily	140mm	0.3m / 0.35m
FEg	*Festuca glauca*	Blue Fescue	140mm	0.3m / 0.3m
LPs	*Liriope 'Samantha*	Lilyturf	140mm	0.5m / 0.5m

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
GROUNDCOVER SPECIES				
CPg	*Carpobrotus glaucescens*	Pig Face	140mm	0.2m / 1.5m
Dsf	*Dichondra argentea 'Silver Falls'*	Dichondra	140mm	0.15m / 0.8m
Gpr	*Grevillea 'Poorinda Royal Mantle'*	Grevillea	140mm	0.2m / 2.0m
MYp	*Myoporum parvifolium*	Creeping Boobialla	140mm	0.1m / 1.5m
MYpp	*Myoporum parvifolium 'Purpurea'*	Purple Creeping Boobialla	140mm	0.1m / 1.5m
Vlh	*Viola hederacea*	Native Violet	140mm	0.2m / 0.4m
WEl	*Westringia 'Low Horizon'*	Coastal Rosemary	140mm	0.3m / 0.7m
CLIMBER SPECIES				
Flp	*Ficus pumila*	Creeping Fig	140mm	N/A
HAv	*Hardenbergia violacea*	Native Lilac	140mm	N/A
TRj	*Trachelospermum jasminoides*	Star Jasmine	140mm	N/A

NO.	DESIGN	DRAWN	CHECKED	VER'D	DATE	AMENDMENT / ISSUE
C	AH	CP	MR		24/07/2020	ISSUE FOR WORKS APPROVAL
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NOTES

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1 0 1 2m
1:50 @ A1 1:100 @ A3

dsb Landscape Architects
Deakin Chambers
14 Hannah Place
Deakin ACT 2600
Tel 02 6285 1955
dsb@dsbla.com.au

Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

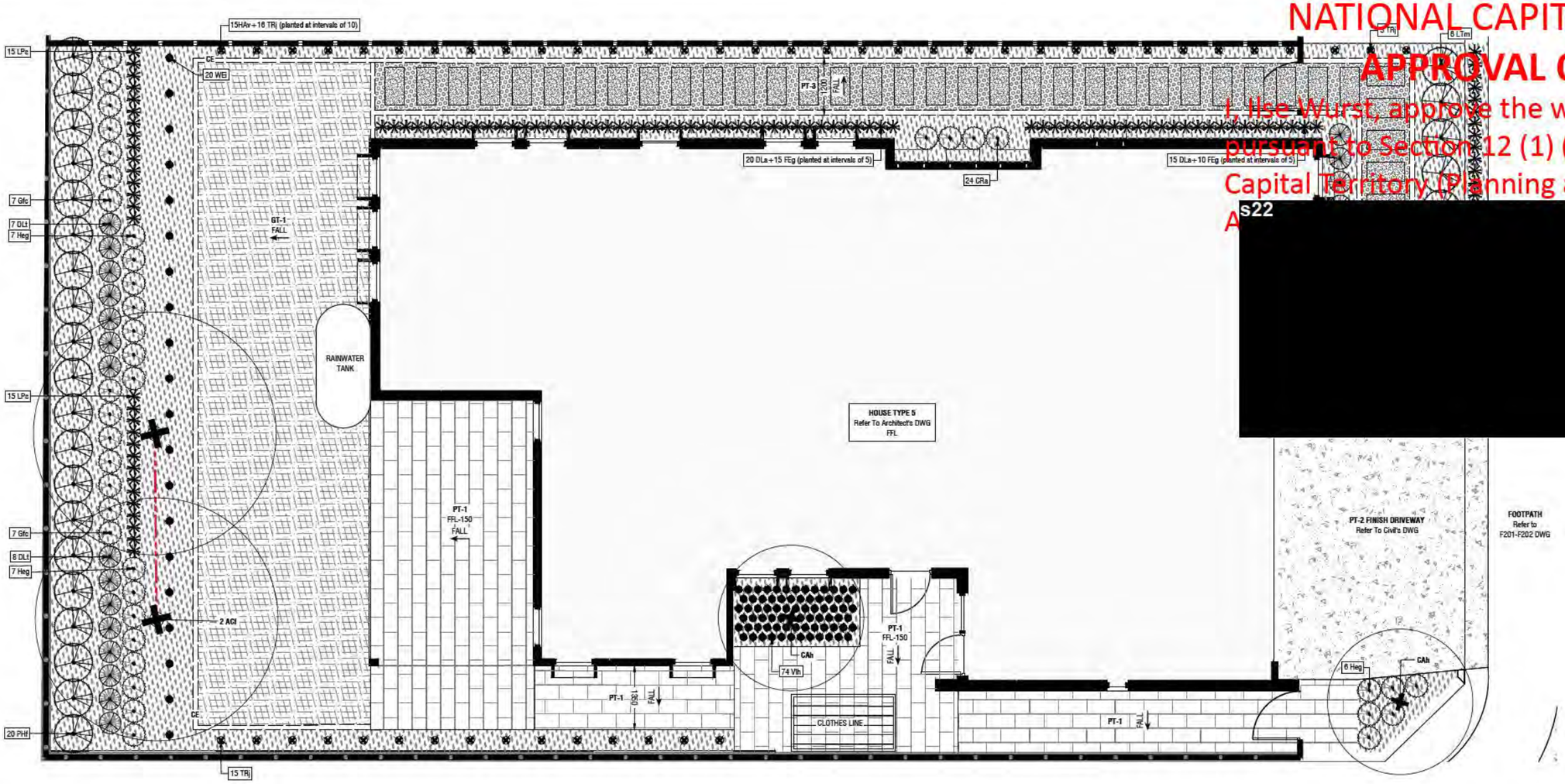
Client
AMC ARCHITECTURE

Drawing Title
TYPICAL HOUSE LANDSCAPE TRETMENT
TYPE 3

Scale 1:50 @ A1 | Plot Date: | Sheet No.
Drg. No. 3715-F303 C

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) A
s22



LEGEND

SOFTSCAPE

- TREE TO BE RETAINED — Excavated Planting Bed. Planting Within The TPZ Of Existing Tree To Be Unexcavated
- KAD1 — KIKUYU TURF — Refer To Grassing Details
- GT-2 — COOL CLIMATE BUFFALO — Refer To Grassing Notes
- GRASS / STRAPPY SPECIES - (<0.7m) — Refer to Planting List
- GROUND COVER SPECIES — Refer to Planting List
- CLIMBERS — Refer to Planting List
- TOP OF BATTER — For Detailed Levels Refer To Engineers Documentation

HARDSCAPE

- PT-1 — UNIT PAVER — 400x600mm, Charcoal.
- PT-2 — CONCRETE PAVING — Standard Grey, Broom Finish.
- PT-3 — STEPPING STONE — 600x400mm Concrete Paver, Laid In Ø20mm River Pebble Mulch.
- CE — CONCRETE EDGING — Refer to details.
- RETAINING WALL — Type varies. Refer To Details & F203 DWG.
- FENCE — Type Varies. Refer to Details & F203 DWG
- RAINWATER TANK — Refer To Civil's DWG.

NOTE:
Print Drawings in Colour

PLANTING LIST

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
TREE SPECIES				
ACf	*Acer Fremanii 'Armstrong'*	October Glory Red Maple	50L	12.0m / 5.0m
BTp	*Betula pendula*	Silver Birch	100L	12.0m / 6.0m
CAh	*Callistemon 'Harkness'*	Harkness Bottlebrush	50L	5.0m / 3.0m
Emf	*Eucalyptus mannifera 'little spotty'*	Brittle Gum	50L	8.0m / 7.0m
Eme	*Eucalyptus melliodora*	Yellow Box	50L	25.0m / 20.0m
Ebl	*Eucalyptus blakelyi*	Red Gum	50L	20.0m / 15.0m
FRv	*Fraxinus velutina*	Velvet Ash	50L	12.0m / 10.0m
LQs	*Liquidambar styraciflua 'Slender Silhouette'*	Sweetgum	50L	2.0m / 10.0m
MEc	*Melia azedarach 'Caroline'*	White Cedar	100L	8.0m / 7.0m
PAp	*Parrotia persica*	Parrotia	100L	7.0m / 5.0m
Pcn	*Prunus cerasifera 'Nigra'*	Purple Leaf Cherry Plum	50L	4.0m / 4.0m
Trees shall be grown, containerised and supplied in accordance with MITS 09C and AS 2303.				
SHRUB SPECIES - HEDGES				
CAv	*Callistemon viminalis 'Slim'*	Slim Bottlebrush	200mm	3.0m / 1.3m
DDv	*Dodonea viscosa 'Purpurea'*	Purple hop bush	200mm	3.0m / 1.5m
Gcg	*Grevillea 'Canberra Gem'*	Grevillea	200mm	2.0m / 2.0m
LTm	*Leptospermum morrisonii 'Burgundy'*	Tea Tree	200mm	3.0m / 1.5m
MGg	*Magnolia grandiflora 'Little Gem'*	Southern Magnolia	200mm	5.0m / 3.0m
PHf	*Photinia x fraser*	Photinia Red Robin	200mm	3.5m / 2.5m
PTt	*Pittosporum tenuifolium 'Screenmaster'*	Screen Master	200mm	3.5m / 2.0m

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
SHRUB SPECIES				
BUr	*Bauera rubioides*	River Rose	140mm	1.0m / 1.0m
CRa	*Correa alba*	White Corres	140mm	1.0m / 1.0m
CWs	*Crowea exalata 'Southern Stars'*	Wax Flower	140mm	1.0m / 1.0m
Gfc	*Grevillea 'Firecracker'*	Grevillea	140mm	1.0m / 1.0m
Heg	*Hebe 'Emerald Green'*	Emerald Green Hebe	140mm	0.4m / 0.5m
LVm	*Lavandula 'Munstead'*	Dwarf Lavender	140mm	0.6m / 0.7m
WEb	*Westringia 'Blue Gem*	Costal Rosemary	140mm	1.0m / 1.0m
GRASS / STRAPPY SPECIES - (>0.7m)				
Dlt	*Dianella tasmanica*	Tasman Flax Lily	140mm	1.0m / 1.0m
DTg	*Dietes grandiflora*	Dietes	140mm	0.9m / 1.5m
Fno	*Ficinia nodosa*	Knobby Club Rush	140mm	1.0m / 0.8m
LDl	*Lomandra 'Little Pal'*	Lomandra 'Little Pal'	140mm	0.6m / 0.5m
GRASS / STRAPPY SPECIES - (<0.7m)				
Dla	*Dianella 'Aranda'*	Flax Lily	140mm	0.3m / 0.35m
FEg	*Festuca glauca*	Blue Fescue	140mm	0.3m / 0.3m
LPs	*Liriope 'Samantha*	Lilyturf	140mm	0.5m / 0.5m

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
GROUNDCOVER SPECIES				
CPg	*Carpobrotus glaucescens*	Pig Face	140mm	0.2m / 1.5m
Dsf	*Dichondra argentea 'Silver Falls'*	Dichondra	140mm	0.15m / 0.8m
Gpr	*Grevillea 'Poorinda Royal Mantle'*	Grevillea	140mm	0.2m / 2.0m
MYp	*Myoporum parvifolium*	Creeping Boobialla	140mm	0.1m / 1.5m
MYpp	*Myoporum parvifolium 'Purpurea'*	Purple Creeping Boobialla	140mm	0.1m / 1.5m
Vfh	*Viola hederacea*	Native Violet	140mm	0.2m / 0.4m
WEl	*Westringia 'Low Horizon'*	Coastal Rosemary	140mm	0.3m / 0.7m
CLIMBER SPECIES				
Flp	*Ficus pumila*	Creeping Fig	140mm	N/A
HAv	*Hardenbergia violacea*	Native Lilac	140mm	N/A
TRj	*Trachelospermum jasminoides*	Star Jasmine	140mm	N/A

NO.	DESIGN	DRAWN	CHECKED	VER'D	DATE	AMENDMENT / ISSUE
C	AH	CP	MR		24/07/2020	ISSUE FOR WORKS APPROVAL
B	AH	CP	MR		12/05/2020	ISSUE FOR WORKS APPROVAL
A	AH	CP	MR		30/04/2020	ISSUE FOR WORKS APPROVAL- DRAFT

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1 0 1 2m
1:50 @ A1 1:100 @ A3

dsb Landscape Architects
Deakin Chambers
14 Hannah Place
Deakin ACT 2600
Tel 02 6285 1955
dsb@dsbla.com.au

Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

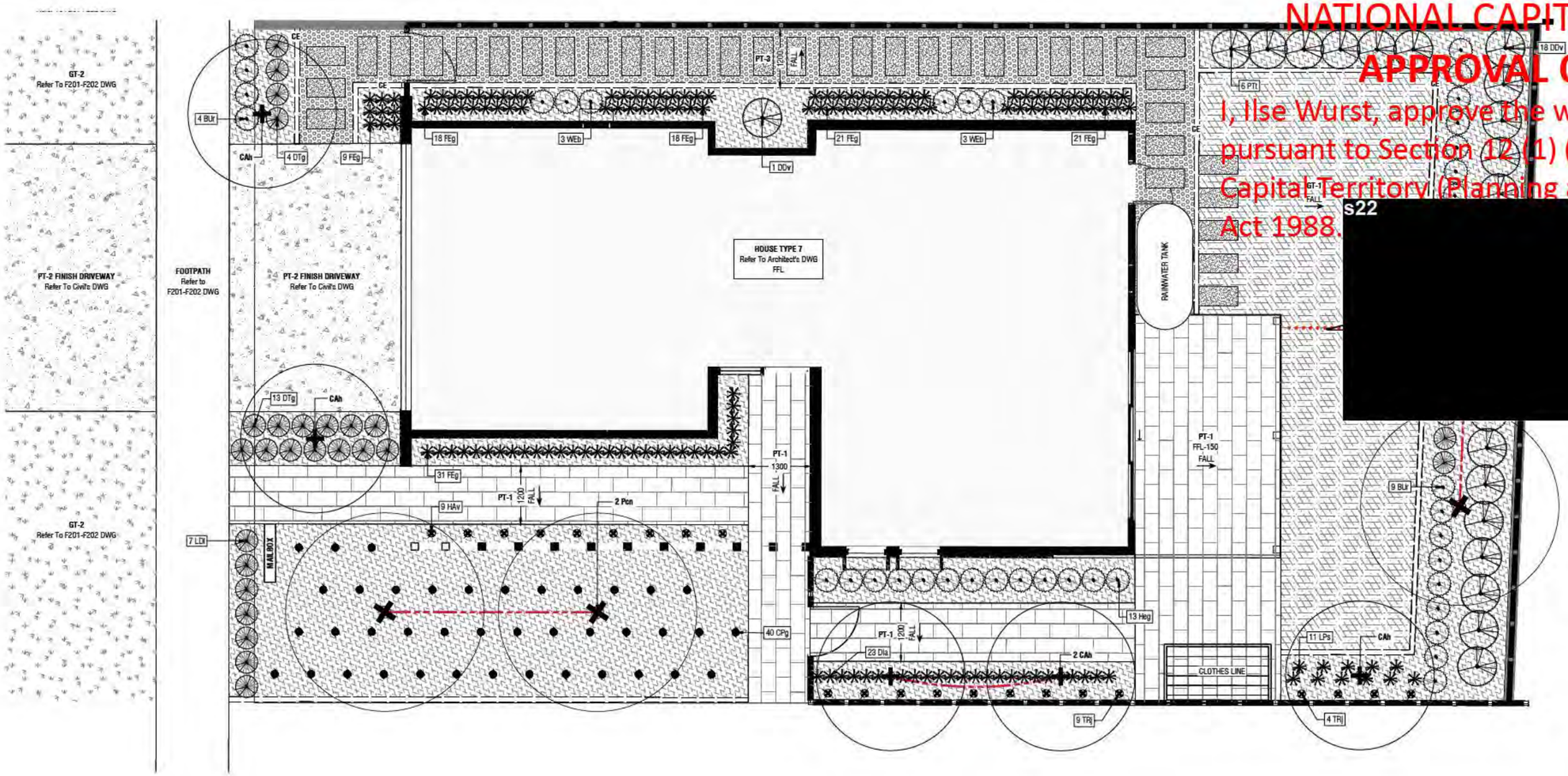
Client
AMC ARCHITECTURE

Drawing Title
TYPICAL HOUSE LANDSCAPE TRETMENT
TYPE 5

Scale 1:50 @ A1 | Plot Date: | Sheet No.
Drg. No. 3715-F304 C

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988.
s22 [redacted]



LEGEND

SOFTSCAPE

PLANTING BED
Excavated Planting Bed.
Planting Within The TPZ Of Existing Trees To Be Undisturbed

GT-1 IRRIGATED TURF
Refer To Grassing Details

GT-2 NON-IRRIGATED GRASS
Refer To Grassing Notes

RETAINED

GRASS / STRAPPY SPECIES (>0.7m)
Refer to Planting List

GRASS / STRAPPY SPECIES - (<0.7m)
Refer to Planting List

GROUND COVER SPECIES
Refer to Planting List

CLIMBERS
Refer to Planting List

TOP OF BATTER
For Detailed Levels Refer To Engineers Documentation

HARDSCAPE

PT-1 UNIT PAVER
400x600mm, Charcoal.

PT-2 CONCRETE PAVING
Standard Grey, Broom Finish.

PT-3 STEPPING STONE
600x400mm Concrete Paver, Laid In Ø20mm River Pebble Mulch.

CE CONCRETE EDGING
Refer to details.

RETAINING WALL
Type varies. Refer To Details & F203 DWG.

FENCE
Type Varies. Refer to Details & F203 DWG

RAINWATER TANK
Refer To Civil's DWG.

NOTE:
Print Drawings in Colour

PLANTING LIST

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
TREE SPECIES				
ACf	*Acer Fremanii 'Armstrong'*	October Glory Red Maple	50L	12.0m / 5.0m
BTp	*Betula pendula*	Silver Birch	100L	12.0m / 6.0m
CAh	*Callistemon 'Harkness'*	Harkness Bottlebrush	50L	5.0m / 3.0m
Emf	*Eucalyptus mannifera 'little spotty'*	Brittle Gum	50L	8.0m / 7.0m
Eme	*Eucalyptus melliodora*	Yellow Box	50L	25.0m / 20.0m
Ebl	*Eucalyptus blakelyi*	Red Gum	50L	20.0m / 15.0m
FRv	*Fraxinus velutina*	Velvet Ash	50L	12.0m / 10.0m
LQs	*Liquidambar styraciflua 'Slender Silhouette'*	Sweetgum	50L	2.0m / 10.0m
MEc	*Melia azedarach 'Caroline'*	White Cedar	100L	8.0m / 7.0m
PAp	*Parrotia persica*	Parrotia	100L	7.0m / 5.0m
Pcn	*Prunus cerasifera 'Nigra'*	Purple Leaf Cherry Plum	50L	4.0m / 4.0m
Trees shall be grown, containerised and supplied in accordance with MITS 09C and AS 2303.				
SHRUB SPECIES - HEDGES				
CAv	*Callistemon viminalis 'Slim'*	Slim Bottlebrush	200mm	3.0m / 1.3m
DDv	*Dodonea viscosa 'Purpurea'*	Purple hop bush	200mm	3.0m / 1.5m
Gcg	*Grevillea 'Canberra Gem'*	Grevillea	200mm	2.0m / 2.0m
LTm	*Leptospermum morrisonii 'Burgundy'*	Tea Tree	200mm	3.0m / 1.5m
MGg	*Magnolia grandiflora 'Little Gem'*	Southern Magnolia	200mm	5.0m / 3.0m
PHf	*Photinia x fraser*	Photinia Red Robin	200mm	3.5m / 2.5m
PTt	*Pittosporum tenuifolium 'Screenmaster'*	Screen Master	200mm	3.5m / 2.0m

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
SHRUB SPECIES				
BUr	*Bauera rubioides*	River Rose	140mm	1.0m / 1.0m
CRa	*Correa alba*	White Corres	140mm	1.0m / 1.0m
CWs	*Crowea exalata 'Southern Stars'*	Wax Flower	140mm	1.0m / 1.0m
Gfc	*Grevillea 'Firecracker'*	Grevillea	140mm	1.0m / 1.0m
Heg	*Hebe 'Emerald Green'*	Emerald Green Hebe	140mm	0.4m / 0.5m
LVm	*Lavandula 'Munstead'*	Dwarf Lavender	140mm	0.6m / 0.7m
WEb	*Westringia 'Blue Gem*	Costal Rosemary	140mm	1.0m / 1.0m
GRASS / STRAPPY SPECIES - (>0.7m)				
Dlt	*Dianella tasmanica*	Tasman Flax Lily	140mm	1.0m / 1.0m
DTg	*Dietes grandiflora*	Dietes	140mm	0.9m / 1.5m
Fno	*Ficinia nodosa*	Knobby Club Rush	140mm	1.0m / 0.8m
LDl	*Lomandra 'Little Pal'*	Lomandra 'Little Pal'	140mm	0.8m / 0.5m
GRASS / STRAPPY SPECIES - (<0.7m)				
Dla	*Dianella 'Aranda'*	Flax Lily	140mm	0.3m / 0.35m
FEg	*Festuca glauca*	Blue Fescue	140mm	0.3m / 0.3m
LPs	*Liriope 'Samantha*	Lilyturf	140mm	0.5m / 0.5m

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
GROUNDCOVER SPECIES				
CPg	*Carpobrotus glaucescens*	Pig Face	140mm	0.2m / 1.5m
Dsf	*Dichondra argentea 'Silver Falls'*	Dichondra	140mm	0.15m / 0.8m
Gpr	*Grevillea 'Poorinda Royal Mantle'*	Grevillea	140mm	0.2m / 2.0m
MYp	*Myoporum parvifolium*	Creeping Boobialla	140mm	0.1m / 1.5m
MYpp	*Myoporum parvifolium 'Purpurea'*	Purple Creeping Boobialla	140mm	0.1m / 1.5m
Vlh	*Viola hederacea*	Native Violet	140mm	0.2m / 0.4m
WEl	*Westringia 'Low Horizon'*	Coastal Rosemary	140mm	0.3m / 0.7m
CLIMBER SPECIES				
Flp	*Ficus pumila*	Creeping Fig	140mm	N/A
HAv	*Hardenbergia violacea*	Native Lilac	140mm	N/A
TRj	*Trachelospermum jasminoides*	Star Jasmine	140mm	N/A

NO.	DESIGN	DRAWN	CHECKED	VER'D	DATE	AMENDMENT / ISSUE
D	AH	CP	MR		24/07/2020	ISSUE FOR WORKS APPROVAL
C	AH	CP	MR		13/07/2020	ISSUE FOR WORKS APPROVAL - WATER TANK RELOCATION
B	AH	CP	MR		12/05/2020	ISSUE FOR WORKS APPROVAL
A	AH	CP	MR		30/04/2020	ISSUE FOR WORKS APPROVAL- DRAFT

NOTES

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1 0 1 2m
1:50 @ A1 1:100 @ A3

dsb Landscape Architects
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14 Hannah Place
Deakin ACT 2600
Tel 02 6285 1955
dsb@dsbla.com.au

Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

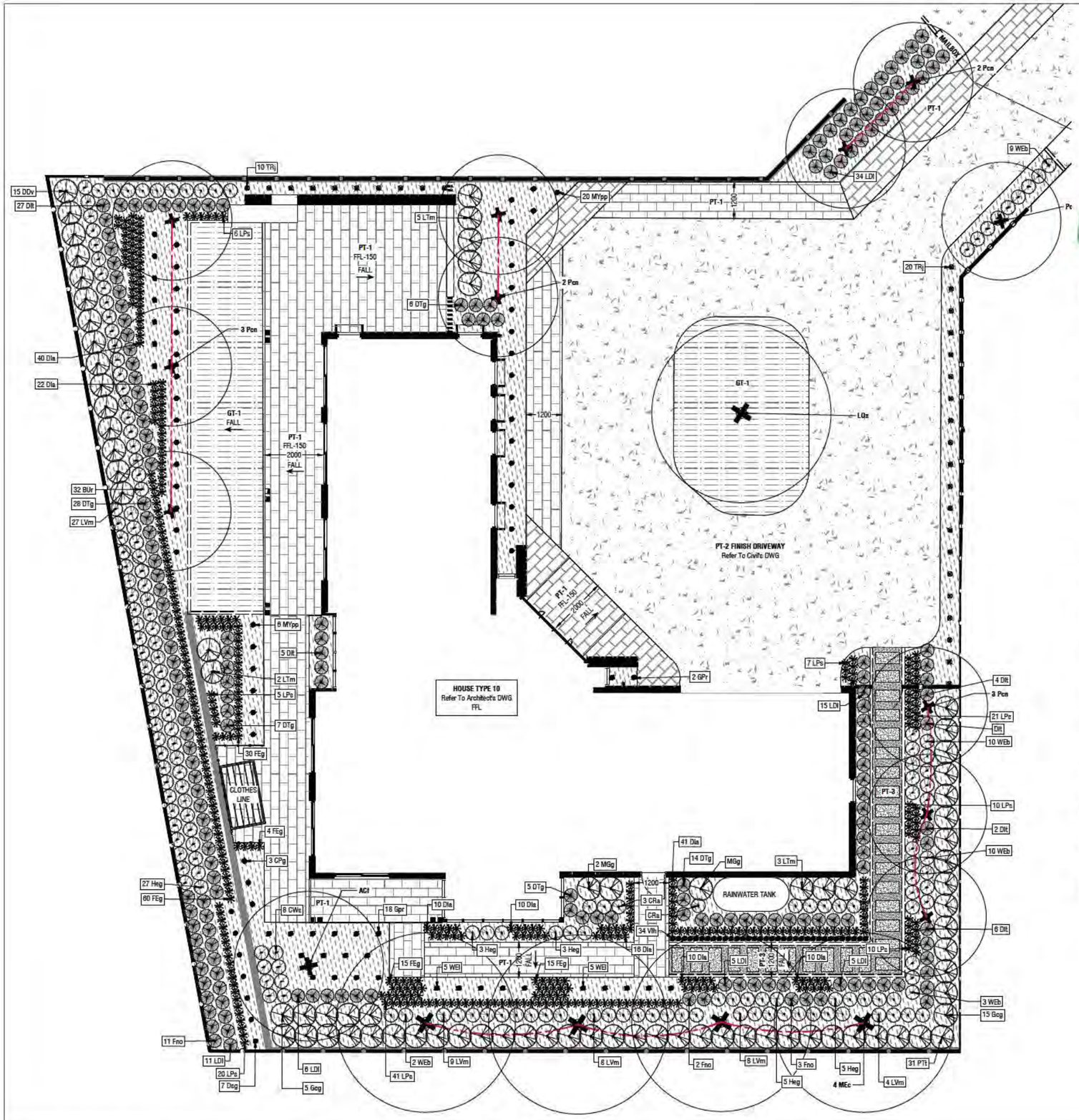
Drawing Title
TYPICAL HOUSE LANDSCAPE TRETMENT
TYPE 7

Scale 1:50 @ A1 | Plot Date: | Sheet No.

Drg. No.
3715-F305 D

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, lise Wurst, approve the works in this document pursuant to Section 12(1)(a) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988.
s22



LEGEND

SOFTSCAPE

- PLANTING BED — Excavated Planting Bed. Planting Within The TPZ Of Retaining Tree Shall Be Unexcavated
- IRRIGATED TURF — Refer To Grassing Details
- NON-IRRIGATED GRASS — Refer To Grassing Notes
- EXISTING STREET TREES TO BE RETAINED
- NEW TREE PLANTING.
- SHRUB SPECIES - HEDGE — Refer to Planting List
- SHRUB SPECIES (<1.0m — Refer to Planting List
- GRASS / STRAPPY SPECIES (>0.7m) — Refer to Planting List
- GRASS / STRAPPY SPECIES - (<0.7m) — Refer to Planting List
- GROUND COVER SPECIES — Refer to Planting List
- CLIMBERS — Refer to Planting List
- TOP OF BATTER — For Detailed Levels Refer To Engineers Documentation

HARDSCAPE

- PT-1 — UNIT PAVER, 400x600mm, Charcoal.
- PT-2 — CONCRETE PAVING, Standard Grey, Broom Finish.
- PT-3 — STEPPING STONE, 600x400mm Concrete Paver, Laid In Ø20mm River Pebble Mulch.
- CE — CONCRETE EDGING, Refer to details.
- RETAINING WALL, Type varies. Refer To Details & F203 DWG.
- FENCE, Type Varies. Refer to Details & F203 DWG
- RAINWATER TANK, Refer To Civil's DWG.

NOTE:
Print Drawings in Colour

PLANTING LIST

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
TREE SPECIES				
ACf	*Acer Freemanii 'Armstrong'*	Autumn Blaze Maple	50L	12.0m / 5.0m
BTp	*Betula pendula*	Silver Birch	100L	12.0m / 6.0m
CAh	*Callistemon 'Harkness'*	Harkness Bottlebrush	50L	5.0m / 3.0m
EMa	*Eucalyptus macrorhyncha*	Red Stringybark	50L	8.0m / 4.0m
EMe	*Eucalyptus melliodora*	Yellow Box	50L	25.0m / 20.0m
EBl	*Eucalyptus blakelyi*	Red Gum	50L	20.0m / 15.0m
FRv	*Fraxinus velutina*	Velvet Ash	50L	12.0m / 10.0m
LSp	*Lagerstroemia spp. 'Sioux', 'Natchez', 'Shoulder Silhouette'*	Crape Myrtle	50L	12.0m / 10.0m
MEc	*Melia azedarach 'Caroline'*	White Cedar	100L	8.0m / 7.0m
PCn	*Pyrus calleryana 'Chanticleer'*	Pyrus	100L	7.0m / 5.0m
PCn	*Prunus cerasifera 'Nigra'*	Purple Leaf Cherry Plum	50L	8.0m / 4.0m

Trees shall be grown, containerised and supplied in accordance with MITS 09C and AS 2303.

CODE	BOTANICAL NAME	COMMON NAME	MIN. SIZE	MATURE SIZE Height / Width
[redacted]				.0m / 1.3m
				.0m / 1.5m
				.0m / 2.0m
				.0m / 1.5m
				.0m / 3.0m
				.5m / 2.5m
				.5m / 2.0m
				.0m / 1.0m
				.0m / 1.0m
				.0m / 1.0m
				.0m / 1.0m
Heg	*Hebe 'Emerald Green'*	Emerald Green Hebe	140mm	0.4m / 0.5m
LVm	*Lavandula 'Munstead'*	Dwarf Lavender	140mm	0.6m / 0.7m
WEb	*Westringia 'Blue Gem'*	Costal Rosemary	140mm	1.0m / 1.0m
GRASS / STRAPPY SPECIES - (>0.7m)				
Dlt	*Dianella tasmanica*	Tasman Flax Lily	140mm	1.0m / 1.0m
DTg	*Dietes grandiflora*	Dietes	140mm	0.9m / 1.5m
Fno	*Ficinia nodosa*	Knobby Club Rush	140mm	1.0m / 0.8m
LDI	*Lomandra 'Little Pal'*	Lomandra 'Little Pal'	140mm	0.8m / 0.5m
GRASS / STRAPPY SPECIES - (<0.7m)				
Dla	*Dianella 'Aranda'*	Flax Lily	140mm	0.3m / 0.35m
FEg	*Festuca glauca*	Blue Fescue	140mm	0.3m / 0.3m
LPs	*Liriope 'Samantha*	Lilyturf	140mm	0.5m / 0.5m
GROUNDCOVER SPECIES				
CPg	*Carpobrotus glaucescens*	Pig Face	140mm	0.2m / 1.5m
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MYp	*Myoporum parvifolium*	Creeping Boobialla	140mm	0.1m / 1.5m
MYpp	*Myoporum parvifolium 'Purpurea'*	Purple Creeping Boobialla	140mm	0.1m / 1.5m
Vlh	*Viola hederacea*	Native Violet	140mm	0.2m / 0.4m
WEl	*Westringia 'Low Horizon'*	Coastal Rosemary	140mm	0.3m / 0.7m
CLIMBER SPECIES				
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HAv	*Hardenbergia violacea*	Native Lilac	140mm	N/A
TRj	*Trachelospermum jasminoides*	Star Jasmine	140mm	N/A

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A	AH	AH	MR		30/04/2020	ISSUE FOR WORKS APPROVAL- DRAFT

NOTES

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1 0 1 2m
1:75 @ A1 1:150 @ A3

dsb Landscape Architects
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tel 02 6285 1955
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Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

Drawing Title
TYPICAL HOUSE LANDSCAPE TRETMENT
TYPE 10

Scale 1:75 @ A1 | Plot Date: | Sheet No.
Drg. No. 3715-F306 C

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document
pursuant to Section 12 (1) (b) of the Australian
s22
[redacted]
ement)

CARRY OUT GRASSING WHERE SHOWN ON PLANS IN ACCORDANCE WITH ACT GOVERNMENT MUNICIPAL INFRASTRUCTURE TECHNICAL SPECIFICATION 09 LANDSCAPE 09B GRASSING (JULY 2019)

USE SEED MIXTURES AS FOLLOWS.

SEED MIXTURE FOR NON IRRIGATED GRASS

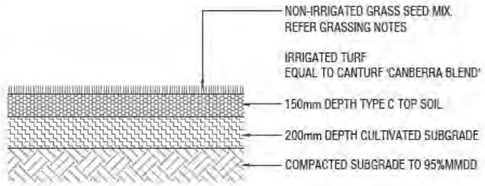
MIX A. 'DWARF' TYPE TALL FESCUE SUMMER DRYLAND GRASS MIXTURE (SOWING PERIOD FROM SEPT TO FEB)

	PERCENT BY WEIGHT	SOWING RATE KG/HA
'DWARF' TYPE TALL FESCUE	55	155
FINE LEAF PERENNIAL RYEGRASS	15	40
CREEPING RED FESCUE	15	40
WHITE CLOVER	5	15
COUCHGRASS (HULLED)	10	30
	TOTAL - 280	

MIX B. 'DWARF' TYPE TALL FESCUE WINTER DRYLAND GRASS MIXTURE (SOWING PERIOD FROM MAR TO AUG)

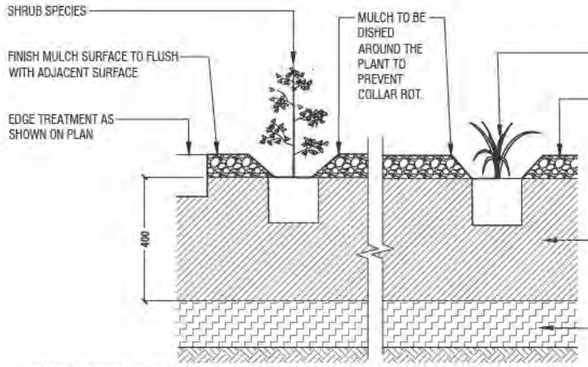
	PERCENT BY WEIGHT	SOWING RATE KG/HA
'DWARF' TYPE TALL FESCUE	62	155
FINE LEAF PERENNIAL RYEGRASS	16	40
CREEPING RED FESCUE	16	40
WHITE CLOVER	6	15
	TOTAL - 250	

GT-1 GRASSING NOTES



GT-1/2 NON-IRRIGATED GRASS / IRRIGATED TURF

SECTION



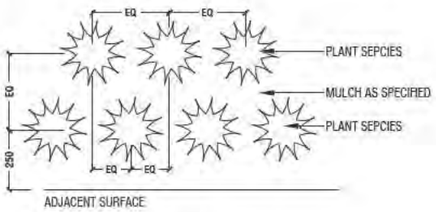
EXCAVATED PLANTING BED

NIC MULCH
p Mulch.

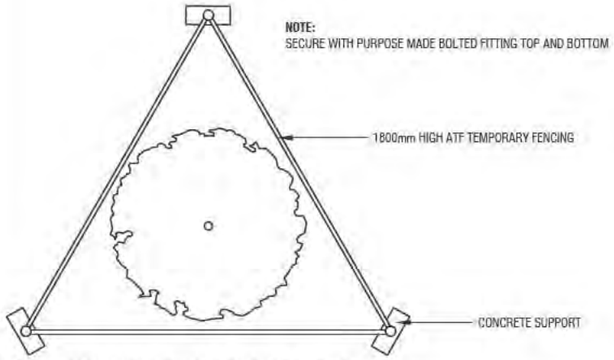
HOLES BY HAND ONLY

REE CANOPY

SECTION

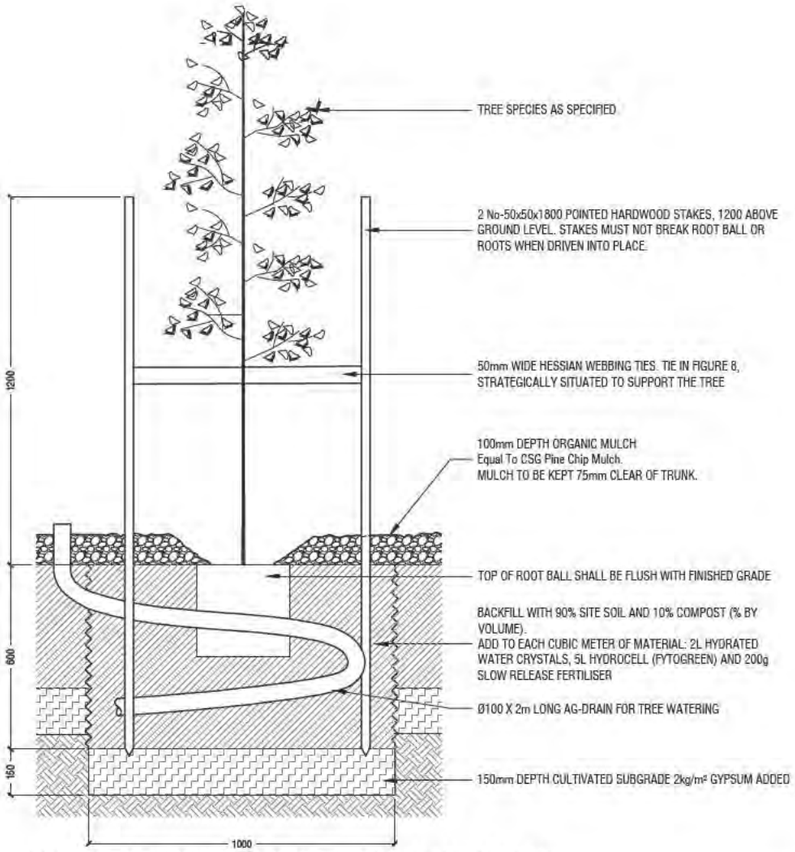


TYPICAL PLANTING SETOUT



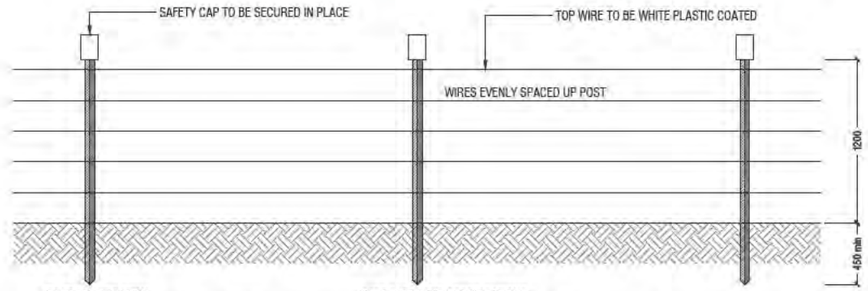
TEMPORARY FENCING - ALL STREET TREES

PLAN



TREE PLANTING IN EXCAVATED PLANTING BEDS OR GRASS AREAS

SECTION



POST SPECIFICATION
GALVANISED STAR PICKETS 1650mm LENGTH.
IN SOFT GROUND POSTS SHOULD BE 1800mm LENGTH

WIRE SPECIFICATION
LONG LIFE HIGH TENSILE WIRE 1.57mm DIAMETER
MINIMUM BREAK STRAIN: 3kN
RECOMMENDED TENSION: 1.3kN

WIRE FASTENING SPECIFICATIONS
POST CLIPS 3.15mm LONG LIFE COATED WIRE

WIRE TENSIONING SPECIFICATIONS
RATCHET STYLE IN LINE ADJUSTER

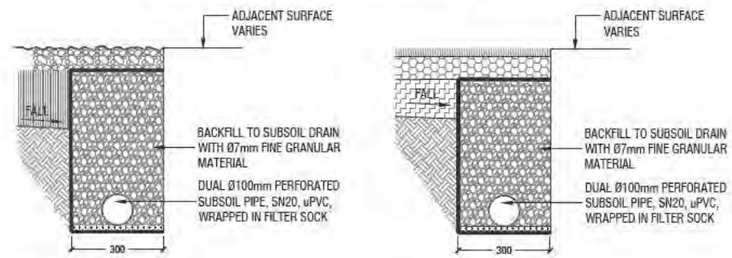
WIRE TIE-OFF SPECIFICATIONS:
MINIMUM 300mm WIRE TWIST RETURN

NOTE:
INSTALL TEMPORARY STAR-PICKET/WIRE FENCE TO PLANTING BED EDGE TO RESTRICT FOOT TRAFFIC THROUGH GARDEN BED. FENCING TO BE REMOVED WHEN PLANTS HAVE MATURED ENOUGH TO CREATE NATURAL BARRIER.

TEMPORARY FENCING - TYPICAL

SECTION

NOTE: ENSURE POSITIVE DRAINAGE FROM SUBSOIL DRAIN TO STORM WATER SUMP



IN PLANTING BED

IN IRRIGATED TURF AREA

SUBSOIL DRAIN (TYPICAL)

SECTION

NO.	DESIGN	DRAWN	CHECKED	VER'D	DATE	AMENDMENT / ISSUE
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0 0.5m
1:10 @ A1 1:20 @ A3

dsb Landscape Architects
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14 Hannah Place
Dickson ACT 2602
Tel 02 6257 1353
dsb@dsla.com.au

Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

Drawing Title
LANDSCAPE DETAILS
SOFTSCAPE

Scale 1:10 @ A1 | Plot Date: | Sheet No.

Drg. No.
3715-F401 A

08 Sep, 2020

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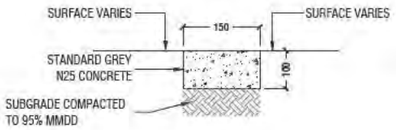
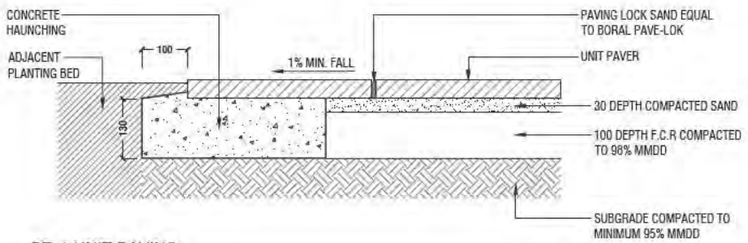


CONCRETE EDGE

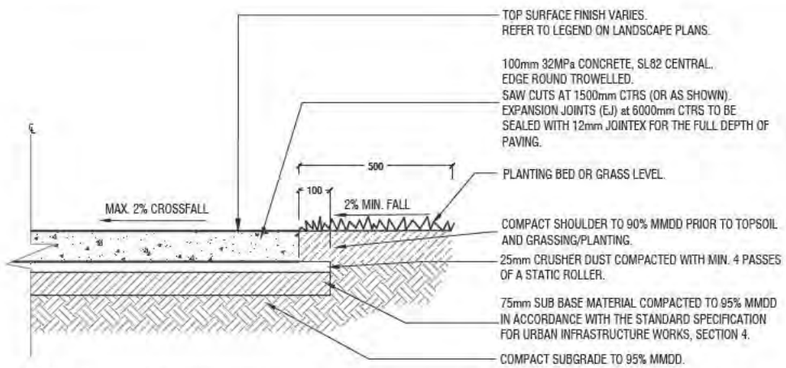
SECTION



PAVER TYPE: ADBRI EUROSTONE
SIZE: 400X600X40
COLOUR: PRAGUE

PT-1 UNIT PAVING

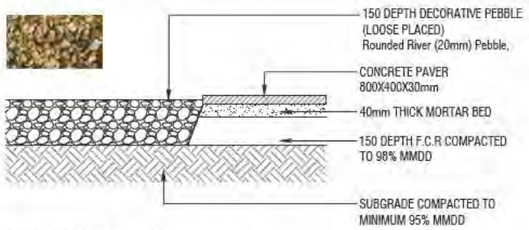
SECTION



NOTES:
1. FOOTPATH EJ'S TO BE LOCATED ADJACENT TO ALL STRUCTURES, SERVICE PITS, KERBS JOINTS AND CROSSINGS, ELSEWHERE AT 5m CENTRES (UNLESS OTHERWISE SPECIFIED OR DIRECTED)
2. SAW CUTS/WEAKENED PLANE JOINTS TO BE 3mm WIDE AND TO $\frac{1}{4}$ OF DEPTH OF PAVING. SPACING OF WJ'S IS TO APPROXIMATE THE WIDTH OF PATH.
3. AVOID JOINT PATTERNS THAT RESULT IN ACUTE ANGLED SECTIONS,
4. ALL PAVING TO BE CURED CONTINUOUSLY FOR 3 DAYS.
5. CONTRACTOR TO PROVIDE SHOP DRAWING FOR JOINT SETOUT FOR APPROVAL

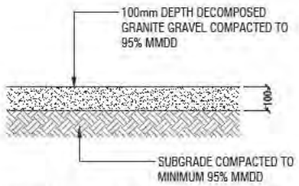
PT-2 CONCRETE PAVING

SECTION



PT-3 STEPPING STONE PAVING

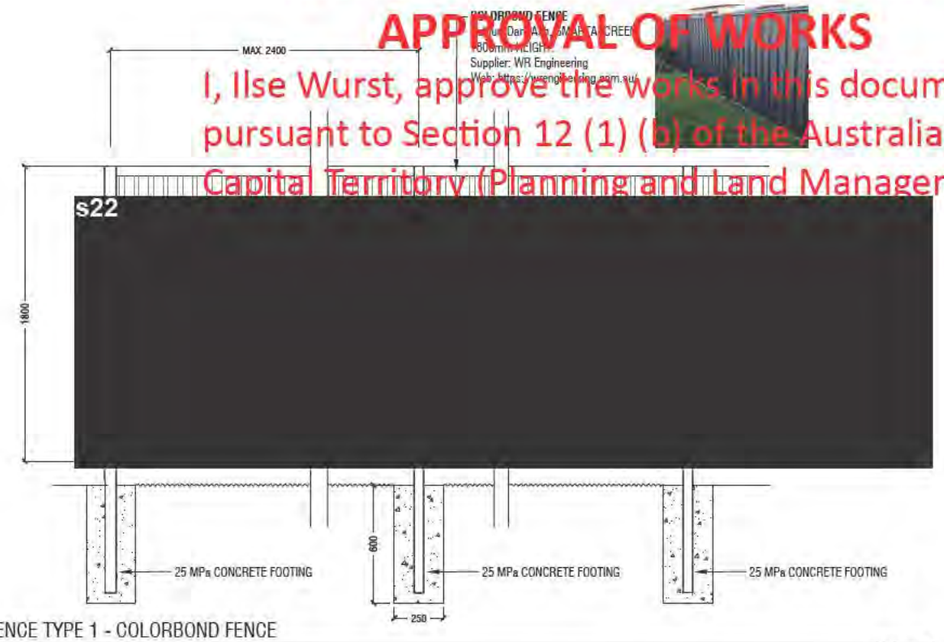
SECTION



NOTE
WHERE SLOPES EXCEED 5% STABILISE 100 DEPTH DECOMPOSED GRANITE GRAVEL BY APPLICATION OF SOILBOND A01 IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.

PT-4 DECOMPOSED GRANITE GRAVEL PAVING

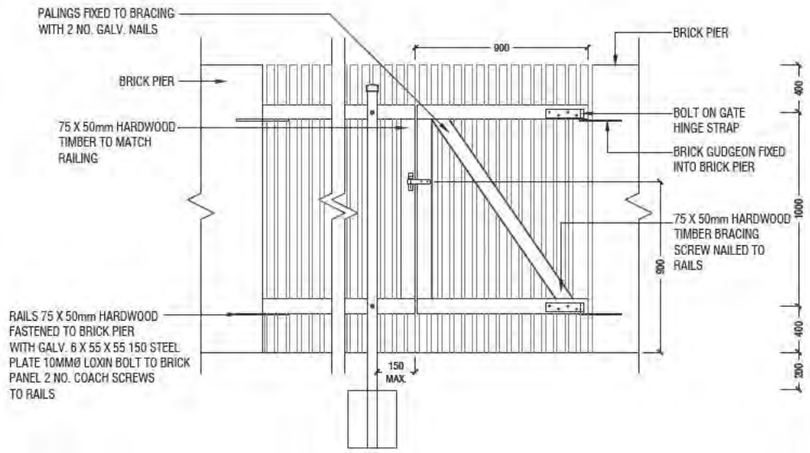
SECTION



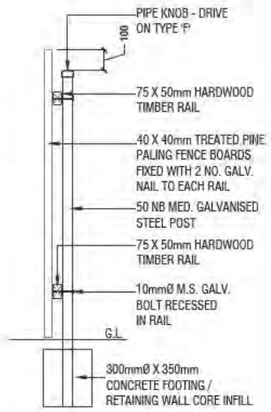
FENCE TYPE 1 - COLORBOND FENCE

SECTION

PLAN



ELEVATION



TYPICAL SECTION

FENCE TYPE 2 & 3 - TIMBER PALING FENCE / GATE AND SCREEN

PLAN & SECTION

NO.	DESIGN	DRAWN	CHECKED	VER'D	DATE	AMENDMENT / ISSUE
D	AH	AH	MR		24/07/2020	ISSUE FOR WORKS APPROVAL
C	AH	AH	MR		08/07/2020	ISSUE FOR WORKS APPROVAL - TYPE 1 FENCE MATERIAL CHANGE
B	AH	AH	MR		12/05/2020	ISSUE FOR WORKS APPROVAL
A	AH	AH	MR		30/04/2020	ISSUE FOR WORKS APPROVAL - DRAFT

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1:10 @ A1 1:20 @ A3

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Tel 02 6285 1355
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CAMPBELL, ACT

Client
AMC ARCHITECTURE

Drawing Title
LANDSCAPE DETAILS
HARDSCAPE

Scale 1:10@A1 | Plot Date | Sheet No.
Drg. No. 3715-F402 D

08 Sep, 2020

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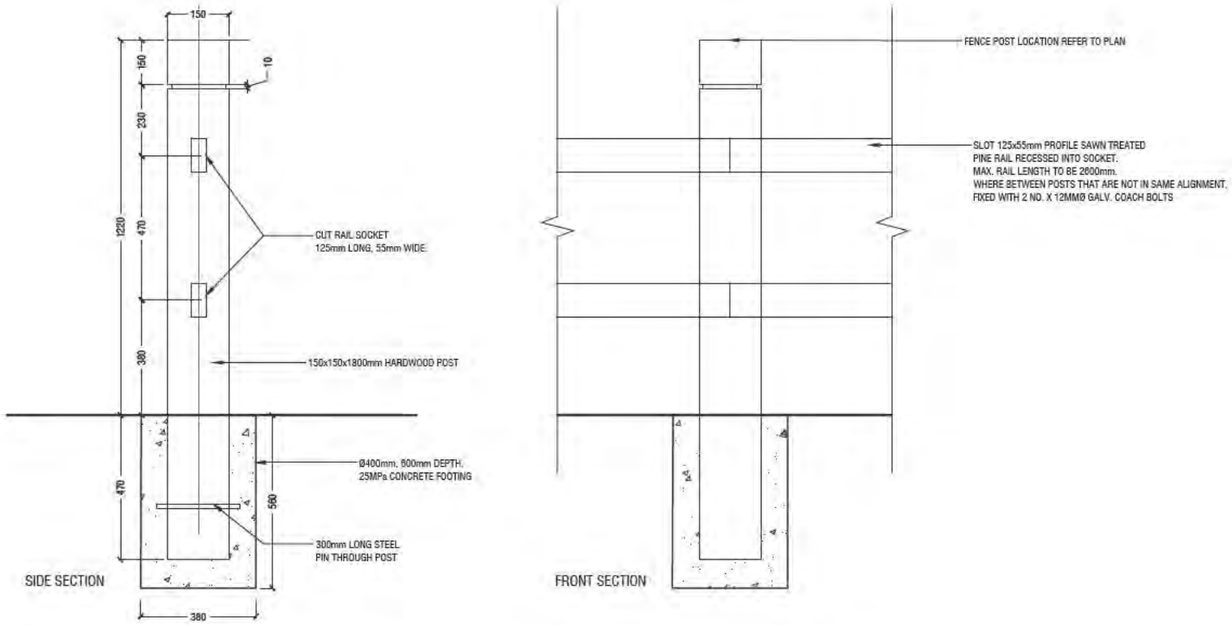
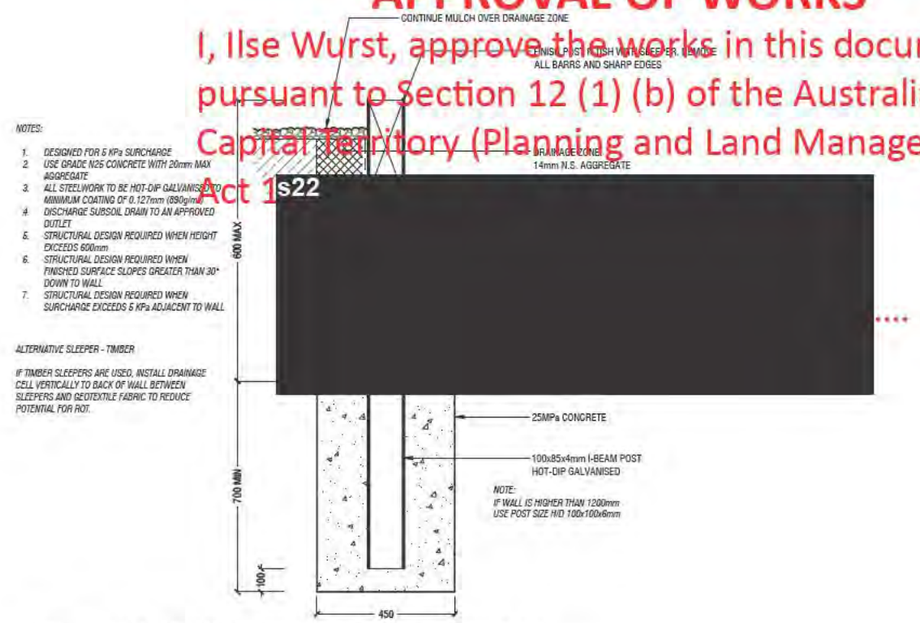


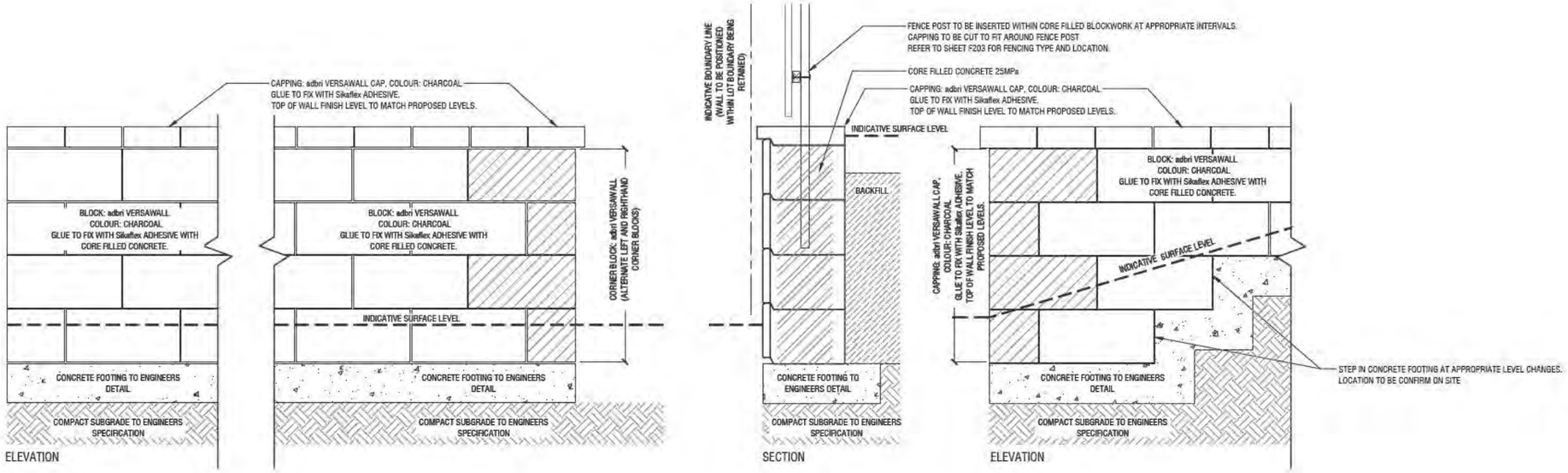
FENCE TYPE 4 - TIMBER POST AND RAIL ENTRANCE



WALL TYPE 3 - I BEAM / CONCRETE SLEEPER RETAINING WALL

N.T.S.

SECTION



WALL TYPE 2 - RETAINING WALL (TYPICAL)

1:20 @ A3

SECTION

NO.	DESIGN	DRAWN	CHECKED	VER'D	DATE	AMENDMENT / ISSUE
A	AH	AH	MR		30/04/2020	ISSUE FOR WORKS APPROVAL - DRAFT

NOTES

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1:10 @ A1 1:20 @ A3

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Project
DHA HOUSING
ACADEMY CLOSE
CAMPBELL, ACT

Client
AMC ARCHITECTURE

Drawing Title
LANDSCAPE DETAILS
HARDSCAPE

Scale 1:10@A1 | Plot Date: | Sheet No.

Drg. No.
3715-F403 A

08 Sep, 2020

DEFENCE HOUSING AUSTRALIA

ACADEMY CLOSE, CAMPBELL
BLOCK 3 SECTION 65
CIVIL WORKS

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1
s22
[redacted]

LOCALITY PLAN
NOT TO SCALE

DRAWING SCHEDULE

No.	DRAWING TITLE
C000	COVER SHEET, DRAWING INDEX & LOCALITY PLAN
C001	STANDARD NOTES
C005	STANDARD DETAILS
C010	CONCEPT EROSION, SEDIMENT & POLLUTION CONTROL PLAN
C010A	CONCEPT EROSION, SEDIMENT & POLLUTION CONTROL DETAILS
C011	LANDSCAPE MANAGEMENT & PROTECTION PLAN
C012	CONCEPT TEMPORARY TRAFFIC MANAGEMENT PLAN – GENERAL CONSTRUCTION
C013	CONCEPT TEMPORARY TRAFFIC MANAGEMENT PLAN – PART LANE CLOSURE
C020	VEHICLE TURNING TEMPLATES
C021	VEHICLE TURNING TEMPLATES
C050	GENERAL ARRANGEMENT PLAN
C070	EXISTING SERVICES PLAN
C071	EXISTING SERVICES TO BE REMOVED/DEMOLISHED
C072	COMBINED NEW SERVICES PLAN – SHEET 1 OF 4
C073	COMBINED NEW SERVICES PLAN – SHEET 2 OF 4
C074	COMBINED NEW SERVICES PLAN – SHEET 3 OF 4
C075	COMBINED NEW SERVICES PLAN – SHEET 4 OF 4
C080	DEMOLITION PLAN
C110	GRADING PLAN – SHEET 1 OF 4
C111	GRADING PLAN – SHEET 2 OF 4
C112	GRADING PLAN – SHEET 3 OF 4
C113	GRADING PLAN – SHEET 4 OF 4
C120	SITE WORKS AND PAVEMENT PLAN – SHEET 1 OF 4
C121	SITE WORKS AND PAVEMENT PLAN – SHEET 2 OF 4
C122	SITE WORKS AND PAVEMENT PLAN – SHEET 3 OF 4
C123	SITE WORKS AND PAVEMENT PLAN – SHEET 4 OF 4
C125	OFF-SITE WORKS PLAN – SHEET 1 OF 4
C126	OFF-SITE WORKS PLAN – SHEET 2 OF 4
C127	OFF-SITE WORKS PLAN – SHEET 3 OF 4
C128	OFF-SITE WORKS PLAN – SHEET 4 OF 4
C130	TYPICAL CROSS SECTIONS
C140	ROAD LONG SECTIONS ACADEMY CLOSE CH:00.000 – CH:280.000
C141	ROAD LONG SECTIONS ACADEMY CLOSE CH:280.000 – CH:450.993
C150	DETAILED CROSS SECTIONS – SHEET 1 OF 4
C151	DETAILED CROSS SECTIONS – SHEET 2 OF 4
C152	DETAILED CROSS SECTIONS – SHEET 3 OF 4
C153	DETAILED CROSS SECTIONS – SHEET 4 OF 4
C160	CONCEPT STORMWATER MANAGEMENT PLAN KEY PLAN SHEET 1 OF 4
C161	CONCEPT STORMWATER MANAGEMENT PLAN SHEET 2 OF 4
C162	CONCEPT STORMWATER MANAGEMENT PLAN SHEET 3 OF 4
C163	CONCEPT STORMWATER MANAGEMENT PLAN SHEET 4 OF 4
C165	STORMWATER DETAILS SHEET 1 OF 2
C166	STORMWATER DETAILS SHEET 1 OF 2
C170	WATER PLAN KEY PLAN SHEET 1 OF 4
C171	WATER PLAN SHEET 2 OF 4
C172	WATER PLAN SHEET 3 OF 4
C173	WATER PLAN SHEET 4 OF 4
C176	EXISTING 1050mm WATER MAIN LONG SECTION CH:00.000 – CH:251.144
C177	EXISTING WATER MAIN CROSS SECTIONS CH:25.513 – CH:182.159
C178	EXISTING WATER MAIN CROSS SECTIONS CH:205.495 – CH:242.009
C180	SEWER PLAN KEY PLAN SHEET 1 OF 4
C181	SEWER PLAN SHEET 2 OF 4
C182	SEWER PLAN SHEET 3 OF 4
C183	SEWER PLAN SHEET 4 OF 4

DRAWN: F.CF-EDIT DESIGNED: F.CF-EDIT JOB MANAGER: D.FIELD VERIFIER:

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	FOR INFORMATION	RC		DF	05.09.18
4	FOR DISCUSSION	RC		DF	21.09.18
5	FOR DISCUSSION	RC		DF	12.10.18
6	WORKS APPROVAL	RC		DF	11.04.19
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	WORKS APPROVAL	JC		DF	14.05.20

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
COVER SHEET, DRAWING INDEX AND LOCALITY PLAN

JOB NUMBER: CR172699
DRAWING NUMBER: C000
REVISION: 8
DRAWING SHEET SIZE = A1

08 Sep, 2020

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH TCCS DEVELOPMENT GUIDELINES . THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) of the Australian Capital Territory (Planning and Land Management) Act 1988 s22

CIVIL NOTES

1. UNLESS NOTED OTHERWISE, CARRY OUT ALL WORK IN ACCORDANCE WITH THE CURRENT EDITION OF "TRANSPORT CANBERRA AND CITY SERVICES STANDARD SPECIFICATION FOR URBAN INFRASTRUCTURE".
2. CONTRACTOR TO OBTAIN SERVICES CLEARANCES FROM ALL RELEVANT AUTHORITIES PRIOR TO COMMENCING WORKS. UNDERTAKE ALL NECESSARY TEMPORARY WORKS TO PROTECT & MAINTAIN EXISTING SERVICES DURING CONSTRUCTION. RESTORE ALL SERVICES AT THE COMPLETION OF THE WORKS.
3. CONTRACTOR IS TO DESIGN, OBTAIN APPROVALS AND CARRY OUT REQUIRED TEMPORARY TRAFFIC CONTROL PROCEDURES.
4. CONTRACTOR IS TO CHECK WITH RELEVANT AUTHORITIES TO ENSURE WORKS ARE CLEAR OF EXISTING SERVICES.
5. RESTORE ALL PAVED, GRASSED AND LANDSCAPED AREAS OUTSIDE THE BOUNDARY DAMAGED BY THE WORK TO THEIR ORIGINAL CONDITION ON COMPLETION OF WORKS.
6. CONFIRM LEVELS ON SITE. IF ANY DISCREPANCIES, CHECK WITH THE SUPERINTENDENT.

EARTHWORKS

1. ALLOW FOR EXCAVATION IN ALL MATERIALS AS FOUND U.N.O.
2. INSTALL AGREED POLLUTION CONTROL MEASURES IN ACCORDANCE WITH THE ENVIRONMENTAL PROTECTION AGREEMENT REQUIREMENTS.
3. REMOVE ALL VEGETATION, GRASSING, BUILDERS DEBRIS AND CONCRETE & BITUMEN PAVING AND SPOIL OFF SITE TO AN APPROVED LOCATION, STRIP TOPSOIL AND STOCK PILE FOR LATER REUSE.
4. REMOVE ALL TREES AND ROOTS EXCEPTING THOSE INTENDED FOR RETENTION. GRUB OUT ROOTS AND STUMPS OVER 75mm DIAMETER TO MINIMUM DEPTH OF 500mm BELOW THE PLATFORM LEVEL. FILL GRUB HOLES AND OTHER VOIDS WITH GENERAL FILL AND COMPACT IN 150mm COMPACTED THICKNESS LAYERS TO THE LEVELS SHOWN ON THE DRAWINGS.
5. WHERE THERE IS INSUFFICIENT EXCAVATED MATERIAL SUITABLE FOR FILLING OR SUBGRADE REPLACEMENT, IMPORT FILL.
6. IMPORTED FILL SHALL COMPLY WITH THE FOLLOWING: MAXIMUM SIZE 50mm, PASSING 75 MICRON SIEVE-NOT GREATER THAN 25%. PLASTICITY INDEX-LESS THAN 15 AND CBR = 8.
7. PROOF ROLL THE EXPOSED SURFACE WITH AT LEAST A 10 TONNE ROLLER IN THE PRESENCE OF THE ENGINEER TO DETERMINE THE INTEGRITY OF THE EXPOSED SURFACE. CARRY OUT REPLACEMENT AS NECESSARY TO ACHIEVE THE REQUIRED COMPACTION.
8. EXCAVATE AND REPLACE UNSUITABLE SUBGRADE IN SELECT MATERIAL FROM EXCAVATION, PLACED IN 200mm LAYERS, WITH EACH LAYER COMPACTED TO 95% MMDD. UNSUITABLE MATERIAL TO BE SPOILED FROM SITE.
9. UNDERTAKE CUT/FILL OPERATIONS TO ESTABLISH THE BUILDING PLATFORM LEVELS NOMINATED.
10. COMPACT THE EXPOSED SURFACE TO THE FOLLOWING CONDITIONS UNDER FUTURE BUILDINGS COMPACT TO 95% MODIFIED MAXIMUM DRY DENSITY (MMDD)

    UNDER FUTURE ROADS/CARPARKING/PAVING
    COMPACT TO 90% MMDD IF GREATER THAN 600mm BELOW NOMINATED PAVEMENT SUBGRADE LEVEL, OTHERWISE 95% MMDD.

    OTHER AREAS
    COMPACT TO 90% MMDD

    OMC -1% / +3% DURING COMPACTION
11. MATERIALS WON FROM EXCAVATION CAN BE USED FOR ENGINEERING FILL ON THE FOLLOWING CONDITIONS:

    TOPSOIL IS EXCLUDED TOPSOIL MAY BE USED IN LANDSCAPE BATTERS.
    FILL MATERIALS MAY BE USED PROVIDED DELETERIOUS MATERIALS ARE REMOVED.
    MEDIUM/HIGH PLASTICITY SANDY CLAYS (RESIDUAL SOILS) ARE THOROUGHLY MIXED WITH GRANULAR SOILS.
    HIGHLY WEATHERED ROCK/MODERATELY WEATHERED ROCK IS BROKEN DOWN TO PARTICLES WITH A SIZE NO GREATER THAN 100mm BIGGER PARTICLES MUST BE EXCLUDED.
12. FILL MATERIALS TO BE PLACED IN MAXIMUM 200mm LAYERS, EACH LAYER COMPACTED TO THE NOMINATED DENSITY AND MOISTURE CONTENT.

    IMPORT FILL TO MAKE UP ANY SHORTFALL. IMPORTED FILL TO COMPLY WITH FOLLOWING SPECIFICATION.
    MAXIMUM SIZE 75mm
    PASSING 75 MICRON SIEVE - NOT GREATER THAN 25%
    PLASTICITY INDEX - LESS THAN 15%
    CBR - NO LESS THAN 8.
    FREE OF ORGANIC MATTER AND LUMPS OF CLAY.

EARTH WORKS (CONT)

TESTING:

1. UNDERTAKE THE FOLLOWING TESTS BY NATA REGISTERED LABORATORY COMPACTION TESTS - NOT LESS THAN 1 TEST PER 1000m² FOR EACH SUCCESSIVE ODD LAYER
   TESTS TO BE TAKEN ON EXPOSED SURFACE LAYERS No. 1, 3, 5 & EACH SUCCESSIVE ODD LAYER TO OBTAIN REPRESENTATIVE CROSS SECTION
   CBR TESTS TO CONFIRM IN-SITU CBR STRENGTH OF CUT & FILL SUBGRADES.
2. FILL TO BE CERTIFIED BY AN APPROPRIATELY QUALIFIED ENGINEER TO LEVEL 1 STANDARD AS DEFINED IN AS 3798.
   STOCKPILED TOPSOIL TO BE SPREAD IN LANDSCAPE BATTERS TO FINISH LEVEL. ALL EXCESS TOPSOIL & FILL MATERIAL TO BE SPOILED FROM SITE IN A LEGAL MANNER.
3. STABILISE ALL EXCAVATION FACES IN ACCORDANCE WITH DETAILS SPECIFIED ON STRUCTURAL ENGINEERS DRAWING.
4. CONTROL ALL RAINWATER & GROUNDWATER SEEPAGE BY PUMPING. COMPLY WITH ALL PROVISIONS OF THE ENVIRONMENT PROTECTION AGREEMENT RELATING TO DISPOSAL OF SITE WATER.
5. TOLERANCES: LEVEL: = +25mm -10mm

TREE PROTECTION

GENERAL

1. INSTALL ALL PROTECTIVE MEASURES PRIOR TO COMMENCING CONSTRUCTION WORKS. ADVISE TRANSPORT CANBERRA AND CITY SERVICES (AA) IN WRITING THAT THE PROTECTIVE MEASURES HAVE BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED LMPP.
2. ALL VERGE VEGETATION INCLUDING GRASS SHALL BE PROTECTED AND RETAINED UND ON THE DRAWINGS. ROUTINELY WATER TO RETAIN VEGETATION IN GOOD CONDITION.
3. A SUITABLY QUALIFIED LANDSCAPE ARCHITECT OR HORTICULTURIST SHALL BE ENGAGED BY THE CONTRACTOR TO OVERSEE ALL MAJOR WORK IN THE VERGE.
4. CONSTRUCTION MATERIAL SHALL NOT BE STORED ON VERGES OR PUBLIC OPEN SPACES
5. CAR PARKING OR EQUIPMENT PARKING SHALL NOT BE PERMITTED ON VERGES OR ADJACENT PARKLAND
6. SITE SHEDS, STORAGE SHEDS, SITE AMENITIES OR BILLBOARDS SHALL NOT BE ERECTED ON VERGES OR PUBLIC OPEN SPACES WITHOUT THE PRIOR WRITTEN APPROVAL OF THE MANAGER, TCCS. FOR THE USE OF VERGES, PUBLIC OPEN SPACES OR UNLEASED TERRITORY LAND.

PROTECTIVE FENCING

1. ALL TEMPORARY PROTECTIVE FENCES SHALL BE IN ACCORDANCE WITH THE APPROVED LMPP
2. FENCE OFF TREES, PLANTINGS AND GRASS MARKED FOR RETENTION TO ENCLOSE THE STREET VERGE, PUBLIC OPEN SPACE OR UNLEASED TERRITORY LAND AREA.
3. THE STANDARD LOCATIONS FOR FENCING SHALL BE:
   FOR EACH TREE ALONG ITS DRIP-LINE 1.2m OFFSET TO THE BACK OF THE KERB FOR THE FULL FRONTAGE OF THE LEASE, ALONG THE PROPERTY BOUNDARY AND ALONG APPROVED DRIVEWAY ACCESS TO ENSURE THAT THE VERGE IS COMPLETELY ENCLOSED.
4. FENCING SHALL BE ERECTED BEFORE THE COMMENCEMENT OF ANY SITE WORKS SHALL BE REMAIN IN PLACE THROUGHOUT THE WORKS AND REMOVED PRIOR TO RESTORATION OF THE VERGE.
5. USE TEMPORARY 1800mm CONTINUOUS MESH FENCE SUPPORTED BY STEEL POSTS WITH CONCRETE BASES UNLESS OTHERWISE APPROVED IN WRITING BY TCCS
6. MAINTAIN ALL EXISTING FOOTPATHS AND PROVIDE SAFE PEDESTRIAN MOVEMENT AT ALL TIMES.
7. WHERE A CONSTRUCTED FOOTPATH/CYCLEWAY EXISTS IN THE VERGE, OFFSET FENCING 600mm EACH SIDE.
8. IF THERE IS NO CONSTRUCTED FOOTPATH/CYCLEWAY PROVIDE A FENCED CLEARWAY 1800mm WIDE FOR PEDESTRIAN ACCESS ALONG THE ENTIRE FRONTAGE
9. FENCING SHALL NOT BE REMOVED FOR THE SERVICE INSTALLATION UNLESS OTHERWISE APPROVED IN WRITING FROM TCCS, ENSURE ALL TREES ARE ADEQUATELY PROTECTED BEFORE COMMENCING TRENCHING. ON COMPLETION RETURN THE FENCE TO ORIGINAL ALIGNMENT.

TREE PROTECTION (CONT)

SERVICES AND UTILITIES

1. SERVICES AND UTILITIES SHALL BE LAID ONLY IN THE LOCATIONS SHOWN ON THE DRAWINGS. TRENCHING ACROSS THE VERGE SHALL BE UNDERTAKEN ONLY WHERE SHOWN ON THE DRAWINGS
2. UNLESS OTHERWISE SHOWN ON THE DRAWINGS NO TRENCHING SHALL BE CARRIED OUT WITHIN THE DRIP LINE OF ANY TREE
3. THE NUMBER OF VERGE CROSSINGS SHALL BE MINIMISED, WHERE PRACTICAL AND PERMITTED SHARED TRENCHING SHALL BE ADOPTED
4. TRENCHES SHALL BE LOCATED MIDWAY BETWEEN TREES

SITE ACCESS

1. SITE ACCESS SHALL ONLY BE VIA THE ACCESS POINTS SHOWN ON THE DRAWINGS.
2. PRIOR WRITTEN APPROVAL FOR ALTERNATIVE OR ADDITIONAL ACCESS POINTS SHALL BE OBTAINED THROUGH TCCS.
3. NEW ACCESS POINTS SHALL BE LOCATED MIDWAY BETWEEN EXISTING TREES WHERE SPACE IS ADEQUATE. DO NOT LOCATE ANY ACCESS WITHIN THE DRIP LINE OF ANY TREE.

WORKING NEAR TREES

1. ALL TREES LOCATED IN THE ROAD RESERVE, PUBLIC OPEN SPACE AND UNLEASED TERRITORY LAND SHALL BE PROTECTED FROM DISTURBANCE, DAMAGE OR DESTRUCTION. PRIOR WRITTEN AUTHORISATION FROM TCCS IS REQUIRED FOR ANY DISTURBANCE, DAMAGE OR DESTRUCTION OF ANY TREE OR LANDSCAPE ASSET.
2. EXISTING CANOPY CLEARANCES SHALL NOT BE ALTERED. CROWNS AND APEX OF CANOPIES SHALL NOT BE ALTERED OR REDUCED
3. ENSURE LIFTING EQUIPMENT AND LOAD CAN CLEAR HEIGHT AND WIDTH OF TREE CANOPY WITHOUT DAMAGE TO CROWN. ENSURE CONSTRUCTION EQUIPMENT CAN PASS BENEATH LOWEST LIMB.
4. DO NOT EXCAVATE OR OTHERWISE DISTURB THE SURFACE LAYER WITHIN THE DRIP-LINE OF ANY TREE WITHOUT THE PRIOR WRITTEN APPROVAL OF TCCS.
5. DO NOT SEVER ROOTS >30mm DIAMETER CLOSER THAN HALFWAY FROM THE DRIP-LINE TO THE TRUNK.
6. HAND EXCAVATE TO A DEPTH OF 300mm TO LOCATE ROOTS BEFORE COMMENCING MACHINE EXCAVATION.
7. CUT ROOTS CLEANLY WITH EQUIPMENT SPECIFICALLY DESIGNED FOR PRUNING ROOTS.
8. PROTECT ANY EXPOSED ROOTS FROM DESICCATION. KEEP LIGHTLY WATERED OR COVER WITH MOIST HESSIAN. AFTER REPLACEMENT OF TOPSOIL REGULARLY WATER TREES UNTIL REESTABLISHED.

CONDITION AND RESTORATION

1. PRIOR TO COMMENCEMENT NOTIFY TCCS OF COMMENCEMENT OF WORK AND UNDERTAKE A JOINT CONDITION SURVEY.
2. AT THE COMPLETION OF WORK ENSURE THAT THE CONDITION OF ALL VEGETATION IS CONSISTENT WITH THE INITIAL CONDITION SURVEY.
3. UNDERTAKE A JOINT CONDITION SURVEY AT COMPLETION OF WORKS AND IMPLEMENT ANY DIRECTIVE FROM TCCS.
4. IF THE GRASS COVER REQUIRES IMPROVEMENT LIGHTLY CULTIVATE THE SOIL TO 50mm. ADD 50mm OF TYPE 1B TOPSOIL AND GRADE EVENLY. ADD NPK FERTILISER AT 40G/sqm. LAY TURF, WATER AND MAINTAIN UNTIL ESTABLISHED.
5. DAMAGED TREES SHALL BE ASSESSED BY TCCS AND REPAIRED OR REPLACED BY THE CONTRACTOR AS DIRECTED.

POLLUTION, EROSION & SEDIMENT CONTROL

GENERAL

1. THE CONTRACTOR MUST ENTER INTO AN ENVIRONMENT PROTECTION AGREEMENT WITH THE EPA
2. ENSURE THAT ALL ENVIRONMENT PROTECTION WORKS ARE IN PLACE BEFORE COMMENCING CONSTRUCTION ON THE SITE.
3. LIAISE AS NECESSARY WITH THE EPA AND OBTAIN AGREEMENT TO THE ADEQUACY OF THE PROTECTION WORKS.
4. KEEP A COPY OF THE EPA SIGNED EROSION AND SEDIMENT CONTROL PLAN ON SITE AT ALL TIMES. DISPLAY [illegible]
5. LOCATE ALL PROTECTION WO[illegible] PRE-APPROVED
6. CONSTRUCT AND MAINTAIN P[illegible] "ENVIRONMENT PROTECTION [illegible] DEVELOPMENT IN THE ACT" [illegible]
7. ASSIGN A DESIGNATED PARK[illegible] IN LEGAL PARKING ZONES, WI[illegible] BLOCK.
8. MINIMISE DISTURBANCE OF TH[illegible]

SPOIL MANAGEMENT

1. DESIGNATE AN AREA ON SITE[illegible]
2. BRICK CUTTING TO OCCUR ON [illegible] AREA.
3. SPOIL TO BE DISPOSED OF APPROPRIATELY TO AN APPROVED LOCATION OFF SITE.

NOISE

1. ENSURE ALL CONSTRUCTION WORK THAT GENERATES NOISE TAKES PLACE ONLY WITHIN THE PRE-APPROVED OPERATING HOURS FOR THE PROJECT: MONDAY TO SATURDAY, BETWEEN 7A.M AND 6P.M.

SEDIMENT CONTROLS AND STORMWATER

1. MAINTAIN STRICT SITE ACCESS CONTROL WITH A STABILISED ACCESS POINT THAT ALL VEHICLES MUST USE.
2. AT THE END OF EACH DAY OR WHEN DIRT OCCURS OR PRIOR TO ANY RAIN EVENT, REMOVE ANY SEDIMENT FROM PUBLIC ROADS ADJACENT TO THE WORK AREA. DO NOT WASH INTO THE STORMWATER SYSTEM.
3. MAINTAIN AS MUCH VEGETATIVE COVER AS PRACTICAL PARTICULARLY BESIDE MAIN DRAINAGE LINES. FENCE OFF BUFFER AREAS TO PREVENT DISTURBANCE
4. PROTECT ALL CUT AND FILL BATTERS FROM RUN-OFF AND STABILISE IMMEDIATELY AFTER CONSTRUCTION.
5. USE CONTOUR PLOUGHING AND/OR SURFACE ROUGHENING OF FINISHED LANDFORM TO SLOW WATER FLOW DURING RAIN EVENTS.
6. INSTALL SILT FENCES ON THE LOW SIDE OF ANY STOCKPILE
7. INSTALL PERMANENT DRAINAGE FACILITIES AT AN EARLY STAGE.
8. FILTER SOCKS TO BE INSTALLED AT ALL OPEN PITS AND KERB SIDE SUMPS PROGRESSIVELY AS CONSTRUCTION PROCEEDS
9. PROVIDE PROTECTION TO NEW DRAINAGE INLETS IMMEDIATELY ON CONNECTION TO THE DRAINAGE SYSTEM
10. ESTABLISH ALTERNATIVE STABLE DRAINAGE SYSTEMS THROUGH THE SITE WHILE PERMANENT FACILITIES ARE BEING INSTALLED.
11. USE DIVERSION STRUCTURES TO CONVEY RUN-OFF TO A STABLE DISPOSAL AREA.
12. STABILISE AND GRASS ALL DIVERSION SWALES AND DRAINS, WHERE MAJOR TEMPORARY DRAINAGE PATHS ARE CREATED CONSTRUCT HAY BALE WEIRS (WRAPPED IN BIDDUM) ACROSS THE ENTIRE FLOW PATH AND AT 25m INTERVALS.
13. STABILISE AND GRASS ALL DIVERSION SWALES AND DRAINS.
14. INSTALL SEDIMENT TRAPS AT DRAINAGE INLETS AND OTHER POINTS OF DISCHARGE FROM AREAS OF DISTURBANCE.
15. UNDERTAKE VEGETATIVE STABILISATION MEASURES IMMEDIATELY AFTER COMPLETION OF FINAL LAND FORMING.
16. PLACE HAY BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE HAY TO FILL ANY GAPS BETWEEN BALES. - ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
17. EMBED EACH BALE IN THE GROUND 75mm-100mm AND ANCHOR WITH TWO 1.2m STAR PICKETS OR STAKES. ANGLE FIRST STAR PICKET/STAKE IN EACH BALE TOWARDS PREVIOUSLY LAID BALE. DRIVE 600mm INTO THE GROUND AND. WHERE STAR PICKETS PROTRUDE ABOVE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.

POLLUTION, EROSION & SEDIMENT CONTROL

INSPECTIONS AND MAINTENANCE SCHEDULE

RECORD MAINTENANCE ACTIVITIES AND DETAILS TO PROVIDE TO EPA.)

1. [illegible] THE SITE WASH-DOWN AREA.
   REMOVE ANY SEDIMENT FROM PUBLIC ROADS ADJACENT TO THE WORK AREA. DO NOT WASH INTO THE STORMWATER SYSTEM.
   SURFACE DUST BY REGULAR WATERING AND WATER AWAY TO GUARD SECURING VEHICLE LOADS ENTERING/EXITING SITE.
2. WEEKLY
   [illegible] AS NEEDED.
   [illegible] DEGRADED OR
   [illegible] APPLICABLE: [illegible] TECTED AREAS.
   [illegible] D SOIL TOGETHER
   [illegible] PLANT WORKING
3. MAINTAIN POLLUTION CONTROL MEASURES DURING CONSTRUCTION AND UNTIL FULL STABILISATION. ROUTINELY INSPECT EACH WEEK AND AFTER SIGNIFICANT RAINFALL EVENTS, REPAIR AND REINSTATE WORKS AS NEEDED TO MAINTAIN PROTECTION. RECORD MAINTENANCE ACTIVITIES AND DETAILS AND PROVIDE TO EPA FOR INSPECTION WHEN REQUESTED.

FIRE

1. BURNING OF WASTE MATERIALS MUST NOT BE UNDERTAKEN.
2. FIRE MAY BE PERMITTED FOR GENERAL HEATING PURPOSES IF IN A BRAZIER OR CONSTRUCTED FIREPLACE, USING SEASONED, UNTREATED TIMBER.

SAFETY IN DESIGN

CIVIL SAFETY REPORT

PURSUANT TO REGULATION 295(1) OF THE WORK HEALTH AND SAFETY REGULATIONS 2011, SO FAR AS WE ARE REASONABLY AWARE AND BASED ON THE DESIGNS FOR WHICH WE HAVE BEEN COMMISSIONED, THERE ARE NO HAZARDS RELATING TO THE DESIGN OF THE CIVIL WORKS SHOWN ON THESE DRAWINGS THAT REPRESENT A SAFETY RISK DURING THE CONSTRUCTION BEYOND THOSE THAT WOULD NORMALLY BE EXPECTED IN OTHER DESIGNS OF THE SAME TYPE.

THE METHOD OF CONSTRUCTION AND THE MAINTENANCE OF SAFETY DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE BUILDER.

IF ANY CIVIL ELEMENT UNDER OUR DESIGN PRESENTS AN UNMANAGEABLE RISK IN RESPECT TO SAFETY, THE MATTER SHALL BE REFERRED TO NORTHROP CONSULTING ENGINEERS THROUGH THE APPROPRIATE CHANNELS FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.

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SIGNED: _____

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: R.CF-EDIV
DRAWN: R.CF-EDIV

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	PRELIMINARY	AH		DF	16.08.18
4	FOR INFORMATION	RC		DF	31.08.18
5	FOR DISCUSSION	RC		DF	12.10.18
6	WORKS APPROVAL	RC		DF	11.04.19
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia
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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS STANDARD NOTES

JOB NUMBER: CR172699
DRAWING NUMBER: C001
REVISION: 8
DRAWING SHEET SIZE = A1

08 Sep, 2020

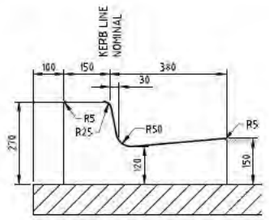
NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1

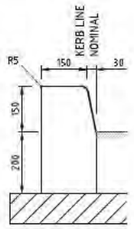
s22

[redacted]



- N25 CONCRETE KERB
- 100mm DGB20 BASE
- WEAKENED PLANE JOINTS @ 3.0m CTRS
- EXPANSION JOINTS @ 12m CTRS
- ALL JOINTS IN KERBS SHALL BE IN ACCORDANCE WITH SECTION 6.09.1 OF "STANDARD SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS" EDITION 1, REVISION 0/SEPT 2002

KERB & GUTTER
(KG)



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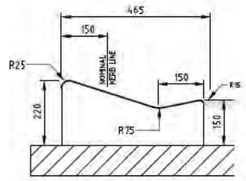
KERB ONLY DETAIL
(KO)



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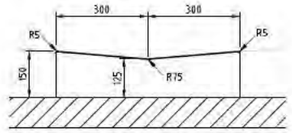
MODIFIED LAYBACK KERB
(MLBK)



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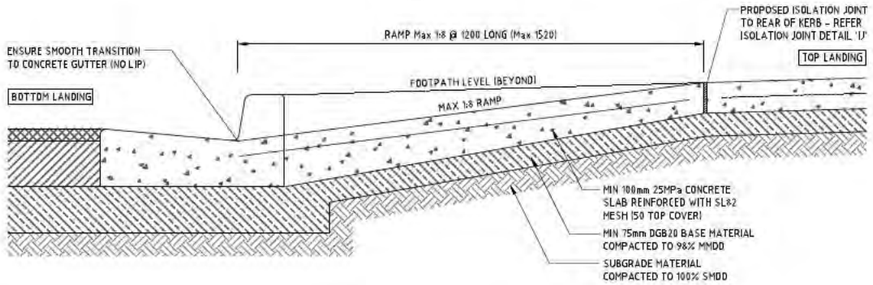
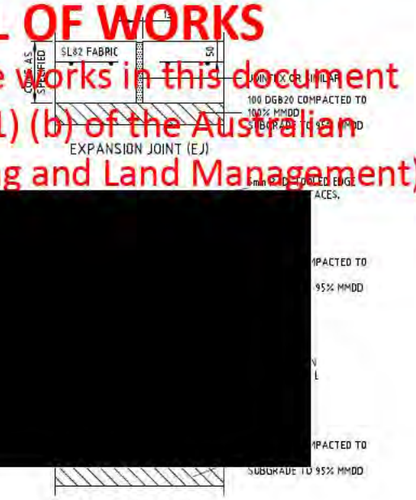
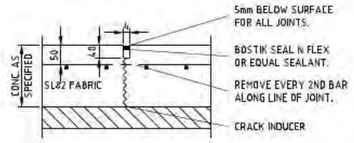
OPEN CONCRETE INVERT
(OCI)

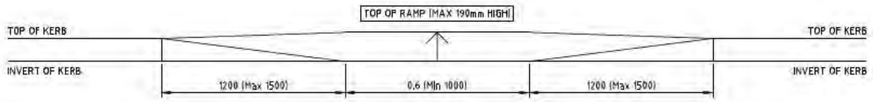




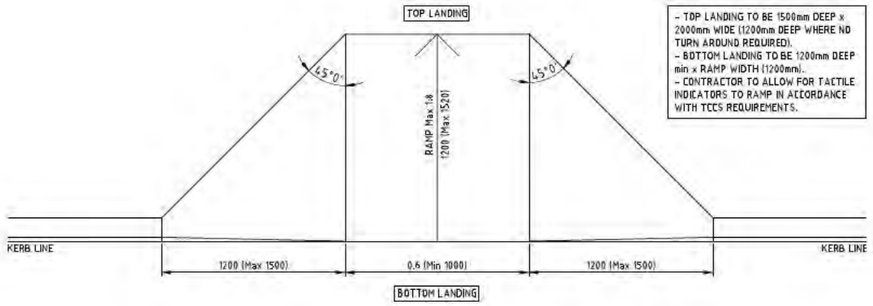


WEAKENED PLANE JOINT (WPJ)

CONCRETE JOINT DETAILS.
NTS



ELEVATION



- TOP LANDING TO BE 1500mm DEEP x 2000mm WIDE (1200mm DEEP WHERE NO TURN AROUND REQUIRED).
- BOTTOM LANDING TO BE 1200mm DEEP min x RAMP WIDTH (1200mm).
- CONTRACTOR TO ALLOW FOR TACTILE INDICATORS TO RAMP IN ACCORDANCE WITH TCCS REQUIREMENTS.

PLAN
KERB RAMP 'KR'

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: R.CF-ADV
DRAWN: R.CF-ADV

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR INFMORMATION	RC		DF	31.08.18
2	FOR DISCUSSION	RC		DF	12.10.18
3	WORKS APPROVAL	RC		DF	11.04.19
4	DRAFT WORKS APPROVAL	JC		DF	30.04.20
5	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close

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0 5 10 15 20 25m PLAN SCALE 1:500 @ A1

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1883
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
STANDARD DETAILS

JOB NUMBER: CR172699

DRAWING NUMBER: C005

REVISION: 5

DRAWING SHEET SIZE = A1

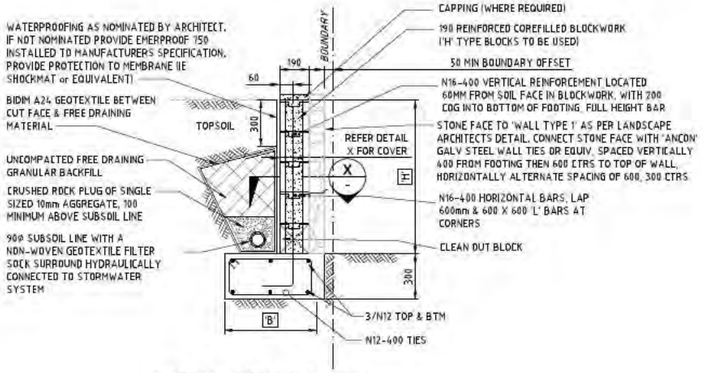
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1)(b) of the Australian C[redacted]gement) A[redacted]

s22

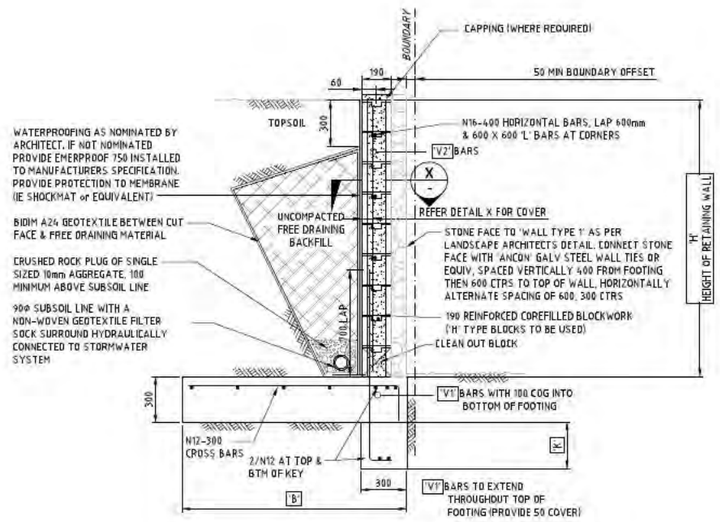


TYPICAL HEIGHT to 1000

RETAINING WALL SCHEDULE	
HEIGHT 'H'	FOOTING WIDTH 'B'
600	600
800	750
1000	750

FOR ø' = 30° & 100kPa BEARING

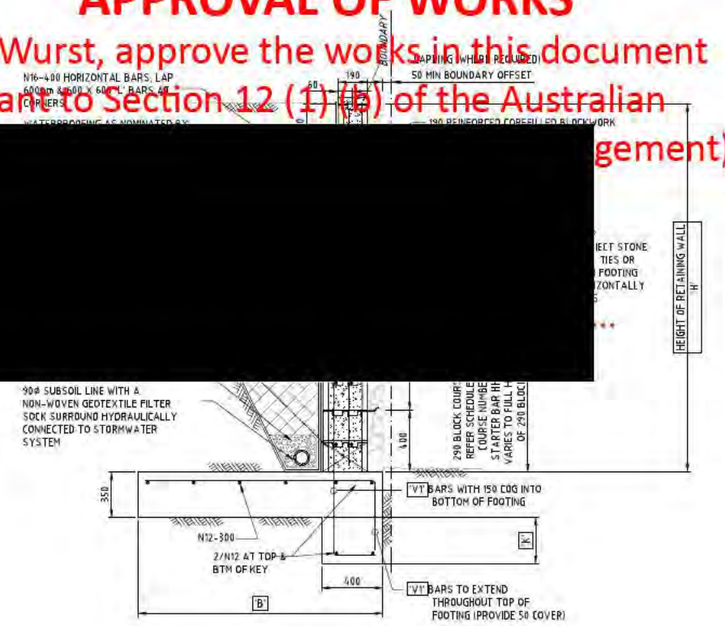
RETAINING WALL NOTES:
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE.
- PROVIDE CLEANOUT BLOCKS IN BOTTOM COURSE.
- ALL BLOCK TO BE RETAINING WALL 'H' BLOCKS.
- ALL CORE FILLING TO BE 32MPA (MIN), 10MM AGGREGATE BLOCKWORK MIX
- JOINTS IN WALLS TO BE AT MAXIMUM OF 8M CTS
- LOADINGS FOR HANDRAILS, BALUSTRADES & FENCES HAVE NOT BEEN INCLUDED IN DESIGN OF WALL. REFER TO ENGINEER IF THESE ARE REQUIRED.
- BUILDER IS TO ENSURE THAT THE STABILITY OF THE TEMPORARY EXCAVATION IS MAINTAINED DURING THE CONSTRUCTION OF THE WALL & THAT NO ADJACENT FOOTINGS / STRUCTURES ARE WITHIN THE ZONE OF INFLUENCE OF THE EXCAVATION. CONTACT NORTHROP ENGINEERS or A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER IF THERE ARE ANY CONCERNS.



TYPICAL HEIGHT 1200 to 1800

RETAINING WALL SCHEDULE				
HEIGHT 'H'	'B'	'K'	'V1' BARS	'V2' BARS
1200	900	0	N16 @ 400	N16 @ 400
1400	1100	300	N16 @ 400	N16 @ 400
1600	1200	300	N16 @ 400	N16 @ 400
1800	1400	300	N16 @ 200	N16 @ 400

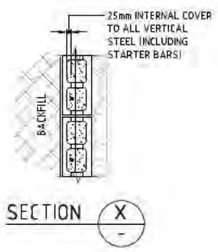
FOR ø' = 30° & 125kPa BEARING

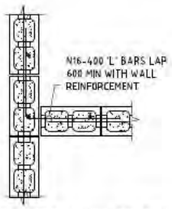


TYPICAL HEIGHT 2000 to 3000

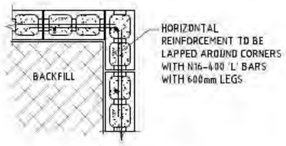
RETAINING WALL SCHEDULE					
HEIGHT 'H'	COURSES of 290 BLOCK	'B'	'K'	'V1' BARS	'V2' BARS
2000	4	1500	300	N16 @ 200	N16 @ 400
2200	4	1700	300	N16 @ 200	N16 @ 400
2400	5	1900	300	N16 @ 200	N16 @ 200
2600	5	2000	300	N16 @ 200	N16 @ 200
2800	6	2200	400	N20 @ 200	N16 @ 200
3000	6	2300	400	N20 @ 200	N16 @ 200

FOR ø' = 30° & 150kPa BEARING

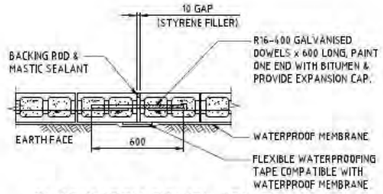




BLOCKWORK JUNCTION DETAIL

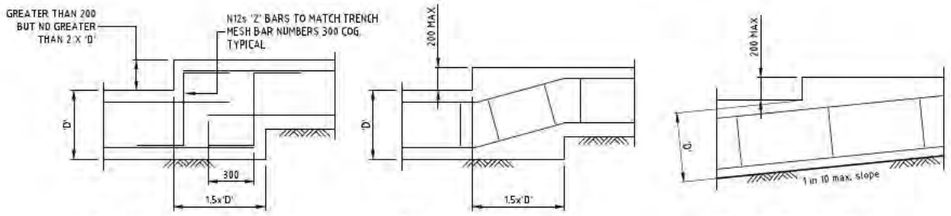


BLOCKWORK CORNER DETAIL



BLOCKWORK DOWEL JOINT for RETAINING WALL

PROVIDE JOINTS AT 8m MAXIMUM CTS. CONFIRM ALL JOINT LOCATIONS WITH ARCHITECT



TYPE 'A' STEP DETAIL

TYPE 'B' STEP DETAIL

TYPE 'C' STEP DETAIL

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	WORKS APPROVAL	JC		DF	07.07.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close

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NOT TO SCALE

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Canberra
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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS RETAINING WALL DETAILS SHEET 1

JOB NUMBER: CR172699

DRAWING NUMBER: C006

REVISION: 1

DRAWING SHEET SIZE = A1

VERIFIER:

JOB MANAGER: D.FIELD

DESIGNED:

DRAWN: J.CLAYCY

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988

s22 [redacted]

GENERAL

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH SPECIFICATIONS AND OTHER CONSULTANT'S DRAWINGS.

G2. THE WEATHER PROOFING OF THE BUILDING IS THE ARCHITECT'S/BUILDER'S RESPONSIBILITY. THIS INCLUDES (BUT IS NOT LIMITED TO) THE SPECIFICATION AND FIXING DETAILS OF CLADDINGS, SHEETING, FLASHING, MEMBRANES, STEPS, SETDOWNS, RECESSES & CONDENSATION MEASURES.

G3. ALL DISCREPANCIES SHALL BE REFERRED TO THE CIVIL ENGINEER AND RESOLVED BEFORE PROCEEDING WITH THE WORK.

G4. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS. REFER TO ARCHITECTURAL DRAWINGS FOR CONFIRMATION OF ALL RL's. ALL LEVELS ARE IN METRES (m) AND DIMENSIONS ARE IN MILLIMETRES (mm)

G5. ALL WORKMANSHIP, TESTING, MATERIALS AND SUPERVISION ARE TO BE IN ACCORDANCE WITH THESE SPECIFICATIONS, THE WORK HEALTH AND SAFETY ACT 2011. ENFORCED BY THE WORKCOVER AUTHORITY AND CURRENT RELEVANT AUSTRALIAN STANDARDS.

G6. PROPRIETARY ITEMS SPECIFIED SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS, DO NOT VARY SPECIFIED PROPRIETARY PRODUCTS WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.

G7. THESE DRAWINGS AND ISSUED WRITTEN INSTRUCTIONS DURING THE COURSE OF THE CONTRACT DEPICT THE COMPLETE STRUCTURE. THEY DO NOT DESCRIBE A WORK METHOD. THE ARRANGEMENT, DESIGN AND INSTALLATION OF TEMPORARY WORKS REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.

G8. THE DETERMINATION OF A SAFE WORK METHOD REMAINS THE RESPONSIBILITY OF THE CONTRACTOR. ANY ELEMENT WHICH POSES AN UNACCEPTABLE LEVEL OF SAFETY RISK TO CONSTRUCT SHALL BE REFERRED TO THE STRUCTURAL ENGINEER. TEMPORARY BRACING AND SUPPORT OF STRUCTURE IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE MAINTAINED DURING ALL STAGES OF CONSTRUCTION.

G9. NOTES ON ANY DRAWING APPLY TO ALL DRAWINGS IN THE SET UNLESS NOTED OTHERWISE

G10. ALL ARCHITECTURAL FITMENTS SUCH AS GLAZING, PARTITIONS, CEILINGS ETC. SHOULD ALLOW FOR THE SHORT AND LONG TERM MOVEMENT OF STRUCTURAL ELEMENTS. FOR BEAMS AND SLABS SPANNING LESS THAN 8m AN ALLOWANCE OF AT LEAST 20mm SHOULD BE MADE (CONSULT ENGINEER WHERE SPANS EXCEED 8m).

G11. THE BUILDER SHALL PROVIDE CERTIFICATION ON ANY DESIGN AND CONSTRUCT COMPONENT BY A CHARTERED PROFESSIONAL ENGINEER (NPER).

G12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL SERVICES IN THE VICINITY OF THE WORKS. ANY SERVICES SHOWN ARE PROVIDED FOR INFORMATION ONLY. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL SERVICES PRIOR TO COMMENCING AND SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED TO SERVICES, AS WELL AS ANY LOSS INCURRED AS A RESULT OF THE DAMAGE TO ANY SERVICE.

G14. THE METHOD OF CONSTRUCTION AND THE MAINTENANCE OF SAFETY DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE BUILDER. IF ANY STRUCTURAL ELEMENT PRESENTS DIFFICULTY IN RESPECT TO SAFETY THE MATTER SHALL BE REFERRED TO NORTHROP CONSULTING ENGINEERS FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.

G15. NO CHANGES IN ANY STRUCTURAL ELEMENT SHALL BE MADE WITHOUT WRITTEN APPROVAL FROM NORTHROP CONSULTING ENGINEERS. IF THERE IS A DISCREPANCY THEN FOR TENDER PURPOSES ALLOW FOR THE MOST EXPENSIVE OPTION. NORTHROP CONSULTING ENGINEERS SHALL BE CONTACTED TO CONFIRM PRIOR TO CONSTRUCTION.

G16. NO CHANGES IN ANY STRUCTURAL ELEMENT SHALL BE MADE WITHOUT WRITTEN APPROVAL FROM NORTHROP CONSULTING ENGINEERS.

G17. NORTHROP CONSULTING ENGINEERS ACCEPTS NO RESPONSIBILITY FOR ANY WORK NOT INSPECTED OR NOT APPROVED BY NORTHROP CONSULTING ENGINEERS DURING CONSTRUCTION.

G18. BUILDER TO ALLOW TO SEPARATELY ENGAGE NORTHROP ENGINEERS FOR CONSTRUCTION PHASE ADVICE, INSPECTIONS AND ANY NECESSARY CHANGES IN DOCUMENTATION DURING CONSTRUCTION. CONSULT NORTHROP DURING TENDER FOR PRICING ALLOWANCES.

CONSTRUCTION PHASE SERVICES - WITNESS POINTS

WP1. OBTAIN NORTHROP CONSULTING ENGINEERS WRITTEN INSTRUCTION AT THE FOLLOWING HOLD POINTS:
- PREPARATION OF FOUNDING MATERIAL, INCLUDING PIER BORE HOLES.
- REINFORCEMENT PRIOR TO PLACEMENT OF CONCRETE or COREFILLING OF BLOCKWORK.
- STEEL AND TIMBER FRAME INSPECTION PRIOR TO SHEETING.

WP2. PROVIDE MINIMUM 48 HOURS NOTICE FOR ANY REQUIRED INSPECTIONS.

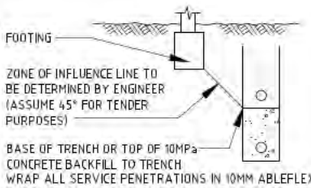
FOUNDATIONS

F1. ASSUMED ALLOWABLE BEARING CAPACITY:
- PAD FOOTINGS = 100 kPa
- STRIP FOOTINGS = 100 kPa
- SLABS ON GROUND = 100 kPa

F2. A GEOTECHNICAL REPORT HAS NOT BEEN CARRIED OUT.

F3. THE SLAB AND FOOTINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH AS2870-2011 FOR CLASS M SITE. A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO BE CONTACTED DURING EXCAVATION TO CONFIRM THE SITE CLASSIFICATION.

F4. THE UNDERSIDE OF FOUNDATIONS SHALL CONFORM TO THE FOLLOWING REGARDLESS OF NOMINATED LEVELS:



F5. WRAP ALL SERVICE PENETRATIONS IN 10MM ABLEFLEX.

F6. THE BASE OF ALL PIER HOLES SHALL BE FREE OF WATER AND CLEANED OF LOOSE MATERIAL OR DEBRIS PRIOR TO PLACEMENT OF CONCRETE, ALLOW TO PROVIDE TEMPORARY LINERS AS DEEMED NECESSARY.

CONCRETE

C1. CARRY OUT ALL CONCRETE WORK IN ACCORDANCE WITH AS3600-2009 AND NATSPEC CONCRETE STANDARDS.

C2. CONCRETE PROPERTIES AND COVER TO REINFORCING :

COVER TO REINFORCEMENT

ELEMENT		CONCRETE STRENGTH f'c (MPa)	MAXIMUM 56 DAY DRY SHRINKAGE	COVER (mm)
BORED PIERS		N25	1000 um	50
SLABS ON GROUND	EXTERNAL (NO MEMBRANE)	25	650 um	TOP 30 | BTM 30
STRIP FOOTINGS		N25	1000 um	50
PAD FOOTINGS		N25	1000 um	50
WALLS (INCLUDING DINCEL AND BLOCKWORK)		N32	1000 um	50
SUSPENDED SLABS	EXTERNAL	40	650 um	30 (BOTTOM)

MAXIMUM AGGREGATE SIZE = 20mm U.N.O.
SLUMP DURING PLACING = 80mm ±10mm
NO ADMIXTURES SHALL BE USED IN THE CONCRETE MIX UNLESS APPROVED
WRITING.

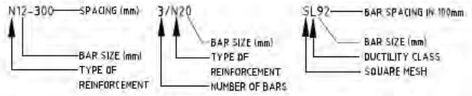
C3. COMPACT ALL CONCRETE, INCLUDING FOOTINGS AND SLABS USING ME

C4. CONCRETE PROFILES :
- SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPL
- NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN SHOWN IN THE
MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL
- PROVIDE DRIP GROOVES AT ALL EXPOSED EDGES, CHAMFERS, DRIP G
DETAILS.

C5. ALL PENETRATIONS TO HAVE 2/N16 TRIMMER BARS TOP AND BOTTO
600 BEYOND PENETRATION.

C6. REINFORCEMENT QUALITY AND NOTATION :
ALL REINFORCING BARS SHALL BE GRADE D500N TO AS/NZS 4671-2001 AND ALL MESH SHALL BE GRADE 500L TO AS/NZS 4671-2001, UNLESS NOTED OTHERWISE CLASS L REINFORCEMENT SHALL NOT BE USED.

REINFORCEMENT LABELS :



C7. LAPS IN MESH SHALL BE IN ACCORDANCE WITH AS3600-2009 SECTION 13.

C8. U.N.O., ALL MASONRY ANCHORS INTO CONCRETE SHALL BE RAMSET TRUBOLTS LONGEST VERSION) OR APPROVED EQUIVALENT.

C9. CURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF 7 DAYS, UNLESS SPECIFIED OTHERWISE. APPROVED SPRAY ON CURING COMPOUNDS THAT COMPLY WITH AS3799-1998 MAY BE USED WHERE FLOOR FINISHES WILL NOT BE AFFECTED. POLYTHENE SHEETING OR WET HESSIAN MAY BE USED TO RETAIN CONCRETE MOISTURE WHERE PROTECTED FROM WIND AND TRAFFIC. CURING IS TO COMMENCE IMMEDIATELY AFTER CONCRETE PLACEMENT.

SLAB ON GROUND - RESIDENTIAL

RSG1. RESIDENTIAL SLABS ON GROUND SHALL BE IN ACCORDANCE WITH AS2870-2011.

RSG2. THE SITE OF THE WORKS SHALL BE STRIPPED OF ALL GRASS, ROOTS, VEGETABLE MATTER AND COMPRESSIBLE TOPSOIL.

RSG3. THE GROUND BELOW SLABS SHALL BE PROOF ROLLED WITH AN APPROVED HEAVY COMPACTOR. ALL "SOFT SPOTS" ENCOUNTERED SHALL BE REMOVED AND REPLACED WITH COMPACTED CRUSHED ROCK OR APPROVED FILL IN ACCORDANCE WITH AS2870-2011 & AS3798-2007.

RSG4. CLEAN GRANULAR FILLING UP TO 600mm MAY BE PLACED UNDER THE SLAB IN ACCORDANCE WITH THE PROVISIONS OF AS2870-2011 PART 6.4. FILLING SHALL BE COMPACTED IN 150mm THICK LAYERS BY MECHANICAL ROLLER.

RSG5. TERMITE PROTECTION SHALL BE PROVIDED AS REQUIRED BY AS3660.1-2000 AND THE LOCAL STATUTORY AUTHORITY.

RSG6. SLABS SHALL BE LAID ON A 0.2mm POLYTHENE MEMBRANE, CONTINUOUS, LAPPED 20mm MINIMUM AND TAPED AT JOINTS, PUNCTURES AND SERVICE PIPE PENETRATIONS.

RSG7. BEAM AND STRIP FOOTING REINFORCEMENT SHALL ACHIEVE THE REQUIRED COVER AS NOTED IN CONCRETE SPECIFICATIONS

RSG8. TRENCH MESH SHALL BE LAID CONTINUOUSLY AND SHALL BE SPLICED WHERE NECESSARY WITH A LAP OF 600mm.

RSG9. TRENCH MESH SHALL BE OVERLAPPED BY THE WIDTH OF MESH AT CORNERS AND INTERSECTIONS AND THE ENDS OF TRENCH MESH SHALL TERMINATE WITH A CROSSBAR.

RSG10. MESH SHALL BE PLACED NEAR THE TOP OF THE SLAB AND SHALL ACHIEVE THE REQUIRED COVER. MESH SHALL BE LAPPED A MINIMUM OF TWO WIRES PLUS 25mm AND SHALL BE SET OUT SUCH THAT NO MORE THAN THREE THICKNESSES OF MESH OCCUR AT ANY LOCATION.

RSG11. HOT WATER HEATING PIPES MAY BE EMBEDDED IN THE SLAB IF THE THICKNESS IS INCREASED BY 25mm AND LAID ON SL52 MESH, OR IF THE SLAB THICKNESS IS INCREASED BY 25mm AND THE MESH SIZE IS INCREASED BY ONE SIZE (eg FROM SL82 MESH TO SL92 MESH).

RSG12. THE GROUND SURROUNDING THE SLAB SHALL HAVE ITS SURFACE AT LEAST 150mm LOWER THAN THE SLAB SURFACE AND BE GRADED AWAY FROM THE SLAB EDGE TO THE SITE DRAINAGE SYSTEM.

RSG13. ADDITIONAL PLUMBING REQUIREMENTS FOR CLASS M, H & E SITES.
CLASS M H or E SITES: THE BASE OF TRENCHES SHALL BE SLOPED AWAY FROM THE BUILDING, TRENCHES SHALL BE BACKFILLED WITH CLAY IN THE TOP 300mm WITHIN 1.5m OF THE BUILDING AND THE CLAY COMPACTED. WHERE PIPES PASS UNDER THE FOOTING SYSTEM THE FULL DEPTH OF THE TRENCH SHALL BE BACKFILLED WITH CLAY or CONCRETE. SUBSURFACE DRAINS TO REMOVE GROUNDWATER SHALL NOT BE USED WITHIN 1.5m OF THE BUILDING UNLESS NOTED OTHERWISE.

NOTE:
WHERE RETAINING WALL FOOTING MAY LOAD ANY PROPOSED OR EXISTING SERVICES ALLOW TO PROVIDE ONE 450 DIA CONCRETE PIER EITHER SIDE OF SERVICE TO FINISH 300mm BELOW BEDDING OF SERVICE. PIER TO BE 25MPA CONCRETE Y20 BARS AT 150 CTRS VERTICALLY. 12mm CIRCULAR TIE BARS AT 250 CTRS PERPENDICULAR TO THE PIER HOLE.

NOT FOR CONSTRUCTION

VERIFIER: JOB MANAGER: D.FIELD DESIGNED: DRAWN: JCLANCY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	WORKS APPROVAL	JC		DF	07.07.20

CLIENT: DHA Defence Housing Australia
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NOT TO SCALE

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PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS RETAINING WALL DETAILS SHEET 2

JOB NUMBER: CR172699
DRAWING NUMBER: C007
REVISION: 1
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
Pursuant to Section 12 (2)(c) of the National Capital Development Capital Territory (Planning and Land Management) Act 1988
s22 [redacted]

CIVIL WORKS LOCATION:	DEFENCE HOUSING AUSTRALIA BLOCK 3, SECTION 65 CAMPBELL, A.C.T
TOTAL WORKS AREA: APPROX. 2241m^2	
HOURS OF OPERATION: MONDAY–SATURDAY, BETWEEN 7A.M–6P.M	
CONTACT DETAILS	

COMPANY:	SITE MANAGER:	PROJECT MANAGER:
Name: TBC Ph: TBC	Name: TBC Ph: TBC	Name: TBC Ph: TBC

NOTE
REFER C010A FOR SEDIMENT AND EROSION CONTROL DETAILS

NOTES

GENERAL:

- THE CONTRACTOR MUST ENTER INTO AN ENVIRONMENT PROTECTION AGREEMENT WITH THE EPA
- ENSURE THAT ALL ENVIRONMENT PROTECTION WORKS ARE IN PLACE BEFORE COMMENCING CONSTRUCTION ON THE SITE.
- LIAISE AS NECESSARY WITH THE EPA AND OBTAIN AGREEMENT [illegible] THE PROTECTION WORKS.
- KEEP A COPY OF THE EPA SIGNED EROSION AND SEDIMENT CONTROL PLAN ON SITE AT ALL TIMES. DISPLAY IN A PROMINENT LOCATION.
- LOCATE ALL PROTECTION WORKS [illegible] THE [illegible] PROCESS OTHERWISE [illegible]
- CONSTRUCT AND MAINTAIN PROTECTION WORKS IN ACCORDANCE WITH THE "ENVIRONMENT PROTECTION GUIDELINES FOR CONSTRUCTION AND LAND DEVELOPMENT IN THE ACT" (2011) AND THE NSW BLUE BOOK AS APPROPRIATE.
- ASSIGN A DESIGNATED PARKING AREA [illegible] WORKERS VEHICLES ARE TO BE PARKED IN LEGAL PARKING ZONES. WHERE POSSIBLE VEHICLES TO BE PARKED WITHIN THE BLOCK.
- MINIMISE DISTURBANCE OF THE EXISTING SURFACE AND VEGETATION.

SPOIL MANAGEMENT

- DESIGNATE AN AREA ON SITE FOR CONCRETE TRUCK [illegible]
- BRICK CUTTING TO OCCUR ON SITE WITHIN THE MA [illegible]
- SPOIL TO BE DISPOSED AT APPROPRIATE [illegible]

NOISE:

- ENSURE ALL CONSTRUCTION WORK THAT GENERATE [illegible] PRE-APPROVED OPERATING HOURS FOR THE PROJE [illegible] 6P.M.

SEDIMENT CONTROLS AND STORMWATER [redacted]

- MAINTAIN STRICT SITE ACCESS CONTROL WITH A ST [illegible] MUST USE.
- AT THE END OF EACH DAY OR WHEN DIRT OCCURS O [illegible] SEDIMENT FROM PUBLIC ROADS ADJACENT TO THE W [illegible] STORMWATER SYSTEM.
- MAINTAIN AS MUCH VEGETATIVE COVER AS PRACTI [illegible] LINES. FENCE OFF BUFFER AREAS TO PREVENT DISTURBANCE
- PROTECT ALL CUT AND FILL BATTERS FROM RUN-OFF AND STABILISE IMMEDIATELY AFTER CONSTRUCTION.
- USE CONTOUR PLOUGHING AND/OR SURFACE ROUGHENING OF FINISHED LANDFORM TO SLOW WATER FLOW DURING RAIN EVENTS.
- INSTALL SILT FENCES ON THE LOW SIDE OF ANY STOCKPILE
- INSTALL PERMANENT DRAINAGE FACILITIES AT AN EARLY STAGE.
- FILTER SOCKS TO BE INSTALLED AT ALL OPEN PITS AND KERB SIDE SUMPS PROGRESSIVELY AS CONSTRUCTION PROCEEDS
- PROVIDE PROTECTION TO NEW DRAINAGE INLETS IMMEDIATELY ON CONNECTION TO THE DRAINAGE SYSTEM
- ESTABLISH ALTERNATIVE STABLE DRAINAGE SYSTEMS THROUGH THE SITE WHILE PERMANENT FACILITIES ARE BEING INSTALLED.
- USE DIVERSION STRUCTURES TO CONVEY RUN-OFF TO A STABLE DISPOSAL AREA.
- STABILISE AND GRASS ALL DIVERSION SWALES AND DRAINS. WHERE MAJOR TEMPORARY DRAINAGE PATHS ARE CREATED CONSTRUCT HAY BALE WEIRS (WRAPPED IN BIDDUM) ACROSS THE ENTIRE FLOW PATH AND AT 25M INTERVALS.
- STABILISE AND GRASS ALL DIVERSION SWALES AND DRAINS.
- INSTALL SEDIMENT TRAPS AT DRAINAGE INLETS AND OTHER POINTS OF DISCHARGE FROM AREAS OF DISTURBANCE.
- UNDERTAKE VEGETATIVE STABILISATION MEASURES IMMEDIATELY AFTER COMPLETION OF FINAL LAND FORMING.
- PLACE HAY BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE HAY TO FILL ANY GAPS BETWEEN BALES. – ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
- EMBED EACH BALE IN THE GROUND 75mm–100mm AND ANCHOR WITH TWO 1.2M STAR PICKETS OR STAKES. ANGLE FIRST STAR PICKET/STAKE IN EACH BALE TOWARDS PREVIOUSLY LAID BALE. DRIVE 600mm INTO THE GROUND AND. WHERE STAR PICKETS PROTRUDE ABOVE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.

INSPECTIONS AND MAINTENANCE SCHEDULE:

(RECORD MAINTENANCE ACTIVITIES AND DETAILS TO PROVIDE TO EPA.)

DAILY:

- CHUTES, BARRELS, WHEELBARROWS AND OTHER EQUIPMENT TO BE RINSED IN THE SITE WASH-DOWN AREA.
- REMOVE ANY SEDIMENT FROM PUBLIC ROADS ADJACENT TO THE WORK AREA. DO NOT WASH INTO THE STORMWATER SYSTEM.
- SUPPRESS DUST BY REGULAR SPRAYING OF WATER AND COVERING AND SECURING VEHICLE LOADS ENTERING/EXITING SITE.
- MAINTAIN AND INSPECT POLLUTION CONTROL MEASURES DURING CONSTRUCTION AND UNTIL FULL STABILISATION. REPAIR AND REINSTATE WORKS AS NEEDED.

MONTHLY:

- MAINTAIN AND INSPECT STABILISED SITE ACCESS POINTS.
- MAINTAIN AND INSPECT HAY BALES. REPLACE AS REQUIRED IF DEGRADED OR DAMAGED.

AIR QUALITY:

SUPPRESS DUST BY THE INCLUDING FOLLOWING METHODS WHERE APPLICABLE:

a. STAGE WORKS TO LIMIT THE EXTENT OF EXPOSED AND UNPROTECTED AREAS.
b. REGULAR SPRAYING OF WATER
c. COVER AND SECURE VEHICLE LOADS ENTERING/EXITING SITE
d. USE AN ENVIRONMENTALLY FRIENDLY CHEMICAL SPRAY TO BIND SOIL TOGETHER THUS STABILISING UNUSED SOIL
e. RESTRICT SPEED OF VEHICLES ONSITE
f. COVER STOCKPILES TO PROTECT FROM THE WIND

- IMPLEMENT MEASURES TO LIMIT AIR POLLUTION BY VEHICLES AND PLANT WORKING ON OR PASSING THROUGH THE SITE.
- MAINTAIN POLLUTION CONTROL MEASURES DURING CONSTRUCTION AND UNTIL FULL STABILISATION. ROUTINELY INSPECT EACH WEEK AND AFTER SIGNIFICANT RAINFALL EVENTS. REPAIR AND REINSTATE WORKS AS NEEDED TO MAINTAIN PROTECTION. RECORD MAINTENANCE ACTIVITIES AND DETAILS AND PROVIDE TO EPA FOR INSPECTION WHEN REQUESTED.

FIRE:

- BURNING OF WASTE MATERIALS MUST NOT BE UNDERTAKEN.
- FIRE MAY BE PERMITTED FOR GENERAL HEATING PURPOSES IF IN A BRAZIER OR CONSTRUCTED FIREPLACE, USING SEASONED, UNTREATED TIMBER.

AREA PROTECTION

GENERAL

- INSTALL ALL PROTECTIVE MEASURES PRIOR TO COMMENCING CONSTRUCTION WORKS, ADVISE TRANSPORT CANBERRA AND CITY SERVICES (AA) IN WRITING THAT THE PROTECTIVE MEASURES HAVE BEEN [illegible] IN [illegible] WITH THE APPROVED MPP.
- ALL VERGE [illegible] AREAS [illegible] PROTECTED AND RETAINED UNO ON THE DRAWINGS OR TIMELY WA[illegible] RECEIVE [illegible] IN GOOD CONDITION.
- A SUITABLY QUALIFIED LANDSCAPE ARCHITECT OR HORTICULTURIST SHALL BE ENGAGED BY THE CONTRACTOR TO OVERSEE ALL MAJOR WORK IN THE VERGE.
- CONSTRUCTION MATERIAL SHALL NOT BE STORED ON VERGES OR PUBLIC OPEN SPACES.
- [illegible] PARKING SHALL NOT BE PERMITTED ON VERGES OR ADJACENT PARKLAND.
- SITE SHEDS, STORAGE SHEDS, SITE AMENITIES OR BILLBOARDS SHALL NOT BE ERECTED ON VERGES OR PUBLIC OPEN SPACES WITHOUT THE PRIOR WRITTEN APPROVAL OF THE MANAGER, TCCS. FOR THE USE OF VERGES, FUEL IN OPEN STATES OR [illegible] OUTSIDE [illegible] LAND.

PROTECTIVE FENCING

- ALL TEMPORARY PROTECTIVE FENCES SHALL BEIN [illegible] [redacted] [illegible] ENCLOSE THE STREET [illegible] REA.
- [illegible] K OF THE KERB FOR THE FULL [illegible] ND ALONG APPROVED DRIVEWAY [illegible] D.
- [illegible] NY SITE WORKS, SHALL BE REMAIN [illegible] ESTORATION OF THE VERGE.
- [illegible] D BY STEEL POSTS WITH CONCRETE [illegible]
- [illegible] STRIAN MOVEMENT AT ALL TIMES. [illegible] VERGE, OFFSET FENCING 600mm [illegible]
- [illegible] A FENCED CLEARWAY 1800mm WIDE [illegible]
- [illegible] ION UNLESS OTHERWISE APPROVED [illegible] PROTECTED BEFORE COMMENCING [illegible] LIGNMENT.

SERVICES AND UTILITIES

- SERVICES AND UTILITIES SHALL BE LAID ONLY IN THE LOCATIONS SHOWN ON THE DRAWINGS. TRENCHING ACROSS THE VERGE SHALL BE UNDERTAKEN ONLY WHERE SHOWN ON THE DRAWINGS.
- UNLESS OTHERWISE SHOWN ON THE DRAWINGS NO TRENCHING SHALL BE CARRIED OUT WITHIN THE DRIP LINE OF ANY TREE.
- THE NUMBER OF VERGE CROSSINGS SHALL BE MINIMISED. WHERE PRACTICAL AND PERMITTED SHARED TRENCHING SHALL BE ADOPTED.
- TRENCHES SHALL BE LOCATED MIDWAY BETWEEN TREES.

SITE ACCESS

- SITE ACCESS SHALL ONLY BE VIA THE ACCESS POINTS SHOWN ON THE DRAWINGS.
- PRIOR WRITTEN APPROVAL FOR ALTERNATIVE OR ADDITIONAL ACCESS POINTS SHALL BE OBTAINED THROUGH TCCS.
- NEW ACCESS POINTS SHALL BE LOCATED MIDWAY BETWEEN EXISTING TREES WHERE SPACE IS ADEQUATE. DO NOT LOCATE ANY ACCESS WITHIN THE DRIP LINE OF ANY TREE.

WORKING NEAR TREES

- ALL TREES LOCATED IN THE ROAD RESERVE, PUBLIC OPEN SPACE AND UNLEASED TERRITORY LAND SHALL BE PROTECTED FROM DISTURBANCE, DAMAGE OR DESTRUCTION. PRIOR WRITTEN AUTHORISATION FROM TCCS IS REQUIRED FOR ANY DISTURBANCE, DAMAGE OR DESTRUCTION OF ANY TREE OR LANDSCAPE ASSET.
- EXISTING CANOPY CLEARANCES SHALL NOT BE ALTERED, CROWNS AND APEX OF CANOPIES SHALL NOT BE ALTERED OR REDUCED.
- ENSURE LIFTING EQUIPMENT AND LOAD CAN CLEAR HEIGHT AND WIDTH OF TREE CANOPY WITHOUT DAMAGE TO CROWN. ENSURE CONSTRUCTION EQUIPMENT CAN PASS BENEATH LOWEST LIMB.
- DO NOT EXCAVATE OR OTHERWISE DISTURB THE SURFACE LAYER WITHIN THE DRIP-LINE OF ANY TREE WITHOUT THE PRIOR WRITTEN APPROVAL OF TCCS.
- DO NOT SEVER ROOTS >30MM DIAMETER CLOSER THAN HALFWAY FROM THE DRIP-LINE TO THE TRUNK.
- HAND EXCAVATE TO A DEPTH OF 300MM TO LOCATE ROOTS BEFORE COMMENCING MACHINE EXCAVATION.
- CUT ROOTS CLEANLY WITH EQUIPMENT SPECIFICALLY DESIGNED FOR PRUNING ROOTS.
- PROTECT ANY EXPOSED ROOTS FROM DESICCATION. KEEP LIGHTLY WATERED OR COVER WITH MOIST HESSIAN. AFTER REPLACEMENT OF TOPSOIL REGULARLY WATER TREES UNTIL REESTABLISHED.

CONDITION AND RESTORATION

- PRIOR TO COMMENCEMENT NOTIFY TCCS OF COMMENCEMENT OF WORK AND UNDERTAKE A JOINT CONDITION SURVEY.
- AT THE COMPLETION OF WORK ENSURE THAT THE CONDITION OF ALL VEGETATION IS CONSISTENT WITH THE INITIAL CONDITION SURVEY.
- PROVIDE CONTINUOUS CARE AND MAINTENANCE BY HORTICULTURAL PRACTICES OF SOFT LANDSCAPE ASSETS ON ROAD RESERVES, STREET VERGES, PUBLIC OPEN SPACE AND UNLEASED TERRITORY LAND ADJACENT TO THE DEVELOPMENT FOR THE DURATION OF THE WORKS (INCLUDING RESTORATION WORKS)
- GRASS AREAS SHALL HAVE A HEALTHY AND VIGOROUS GRASS SWARD APPROPRIATE TO THE AREA. IF THE STANDARD OF GRASS COVER IS TO BE IMPROVED, THE FOLLOWING REQUIREMENTS APPLY:–
  - a. LIGHTLY CULTIVATE THE SOIL TO 25–50mm DEPTH (50mm MAXIMUM TO MINIMISE DAMAGE TO TREE ROOTS). CULTIVATE ONLY IN ONE DIRECTION. AVOID MAJOR TREE ROOTS AND KEEP A MINIMUM OF ONE METER (1.0m) AWAY FROM TREE TRUNKS.
  - b. ADD TYPE 'B' TOPSOIL AT 25–50mm DEPTH. LEVEL THE TOPSOIL AND ADD NPK FERTILISER (EQUIVALENT TO MULTIGRO) AT 40g/m^2.
  - c. LAY TURF OR SOW SEED OF SUITABLE DROUGHT TOLERANT SPECIES AS SPECIFIED IN THE ACT GOVERNMENT 'SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS' (ISSUE 1, REVISION 0, 2002). KEEP MOIST DURING ESTABLISHMENT.
- PLANT DAMAGE: DAMAGE TO TREES OR OTHER PLANTINGS TO BE RECTIFIED BY REPLACEMENT OR REHABILITATION AT CONTRACTORS EXPENSE AND TO THE SATISFACTION OF THE TCCS SPECIFICATION.

LEGEND

- EXISTING CONTOUR
- 1.8m HIGH STEEL MESH TEMPORARY SITE FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- OVERLAND FLOW DIRECTION
- STABILISED ACCESS
- SITE ACCESS
- EXISTING STORMWATER PIT WITH DROP INLET SEDIMENT TRAP
- EXISTING TREES TO BE RETAINED. REFER LANDSCAPE MANAGEMENT PLAN FOR TREE REMOVAL

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
5	FOR INFORMATION	RC		DF	04.09.18
6	FOR DISCUSSION	RC		DF	21.09.18
7	WORKS APPROVAL	RC		DF	11.04.19
8	WORKS APPROVAL	RC		DF	17.04.19
9	DRAFT WORKS APPROVAL	JC		DF	30.04.20
10	WORKS APPROVAL	JC		DF	14.05.20

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0 5 10 15 20 25m PLAN SCALE 1:500 @ A1

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
CONCEPT EROSION, SEDIMENT AND POLLUTION CONTROL PLAN

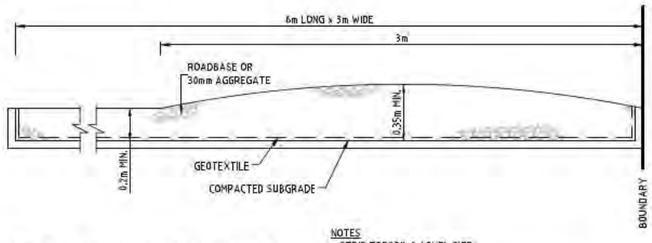
JOB NUMBER: CR172699
DRAWING NUMBER: C010
REVISION: 10
DRAWING SHEET SIZE = A1

DRAWN: F.CF-ADCV
DESIGNED: F.CF-ADCV
JOB MANAGER: D.FIELD
VERIFIER:

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS

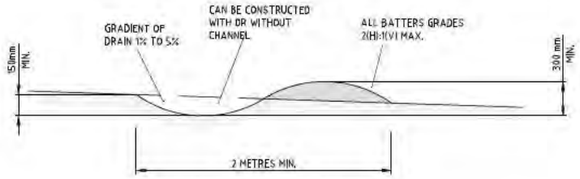
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act s22 [redacted]



GEOTEXTILE FABRIC DESIGNED TO PREVENT INTERMIXING OF SUBGRADE & BASE MATERIALS & TO MAINTAIN GOOD PROPERTIES OF THE SUB-BASE LAYERS. GEOTEXTILE MAY BE WOVEN OR NEEDLE PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4-90) OF 2500N.

NOTES
- STRIP TOPSOIL & LEVEL SITE.
- COMPACT SUB-GRADE.
- COVER AREA WITH NEEDLE PUNCHED GEOTEXTILE.
- CONSTRUCT GRAVEL PAD OVER GEOTEXTILE USING ROADBASE OR 30mm AGGREGATE. MINIMUM 3m WIDE.
- CONSTRUCT HUMP IMMEDIATELY WITHIN BOUNDARY TO DIVERT WATER TO A SEDIMENT FENCE OR TRAP

STABILISED SITE ACCESS DETAIL

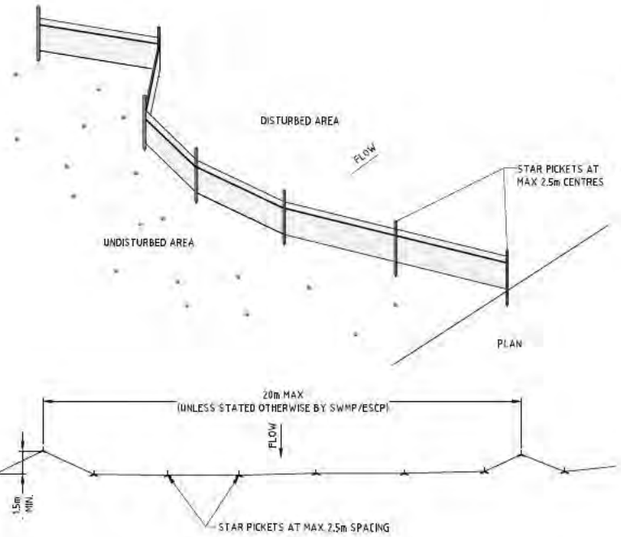


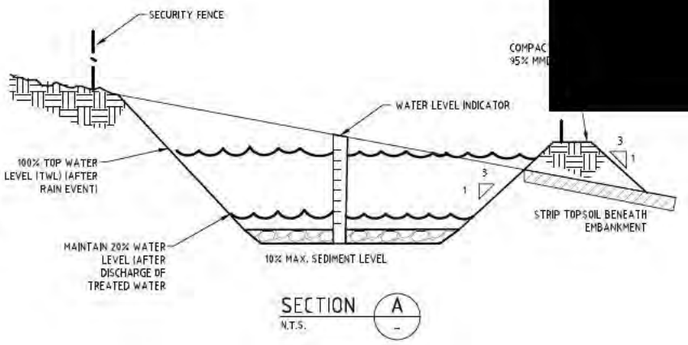
EARTH BANK (LOW FLOW)

NOTES
1. BUILD WITH GRADIENTS BETWEEN 1 PERCENT AND 5 PERCENT.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

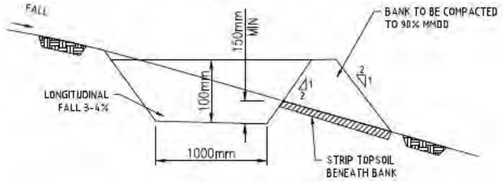
DROP INLET SEDIMENT TRAP

NOTES
1. ALL BALES EMBEDDED TO A DEPTH OF 100mm [redacted]
2. BALES ARE TO BE STAKED WITH STAKES 50mm SQUARE AND [redacted]



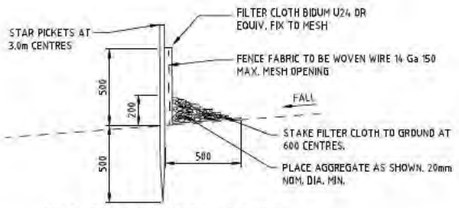


SECTION A
N.T.S.



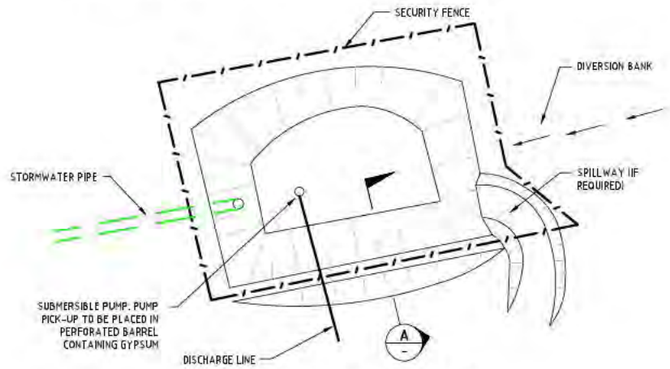
EARTH BANK DETAIL

NOTES
1. BUILD WITH GRADIENTS BETWEEN 1 PERCENT AND 5 PERCENT.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.



SEDIMENT CONTROL FENCE
N.T.S.

SEDIMENT NOTES
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50L/sec IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO THE GROUND AT 2.5m INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH THE WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.



SEDIMENT CONTROL POND

THE SEDIMENT CONTROL POND SHOULD BE LOCATED TO OBTAIN THE MAXIMUM STORAGE BENEFIT FROM THE TERRAIN, AND FOR EASE CLEANOUT OF THE TRAPPED SEDIMENT. THE POND/S SHALL BE MONITORED AND MAINTAINED ON A DAILY BASIS THROUGHOUT CONSTRUCTION AND SHALL NOT BE REMOVED UNTIL 85% OF THE DEVELOPMENT IS COMPLETE, OR ALL THE DISTURBED AREAS ARE STABILISED

WATER AT 20%'.

STABILISATION

STABILISE THE EMBANKMENT AND EMERGENCY SPILLWAY IN ACCORDANCE WITH THE APPROPRIATE VEGETATIVE STANDARDS AND SPECIFICATIONS IMMEDIATELY FOLLOWING CONSTRUCTION (I.E. GRASSED, JUTE MES, MULCH AND BITUMEN SPRAY). IN NO CASE SHALL THE EMBANKMENT REMAIN UNSTABILISED FOR MORE THAN 7 DAYS AFTER COMPLETION. POINTS OF ENTRANCE OF SURFACE RUN-OFF INTO EXCAVATED SEDIMENT CONTROL PONDS SHALL BE PROTECTED TO PREVENT EROSION.

LENGTH TO WIDTH RATIO SHOULD BE GREATER THAN 2:1, WHERE LENGTH IS THE DISTANCE BETWEEN THE INLET AND OUTLET. A WEDGE SHAPE IS PREFERRED WITH THE INLET LOCATED AT THE NARROW END. HOWEVER, IT IS ACCEPTED THAT IT WILL NEED TO BE FITTED INTO THE AVAILABLE LAND.

SAFETY:

CARE SHALL BE TAKEN TO KEEP BASIN SLOPES BELOW WATER LEVEL TO 1 IN 4. OTHERWISE SECURITY FENCING IS REQUIRED

DE-WATERING

MANAGE WATER SO DOSING AND DISCHARGE CAN BE ACHIEVED IN A TIMELY MANNER BEFORE THE NEXT RAIN EVENT. WATER SHOULD BE CHEMICALLY DOSED AND DISCHARGED WHEN IT IS ABOVE 20% OF THE POND'S FULL CAPACITY (INDICATED BY WATER LEVEL INDICATOR)

WATER SHOULD BE CHEMICALLY DOSED WITH GYPSUM TO ACCELERATE SETTLEMENT OF SUSPENDED SOLIDS. GYPSUM MAY BE MIXED EITHER IN A TANK OR TANKER OR INTO A SLURRY IN A CONCRETE MIXER AND THEN DISTRIBUTED TO SEVERAL POINTS IN THE BASIN BY A SPRAY OR SPREADING TECHNIQUE. SPRAYING OVER THE SURFACE IS PREFERRED AND IN-DAM MIXING MAY BE REQUIRED. GYPSUM DOSING RATE SHOULD BE APPLIED AT ABOUT 30KG/100M^3 OF STORED WATER. IN SOME INSTANCES, HIGHER RATES MAY APPLY. TYPICALLY LESS THAN 50MG/LITRE. IF DOSING WITH ALUM, ENSURE IT IS DONE IN ACCORDANCE WITH BLUE BOOK.

DISCHARGE PERMISSIBLE WHEN THE WATER PH IS 6.5-8.5 AND IS CLARIFIED TO AT OR BELOW 60MG/L (50NTU) FOR URBAN ENVIRONMENTS. CLARIFICATION WOULD GENERALLY BE ACHIEVED WITHIN A PERIOD OF 24-36 HOURS.

DEWATERING SHALL BE DONE IN SUCH A MANNER AS TO REMOVE THE RELATIVELY CLEAN WATER WITHOUT REMOVING ANY OF THE SEDIMENT THAT HAS SETTLED OUT AND WITHOUT REMOVING ANY APPRECIABLE QUANTITIES OF FLOATING DEBRIS. THE PUMP SHOULD BE MONITORED AT ALL TIME DURING PUMPING TO ENSURE SEDIMENT IS NOT BEING DISTURBED CREATING TURBID WATER. IF WATER EXCEEDS 60MG/L (50NTU) DURING DEWATERING, PUMPING MUST CEASE IMMEDIATELY AND FURTHER TREATMENT SHOULD BE CARRIED OUT BEFORE PUMPING IS RECOMMENCED. RECORDS MUST BE KEPT OF ALL MEASUREMENTS PRIOR TO, DURING AND AFTER DISCHARGE.

NOT FOR CONSTRUCTION

DRAWN: R.CF-ADV DESIGNED: R.CF-ADV JOB MANAGER: D.FIELD VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	PRELIMINARY	AH		DF	16.08.18
4	FOR INFORMATION	RC		DF	31.08.18
5	FOR DISCUSSION	RC		DF	21.09.18
6	WORKS APPROVAL	RC		DF	11.04.19
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	DRAFT WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close Campbell

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
CONCEPT EROSION, SEDIMENT
AND POLLUTION CONTROL DETAILS

JOB NUMBER: CR172699

DRAWING NUMBER: C010A

REVISION: 7

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ise Wurst, approve the works in this document pursuant to section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988
s22
[redacted]

LEGEND

- CONSTRUCTION FENCE
- VEGETATION PROTECTION FENCE
- GATE
- ESTABLISHED VEHICLE ACCESS
- EXISTING TREE WITH EXCEPTIONAL CONTEXTUAL VALUE TO BE PROTECTED - REFER TO LANDSCAPE ARCHITECT
- NOTIONAL ALIGNMENT OF TEMPORARY GRAVEL PATH TO BE MAINTAINED UNTIL SITE IS OPENED

NOTES

GENERAL

1. INSTALL ALL PROTECTIVE MEASURES PRIOR TO COMMENCING CONSTRUCTION WORKS. ADVISE DESIGN AND REVIEW COORDINATION (DRC) OF TCCS IN WRITING THAT THE PROTECTIVE MEASURES HAVE BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED LMPP
2. ALL VERGE VEGETATION INCLUDING GRASS SHALL BE PROTECTED AND RETAINED UNO ON THE DRAWINGS. ROUTINELY WATER TO RETAIN VEGETATION IN GOOD CONDITION.
3. A SUITABLY QUALIFIED LANDSCAPE ARCHITECT OR HORTICULTURIST MUST BE ENGAGED BY THE CONTRACTOR TO OVERSEE ALL MAJOR WORK IN THE VERGE.
4. CONSTRUCTION MATERIALS SHALL NOT BE STORED ON VERGES, OR PUBLIC OPEN SPACES.
5. CAR PARKING OR EQUIPMENT PARKING SHALL NOT BE PERMITTED ON VERGES OR ADJACENT PARKLAND
6. SITE SHEDS, STORAGE SHEDS, SITE AMENITIES OR BILLBOARDS SHALL NOT BE ERECTED ON VERGES OR PUBLIC OPEN SPACES WITHOUT THE PRIOR WRITTEN APPROVAL OF THE MANAGER, TRANSPORT [redacted] PEN SPACES OR
6. MAINTAIN ALL EXISTING FOOTPATHS AND PROVIDE SAFE PEDESTRIAN MOVEMENT AT ALL TIMES.
7. WHERE A CONSTRUCTED FOOTPATH/CYCLEWAY EXISTS IN THE VERGE, OFFSET FENCING 600mm EACH SIDE.
8. IF THERE IS NO CONSTRUCTED FOOTPATH/CYCLEWAY PROVIDE A FENCED CLEARWAY 1800mm WIDE FOR PEDESTRIAN ACCESS ALONG THE ENTIRE FRONTAGE
9. FENCING SHALL NOT BE REMOVED FOR THE SERVICE INSTALLATION UNLESS OTHERWISE APPROVED IN WRITING FROM TCCS. ENSURE ALL TREES ARE ADEQUATELY PROTECTED BEFORE COMMENCING TRENCHING. ON COMPLETION RETURN THE FENCE TO ORIGINAL ALIGNMENT

[redacted] PPROVED LMPP

[redacted] SE THE STREET VERGE,

[redacted] LEASE, ALONG THE [redacted] URE THAT THE VERGE IS

[redacted] , SHALL BE REMAIN IN [redacted] HE VERGE.

[redacted] STS WITH CONCRETE

SERVICES AND UTILITIES

1. SERVICES AND UTILITIES SHALL BE LAID ONLY IN THE LOCATIONS SHOWN ON THE DRAWINGS. TRENCHING ACROSS THE VERGE SHALL BE UNDERTAKEN ONLY WHERE SHOWN ON THE DRAWINGS
2. UNLESS OTHERWISE SHOWN ON THE DRAWINGS NO TRENCHING SHALL BE CARRIED OUT WITHIN THE DRIP LINE OF ANY TREE
3. THE NUMBER OF VERGE CROSSINGS SHALL BE MINIMISED. WHERE PRACTICAL AND PERMITTED SHARED TRENCHING SHALL BE ADOPTED
4. TRENCHES SHALL BE LOCATED MIDWAY BETWEEN TREES

SITE ACCESS

1. SITE ACCESS SHALL ONLY BE VIA THE ACCESS POINTS SHOWN ON THE DRAWINGS.
2. PRIOR WRITTEN APPROVAL FOR ALTERNATIVE OR ADDITIONAL ACCESS POINTS SHALL BE OBTAINED THROUGH TCCS.
3. NEW ACCESS POINTS SHALL BE LOCATED MIDWAY BETWEEN EXISTING TREES WHERE SPACE IS ADEQUATE. DO NOT LOCATE ANY ACCESS WITHIN THE DRIP LINE OF ANY TREE.

WORKING NEAR TREES

1. ALL TREES LOCATED IN THE ROAD RESERVE, PUBLIC OPEN SPACE AND UNLEASHED TERRITORY LAND SHALL BE PROTECTED FROM DISTURBANCE, DAMAGE OR DESTRUCTION. PRIOR WRITTEN AUTHORISATION FROM TCCS IS REQUIRED FOR ANY DISTURBANCE, DAMAGE OR DESTRUCTION OF ANY TREE OR LANDSCAPE ASSET.
2. EXISTING CANOPY CLEARANCES SHALL NOT BE ALTERED. CROWNS AND APEX OF CANOPIES SHALL NOT BE ALTERED OR REDUCED
3. ENSURE LIFTING EQUIPMENT AND LOAD CAN CLEAR HEIGHT AND WIDTH OF TREE CANOPY WITHOUT DAMAGE TO CROWN. ENSURE CONSTRUCTION EQUIPMENT CAN PASS BENEATH LOWEST LIMB.
4. DO NOT EXCAVATE OR OTHERWISE DISTURB THE SURFACE LAYER WITHIN THE DRIP-LINE OF ANY TREE WITHOUT THE PRIOR WRITTEN APPROVAL OF TCCS.
5. DO NOT SEVER ROOTS >30mm DIAMETER CLOSER THAN HALFWAY FROM THE DRIP-LINE TO THE TRUNK.
6. HAND EXCAVATE TO A DEPTH OF 300mm TO LOCATE ROOTS BEFORE COMMENCING MACHINE EXCAVATION.
7. CUT ROOTS CLEANLY WITH EQUIPMENT SPECIFICALLY DESIGNED FOR PRUNING ROOTS.
8. PROTECT ANY EXPOSED ROOTS FROM DESICCATION. KEEP LIGHTLY WATERED OR COVER WITH MOIST HESSIAN. AFTER REPLACEMENT OF TOPSOIL REGULARLY WATER TREES UNTIL REESTABLISHED.

CONDITION AND RESTORATION

1. PRIOR TO COMMENCEMENT NOTIFY TCCS OF COMMENCEMENT OF WORK AND UNDERTAKE A JOINT CONDITION SURVEY.
2. AT THE COMPLETION OF WORK ENSURE THAT THE CONDITION OF ALL VEGETATION IS CONSISTANT WITH THE INITIAL CONDITION SURVEY.
3. UNDERTAKE A JOINT CONDITION SURVEY AT COMPLETION OF WORKS AND IMPLEMENT ANY DIRECTIVE FROM TCCS.
4. IF THE GRASS COVER REQUIRES IMPROVEMENT LIGHTLY CULTIVATE THE SOIL TO 50mm. ADD 50mm OF TYPE 9B TOPSOIL AND GRADE EVENLY. ADD NPK FERTISER AT 40g/m². LAY TURF. WATER AND MAINTAIN UNTIL ESTABLISHED.
5. DAMAGED TREES SHALL BE ASSESSED BY TCCS AND REPAIRED OR REPLACED BY THE CONTRACTOR AS DIRECTED.

NOT FOR CONSTRUCTION

DRAWN: F.CF-LOU DESIGNED: F.CF-LOU JOB MANAGER: D.FIELD VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
6	FOR DISCUSSION	RC		DF	21.09.18
7	WORKS APPROVAL	RC		DF	11.04.19
8	WORKS APPROVAL	RC		DF	17.04.19
9	DRAFT WORKS APPROVAL	JC		DF	30.04.20
10	WORKS APPROVAL	JC		DF	14.05.20
11	TEMPORARY PATHWAY	JC		DF	01.07.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS LANDSCAPE MANAGEMENT AND PROTECTION PLAN

JOB NUMBER: CR172699

DRAWING NUMBER: C011 REVISION: 11

DRAWING SHEET SIZE : A1

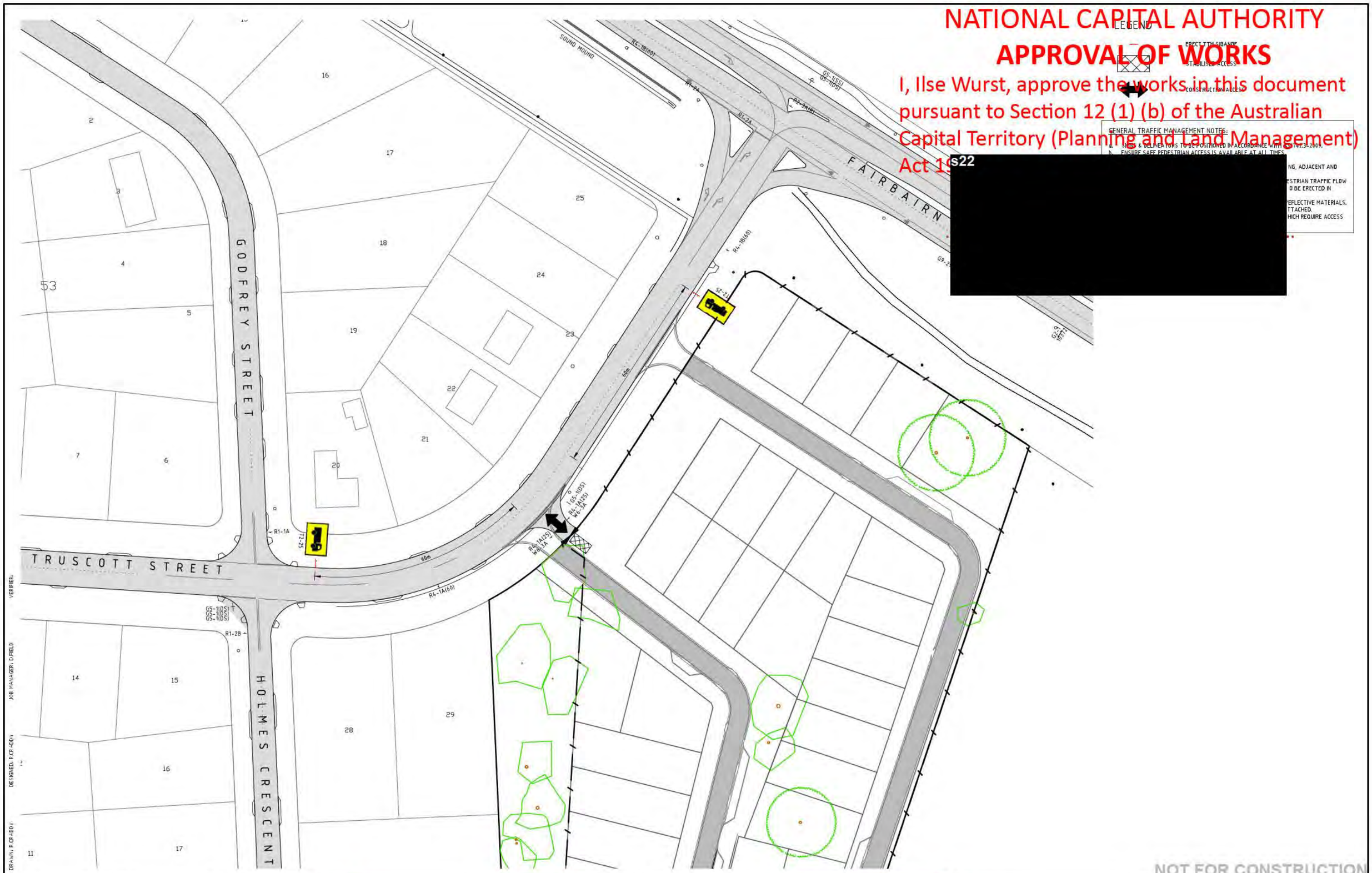
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 19[redacted]

s22



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3	FOR INFORMATION	RC		DF	31.08.18
4	FOR DISCUSSION	RC		DF	21.09.18
5	WORKS APPROVAL	RC		DF	11.04.19
6	WORKS APPROVAL	RC		DF	17.04.19
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	WORKS APPROVAL	JC		DF	14.05.20

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PROJECT: DEFENSE HOUSING AUSRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS CONCEPT TEMPORARY TRAFFIC MANAGEMENT PLAN - GENERAL CONSTRUCTION

JOB NUMBER: CR172699

DRAWING NUMBER: C012 REVISION: 8

DRAWING SHEET SIZE = A1

VERIFIER: JOB MANAGER: O.FIELD DESIGNED: R.CF-DOY DRAWN: R.CF-DOY

08 Sep, 2020

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APPROVAL OF WORKS

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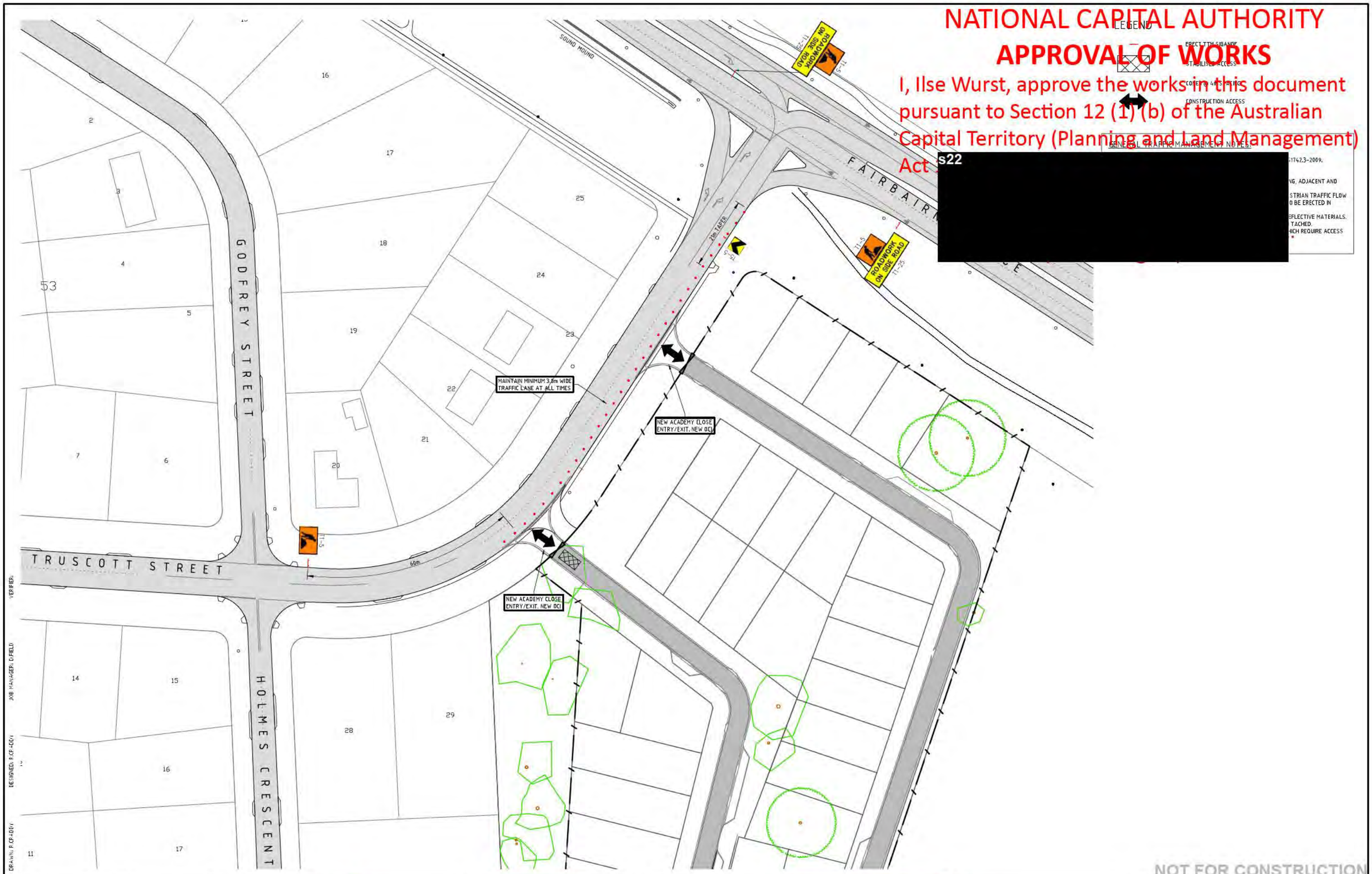

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6	WORKS APPROVAL	RC		DF	17.04.19
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	WORKS APPROVAL	JC		DF	15.04.20

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
CONCEPT TEMPORARY TRAFFIC MANAGEMENT PLAN
- PART LANE CLOSURE

JOB NUMBER: CR172699

DRAWING NUMBER: C013

REVISION: 8

DRAWING SHEET SIZE = A1

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4	FOR INFORMATION	RC		DF	31.08.18
5	FOR DISCUSSION	RC		DF	21.09.18
6	WORKS APPROVAL	RC		DF	11.04.19
7	WORKS APPROVAL	JW		DF	16.04.19
8	DRAFT WORKS APPROVAL	JC		DF	30.04.20
9	WORKS APPROVAL	JC		DF	14.05.20

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
VEHICLE TURNING TEMPLATES

JOB NUMBER: CR172699

DRAWING NUMBER: C020

REVISION: 9

DRAWING SHEET SIZE = A1

08 Sep, 2020

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4	FOR INFORMATION	RC		DF	31.08.18
5	FOR DISCUSSION	RC		DF	21.09.18
6	WORKS APPROVAL	RC		DF	11.04.19
7	WORKS APPROVAL	JW		DF	16.04.19
8	DRAFT WORKS APPROVAL	JC		DF	30.04.20
9	WORKS APPROVAL	JC		DF	14.05.20

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
VEHICLE TURNING TEMPLATES

JOB NUMBER: CR172699

DRAWING NUMBER: C021

REVISION: 9

DRAWING SHEET SIZE = A1

08 Sep, 2020

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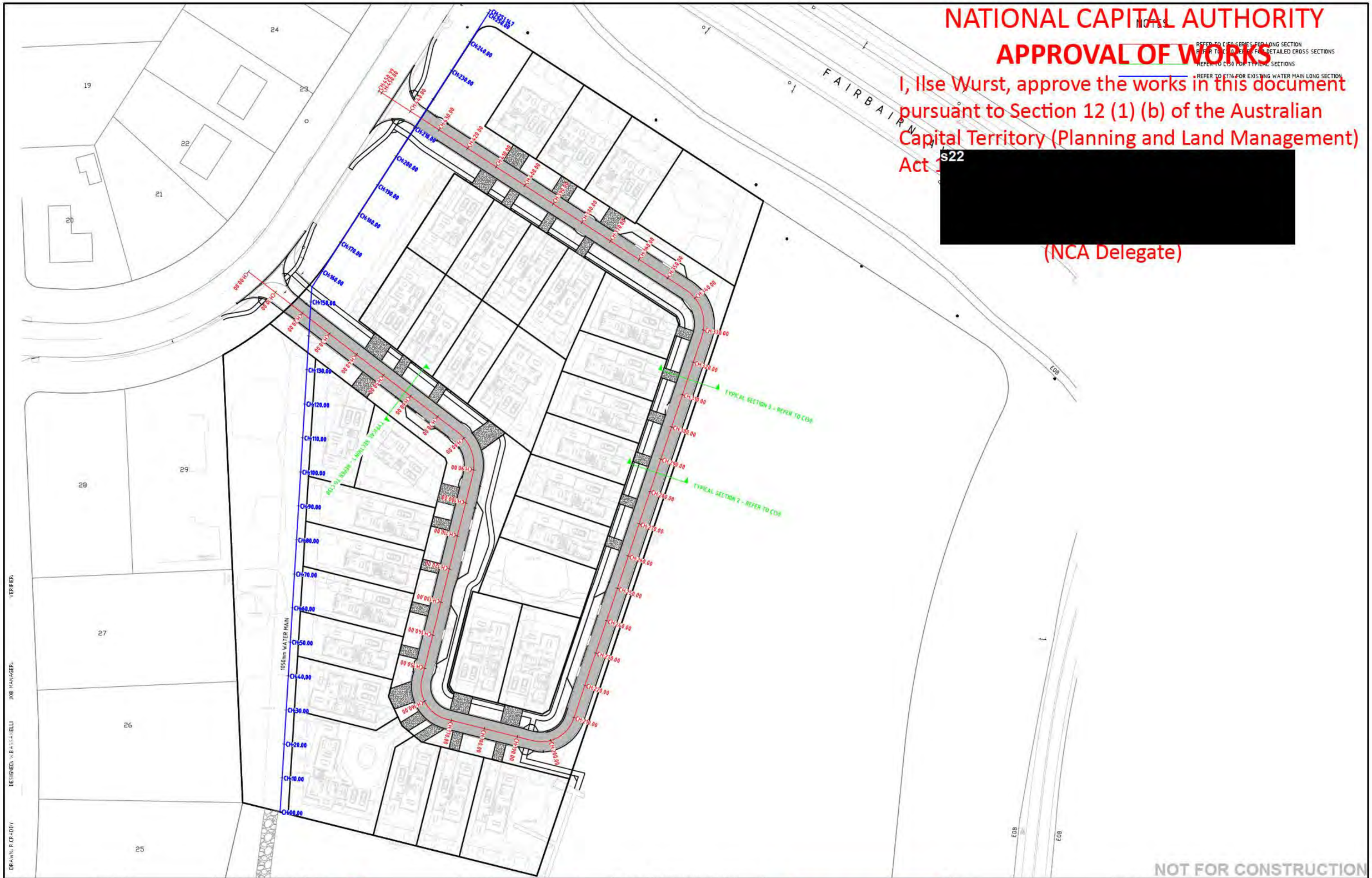

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3	FOR DISCUSSION	RC		DF	12.10.18
4	WORKS APPROVAL	RC		DF	11.04.19
5	WORKS APPROVAL	RC		DF	17.04.19
6	UPDATED BLOCKS	RC		DF	04.11.19
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	WORKS APPROVAL	JC		DF	14.05.20

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
GENERAL ARRANGMENT PLAN

JOB NUMBER: CR172699

DRAWING NUMBER: C050 REVISION: 8

DRAWING SHEET SIZE = A1

DRAWN: F.CIFALDY DESIGNED: M.BASSANELLI JOB MANAGER: VERIFIER:

08 Sep, 2020

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s22 [redacted]
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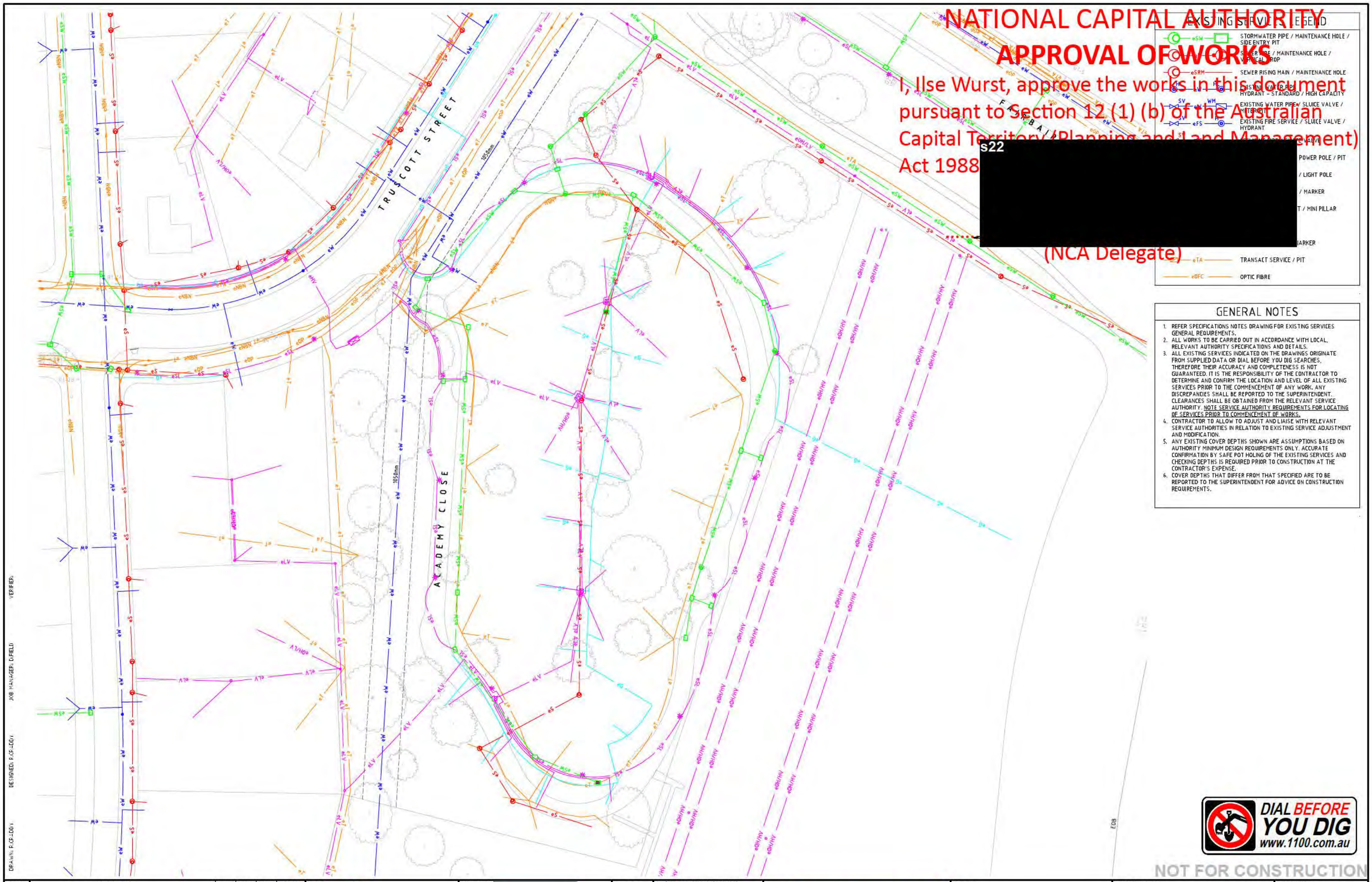

DRAWN: R.CRADDY DESIGNED: R.CRADDY JOB MANAGER: D.FIELD VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	FOR INFORMATION	RC		DF	31.08.18
5	FOR DISCUSSION	RC		DF	21.09.18
6	FOR DISCUSSION	RC		DF	12.10.18
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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXISTING SERVICES PLAN

JOB NUMBER: CR172699
DRAWING NUMBER: C070
REVISION: 9
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
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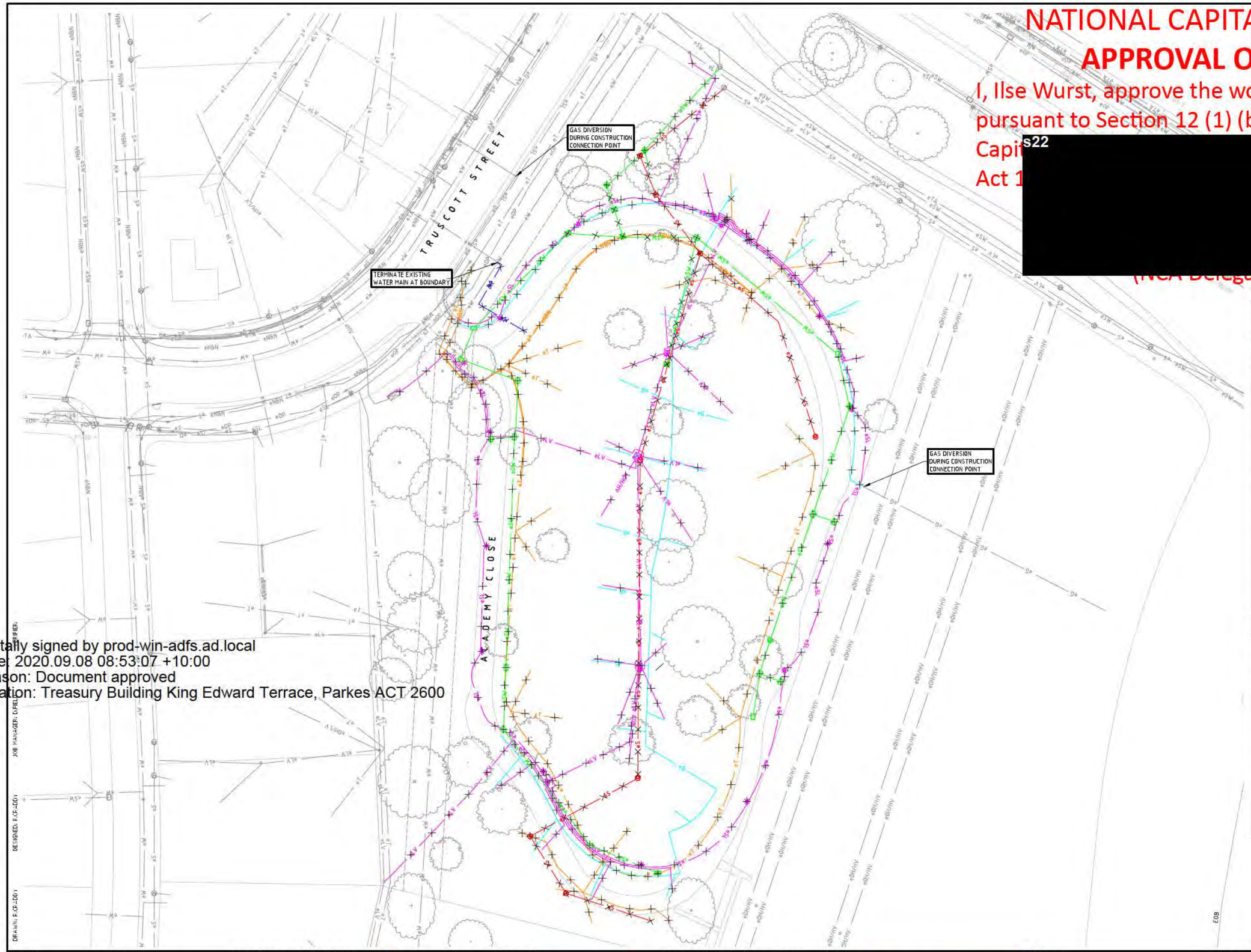
(NCA Delegate)

s22

Digitally signed by prod-win-adfs.ad.local
Date: 2020.09.08 08:53:07 +10:00
Reason: Document approved
Location: Treasury Building King Edward Terrace, Parkes ACT 2600



EXISTING SERVICES TO BE DEMOLISHED

- STORMWATER PIPE / MAINTENANCE HOLE / SIDE ENTRY PIT
- SEWER PIPE / MAINTENANCE HOLE / VERTICAL DROP
- EXISTING WATER PIPE HYDRANT - STANDARD / HIGH CAPACITY
- EXISTING WATER PIPE / SLUICE VALVE / METER PIT
- EXISTING FIRE SERVICE / SLUICE VALVE / HYDRANT
- EFFLUENT PIPE / SLUICE VALVE
- [redacted]
- OPTIC FIBRE

NEW SERVICES DIVERSION

- GAS SERVICE

EXISTING SERVICES

- STORMWATER PIPE / MAINTENANCE HOLE / SIDE ENTRY PIT
- SEWER PIPE / MAINTENANCE HOLE / VERTICAL DROP
- EXISTING WATER PIPE HYDRANT - STANDARD / HIGH CAPACITY
- EXISTING WATER PIPE / SLUICE VALVE / METER PIT
- EXISTING FIRE SERVICE / SLUICE VALVE / HYDRANT
- EFFLUENT PIPE / SLUICE VALVE
- ELECTRICAL SERVICE / POWER POLE / PIT
- STREETLIGHT SERVICE / LIGHT POLE
- GAS SERVICE / VALVE / MARKER
- TELSTRA SERVICE / PIT / MINI PILLAR
- OPTUS SERVICE / PIT
- TRANSACT SERVICE / PIT
- OPTIC FIBRE

GENERAL NOTES

1. REFER SPECIFICATIONS NOTES DRAWING FOR EXISTING SERVICES GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL, RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. ALL EXISTING SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY. NOTE SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS.
4. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATION.
5. ANY EXISTING COVER DEPTHS SHOWN ARE ASSUMPTIONS BASED ON AUTHORITY MINIMUM DESIGN REQUIREMENTS ONLY. ACCURATE CONFIRMATION BY SAFE POT HOLING OF THE EXISTING SERVICES AND CHECKING DEPTHS IS REQUIRED PRIOR TO CONSTRUCTION AT THE CONTRACTOR'S EXPENSE.
6. COVER DEPTHS THAT DIFFER FROM THAT SPECIFIED ARE TO BE REPORTED TO THE SUPERINTENDENT FOR ADVICE ON CONSTRUCTION REQUIREMENTS.

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JOB MANAGER: C.FIELDER
DESIGNED: P.CP-LOGY
DRAWN: P.CP-LOGY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	RC		DF	23.03.18
2	FOR DISCUSSION	RC		DF	12.10.18
3	WORKS APPROVAL	RC		DF	11.04.19
4	WORKS APPROVAL	RC		DF	17.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia
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Email canberra@northrop.com.au ABN 81 094 433 100

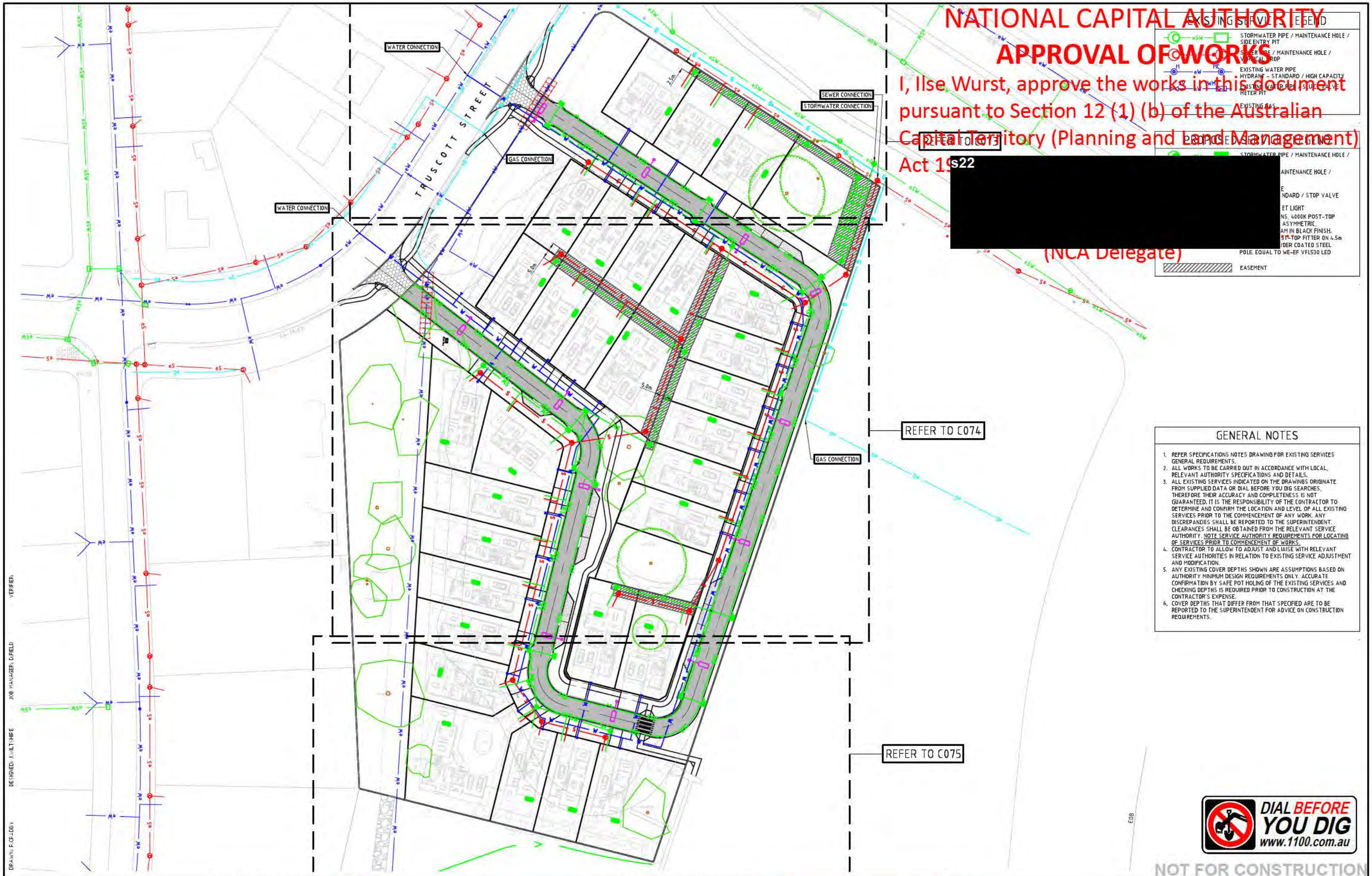
PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXISTING SERVICES
TO BE REMOVED/DEMOLISHED

JOB NUMBER: CR172699
DRAWING NUMBER: C071
REVISION: 6
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 19[redacted]
(NCA Delegate)



REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	WORKS APPROVAL	RC		DF	11.04.19
5	WORKS APPROVAL	RC		DF	17.04.19
6	PROGRESS	RC		DF	07.11.19
7	PROGRESS	RC		DF	25.11.19
8	DRAFT WORKS APPROVAL	JC		DF	30.04.20
9	WORKS APPROVAL	JC		DF	14.05.20

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PROJECT
DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
COMBINED NEW SERVICES PLAN
KEY PLAN
SHEET 1 OF 4

JOB NUMBER CR172699
DRAWING NUMBER C072
REVISION 9
DRAWING SHEET SIZE = A1

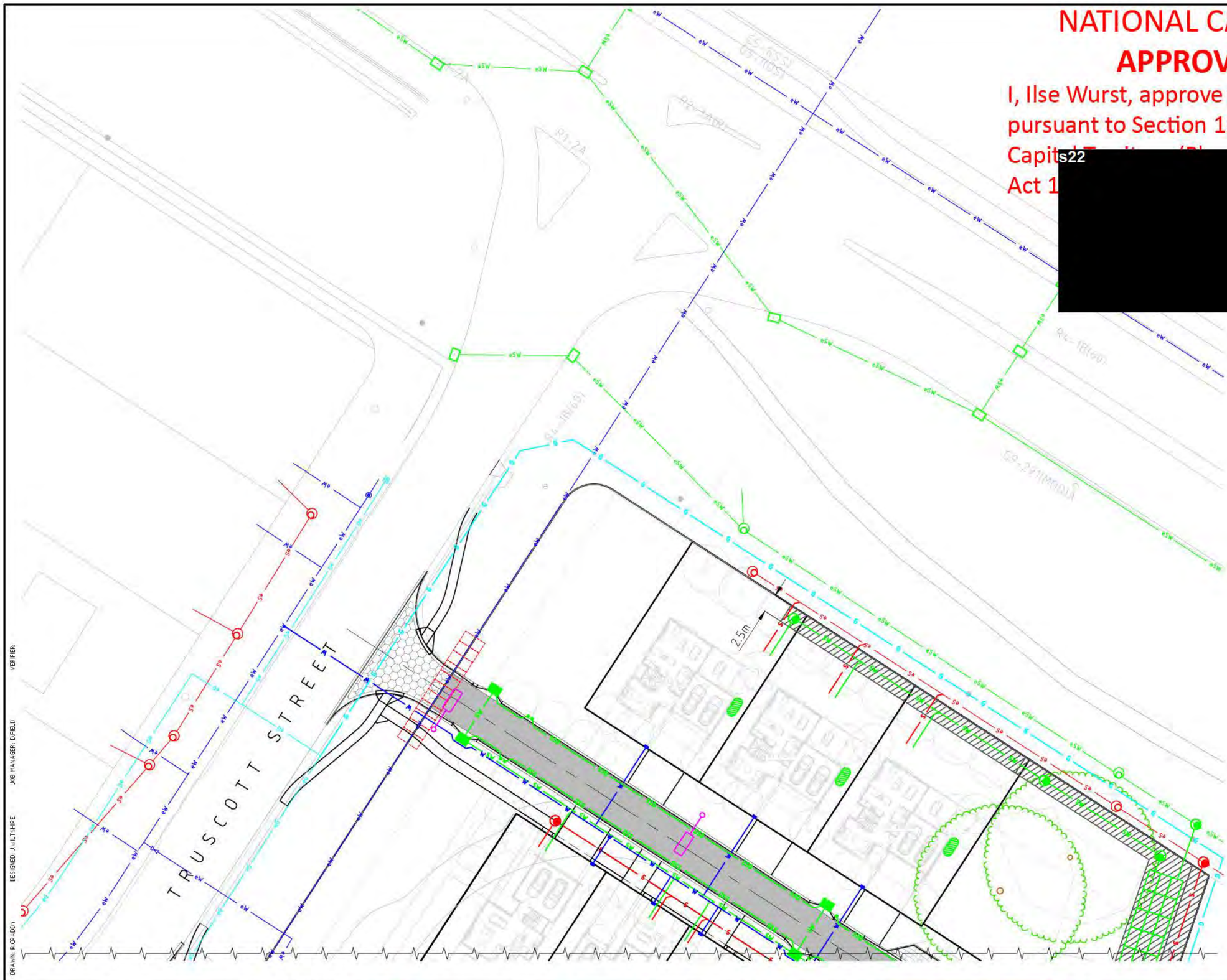
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1

s22 [redacted]



NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
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s22 [redacted]

NOT FOR CONSTRUCTION

DRAWN: F.CR-LOU DESIGNED: J.WILT-HIRE JOB MANAGER: D.FIELD VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	WORKS APPROVAL	RC		DF	11.04.19
5	WORKS APPROVAL	RC		DF	17.04.19
6	PROGRESS	RC		DF	07.11.19
7	PROGRESS	RC		DF	26.11.19
8	DRAFT WORKS APPROVAL	JC		DF	30.04.20
9	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia
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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
COMBINED NEW SERVICES PLAN
SHEET 3 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C074
REVISION: 9
DRAWING SHEET SIZE = A1

08 Sep, 2020

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APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 19

s22 [redacted]

EXISTING SERVICES LEGEND

- STORMWATER PIPE / MAINTENANCE HOLE / SIDE ENTRY PIT
- SEWER PIPE / MAINTENANCE HOLE / VERTICAL DROP
- EXISTING WATER PIPE
- HYDRANT - STANDARD / HIGH CAPACITY
- EXISTING WATER VALVE / STOP VALVE
- METER PIT

PROPOSED SERVICES LEGEND

- MAINTENANCE HOLE /
- ICE HOLE /
- STOP VALVE
- POST-TOP
- TRIC.
- CK FINISH.
- ITTER ON 4.5m
- TED STEEL
- FL530 LED

GENERAL NOTES

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DRAWN: R.CRUDDI DESIGNED: A.WILT-HIRE JOB MANAGER: D.FIELD VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	WORKS APPROVAL	RC		DF	11.04.19
5	WORKS APPROVAL	RC		DF	17.04.19
6	PROGRESS	RC		DF	07.11.19
7	PROGRESS	RC		DF	26.11.19
8	DRAFT WORKS APPROVAL	JC		DF	30.04.20
9	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia
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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
COMBINED NEW SERVICES PLAN
SHEET 4 OF 4

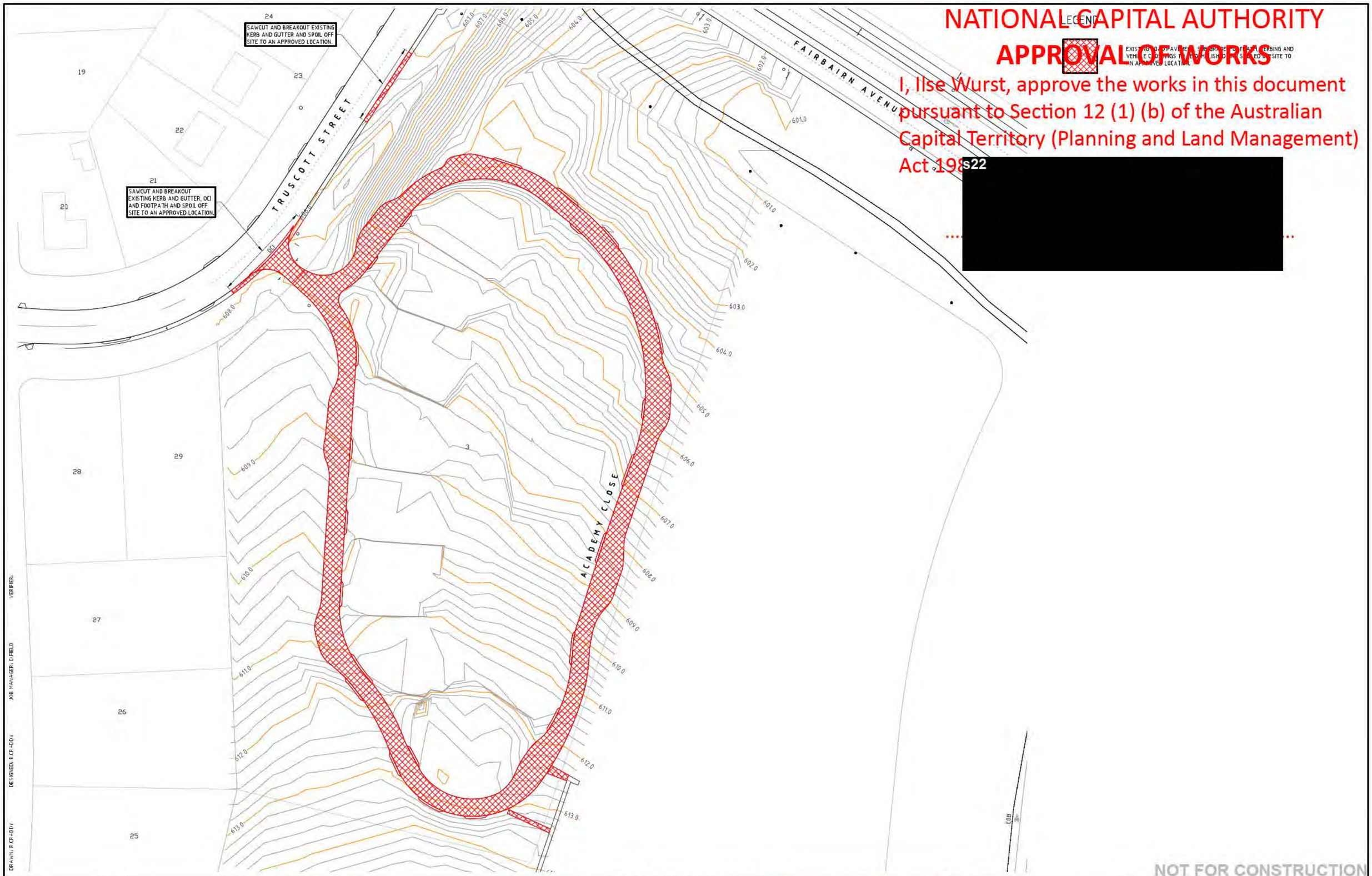
JOB NUMBER: CR172699
DRAWING NUMBER: C075
REVISION: 9
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 198s22 [redacted]



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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR INFORMATION	RC		DF	05.09.18
2	WORKS APPROVAL	RC		DF	11.04.19
3	DRAFT WORKS APPROVAL	JC		DF	30.04.20
4	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
DEMOLITION PLAN

JOB NUMBER: CR172699

DRAWING NUMBER: C080

REVISION: 4

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

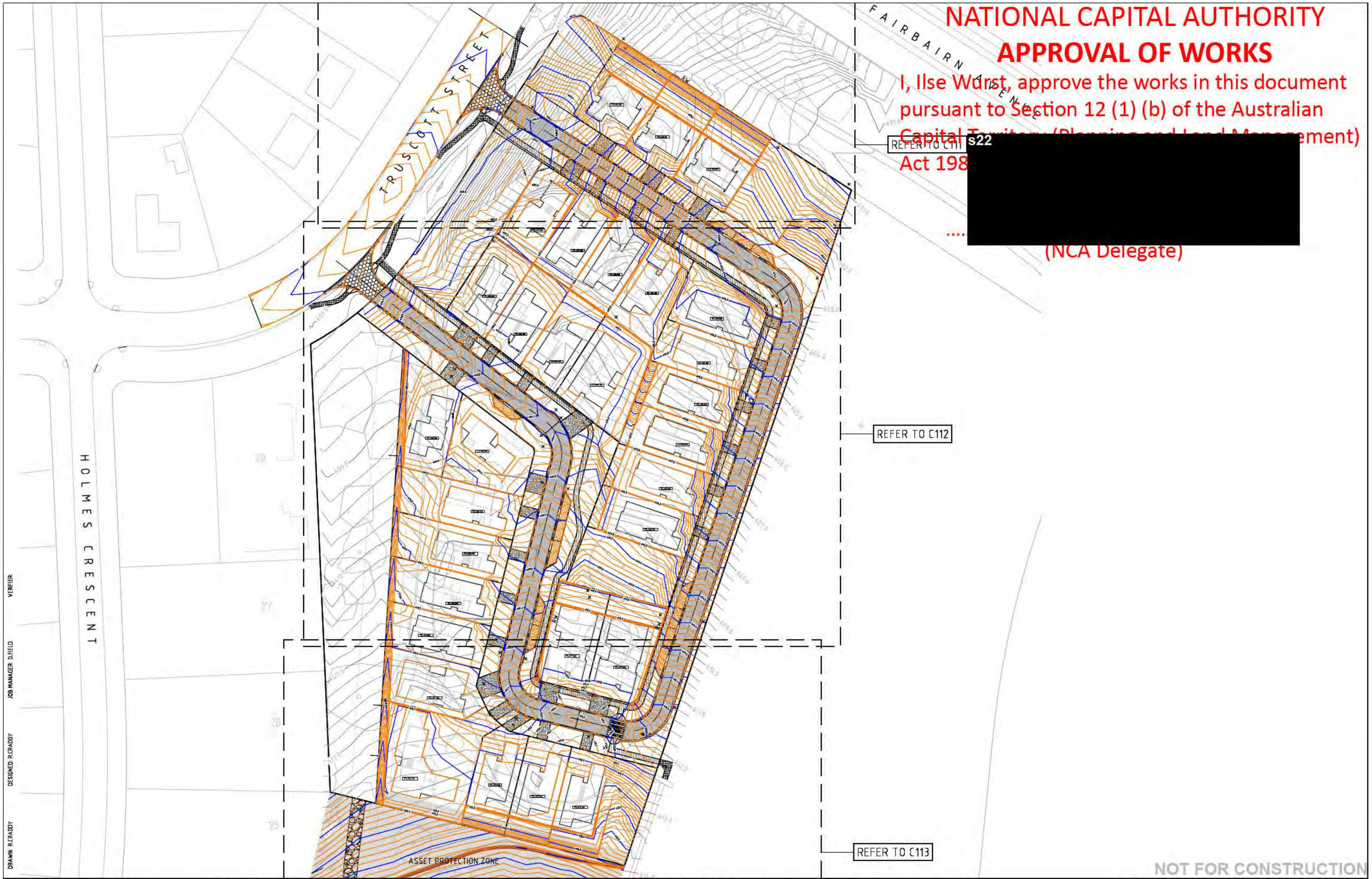
APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 198[redacted]

s22

.... [redacted]

(NCA Delegate)



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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	WORKS APPROVAL	RC		DF	11.04.19
5	WORKS APPROVAL	RC		DF	17.04.19
6	PROGRESS	RC		JW	26.11.19
7	DRAFT WORKS APPROVAL	RC		DF	30.04.20
8	WORKS APPROVAL	RC		DF	14.05.20
9	WORKS APPROVAL	JC		DF	26.05.20

CLIENT: DHA Defence Housing Australia

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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: GRADING
KEY PLAN
SHEET 1 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C110

REVISION: 9

DRAWING SHEET SIZE = A1

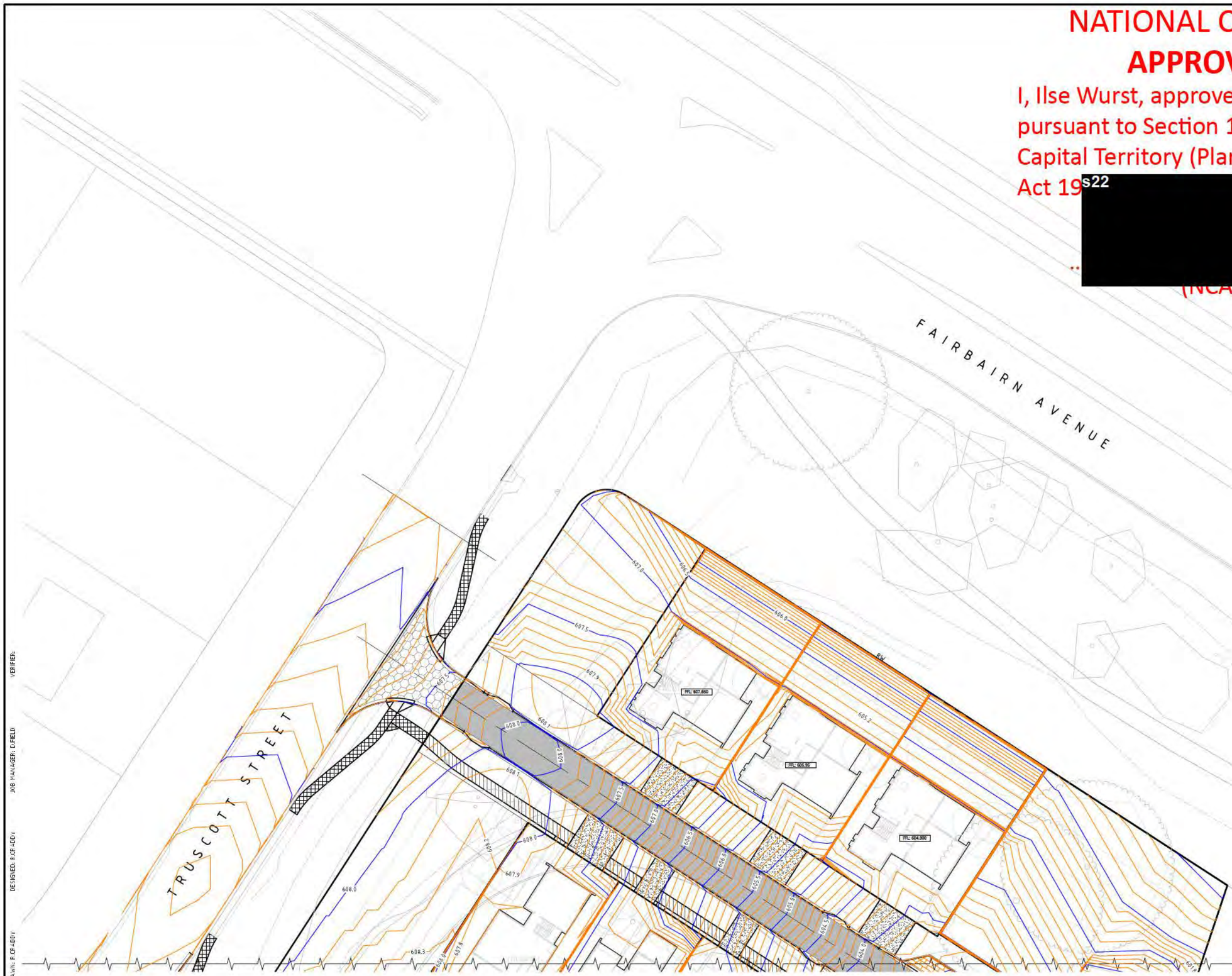
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 19s22 [redacted]

(NCA Delegate)



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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	FOR INFORMATION	RC		DF	04.09.18
4	WORKS APPROVAL	RC		DF	11.04.19
5	WORKS APPROVAL	RC		DF	17.04.19
6	PROGRESS	RC		JW	26.11.19
7	DRAFT WORKS APPROVAL	RC		DF	30.04.20
8	WORKS APPROVAL	RC		DF	14.05.20

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

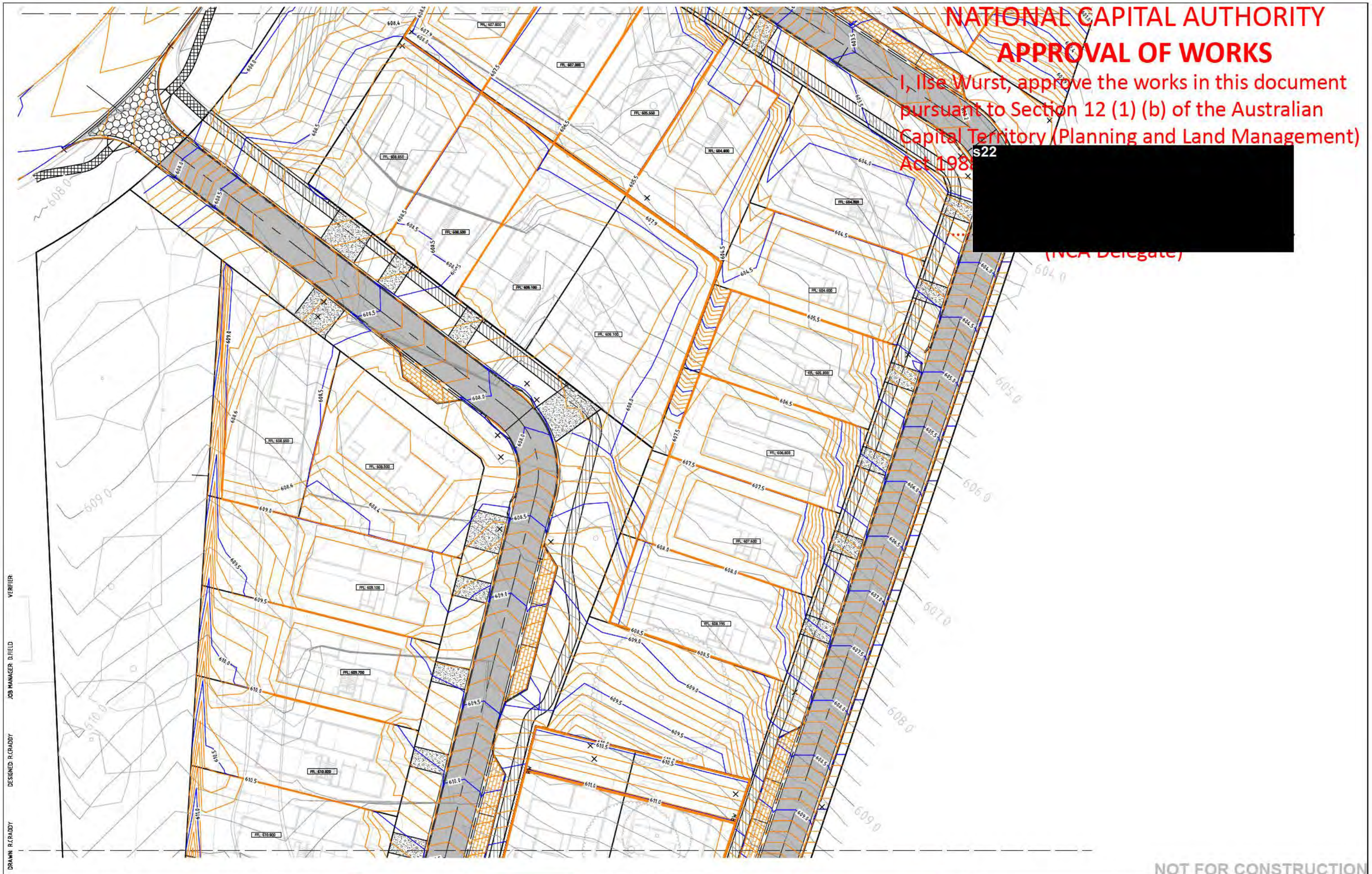
DRAWING TITLE: GRADING PLAN
SHEET 2 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C111 REVISION: 8

DRAWING SHEET SIZE = A1

08 Sep, 2020



REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	WORKS APPROVAL	RC		DF	11.04.19
5	WORKS APPROVAL	RC		DF	17.04.19
6	PROGRESS	RC		JW	26.11.19
7	DRAFT WORKS APPROVAL	RC		DF	30.04.20
8	WORKS APPROVAL	RC		DF	14.05.20
9	WORKS APPROVAL	JC		DF	26.05.20

CLIENT: DHA Defence Housing Australia

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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: GRADING PLAN SHEET 3 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C112

REVISION: 9

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 19[redacted]

s22

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	FOR INFORMATION	RC		DF	04.09.18
4	WORKS APPROVAL	RC		DF	11.04.19
5	WORKS APPROVAL	RC		DF	17.04.19
6	PROGRESS	RC		JW	26.11.19
7	DRAFT WORKS APPROVAL	RC		DF	30.04.20
8	WORKS APPROVAL	RC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: GRADING PLAN
SHEET 4 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C113

REVISION: 8

DRAWING SHEET SIZE = A1

DRAWN: F.CIFADDY DESIGNED: F.CIFADDY JOB MANAGER: D.FIELLI VERIFIER:

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1

s22 [redacted]

(NCA Delegate)

Ranges

				2D Area (m^2)	Volume (m^3)
				21.4	0.6
				941.8	4.85.7
				1472.9	1552.1
				2607.5	3651.6
		-1.000	0.000	5539.7	7105.0
6		0.000	1.000	14113.8	5978.8
7		1.000	2.000	1251.9	301.9
8		2.000	3.000	1.6	0.2

CUT/FILL SUMMARY

NAME	CUT FACTOR	FILL FACTOR	2D AREA	CUT	FILL	NET
VOLUMES	1.000	1.000	25950.593sq.m	12794.681 Cu. M.	6280.867 Cu. M.	6513.814 Cu. M.<Cut>
TOTALS			25950.593sq.m	12794.681 Cu. M.	6280.867 Cu. M.	6513.814 Cu. M.<Cut>

NOT FOR CONSTRUCTION

DRAWN: J.CLANCY
DESIGNED: J.CLANCY
JOB MANAGER: D.FIELD
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	WORKS APPROVAL	JC		DF	02.06.20

CLIENT: DHA Defence Housing Australia

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PLAN SCALE 1:500 @ A1

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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: BULK EARTHWORKS VOLUMES PLAN

JOB NUMBER: CR172699

DRAWING NUMBER: C115

REVISION: 1

DRAWING SHEET SIZE = A1

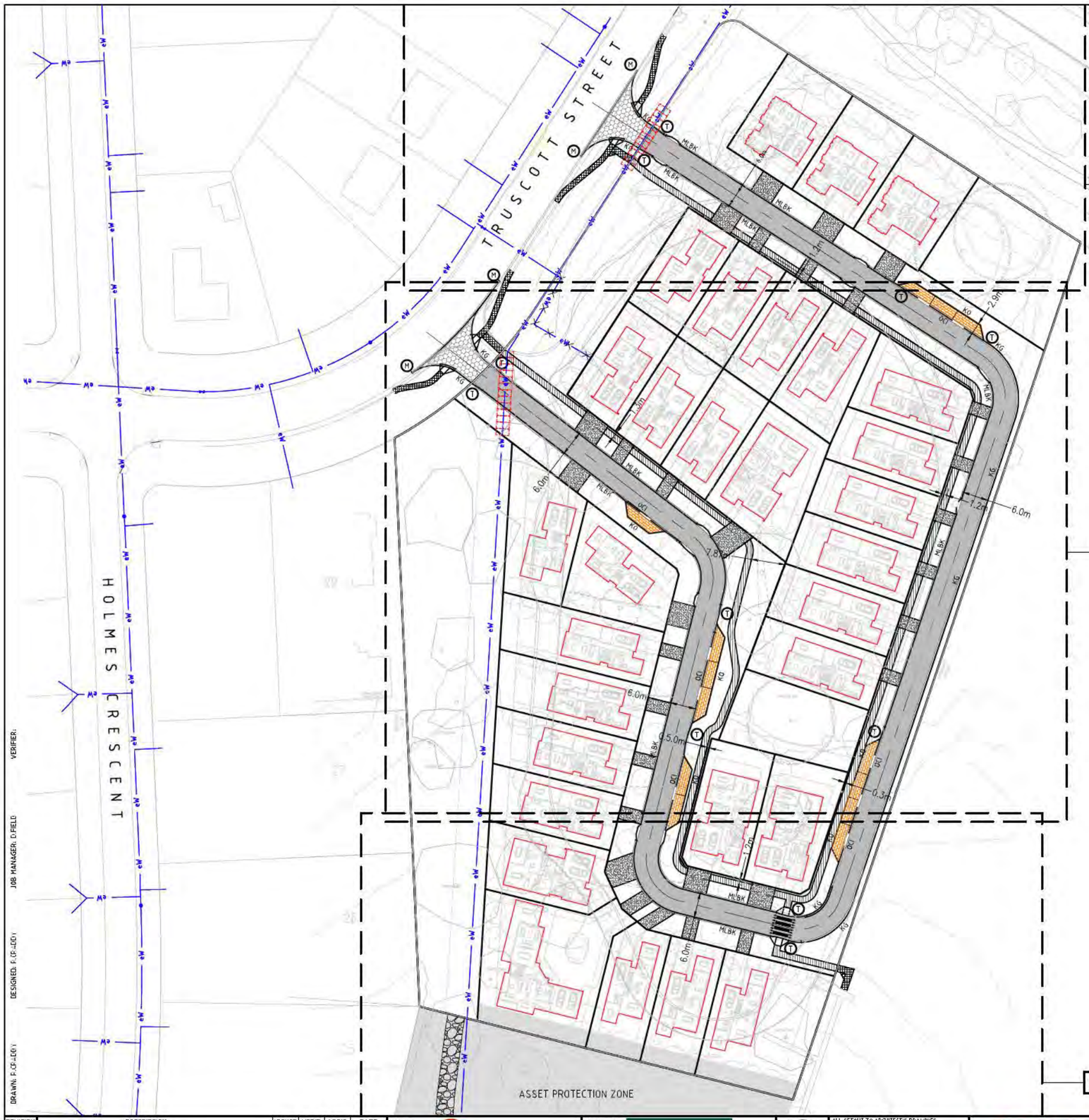
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 198[redacted]

(NCA Delegate)



PAVEMENT LEGEND

NOTE:
AC PAVEMENTS TO BE CONSTRUCTED UP TO THE PRIME COAT PRIOR TO HOUSING CONSTRUCTION, PROVIDE COLD MIX TRANSITION (MAX 40) TO EDGE OF PAVEMENT TO PROTECT KERBS AND ALLOW GOOD ACCESS.
AC WEARING COURSE IS TO BE PLACED AFTER HOUSING CONSTRUCTION HAS BEEN COMPLETED.

ASPHALT ROAD
40mm AC10 WEARING COURSE
PRIME & TACK COAT BASE MATERIAL
100mm DGB20 BASE MATERIAL COMPACTED TO 98% MMDD
200mm DGS40 SUBBASE MATERIAL COMPACTED TO 95% MMDD
SUBGRADE MATERIAL COMPACTED TO 95% MMDD

ASPHALT/BRICK PAVER

OFFSITE PEDESTRIAN FOOTPATH
(REFER OFF SITE WORKS PLAN C125-C127)
100mm N32 CONCRETE BROOM FINISH
SL82 CENTRALLY PLACED
150mm DGB20 BASE MATERIAL COMPACTED TO 98% MMDD
SUBGRADE MATERIAL COMPACTED TO 95% MMDD

CONCRETE ON-STREET PARKING
(REFER OFF SITE WORKS PLAN C125-C127)
150mm N32 CONCRETE,
SL82 REINFORCEMENT (CENTRALLY PLACED)
STENCIL FINISH
100mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

KG	NEW KERB AND GUTTER
MLBK	NEW MODIFIED LAYBACK KERB
MLBK	NEW MODIFIED LAYBACK KERB
(T)	3m KERB TRANSITION
(M)	MATCH TO EXISTING LEVELS AND MAKE GOOD

SERVICES LEGEND

eW	EXISTING WATER MAIN
eW	EXISTING WATER MAIN TO BE REMOVED
	EXISTING FIRE HYDRANT
	EXISTING STOP VALVE
	CAPPING SLAB OVER EXISTING 1050DN WATER MAIN

NOTES

ASPHALTIC CONCRETE (AC) MIX DESIGN

1. BITUMEN TO BE CLASS 320. UNLESS OTHERWISE NOTED.
2. EACH AC MIX TO SATISFY REQUIREMENTS OF THE STANDARD SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS
3. CONTRACTOR TO PROVIDE DETAILS ON ALL MIX DESIGNS PRIOR TO COMMENCING WORK. DETAILS SHALL CONSIST OF RESULTS OF TRIAL BATCHES AND NATA TEST RESULTS OF SIMILAR MIXES AND LIST ALL MIX PROPERTIES SPECIFIED IN THE BASIC SPECIFICATION. NO ASPHALTIC WORK TO COMMENCE UNTIL WRITTEN APPROVAL OF ALL MIXES OBTAINED FROM SUPERINTENDENT. (REFER HOLD POINT 4.7)

GENERAL FILL

1. THICKNESS SPECIFIED IS MINIMUM REQUIRED. USE GENERAL FILL WON FROM EXCAVATION IF AVAILABLE, OR IMPORTED FILL CBR ≥ 6 PLACED IN MAXIMUM 200mm LAYERS COMPACTED TO 95% MMDD, BETWEEN STRIPPED SURFACES AND NOMINATED PAVEMENT SUBGRADE LEVEL.

TESTING

ALLOW FOR FOLLOWING:
(REFER ALSO TO SPECIFICATION)

1. COMPACTION TESTS ON EACH PAVEMENT LAYER - ONE PER 500m²
2. TESTS VERIFYING ALL SPECIFIED MATERIAL PROPERTIES OF SELECT FILL, DGS - 20 AND DGB - 20, (1 SAMPLE FOR EACH PAVEMENT LAYER)
3. PLANT SAMPLES VERIFYING MIX PROPERTIES OF SUPPLIED ASPHALTIC CONCRETE . (ALLOW 6No)
4. DENSITY TESTS ON ASPHALTIC CONCRETE . SURFACING (ALLOW 6 No LOTS)
5. CONCRETE COMPRESSION & SLUMP TESTS . (ALLOW 10No).
6. SOAKED CBR TESTS TO VERIFY PAVEMENT SUBGRADE (6 No.)

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
11	PROGRESS	RC		JW	26.11.19
12	PROGRESS	JW		DF	16.03.20
13	DRAFT WORKS APPROVAL	JC		DF	30.04.20
14	WORKS APPROVAL	JC		DF	14.05.20
15	WORKS APPROVAL	JC		DF	26.05.20
16	WORKS APPROVAL	JC		DF	01.07.20

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL

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NORTHROP
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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: SITE WORKS AND PAVEMENT PLAN
KEY PLAN
SHEET 1 OF 4

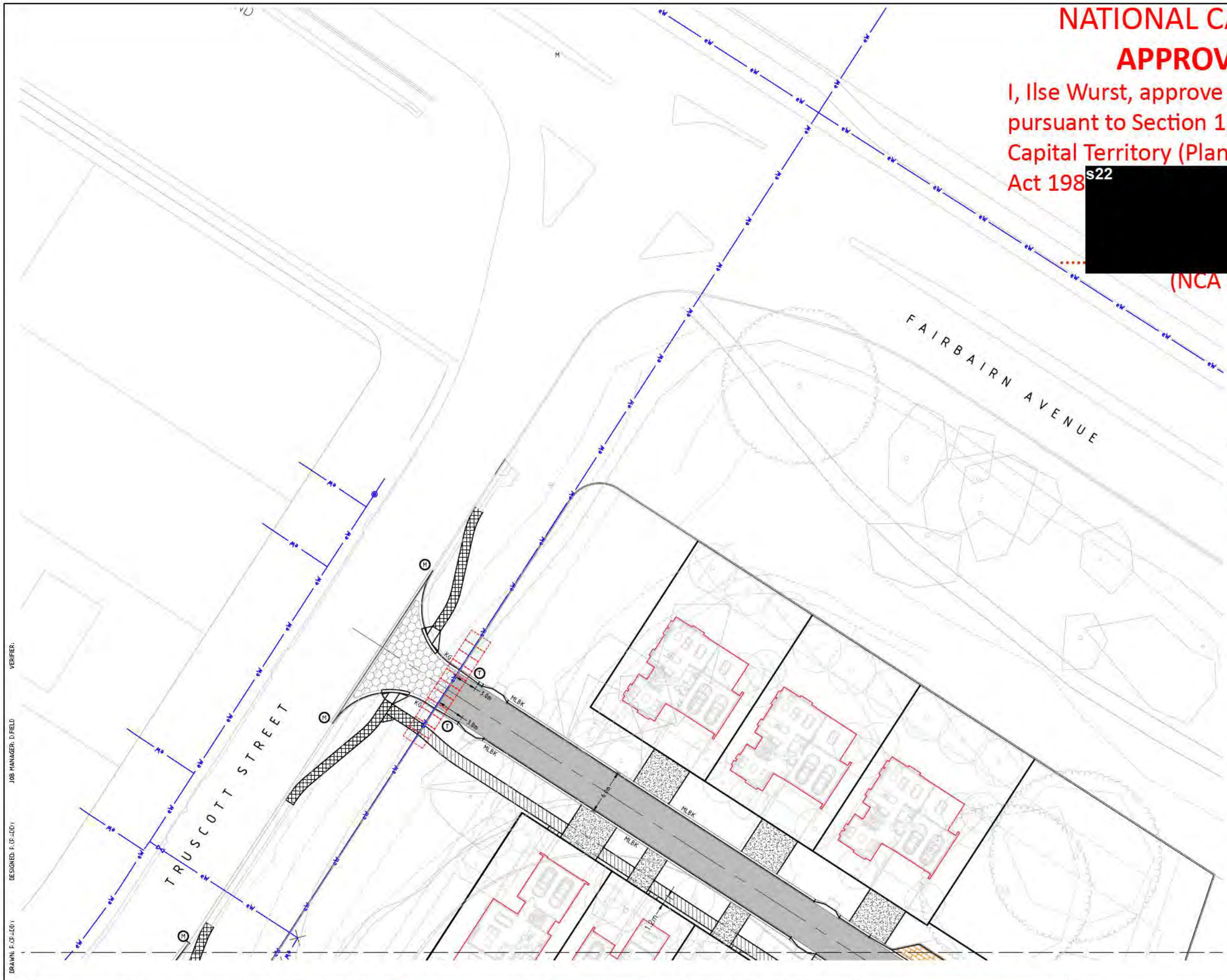
JOB NUMBER: CR172699
DRAWING NUMBER: C120
REVISION: 16
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1)(b) of the Australian Capital Territory (Planning and Land Management) Act 198[redacted]

(NCA Delegate)



PAVEMENT LEGEND

ASPHALT ROAD
40mm AC10 WEARING COURSE
PRIME + TACK OFT BITUMINOUS
100mm DGB20 BASE MATERIAL COMPACTED TO 98% MMDD
280mm DGS40 SUBBASE MATERIAL COMPACTED TO 98% MMDD
SUBGRADE MATERIAL COMPACTED TO 95% MMDD

ENTRY/EXIT
(REFER OFF SITE WORKS PLAN C125-C127)
150mm N32 CONCRETE
SL82 REINFORCEMENT (CENTRALLY PLACED)
STENCIL FINISH
100mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

OFFSITE PEDESTRIAN FOOTPATH
(REFER OFF SITE WORKS PLAN C125-C127)
100mm N32 CONCRETE BROOM FINISH
SL82 CENTRALLY PLACED
150mm DGB20 BASE MATERIAL COMPACTED TO 98% MMDD
SUBGRADE MATERIAL COMPACTED TO 95% MMDD

CONCRETE ON-STREET PARKING
(REFER OFF SITE WORKS PLAN C125-C127)
150mm N32 CONCRETE.
SL82 REINFORCEMENT (CENTRALLY PLACED)
STENCIL FINISH
100mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

eW — EXISTING WATER MAIN
eW — EXISTING WATER MAIN TO BE REMOVED
EXISTING FIRE HYDRANT
EXISTING STOP VALVE
1.5m / 3.0m — CAPPING SLAB OVER EXISTING 1050DN WATER MAIN.
150mm THICK N32 CONCRETE
SLB2 CENTRALLY PLACED
100mm GRAVEL
3m x 1.5m
KG — NEW KERB AND GUTTER
MLBK — NEW MODIFIED LAYBACK KERB
MLBK — NEW MODIFIED LAYBACK KERB
T — 3m KERB TRANSITION
M — MATCH TO EXISTING LEVELS AND MAKE GOOD

NOTES

ASPHALTIC CONCRETE (AC) MIX DESIGN

1. BITUMEN TO BE CLASS 320, UNLESS OTHERWISE NOTED.
2. EACH AC MIX TO SATISFY REQUIREMENTS OF THE STANDARD SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS
3. CONTRACTOR TO PROVIDE DETAILS ON ALL MIX DESIGNS PRIOR TO COMMENCING WORK. DETAILS SHALL CONSIST OF RESULTS OF TRIAL BATCHES AND NATA TEST RESULTS OF SIMILAR MIXES AND LIST ALL MIX PROPERTIES SPECIFIED IN THE BASIC SPECIFICATION. NO ASPHALTIC WORK TO COMMENCE UNTIL WRITTEN APPROVAL OF ALL MIXES OBTAINED FROM SUPERINTENDENT. (REFER HOLD POINT 4.7)

GENERAL FILL

1. THICKNESS SPECIFIED IS MINIMUM REQUIRED. USE GENERAL FILL WON FROM EXCAVATION IF AVAILABLE, OR IMPORTED FILL CBR ≥ 8 PLACED IN MAXIMUM 200mm LAYERS COMPACTED TO 95% MMDD, BETWEEN STRIPPED SURFACES AND NOMINATED PAVEMENT SUBGRADE LEVEL.

TESTING

ALLOW FOR FOLLOWING:
(REFER ALSO TO SPECIFICATION)

1. COMPACTION TESTS ON EACH PAVEMENT LAYER – ONE PER 500m²
2. TESTS VERIFYING ALL SPECIFIED MATERIAL PROPERTIES OF SELECT FILL, DGS – 20 AND DGB – 20, (1 SAMPLE FOR EACH PAVEMENT LAYER)
3. PLANT SAMPLES VERIFYING MIX PROPERTIES OF SUPPLIED ASPHALTIC CONCRETE. (ALLOW 6No)
4. DENSITY TESTS ON ASPHALTIC CONCRETE, SURFACING (ALLOW 6 No LOTS)
5. CONCRETE COMPRESSION & SLUMP TESTS. (ALLOW 10No).
6. SOAKED CBR TESTS TO VERIFY PAVEMENT SUBGRADE (6 No.)

NOT FOR CONSTRUCTION

DRAWN: F.CF-LOO1 | DESIGNED: F.CF-LOO1 | JOB MANAGER: D.FIELD | VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
6	PROGRESS	RC		DF	07.11.19
7	PROGRESS	RC		JW	26.11.19
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9	DRAFT WORKS APPROVAL	JC		DF	30.04.20
10	WORKS APPROVAL	JC		DF	14.05.20
11	WORKS APPROVAL	JC		DF	01.07.20

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close CAMPBELL
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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: SITE WORKS AND PAVEMENT PLAN SHEET 2 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C121
REVISION: 11
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1)(b) of the Australian Capital Territory (Planning and Land Management) Act 198
s22 [redacted]
(NCA Delegate)

PAVEMENT LEGEND

ASPHALT ROAD
40mm AC10 WEARING COURSE
PRIME + TWO COAT BITUMINOUS SEAL
100mm DGS20 BASE MATERIAL COMPACTED TO 98% MMDD
280mm DGS40 SUBBASE MATERIAL COMPACTED TO 98% MMDD
SUBGRADE MATERIAL COMPACTED TO 95% MMDD

ENTRY/EXIT
(REFER OFF SITE WORKS PLAN C125-C127)
150mm N32 CONCRETE
SL82 REINFORCEMENT (CENTRALLY PLACED)
STENCIL FINISH
100mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

OFFSITE PEDESTRIAN FOOTPATH
(REFER OFF SITE WORKS PLAN C125-C127)
100mm N32 CONCRETE BROOM FINISH
SL82 CENTRALLY PLACED
150mm DGB20 BASE MATERIAL COMPACTED TO 98% MMDD
SUBGRADE MATERIAL COMPACTED TO 95% MMDD

CONCRETE ON-STREET PARKING
(REFER OFF SITE WORKS PLAN C125-C127)
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SL82 REINFORCEMENT (CENTRALLY PLACED)
STENCIL FINISH
100mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

eW	EXISTING WATER MAIN
eW	EXISTING WATER MAIN TO BE REMOVED
	EXISTING FIRE HYDRANT
	EXISTING STOP VALVE
1.5m / 3.0m / eW	CAPPING SLAB OVER EXISTING 1050DN WATER MAIN. 150mm THICK N32 CONCRETE SLB2 CENTRALLY PLACED 100mm GRAVEL 3m x 1.5m
KG	NEW KERB AND GUTTER
MLBK	NEW MODIFIED LAYBACK KERB
MLBK	NEW MODIFIED LAYBACK KERB
T	3m KERB TRANSITION
M	MATCH TO EXISTING LEVELS AND MAKE GOOD

NOTES

ASPHALTIC CONCRETE (AC) MIX DESIGN

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GENERAL FILL

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TESTING

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(REFER ALSO TO SPECIFICATION)

1. COMPACTION TESTS ON EACH PAVEMENT LAYER – ONE PER 500m²
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4. DENSITY TESTS ON ASPHALTIC CONCRETE, SURFACING (ALLOW 6 No LOTS)
5. CONCRETE COMPRESSION & SLUMP TESTS. (ALLOW 10No).
6. SOAKED CBR TESTS TO VERIFY PAVEMENT SUBGRADE (6 No.)

NOT FOR CONSTRUCTION

DRAWN: F.CF.LOO1 | DESIGNED: F.CF.LOO1 | JOB MANAGER: D.FIELD | VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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9	DRAFT WORKS APPROVAL	JC		DF	30.04.20
10	WORKS APPROVAL	JC		DF	14.05.20
11	WORKS APPROVAL	JC		DF	01.07.20

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL
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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: SITE WORKS AND PAVEMENT PLAN
SHEET 3 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C122
REVISION: 11
DRAWING SHEET SIZE : A1

08 Sep, 2020

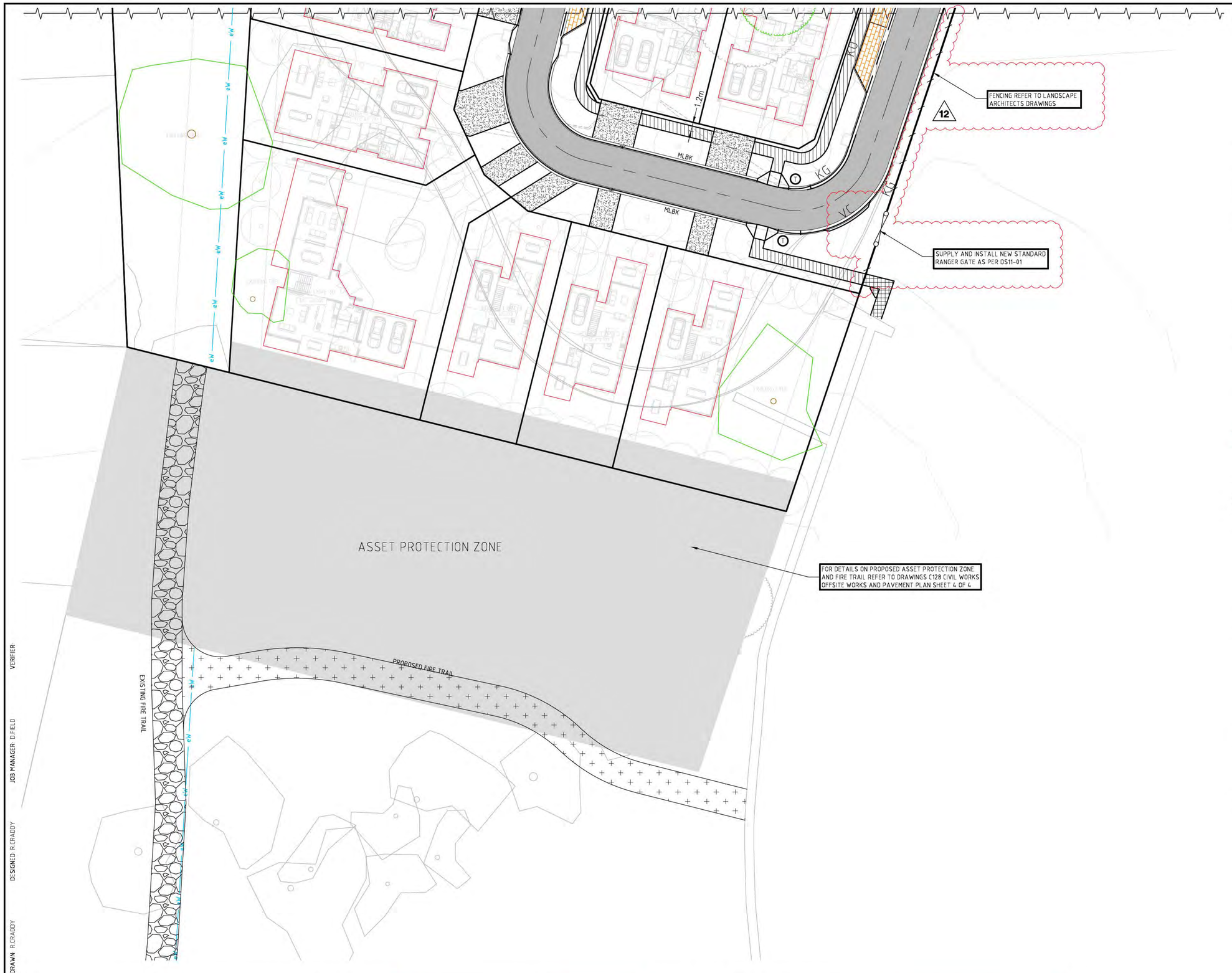
NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988.

s22 [redacted]

(NCA Delegate)



PAVEMENT LEGEND

ASPHALT ROAD
40mm AC10 WEARING COURSE
PRIME & TACK COAT BASE MATERIAL
100mm [redacted]
284 [redacted]
SUBG[redacted]

E[redacted]
150mm N32 CONCRE[redacted]
SL82 REINFORCEMENT (CENTRALLY PLACED)
STENCIL FINISH
100mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

PEDESTRIAN FOOTPATH
100mm N32 CONCRETE BROOM FINISH
SL82 CENTRALLY PLACED
150mm DGB20 BASE MATERIAL COMPACTED TO 98% MMDD
SUBGRADE MATERIAL COMPACTED TO 95% MMDD

RESIDENT DRIVEWAY

OFFSITE PEDESTRIAN FOOTPATH
(REFER OFF SITE WORKS PLAN C125-C127)
100mm N32 CONCRETE BROOM FINISH
SL82 CENTRALLY PLACED
150mm DGB20 BASE MATERIAL COMPACTED TO 98% MMDD
SUBGRADE MATERIAL COMPACTED TO 95% MMDD

CONCRETE ON-STREET PARKING
(REFER OFF SITE WORKS PLAN C125-C127)
150mm N32 CONCRETE.
SL82 REINFORCEMENT (CENTRALLY PLACED)
STENCIL FINISH
100mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

eW	EXISTING WATER MAIN
	EXISTING WATER MAIN TO BE REMOVED
	EXISTING FIRE HYDRANT
	EXISTING STOP VALVE
1.5m / 3.0m / eW	CAPPING SLAB OVER EXISTING 100DN WATER MAIN. 150mm THICK N32 CONCRETE SL82 CENTRALLY PLACED 100mm GRAVEL 3m x 1.5m
KG	NEW KERB AND GUTTER
MLBK	NEW MODIFIED LAYBACK KERB
MLBK	NEW MODIFIED LAYBACK KERB
T	3m KERB TRANSITION
M	MATCH TO EXISTING LEVELS AND MAKE GOOD

NOTES

ASPHALTIC CONCRETE (AC) MIX DESIGN

1. BITUMEN TO BE CLASS 320. UNLESS OTHERWISE NOTED.
2. EACH AC MIX TO SATISFY REQUIREMENTS OF THE STANDARD SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS.
3. CONTRACTOR TO PROVIDE DETAILS ON ALL MIX DESIGNS PRIOR TO COMMENCING WORK. DETAILS SHALL CONSIST OF RESULTS OF TRIAL BATCHES AND NATA TEST RESULTS OF SIMILAR MIXES AND LIST ALL MIX PROPERTIES SPECIFIED IN THE BASIC SPECIFICATION. NO ASPHALTIC WORK TO COMMENCE UNTIL WRITTEN APPROVAL OF ALL MIXES OBTAINED FROM SUPERINTENDENT. (REFER HOLD POINT 4.7)

GENERAL FILL

1. THICKNESS SPECIFIED IS MINIMUM REQUIRED. USE GENERAL FILL WON FROM EXCAVATION IF AVAILABLE, OR IMPORTED FILL CBR ≥ 8 PLACED IN MAXIMUM 200mm LAYERS COMPACTED TO 95% MMDD, BETWEEN STRIPPED SURFACES AND NOMINATED PAVEMENT SUBGRADE LEVEL.

TESTING

ALLOW FOR FOLLOWING:
(REFER ALSO TO SPECIFICATION)

1. COMPACTION TESTS ON EACH PAVEMENT LAYER - ONE PER 500m²
2. TESTS VERIFYING ALL SPECIFIED MATERIAL PROPERTIES OF SELECT FILL, DGS - 20 AND DGB - 20, (1 SAMPLE FOR EACH PAVEMENT LAYER)
3. PLANT SAMPLES VERIFYING MIX PROPERTIES OF SUPPLIED ASPHALTIC CONCRETE. (ALLOW 6No)
4. DENSITY TESTS ON ASPHALTIC CONCRETE SURFACING (ALLOW 6 No LOTS)
5. CONCRETE COMPRESSION & SLUMP TESTS. (ALLOW 10No).
6. SOAKED CBR TESTS TO VERIFY PAVEMENT SUBGRADE (6 No.)

NOT FOR CONSTRUCTION

VERIFIER
JOB MANAGER D.FIELD
DESIGNED R.CRADDY
DRAWN R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
7	PROGRESS	RC		JW	26.11.19
8	PROGRESS	JW		DF	16.03.20
9	DRAFT WORKS APPROVAL	JC		DF	30.04.20
10	WORKS APPROVAL	JC		DF	14.05.20
11	WORKS APPROVAL	JC		DF	01.07.20
12	RANGER GATE ADDDED	JC		DF	09.07.20

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL
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0 2.5 5.0 7.5 10.0 12.5m
PLAN
SCALE 1:250 @ A1

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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
SITE WORKS AND PAVEMENT PLAN SHEET 4 OF 4

JOB NUMBER: **CR172699**
DRAWING NUMBER: **C123**
REVISION: **12**
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1)(b) of the Australian Capital Territory (Planning and Land Management) Act 1
s22
(NCA Delegate)

LOCALITY PLAN
NTS

LEGEND

EXISTING SERVICES

- STORMWATER MAIN
- SEWER MAIN
- WATER MAIN
- TRANSACT
- GAS
- ELECTRICITY
- ABANDONED
- SEWER MANHOLE
- STORMWATER MANHOLE
- STORMWATER SUMP
- FIRE HYDRANT
- STOP VALVE
- WATER METER
- LIGHTPOLE

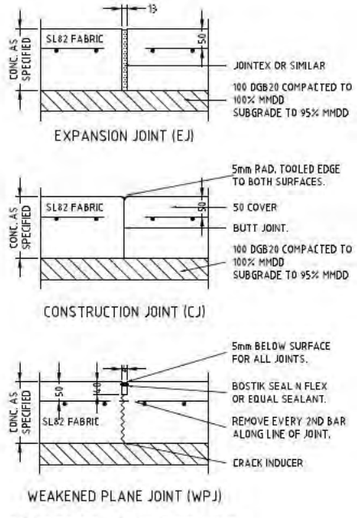
WARNING:
EXISTING SERVICES SHOWN ARE BASED ON INFORMATION PROVIDED BY SERVICE AUTHORITIES AND ARE ESTIMATES ONLY. UNDER NO CIRCUMSTANCES SHOULD THE LOCATIONS OF SERVICES SHOWN ON THIS PLAN BE RELIED UPON FOR ON SITE WORK. ALL INFORMATION MUST BE CONFIRMED IN THE FIELD.

PAVEMENT LEGEND

CONCRETE THRESHOLD (NEW)
150mm N32 CONCRETE,
SL82 REINFORCEMENT (CENTRALLY PLACED)
STENCIL FINISH
100mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

CONCRETE FOOTPATH (NEW)
100mm N25 CONCRETE,
SL82 REINFORCEMENT (CENTRALLY PLACED)
BROOM FINISH
75mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

- DEM — KERB TO BE DEMOLISHED
- K&G — KERB AND GUTTER
- OCI — OPEN CONCRETE INVERT
- M — MATCH TO EXISTING LEVELS AND MAKE GOOD
- T — KERB TRANSITION
- P1 — SETOUT POINT (REFER SETOUT TABLE)



CONCRETE JOINT DETAILS.
NTS

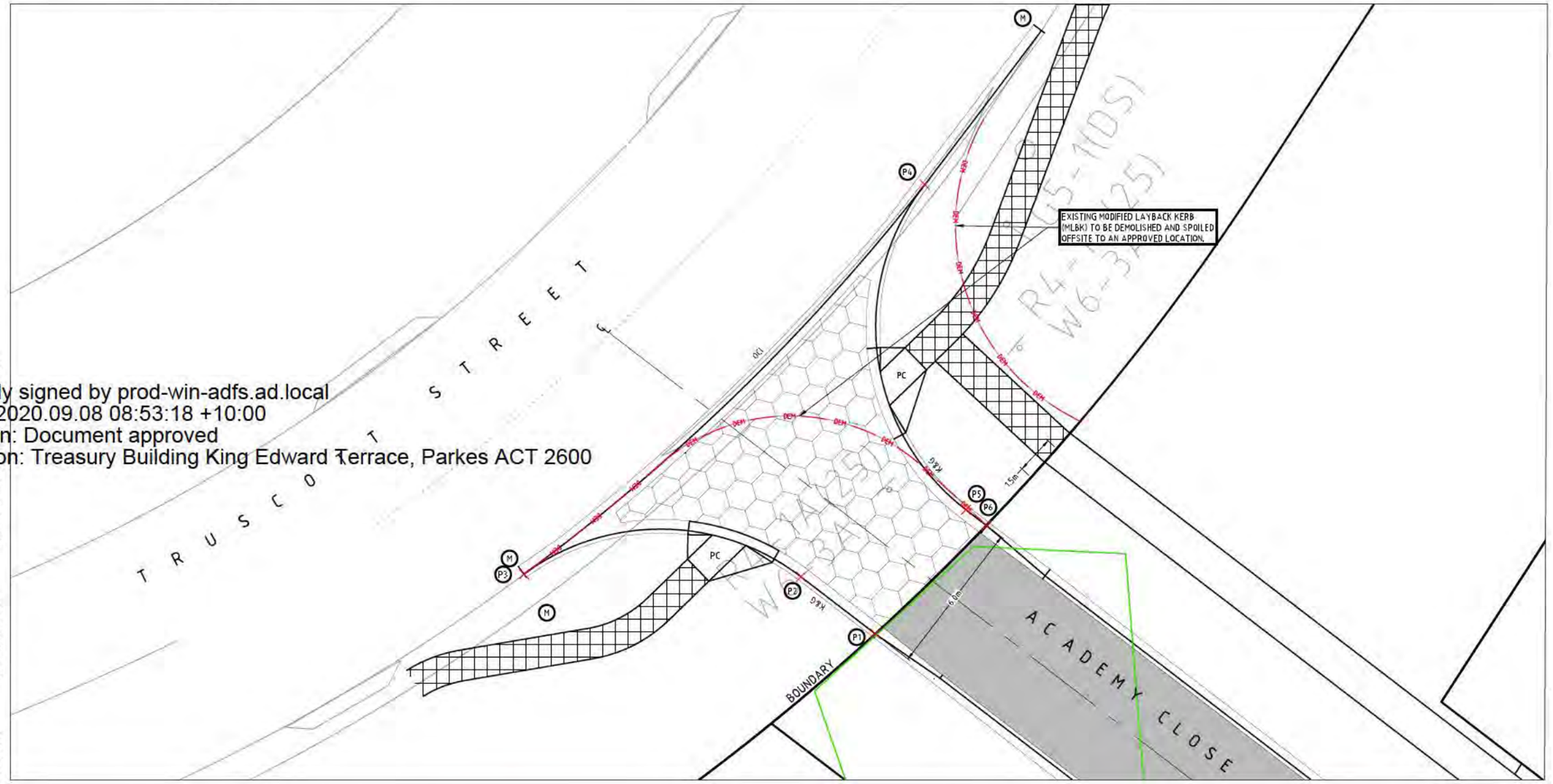
KERB & GUTTER (KG)

OPEN [redacted]

KERB NO
- N25 CONCRETE - C45
- 100mm DGB20 BASE
- WEAKENED PLANE JOINTS @ 3.0m CTRS
- EXPANSION JOINTS @ 12m CTRS
- ALL JOINTS IN KERBS SHALL BE IN ACCORDANCE WITH SECTION 6.09.1 OF "STANDARD SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS" EDITION 1, REVISION 0/SEPT 2002

GENERAL FILL
1. THICKNESS SPECIFIED IS MINIMUM REQUIRED. USE GENERAL FILL WON FROM EXCAVATION IF AVAILABLE, OR IMPORTED FILL CBR > 3 PLACED IN MAXIMUM 200mm LAYERS, COMPACTED TO 98% MMDD, BETWEEN STRIPPED SURFACES AND MINIMUM TEN PAVEMENT SUBGRADE LEVEL.

TESTING
ALLOW FOR FOLLOWING
(REFER ALL NOTES SPECIFICATION)
1. COMPACTION TESTS ON EACH PAVEMENT LAYER – ONE PER DRIVEWAY
2. TESTS (VERIFYING ALL SPECIFIED MATERIAL PROPERTIES) FOR SUBGRADE, DGS - 20 AND DGB - 20, (1 SAMPLE FOR EACH PAVEMENT LAYER)
3. PRESENT RESULTS (VERIFYING IMPORTED OR SUPPLIED MATERIAL LOCKED ALONG Nos)



DRIVEWAY SETOUT (SOUTH)

POINT #	ELEVATION	EASTING	NORTHING	COMMENT
1	607.912	213 837.657	603 212.419	BOUNDARY
2	607.832	213 834.752	603 214.646	TP
3	607.614	213 823.933	603 214.747	TP
4	607.685	213 839.589	603 229.957	TP
5	607.826	213 841.197	603 217.265	TP
6	607.963	213 841.994	603 216.654	BOUNDARY

Digitally signed by prod-win-adfs.ad.local
Date: 2020.09.08 08:53:18 +10:00
Reason: Document approved
Location: Treasury Building King Edward Terrace, Parkes ACT 2600

JOB MANAGER: D.FIELD
DESIGNED: R.CR-DDV
DRAWN: R.CR-DDV

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	FOR DISCUSSION	RC		DF	12.10.18
4	WORKS APPROVAL	RC		DF	11.04.19
5	WORKS APPROVAL	RC		DF	17.04.19
6	PROGRESS	RC		DF	07.11.19
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close
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0 1 2 3 4 5m PLAN SCALE 1:100 @ A1

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SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
OFF SITE WORKS AND
PAVEMENT PLAN
SHEET 1 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C125
REVISION: 8
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) of the Australian Capital Territory (Planning and Land Management) Act 198[redacted]
(NCA Delegate)
s22

LOCALITY PLAN
NTS

LEGEND

EXISTING SERVICES

- STORMWATER MAIN
- SEWER MAIN
- WATER MAIN
- TRANSACT
- GAS
- ELECTRICITY
- ABANDONED
- SEWER MANHOLE
- STORMWATER MANHOLE
- STORMWATER SUMP
- FIRE HYDRANT
- STOP VALVE
- WATER METER
- LIGHTPOLE

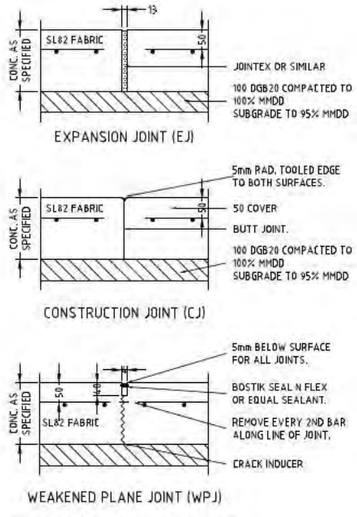
WARNING:
EXISTING SERVICES SHOWN ARE BASED ON INFORMATION PROVIDED BY SERVICE AUTHORITIES AND ARE ESTIMATES ONLY. UNDER NO CIRCUMSTANCES SHOULD THE LOCATIONS OF SERVICES SHOWN ON THIS PLAN BE RELIED UPON FOR ON SITE WORK. ALL INFORMATION MUST BE CONFIRMED IN THE FIELD.

PAVEMENT LEGEND

CONCRETE THRESHOLD (NEW)
150mm N32 CONCRETE,
SL82 REINFORCEMENT (CENTRALLY PLACED)
STENCIL FINISH
100mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

CONCRETE FOOTPATH (NEW)
100mm N25 CONCRETE,
SL82 REINFORCEMENT (CENTRALLY PLACED)
BROOM FINISH
75mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

- DEM — KERB TO BE DEMOLISHED
- K&G — KERB AND GUTTER
- OCI — OPEN CONCRETE INVERT
- M — MATCH TO EXISTING LEVELS AND MAKE GOOD
- T — KERB TRANISTION
- P1 — SETOUT POINT (REFER SETOUT TABLE) FACE OF KERB

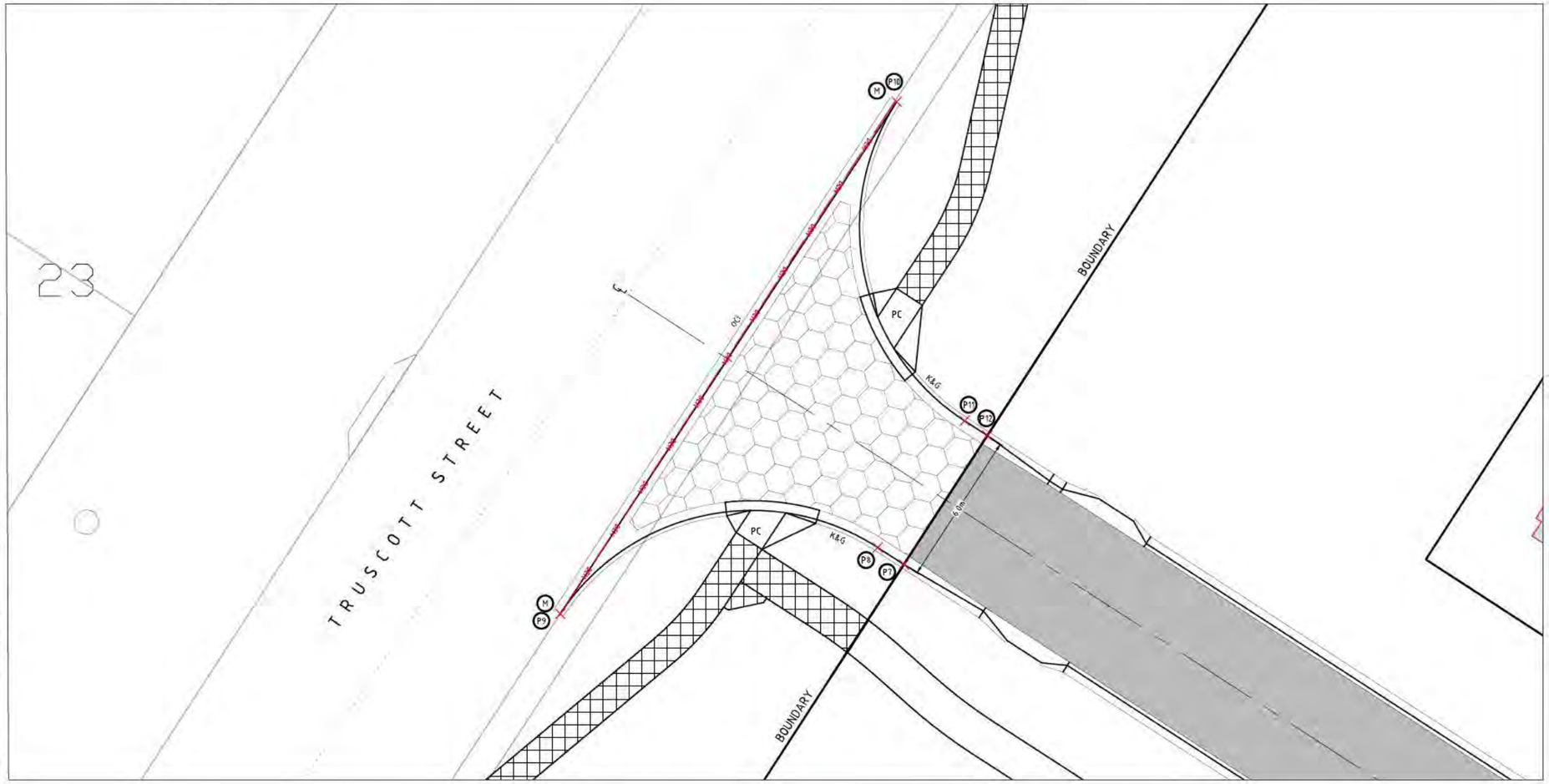


CONCRETE JOINT DETAILS.
NTS

GENERAL FILL
1. THICKNESS SPECIFIED IS MINIMUM REQUIRED. USE GENERAL FILL WON FROM EXCAVATION IF AVAILABLE, OR IMPORTED FILL CBR > 3 PLACED IN MAXIMUM 200mm LAYERS COMPACTED TO 95% MMDD, BETWEEN STRIPPED SURFACES AND 300mm TO FINAL SUBGRADE LEVEL.

TESTING
ALLOW FOR FOLLOWING
(REFER ALL NCA SPECIFICATIONS)
COMPACTION TESTS ON EACH PAVEMENT LAYER – ONE PER DRIVEWAY
TESTS VERIFYING ALL SPECIFIED MATERIAL PROPERTIES OR SELECTED DGS – 20 AND DGB – 20, (1 SAMPLE FOR EACH PAVEMENT LAYER)

KERB NOTES
- N25 CONCRETE KERB
- 100mm DGB20 BASE
- WEAKENED PLANE JOINTS @ 3.0m CTRS
- EXPANSION JOINTS @ 12m CTRS
- ALL JOINTS IN KERBS SHALL BE IN ACCORDANCE WITH SECTION 6.09.1 OF "STANDARD SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS" EDITION 1, REVISION 0/SEPT 2002



DRIVEWAY SETOUT (NORTH)				
POINT #	ELEVATION	EASTING	NORTHING	COMMENT
7	607.720	213 876.355	603 266.670	BOUNDARY
8	607.660	213 875.410	603 267.282	TP
9	607.370	213 862.905	603 264.700	TP
10	607.023	213 876.077	603 284.742	TP
11	607.664	213 878.729	603 272.281	TP
12	607.720	213 879.619	603 271.705	BOUNDARY

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	FOR DISCUSSION	RC		DF	12.10.18
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5	WORKS APPROVAL	RC		DF	17.04.19
6	PROGRESS	RC		DF	07.11.19
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia
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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
OFF SITE WORKS AND
PAVEMENT PLAN
SHEET 2 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C126
REVISION: 8
DRAWING SHEET SIZE = A1

DRAWN: R. CF-DOV
DESIGNED: R. CF-DOV
JOB MANAGER: D. FIELD
VERIFIER: J. HWANG

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

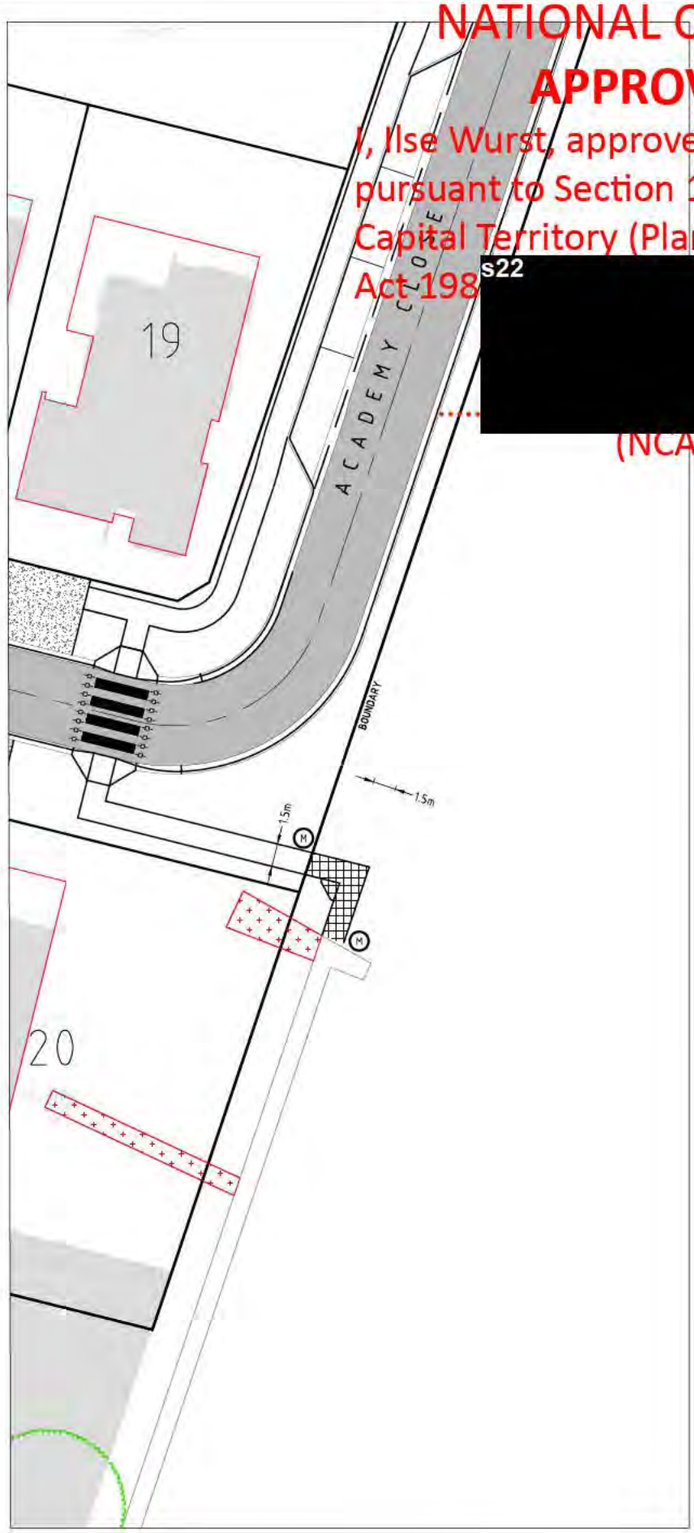
APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 198

s22 [redacted]

(NCA Delegate)

LOCALITY PLAN
NTS



PAVEMENT LEGEND

CONCRETE FOOTPATH (NEW)
100 mm CONCRETE 20mm MAX. AGGREGATE
SL82 REINFORCEMENT (CENTRALLY PLACED)
BROOM FINISH
75mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

CONCRETE FOOTPATH TO BE REMOVED

NEW FOOTPATH JOINTING

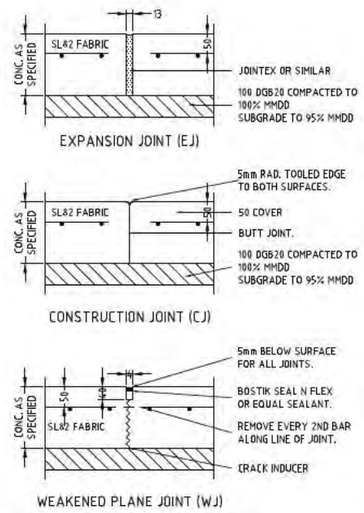
GENERAL FILL

1. THICKNESS SPECIFIED IS MINIMUM REQUIRED. USE GENERAL FILL WON FROM EXCAVATION IF AVAILABLE, OR IMPORTED FILL CBR = 8 PLACED IN MAXIMUM 200mm LAYERS COMPACTED TO 95% MMDD, BETWEEN STRIPPED SURFACES AND NOMINATED PAVEMENT SUBGRADE LEVEL.

TESTING

ALLOW FOR FOLLOWING:
(REFER ALSO TO SPECIFICATION)

1. COMPACTION TESTS ON EACH PAVEMENT LAYER – ONE PER DRIVEWAY
2. TESTS VERIFYING ALL SPECIFIED MATERIAL PROPERTIES OF SELECT FILL, DGS – 20 AND DGB – 20, (1 SAMPLE FOR EACH PAVEMENT LAYER)
3. PLANT SAMPLES VERIFYING MIX PROPERTIES OF SUPPLIED ASPHALTIC CONCRETE . (ALLOW 1 No)
4. DENSITY TESTS ON ASPHALTIC CONCRETE . SURFACING (ALLOW 1 No.)
5. CONCRETE COMPRESSION & SLUMP TESTS . (ALLOW 1 No).
6. SOAKED CBR TESTS TO VERIFY PAVEMENT SUBGRADE (1 No.)



CONCRETE JOINT DETAILS.
NTS

NOT FOR CONSTRUCTION

DRAWN: R. CRAIDY DESIGNED: R. CRAIDY JOB MANAGER: D. FIELD VERIFIER: J. HAWKFORD

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR DISCUSSION	RC		DF	12.10.18
2	WORKS APPROVAL	RC		DF	11.04.19
3	WORKS APPROVAL	RC		DF	17.04.19
4	PROGRESS	RC		DF	07.11.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL

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NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS OFF SITE WORKS AND PAVEMENT PLAN SHEET 3 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C127 REVISION: 6

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

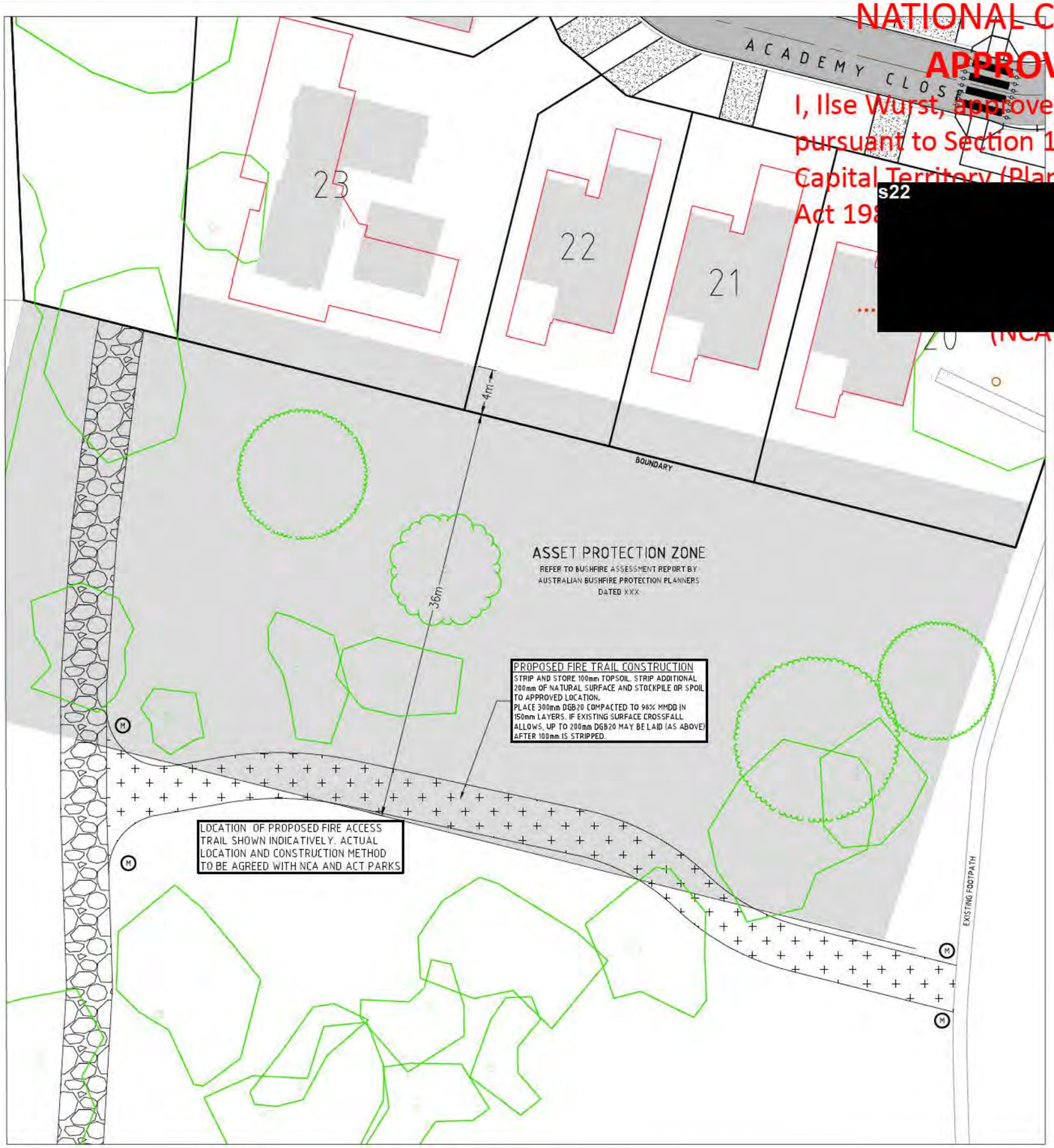
APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1)(b) of the Australian Capital Territory (Planning and Land Management) Act 198[redacted]

s22

(NCA Delegate)

LOCALITY PLAN
NTS



PAVEMENT LEGEND

PROPOSED GRAVEL FIRE TRAIL
100mm DGB20 CONCRETE [illegible] AGGREGATE
SL [illegible] REINFORCEMENT (CONTRACTOR TO PLACE)
BROOM FINISH
75mm DGS20 COMPACTED TO 98% MMDD
SUBGRADE COMPACTED TO 95% MMDD

EXISTING GRAVEL FIRE TRAIL

1. COMPACTION TESTS ON EACH PAVEMENT LAYER – ONE PER DRIVEWAY
2. TESTS VERIFYING ALL SPECIFIED MATERIAL PROPERTIES OF SELECT FILL, DGS – 20 AND DGB – 20, (1 SAMPLE FOR EACH PAVEMENT LAYER)
3. PLANT SAMPLES VERIFYING MIX PROPERTIES OF SUPPLIED ASPHALTIC CONCRETE . (ALLOW 1 No)
4. DENSITY TESTS ON ASPHALTIC CONCRETE . SURFACING (ALLOW 1 No.)
5. CONCRETE COMPRESSION & SLUMP TESTS . (ALLOW 1 No).
6. SOAKED CBR TESTS TO VERIFY PAVEMENT SUBGRADE (1 No.)

NOT FOR CONSTRUCTION

DRAWN: F. CRAIDOV DESIGNED: F. CRAIDOV JOB MANAGER: D. FIELD VERIFIER: A. HOWARD

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR DISCUSSION	RC		DF	12.10.18
2	WORKS APPROVAL	RC		DF	11.04.19
3	WORKS APPROVAL	RC		DF	17.04.19
4	PROGRESS	RC		DF	07.11.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS OFF SITE WORKS AND PAVEMENT PLAN SHEET 4 OF 4

JOB NUMBER: CR172699

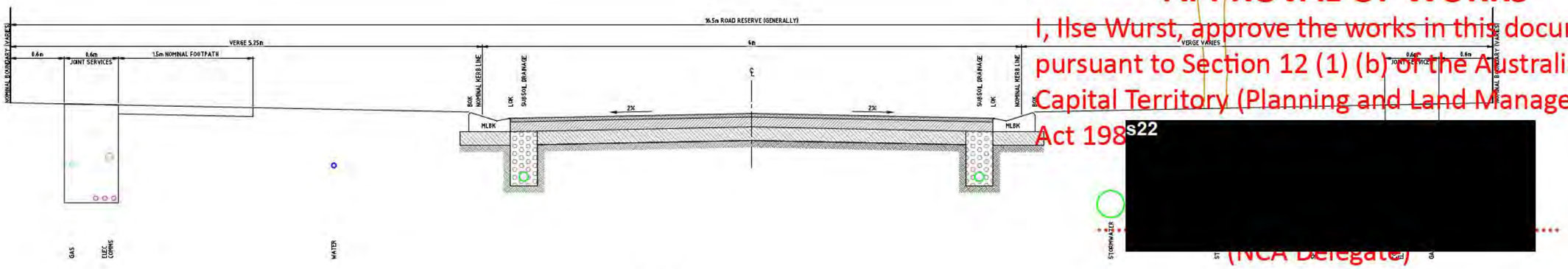
DRAWING NUMBER: C128

REVISION: 6

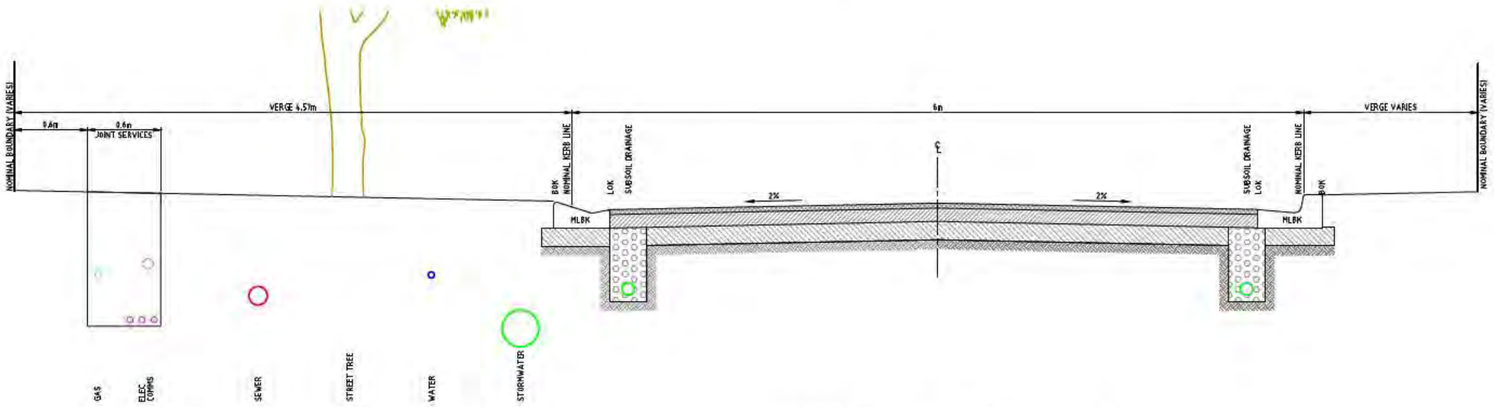
DRAWING SHEET SIZE = A1

08 Sep, 2020

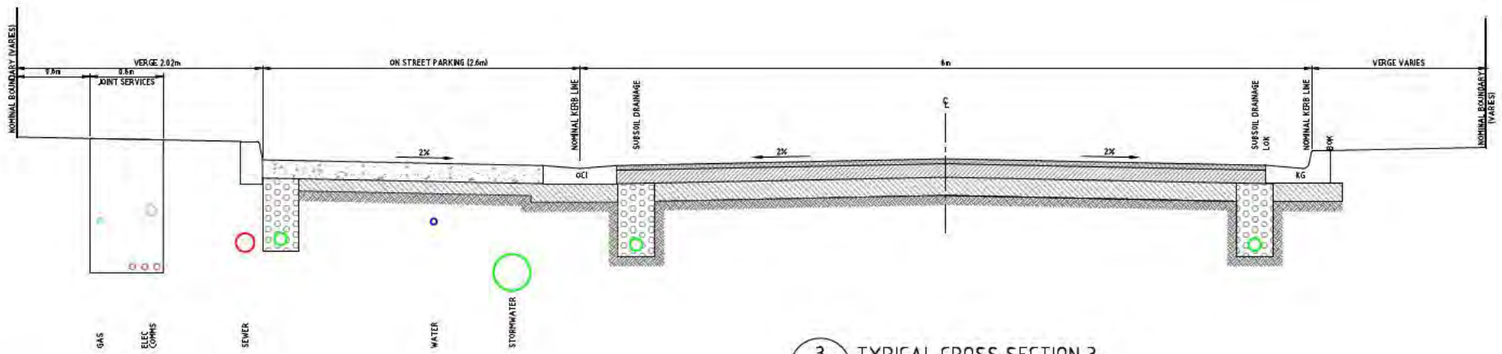
NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 198[redacted] (NCA Delegate)



1 C050 TYPICAL CROSS SECTION 1
NTS



2 C050 TYPICAL CROSS SECTION 2
NTS



3 C050 TYPICAL CROSS SECTION 3
NTS

NOT FOR CONSTRUCTION

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: R.CRADDY
DRAWN: R.CRADDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
5	FOR INFORMATION	RC		DF	31.08.18
6	FOR DISCUSSION	RC		DF	21.09.18
7	WORKS APPROVAL	RC		DF	11.04.19
8	DRAFT WORKS APPROVAL	JC		DF	30.04.20
9	WORKS APPROVAL	JC		DF	14.05.20
10	PARKING PAVEMENT	JC		DF	03.06.20

CLIENT: DHA Defence Housing Australia
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ARCHITECT: Academy Close
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0 250 500 750 1000mm
PLAN
SCALE 1:20 @ A1

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PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
TYPICAL CROSS SECTIONS

JOB NUMBER: CR172699
DRAWING NUMBER: C130
REVISION: 10
DRAWING SHEET SIZE = A1

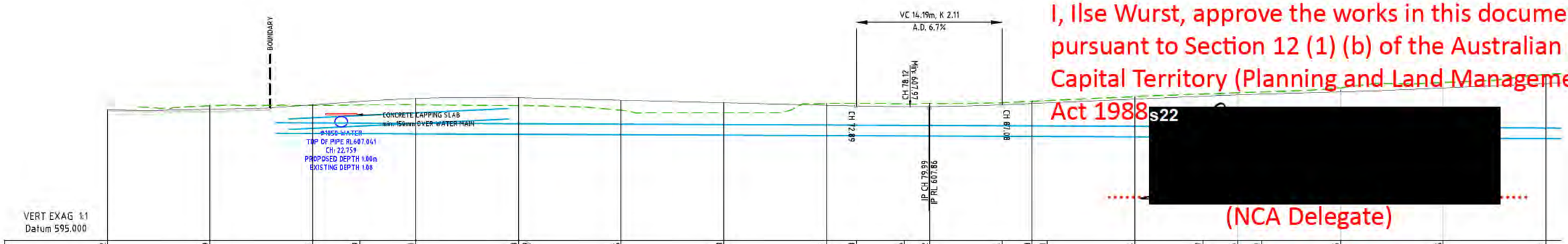
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

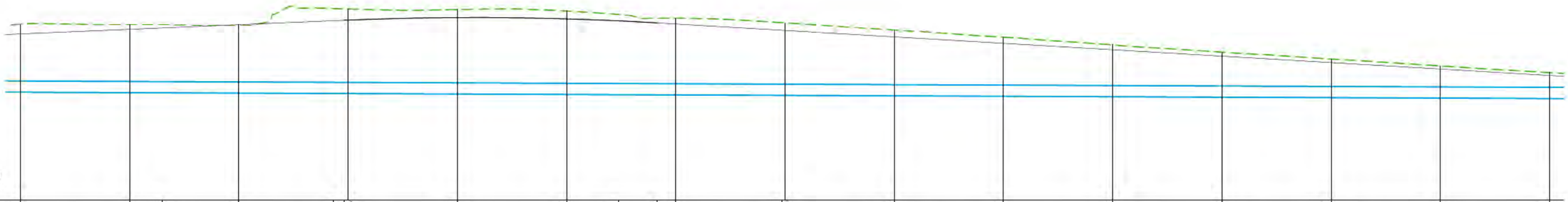
APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988 s22 [redacted]

(NCA Delegate)



DESIGN LEVELS	607.672	607.729	608.161	608.479	608.771	608.853	608.839	608.606	608.358	608.110	608.038	607.974	607.982	608.164	608.288	608.351	608.714	608.997	609.126	609.199	609.435	609.796	610.219
EXISTING LEVELS		608.062	608.107	608.161	608.167	608.089	608.091	607.627	607.370	608.267	608.273	608.264	608.271	608.366	608.498	608.566	608.944	609.208	609.326	609.408	609.810	610.324	611.106
DEPTH		-0.333	0.054	0.318	0.604	0.764	0.749	0.979	0.988	-0.157	-0.234	-0.290	-0.289	-0.202	-0.209	-0.215	-0.230	-0.211	-0.199	-0.208	-0.395	-0.528	-0.887
CHAINAGE	0.000	10.000	20.000	24.554	30.000	40.000	40.621	50.000	60.000	70.000	72.893	77.546	80.000	87.085	90.000	91.476	100.000	106.641	110.000	112.352	120.000	130.000	140.000



DESIGN LEVELS	610.219	610.641	610.766	611.064	611.430	611.472	611.486	611.720	611.600	611.418	611.231	611.132	610.559	610.541	609.950	609.360	608.769	608.178	607.587	606.997	606.406
EXISTING LEVELS	611.106	611.060	611.052	611.020	612.545	612.515	612.506	612.455	612.323	612.000	611.656	611.659	611.254	611.233	610.574	609.920	609.216	608.545	607.918	607.284	606.671
DEPTH	-0.887	-0.419	-0.285	0.044	-1.115	-1.043	-1.019	-0.735	-0.723	-0.582	-0.425	-0.527	-0.694	-0.692	-0.624	-0.561	-0.447	-0.367	-0.331	-0.287	-0.264
CHAINAGE	140.000	150.000	152.956	160.000	168.665	169.649	170.000	180.000	190.000	194.780	198.319	200.000	209.691	210.000	220.000	230.000	240.000	250.000	260.000	270.000	280.000

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: F.CP-EDY
DRAWN: F.CP-EDY

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
2	FOR INFORMATION	RC		DF	31.08.18
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CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close

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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
ROAD LONG SECTIONS
ACADEMY CLOSE
CH:00.000 - CH:280.00

JOB NUMBER: CR172699
DRAWING NUMBER: C140
REVISION: 7
DRAWING SHEET SIZE = A1

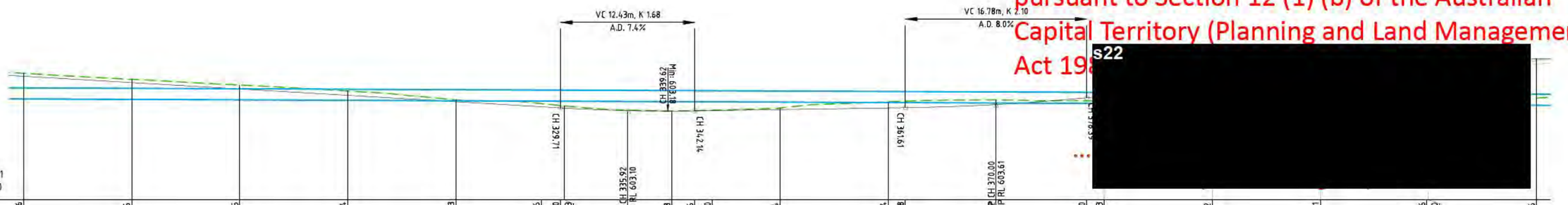
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

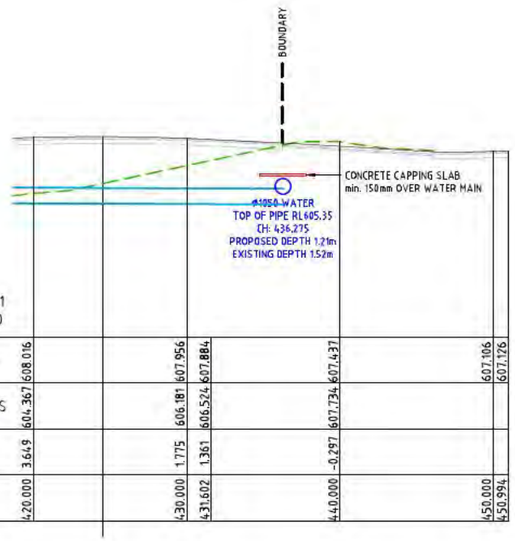
APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 19[redacted]

s22



DESIGN LEVELS	606.406		605.815		605.225		604.634		604.043		603.576	603.470	603.453		603.178	603.196	603.220		603.314		603.464	603.488	603.780	604.410	604.563		605.512		606.461		607.396	607.410		608.076
EXISTING LEVELS	606.671		606.115		605.589		605.034		604.212		603.867	603.689	603.662		603.192	603.209	603.247		603.458		604.030	604.092	604.204	604.432	604.127		604.199		604.044		603.933	603.932		604.367
DEPTH	-0.264		-0.299		-0.365		-0.400		-0.168		-0.291	-0.219	-0.209		-0.014	-0.013	-0.027		-0.143		-0.566	-0.604	-0.422	0.278	0.436		1.403		2.417		3.464	3.478		3.649
CHAINAGE	280.000		290.000		300.000		310.000		320.000		327.909	329.707	330.000		340.000	342.136	343.749		350.000		360.000	361.611	370.000	378.389	380.000		390.000		400.000		409.858	410.000		420.000



DESIGN LEVELS	608.016		607.956	607.884		607.437		607.106	607.126
EXISTING LEVELS	604.367		606.181	606.524		607.734			
DEPTH	3.649		1.775	1.361		-0.297			
CHAINAGE	420.000		430.000	431.602		440.000		450.000	450.994

VERIFIER:

JOB MANAGER: D.FIELD

DESIGNED: R.CF-DOV

DRAWN: R.CF-DOV

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
2	FOR INFORMATION	RC		DF	31.08.18
3	FOR DISCUSSION	RC		DF	21.09.18
4	FOR DISCUSSION	RC		DF	12.10.18
5	WORKS APPROVAL	RC		DF	11.04.19
6	DRAFT WORKS APPROVAL	JC		DF	30.04.20
7	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close

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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
ROAD LONG SECTIONS
ACADEMY CLOSE
CH:280.000 - CH:450.993

JOB NUMBER: CR172699

DRAWING NUMBER: C141

REVISION: 7

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 1(1) (b) of the Australian Capital Territory (Planning and Land Management) Act 198

s22 [redacted]

(NCA Delegate)

Datum: 605.000

PROPOSED LEVELS	608.972	608.800	608.853	608.800	608.898
EXISTING LEVELS	607.797	607.949	608.089	608.197	
LEVEL DIFFERENCE	1.175	0.851	0.764	0.602	
OFFSETS	-8.250	-2.685	0.000	2.685	???

CH: 40.000
Chainage 40.000

Datum: 605.000

PROPOSED LEVELS	608.804	608.833	608.836	608.678	608.660	608.714	608.661	608.678	608.511	608.548		
EXISTING LEVELS	608.792	608.807	608.814	608.865	608.866							
LEVEL DIFFERENCE	0.013	0.026	0.012	-0.188	-0.235							
OFFSETS	-8.250	-7.215	-6.349	-4.194	-2.700							

CH: 100.000
Chainage 100.000

Datum: 605.000

PROPOSED LEVELS	608.279	608.107	608.161	608.107	608.279					
EXISTING LEVELS	607.734	608.034	608.107	608.170	608.310					
LEVEL DIFFERENCE	0.545	0.074	0.054	-0.063	-0.031					
OFFSETS	-8.250	-2.685	0.000	2.685	8.250					

CH: 20.000
Chainage 20.000

Datum: 605.000

PROPOSED LEVELS	608.100	607.928	607.982	607.928	608.143	608.210	608.211	
EXISTING LEVELS	607.951	608.190	608.270	608.325	608.412	608.445	608.446	
LEVEL DIFFERENCE	0.149	-0.262	-0.289	-0.397	-0.269	-0.235	-0.235	
OFFSETS	-8.250	-2.685	0.000	2.685	6.594	8.170	8.250	

CH: 80.000
Chainage 80.000

Datum: 605.000

PROPOSED LEVELS	607.741	607.732	607.717	607.701	607.684	607.672	607.642	607.616	607.588	607.562	607.560
EXISTING LEVELS											
LEVEL DIFFERENCE											
OFFSETS	-8.250	-7.232	-5.495	-3.596	-1.586	0.000	2.354	4.295	6.293	8.076	8.250

CH: 0.000
Chainage 00.000

Datum: 605.000

PROPOSED LEVELS	608.476	608.304	608.358	608.304	608.419	608.348	608.223
EXISTING LEVELS	607.263	607.317	607.370	608.359	608.388	608.466	608.482
LEVEL DIFFERENCE	1.213	0.987	0.988	-0.055	0.031	-0.118	-0.259
OFFSETS	-8.250	-2.685	0.000	2.685	3.551	6.101	8.250

CH: 60.000
Chainage 60.000

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: R.CF-DOY
DRAWN: R.CF-DOY

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	RC		DF	10.08.18
2	PRELIMINARY	AH		DF	16.08.18
3	FOR INFORMATION	RC		DF	31.08.18
4	WORKS APPROVAL	RC		DF	11.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
DETAILED ROAD
CROSS SECTIONS
CH:00.000 - CH:100.000

JOB NUMBER: CR172699
DRAWING NUMBER: C150
REVISION: 6
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988

s22 [redacted]

(NCA Delegate)

Datum: 610.000

PROPOSED LEVELS	611.182	611.010	611.064	611.010	611.178
EXISTING LEVELS	611.194	611.013	611.020	611.026	611.986
LEVEL DIFFERENCE	-0.012	-0.003	0.044	-0.016	-0.809
OFFSETS	-8.250	-2.685	0.000	2.685	8.250

CH: 160.000
Chainage 160.000

Datum: 605.000

PROPOSED LEVELS	611.407	610.409	610.211	610.165	610.219	610.165		610.327
EXISTING LEVELS	611.029	611.039	611.120	611.087	611.106	611.134		
LEVEL DIFFERENCE	0.378	-0.630	-0.909	-0.923	-0.887	-0.969		
OFFSETS	-8.570	-8.204	-5.600	-2.700	0.000	2.685		???

CH: 140.000 Chainage 140.000

Datum: 605.000

PROPOSED LEVELS	609.487	609.546	609.400	609.361	609.415	609.362	609.441
EXISTING LEVELS	609.703	609.712	609.713	609.719	609.810	610.314	610.312
LEVEL DIFFERENCE	-0.216	-0.166	-0.313	-0.358	-0.395	-0.953	-0.871
OFFSETS	-8.250	-5.966	-5.227	-2.700	0.000	2.685	8.250

CH: 120.000
Chainage 120.000

Datum: 605.000

PROPOSED LEVELS	611.364	610.128	609.944	609.577	609.446	609.493	609.550	609.608	610.153
EXISTING LEVELS	610.801	610.777	610.722	610.676	610.608	610.553	610.574	610.602	610.551
LEVEL DIFFERENCE	0.562	-0.649	-0.619	-0.741	-0.702	-0.656			
OFFSETS	-8.250	-7.570	-6.283	-5.209	-3.812	-2.750	0.000	2.620	5.752

CH: 220.000
Chainage 220.000

Datum: 610.000

PROPOSED LEVELS	611.400	611.300	611.312		611.079	611.132	611.079	611.228	611.281
EXISTING LEVELS	611.284	611.284	611.296		611.432	611.659	611.875	612.032	612.163
LEVEL DIFFERENCE	0.116	0.016	0.016		-0.352	-0.527	-0.796	-0.804	-0.882
OFFSETS	-8.250	-8.184	-6.809		-2.620	0.000	2.620	5.752	8.250

CH: 200.000

Chainage 200.000

Datum: 610.000

PROPOSED LEVELS	611.838	611.666	611.720	611.666	611.833
EXISTING LEVELS	611.793	612.404	612.455	612.506	612.612
LEVEL DIFFERENCE	0.045	-0.738	-0.735	-0.840	-0.779
OFFSETS	-8.250	-2.685	0.000	2.685	8.250

CH: 180.000

Chainage 180.000

NOT FOR CONSTRUCTION

DRAWN: F.CF-LOU DESIGNED: F.CF-LOU JOB MANAGER: D.FIELD VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	RC		DF	10.08.18
2	PRELIMINARY	AH		DF	16.08.18
3	FOR INFORMATION	RC		DF	31.08.18
4	WORKS APPROVAL	RC		DF	11.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
DETAILED ROAD
CROSS SECTIONS
CH:120.000 - CH:220.000

JOB NUMBER: CR172699

DRAWING NUMBER: C151 REVISION: 6

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988.

s22 [redacted]

(NCA Delegate)

Datum: 605.000

PROPOSED LEVELS	606.515	606.511	606.352	606.406	606.354	606.499
EXISTING LEVELS	607.146	607.082	606.753	606.671	606.644	606.624
LEVEL DIFFERENCE	-0.631	-0.571	-0.400	-0.264	-0.291	-0.125
OFFSETS	-8.250	-7.570	-2.685	0.000	2.620	4.430

CH: 280.000

Chainage 280.000

Datum: 605.000

PROPOSED LEVELS	608.203	608.160	608.053	608.106	608.054	608.200
EXISTING LEVELS	608.150	608.068	608.003	607.918	607.829	607.770
LEVEL DIFFERENCE	0.053	0.091	0.050	0.188	0.224	0.429
OFFSETS	-8.250	-5.000	-2.685	0.000	2.620	4.430

CH: 260.000

Chainage 260.000

Datum: 605.000

PROPOSED LEVELS	609.023	608.947	608.761	608.715	608.769	608.716	608.862
EXISTING LEVELS	609.371	609.348	609.296	609.240	609.216	609.160	609.074
LEVEL DIFFERENCE	-0.348	-0.401	-0.535	-0.525	-0.447	-0.444	-0.212
OFFSETS	-8.250	-7.570	-5.600	-2.700	0.000	2.620	4.430

CH: 240.000

Chainage 240.000

Datum: 600.000

PROPOSED LEVELS	603.337	603.292	603.277	603.262	603.181	603.191	603.192	603.312
EXISTING LEVELS	604.034	604.014	603.938	603.850	603.467	603.392	603.320	
LEVEL DIFFERENCE	-0.697	-0.722	-0.661	-0.588				
OFFSETS	-8.250	-8.059	-7.309	-6.449				

CH: 340.000

Chainage 340.000

Datum: 600.000

PROPOSED LEVELS	604.351	604.309	604.119	604.173	604.121	604.266	
EXISTING LEVELS	604.646	604.496	604.290	604.212	604.186	604.179	
LEVEL DIFFERENCE	-0.295	-0.188	-0.171	-0.039	-0.065	0.087	
OFFSETS	-7.570	-5.480	-2.700	0.000	2.620	4.430	

CH: 320.000

Chainage 320.000

Datum: 600.000

PROPOSED LEVELS	605.408	605.329	605.171	605.225	605.172	605.318	
EXISTING LEVELS	605.729	605.716	605.634	605.589	605.521	605.468	
LEVEL DIFFERENCE	-0.321	-0.387	-0.463	-0.365	-0.349	-0.150	
OFFSETS	-8.250	-7.570	-2.685	0.000	2.620	4.430	

CH: 300.000

Chainage 300.000

DRAWN: F.CF-ADDY DESIGNED: F.CF-ADDY JOB MANAGER: D.FIELD VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	RC		DF	10.08.18
2	PRELIMINARY	AH		DF	16.08.18
3	FOR INFORMATION	RC		DF	31.08.18
4	WORKS APPROVAL	RC		DF	11.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS DETAILED ROAD CROSS SECTIONS CH:240.000 - CH:340.000

JOB NUMBER: CR172699

DRAWING NUMBER: C152

REVISION: 6

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 19
s22 [redacted]
(NCA Delegate)

Datum: 600.000

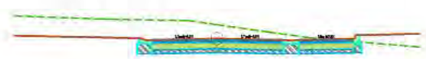
PROPOSED LEVELS	606.579	606.407	606.461	606.407	606.579
EXISTING LEVELS	604.979	604.097	604.044	604.014	
LEVEL DIFFERENCE	1.600	2.310	2.417	2.393	
OFFSETS	-8.250	-2.685	0.000	2.685	???

CH: 400.000 Chainage 400.000

Datum: 600.000

PROPOSED LEVELS	604.681	604.509	604.563	604.509	604.681
EXISTING LEVELS	604.595	604.198	604.127	603.884	603.257
LEVEL DIFFERENCE	0.086	0.312	0.436	0.625	1.424
OFFSETS	-8.250	-2.685	0.000	2.685	8.250

CH: 380.000
Chainage 380.000



Datum: 600.000

PROPOSED LEVELS	603.582	603.410	603.464	603.410	603.456	603.655
EXISTING LEVELS	604.386	604.222	604.030	603.647	603.343	
LEVEL DIFFERENCE	-0.804	-0.811	-0.566	-0.237	0.113	
OFFSETS	-8.250	-2.685	0.000	2.700	5.600	???

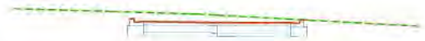
CH: 360.000
Chainage 360.000

Datum: 605.000

PROPOSED LEVELS	607.258	607.254	607.221	607.188	607.172	607.155	607.126	607.099	607.087	607.075	607.052	607.029	607.025	
EXISTING LEVELS														
LEVEL DIFFERENCE														
OFFSETS	-8.250	-7.974	-5.966	[redacted]										

CH: 450 [redacted]

Chainage 450.993

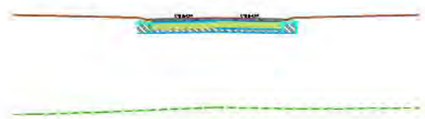


Datum: 605.000

PROPOSED LEVELS		607.590	607.472	607.437	607.432	607.425	607.536
EXISTING LEVELS		607.860	607.843	607.734	607.692	607.569	607.533
LEVEL DIFFERENCE		-0.271	-0.370	-0.297	-0.260	-0.144	0.003
OFFSETS		-3.530	-2.983	0.000	0.760	3.005	3.665

CH: 440.000

Chainage 440.000



Datum: 600.000

PROPOSED LEVELS	608.134	607.962	608.016	607.962	608.134
EXISTING LEVELS	604.091	604.261	604.367	604.323	
LEVEL DIFFERENCE	4.043	3.702	3.649	3.639	
OFFSETS	-8.250	-2.685	0.000	2.685	???

CH: 420.000
Chainage 420.000

NOT FOR CONSTRUCTION

DRAWN: R.CF-CCV DESIGNED: R.CF-CCV JOB MANAGER: D.FIELD VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	RC		DF	10.08.18
2	PRELIMINARY	AH		DF	16.08.18
3	FOR INFORMATION	RC		DF	31.08.18
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5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close
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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
DETAILED ROAD
CROSS SECTIONS
CH:360.000 - CH:450.993

JOB NUMBER: CR172699
DRAWING NUMBER: C153
REVISION: 6
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988

s22 [redacted]

STORMWATER SETOUT

POINT #	ELEVATION	EASTING	NORTHING	STRUCTURE TYPE
1-1	600.779	213976.7934	603251.6055	1050 MANHOLE
1-2	602.835	213967.1945	603223.0152	1050 MANHOLE
1-3	602.915	213961.3552	603218.3829	R SUMP
1-4	605.135	213948.7271	603181.2921	R SUMP
1-5	609.229	213928.9041	603120.4742	V-GRATED PIT
1-6	611.160	213919.8959	603095.4185	R SUMP
1-7	611.159	213926.6552	603093.1491	R SUMP
2-1	601.132	213972.1772	603247.5016	1050 MANHOLE
2-2	601.465	213956.9751	603257.3473	1050 MANHOLE
2-3	605.427	213912.2171	603286.3348	1050 MANHOLE
3-1	602.873	213955.4761	603213.8155	R SUMP
3-2	604.147	213924.7513	603234.2886	R SUMP
3-3	607.964	213880.7532	603262.7912	R SUMP
3-4	607.964	213884.9576	603269.2778	R SUMP
4-1	604.144	213928.9744	603240.7688	R SUMP
5-1	605.840	213910.1659	603204.1426	1050 MANHOLE
5-2	607.598	213893.2896	603178.0816	R SUMP
5-3	608.191	213887.8348	603159.1332	R SUMP
5-4	611.007	213875.4104	603109.2332	R SUMP
5-5	611.943	213880.1996	603089.8180	1050 MANHOLE
5-6	612.484	213901.3403	603084.5495	1050 MANHOLE
6-1	609.389	213935.1278	603118.3850	1050 MANHOLE
7-1	609.720	213901.1512	603127.3973	1050 MANHOLE
8-1	608.539	213873.5606	603229.9744	1050 MANHOLE
9-1	607.598	213887.5607	603172.8920	R SUMP
9-2	608.584	213862.0726	603192.4383	1050 MANHOLE
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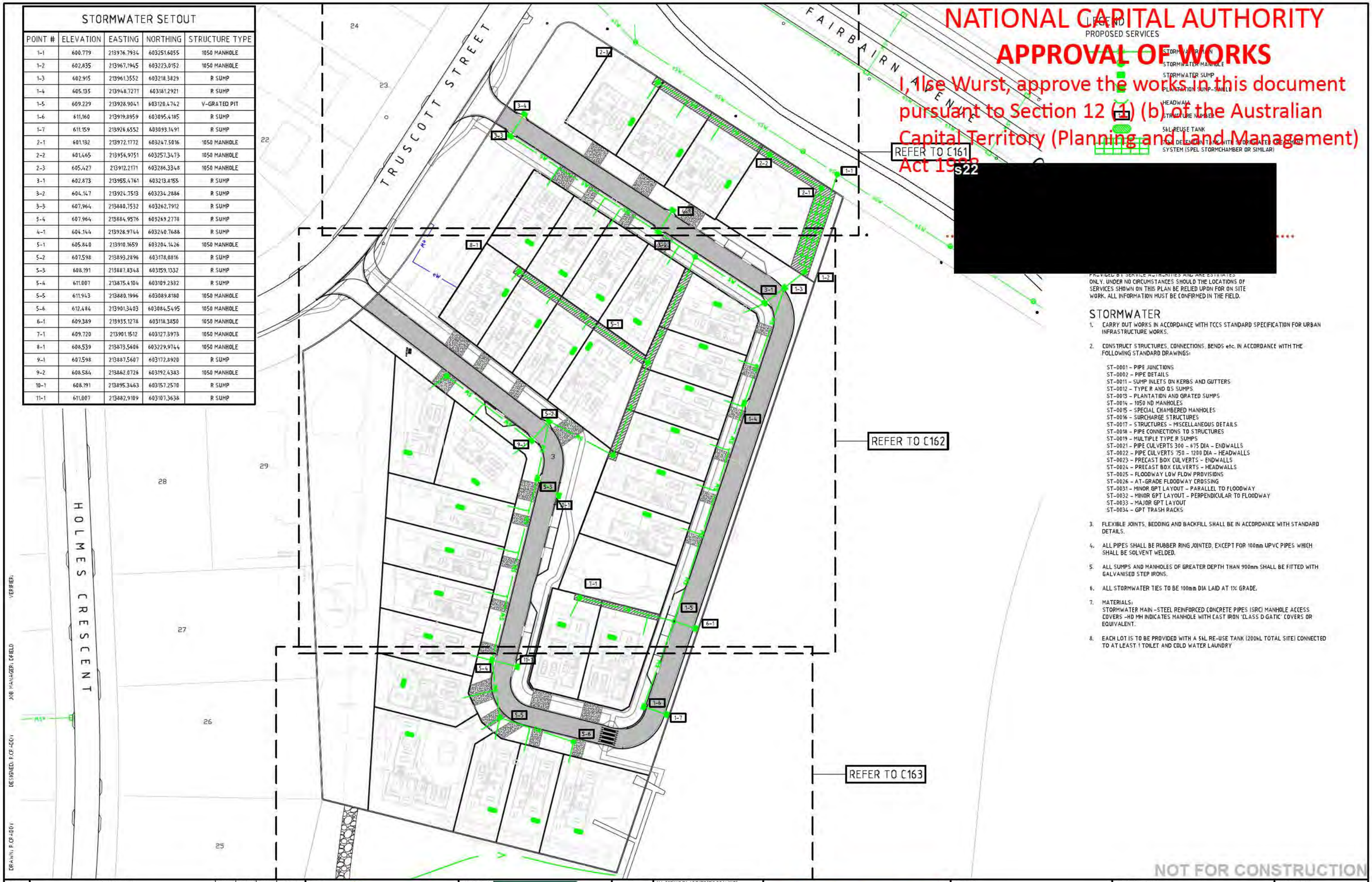
11-1	611.007	213882.9109	603107.3638	R SUMP



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STORMWATER

1. CARRY OUT WORKS IN ACCORDANCE WITH TCCS STANDARD SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS.
2. CONSTRUCT STRUCTURES, CONNECTIONS, BENDS etc. IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS:

   ST-0001 – PIPE JUNCTIONS
   ST-0002 – PIPE DETAILS
   ST-0011 – SUMP INLETS ON KERBS AND GUTTERS
   ST-0012 – TYPE R AND D/S SUMPS
   ST-0013 – PLANTATION AND GRATED SUMPS
   ST-0014 – 1050 ND MANHOLES
   ST-0015 – SPECIAL CHAMBERED MANHOLES
   ST-0016 – SURCHARGE STRUCTURES
   ST-0017 – STRUCTURES – MISCELLANEOUS DETAILS
   ST-0018 – PIPE CONNECTIONS TO STRUCTURES
   ST-0019 – MULTIPLE TYPE R SUMPS
   ST-0021 – PIPE CULVERTS 300 – 675 DIA – ENDWALLS
   ST-0022 – PIPE CULVERTS 750 – 1200 DIA – HEADWALLS
   ST-0023 – PRECAST BOX CULVERTS – ENDWALLS
   ST-0024 – PRECAST BOX CULVERTS – HEADWALLS
   ST-0025 – FLOODWAY LOW FLOW PROVISIONS
   ST-0026 – AT-GRADE FLOODWAY CROSSING
   ST-0031 – MINOR GPT LAYOUT – PARALLEL TO FLOODWAY
   ST-0032 – MINOR GPT LAYOUT – PERPENDICULAR TO FLOODWAY
   ST-0033 – MAJOR GPT LAYOUT
   ST-0034 – GPT TRASH RACKS

3. FLEXIBLE JOINTS, BEDDING AND BACKFILL SHALL BE IN ACCORDANCE WITH STANDARD DETAILS.
4. ALL PIPES SHALL BE RUBBER RING JOINTED, EXCEPT FOR 100mm UPVC PIPES WHICH SHALL BE SOLVENT WELDED.
5. ALL SUMPS AND MANHOLES OF GREATER DEPTH THAN 900mm SHALL BE FITTED WITH GALVANISED STEP IRONS.
6. ALL STORMWATER TIES TO BE 100mm DIA LAID AT 1% GRADE.
7. MATERIALS:
   STORMWATER MAIN –STEEL REINFORCED CONCRETE PIPES (SRC) MANHOLE ACCESS COVERS –HD MH INDICATES MANHOLE WITH CAST IRON 'CLASS D GATIC' COVERS OR EQUIVALENT.
8. EACH LOT IS TO BE PROVIDED WITH A 5kL RE-USE TANK (200kL TOTAL SITE) CONNECTED TO AT LEAST 1 TOILET AND COLD WATER LAUNDRY

NOT FOR CONSTRUCTION

VERIFIER:
JOB MANAGER: DFIELD
DESIGNED: F.CF-DDV
DRAWN: F.CF-DDV

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
5	FOR DISCUSSION	RC		DF	21.09.18
6	WORKS APPROVAL	RC		DF	11.04.19
7	WORKS APPROVAL	RC		DF	17.04.19
8	PROGRESS	RC		DF	07.11.19
9	DRAFT WORKS APPROVAL	JC		DF	30.04.20
10	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close

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NORTHROP
Canberra
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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CONCEPT STORMWATER MANAGEMENT PLAN
KEY PLAN
SHEET 1 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C160
REVISION: 10
DRAWING SHEET SIZE = A1

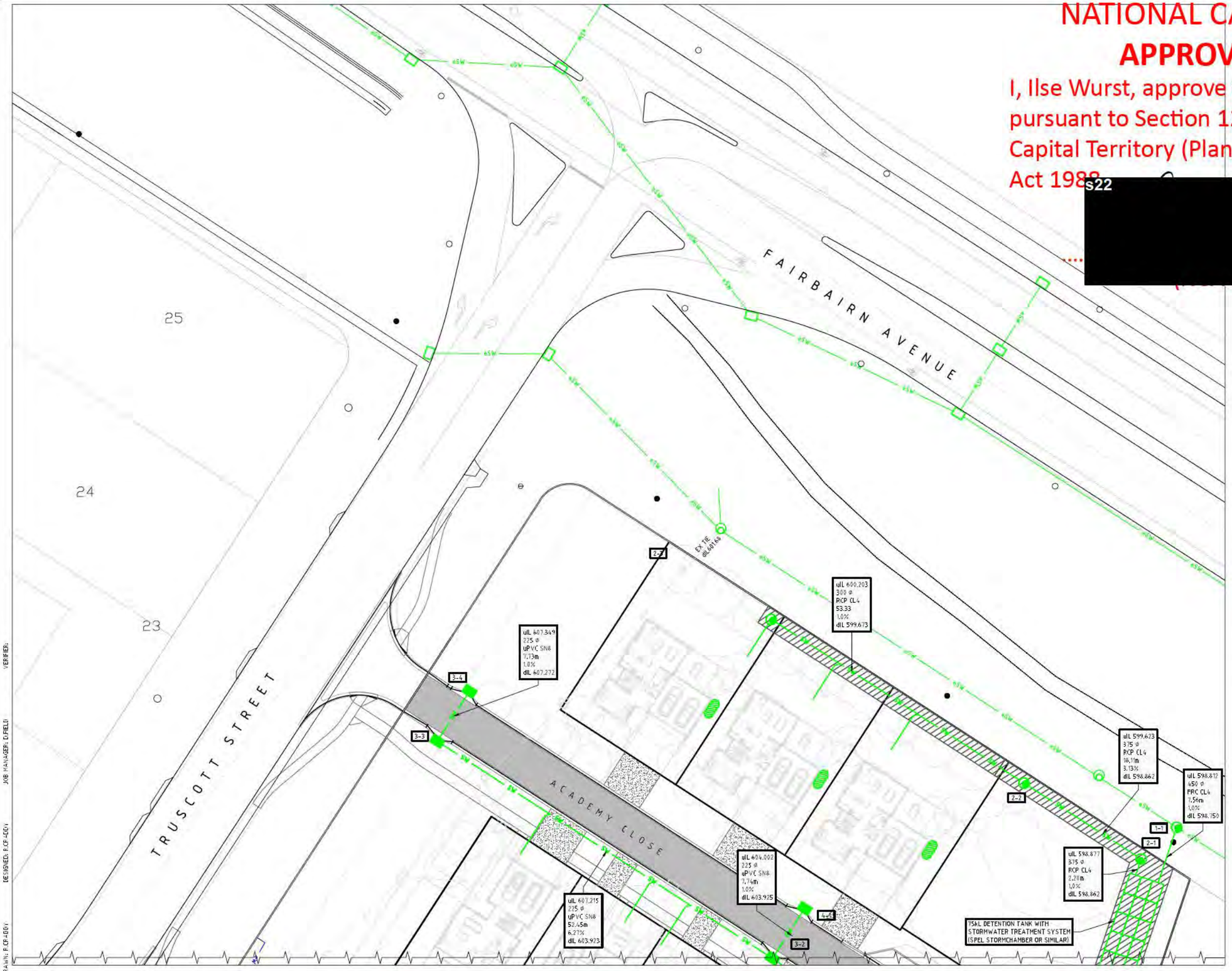
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988.

s22 [redacted]



LEGEND

PROPOSED SERVICES

STORMWATER MANHOLE

STORMWATER SUMP

PLANTATION SUMP SINGLE

HEADWALL

STRUCTURE NUMBER

5kL REUSE TANK

DETENTION / RAINWATER / STORMWATER TREATMENT SYSTEM (SPEL STORMCHAMBER OR SIMILAR)

WARNING

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DRAWN: R.CF-ADDY DESIGNED: R.CF-ADDY JOB MANAGER: CLIFIELD VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	FOR DISCUSSION	RC		DF	21.09.18
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7	PROGRESS ISSUE	JW		DF	06.12.19
8	DRAFT WORKS APPROVAL	JC		DF	30.04.20
9	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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Ph (02) 6285 1822 Fax (02) 6285 1983
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CONCEPT STORMWATER MANAGEMENT PLAN SHEET 2 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C161 REVISION: 9

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988
s22 [redacted]

STORMWATER SETOUT

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CLIENT: DHA Defence Housing Australia
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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CONCEPT STORMWATER MANAGEMENT PLAN SHEET 3 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C162
REVISION: 9
DRAWING SHEET SIZE = A1

DRAWN: F.CF-DOV DESIGNED: F.CF-DOV JOB MANAGER: D.FIELD VERIFIER:

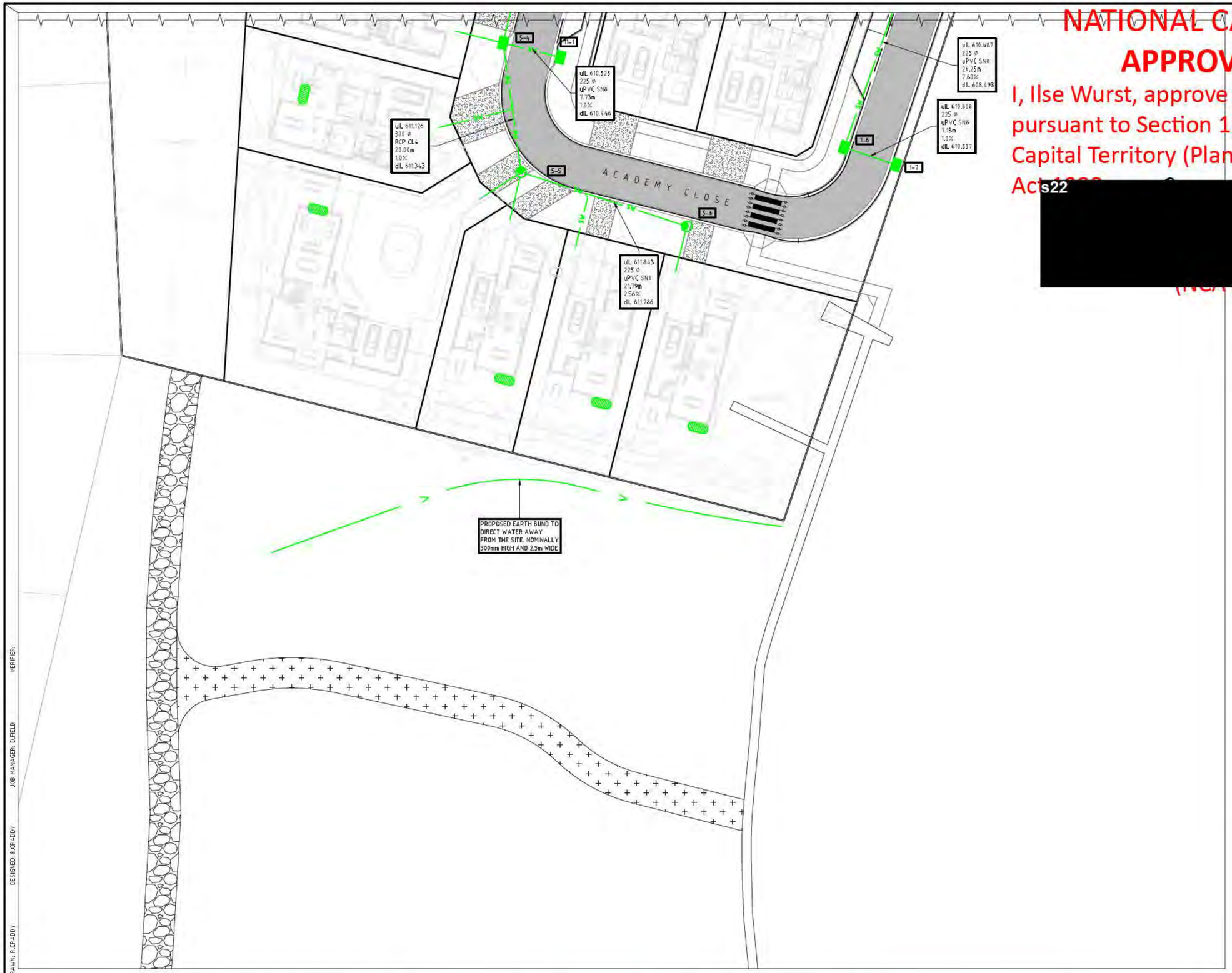
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Acts22 [redacted]

(NCA Delegate)



LEGEND

PROPOSED SERVICES

STORMWATER MANHOLE

STORMWATER SUMP

PLANTATION SUMP SINGLE

HEADWALL

STRUCTURE NUMBER

5kL REUSE TANK

GROSS POLLUTANT TRAP/WATER SENSITIVE STORMWATER TREATMENT SYSTEM (SPEL STORMCHAMBER OR SIMILAR)

WARNING

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DRAWN: F.CF-ODY DESIGNED: F.CF-ODY JOB MANAGER: C.FIELD VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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PROJECT: DEFENSE HOUSING AUSRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CONCEPT STORMWATER MANAGEMENT PLAN SHEET 4 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C163 REVISION: 9

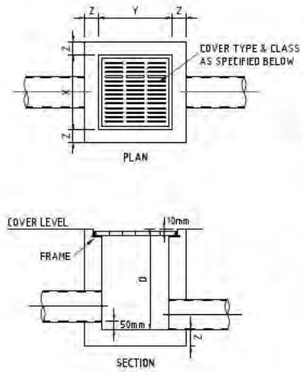
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 19[redacted]



PIT TYPES

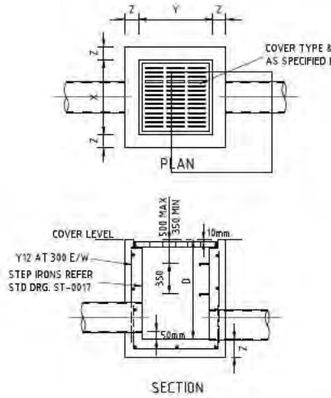
	CLEAR OPENING 'X'	'Y'	MAX DEPTH 'D'
TYPE 1	300	300	450
TYPE 2	450	450	750
TYPE 3	600	600	1050

WALL THICKNESS 'Z'
DEPTH = 600 Z = 100
DEPTH > 600 Z = 150

COVER TYPES
(A) CAST IRON COVER AND FRAME
(B) CAST IRON GRATE AND FRAME
(C) GALVANISED MILD STEEL GRATE AND FRAME
(D) GALVANISED MILD STEEL GRATE UNFRAMED WITH LOCKDOWN
(E) CONCRETE COVER

COVER CLASS
(1) EXTRA LIGHT DUTY (10kN LOADING)
(2) LIGHT DUTY (10kN LOADING)
(3) MEDIUM DUTY (150kN LOADING)
(4) HEAVY DUTY (210kN LOADING)

PIT DETAIL 1
N.T.S.



PIT TYPES

	CLEAR OPENING 'X'	'Y'	MAX DEPTH 'D'
TYPE 1	900	600	1200
TYPE 2	900	900	1800
TYPE 3	1200	900	2400

WALL THICKNESS 'Z'
DEPTH > 600 Z = 150

COVER TYPES
(A) CAST IRON COVER AND FRAME
(B) CAST IRON GRATE AND FRAME
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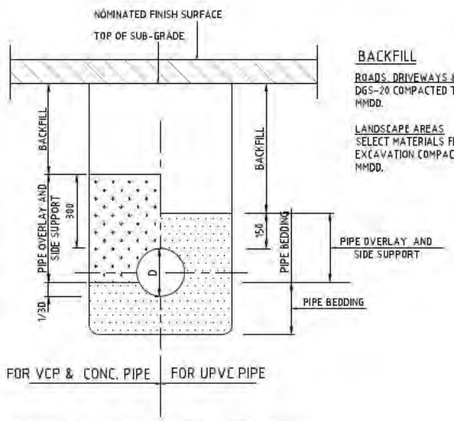
PIT DETAIL 2
N.T.S.



BACKFILL

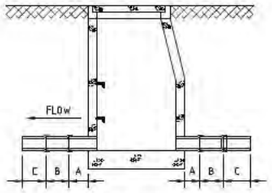
ROADS, DRIVEWAYS & PAVING
DGS-20 COMPACTED TO 95% MMDD.

LANDSCAPE AREAS
SELECT MATERIALS FROM EXCAVATION COMPACTED TO 90% MMDD.

BEDDING AND BACKFILL DETAILS

PIPE BEDDING AND BACKFILLING

	MATERIAL SPECIFICATION	COMPACTION METHOD	DEGREE OF COMPACTION
BACKFILL	IN TRAFFICKED AREA'S – HIGH GRADE DGS-20 'ROADBASE' CRUSHED ROCK. ELSEWHERE – MATERIAL OBTAINED FROM EXCAVATIONS OF THE PIPE TRENCH OR ELSEWHERE AND CONTAINING NOT MORE THAN 20% BY MASS OF STONES WITH A SIZE RANGE BETWEEN 75 AND 150 AND NONE LARGER THAN 150.	SUITABLE PLATE COMPACTOR IN LAYERS NOT EXCEEDING 150 THICKNESS.	THE MAXIMUM MODIFIED DRY DENSITY SHALL NOT BE LESS THAN: -90% FOR NON TRAFFICKED AREA'S -95% FOR TRAFFICKED AREA'S DETERMINED IN ACCORDANCE WITH AS.1289.E8.1, 2.1.1, 5.2.1, & 5.4.1
OVERLAY	IN TRAFFICKED AREA'S – HIGH GRADE DGS-20 'ROADBASE' CRUSHED ROCK. ELSEWHERE – SELECTED FINE MATERIAL OBTAINED FROM EXCAVATIONS OF PIPE TRENCH OR ELSEWHERE, FREE FROM ALL ORGANIC MATERIAL, CLAY LUMPS RETAINED ON A 75 SIEVE AND FROM STONES RETAINED ON A 26.5 SIEVE.	IN THE ZONE OF EMBEDMENT SELECTED FINES SHALL BE PLACED AND COMPACTED BY HAND TAMPING SO THAT THE PIPES ARE NEITHER DISLODGED NOR DAMAGED. REMAINDER OF THE SELECTED FINES SHALL BE COMPACTED USING A SUITABLE PLATE COMPACTOR. MATERIAL FOR PIPE SIDE SUPPORT AND OVERLAY SHALL BE THOROUGHLY RODDED WITH TAMPING BARS. PIPES SHALL BE LAID SO THAT THE GRANULAR BEDDING MATERIAL UNIFORMLY SUPPORTS THE BARREL OF THE PIPE.	THE MAXIMUM MODIFIED DRY DENSITY SHALL NOT BE LESS THAN: -90% FOR NON TRAFFICKED AREA'S -95% FOR TRAFFICKED AREA'S DETERMINED IN ACCORDANCE WITH AS.1289.E8.1, 2.1.1, 5.2.1, & 5.4.1
BEDDING	BEDDING SHALL CONSIST OF GRANULAR MATERIAL OF LOW PLASTICITY SUCH AS QUARRY FINES, OR COARSE RIVER SAND FREE FROM ORGANIC MATTER WITH 100% PASSING 13.2, MINIMUM OF 85% PASSING THE 2.36 AND NOT MORE THAN 15% PASSING THE 0.075 SIEVE.		

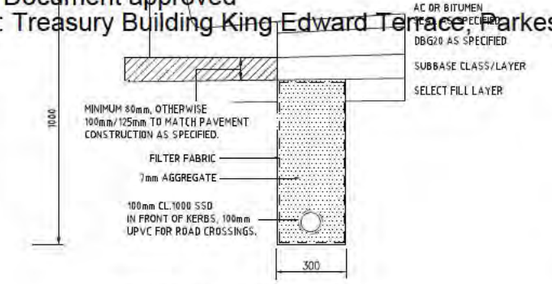


PIPE SPECIFICATION
1. FOR PIPES UP TO 375Ø
2. R.R.J. APPLY TO 375Ø

JOINT DIMENSIONS
A. 150 min, 750 max
B. 600 min, 1200max
C. 2400

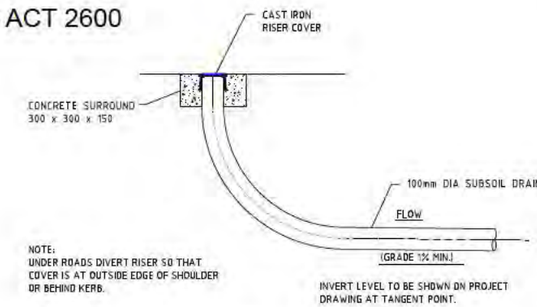
FLEXIBLE CONNECTION TO STRUCTURES
N.T.S.

Digitally signed by prod-win-adfs.ad.local
Date: 2020.09.08 08:53:16 +10:00
Reason: Document approved
Location: Treasury Building King Edward Terrace, Parkes ACT 2600

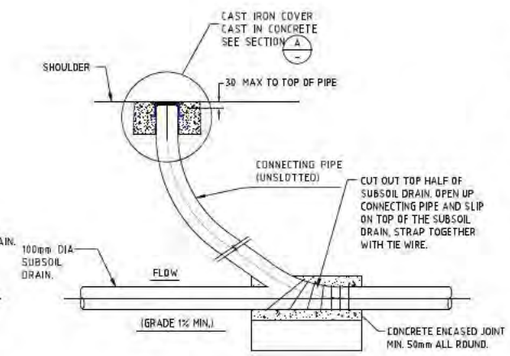


SUBSOIL DRAIN DETAIL (SSD)
N.T.S.

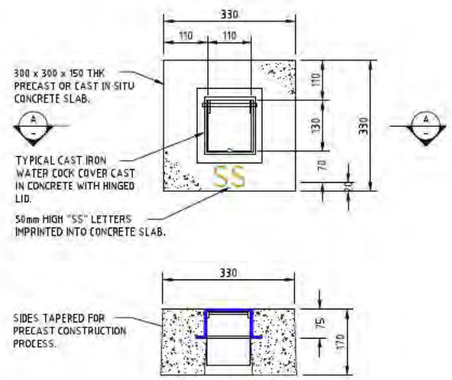
NOTE:
- MINIMUM GRADE OF SSD TO BE 1%
- HIGH END RISER DETAIL TO BE AS PER D.U.S. STD DWG DS6-01.
- TURN UP END RISERS BEHIND KERBS.



HIGH END RISER FLUSHING POINT



INTERMEDIATE RISER FLUSHING POINT



SECTION A

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR INFORMATION	RC		DF	31.08.18
2	FOR DISCUSSION	RC		DF	21.09.18
3	WORKS APPROVAL	RC		DF	11.04.19
4	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close
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Canberra
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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: STORMWATER DETAILS
SHEET 1 OF 2

JOB NUMBER: CR172699
DRAWING NUMBER: C165
REVISION: 4
DRAWING SHEET SIZE = A1

JOB MANAGER: DFIELDS
DESIGNED: R.CF-ADCV
DRAWN: R.CF-ADCV

08 Sep, 2020

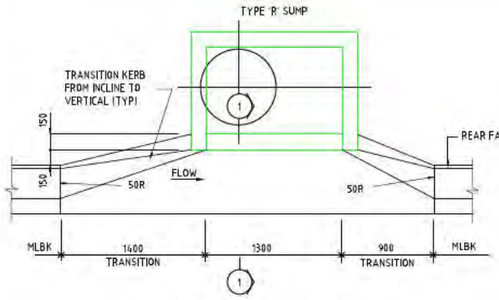
NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) b) of the Australian Capital Territory (Planning and Land Management) Act 1988

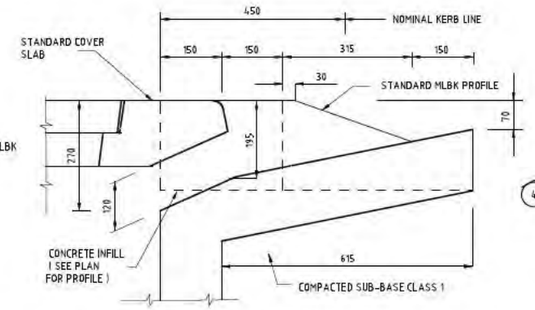
s22 [redacted]

(NCA Delegate)

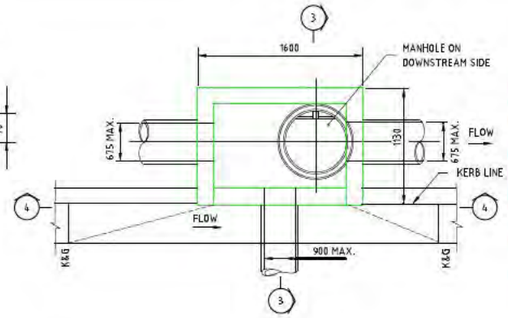


R SUMP ON MODIFIED LAYBACK KERB

TCCS STANDARD DRAWING ST-0011



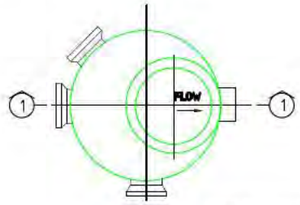
SECTION 1



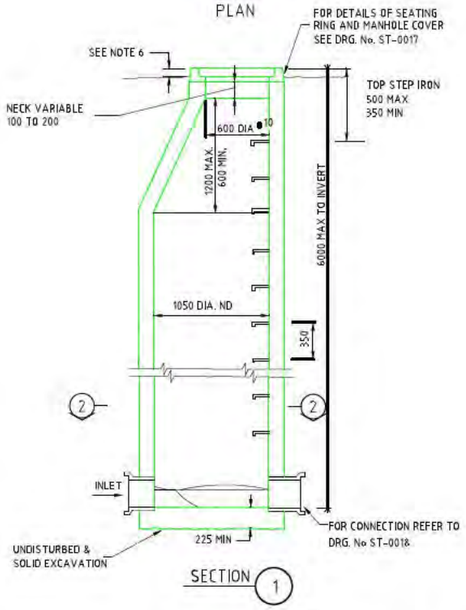
PLAN

DOUBLE SUMP - TYPE R ON KERB AND GUTTER

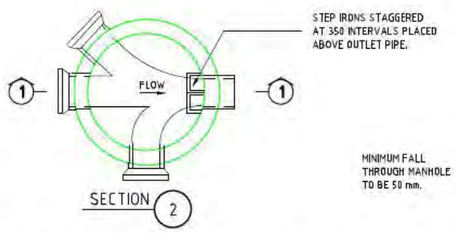
MAX DEPTH TO U.L. = 3500



PLAN



SECTION 1



SECTION 2

STANDARD 1050 ND TYPE MANHOLE

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR INFORMATION	RC		DF	31.08.18
2	FOR DISCUSSION	RC		DF	21.09.18
3	WORKS APPROVAL	RC		DF	11.04.19
4	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close

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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: STORMWATER DETAILS SHEET 2 OF 2

JOB NUMBER: CR172699

DRAWING NUMBER: C166

REVISION: 4

DRAWING SHEET SIZE = A1

DRAWN: R.CF-ODV DESIGNED: R.CF-ODV JOB MANAGER: D.FIELD VERIFIER:

08 Sep, 2020

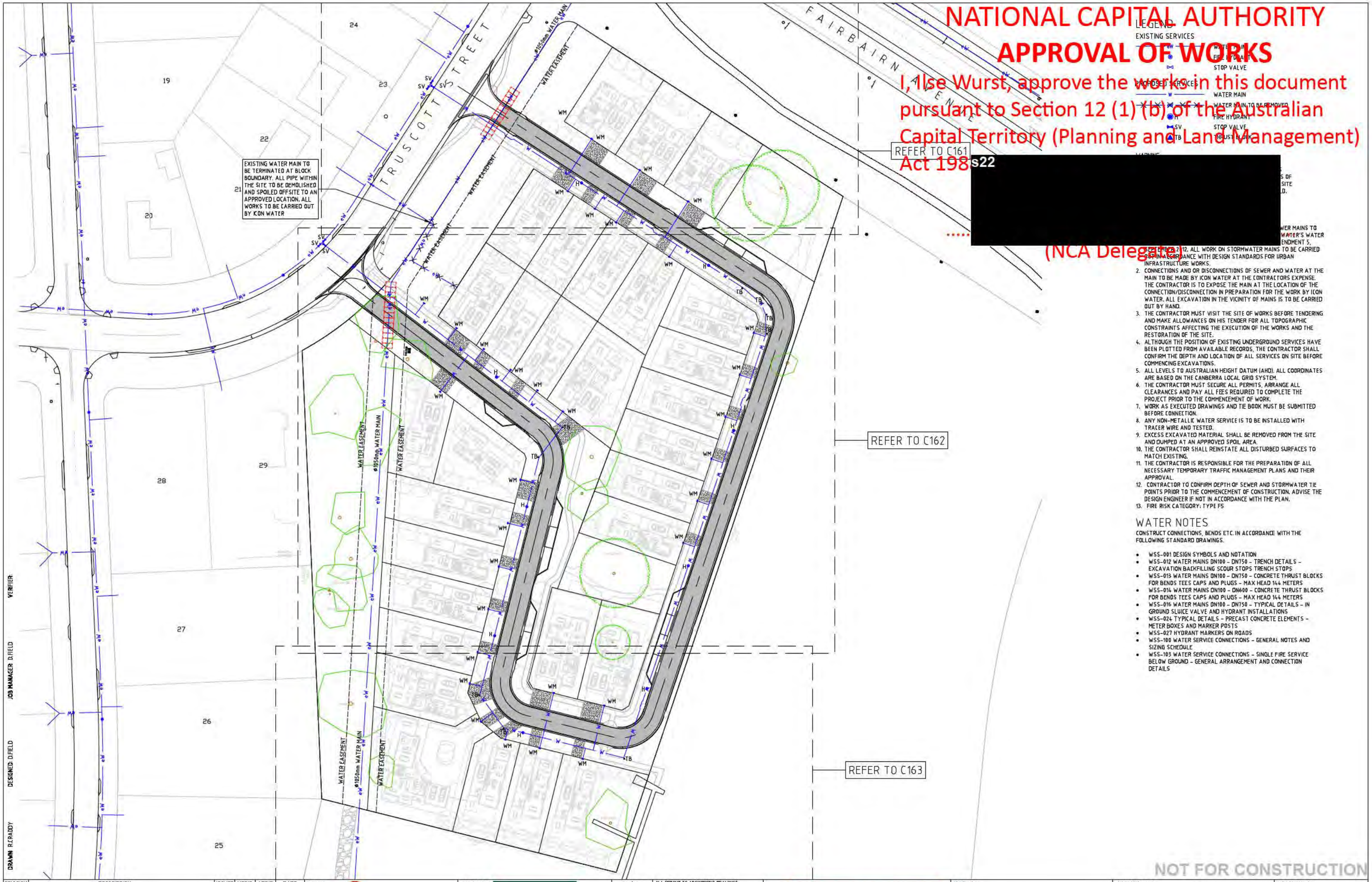
NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988

s22 [redacted]

(NCA Delegate)



2. CONNECTIONS AND OR DISCONNECTIONS OF SEWER AND WATER AT THE MAIN TO BE MADE BY ICON WATER AT THE CONTRACTORS EXPENSE. THE CONTRACTOR IS TO EXPOSE THE MAIN AT THE LOCATION OF THE CONNECTION/DISCONNECTION IN PREPARATION FOR THE WORK BY ICON WATER. ALL EXCAVATION IN THE VICINITY OF MAINS IS TO BE CARRIED OUT BY HAND.
3. THE CONTRACTOR MUST VISIT THE SITE OF WORKS BEFORE TENDERING AND MAKE ALLOWANCES ON HIS TENDER FOR ALL TOPOGRAPHIC CONSTRAINTS AFFECTING THE EXECUTION OF THE WORKS AND THE RESTORATION OF THE SITE.
4. ALTHOUGH THE POSITION OF EXISTING UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM AVAILABLE RECORDS, THE CONTRACTOR SHALL CONFIRM THE DEPTH AND LOCATION OF ALL SERVICES ON SITE BEFORE COMMENCING EXCAVATIONS.
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12. CONTRACTOR TO CONFIRM DEPTH OF SEWER AND STORMWATER TIE POINTS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ADVISE THE DESIGN ENGINEER IF NOT IN ACCORDANCE WITH THE PLAN.
13. FIRE RISK CATEGORY: TYPE FS

WATER NOTES

CONSTRUCT CONNECTIONS, BENDS ETC. IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

- WSS-001 DESIGN SYMBOLS AND NOTATION
- WSS-012 WATER MAINS DN100 – DN750 – TRENCH DETAILS – EXCAVATION BACKFILLING SCOUR STOPS TRENCH STOPS
- WSS-013 WATER MAINS DN100 – DN750 – CONCRETE THRUST BLOCKS FOR BENDS TEES CAPS AND PLUGS – MAX HEAD 144 METERS
- WSS-014 WATER MAINS DN100 – DN600 – CONCRETE THRUST BLOCKS FOR BENDS TEES CAPS AND PLUGS – MAX HEAD 144 METERS
- WSS-016 WATER MAINS DN100 – DN750 – TYPICAL DETAILS – IN GROUND SLUICE VALVE AND HYDRANT INSTALLATIONS
- WSS-024 TYPICAL DETAILS – PRECAST CONCRETE ELEMENTS – METER BOXES AND MARKER POSTS
- WSS-027 HYDRANT MARKERS ON ROADS
- WSS-100 WATER SERVICE CONNECTIONS – GENERAL NOTES AND SIZING SCHEDULE
- WSS-103 WATER SERVICE CONNECTIONS – SINGLE FIRE SERVICE BELOW GROUND – GENERAL ARRANGEMENT AND CONNECTION DETAILS

DRAWN: R.CRADDY | DESIGNED: D.FIELD | JOB MANAGER: D.FIELD | VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
2	FOR INFORMATION	RC		DF	05.09.18
3	WORKS APPROVAL	RC		DF	11.04.19
4	WORKS APPROVAL	RC		DF	17.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20
7	WORKS APPROVAL	JC		DF	01.07.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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0 5 10 15 20 25m PLAN SCALE 1:500 @ A1

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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: WATER PLAN KEY PLAN SHEET 1 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C170 | REVISION: 7

DRAWING SHEET SIZE = A1

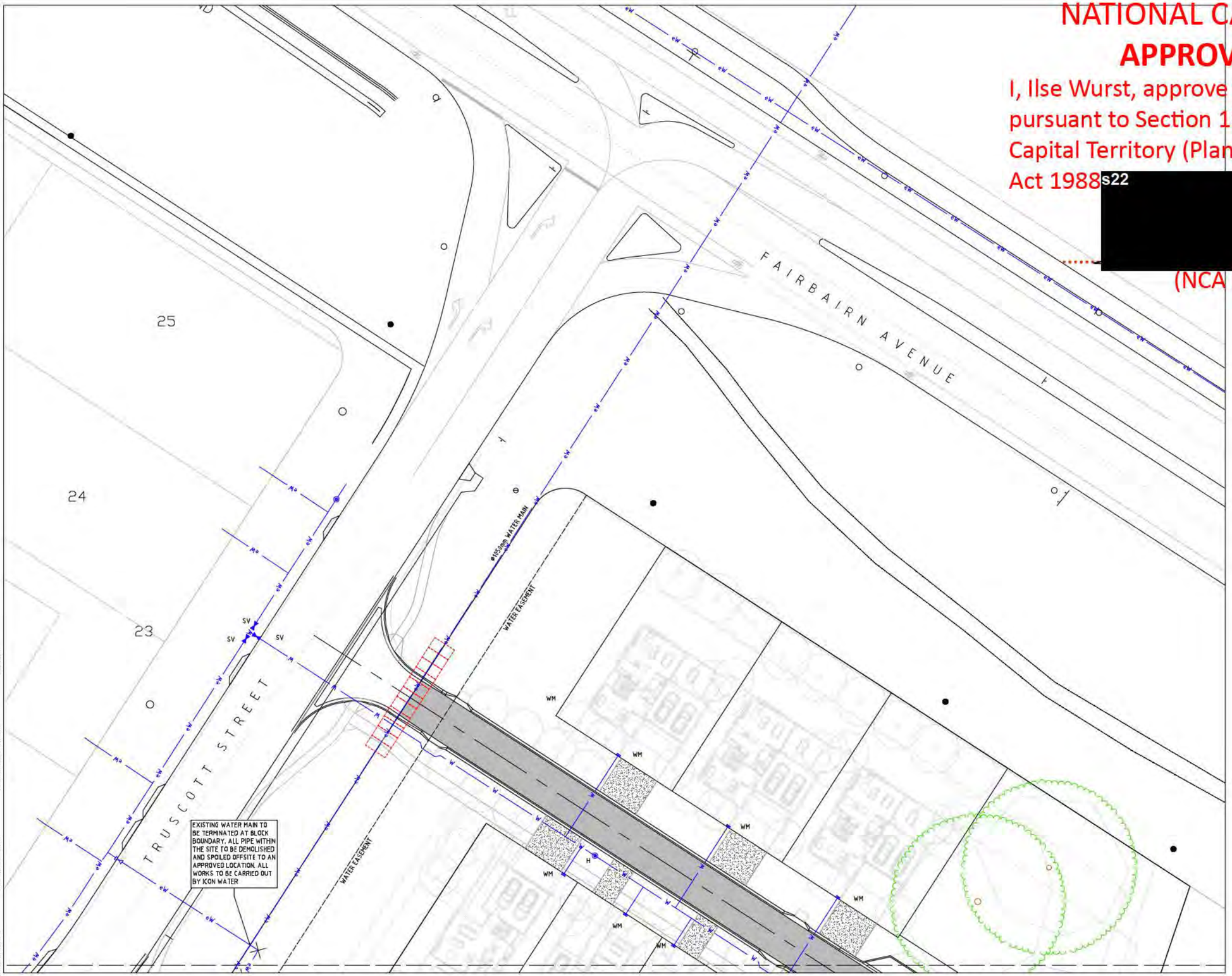
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988 s22 [redacted]

(NCA Delegate)



LEGEND

EXISTING SERVICES

WATER MAIN
FIRE HYDRANT
STOP VALVE

PROPOSED SERVICES

WATER MAIN
WATER MAIN TO BE REMOVED
FIRE HYDRANT
STOP VALVE
THRUST BLOCK

...ON
...ES
...ONS OF
...ON SITE
...IELD.

...SEWER MAINS TO
...ON WATER'S WATER
...AMENDMENT 5,
...12. ALL WORK ON STORMWATER MAINS TO BE CARRIED
...IN ACCORDANCE WITH DESIGN STANDARDS FOR URBAN INFRASTRUCTURE WORKS.

2. CONNECTIONS AND OR DISCONNECTIONS OF SEWER AND WATER AT THE MAIN TO BE MADE BY ICON WATER AT THE CONTRACTORS EXPENSE. THE CONTRACTOR IS TO EXPOSE THE MAIN AT THE LOCATION OF THE CONNECTION/DISCONNECTION IN PREPARATION FOR THE WORK BY ICON WATER. ALL EXCAVATION IN THE VICINITY OF MAINS IS TO BE CARRIED OUT BY HAND.
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13. FIRE RISK CATEGORY: TYPE FS

WATER NOTES

CONSTRUCT CONNECTIONS, BENDS ETC. IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

- WSS-001 DESIGN SYMBOLS AND NOTATION
- WSS-012 WATER MAINS DN100 – DN750 – TRENCH DETAILS – EXCAVATION BACKFILLING SCOUR STOPS TRENCH STOPS
- WSS-013 WATER MAINS DN100 – DN750 – CONCRETE THRUST BLOCKS FOR BENDS TEES CAPS AND PLUGS – MAX HEAD 144 METERS
- WSS-014 WATER MAINS DN100 – DN600 – CONCRETE THRUST BLOCKS FOR BENDS TEES CAPS AND PLUGS – MAX HEAD 144 METERS
- WSS-016 WATER MAINS DN100 – DN750 – TYPICAL DETAILS – IN GROUND SLUICE VALVE AND HYDRANT INSTALLATIONS
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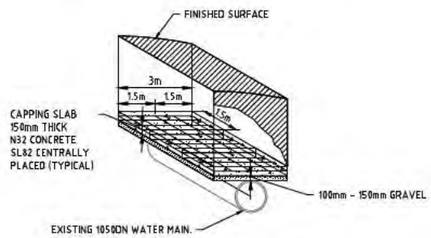

CAPPING SLAB DETAIL
NTS

NOT FOR CONSTRUCTION

DRAWN R.RADDY | DESIGNED D.FIELD | JOB MANAGER D.FIELD | VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	WORKS APPROVAL	RC		DF	11.04.19
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CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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0 2.5 5.0 7.5 10.0 12.5m PLAN SCALE 1:250 @ A1

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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: WATER PLAN SHEET 2 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C171 | REVISION: 8

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

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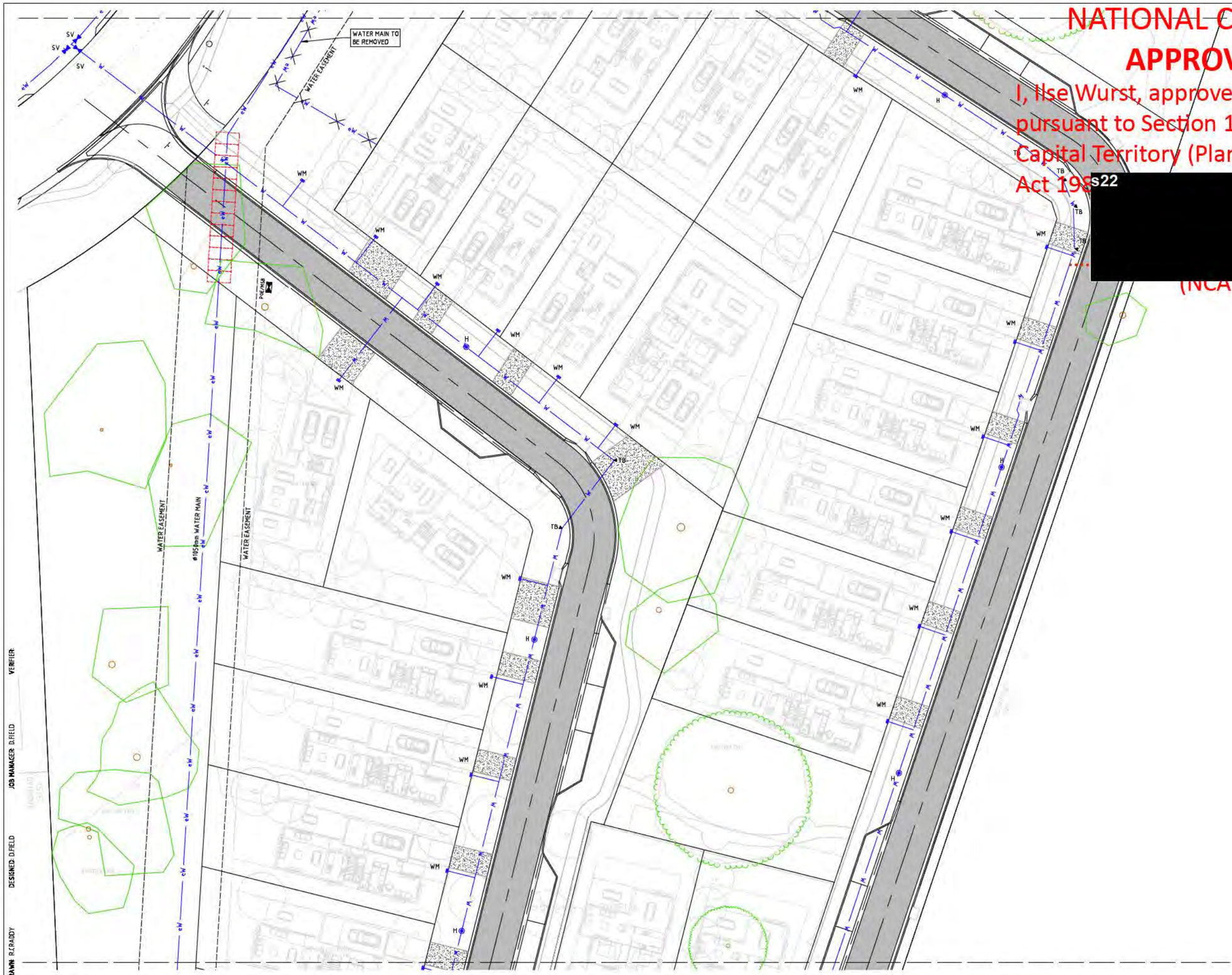
s22 [redacted]

(NCA Delegate)



LEGEND

EXISTING SERVICES

WATER MAIN
FIRE HYDRANT
STOP VALVE

PROPOSED SERVICES

WATER MAIN
WATER MAIN TO BE REMOVED
FIRE HYDRANT
STOP VALVE
THRUST BLOCK

...ER MAINS TO ...ATER'S WATER ...NDMENT 5, ...TO BE CARRIED ...IN ACCORDANCE WITH DESIGN STANDARDS FOR URBAN INFRASTRUCTURE WORKS.

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- WSS-013 WATER MAINS DN100 – DN750 – CONCRETE THRUST BLOCKS FOR BENDS TEES CAPS AND PLUGS – MAX HEAD 144 METERS
- WSS-014 WATER MAINS DN100 – DN600 – CONCRETE THRUST BLOCKS FOR BENDS TEES CAPS AND PLUGS – MAX HEAD 144 METERS
- WSS-016 WATER MAINS DN100 – DN750 – TYPICAL DETAILS – IN GROUND SLUICE VALVE AND HYDRANT INSTALLATIONS
- WSS-024 TYPICAL DETAILS – PRECAST CONCRETE ELEMENTS – METER BOXES AND MARKER POSTS
- WSS-027 HYDRANT MARKERS ON ROADS
- WSS-100 WATER SERVICE CONNECTIONS – GENERAL NOTES AND SIZING SCHEDULE
- WSS-103 WATER SERVICE CONNECTIONS – SINGLE FIRE SERVICE BELOW GROUND – GENERAL ARRANGEMENT AND CONNECTION DETAILS

DRAWN: R.CRADDY DESIGNED: D.FIELD JOB MANAGER: D.FIELD VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
2	FOR INFORMATION	RC		DF	05.09.18
3	WORKS APPROVAL	RC		DF	11.04.19
4	WORKS APPROVAL	RC		DF	17.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20
7	WORKS APPROVAL	JC		DF	01.07.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: WATER PLAN SHEET 3 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C172 REVISION: 7

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988

s22 [redacted]

(NCA Delegate)

LEGEND

EXISTING SERVICES

- WATER MAIN
- FIRE HYDRANT
- STOP VALVE

PROPOSED SERVICES

- WATER MAIN
- WATER MAIN TO BE REMOVED
- FIRE HYDRANT
- STOP VALVE
- THRUST BLOCK

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH DESIGN STANDARDS FOR URBAN INFRASTRUCTURE WORKS.
2. CONNECTIONS AND OR DISCONNECTIONS OF SEWER AND WATER AT THE MAIN TO BE MADE BY ICON WATER AT THE CONTRACTORS EXPENSE. THE CONTRACTOR IS TO EXPOSE THE MAIN AT THE LOCATION OF THE CONNECTION/DISCONNECTION IN PREPARATION FOR THE WORK BY ICON WATER. ALL EXCAVATION IN THE VICINITY OF MAINS IS TO BE CARRIED OUT BY HAND.
3. THE CONTRACTOR MUST VISIT THE SITE OF WORKS BEFORE TENDERING AND MAKE ALLOWANCES ON HIS TENDER FOR ALL TOPOGRAPHIC CONSTRAINTS AFFECTING THE EXECUTION OF THE WORKS AND THE RESTORATION OF THE SITE.
4. ALTHOUGH THE POSITION OF EXISTING UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM AVAILABLE RECORDS, THE CONTRACTOR SHALL CONFIRM THE DEPTH AND LOCATION OF ALL SERVICES ON SITE BEFORE COMMENCING EXCAVATIONS.
5. ALL LEVELS TO AUSTRALIAN HEIGHT DATUM (AHD). ALL COORDINATES ARE BASED ON THE CANBERRA LOCAL GRID SYSTEM.
6. THE CONTRACTOR MUST SECURE ALL PERMITS, ARRANGE ALL CLEARANCES AND PAY ALL FEES REQUIRED TO COMPLETE THE PROJECT PRIOR TO THE COMMENCEMENT OF WORK.
7. WORK AS EXECUTED DRAWINGS AND TIE BOOK MUST BE SUBMITTED BEFORE CONNECTION.
8. ANY NON-METALLIC WATER SERVICE IS TO BE INSTALLED WITH TRACER WIRE AND TESTED.
9. EXCESS EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE AND DUMPED AT AN APPROVED SPOIL AREA.
10. THE CONTRACTOR SHALL REINSTATE ALL DISTURBED SURFACES TO MATCH EXISTING.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE PREPARATION OF ALL NECESSARY TEMPORARY TRAFFIC MANAGEMENT PLANS AND THEIR APPROVAL.
12. CONTRACTOR TO CONFIRM DEPTH OF SEWER AND STORMWATER TIE POINTS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ADVISE THE DESIGN ENGINEER IF NOT IN ACCORDANCE WITH THE PLAN.
13. FIRE RISK CATEGORY: TYPE FS

WATER NOTES

CONSTRUCT CONNECTIONS, BENDS ETC. IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

- WSS-001 DESIGN SYMBOLS AND NOTATION
- WSS-012 WATER MAINS DN100 – DN750 – TRENCH DETAILS – EXCAVATION BACKFILLING SCOUR STOPS TRENCH STOPS
- WSS-013 WATER MAINS DN100 – DN750 – CONCRETE THRUST BLOCKS FOR BENDS TEES CAPS AND PLUGS – MAX HEAD 144 METERS
- WSS-014 WATER MAINS DN100 – DN600 – CONCRETE THRUST BLOCKS FOR BENDS TEES CAPS AND PLUGS – MAX HEAD 144 METERS
- WSS-016 WATER MAINS DN100 – DN750 – TYPICAL DETAILS – IN GROUND SLUICE VALVE AND HYDRANT INSTALLATIONS
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NOT FOR CONSTRUCTION

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6	WORKS APPROVAL	JC		DF	14.05.20
7	WORKS APPROVAL	JC		DF	01.07.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: WATER PLAN SHEET 4 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C173

REVISION: 7

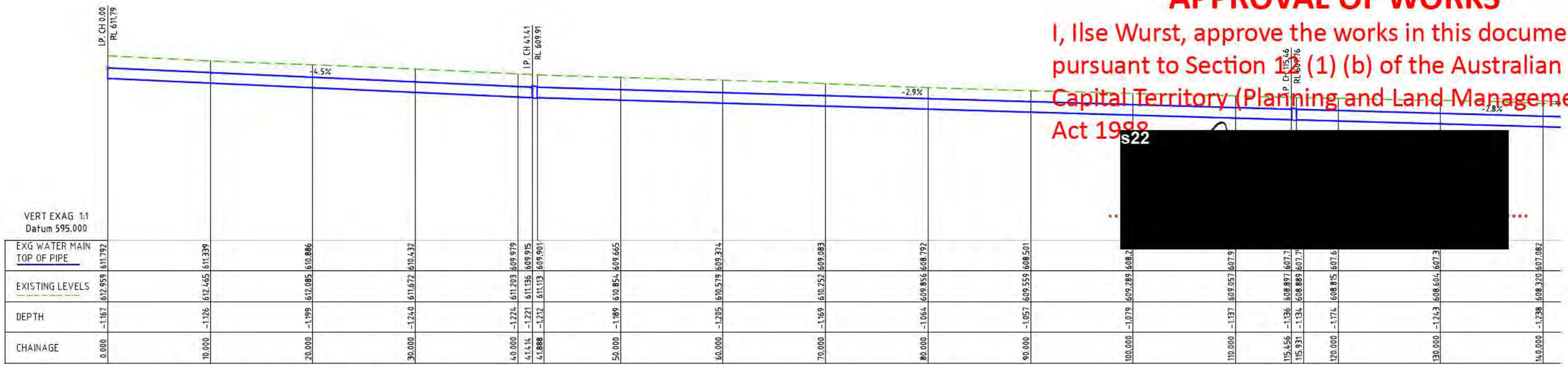
DRAWING SHEET SIZE = A1

08 Sep, 2020

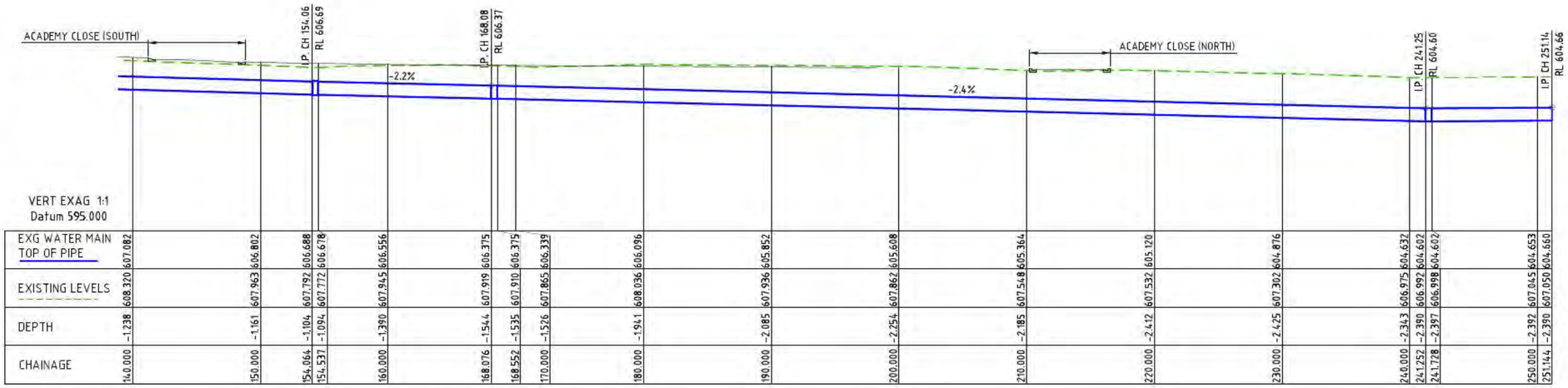
NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 1[redacted] (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 19[redacted]

s22 [redacted]



ALIGNMENT - PP_WATER_MAIN LONG SECTION



VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: F.CF-DOV
DRAWN: F.CF-DOV

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR DISCUSSION	RC		DF	12.10.18
2	WORKS APPROVAL	RC		DF	11.04.19
3	DRAFT WORKS APPROVAL	JC		DF	30.04.20
4	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close

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0 2 4 6 8 10m PLAN SCALE 1:200 @ A1

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SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1883
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXISTING 1050mm WATER MAIN
LONG SECTION
CH:00.000 - CH:251.144

JOB NUMBER: CR172699
DRAWING NUMBER: C176
REVISION: 4
DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

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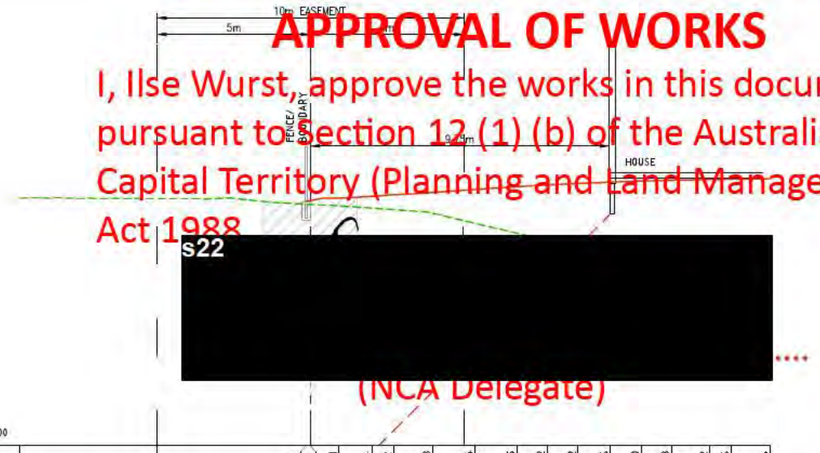
s22 [redacted]

(NCA Delegate)

Datum: 605.000

PROPOSED LEVELS					611.811	612.087	611.872		611.792		611.795
EXISTING LEVELS	611.388	611.563	611.743		611.811	611.839	611.860		612.119		612.215
LEVEL DIFFERENCE					0.000	0.247	0.013		-0.327		-0.420
OFFSETS	-10.00	-5.00	0.00		2.386	3.386	4.107	5.00	10.00		15.000

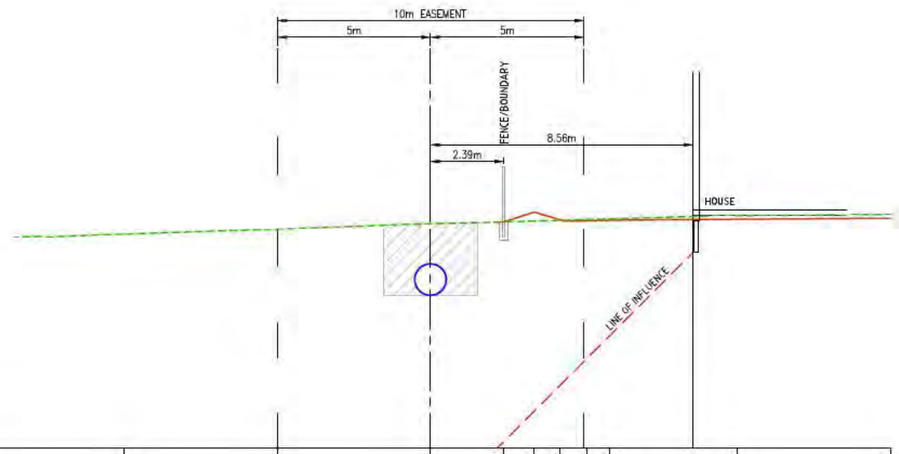
CH: 40.301



Datum: 600.000

PROPOSED LEVELS				607.866	607.960	607.985	608.061	608.124	608.172	608.248	608.344		608.435	608.492	608.542	608.585	608.620	608.648		608.672	608.675	608.694
EXISTING LEVELS	608.044			607.866	607.859	607.863	607.736	607.687	607.572	607.242	607.243		606.922	606.672	606.611	606.635	606.658	606.681		606.709	606.726	606.770
LEVEL DIFFERENCE				0.094	0.126	0.253	0.387	0.435	0.677	0.677	1.101		1.514	1.820	1.931	1.951	1.962	1.967		1.963	1.950	1.924
OFFSETS		-5.00		-0.138	0.000	0.940	2.005	2.714	3.987		5.363		6.738	7.738	8.738	9.793	10.785	11.777		13.826	13.733	15.000

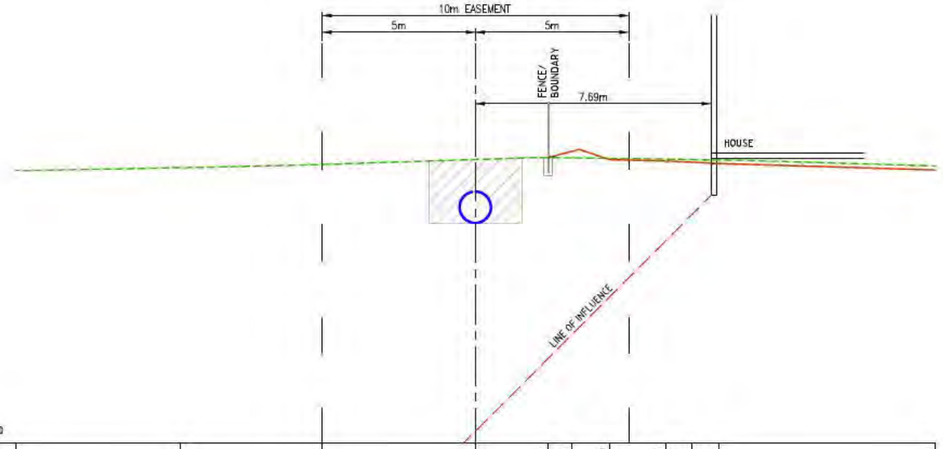
CH: 182.159



Datum: 605.000

PROPOSED LEVELS					612.377	612.697	612.646	612.414	612.430	612.465	612.437
EXISTING LEVELS	611.981	612.145	612.320		612.377	612.486	612.430	612.455	612.476	612.581	612.422
LEVEL DIFFERENCE					0.000	0.292	0.016	-0.041	-0.046	-0.116	-0.125
OFFSETS	-10.00	-5.00	0.00		2.387	3.387	4.224	5.097	5.844	10.00	15.00

CH: 25.513



Datum: 600.000

PROPOSED LEVELS				609.312	609.518	609.249	609.199	609.161	609.121		608.910
EXISTING LEVELS	609.984	609.888	609.249	609.312	609.302	609.286	609.262	609.247	609.232		609.040
LEVEL DIFFERENCE				0.000	0.216	-0.038	-0.062	-0.086	-0.111		-0.130
OFFSETS	-10.00	-5.00	0.00	2.379	3.153	4.379	6.211	7.076	7.953		15.000

CH: 113.667

NOT FOR CONSTRUCTION

VERIFIED:

JOB MANAGER: D.FIELD

DESIGNED: F.CF-LOU

DRAWN: F.CF-LOU

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR DISCUSSION	RC		DF	24.09.18
2	FOR DISCUSSION	RC		DF	12.10.18
3	WORKS APPROVAL	RC		DF	11.04.19
4	DRAFT WORKS APPROVAL	JC		DF	30.04.20
5	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close

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0 1 2 3 4 5m PLAN SCALE 1:100 @ A1

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXISTING WATER MAIN
CROSS SECTIONS
CH:25.513 - CH:182.159

JOB NUMBER: CR172699

DRAWING NUMBER: C177

REVISION: 5

DRAWING SHEET SIZE = A1

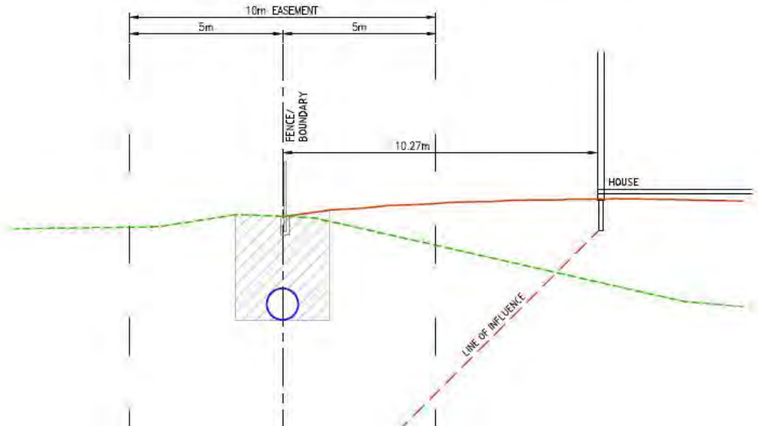
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 198[redacted]

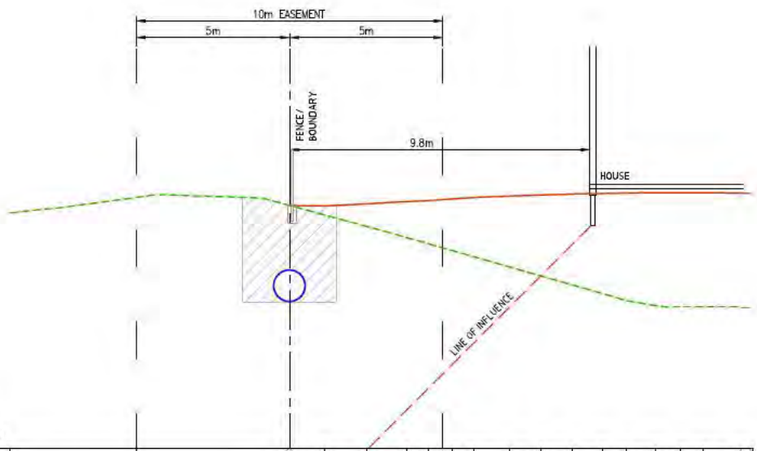
s22



Datum: 600.000

PROPOSED LEVELS				607.445	607.660	607.706	607.796	607.825	607.898	607.918	607.932	607.976	607.981	608.005	608.002	608.015		607.987	607.960	607.945
EXISTING LEVELS	607.090			607.448 607.445	607.264	607.053	606.859	606.694	606.407	606.240	606.072	605.786	605.607	605.436	605.261	605.072	604.660		604.565	604.503
LEVEL DIFFERENCE				0.000	0.396	0.653	0.936	1.131	1.491	1.678	1.860	2.190	2.374	2.569	2.741	2.942	3.327		3.394	3.442
OFFSETS	-5.00			0.000 0.077	1.622	2.569	3.427	4.156	5.424	6.163	6.902	8.166	8.956	9.711	10.485	11.318	13.224		14.238	15.000

CH: 242.009



Datum: 600.000

PROPOSED LEVELS				607.929	607.919	607.909	607.877	608.049	608.082	608.135	608.179	608.230	608.265	608.294	608.315	608.325	608.335	608.335	608.339	608.325	608.320
EXISTING LEVELS	608.184			607.929 607.923	607.689	607.337	606.881	606.673	606.456	606.254	605.955	605.624	605.339	605.054	604.820	604.655	604.689	604.610	604.688	604.607
LEVEL DIFFERENCE				0.000 -0.004	0.299	0.740	1.167	1.409	1.679	1.925	2.315	2.641	2.954	3.261	3.505	3.680	3.726	3.730	3.718	3.713
OFFSETS	-5.00			-0.023 0.000	1.153	2.523	3.685	4.532	5.293	5.999	7.186	8.205	9.202	10.200	10.975	11.952	12.748	13.493	14.744	15.000

CH: 205.495

DRAWN: F.CF-ADDY
DESIGNED: F.CF-ADDY
JOB MANAGER: D.FIELD
VERIFIER:

NOT FOR CONSTRUCTION

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2	FOR DISCUSSION	RC		DF	12.10.18
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4	DRAFT WORKS APPROVAL	JC		DF	30.04.20
5	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXISTING WATER MAIN
CROSS SECTIONS
CH:205.495 - CH:242.009

JOB NUMBER: CR172699
DRAWING NUMBER: C178
REVISION: 5
DRAWING SHEET SIZE = A1

08 Sep, 2020

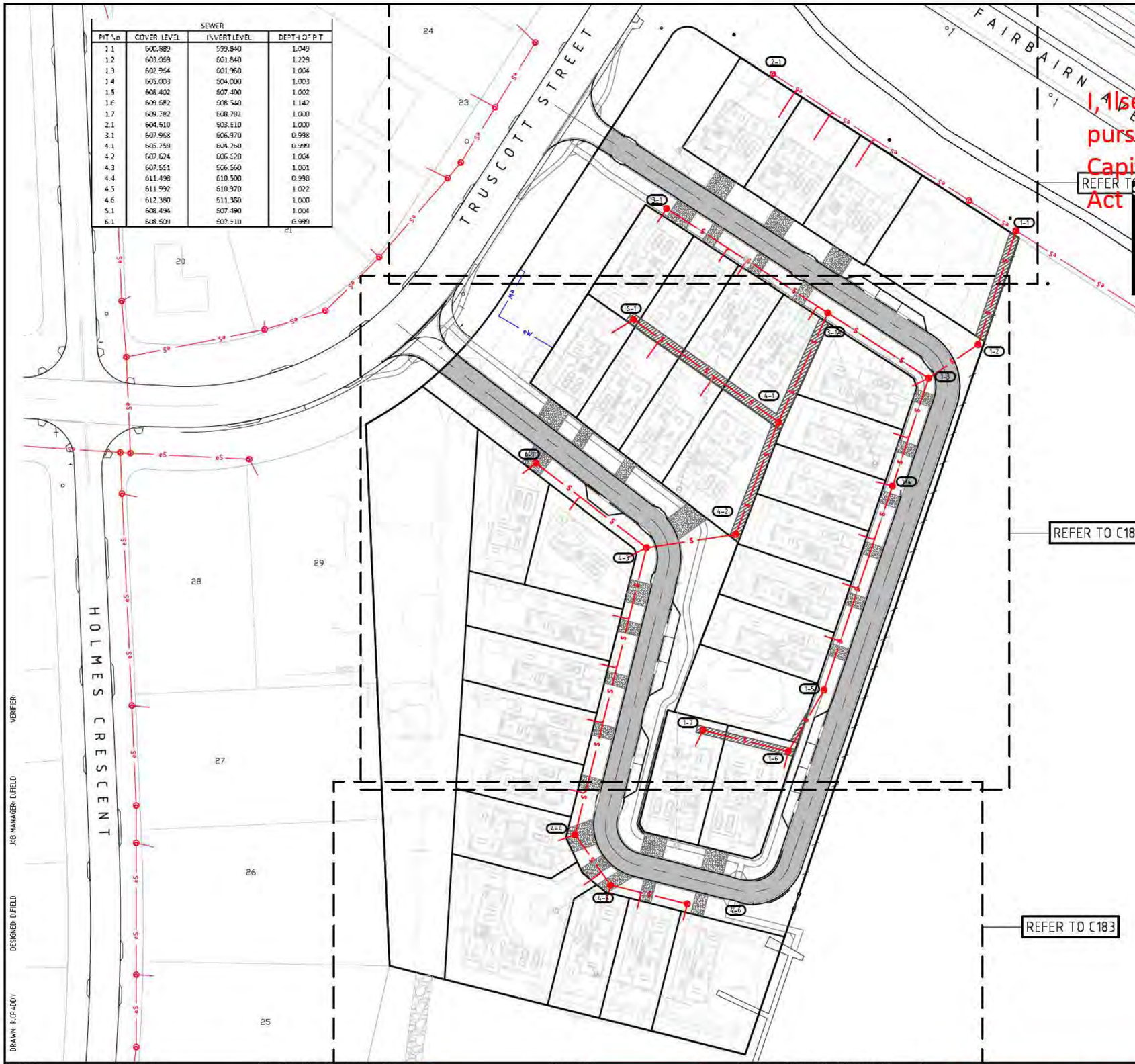
NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12(1) (b) of the Australian Capital Territory (Planning and Land Management) Act

s22 [redacted]

(NCA Reference: [redacted])



SEWER			
PIT No	COVER LEVEL	INVERT LEVEL	DEPTH OF PIT
1.1	600.889	599.840	1.049
1.2	603.069	601.840	1.229
1.3	602.964	601.960	1.004
1.4	605.003	604.000	1.003
1.5	608.402	607.400	1.002
1.6	609.682	608.540	1.142
1.7	609.782	608.782	1.000
2.1	604.610	603.610	1.000
3.1	607.968	606.970	0.998
4.1	605.759	604.760	0.999
4.2	607.624	606.620	1.004
4.3	607.661	606.660	1.001
4.4	611.498	610.500	0.998
4.5	611.992	610.970	1.022
4.6	612.380	611.380	1.000
5.1	608.494	607.490	1.004
6.1	608.609	607.610	0.999

LEGEND

EXISTING SERVICES

SEWER MAIN

SEWER MANHOLE

PROPOSED SERVICES

SEWER MAIN

SEWER MAIN TO BE REMOVED

SEWER MANHOLE

WARNING:
EXISTING SERVICES SHOWN ARE BASED ON INFORMATION PROVIDED BY SERVICE AUTHORITIES AND ARE ESTIMATES. ON-LINE INVESTIGATIONS SHOULD THE LOCATIONS OF SERVICES SHOWN ON THIS PLAN BE RELIED UPON FOR ON SITE

ARRIED OUT IN
GE STANDARDS.
MAINS TO BE
STRUCTURE

IN TO BE MADE BY
POSE THE MAIN AT
THE WORK BY ICON

WATER. ALL EXCAVATION IN THE VICINITY OF MAINS IS TO BE CARRIED OUT BY HAND.
3. THE CONTRACTOR SHALL VISIT THE SITE OF WORKS BEFORE TENDERING AND MAKE ALLOWANCES ON HIS TENDER FOR ALL TOPOGRAPHIC CONSTRAINTS AFFECTING THE EXECUTION OF THE WORKS AND THE RESTORATION OF THE SITE.
4. ALTHOUGH THE POSITION OF EXISTING UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM AVAILABLE RECORDS, THE CONTRACTOR SHALL CONFIRM THE DEPTH AND LOCATION OF ALL SERVICES ON SITE BEFORE COMMENCING EXCAVATIONS.
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7. WORK AS EXECUTED DRAWINGS AND TIE BOOK MUST BE SUBMITTED BEFORE CONNECTION.
8. ANY NON-METALLIC WATER SERVICE IS TO BE INSTALLED WITH TRACER WIRE AND TESTED.
9. EXCESS EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE AND DUMPED AT AN APPROVED SPOIL AREA.
10. THE CONTRACTOR SHALL REINSTATE ALL DISTURBED SURFACES TO MATCH EXISTING.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE PREPARATION OF ALL NECESSARY TEMPORARY TRAFFIC MANAGEMENT PLANS AND THEIR APPROVAL.
12. CONTRACTOR TO CONFIRM DEPTH OF SEWER AND STORMWATER TIE POINTS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ADVISE THE DESIGN ENGINEER IF NOT IN ACCORDANCE WITH THE PLAN.
13. FIRE RISK CATEGORY: TYPE F5

SEWER NOTES

CONSTRUCT STRUCTURES AND CONNECTIONS IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

- ROAD VERGE DRAWINGS – DRAWING NOS. SEP4 – 01 TO 06, CHAPTER 4 (ROAD VERGES) (REFERENCE 10,15)
- WSS-038 SEWERAGE SYSTEM – DESIGN SYMBOLS AND NOTATION
- WSS-052 DN1050 CAST INSITU MAINTENANCE HOLE
- WSS-054 TYPICAL HOUSE CONNECTIONS – SERVICE TIES
- WSS-056 STANDARD BEDDING DETAILS FOR SEWERS – DN100 – DN300
- WSS-058 CLASS D GATIC CONCRETE MAINTENANCE HOLE COVER AND SURROUND
- WSS-061 SEWER MAINTENANCE SHAFTS AND RODDING POINTS – TYPICAL ARRANGEMENT
- WSS-062 STANDARD OFFSETS FOR SIMPLE MAINTENANCE HOLE CONFIGURATIONS

SEWER SETOUT

POINT #	ELEVATION	EASTING	NORTHING	STRUCTURE TYPE
1.1	600.889	213977.7900	603246.6642	1050 MANHOLE
1.2	603.069	213968.5183	603219.0482	1050 MANHOLE
1.3	602.964	213956.5411	603210.8656	1050 MANHOLE
1.4	605.003	213947.7625	603184.6923	1050 MANHOLE
1.5	608.402	213931.1376	603135.2013	1050 MANHOLE
1.6	609.682	213922.4754	603120.2743	1050 MANHOLE
1.7	609.782	213901.7170	603125.4525	1050 MANHOLE
2.1	604.610	213911.6337	603289.3070	1050 MANHOLE
3.1	607.968	213890.1823	603253.8429	1050 MANHOLE
4.1	605.759	213909.4816	603207.6851	1050 MANHOLE
4.2	607.624	213891.8535	603180.4633	1050 MANHOLE
4.3	607.661	213888.0228	603169.6987	1050 MANHOLE
4.4	611.498	213870.6540	603100.0723	1050 MANHOLE
4.5	611.992	213879.2865	603087.8813	1050 MANHOLE
4.6	612.380	213906.1018	603081.2372	1050 MANHOLE
5.1	608.494	213874.9195	603232.0720	1050 MANHOLE
6.1	608.609	213861.1888	603190.2771	1050 MANHOLE

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
2	FOR INFORMATION	RC		DF	05.09.18
3	WORKS APPROVAL	RC		DF	11.04.19
4	WORKS APPROVAL	RC		DF	17.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20
7	SUBJECT TO AUTHORITY APPROVAL	TE		DF	14.07.20

DESIGNED: DFIELD
DRAWN: FJC-ADOV
JOB MANAGER: DFIELD
VERIFIER:

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close

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NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: SEWER PLAN
KEY PLAN
SHEET 1 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C180

REVISION: 7

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1)(b) of the Australian Capital Territory (Planning and Land Management) Act 1988.

s22 [redacted]

(NCA Delegate)

LEGEND

EXISTING SERVICES

SEWER MAIN

EXISTING SEWER PIPE

SEWER MANHOLE

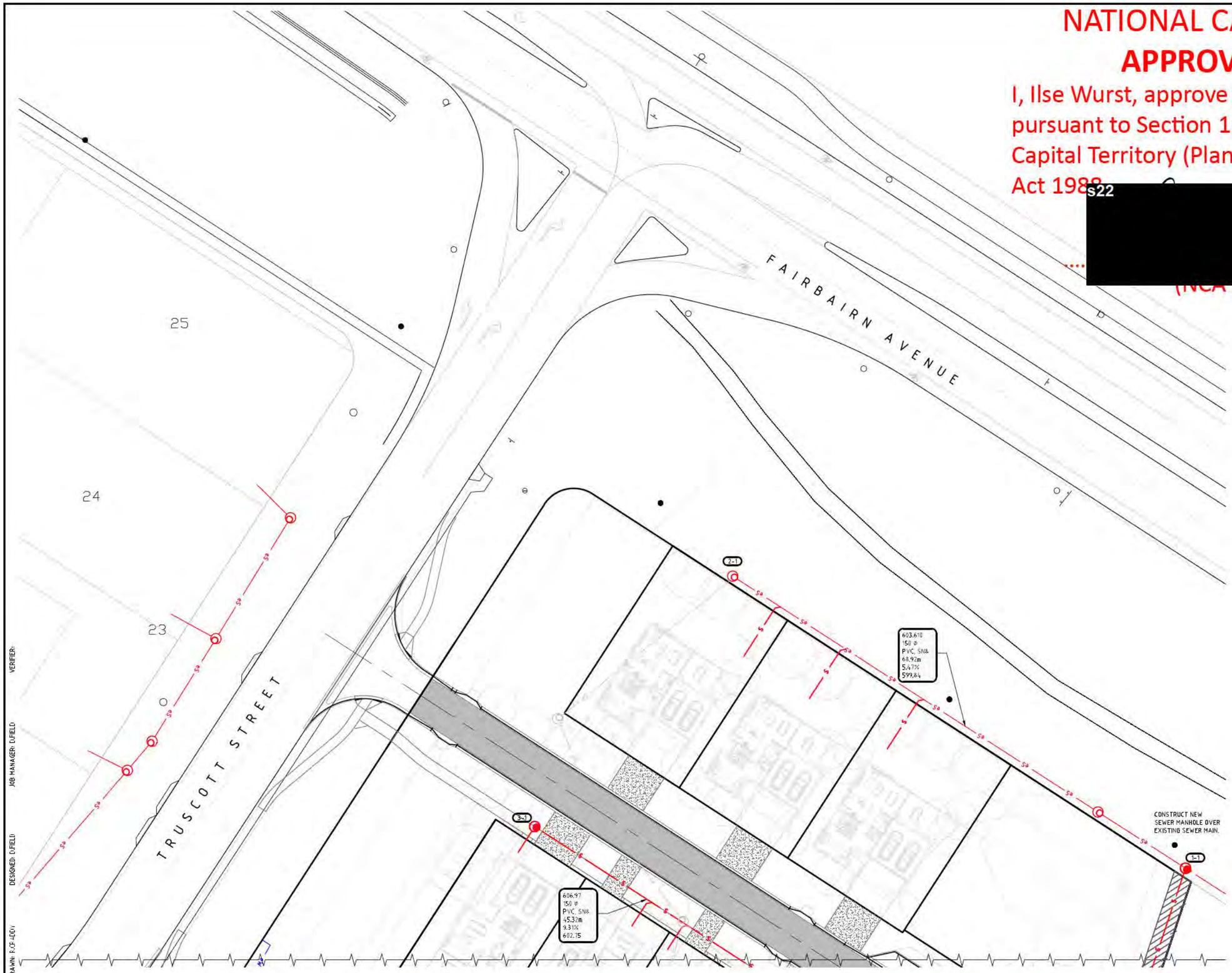
PROPOSED SERVICES

SEWER MAIN

SEWER MAIN TO BE REMOVED

SEWER MANHOLE

WARNING:
EXISTING SERVICES SHOWN ARE BASED ON INFORMATION PROVIDED BY SERVICE AUTHORITIES AND ARE ESTIMATES. NUMEROUS SERVICES MAY NOT BE SHOWN. ALL SERVICES SHOWN ON THIS PLAN BE RELIED UPON FOR ON SITE WORK. ALL INFORMATION MUST BE CONFIRMED IN THE FIELD.



				STRUCTURE TYPE
				1050 MANHOLE
				1050 MANHOLE
				1050 MANHOLE
1.4	605.005	213947.7625	603184.6923	1050 MANHOLE
1.5	608.402	213931.1376	603135.2013	1050 MANHOLE
1.6	609.682	213922.4154	603120.2743	1050 MANHOLE
1.7	609.782	213901.7170	603125.4525	1050 MANHOLE
2.1	604.610	213911.6337	603289.3070	1050 MANHOLE
3.1	607.968	213890.1823	603253.8429	1050 MANHOLE
4.1	605.759	213909.4816	603207.6851	1050 MANHOLE
4.2	607.624	213891.8535	603180.4633	1050 MANHOLE
4.3	607.661	213888.0228	603169.6987	1050 MANHOLE
4.4	611.498	213870.6540	603100.0723	1050 MANHOLE
4.5	611.992	213879.2865	603087.8813	1050 MANHOLE
4.6	612.380	213906.1018	603081.2372	1050 MANHOLE
5.1	608.494	213874.9195	603232.0720	1050 MANHOLE
6.1	608.609	213861.1888	603190.2771	1050 MANHOLE

NOT FOR CONSTRUCTION

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4	WORKS APPROVAL	RC		DF	17.04.19
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6	WORKS APPROVAL	JC		DF	14.05.20
7	SUBJECT TO AUTHORITY APPROVAL	TE		DF	14.07.20

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close

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SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1803
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: SEWER PLAN
SHEET 2 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C181

REVISION: 7

DRAWING SHEET SIZE = A1

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: D.FIELD
DRAWN: K.CE-LOOV

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988
s22 [redacted]

				STRUCTURE TYPE
				1050 MANHOLE
				1050 MANHOLE
				1050 MANHOLE
				1050 MANHOLE
1.5	608.402	213931.1376	603135.2013	1050 MANHOLE
1.6	609.682	213922.4154	603120.2743	1050 MANHOLE
1.7	609.782	213901.7170	603125.4525	1050 MANHOLE
2.1	604.610	213911.6337	603289.3070	1050 MANHOLE
3.1	607.968	213890.1823	603253.8429	1050 MANHOLE
4.1	605.759	213909.4816	603207.6851	1050 MANHOLE
4.2	607.624	213891.8535	603180.4633	1050 MANHOLE
4.3	607.661	213888.0228	603169.6987	1050 MANHOLE
4.4	611.498	213870.6540	603100.0723	1050 MANHOLE
4.5	611.992	213879.2865	603087.8813	1050 MANHOLE
4.6	612.380	213906.1018	603081.2372	1050 MANHOLE
5.1	608.494	213874.9195	603232.0720	1050 MANHOLE
6.1	608.609	213861.1888	603190.2771	1050 MANHOLE

NOT FOR CONSTRUCTION

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4	WORKS APPROVAL	RC		DF	17.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20
7	SUBJECT TO AUTHORITY APPROVAL	TE		DF	14.07.20

CLIENT
DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT
Academy Close
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0 2.5 5.0 7.5 10.0 12.5m PLAN
SCALE 1:250 @ A1

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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
SEWER PLAN
SHEET 3 OF 4

JOB NUMBER CR172699
DRAWING NUMBER C182
REVISION 7
DRAWING SHEET SIZE = A1

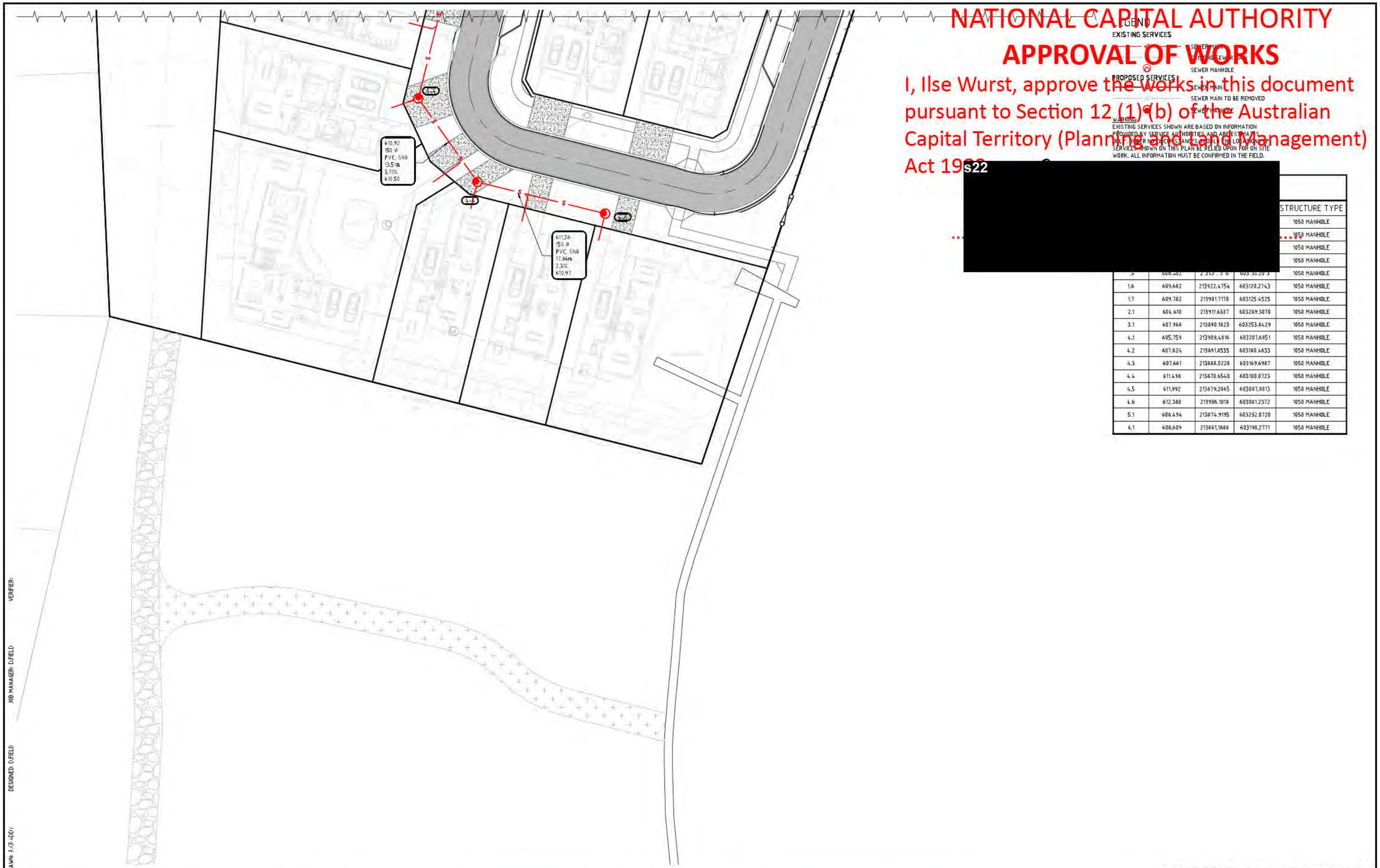
08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1)(b) of the Australian Capital Territory (Planning and Land Management) Act 19[redacted]

s22



				STRUCTURE TYPE
				1050 MANHOLE
				1050 MANHOLE
				1050 MANHOLE
				1050 MANHOLE
.5	608.402	213[illegible]	603[illegible]	1050 MANHOLE
1.6	609.682	213922.4154	603120.2743	1050 MANHOLE
1.7	609.782	213901.7170	603125.4525	1050 MANHOLE
2.1	604.610	213911.6337	603289.3070	1050 MANHOLE
3.1	607.968	213890.1823	603253.8429	1050 MANHOLE
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5.1	608.494	213874.9195	603232.0720	1050 MANHOLE
6.1	608.609	213861.1888	603190.2771	1050 MANHOLE

NOT FOR CONSTRUCTION

DRAWN: R.CF-LOO DESIGNED: D.FIELD JOB MANAGER: D.FIELD VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
2	FOR INFORMATION	RC		DF	05.09.18
3	WORKS APPROVAL	RC		DF	11.04.19
4	WORKS APPROVAL	RC		DF	17.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20
7	SUBJECT TO AUTHORITY APPROVAL	TE		DF	14.07.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close

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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: SEWER PLAN SHEET 4 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C183 REVISION: 7

DRAWING SHEET SIZE = A1

08 Sep, 2020

NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

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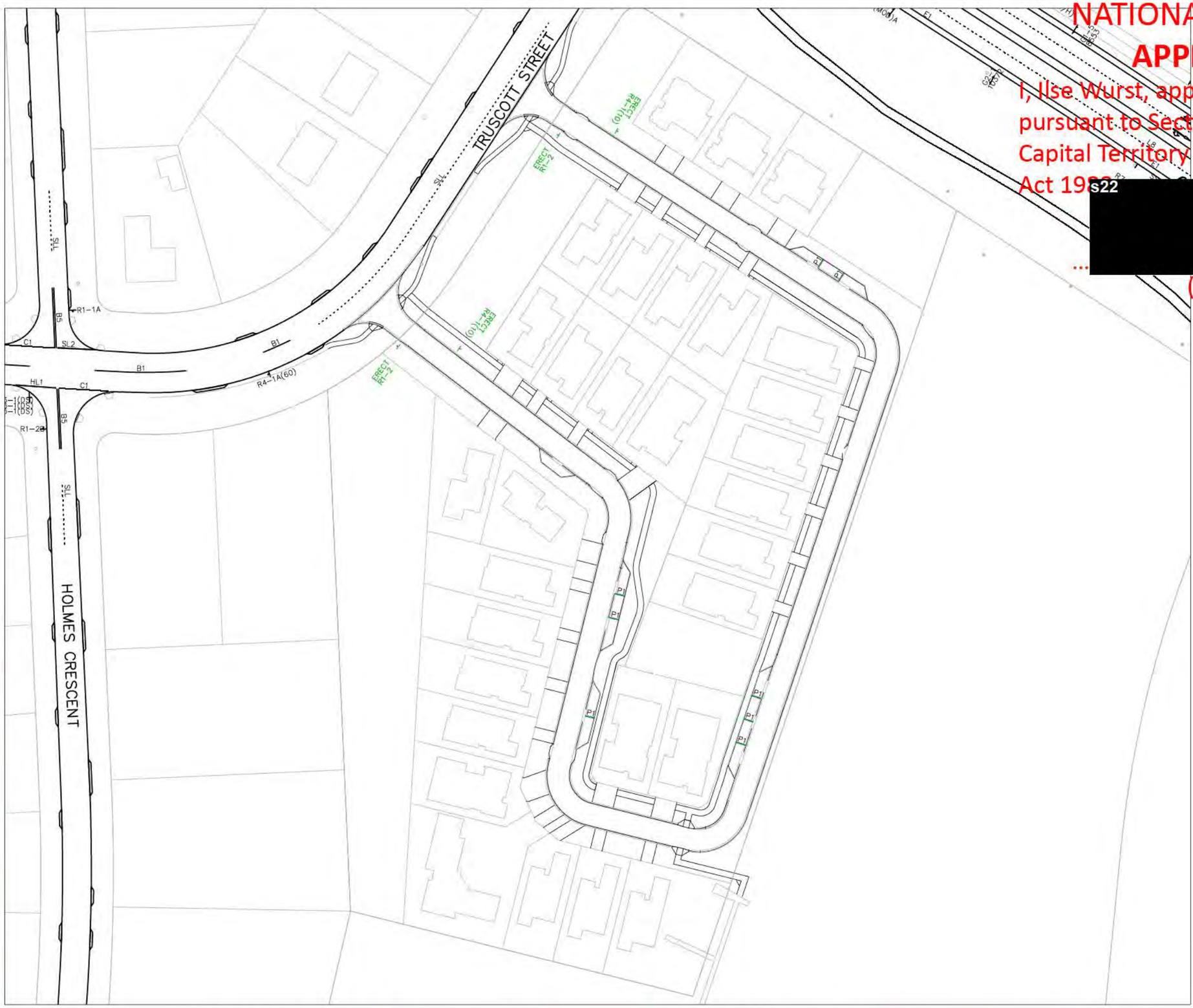
s22 [redacted]

(NCA Delegate)



NO.	DESCRIPTION	HAND	SIZE	NO. OF
–		A	2	
–		A	2	

NOT FOR CONSTRUCTION

DRAWN: J.FLANEY DESIGNED: D.FIELD JOB MANAGER: S.BLAND VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR INFORMATION	JC		DF	01.07.20

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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0 5 10 15 20 25m PLAN SCALE 1:500 @ A1

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Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
TCD PLAN

JOB NUMBER: CR172699

DRAWING NUMBER: C190 REVISION: 1

DRAWING SHEET SIZE = A1

08 Sep, 2020

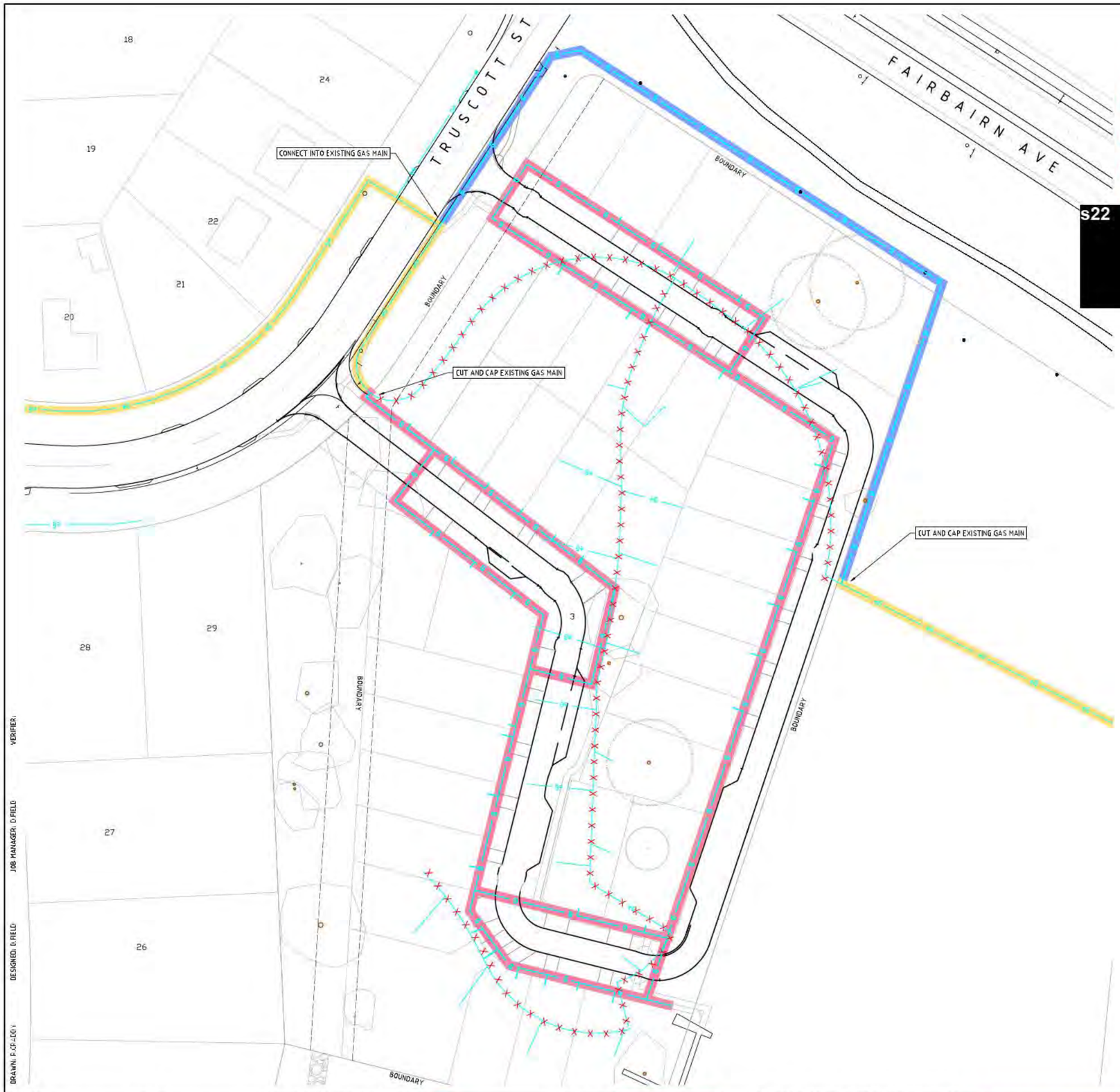
NATIONAL CAPITAL AUTHORITY

APPROVAL OF WORKS

I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1988

s22 [redacted]

(NCA Delegate)



LEGEND

- EXISTING GAS MAIN
- NEW GAS MAIN
- EXISTING GAS MAIN TO BE REMOVED (INCLUDING REDUNDANT TIES)
- EXISTING GAS MAIN TO RE-PAIN
- NEW GAS MAIN (BLOCK TOP ZONING)
- NEW GAS MAIN (BLOCK TOP DEVELOPER)

NOTES

1. REFER TO 'MATERIAL' SECTION OF THE HYDRAULIC SPECIFICATION FOR PIPE MATERIALS.
2. ALL PIPEWORK TO BE INSTALLED IN ACCORDANCE WITH AS5601 AND TO ACTEWAGL AND ACT GOVERNMENT REQUIREMENTS.
3. CONTRACTOR TO ENSURE THAT EACH GAS APPLIANCE HAS ITS OWN INDIVIDUAL REGULATOR.
4. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH RELEVANT AUTHORITY REQUIREMENTS, EVOENERGY, ACTEWAGL REGULATIONS, SUPERINTENDENTS APPROVAL AND NATIONAL PLUMBING CODES AS.3500 (2015), AS.1221 (1997), AS.2441 (2005) AND AS.2419.1 (2005).
5. THIS PLAN SHALL BE READ IN CONJUNCTION WITH THE APPROVED ARCHITECTURAL, LANDSCAPE, STRUCTURAL, MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS. SHOULD THE DRAWINGS CONFLICT WITH THE SPECIFICATION, THE SPECIFICATION TAKES PRECEDENCE. SHOULD THE SPECIFICATION CONFLICT WITH THE ABOVE MENTIONED DOCUMENTATION, THE MORE STRINGENT SHALL APPLY.
6. EXISTING SERVICES ARE ESTIMATES AND HAVE BEEN PLOTTED FROM SUPPLIED DATA. IT IS THE THE CONTRACTORS RESPONSIBILITY TO ESTABLISH THE LOCATION OF ALL EXISTING SERVICES IN THE FIELD PRIOR TO THE COMMENCEMENT OF ANY WORK. ALL CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT AUTHORITY.
7. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUTS BY A REGISTERED SURVEYOR.
8. ALL SERVICES THAT CROSS PATHS, FOOTINGS ETC. SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL TO SUBGRADE LEVEL AND COMPACTED TO 100% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS.1289.E1.1.
9. ON COMPLETION OF WORKS, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION INCLUDING BUT NOT LIMITED TO KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.
10. TRENCHES THROUGH EXISTING ROAD AND CONCRETE AREAS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MINIMUM OF 50mm IN BITUMINOUS PAVING. REINSTATE TO EQUIVALENT OF ORIGINAL ROAD AND CONCRETE AREA.
11. WHERE NEW WORK ABUTS EXISTING, THE CONTRACTOR SHALL ENSURE THAT A SMOOTH, EVEN PROFILE, FREE FROM ABRUPT CHANGES, IS OBTAINED.
12. CARE SHALL BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATION SHALL BE TAKEN OVER TELSTRA OR ELECTRICAL SERVICES. EXCAVATE BY HAND IN THESE AREAS.
13. ALL CORE HOLE LOCATIONS SHALL BE APPROVED BY THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF CORING.
14. CONTRACTOR SHALL ALLOW FOR ALL TIMBERING, SHORING AND SHUTTERING AS NECESSARY TO CONSTRUCT PIPEWORK AND INCLUDE THE REMOVAL OF SAME UPON COMPLETION OF PIPEWORK.
15. CONTRACTOR IS TO ALLOW FOR THE REMOVAL OF ALL DEBRIS TO THE TIP AND INCLUDING ALL TIP FEES.
16. THE CONTRACTOR IS TO LOCATE AND CONFIRM LEVELS OF ALL EXISTING SERVICE CONNECTIONS PRIOR TO COMMENCING WORK. NOTIFY THE SUPERINTENDENT IMMEDIATELY IF ANY DIFFERENCES IN POSITION AND LEVEL ARE FOUND.
17. THE CONTRACTOR MUST VISIT THE SITE OF WORKS BEFORE TENDERING AND ALLOWANCES ON THEIR TENDER FOR ALL TOPOGRAPHICAL CONSTRAINTS AFFECTING THE EXECUTION OF THE WORKS AND THE RESTORATION OF THE SITE.
18. THE CONTRACTOR MUST SECURE ALL PERMITS, ARRANGE ALL CLEARANCES AND PAY ALL FEES REQUIRED TO COMPLETE THE PROJECT BEFORE COMMENCING WORK.
19. THESE DRAWING SHALL NOT BE COPIED OR AMENDED WITHOUT THE WRITTEN CONSENT FROM NORTHROP CONSULTING ENGINEERS PTY LTD.
20. THE CONTRACTOR IS TO ALLOW FOR THE PROCUREMENT AND INSTALLATION OF ALL APPLICABLE SIGNAGE FOR THE HYDRAULIC AND WET FIRE SERVICES IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL AUTHORITY HAVING JURISDICTION AND THE CURRENT EDITION OF THE FOLLOWING STANDARDS;
    - AS3500 (2015)
    - AS2419 (2005)
    - AS2441 (2005)
    - AS5601 (2013)
    - AS2118 (2006)

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	WORKS APPROVAL	JC		DF	01.07.20

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL

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0 5 10 15 20 25m PLAN SCALE 1:500 @ A1

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: PROPOSED GAS PLAN

JOB NUMBER: CR172699

DRAWING NUMBER: C200 REVISION: 1

DRAWING SHEET SIZE : A1

08 Sep, 2020

DEFENCE HOUSING AUSTRALIA

ACADEMY CLOSE, CAMPBELL
BLOCK 3 SECTION 65
CIVIL WORKS

NATIONAL CAPITAL AUTHORITY
APPROVAL OF WORKS
I, Ilse Wurst, approve the works in this document pursuant to Section 12 (1) (b) of the Australian Capital Territory (Planning and Land Management) Act 1 s22 [redacted] .....
(NCA Delegate)

LOCALITY PLAN
NOT TO SCALE

Digitally signed by prod-win-adfs.ad.local
Date: 2020.09.08 08:53:13 +10:00
Reason: Document approved
Location: Treasury Building King Edward Terrace, Parkes ACT 2600

DRAWING SCHEDULE

No.	DRAWING TITLE
C000	COVER SHEET, DRAWING INDEX & LOCALITY PLAN
C001	STANDARD NOTES
C005	STANDARD DETAILS
C010	CONCEPT EROSION, SEDIMENT & POLLUTION CONTROL PLAN
C010A	CONCEPT EROSION, SEDIMENT & POLLUTION CONTROL DETAILS
C011	LANDSCAPE MANAGEMENT & PROTECTION PLAN
C012	CONCEPT TEMPORARY TRAFFIC MANAGEMENT PLAN – GENERAL CONSTRUCTION
C013	CONCEPT TEMPORARY TRAFFIC MANAGEMENT PLAN – PART LANE CLOSURE
C020	VEHICLE TURNING TEMPLATES
C021	VEHICLE TURNING TEMPLATES
C050	GENERAL ARRANGEMENT PLAN
C070	EXISTING SERVICES PLAN
C071	EXISTING SERVICES TO BE REMOVED/DEMOLISHED
C072	COMBINED NEW SERVICES PLAN – SHEET 1 OF 4
C073	COMBINED NEW SERVICES PLAN – SHEET 2 OF 4
C074	COMBINED NEW SERVICES PLAN – SHEET 3 OF 4
C075	COMBINED NEW SERVICES PLAN – SHEET 4 OF 4
C080	DEMOLITION PLAN
C110	GRADING PLAN – SHEET 1 OF 4
C111	GRADING PLAN – SHEET 2 OF 4
C112	GRADING PLAN – SHEET 3 OF 4
C113	GRADING PLAN – SHEET 4 OF 4
C120	SITE WORKS AND PAVEMENT PLAN – SHEET 1 OF 4
C121	SITE WORKS AND PAVEMENT PLAN – SHEET 2 OF 4
C122	SITE WORKS AND PAVEMENT PLAN – SHEET 3 OF 4
C123	SITE WORKS AND PAVEMENT PLAN – SHEET 4 OF 4
C125	OFF-SITE WORKS PLAN – SHEET 1 OF 4
C126	OFF-SITE WORKS PLAN – SHEET 2 OF 4
C127	OFF-SITE WORKS PLAN – SHEET 3 OF 4
C128	OFF-SITE WORKS PLAN – SHEET 4 OF 4
C130	TYPICAL CROSS SECTIONS
C140	ROAD LONG SECTIONS ACADEMY CLOSE CH:00.000 – CH:280.000
C141	ROAD LONG SECTIONS ACADEMY CLOSE CH:280.000 – CH:450.993
C150	DETAILED CROSS SECTIONS – SHEET 1 OF 4
C151	DETAILED CROSS SECTIONS – SHEET 2 OF 4
C152	DETAILED CROSS SECTIONS – SHEET 3 OF 4
C153	DETAILED CROSS SECTIONS – SHEET 4 OF 4
C160	CONCEPT STORMWATER MANAGEMENT PLAN KEY PLAN SHEET 1 OF 4
C161	CONCEPT STORMWATER MANAGEMENT PLAN SHEET 2 OF 4
C162	CONCEPT STORMWATER MANAGEMENT PLAN SHEET 3 OF 4
C163	CONCEPT STORMWATER MANAGEMENT PLAN SHEET 4 OF 4
C165	STORMWATER DETAILS SHEET 1 OF 2
C166	STORMWATER DETAILS SHEET 1 OF 2
C170	WATER PLAN KEY PLAN SHEET 1 OF 4
C171	WATER PLAN SHEET 2 OF 4
C172	WATER PLAN SHEET 3 OF 4
C173	WATER PLAN SHEET 4 OF 4
C176	EXISTING 1050mm WATER MAIN LONG SECTION CH:00.000 – CH:251.144
C177	EXISTING WATER MAIN CROSS SECTIONS CH:25.513 – CH:182.159
C178	EXISTING WATER MAIN CROSS SECTIONS CH:205.495 – CH:242.009
C180	SEWER PLAN KEY PLAN SHEET 1 OF 4
C181	SEWER PLAN SHEET 2 OF 4
C182	SEWER PLAN SHEET 3 OF 4
C183	SEWER PLAN SHEET 4 OF 4

JOB MANAGER: D.FIELD
DESIGNED: F.CF-EDV
DRAWN: F.CF-EDV

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	FOR INFORMATION	RC		DF	05.09.18
4	FOR DISCUSSION	RC		DF	21.09.18
5	FOR DISCUSSION	RC		DF	12.10.18
6	WORKS APPROVAL	RC		DF	11.04.19
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close
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NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

NOT TO SCALE

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
COVER SHEET, DRAWING INDEX AND LOCALITY PLAN

JOB NUMBER: CR172699
DRAWING NUMBER: C000
REVISION: 8
DRAWING SHEET SIZE = A1

08 Sep, 2020

s22 [redacted]

From: s22 [redacted]
Sent: Tuesday, 1 November 2022 3:08 PM
To: s22 [redacted]
Subject: FW: DHA Academy Close - Erosion Sediment Control Plan
Attachments: ESCP REV 0.pdf

s22 [redacted]
Please find attached original email sent to David.

s22 [redacted]
Project Manager
groupOne
p: 02 6241 1955
f: 02 6241 8955
m: s22 [redacted]

From: s22 [redacted]
Sent: Thursday, 24 September 2020 11:58 AM
To: s22 [redacted]
Cc: s22 [redacted]
Subject: FW: DHA Academy Close - Erosion Sediment Control Plan

s22 [redacted]
See correspondence below from s22 [redacted] at EPA.

s22 [redacted]
Project Manager
groupOne
p: 02 6241 1955
f: 02 6241 8955
m: s22 [redacted]

From: s22 [redacted]]
Sent: Tuesday, 15 September 2020 8:20 AM
To: s22 [redacted]
Subject: RE: DHA Academy Close - Erosion Sediment Control Plan

OFFICIAL

Hi s22 [redacted]

The Environment Protection Authority approves the attached Sediment and Erosion Control Plan (SECP) subject to the following conditions:

- Erosion and sediment control measures shall be in accordance with the Environment Protection Guidelines for Construction and Land Development in the ACT (2011).
- All control measures shall be in place prior to commencing works and shall be maintained until development completion.

- Adjacent roads shall be swept clean at all times.

NOTE: This approval applies to pollution controls only.

Due to current health restrictions, I am unable to stamp the hard copy, so please retain this email as evidence of approval and contact me with any questions.

s22

From: s22 [redacted]
Sent: Friday, 11 September 2020 2:57 PM
To: Environment Protection <Environment.Protection@act.gov.au>
Subject: DHA Academy Close - Erosion Sediment Control Plan

CAUTION: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi,

Please be advised that Group One has been awarded the DHA Academy Close, Campbell. Please find attached Erosion and Sediment Control Plan for your review and approval. Happy to have a meeting onsite next week if needed. Please let me know if any further information is required. Have a great weekend!

Regards,

s22 [redacted]
Project Manager

p: 02 6241 1955
f: 02 6241 8955
m: s22 [redacted]
Unit 5 & 6
45-51 Grimwade St
MITCHELL ACT 2911

This email, and any attachments, may be confidential and also privileged. If you are not the intended recipient, please notify the sender and delete all copies of this transmission along with any attachments immediately. You should not copy or use it for any purpose, nor disclose its contents to any other person.

File Ref : F2018-007900
HACS Ref: 3928
Contact: s22 [redacted]
Tel: 6180 6902

16 September 2021

Northrop Engineers Pty Ltd
(Att: s22 [redacted])
2-6 Shea Street
Phillip
ACT 2606

Dear Sir

CAMPBELL Section 65 Block 3 Temporary Works – Certificate of Design Acceptance

Your design submission consisting of Drawings numbered: *CR172699 – SK02 Rev 8, SK04 Rev 5 is* accepted on the condition that all design and works are in accordance with Icon Water's current Water Supply and Sewerage Standards (WSSS).

The Design Acceptance refers to the above drawing only and will expire one year from the above date unless construction is commenced beforehand.

Please ensure that you, the Developer and the contractors used on the project are familiar with Icon Water requirements. Failure to meet the obligations set out in the Icon Water Standards may result in Icon Water refusing to accept handover of the works.

The obligations include an accurate Work As Executed Survey to be carried out as the work proceeds and certification of Work as Executed Drawings by you or the Developer.

You are also advised:

All documentation is to be submitted in a timely manner including ACAP: *Advice of Commencement of Hydraulic Works* and *Inspection and Test Plan* before commencing field work; and marked up "As Constructed" drawings, Work as Executed Drawings, Connection/ Tie information and Costed Bills of Quantities during handover.

The Inspection and Test Plan must show *mandatory Hold and Inspection Points* to the requirements of Icon Water. You or the Developer are to undertake tests and inspections as per the Inspection and Test Plan and submit records to this office.

The Defects Liability period is 1 year from the date of Icon Water's *Provisional Certificate of Operation* issued on handover of the works.

Please pass a copy of this Certificate to the Developer and the contractor on site.

Yours faithfully

s22 [redacted]

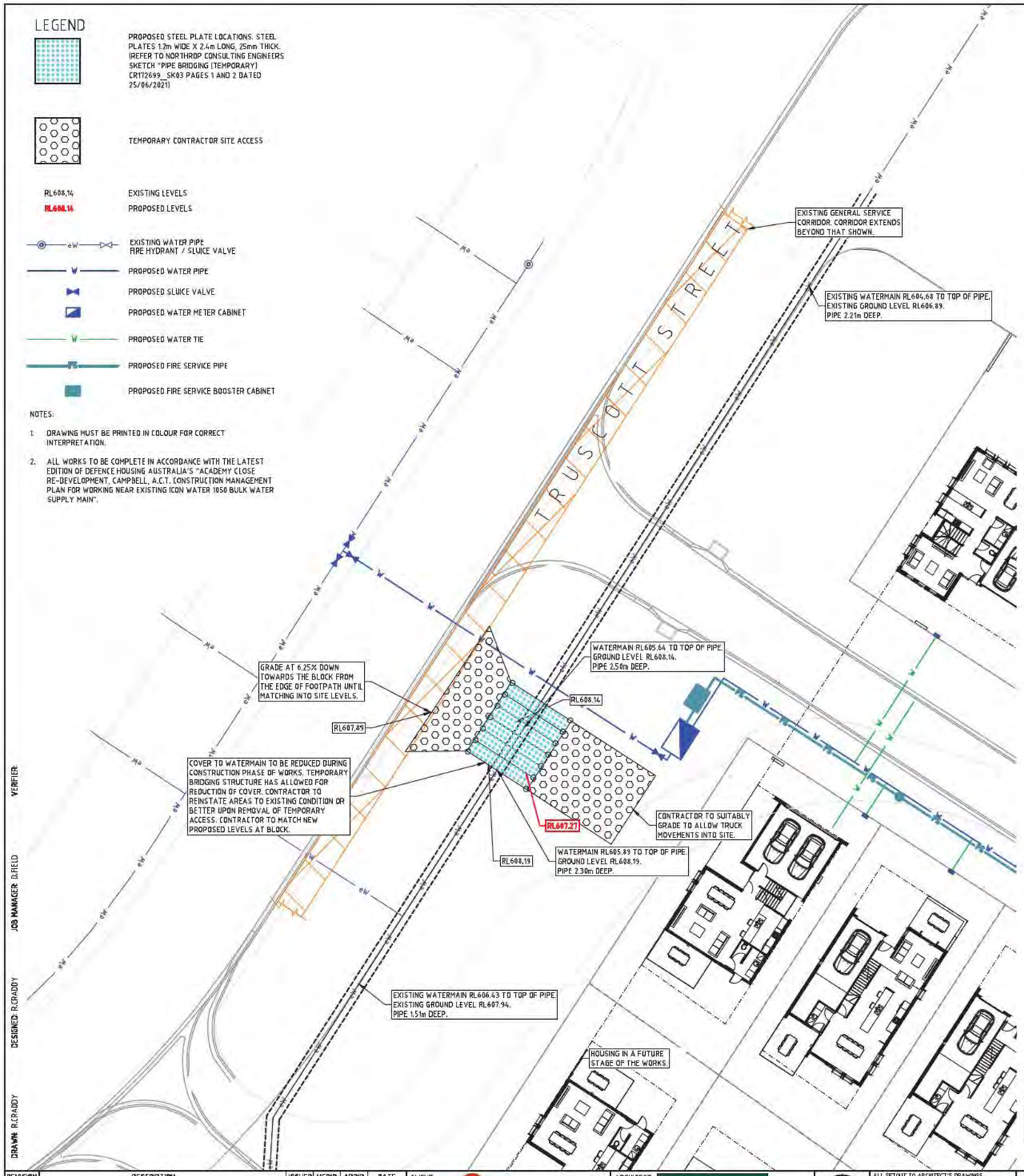
Team Leader, Developer Services

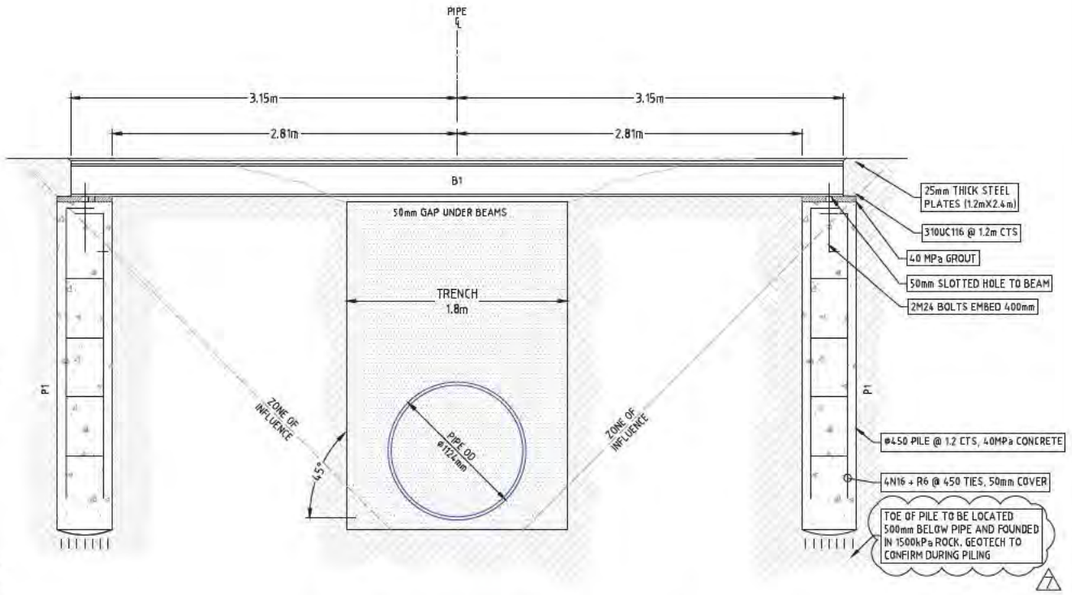
LEGEND

- PROPOSED STEEL PLATE LOCATIONS. STEEL PLATES 1.2m WIDE X 2.4m LONG, 25mm THICK. (REFER TO NORTHROP CONSULTING ENGINEERS SKETCH "PIPE BRIDGING (TEMPORARY) CR172699_SK03 PAGES 1 AND 2 DATED 25/06/2021)
- TEMPORARY CONTRACTOR SITE ACCESS
- RL608.14 — EXISTING LEVELS
- RL608.14 — PROPOSED LEVELS
- EXISTING WATER PIPE / FIRE HYDRANT / SLUICE VALVE
- PROPOSED WATER PIPE
- PROPOSED SLUICE VALVE
- PROPOSED WATER METER CABINET
- PROPOSED WATER TIE
- PROPOSED FIRE SERVICE PIPE
- PROPOSED FIRE SERVICE BOOSTER CABINET

NOTES:

1. DRAWING MUST BE PRINTED IN COLOUR FOR CORRECT INTERPRETATION.
2. ALL WORKS TO BE COMPLETE IN ACCORDANCE WITH THE LATEST EDITION OF DEFENCE HOUSING AUSTRALIA'S "ACADEMY CLOSE RE-DEVELOPMENT, CAMPBELL, A.C.T. CONSTRUCTION MANAGEMENT PLAN FOR WORKING NEAR EXISTING ICON WATER 1050 BULK WATER SUPPLY MAIN".





ENTRY CROSS SECTION DURING CONSTRUCTION WORKS (A / SK04)
NTS

WORK AS EXECUTED DRAWINGS REQUIRED

icon WATER

Work As Executed Drawings must be submitted to Icon Water and accepted prior to the works being approved for connection.

A Provisional Certificate of Operation will be issued on request

INSPECTION REQUIRED

icon WATER

Icon Water inspection of new work is required before connection to main. Ensure notification of commencement is submitted.

Contact 02 6248 3111 before commencing work.

DESIGN ACCEPTANCE

icon WATER

- This design has been assessed against Icon Water's *Water Supply and Sewerage Standards*.
- Icon Water confirms it accepts the design for the purpose of commencing construction of Icon Water hydraulic assets only.
- This acceptance is subject to any conditions set out in Icon Water's *Certificate of Design Acceptance*. Construction must be in accordance with this drawing and the *Water Supply and Sewerage Standards*.
- This design must be resubmitted to Icon Water for reassessment if there are any changes to relevant information, including site conditions.
- This acceptance is not approval for connection purposes - a separate application for a Connection Certificate is required once construction is complete.
- The proposed development may require payment of a charge under the *Water and Sewerage* will be notified separately.

s22 [redacted] 15/09/2021 F2018-007900

Hydraulic Asset Acceptance Officer | Date | File #

NOTES

1. EARTHWORKS TO ALLOW GROUND BELOW TEMPORARY STRUCTURE IS FREE DRAINING (MINIMUM 1% SLOPE).
2. PIERS TO BE CONSTRUCTED WITH AN AUGER ON AN EXCAVATOR.
3. DRAWING MUST BE PRINTED IN COLOUR FOR CORRECT INTERPRETATION.
4. ALL WORKS TO BE COMPLETE IN ACCORDANCE WITH THE LATEST EDITION OF DEFENCE HOUSING AUSTRALIA'S "ACADEMY CLOSE RE-DEVELOPMENT, CAMPBELL, A.C.T. CONSTRUCTION MANAGEMENT PLAN FOR WORKING NEAR EXISTING ICON WATER 1050 BULK WATER SUPPLY MAIN".
5. PIPE OD AS SPECIFIED BY ICON WATER 09/12/2020 BY EMAIL CORRESPONDENCE.

SPECIFIC INSTALLATION REQUIREMENTS

THE FOLLOWING SPECIFIC INSTALLATION REQUIREMENTS REFER TO THE INSTALLATION AND OPERATION OF THE TEMPORARY CROSSING AS SHOWN ON THIS DRAWING.

1. THE CONTRACTOR IS TO INSTALL VIBRATION MONITORS WITH 5mm/sec THRESHOLD AND MAX 10mm/sec DURING THE PILE INSTALLATION IN LINE WITH ADVICE FROM A SUITABLE QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER. THE CONTRACTOR MUST PROVIDE ICON WATER WITH A FORMAL REPORT OUTLINING INSTALLATION OF THE VIBRATION MONITORS UPON COMPLETION OF THIS WORK.
2. THE CONTRACTOR MUST LIAISE WITH ICON WATER IN REGARDS TO THE START DATE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION OF THE TEMPORARY CROSSING, THE PILE INSTALLATION AND THE BRIDGE CONSTRUCTION. THE CONTRACTOR MUST CONTINUE TO LIAISE WITH ICON WATER AS REQUESTED BY THE AUTHORITY.
3. THE CONTRACTOR MUST LIAISE WITH ICON WATER THE TIMING FOR CONDUCTING THE FIRST WITNESSED SETTLEMENT SURVEY. THE CONTRACTOR IS TO ALLOW FOR ATTENDANCE BY ICON WATER IF REQUESTED BY THE AUTHORITY.
4. THE CONTRACTOR MUST PROVIDE WEEKLY SETTLEMENT SURVEY RESULTS TO ICON WATER FOR REVIEW.

DESIGN ACCEPTANCE FOR TEMPORARY PROTECTION MEASURES ONLY

NOT FOR CONSTRUCTION

DRAWN: R.CRADDY
DESIGNED: R.CRADDY
JOB MANAGER: D.FIELD
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	PRELIMINARY V3	NG		NG	16.07.21
4	PRELIMINARY V4	NG		DF	23.07.21
5	PRELIMINARY V5	NG		DF	13.08.21
6	PRELIMINARY V6	NG		DF	20.08.21
7	PRELIMINARY V7	NG		DF	24.08.21
8	PRELIMINARY V8	NG		DF	31.08.21

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL
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0 1 2 3 4 5m PLAN SCALE 1:100 @ A1

NORTHROP Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 61 094 433 188

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: TEMPORARY SITE ENTRANCE OVER ICON WATER MAIN

JOB NUMBER: CR172699
DRAWING NUMBER: SK02
REVISION: 8
DRAWING SHEET SIZE = A1

SPECIFIC INSTALLATION REQUIREMENTS

THE FOLLOWING SPECIFIC INSTALLATION REQUIREMENTS REFER TO THE INSTALLATION AND OPERATION OF THE TEMPORARY CROSSING AS SHOWN ON THIS DRAWING.

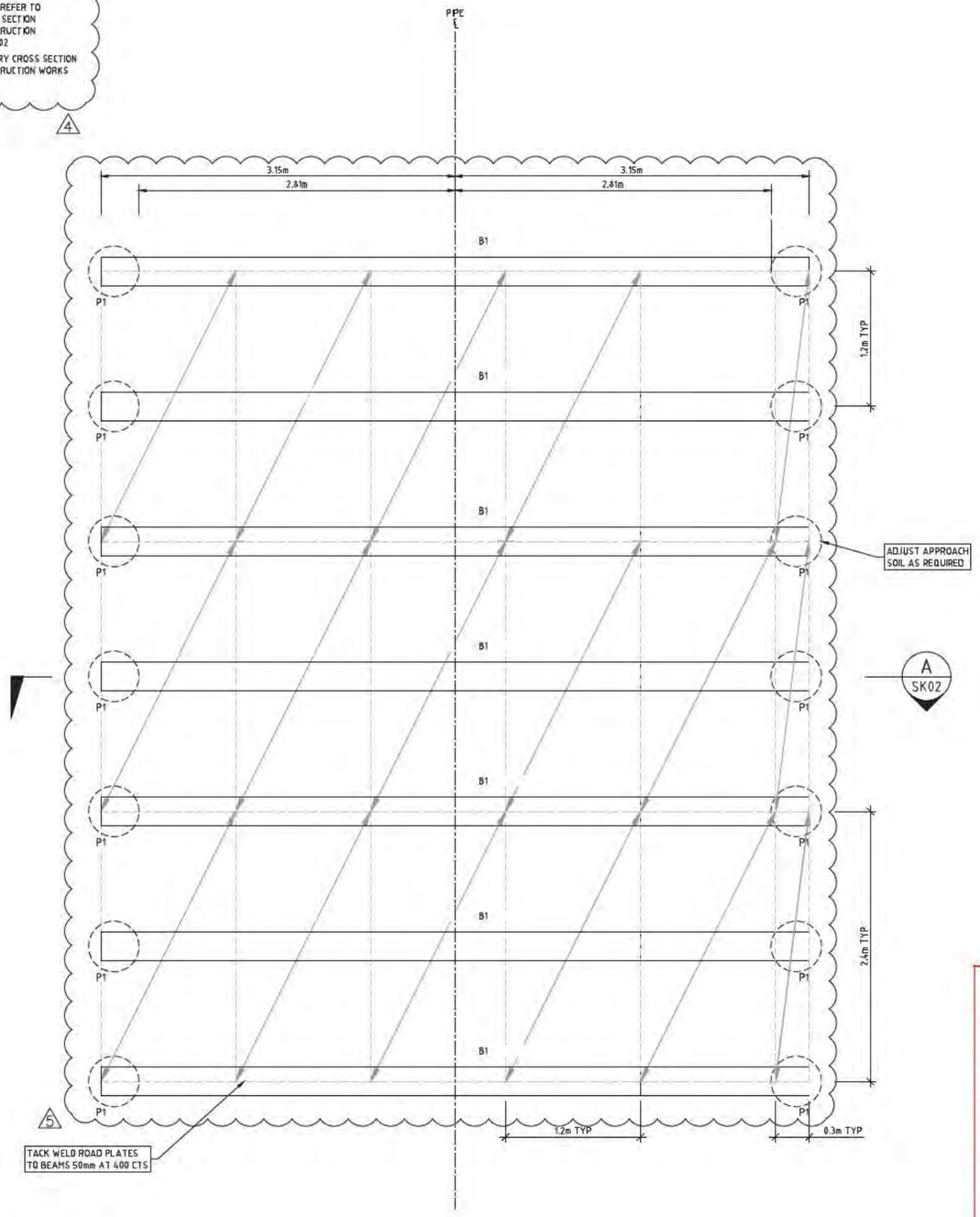
1. THE CONTRACTOR IS TO INSTALL VIBRATION MONITORS WITH 5mm/sec THRESHOLD AND MAX 10mm/sec DURING THE PILE INSTALLATION IN LINE WITH ADVICE FROM A SUITABLE QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER. THE CONTRACTOR MUST PROVIDE ICON WATER WITH A FORMAL REPORT OUTLINING INSTALLATION OF THE VIBRATION MONITORS UPON COMPLETION OF THIS WORK.
2. THE CONTRACTOR MUST LIAISE WITH ICON WATER IN REGARDS TO THE START DATE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION OF THE TEMPORARY CROSSING, THE PILE INSTALLATION AND THE BRIDGE CONSTRUCTION. THE CONTRACTOR MUST CONTINUE TO LIAISE WITH ICON WATER AS REQUESTED BY THE AUTHORITY.
3. THE CONTRACTOR MUST LIAISE WITH ICON WATER THE TIMING FOR CONDUCTING THE FIRST WITNESSED SETTLEMENT SURVEY. THE CONTRACTOR IS TO ALLOW FOR ATTENDANCE BY ICON WATER IF REQUESTED BY THE AUTHORITY.
4. THE CONTRACTOR MUST PROVIDE WEEKLY SETTLEMENT SURVEY RESULTS TO ICON WATER FOR REVIEW.

4

B1 – 7 OF 310UC116. REFER TO ENTRY CROSS SECTION DURING CONSTRUCTION WORKS ON SK02

P1 – REFER TO ENTRY CROSS SECTION DURING CONSTRUCTION WORKS ON SK02

4



WORK AS EXECUTED DRAWINGS REQUIRED

icon WATER

Work As Executed Drawings must be submitted to Icon Water and accepted prior to the works being approved for connection.

A Provisional Certificate of Operation will be issued on request

INSPECTION REQUIRED

icon WATER

Icon Water inspection of new work is required before connection to main. Ensure notification of commencement is submitted.

Contact 02 6248 3111 before commencing work

DESIGN ACCEPTANCE

icon WATER

- This design has been assessed against Icon Water's *Water Supply and Sewerage Standards*.
- Icon Water confirms it accepts the design for the purpose of commencing construction of Icon Water hydraulic assets only.
- This acceptance is subject to any conditions set out in Icon Water's *Certificate of Design Acceptance*. Construction must be in accordance with this drawing and the *Water Supply and Sewerage Standards*.
- This design must be resubmitted to Icon Water for reassessment if there are any changes to relevant information, including site conditions.
- This acceptance is not approval for connection purposes - a separate application for a Connection Certificate is required once construction is complete.
- The proposed development may require payment of a charge under the *Water and Sewerage* be notified separately.

s22 [redacted] 15/09/2021 F2018-007900

Hydraulic Asset Acceptance Officer | Date | File #

NOT FOR CONSTRUCTION

DRAWN R.CRADDY | DESIGNED R.CRADDY | JOB MANAGER D.FIELD | VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	NG		DF	16.07.21
2	PRELIMINARY V2	NG		DF	23.07.21
3	PRELIMINARY V3	NG		DF	13.08.21
4	PRELIMINARY V4	NG		DF	20.08.21
5	PRELIMINARY V5	NG		DF	24.08.21

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL

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NOT TO SCALE

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: TEMPORARY SITE ENTRANCE OVER ICON WATER MAIN TEMPORARY PIPE BRIDGING DETAILS

JOB NUMBER: CR172699

DRAWING NUMBER: SK04 | REVISION: 5

DRAWING SHEET SIZE = A1

GENERAL

1. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH RELEVANT AUTHORITY REQUIREMENTS, ICON WATER, ACTEWAGL REGULATIONS, SUPERINTENDENTS APPROVAL, HYDRAULIC SPECIFICATIONS AND NATIONAL PLUMBING CODES AS/3500 (2015), AS/2200 (1990), AS/2441 (2005) AND AS/2419.1 (2005).
2. THIS PLAN SHALL BE READ IN CONJUNCTION WITH THE APPROVED ARCHITECTURAL, LANDSCAPE, STRUCTURAL, MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS. SHOULD THE DRAWINGS CONFLICT WITH THE SPECIFICATION, THE SPECIFICATION TAKES PRECEDENCE. SHOULD THE SPECIFICATION CONFLICT WITH THE ABOVE MENTIONED DOCUMENTATION, THE MORE STRINGENT SHALL APPLY.
3. ALL POTABLE WATER MAIN DIAMETERS NOTED IN C171, C172 AND C173 ARE INTERNAL DIAMETERS ONLY. THE HYDRAULIC CONTRACTOR MAY SPECIFY THE PIPE MATERIAL WITH THE EQUIVALENT INTERNAL PIPE DIAMETERS IN ACCORDANCE WITH THE FOLLOWING STANDARDS:
4. EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA. THE SUPERINTENDENT DOES NOT GUARANTEE THEIR ACCURACY AND IT IS THE THE CONTRACTORS RESPONSIBILITY TO ESTABLISH THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ALL CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT AUTHORITY.
5. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUTS BY A REGISTERED SURVEYOR.
6. ALL SERVICES THAT CROSS FOOT PATHS, FOOTINGS ETC. SHALL BE BACKFILLED WITH APPROVED GRANULAR MATERIAL TO SUBGRADE LEVEL AND COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS/1289.E1.
7. ON COMPLETION OF PIPE INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.
8. TRENCHES THROUGH EXISTING ROAD AND CONCRETE AREAS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MINIMUM OF 50MM IN BITUMINOUS PAVING. REINSTATE TO EQUIVALENT OF ORIGINAL ROAD AND CONCRETE AREA.
9. WHERE NEW WORK ABUTS EXISTING, THE CONTRACTOR SHALL ENSURE THAT A SMOOTH, EVEN PROFILE, FREE FROM ABRUPT CHANGES, IS OBTAINED.
10. CARE SHALL BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATION SHALL BE TAKEN OVER TELSTRA OR ELECTRICAL SERVICES. EXCAVATE BY HAND IN THESE AREAS.
11. ALL CORE HOLE LOCATIONS SHALL BE APPROVED BY THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF CORING.
12. CONTRACTOR SHALL ALLOW FOR ALL TIMBERING, SHORING AND SHUTTERING AS NECESSARY TO CONSTRUCT PIPEWORK AND INCLUDE THE REMOVAL OF SAME UPON COMPLETION OF PIPEWORK.
13. ALL UPVC PIPE EXPOSED TO SUNLIGHT SHALL BE DWV MATERIAL.
14. CONTRACTOR IS TO ALLOW FOR THE REMOVAL OF ALL DEBRIS TO THE TIP AND INCLUDING ALL TIP FEES.
15. THE CONTRACTOR IS TO LOCATE AND CONFIRM LEVELS OF ALL EXISTING SERVICE CONNECTIONS PRIOR TO COMMENCING WORK. NOTIFY THE SUPERINTENDENT IMMEDIATELY IF ANY DIFFERENCES IN POSITION AND LEVEL ARE FOUND.
16. THE CONTRACTOR MUST SECURE ALL PERMITS, ARRANGE ALL CLEARANCES AND PAY ALL FEES REQUIRED TO COMPLETE THE PROJECT BEFORE COMMENCING WORK.
17. ANY NON-METALLIC INGROUND WATER SERVICE IS TO BE INSTALLED WITH TRACE WIRE AND TESTED.
18. THESE DRAWING SHALL NOT BE COPIED OR AMENDED WITHOUT THE WRITTEN CONSENT FROM NORTHROP CONSULTING ENGINEERS PTY LTD.
19. THE CONTRACTOR IS TO ALLOW FOR THE PROCUREMENT AND INSTALLATION OF ALL APPLICABLE SIGNAGE FOR THE HYDRAULIC AND WET FIRE SERVICES IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL AUTHORITY HAVING JURISDICTION AND THE CURRENT EDITION OF THE FOLLOWING STANDARDS:
   - AS3500
   - AS2419

HYDRANT SETOUT TABLE

POINT	EASTING	NORTHING
HYD 1	213 901.158	603 241.836
HYD 2	213 934.117	603 223.686
HYD 3	213 945.883	603 216.530
HYD 4	213 931.574	603 136.799
HYD 5	213 920.649	603 108.774
HYD 6	213 884.662	603 088.002
HYD 7	213 875.940	603 136.864
HYD 8	213 885.602	603 154.311
HYD 9	213 878.457	603 192.466

POTABLE WATER SERVICES

1. THE INTERNAL POTABLE WATER MAIN HAS BEEN SIZED IN ACCORDANCE WITH SECTION 3 OF AS3500.1. ALL POTABLE WATER MAIN DIAMETERS NOTED IN DRAWINGS C171-C173 ARE INTERNAL DIAMETERS ONLY. THE HYDRAULIC CONTRACTOR MAY SPECIFY THE PIPE MATERIAL TO BE PVC-O, COPPER OR PE100. THE SPECIFIED PIPE MATERIAL IS TO HAVE THE SAME EQUIVALENT NOMINAL PIPE DIAMETER AS STIPULATED IN DRAWINGS C171-C173 AND TO BE INSTALLED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF THE FOLLOWING STANDARDS:
   1.1. PVC-O PRESSURE PIPES AND FITTINGS TO AS4441;
   1.2. COPPER PIPES AND FITTINGS TO AS1432 AND 1589 RESPECTIVELY; AND
   1.3. PE100 PIPES AND FITTINGS TO AS4130.
2. ALL CHANGES IN PIPE DIRECTION (BENDS) AND TEE JOINTS ARE TO BE RESTRAINED OR ADEQUATELY ANCHORED VIA THRUST BLOCKS. THRUST BLOCKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-5002-D AND SD-5003-D.
3. ALL POTABLE WATER PIPEWORK IS TO HAVE A MINIMUM COVER OF 450mm.
4. ALL POTABLE WATER PIPEWORK IS TO HAVE THE MINIMUM HORIZONTAL AND VERTICAL CLEARANCES IN ACCORDANCE WITH TABLE 5.5 OF WSA-03:2011 PART 3.1. WHERE VERTICAL AND HORIZONTAL DEVIATION OF THE POTABLE WATER MAIN ARE REQUIRED TO AVOID MINOR AND MAJOR OBSTRUCTIONS, VERTICAL AND HORIZONTAL DEVIATIONS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH SECTION 5.12.6.1 OF WSA-03:2011 PART 3.1.
5. ALL PIPEWORK SHALL BE INSTALLED WITH AS3500.1:2021.
6. ALL HOT WATER PIPEWORK SHALL BE INSULATED IN ACCORDANCE WITH AS3500.1:2021.
7. ALL HOSE COCKS TO BE INSTALLED WITH A VACUUM BREAKER TO THE WATER AUTHORITIES REQUIREMENTS.
8. COPPER TUBES SHALL BE USED FOR DOMESTIC WATER AND SHALL COMPLY WITH AS1432 - 1993 TYPE 'B' TUBES.
9. NO CHANGES ALLOWED UNLESS APPROVED IN WRITING BY SUPERINTENDENT.
10. NO PIPE WORK SHALL RUN IN SOUND INSULATED WALLS UNLESS OTHER WISE SPECIFIED.
11. WHERE PIPES ARE IN CONTACT WITH DISSIMILAR MATERIALS THEY ARE TO BE PROTECTED WITH BI-METAL CORROSION.
12. ANY STORED OR CIRCULATED HOT WATER IS TO BE AT NO LESS THAN 60°C.
13. ISOLATION VALVES AND THERMOSTATIC MIXING VALVES ARE TO BE LOCATED IN ACCORDANCE WITH AS3500.1:2021.
14. PRESSURE TO FIXTURES TO BE NO MORE THAN 500kPa. HYDRAULIC CONTRACTOR TO INSTALL PRESSURE LIMITING VALVE AS REQUIRED. INSTALLATION TO BE IN ACCORDANCE WITH AS3500.1:2021.

WORK AS EXECUTED DRAWINGS

1. THE CONTRACTOR SHALL PREPARE AND SUBMIT 'WORK AS EXECUTED' DRAWINGS AND SUBMIT TO RELEVANT AUTHORITIES FOR APPROVAL AND PAY ALL FEES AS REQUIRED.
2. THE 'WORK AS EXECUTED' DRAWING SHALL SHOW ALL CHANGES TO THE INSTALLATION AND AS INSTALLED WORK NOT SHOWN ON THE APPROVED DESIGN DRAWINGS.

LEGEND

EXISTING SERVICES

- W — WATER MAIN
- FIRE HYDRANT
- SV — STOP VALVE

PROPOSED SERVICES

- COLD WATER (DIAMETER AS NOTED ON C171-C173)
- W — AUTHORITY WATER MAIN (ICON WATER)
- EXISTING WATER MAIN TO BE REMOVED
- DN100 FIRE HYDRANT
- WM — DN20 WATER PIT IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3006-D (FOR DHA INTERNAL USE ONLY)
- FBB — FIRE BRIGADE BOOSTER IN ACCORDANCE WITH AS2419
- H — INGROUND SPRING HYDRANT IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3202-D. REFER TO HYDRANT SETOUT TABLE FOR HYDRANT LOCATIONS.
- SV — STOP VALVE IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3201-D
- TB / TB — THRUST BLOCK IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-5002-D AND SD-5003-D
- FP — PROVIDE ABOVE GROUND FLUSHING POINT W/SCOUR OUTLET WITH ISOLATING VALVE IN ACCORDANCE WITH ICON WATER DWG SD-3104
- 10m WIDE WATER EASEMENT

EXTERNAL FIRE HYDRANTS

1. ALL FIRE SERVICE SERVICE DIAMETERS NOTED IN DRAWINGS C171-C173 ARE INTERNAL DIAMETERS ONLY. THE HYDRAULIC CONTRACTOR MAY SPECIFY THE PIPE MATERIAL TO BE PVC-U, PVC-M, PVC-O, POLYETHYLENE (PE100) OR DUCTILE IRON. THE SPECIFIED PIPE MATERIAL IS TO HAVE THE SAME EQUIVALENT NOMINAL PIPE DIAMETER AS STIPULATED IN DRAWINGS C171-C173 AND TO BE INSTALLED IN ACCORDANCE WITH THE MOST CURRENT VERSIONS OF THE FOLLOWING STANDARDS:
   1.1. PVC-U PRESSURE PIPES AND FITTINGS TO AS1477;
   1.2. PVC-O PRESSURE PIPES AND FITTINGS TO AS4441;
   1.3. PVC-M PRESSURE PIPES AND FITTINGS TO AS4765;
   1.4. PE100 PIPES AND FITTINGS TO AS4130; AND
   1.5. DUCTILE IRON PIPES AND FITTINGS TO AS2280.
2. THE ENTIRE FIRE HYDRANT SYSTEM INCLUDING ALL PIPEWORK AND FITTINGS SHALL BE CAPABLE OF HANDLING A MINIMUM OF 1700 KPa TEST PRESSURE IN ACCORDANCE WITH THE REQUIREMENTS AS DEPICTED IN AS2419.
3. ALL FIRE SERVICE PIPEWORK IS TO HAVE A MINIMUM COVER OF 700mm.
4. ALL FIRE SERVICE PIPEWORK IS TO HAVE THE MINIMUM HORIZONTAL AND VERTICAL CLEARANCES IN ACCORDANCE WITH TABLE 5.5 OF WSA-03:2011 PART 3.1. WHERE VERTICAL AND HORIZONTAL DEVIATION OF THE POTABLE WATER MAIN ARE REQUIRED TO AVOID MINOR AND MAJOR OBSTRUCTIONS, VERTICAL AND HORIZONTAL DEVIATIONS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH SECTION 5.12.6.1 OF WSA-03:2011 PART 3.1.
5. ANCHORAGE SHALL BE PROVIDED AT ALL CHANGES IN DIRECTION, TEES, VALVES, TAPERS AND TERMINATION POINTS. NEW ANCHOR BLOCKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-5001-D, SD-5002-D AND SD-5003-D.
6. WHERE PIPEWORK IS LOCATED BELOW GROUND, THE SERVICE SHALL BE CONSTRUCTED OF UPVC PRESSURE PIPE OR POLYETHYLENE PIPE AND BE SUITABLE FOR FIRE SERVICES APPLICATION.
7. SUPPLY AND INSTALL BLUE HYDRANT MARKER AND KERB MARKING FOR INGROUND FEED HYDRANTS (PH) IN ACCORDANCE WITH ICON WATER STANDARD DRAWING SD-3002-D AND SD-3300 SERIES.
8. HYDRANT ARE TO BE INSTALLED IN THE LOCATIONS AS SPECIFIED THE HYDRANT SETOUT TABLE.
9. ALL FIRE SERVICE ISOLATION VALVES TO BE METAL STRAPPED PADLOCKED OPEN AND LABELLED WITH A NON-FERROUS METAL TAG WITH ARIAL UPPER CASE WORDING: 'FIRE SERVICE VALVE/CLOSE ONLY TO TERMINATE FIRE HYDRANT SYSTEM'.
10. NEW FIRE BLOCK PLANS ARE TO BE PRODUCED ILLUSTRATING ALL AMENDMENTS AND ALTERATIONS. LOCATIONS TO BE TAKEN FROM THE WORK AS EXECUTED INFORMATION.

s22 [redacted]

REVISION	DESCRIPTION
E	FOR INFORMATION
F	FOR INFORMATION
G	FOR INFORMATION
H	BUILDING APPROVAL
I	BUILDING APPROVAL

ISSUED	VER'D	APP'D	DATE
NFWR	DF	NG	10.06.22
NFWR	DF	NG	21.06.22
BC	DF	NG	22.06.22
BC	DF	NG	15.07.22
JC	NFWR	DF	01.03.23

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close

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PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: WATER PLAN
KEY PLAN
SHEET 1 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C170

REVISION: I

DRAWING SHEET SIZE = A1

LEGEND

EXISTING SERVICES

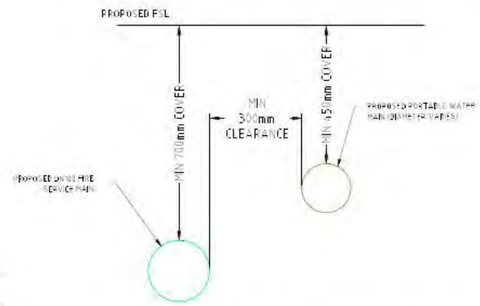
- WATER MAIN
- FIRE HYDRANT
- STOP VALVE

PROPOSED SERVICES

- COLD WATER (DIAMETER AS NOTED ON C171-C173)
- AUTHORITY WATER MAIN (ICON WATER)
- EXISTING WATER MAIN TO BE REMOVED
- DN100 FIRE HYDRANT
- WM — DN20 WATER PIT IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3006-D (FOR DHA INTERNAL USE ONLY)
- FBB — FIRE BRIGADE BOOSTER IN ACCORDANCE WITH A52419.
- H — INGROUND SPRING HYDRANT IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3202-D. REFER TO HYDRANT SETOUT TABLE FOR HYDRANT LOCATIONS.
- SV — STOP VALVE IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3202-D
- TB — THRUST BLOCK IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-5002-D AND SD-5003-D
- FP — PROVIDE ABOVE GROUND FLUSHING POINT W/SCOUR OUTLET WITH ISOLATING VALVE IN ACCORDANCE WITH ICON WATER DWG SD-1104
- 10m WIDE WATER EASEMENT

HYDRANT SETOUT TABLE

POINT	EASTING	NORTHING
HYD 1	213 981.158	603 241.636
HYD 2	213 958.447	603 223.666
HYD 3	213 945.663	603 176.530
HYD 4	213 937.544	603 136.196
HYD 5	213 928.449	603 106.774
HYD 6	213 884.662	603 088.082
HYD 7	213 875.947	603 116.784
HYD 8	213 885.402	603 154.177
HYD 9	213 874.457	603 192.166



TYPICAL WATER SERVICE AND FIRE SERVICE ARRANGEMENTS (N.T.S)

s22 [redacted]

TAP OVER ORIG. TAP TO BE FITTED WITH BACKFLOW PREVENTION DEVICE

REVISION	DESCRIPTION
C	FOR INFORMATION
D	FOR INFORMATION
E	FOR INFORMATION
F	BUILDING APPROVAL
G	BUILDING APPROVAL

ISSUED	VER'D	APP'D	DATE
FC	DF	NG	03.06.22
FC	DF	NG	07.06.22
NP-WK	DF	NG	21.06.22
BC	DF	NG	13.07.22
JC	NP-WK	DF	21.07.22

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0 2.5 5m 7.5 10m 12.5m PLAN SCALE 1:250 @ A1

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PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: WATER PLAN SHEET 2 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C171

REVISION: G

DRAWING SHEET SIZE = A1

LEGEND

EXISTING SERVICES

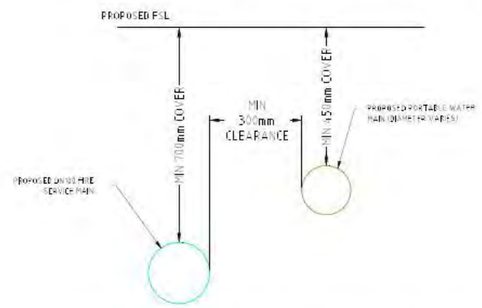
- WATER MAIN
- FIRE HYDRANT
- STOP VALVE

PROPOSED SERVICES

- COLD WATER (DIAMETER AS NOTED ON C171–C173)
- AUTHORITY WATER MAIN (ICON WATER)
- EXISTING WATER MAIN TO BE REMOVED
- DN100 FIRE HYDRANT
- WM — DN20 WATER FIT IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3006-D (FOR DHA INTERNAL USE ONLY)
- FBB — FIRE BRIGADE BOOSTER IN ACCORDANCE WITH AS2419
- H — INGROUND SPRING HYDRANT IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3202-D. REFER TO HYDRANT SETOUT TABLE FOR HYDRANT LOCATIONS.
- SV — STOP VALVE IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3202-D
- TB — THRUST BLOCK IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3002-D AND SD-3003-D
- FP — PROVIDE ABOVE GROUND FLUSHING POINT W/SCOUR OUTLET WITH ISOLATING VALVE IN ACCORDANCE WITH ICON WATER DWG SD-1104
- 10m WIDE WATER EASEMENT

HYDRANT SETOUT TABLE

POINT	EASTING	NORTHING
HYD 1	213 981.158	603 247.636
HYD 2	213 938.447	603 223.666
HYD 3	213 945.663	603 176.530
HYD 4	213 937.544	603 136.796
HYD 5	213 920.449	603 108.774
HYD 6	213 884.662	603 088.602
HYD 7	213 875.947	603 176.784
HYD 8	213 885.402	603 154.317
HYD 9	213 878.457	603 197.166



TYPICAL WATER SERVICE AND FIRE SERVICE ARRANGEMENTS (N.T.S)

s22 [redacted]

REVISION	DESCRIPTION
B	FOR CONSTRUCTION
C	FOR INFORMATION
D	FOR INFORMATION
E	BUILDING APPROVAL
F	BUILDING APPROVAL

ISSUED	VER'D	APP'D	DATE
BC	DF	NG	09.04.22
BC	DF	NG	03.06.22
BC	DF	NG	22.06.22
BC	DF	NG	15.07.22
JC	NF/VK	DF	21.07.22

CLIENT: DHA Defence Housing Australia

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PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: WATER PLAN SHEET 3 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C172

REVISION: F

DRAWING SHEET SIZE = A1

LEGEND

EXISTING SERVICES

- WATER MAIN
- FIRE HYDRANT
- STOP VALVE

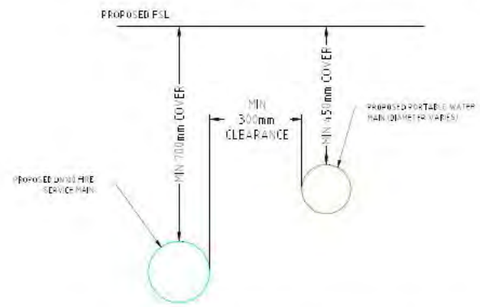
PROPOSED SERVICES

- COLD WATER (DIAMETER AS NOTED ON C171–C173)
- AUTHORITY WATER MAIN (ICON WATER)
- EXISTING WATER MAIN TO BE REMOVED
- DN100 FIRE HYDRANT
- WM — DN20 WATER FIT IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3006-D (FOR DHA INTERNAL USE ONLY)
- FBB — FIRE BRIGADE BOOSTER IN ACCORDANCE WITH AS2419.
- H — INGROUND SPRING HYDRANT IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3202-D. REFER TO HYDRANT SETOUT TABLE FOR HYDRANT LOCATIONS.
- S.V. — STOP VALVE IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-3202-D
- TB — THRUST BLOCK IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-5002-D AND SD-5003-D
- FP — PROVIDE ABOVE GROUND FLUSHING POINT W/SCOUR OUTLET WITH ISOLATING VALVE IN ACCORDANCE WITH ICON WATER DWG SD-1104
- 10m WIDE WATER EASEMENT

E

HYDRANT SETOUT TABLE

POINT	EASTING	NORTHING
HYD 1	213 941.158	603 241.636
HYD 2	213 938.447	603 223.666
HYD 3	213 945.663	603 176.530
HYD 4	213 937.544	603 136.796
HYD 5	213 920.449	603 106.174
HYD 6	213 884.662	603 068.082
HYD 7	213 875.947	603 106.184
HYD 8	213 885.402	603 154.117
HYD 9	213 874.457	603 192.166



TYPICAL WATER SERVICE AND FIRE SERVICE ARRANGEMENTS (N.T.S)

s22 [redacted]

REVISION	DESCRIPTION
H	ICON APPROVAL
A	ICON APPROVAL
B	CONSTRUCTION
C	FOR INFORMATION
D	BUILDING APPROVAL
E	BUILDING APPROVAL

ISSUED	VER'D	APP'D	DATE
RC		DF	28.04.21
BC	DF	NG	21.05.21
RC	DF	NG	29.04.22
RC	DF	NG	03.06.22
BC	DF	NG	13.07.22
JC	KP/VK	DF	21.01.23

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PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

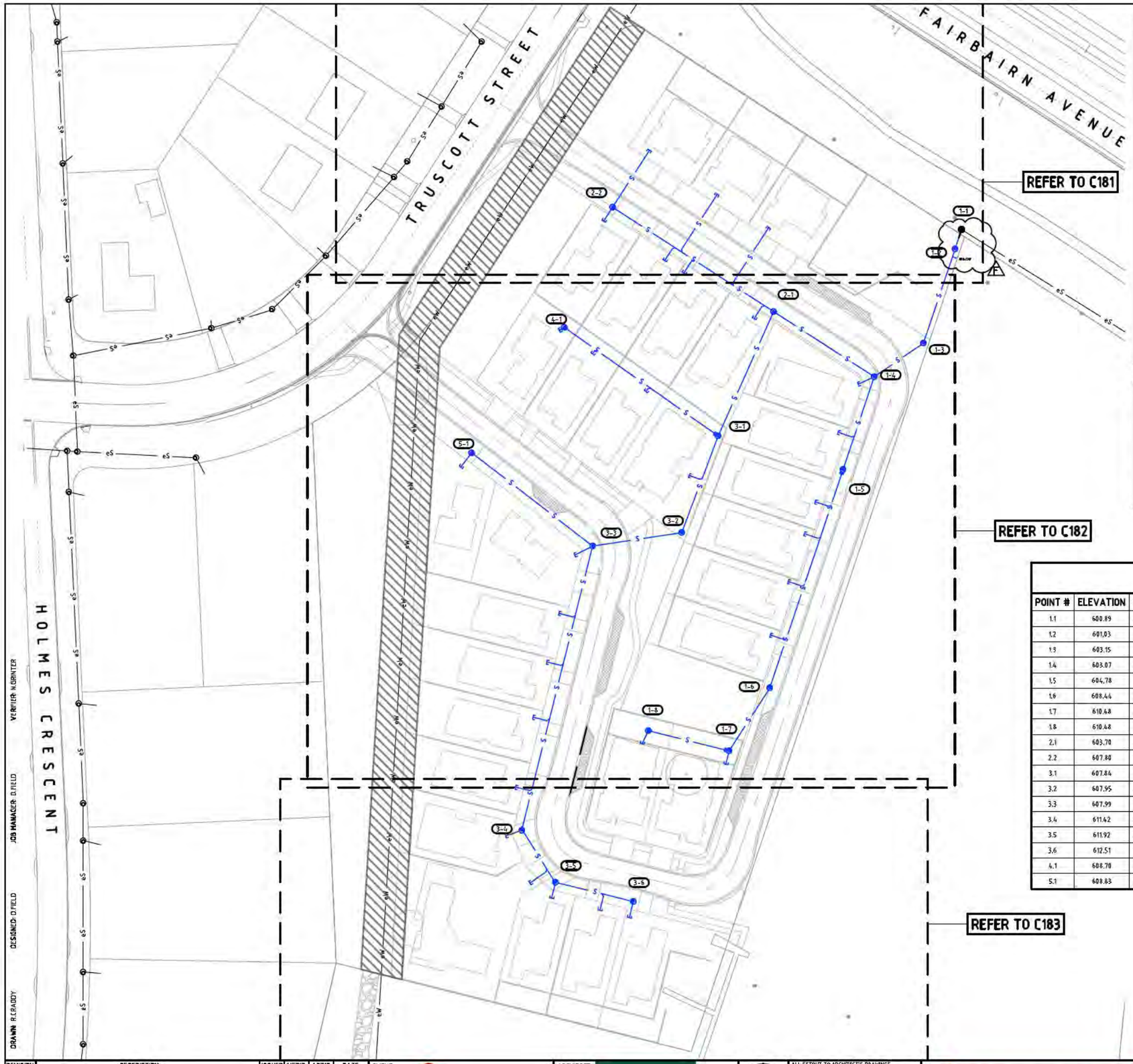
DRAWING TITLE: WATER PLAN
SHEET 4 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C173

REVISION: E

DRAWING SHEET SIZE = A1



LEGEND

EXISTING SERVICES

- SEWER MAIN
- SEWER MANHOLE HOLE

PROPOSED SERVICES

- SANITARY DRAIN
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D
- SEWER MANHOLE WITH EXTERNAL DROP DOWN STRUCTURE REFER TO ICON WATER STANDARD DRAWING SD-2202-D
- SEWER TIE CAP - REFER TO NOTE 1
- DRG + TAP — OVERFLOW RELIEF GULLY WITH TAP OVER - REFER TO NOTE 3
- SEWER MAIN (EXTERNAL)
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D (EXTERNAL)
- 10m WIDE WATER EASEMENT

REINSTATEMENT GENERALLY

1. UNLESS OTHERWISE DIRECTED REINSTATE ALL SURFACES DISTURBED BY THE WORKS WITH MINIMUM 100mm SITE TOP SOIL, DRY LAND GRASS, BITUMEN, STRAW MULCH.
2. CONSOLIDATE FOR 13 WEEKS ONCE HEALTHY SWARD ESTABLISHED.
3. REMOVE ALL EXCESS SOIL INCLUDING EXCESS TOPSOIL AND UNSUITABLE SUBGRADE FROM THE SITE UNLESS DIRECTED OTHERWISE.

GENERAL NOTES

1. ALL INTERNAL LOT SEWER SERVICE TIES ARE TO EXTEND AND BE CAPPED AT A MINIMUM OF 1m WITHIN THE INTERNAL LOT BOUNDARY. THE DESIGN OF THE INTERNAL LOT SANITARY NETWORK AND CONNECTION INTO THE SEWER SERVICE TIES IS TO BE UNDERTAKEN BY THE HYDRAULIC ENGINEER. PVC SERVICES SHALL BE SEALED WITH A SOLVENT CEMENTED END CAP OR SCREW CAP.
2. ALL INTERNAL LOT SEWER SERVICE TIES ARE TO BE 100mm SN8 FOR SEWER TIE CONNECTION INTO SEWER MAIN REFER TO ICON WATER STANDARD DRAWINGS SD-2005-D DETAIL '45 DEGREE JUMP UP DIRECT CONNECTION TO SEWER OUTSIDE LEASE - FOR SEWER DEPTHS LESS THAN 3500'. FOR SEWER TIE CONNECTION TO MANHOLE REFER TO ICON WATER STANDARD DRAWINGS SD-2006-D"SEWER TIE TO MAINTENANCE HOLE" DETAIL.
3. OVERFLOWRELIEF GULLY (ORG) LEVEL TO BE A MINIMUM OF 150mm LOWER THAN LOWEST FIXTURE LEVEL, AND 75mm ABOVE SURROUNDING GROUND LEVEL UNLESS CONCRETED. MINIMUM CONCRETED LEVEL 10mm.
4. CONTRACTOR SHALL ALLOW FOR ADDITIONAL EXCAVATION (INCLUDING ROCK) AND BACKFILL OF PIPES, FITTINGS AND ALL JUMP-UPS TO THE LOCAL AUTHORITY REQUIREMENTS, INCLUDING THOSE TO BRANCH DRAINS.
5. ALL BRANCH LINES SHALL BE GRADED AND/OR LOWERED TO AVOID PENETRATING FOOTING BEAMS UNLESS SHOWN OTHERWISE. THE CONTRACTOR SHALL ALLOW FOR ADDITIONAL PIPE LENGTHS AND WORK INCLUDING CONSTRUCTION OF ADDITIONAL INSPECTION OPENINGS AS REQUIRED BY THE LOCAL AUTHORITY.
6. CO-ORDINATE WITH STRUCTURAL DRAWINGS. NO STEEL REINFORCING BARS TO BE CUT WITHOUT PRIOR WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.
7. DRG GRATE LEVEL SHALL BE IN ACCORDANCE WITH AS 3500.2 CLAUSE 4.6.6.6 AND 4.6.6.7.
8. ALL SEWER MAINTENANCE HOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ICON WATER STANDARD DRAWINGS SD-2201-D AND SD-2202-D AND UNLESS NOTED OTHERWISE BE FITTED WITH A HEAVY DUTY GATTIC COVER.
9. NEW DRAINS TO BE CONSTRUCTED ARE SHOWN IN BLUE LINES. EXISTING DRAINS ARE SHOWN IN BLACK LINES. NEW AUTHORITY MAINS ARE SHOWN IN RED.
10. EXISTING DRAINS SHOWN "X'ed" IN RED ARE TO BE EXHUMED OR ABANDONED (AS NOTED) AND ENDS SHALL BE SEALED TO APPROVAL.

SEWER SETOUT

POINT #	ELEVATION	EASTING	NORTHING	STRUCTURE TYPE
1.1	600.89	213977.790	603246.664	1050 MANHOLE
1.2	601.03	213976.198	603241.923	1050 MANHOLE
1.3	603.15	213968.518	603219.048	1050 MANHOLE
1.4	603.07	213956.541	603210.866	1050 MANHOLE
1.5	604.78	213948.961	603188.287	1050 MANHOLE EXTERNAL VERTICAL DROP
1.6	608.44	213931.138	603135.201	1050 MANHOLE
1.7	610.48	213921.240	603119.906	1050 MANHOLE EXTERNAL VERTICAL DROP
1.8	610.48	213901.556	603124.807	1050 MANHOLE
2.1	603.70	213932.062	603226.720	1050 MANHOLE
2.2	607.80	213892.887	603252.092	1050 MANHOLE
3.1	607.84	213918.572	603196.461	1050 MANHOLE EXTERNAL VERTICAL DROP
3.2	607.95	213909.709	603172.972	1050 MANHOLE
3.3	607.99	213888.023	603169.699	1050 MANHOLE
3.4	611.42	213870.782	603100.588	1050 MANHOLE
3.5	611.92	213879.024	603087.947	1050 MANHOLE
3.6	612.51	213897.929	603083.262	1050 MANHOLE
4.1	608.70	213881.131	603222.879	1050 MANHOLE
5.1	608.83	213858.551	603192.388	1050 MANHOLE

SEWER DRAWING REFERENCES

CONSTRUCT STRUCTURES AND CONNECTIONS IN ACCORDANCE WITH THE FOLLOWING STANDARD DRAWINGS.

- SD-2005-D - SEWERAGE NETWORK PROPERTY - CONNECTION DETAILS - SEWER TIES - SHEET 1 OF 2
- SD-2006-D - SEWERAGE NETWORK PROPERTY - CONNECTION DETAILS - SEWER TIES - SHEET 2 OF 2
- SD-2102-D - SEWERAGE AND WATER NETWORKS - PIPE EMBEDMENT AND TRENCH FILL - GRANULAR AND CEMENT STABILISED EMBEDMENT DETAILS
- SD-2103-D - SEWERAGE AND WATER NETWORKS PIPE EMBEDMENT AND TRENCH FILL CONCRETE BEDDING AND EMBEDMENT DETAILS.
- SD-2106-D - SEWERAGE AND WATER NETWORKS MINIMUM PIPE COVER AND CLEARANCES STANDARD CONDITIONS AND APPLICATIONS
- SD-2107-D - SEWERAGE AND WATER NETWORKS WATER MAINS⊡TOⲤMETER AND SEWER TIE APPLICATIONS TRENCH EMBEDMENT AND BACKFILL DETAILS
- SD-2201-D - SEWERAGE NETWORK - CAST IN SITU MAINTENANCE HOLE - 1050 DIA. WITH BRANCHES - ARRANGEMENT AND DETAILS
- SD-2202-D - SEWERAGE NETWORK CAST IN SITU MAINTENANCE HOLE 1050 DIA. WITH EXTERNAL DROP ARRANGEMENT AND DETAILS
- SD-2204-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES 1050, 1200 AND 1500 DIA. COVERS AND SURROUNDS ARRANGEMENT AND FIXING DETAILS
- SD-2205-D - SEWERAGE NETWORK - PRECAST MAINTENANCE HOLES - FOR DEPTHS LESS THAN 6000mm - TYPICAL ARRANGEMENT AND BASE DETAILS
- SD-2206-D - SEWERAGE NETWORK - PRECAST MAINTENANCE HOLES FOR DEPTHS LESS THAN 1200mm - TYPICAL ARRANGEMENT
- SD-2207-D - SEWERAGE NETWORK - 1050 DIA. PRECAST MAINTENANCE HOLES - TYPICAL COMPONENTS - DETAILS
- SD-2208-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES - STANDARD OFFSETS AND BENCHING DETAILS
- SD-2209-D - SEWERAGE NETWORK - SEWER MAINTENANCE SHAFTS (SMS) AND RODDING POINTS - TYPICAL ARRANGEMENTS
- SD-2210-D - SEWERAGE NETWORK - PRECAST AND CAST IN SITU MAINTENANCE HOLES - PIPE CONNECTION DETAILS

s22 [redacted]

VERIFIER: N.GRINTER
JOB MANAGER: D.FIELD
DESIGNER: D.FIELD
DRAWN: R.READDY

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	CONSTRUCTION	RC		DF	09.04.21
B	CONSTRUCTION v2	RC	NG	DF	21.05.21
C	CONSTRUCTION v3	RC	NG	DF	29.04.22
D	CONSTRUCTION v4	KPVK	NG	DF	26.06.22
E	BUILDING APPROVAL	BC	DF	KPVK	13.07.22
F	BUILDING APPROVAL	JC	KPVK	DF	21.07.22

CLIENT: DHA Defence Housing Australia

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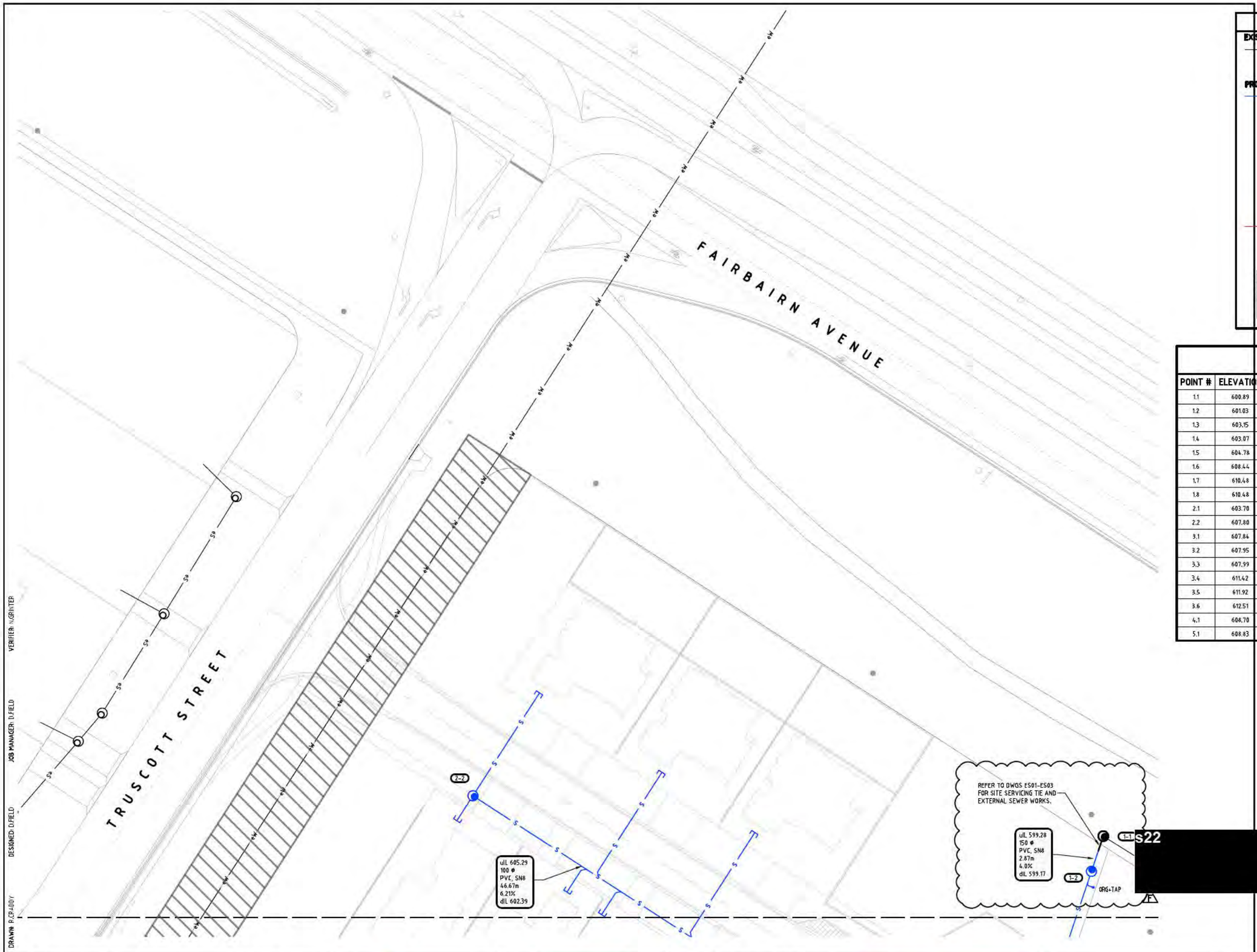
PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: SEWER PLAN
KEY PLAN
SHEET 1 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C180
REVISION: F
DRAWING SHEET SIZE = A1



LEGEND

EXISTING SERVICES

- eS — SEWER MAIN
- SEWER MANHOLE HOLE

PROPOSED SERVICES

- S — SANITARY DRAIN
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D
- SEWER MANHOLE WITH EXTERNAL DROP DOWN STRUCTURE REFER TO ICON WATER STANDARD DRAWING SD-2202-D
- SEWER TIE CAP - REFER TO DWG. C180 NOTE 1
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- S — SEWER MAIN (EXTERNAL)
- SEWER MAINTENANCE HOLE REFER TO ICON WATER STANDARD DRAWING SD-2201-D (EXTERNAL)
- 10m WIDE WATER EASEMENT

SEWER SETOUT

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4.1	608.70	213861.131	603222.879	1050 MANHOLE
5.1	608.83	213858.551	603192.388	1050 MANHOLE

DRAWN: R.CRAIGDY
DESIGNED: D.FIELD
JOB MANAGER: D.FIELD
VERIFIER: N.GRINTER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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B	CONSTRUCTION v2	RC	NG	DF	21.05.21
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E	BUILDING APPROVAL	BC	DF	KPVK	13.07.22
F	BUILDING APPROVAL	JC	KPVK	DF	21.07.22

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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0 2.5 5.0 7.5 10.0 12.5m PLAN
SCALE 1:250 @ A1

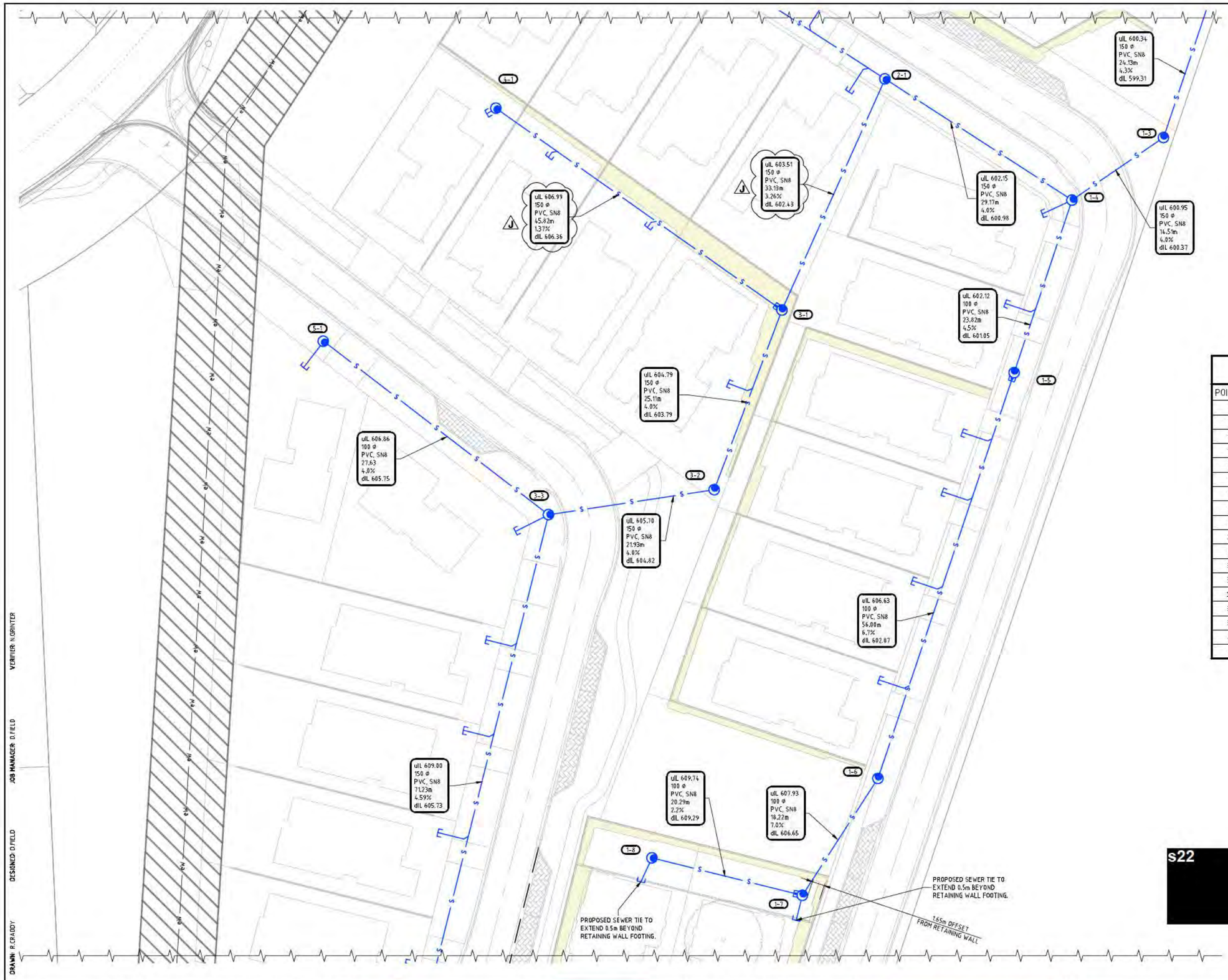
NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1803
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
SEWER PLAN
SHEET 2 OF 4

CR172699

C181 F



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s22 [redacted]

DRAWN: R.CRADDY
DESIGNED: D.FIELD
JOB MANAGER: D.FIELD
VERIFIER: N.GRINTER

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I	BUILDING APPROVAL	JC	KPVK	DF	21.07.22
J	RFI RESPONSE	RC		DF	29.07.22

CLIENT: DHA Defence Housing Australia

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Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 054 433 900

PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

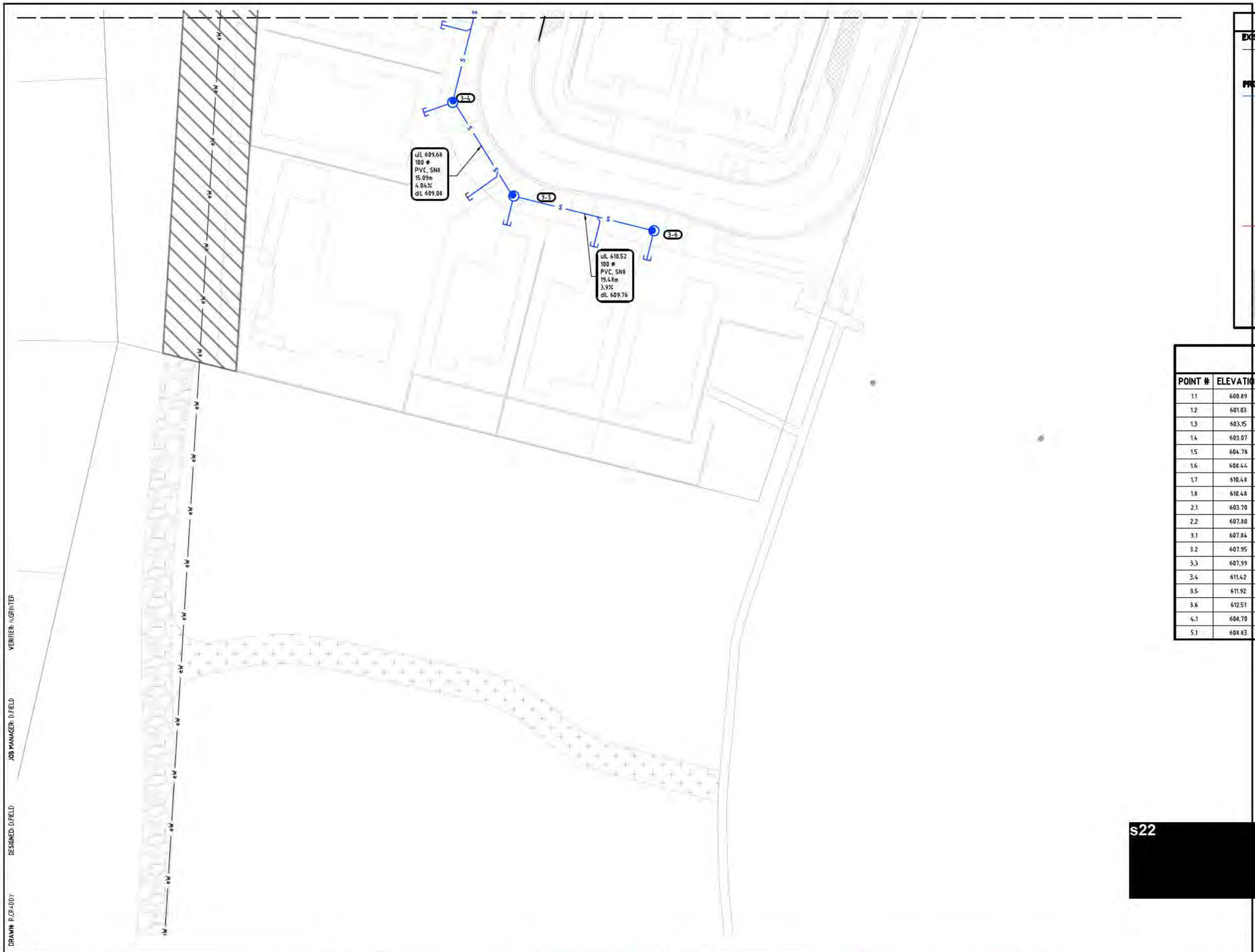
DRAWING TITLE: SEWER PLAN
SHEET 3 OF 4

JOB NUMBER: CR172699

DRAWING NUMBER: C182

REVISION: J

DRAWING SHEET SIZE = A1



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s22 [redacted]

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SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1803
Email canberra@northrop.com.au ABN 81 054 433 930

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: SEWER PLAN SHEET 4 OF 4

CR172699

C183 F

Irwin&Hartshorn pty ltd

abn 69 074 330 082

12 alderson place
hume act 2620

phone **02 6260 1588**
fax **02 6260 1236**

DEMOLITION WORK PLAN FOR

BLOCK: **3** SECTION: **65** SUBURB: **CAMPBELL**

STREET ADDRESS: ACADEMY CLOSE

OWNER: DEFENSE HOUSING AUSTRALIA

Number of buildings to be demolished: TWENTY TWO + GARAGES
Height: Approx: 5.9m
Distance from closest boundary: Approx. 10.0 metres
Main materials of construction: Brick, concrete & timber

PROCEDURES

- Power supply to the site will be disconnected at the main by ACTEW/AGL
- Gas supply will be terminated outside the boundary by ACTEW/AGL
- A licenced remover will remove and dispose of all asbestos sheeting in accordance with NOHSC 2002:2005 second edition
- An 'A' class asbestos assessor will provide a written clearance certificate
- All insulation will be removed and disposed of in accordance with the code of practice
- A licenced drainer will plug the sewer before being inspected by ACTEW/AGL
- Water will be used for dust suppression before being disconnected at meter
- All new workers to Irwin & Hartshorn will be inducted on site
- All demolition work will be in accordance with the AS 2601 code
- One day is allowed for each major activity, 7 days for completion of the demolition

METHOD

- Strip by hand all material to be salvaged
- Using a hydraulic excavator fold building to middle and load all rubble onto tipping trucks to be recycled where possible or tipped at an approved site
- Exhume all concrete footings with hydraulic excavator then transport to Canberra Concrete Recyclers for processing
- Clean and level site on completion

SAFETY PROCEEDURES

- Any work above 1.8m will be done in accordance with appropriate code
- A mobile telephone will be available on site at all times
- Appropriate safety equipment will be worn at all times
- A 1.8m high chain wire fence will be erected around the site to prevent any unauthorised entry

s22 [redacted]

WASTE MANAGEMENT PLAN — PART 3

DEMOLITION WASTE PROFORMA

Unit No: ..... Block: 3 Section 65 Suburb: CAMPBELL

Applicant's Name: ..... Applicant's Signature: ..... Date:...../...../.....

Demolisher Assigned: IRWIN & HARTSHORN P/L Demolisher's Signature [redacted] S22 ..... ACT Builder's Licence No: 20012208 Date: 8/8/17

		REUSE/RECYCLING OF DEMOLITION WASTE				DISPOSAL AT LANDFILL	
		ON-SITE		OFF-SITE			
Type Of Material Generated	Estimated Volume Of Material Generated (m³)	Estimated Volume (m³)	Specify proposed reuse or on-site recycling methods	Estimated Volume (m³)	Specify name of receiving recycling outlet(s) and/or reuse site(s)	Estimated Volume (m³)	Specify landfill site(s)
Excavation Material	/						
Green Waste	/						
Bricks	364			364	C.C.R		
Concrete	187			187	C.C.R		
Timber (Please Specify)	76			60	C.C.R	16	MUGGA TIP
Plasterboard/Gyprock	41					41	MUGGA TIP
Metals (Please Specify)	32			32	SIMS METALS		
Other (Please Specify)							
TOTAL	700			643		57	

APPOINTMENT OF BUILDER & APPLICATION FOR COMMENCEMENT NOTICE

Building Act 2004, S151

In completing this form the owner is authorising the builder nominated below to apply to the appointed certifier to issue a Commencement Notice for the works detailed in this application form.

PART A — PROJECT DETAILS

Block	Section	Suburb	Unit No.
3	65	Campbell	2 to 33

Street Address 2 - 33 Academy Close, Campbell, A.C.T.

Certifier Name BCA Certifiers Australia Pty Ltd - 200714

Description of Building Works relevant to this application-*If more than 6 items please attach further details*

1 Demolition of 22 dwellings including fences & driveways

2

3.

4

PART B — OWNER DETAILS – Please Print

All owners **must** be listed

Owner 1 will be considered the contact person in relation to this application

Company Details Defence Housing Australia

Owner 1 Jonathan Thompson **Owner 2**

Owner 3 **Owner 4**

Postal Address Level 2, Suite 2.01 / 287 Elizabeth St

Suburb Sydney **State** N.S.W. **Postcode** 2000

Phone Number Business Hours (02) 8836 5709 **Mobile** s22 [redacted]

EMAIL ADDRESS s22 [redacted]

Approved form AF2016-79 approved by David Middlemiss, Construction Occupations Deputy Registrar on 02 August 2016 under section 151 of the *Building Act 2004*. This form repeals AF2014-72

Authorised by the ACT Parliamentary Counsel—also accessible at www.legislation.act.gov.au

PART C	APPOINTMENT OF BUILDER

I/we the owner/s have appointed the person whose details appear below as the builder in relation to the building works described in thisform

Licence Holders Name asit appears on licence card: s22 [redacted]

Licence Number s22 [redacted] Class: D Expiry Date: 22/12/18

List any conditions or endorsements on licence: Valid for demolition of any building of BCA class 1 to 10

EMAIL ADDRESS s22 [redacted]

PART D	NOMINEE'S DETAILS If the builder is a company or partnership provide details of the Nominee who will supervise the building

Nominee's Name:

Licence Number: Class: Expiry Date:

Signature ofNominee: Date:

PART E	OWNER SIGNATURE/S– all owners **must** sign this form

Owner 1 _____ Signature_____ *DATE :*

Owner 2 _____ Signature_____ *DATE:*

Owner 3 _____ Signature_____ *DATE:*

Owner 4 _____ Signature_____ *DATE:*

PART F	BUILDER APPLICATION TO CERTIFIER FOR COMMENCEMENT NOTICE

I hereby apply to the building certifier listed above for a commencement notice for the works detailed in Part A of this form in accordance with the Building Act 2004.

☐ A site sign was **not** required to be displayed prior to making this application.

☐ A site sign **was** required to be displayed prior to making this application and I declare that a compliant sign was erected and displayed for the required period.

Signature of Builder: s22 [redacted] Date: 8/8/17

NOTE: There are penalties for deliberately giving false and misleading information. The Planning and Land Authority or Minister may revoke an approval if satisfied that the approval was obtained by fraud or misrepresentation.

PART G	INSURANCE OR FIDELITY CERTIFICATE

For residential building work please provide details of insurance where applicable

Insurance Provider: Policy No.: Date Issued:

Approved form AF2016-79 approved by David Middlemiss, Construction Occupations Deputy Registrar on 02 August 2016 under section 151 of the *Building Act 2004*. This form repeals AF2014-72

SAP House, Level 6, 224 Bunda Street (PO Box 213)
Canberra ACT 2608
02 6285 1822
canberra@northrop.com.au
ABN 81 094 433 100

CR172699_MC100

25/10/2022

s22
Defence Housing Australia
Level 1/ 1 Main Street
Mawson Lakes SA 5095

Dear s22

Re: Northrop Civil Certification for Building Approval – Civil Services Academy Close

This letter confirms that the current civil design for the Engineering Design & Project Management at Academy Close Campbell ACT works (Consultancy Agreement PROC-11793 and associated approved consultancy variations) has been designed in accordance with the design intent of the standards and guidelines:

Water Sensitive Urban Design Requirements of the Development Approval (Application Number WA101918):

- Australian Government National Capital Authority "The Consolidated National Capital Plan" (as of 08/09/2020)
- ACT Government Environment, Planning and Sustainable Development "Waterways: Water Sensitive Urban Design General Code (21 February, 2020)

Stormwater, Sewer and Water Connections to Authority networks:

- AS3500.3:2018 Plumbing and Drainage – Stormwater Drainage
- AS3500.2:2018 Plumbing and Drainage – Sanitary Plumbing and Drainage
- AS3500.1:2018 Plumbing and Drainage – Water Services
- WSA 02-2014 Gravity Sewerage Code of Australia Version 3.1
- WSA 03-2011 Water Supply Code of Australia Version 3.1
- Icon Water Water and Sewerage Service and Installation Rules
- Icon Water STD-SPE-G-011 Supplement to WSA 02-2014-3.2 – Gravity Sewerage Code of Australia
- Icon Water STD-SPE-G-012 Supplement to WSA 03-2011-3.2 – Water Supply Code of Australia
- Icon Water STD-SPE-M-006 Requirements for Property Service Connections and Water Meters
- Icon Water STD-SPE-C-001 Technical Specification – Civil and Structural Works
- Transport Canberra and City Services Municipal Infrastructure Standards 08 Stormwater (September 2021)

Waste Management Strategy:

- ACT Government Development Control Code for Best Practice in Waste Management in the ACT 2019

Car Parking:

- AS2890.5 Parking facilities Part 5: On-street parking
- ACT Government ACT Planning & Land Authority Parking and Vehicular Access General Code (May 2018)

This Civil Certification does not include:

- Parking for lots;
- Items not listed.

The design has been undertaken on the following Northrop Drawing:

Doc No.	Revision	Document Title
CR172699_C001	E	Civil Works Standard Notes
CR172699_C005	C	Civil Works Standard Civil Details
CR172699_C072	F	Civil Works Combined New Services Plan Key Plan Sheet 1 of 4
CR172699_C073	E	Civil Works Combined New Services Plan Sheet 2 of 4
CR172699_C120	D	Civil Works Site Works and Pavement Key Plan Sheet 1 of 4
CR172699_C121	D	Civil Works Site Works and Pavement Plan Sheet 2 of 4
CR172699_C122	D	Civil Works Site Works and Pavement Plan Sheet 3 of 4
CR172699_C123	D	Civil Works Site Works and Pavement Plan Sheet 4 of 4
CR172699_C127	C	Civil Works Off Site Works and Pavement Plan Sheet 3 of 5
CR172699_C160	G	Civil Works Stormwater Management Plan Key Plan Sheet 1 of 4
CR172699_C161	H	Civil Works Stormwater Management Plan Sheet 2 of 4
CR172699_C162	H	Civil Works Stormwater Management Plan Sheet 3 of 4
CR172699_C163	G	Civil Works Stormwater Management Plan Sheet 4 of 4
CR172699_C165	D	Civil Works Stormwater Details Sheet 1 of 2
CR172699_C166	D	Civil Works Stormwater Details Sheet 2 of 2
CR172699_C170	I	Water Plan Key Plan Sheet 1 of 4
CR172699_C171	G	Water Plan Sheet 2 of 4
CR172699_C172	F	Water Plan Sheet 3 of 4

CR172699_C173	E	Water Plan Sheet 4 of 4
CR172699_C179	D	Civil Works New Water Tie and Sewer Tie Long Sections
CR172699_C180	F	Sewer Plan Key Plan Sheet 1 of 4
CR172699_C181	F	Sewer Plan Sheet 2 of 4
CR172699_C182	J	Sewer Plan Sheet 3 of 4
CR172699_C183	F	Sewer Plan Sheet 4 of 4
CR172699_ES01	C	Civil Works External Services Plan
CR172699_ES02	B	Civil Works External Services Plan with Proposed Planting
CR172699_ES03	D	Civil Works External Services Plan Water Meter Detail
CR172699-EC04	1	Civil Engineering Report: Water Sensitive Urban Design Report
CR172699_EC03 WMP	V3	Completed ACT Government Waste Management Application submitted with the Works Approval

In undertaking the design, we exercised the same degree of skill, care and diligence normally exercised by consulting engineers in similar circumstances.

This certificate shall not be construed as relieving any other party of their responsibility.

Prepared by: Review by:

s22 [redacted]

TCCS DILAPIDATION REPORT

Campbell Section 65 Block 3

Academy Close Redevelopment

PREPARED FOR
Place Coordination and Planning
Transport Canberra and City Services
496 Northbourne Avenue
Dickson, ACT 2602

Ref: CR172699_EC05E
Rev: 2.0
Date: 15 October, 2020

Civil Engineering Report:

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
25/09/20	1.0	Draft for Group 1's Information	s22 [redacted]	
15/10/20	2.0	Design Review		

Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

2-6 Shea Street, Phillip ACT 2606

02 6285 1822 | canberra@northrop.com.au | www.northrop.com.au

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Defect Inspection

The defects and condition of the road reserve and verge outlined in this report were observed and noted during an inspection carried out on the 18 September 2020 for approval by TCCS prior to construction. These are the existing conditions prior to any construction commencing at Block 3, Section 65 Campbell. The contractor is to notify the Superintendent if any of the conditions change prior to the commencement of construction.

A selection of photos has been included in the report. Northrop Consulting Engineers have more photos available of the area.

The areas of works include (inclusive of all service works):

- Eastern verge of Truscott Street directly adjacent to Block 3;
- Western verge of Truscott Street adjacent the Southern boundary of Block 3; and
- Southern verge of Fairbairn Avenue adjacent the Northern boundary of Block3.

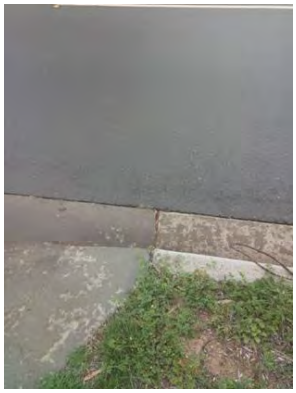
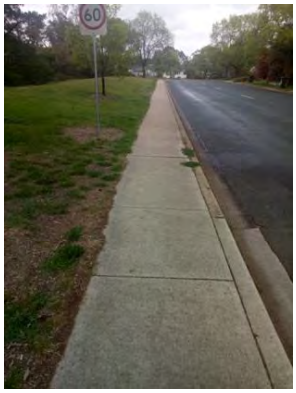
Each defect/condition is referenced on the Defect Locality Plan, photos of each defect are included in the following sections.

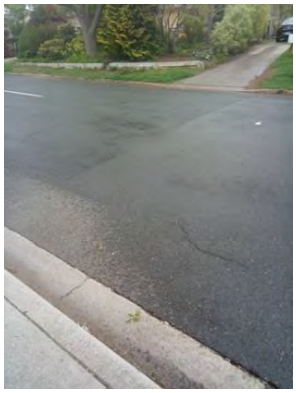
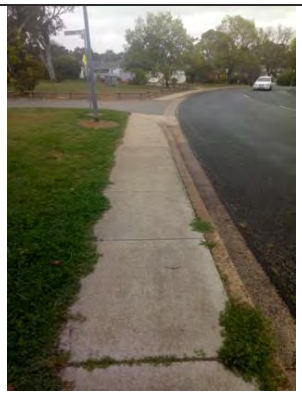
Photos

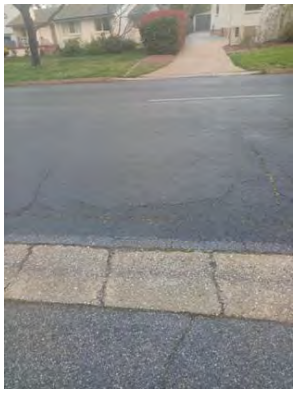
Location	Description	Photo
1	Existing Sewer Manhole North East of block – inside in good conditions, surround and lid showing spalling of concrete and general deterioration	
2	Existing Stormwater Manhole North East of block below natural surface level and exposed for inspection. Grassing along verge in good condition with small evidence of a track used	

3	Existing condition of grassing showing deterioration in a strip adjacent to Fairbairn Avenue. Evidence of deterioration of grassing close to the block boundary	
4	Existing Sewer Manhole North West of block –surround and lid showing spalling of concrete and general deterioration	
5	Existing Stormwater Manhole North West of block –surround and lid showing spalling of concrete and general deterioration	
6	Existing electricity pole not straight	

7	Existing condition of intersection	
8	Existing marker not straight and condition of verge	
9	Existing condition of verge showing grass deterioration	
10	Existing Stormwater sump on Truscott Street	

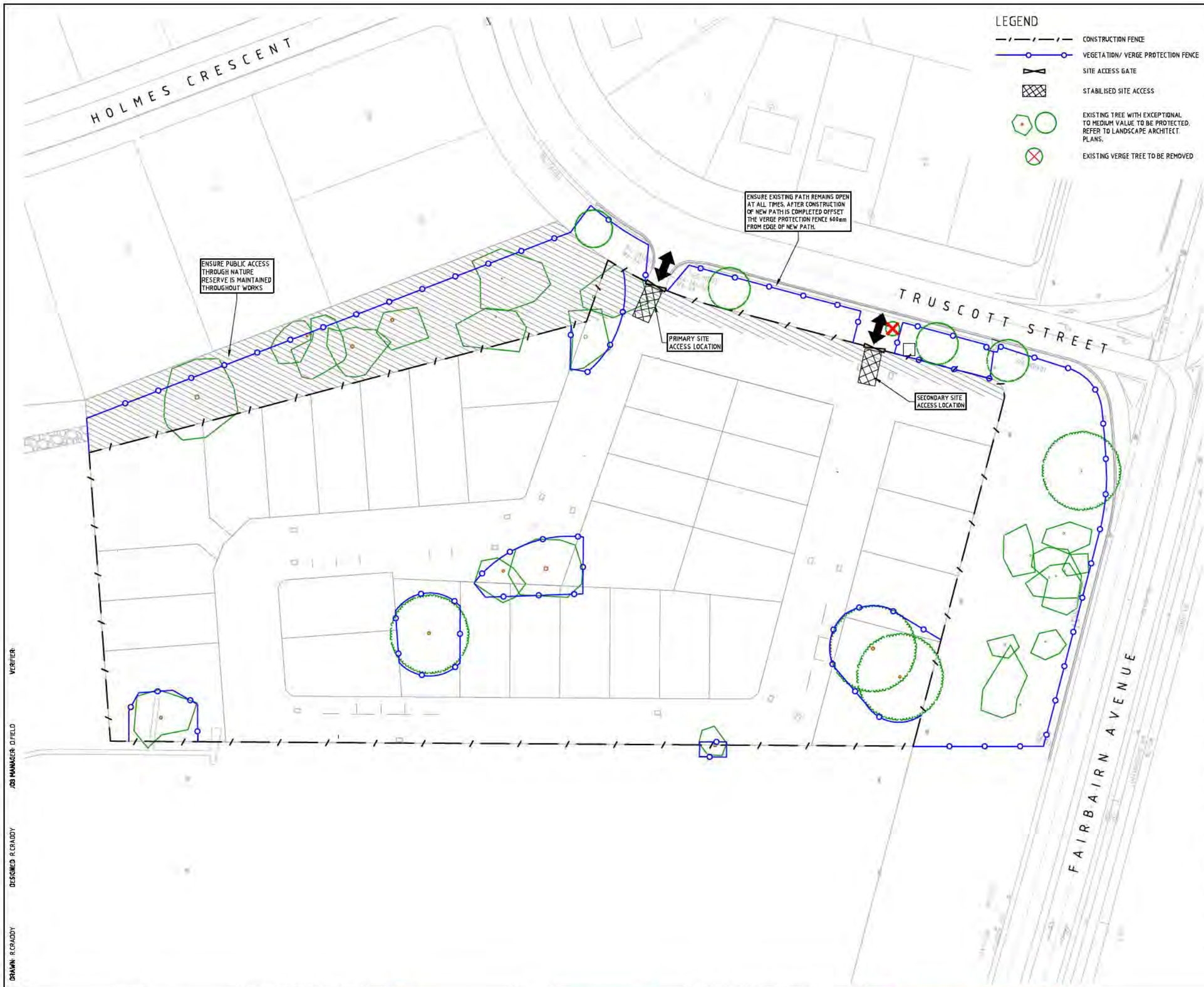
11	Condition of kerb and gutter and asphalt, asphalt and concrete interface worn	
12	Grass growth around selected trees	
13	Spalling of concrete	
14	Path in good condition, kerb and gutter change profile part way through Truscott Street, general grassing along Truscott Street adjacent to site	

15	Cracking of asphalt road along Truscott Street, cracking of kerb and gutter, spalling at kerb and gutter present for the extents of Truscott Street Verge on Western side of Truscott Street in generally good condition for entirety	
16	No grass growth at signs or street lights	
17	Condition of pit lid and surround	
18	Condition of pit lid and surround	

19	Condition of OCI (consistent across OCI)	
20	Existing condition of pit	
21	Existing condition of substation	
22	TCCS Streetlight asset tags to be returned to TCCS (14 total across site and not shown on Defect Locality Plan)	

Defect Locality Plan

Conditions have their approximate location shown by the white text boxes with the number corresponding the previous table. Some conditions are over a large location however have been shown in one location only. Other conditions are only in the general area of the locality plan due to the number reported in the particular area.



LEGEND

- CONSTRUCTION FENCE
- VEGETATION/ VERGE PROTECTION FENCE
- SITE ACCESS GATE
- STABILISED SITE ACCESS
- EXISTING TREE WITH EXCEPTIONAL TO MEDIUM VALUE TO BE PROTECTED. REFER TO LANDSCAPE ARCHITECT PLANS.
- EXISTING VERGE TREE TO BE REMOVED

NOTES

GENERAL

1. INSTALL ALL PROTECTIVE MEASURES PRIOR TO COMMENCING CONSTRUCTION WORKS. ADVISE DESIGN REVIEW AND COORDINATION (DRC) OF TCCS IN WRITING THAT THE PROTECTIVE MEASURES HAVE BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED LMPP.
2. ALL VERGE VEGETATION INCLUDING GRASS SHALL BE PROTECTED AND RETAINED UNO ON THE DRAWINGS. ROUTINELY WATER TO RETAIN VEGETATION IN GOOD CONDITION.
3. A SUITABLY QUALIFIED LANDSCAPE ARCHITECT OR HORTICULTURIST SHALL BE ENGAGED BY THE CONTRACTOR TO OVERSEE ALL MAJOR WORK IN THE VERGE.
4. CONSTRUCTION MATERIAL SHALL NOT BE STORED ON VERGES OR PUBLIC OPEN SPACES
5. CAR PARKING OR EQUIPMENT PARKING SHALL NOT BE PERMITTED ON VERGES OR ADJACENT PARKLAND
6. SITE SHEDS, STORAGE SHEDS, SITE AMENITIES OR BILLBOARDS SHALL NOT BE ERECTED ON VERGES OR PUBLIC OPEN SPACES WITHOUT THE PRIOR WRITTEN APPROVAL OF THE MANAGER, TRANSPORT CANBERRA AND TRAFFIC SERVICES (TCCS) FOR THE USE OF VERGES, PUBLIC OPEN SPACES OR UNLEASED TERRITORY LAND.

PROTECTIVE FENCING

1. ALL TEMPORARY PROTECTIVE FENCES SHALL BE IN ACCORDANCE WITH THE APPROVED LMPP
2. FENCE OFF TREES, PLANTINGS AND GRASS MARKED FOR RETENTION TO ENCLOSE THE STREET VERGE, PUBLIC OPEN SPACE OR UN-LEASED TERRITORY LAND AREA.
3. THE STANDARD LOCATIONS FOR FENCING SHALL BE:
   - FOR EACH TREE ALONG ITS DRIP-LINE
   - 1.2m OFFSET TO THE BACK OF THE KERB FOR THE FULL FRONTAGE OF THE LEASE, ALONG THE PROPERTY BOUNDARY AND ALONG APPROVED DRIVEWAY ACCESS TO ENSURE THAT THE VERGE IS COMPLETELY ENCLOSED.
4. FENCING SHALL BE ERECTED BEFORE THE COMMENCEMENT OF ANY SITE WORKS, SHALL BE REMAIN IN PLACE THROUGHOUT THE WORKS AND REMOVED PRIOR TO RESTORATION OF THE VERGE.
5. USE TEMPORARY 1800mm CONTINUOUS MESH FENCE SUPPORTED BY STEEL POSTS WITH CONCRETE BASES UNLESS OTHERWISE APPROVED IN WRITING BY TCCS.
6. MAINTAIN ALL EXISTING FOOTPATHS AND PROVIDE SAFE PEDESTRIAN MOVEMENT AT ALL TIMES.
7. WHERE A CONSTRUCTED FOOTPATH/CYCLEWAY EXISTS IN THE VERGE, OFFSET FENCING 600mm EACH SIDE.
8. IF THERE IS NO CONSTRUCTED FOOTPATH/CYCLEWAY PROVIDE A FENCED CLEARWAY 1800mm WIDE FOR PEDESTRIAN ACCESS ALONG THE ENTIRE FRONTAGE
9. FENCING SHALL NOT BE REMOVED FOR THE SERVICE INSTALLATION UNLESS OTHERWISE APPROVED IN WRITING FROM TCCS. ENSURE ALL TREES ARE ADEQUATELY PROTECTED BEFORE COMMENCING TRENCHING. ON COMPLETION RETURN THE FENCE TO ORIGINAL ALIGNMENT

SERVICES AND UTILITIES

1. SERVICES AND UTILITIES SHALL BE LAID ONLY IN THE LOCATIONS SHOWN ON THE DRAWINGS. TRENCHING ACROSS THE VERGE SHALL BE UNDERTAKEN ONLY WHERE SHOWN ON THE DRAWINGS
2. UNLESS OTHERWISE SHOWN ON THE DRAWINGS NO TRENCHING SHALL BE CARRIED OUT WITHIN THE DRIP LINE OF ANY TREE
3. THE NUMBER OF VERGE CROSSINGS SHALL BE MINIMISED. WHERE PRACTICAL AND PERMITTED SHARED TRENCHING SHALL BE ADOPTED
4. TRENCHES SHALL BE LOCATED MIDWAY BETWEEN TREES

SITE ACCESS

1. SITE ACCESS SHALL ONLY BE VIA THE ACCESS POINTS SHOWN ON THE DRAWINGS.
2. PRIOR WRITTEN APPROVAL FOR ALTERNATIVE OR ADDITIONAL ACCESS POINTS SHALL BE OBTAINED THROUGH TCCS.
3. NEW ACCESS POINTS SHALL BE LOCATED MIDWAY BETWEEN EXISTING TREES WHERE SPACE IS ADEQUATE. DO NOT LOCATE ANY ACCESS WITHIN THE DRIP LINE OF ANY TREE.

WORKING NEAR TREES

1. ALL TREES LOCATED IN THE ROAD RESERVE, PUBLIC OPEN SPACE AND UNLEASHED TERRITORY LAND SHALL BE PROTECTED FROM DISTURBANCE, DAMAGE OR DESTRUCTION. PRIOR WRITTEN AUTHORISATION FROM TCCS IS REQUIRED FOR ANY DISTURBANCE, DAMAGE OR DESTRUCTION OF ANY TREE OR LANDSCAPE ASSET.
2. EXISTING CANOPY CLEARANCES SHALL NOT BE ALTERED. CROWNS AND APEX OF CANOPIES SHALL NOT BE ALTERED OR REDUCED
3. ENSURE LIFTING EQUIPMENT AND LOAD CAN CLEAR HEIGHT AND WIDTH OF TREE CANOPY WITHOUT DAMAGE TO CROWN. ENSURE CONSTRUCTION EQUIPMENT CAN PASS BENEATH LOWEST LIMB.
4. DO NOT EXCAVATE OR OTHERWISE DISTURB THE SURFACE LAYER WITHIN THE DRIP-LINE OF ANY TREE WITHOUT THE PRIOR WRITTEN APPROVAL OF TCCS.
5. DO NOT SEVER ROOTS >30mm DIAMETER CLOSER THAN HALFWAY FROM THE DRIP-LINE TO THE TRUNK.
6. HAND EXCAVATE TO A DEPTH OF 300mm TO LOCATE ROOTS BEFORE COMMENCING MACHINE EXCAVATION.
7. CUT ROOTS CLEANLY WITH EQUIPMENT SPECIFICALLY DESIGNED FOR PRUNING ROOTS.
8. PROTECT ANY EXPOSED ROOTS FROM DESICCATION. KEEP LIGHTLY WATERED OR COVER WITH MOIST HESSIAN. AFTER REPLACEMENT OF TOPSOIL REGULARLY WATER TREES UNTIL REESTABLISHED.

CONDITION AND RESTORATION

1. PRIOR TO COMMENCEMENT NOTIFY TCCS OF COMMENCEMENT OF WORK AND UNDERTAKE A JOINT CONDITION SURVEY.
2. AT THE COMPLETION OF WORK ENSURE THAT THE CONDITION OF ALL VEGETATION IS CONSISTANT WITH THE INITIAL CONDITION SURVEY.
3. UNDERTAKE A JOINT CONDITION SURVEY AT COMPLETION OF WORKS AND IMPLEMENT ANY DIRECTIVE FROM TCCS.
4. IF THE GRASS COVER REQUIRES IMPROVEMENT LIGHTLY CULTIVATE THE SOIL TO 50mm. ADD 50mm OF TYPE 9B TOPSOIL AND GRADE EVENLY. ADD NPK FERTISER AT 40g/m². LAY TURF. WATER AND MAINTAIN UNTIL ESTABLISHED.
5. DAMAGED TREES SHALL BE ASSESSED BY TCCS AND REPAIRED OR REPLACED BY THE CONTRACTOR AS DIRECTED.

NOT FOR CONSTRUCTION

DRAWN: R.CRADDY DESIGNED: R.CRADDY JOB MANAGER: D.FIELD VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
9	DRAFT WORKS APPROVAL	JC		DF	30.04.20
10	WORKS APPROVAL	JC		DF	14.05.20
11	TEMPORARY PATHWAY	JC		DF	01.07.20
12	TCCS DESIGN REVIEW	TE		DF	09.10.20
13	FOR INFORMATION	RC		DF	19.11.20
14	TCCS DESIGN REVIEW v2	RC		DF	20.11.20

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close

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0 5 10 15 20 25m PLAN SCALE 1:500 @ A1

NORTHROP Canberra
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Email canberra@northrop.com.au ABN 81 094 433 800

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS LANDSCAPE MANAGEMENT AND PROTECTION PLAN

JOB NUMBER: CR172699

DRAWING NUMBER: C011 REVISION: 14

DRAWING SHEET SIZE = A1

Australian Government
National Capital Authority

Application Number: WA100257

s22 [redacted]
Defence Housing Australia
Level 2, 287 Elizabeth St
SYDNEY NSW 2000

Dear s22 [redacted]

Block 3 Section 65 Campbell - Academy Close
Installation of temporary fencing

I refer to the works approval application, drawings and supporting information on the above works submitted to the National Capital Authority (NCA) for consideration on 15 February 2017.

The NCA advises that:

Works Approval is granted pursuant to Section 12(1)(b) of the *Australian Capital Territory (Planning and Land Management) Act 1988* for the installation of "ATF" style temporary fencing located at Block 3 Section 65 Campbell as shown on Drawing Nos. 1 & 2 and as outlined in the supporting documentation submitted.

> The term "works" is defined in the Act to exclude anything done inside buildings or structures. Under the Act works approval may be given where the works are in accordance with the National Capital Plan. This works approval is given only on the basis of satisfaction that the works are in accordance with the National Capital Plan and does not constitute building approval. It does not constitute any form of warranty as to the structural sufficiency of the proposed works, as to safety of the works or as to safety of the performance of the works. It is the responsibility of the applicant to ensure the safety of the works and the safety of the performance of the works and to ensure that any approvals required under separate legislation are also obtained.

Notes:
1. Temporary fencing installation is to be in accordance with *Australian Standard AS4687-2007 Temporary Fencing and Hoardings.*
2. It is noted that beige or similar coloured shade cloth will be installed on the fence.
3. No signage is to be installed without the approval of the NCA. No advertising material is to be erected on any part of the temporary fence.

The approved plans are available for download from your Works Approval eLodgement account. Should you have any query or need further advice on the matter please contact s22 [redacted].

Yours sincerely,

s22 [redacted]

21 February 2017

ARCADIS Design & Consultancy for natural and built assets

DEMOLITION MANAGEMENT PLAN

Academy Close, Campbell, ACT

23 MARCH 2017

Incorporating

Environmental Strategies

CONTACT

s22 [redacted]

T 6280 9898
s22 [redacted]

Arcadis
Unit 5, 9 Beaconsfield St
Fyshwick, ACT

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DEFENCE HOUSING AUSTRALIA 17067

Demolition Management Plan

Academy Close, Campbell, ACT

Author	s22 [redacted]
Checker	
Approver	

Report No	17067
Date	23/03/2017
Revision Text	R01

This report has been prepared for Defence Housing Australia in accordance with the terms and conditions of appointment for P15501_Haz_Materials Academy CI ACT (Rev3) dated 21/02/2017. Arcadis Australia Pacific Pty Limited (ABN 76 104 485 28976 104 485 289) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

REVISIONS

Revision	Date	Description	Prepared by	Approved by
V01	20/03/2017	DRAFT for client comment	CG	CG
V02	23/03/2017	Final	CG	CG

CONTENTS

1 INTRODUCTION 1
1.1 Project Overview 1
1.2 DMP Objectives 1
1.3 Reports Relied Upon in Preparing this DMP 1

2 ROLES AND RESPONSIBILITIES 2
2.1 Project Organisational Structure 2
2.2 Parties and Responsibilities 2

3 IMPLEMENTATION OF DMP 4
3.1 Site Inductions and Training 4
3.2 DMP Induction 4
3.3 Daily Toolbox Meetings 4
3.4 Personal Protective Equipment 4
3.5 Responsibility and Reporting 5

4 LEGISLATION 6

5 OCCUPATIONAL HEALTH AND SAFETY 7
5.1 Responsibilities 7
5.2 Hazards 7
5.3 Potential Chemical Hazards 8
5.4 Physical Hazards 8
5.5 Underground Services 9
5.6 Aboveground Electrical Hazards 9
5.7 Manual Handling 10
5.8 Noise 10

6 ENVIRONMENTAL MANAGEMENT 11
6.1 Potential Environmental Issues 11
6.2 General Structure of Environmental Management 11

7 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 1: AIR QUALITY 13
7.1 Summary of Potential Impacts 13
7.2 Procedures 13

8 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 2: ASBESTOS DUST 16
8.1 Summary of Potential Impacts 16
8.2 Procedures 16

9 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 3: SEDIMENTS 19
9.1 Summary of Potential Impacts 19
9.2 Procedures 19

10 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 4: SURFACE WATER . 21
10.1 Summary of Potential Impacts 21
10.2 Procedures 21

11 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 5: TREE MANAGEMENT 24
11.1 Summary of Potential Impacts 24
11.2 Procedures 24

12 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 6: WASTE MANAGEMENT 26
12.1 Summary of Potential Impacts 26
12.2 Procedures 26

13 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 7: NOISE MANAGEMENT 29
13.1 Summary of Potential Impacts 29
13.2 Procedures 29

14 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 8: VIBRATION 31
14.1 Summary of Potential Impacts 31
14.2 Procedures 31

15 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 9: TRAFFIC MANAGEMENT 33
15.1 Summary of Potential Impacts 33
15.2 Procedures 33

16 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 10: UNEXPECTED FINDS 35

17 MONITORING REQUIREMENTS 38
17.1 Auditing and Records 38

18 EMERGENCY PREPAREDNESS AND RESPONSE 39

19 SECURITY AND PUBLIC SAFETY 40
19.1 Restriction to Access 40
19.2 Pedestrian and Traffic Control 40

20 REPORTING 41
20.1 Non-compliance 41
20.2 Environmental Incident 41
20.3 Reporting and Corrective Actions 41

APPENDICES

APPENDIX A

Site Figures

APPENDIX B

Tree Management Plan

1 INTRODUCTION

1.1 Project Overview

Defence Housing Australia (DHA) proposes to demolish existing low density residential dwellings located along Academy Close, Campbell ACT (the 'site'). Arcadis Australia Pacific Pty Ltd (Arcadis) has been engaged by DHA to prepare this demolition management plan (DMP). When implemented by the Principal Contractor responsible for the demolition of the site, the objective of the management measures outlined will be to ensure that the project can be carried out without significant adverse impact on the environment in the vicinity of the proposed work area.

The site is located on Block 3 Section 65, Campbell and occupies an area of approximately 25,354 square metres (m^2). The houses are currently unoccupied. Refer to **Figure 1, Appendix A** for the location of the Site.

1.2 DMP Objectives

This document is an operational DMP which provides the framework necessary to implement the required management measures associated with the proposed Demolition works. It is noted that this is not an asbestos removal control plan which will need to be completed by a licenced asbestos removalist.

Once implemented the objective of the management measures will be to ensure that the excavation of materials present at the site can be carried out without significant adverse impact on the environment or the health of the site workers and neighbouring residence. The management and monitoring aspects and Principal Contractor responsibilities covered in this DMP include air quality, sediments, surface water, waste, noise, vibration, traffic, site security and emergencies.

Arcadis notes that this DMP will focus on mitigating and managing environmental and human health issues associated with the demolition works proposed at the site It is assumed that the appointed Civil Works Contractor will provide task specific (i.e. operational hours, noise mitigation, traffic control, environmental management, erosion sediment control plan) measures for the proposed construction works.

The objectives of this DMP can be summarised as follows:

- Prevent, reduce and effectively manage potential impacts to the environment resulting from excavation works, material handling and associated spoil disposal;
- Ensure that environmental management is undertaken in accordance with relevant legislative and policy requirements;
- To ensure the Site is suitable for the proposed landuse, in reference to contamination; and
- Promote environmental awareness amongst employees and contractors.

1.3 Reports Relied Upon in Preparing this DMP

The DMP framework provided in this document has relied upon information provided in the hazardous materials report by Lancaster and Dickenson Consulting Pty Ltd titled '*Intrusive Hazardous Materials Survey Report, Academy Close, Campbell, ACT 2612*'.

2 ROLES AND RESPONSIBILITIES

The following sections set out the organisational structure for the project:

2.1 Project Organisational Structure

All personnel including the Consultants, Contractors, Subcontractors and all other personnel associated with undertaking demolition works on the project at Academy Close, ultimately report to the Principal Contractor.

The Principal Contractor will be responsible for implementing this DMP. This will specifically involve monitoring the environmental performance of the works and ongoing compliance with legislative requirements, this DMP, and all other associated environmental management documentation, operational and post-demolition monitoring and reporting.

2.2 Parties and Responsibilities

The parties involved with, and their responsibilities during, the works are provided in Table 1.

Table 1: Project Parties and Responsibilities

Party	Responsibilities	Reports to
The Principal Contractor	- Ensure all works are implemented in accordance with the DMP. - Promote awareness of appropriate environmental management and occupation health and safety (OHS) practices to the Project Manager. - Ensure the Project Manager is aware of the DMP and site specific issues. - Review risks and identify potential opportunities and issues with the project. - Monitor and inspect activities for compliance with relevant environmental requirements, including ensuring suitable management plans have been submitted and approved prior to undertaking works. - Ensure environmental incidents and non-compliances are reported promptly and investigated. - Undertake environmental audits on the project at a frequency deemed appropriate to the length of the project. - Periodically review the performance of the Project Manager in meeting the objectives of their DMP via regular audits. The audits will review the Project Manager's activities to ensure that environmental hazards have the appropriate mitigation controls in place. Improvement requests and non-compliances will be monitored and corrective action undertaken. - Maintain an environmental audit register to record close out of any actions issued.	The Contract Administrator / Project Manager (DHA)
Asbestos Assessor	- Comply with the requirements of this DMP.	The Principal Contractor

	- Provide advice to the Principal Contractor where required in relation to asbestos and other hazardous materials that may be unexpectedly encountered. - Undertake air monitoring for asbestos fibres during the removal of asbestos materials. - Conduct clearance inspections after the removal of asbestos materials and where appropriate, provide a clearance certificate.	
Environmental Consultant	- Comply with this DMP. - Provide advice where required to the Principal Contractor in relation to environmental issues associated with the works, if requested. - Conduct environmental incident investigations if requested by the Project Manager. - Demonstrate an understanding and management of the potential environmental impacts associated with the project. - Review risks and identify potential opportunities and issues with the project. - Implement corrective action responses to environmental incidents and non-compliances in consultation with the Project Manager.	The Principal Contractor
Demolition Contractors / Asbestos Removalist	- Implement and comply with relevant components of this DMP. - Report all environmental incidents, hazards, non-compliances and near misses to the Principal Contractor immediately. - Implement corrective action responses to environmental incidents and non-compliances as required by the Contractor.	The Principal Contractor

3 IMPLEMENTATION OF DMP

3.1 Site Inductions and Training

All personnel including the Principal Contractors staff and subcontractors who will be working on the project or will require regular access to the sites will be required to undertake training and site inductions including environmental requirements as required by the Principal Contractor. All personnel should demonstrate an understanding of potential environmental issues and the measures that will be implemented to protect the environment and local community, as detailed in this document.

3.2 DMP Induction

The DMP awareness induction will be designed to:

- Outline the objective and purpose of the works for demolition contractors; and
- Present details of the contents of the DMP and their (the workers) responsibility.

All site workers will sign the DMP induction register acknowledging receipt and understanding of this DMP. All induction sessions will be recorded in the induction register.

In addition to this, the demolition contractor managing the works will provide their own management plan for site specific tasks which will be adhered to for the duration of the works.

3.3 Daily Toolbox Meetings

The Principal Contractor will also conduct daily toolbox meetings with all personnel to review management procedures and identify / discuss daily site conditions and potential hazards. Site inductions and toolbox talks will highlight specific environmental requirements and activities being undertaken at the worksite each day.

A record of issues covered in daily toolbox meetings should be maintained for future audit.

3.4 Personal Protective Equipment

All site personnel will be provided with, utilise, and be appropriately trained in the requirements of personal protective equipment (PPE). PPE requirements will depend on the activity or situation, but may include the following:

- High visibility clothing;
- Protective clothing and footwear;
- Eye protection;
- Respirable (half-face) masks as required;
- Hard hat as required (i.e. in the vicinity of the working excavator or other overhead plant); and
- Sun protection as required (long sleeves, sunscreen, hat or hard hat fitted with wide brimmed sun protection).

The above PPE is not an exhaustive list and the contractor will be required to advise any personnel of specific PPE requirements for the site. Personnel will be trained in the requirements and use of PPE to an appropriate level according to responsibilities.

PPE requirements should be detailed in the Safe Work Method Statements (or similar) which will be provided to the Principal Contractor for review and endorsement. Additional PPE will be required to carry out some aspects of the construction process and the PPE outline above should only be considered as the basic requirements.

3.5 Responsibility and Reporting

The Principal Contractor is responsible for ensuring that all personnel under their jurisdiction have been provided with adequate training in the areas outlined in this document.

The Principal Contractor will maintain records of all personnel who have undergone training in relation to the DMP and general environmental responsibilities. Records of trained personnel will be maintained in a log to be kept on site. A record of issues covered in daily toolbox meetings should be maintained.

The Principal Contractor will ensure that anyone who appears to lack an understanding in the above areas undergoes adequate retraining.

4 LEGISLATION

The following is a summary of statutory requirements to be satisfied by the Principal Contractor.

All work shall be conducted, as appropriate, in accordance with (but not limited to) with the following legislation, regulations and guidelines.

- Australian Standard (AS) 2436-1981: Guide to Noise Control on Construction, Maintenance and Demolition Sites;
- AS 2601 - 2001: Demolition of Structures;
- AS 2436- 1981: Guide to Noise Control on Construction, Maintenance and Demolition Sites;
- AS 2986.1-2003 Workplace air quality - Sampling and analysis of volatile organic compounds by solvent desorption;
- AS 2986.2-2003 Workplace air quality – Part 2: Diffusive sampling method;
- AS NZS ISO 19011-2003 Guidelines for quality and or environmental management systems auditing;
- AS/NZS 3012-2003: Electrical Installations- Construction and Demolition sites;
- BS6472 -1992: Evaluation and Human Exposure to Vibration in Buildings (1 to 80Hz);
- BS7385 Part 2-1993: Evaluation and measurement of Vibration in Buildings Part 2;
- DEC (now EPA), NSW (2005): Approved Methods for the Modelling and Assessment of Air Pollutants in NSW;
- DEC (now EPA), NSW (2007): Approved methods for the Sampling and Analysis of Air Pollutants in NSW;
- ACT EPA (2011) 'Environment Protection Guidelines for Construction and Land Development in the ACT'
- National Environmental Protection Measure (NEPM) on Ambient Air Quality;
- National Environment Protection Council (NEPC) 'National Environment Protection (Assessment of Site Contamination) Measure 1999' (Amended 2013);
- ACT EPA (2017) 'Information Sheet 1: Decommissioning, Assessment and Audit of Sites Containing Above Ground or Underground Fuel Storage Tanks'
- ACT EPA (2017) 'Information Sheet 3: Requirements for the Assessment and Validation of Sites Containing Above Ground or Underground Fuel Storage Tanks';
- ACT EPA (2017) 'Information Sheet 4: Requirements for the Reuse and Disposal of Contaminated Soil in the ACT';
- ACT EPA (2017) 'Information Sheet 5: Requirements for the Transport and Disposal of Asbestos Contaminated Wastes';
- ACT EPA (2017) 'Information Sheet 6: Management of Small Scale, Low Risk Soil Asbestos Contamination';
- Environment ACT (2000) 'ACT's Environmental Standards: Assessment and Classification of Liquid & Non-liquid Wastes'.

5 OCCUPATIONAL HEALTH AND SAFETY

The following Health and Safety plan contains procedures and requirements that are to be implemented as a minimum during the site works.

The objectives of the health and safety plan are:

- To apply standard procedures that reduces risks resulting from the above works;
- To ensure all employees are provided with appropriate training, equipment and support to consistently perform their duties in a safe manner; and
- To have procedures to protect other site workers and the general public.

These objectives will be achieved by:

- Assignment of responsibilities;
- An evaluation of hazards;
- Establishment of personal protection standards and mandatory safety practices and procedures; and
- Provision for contingencies that may arise while operations are being conducted at the site.

This health and safety plan does not provide safety information specific to demolition or excavation activities carried out by contractors, such as the safe operation, maintenance and inspection of plant, etc. Contractors will be required to prepare their own Safe Work Method Statements for their work activities. All parties working on the site shall comply with all applicable Work Health and Safety legislation, regulations, codes and guidelines.

5.1 Responsibilities

Principal Contractor

The Principal Contractor is responsible for ensuring that the work is carried out in accordance with the health and safety plan. This will include:

- Ensuring a copy of the health and safety plan and DMP is available at the site during the excavation/construction activities;
- Confirming individuals are competent in performing assigned tasks;
- Liaison with the contractor representatives, as appropriate, regarding safety matters; and
- Investigation and reporting of incidents and accidents.

Every individual worker is responsible for conducting their allocated tasks in a safe manner and in accordance with their training and experience. They must give due consideration to the safety of all others in their proximity and cooperate in matters of health and safety. All workers must leave their work areas in such a condition that the location will not be hazardous to others at any time.

5.2 Hazards

The known or potential hazards associated with the work activities described are listed below:

- Potential chemical hazards;
- Presence of hazardous materials (e.g. asbestos);
- Physical hazards, including;
  - Work in or near excavations;
  - Operating machinery;

- Demolition traffic
- Heat stress and UV exposure;
- Underground or overhead services;
- Manual handling;
- Noise.

In the event of the discovery of any condition that would suggest the existence of a situation more hazardous than anticipated, or of any new hazard that could potentially cause serious harm to personnel or the environment, work will be suspended until the Project Manager has been notified and appropriate instructions have been provided to field personnel.

5.3 Potential Chemical Hazards

The main potential chemical hazards associated with the excavation/construction works are petroleum hydrocarbons, PAHs, heavy metals, asbestos and soil gasses.

When working with identified contaminated materials in general, care needs to be taken to ensure that the contamination is not introduced to the worker via ingestion, inhalation or dermal contact. The personal protective equipment (PPE) and decontamination requirements outlined in Section 3.4 shall be followed to control the risks posed by chemical hazards at the site.

5.4 Physical Hazards

Operating Machinery

Heavy plant and equipment operating in the vicinity of field personnel presents a risk of physical injury. Personnel should be cognisant of their position in relation to operating machinery at all times.

Never walk behind or to the side of any operating equipment without the operator's knowledge. Do not assume that the operator knows your position. Personnel should stay at least 2 m from the operational area of heavy equipment and should not stand directly below any load or piece of equipment (eg. excavators).

Traffic

Where possible, mobile plant and trucks should use the existing Academy Close for access. As the street is a residential road, it is narrow and passing of vehicles will be difficult and may pose a collision hazard. Therefore, vehicle movement should be in a clockwise direction around Academy Close. **Figure 3** illustrates the recommended route for vehicles during demolition.

Working in or Near Excavations

All excavations shall be shored, sloped or otherwise constructed so as to comply with SafeWork Authority safety regulation to minimise the potential for collapse.

In addition to the above an excavation engineering plan has been prepared (details not available at the time of preparing this DMP) documenting slopes of batters, off ramps etc. This Plan should be adhered to at all times.

Cuts and Abrasions

The manual work associated with the site works gives rise to the risk of cuts and abrasions to personnel working in the area. As well as the direct consequences of any cut or abrasion, such injuries can lead to the possibility of exposure to contaminants through the wound as well as diseases such as tetanus. To minimise the risk of direct or indirect injury, personnel will wear the personal protective equipment described.

Heat Stress and UV Exposure

Site personnel may experience heat stress due to a combination of elevated ambient temperatures and the concurrent use of personal protection equipment; this depends in part on the type of work and the time of year.

There are four main types of heat stress related problems:

- Heat Rash - caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Decreased ability to tolerate heat, as well as being a nuisance.
- Heat Cramps - caused by profuse perspiration with inadequate fluid intake and chemical replacement. Signs: muscle spasms and pain in the extremities and abdomen.
- Heat Exhaustion – is caused by increased stress on various organs as they meet the increasing demand to cool the body. Signs: shallow breathing; pale, cool, moist skin; profuse sweating; dizziness, and lassitude
- Heat Stroke - result of overworked cooling system. Heat Stroke is the most severe form of heat stress. Body must be cooled immediately to prevent severe injury and/or death. Signs: red, hot, dry skin; no perspiration, nausea; dizziness and confusion; strong, rapid pulse and coma. Medical help must be obtained immediately.

In addition to the above, overexposure to UV radiation in sunlight can result in sunburn to exposed skin. The use of a high protection sunscreen (SPF15 or greater) on all exposed skin is recommended. Hats (including hard hats in specified areas) will also provide additional sun protection during the peak (i.e. 10:00 am to 3:00 PM) sun period. Sunglasses should be worn (where appropriate) to protect eyes from effects of UV exposure.

5.5 Underground Services

There is the potential for underground services (electricity, natural gas lines, water, telephone, sewer, and stormwater) to be present beneath the work area. The demolition contractor shall ensure that appropriate procedures will be taken to minimise the risk associated with excavation near services. This should include but not be limited to dial before you dig plan review, service provider notification and work clearance, service location by an approved contractor, manual test pitting, adherence to safe excavation distances (for overhead and below ground services), spotting during excavation, assessment of structural considerations etc.

Arcadis notes that due to the age of the site and nature of the buried services, asbestos pipes may exist on the site.

5.6 Aboveground Electrical Hazards

All electrical plant and equipment must comply with the requirements of Australian Standard AS 3000. Hand held portable tools shall comply with AS/NZS 3160 "hand-held portable electric tools" and shall be double insulated. A Residual Current Device (RCD) shall protect plug-in portable equipment, which is connected to a supply above Extra Low Voltage - 12-24 Volts (including equipment supplied from a generator or welding set). RCD protection shall be provided during maintenance of portable electrical equipment at all times while the equipment is connected to a power supply above Extra Low Voltage, irrespective of whether power is switched ON or OFF. RCD's shall comply with AS 3190 and shall be type II units, rated to trip at or below 30 milliamps within 40 milliseconds.

No excavator may work within 2 m of overhead distribution power lines.

5.7 Manual Handling

When lifting or handling heavy objects, use correct lifting techniques, bending the knees not the back. If the item to be lifted is too heavy or awkward for one person to lift, seek assistance from other employees or use mechanical help.

5.8 Noise

Long-term exposure to high levels of noise is unlikely. However, operating machinery may cause significant noise exposures for short periods. Earplugs or earmuffs should be worn in any situation where noise levels make normal conversation difficult.

6 ENVIRONMENTAL MANAGEMENT

The remaining sections of this document set out the environmental management activities and management measures, which will be implemented during the Excavation works at Academy Close, Campbell. The Principal Contractor will ensure that personnel responsible for undertaking the works are aware of their roles and responsibilities detailed in this DMP.

6.1 Potential Environmental Issues

The potential environmental issues associated with the proposed demolition works include:

- Impact of noise and air emissions from plant, equipment and vehicles used in the project and associated transport of infrastructure;
- Potential impacts to terrestrial within close proximity to the work area and the surrounding areas;
- Disturbance to, and release of potentially contaminated soil and groundwater to the local environment;
- Protection of trees on the site; and
- Disruption to amenity of any residents and other land users in the vicinity of the site.

6.2 General Structure of Environmental Management

Individual management measures have been prepared to address the issues listed in Environmental Elements 1 to 9. The numbering order should not be considered as a ranking of priority of each element as each element will have some over laps in procedures and monitoring requirements. Each plan is comprised of a number of elements, each with an overall associated management policy, mechanisms of policy implementation, proposed monitoring programs and potential corrective actions as described in Table 2.

Table 2: Structure of DMP

EMP Element	Description of Content
Element	The environmental aspect of construction or operation requiring management consideration.
Potential Impacts	The potential impacts in relation to the environment.
Management Actions	The procedures to be undertaken to avoid or minimise potential impacts
Performance Objectives	The target or strategy to be achieved through the specific management actions.
Performance Indicator	The criteria against which the implementation of the actions and the level of achievement of the performance objectives will be measured, as well as the success of the implementation of the policy.
Monitoring	The intended monitoring program and the process of measuring actual performance.
Responsibility	The entity assigned responsibility for carrying out each action.

Reporting	The process of documenting actual performance, or how well the policy has been achieved, including the format, timing and responsibility for reporting and auditing of the monitoring results.
Corrective Action	The action to be implemented and by whom in the case where a performance requirement is not met.

7 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 1: AIR QUALITY

7.1 Summary of Potential Impacts

Potential impacts to air quality resulting from the works include emissions from exposed soils, asbestos dust, groundwater, plant and equipment and dust generated during earthworks and land clearance and demolition work. Since asbestos is present in some soil samples, asbestos air monitoring is required and is discussed in Element 2.

Potential odour / vapour impacts may also occur as a result of the release of odours from impacted soils / groundwater / gases and exposure from unexpected finds, hydrocarbon hotspots and soil gas pathways within any uncontrolled fill.

Ambient air levels will likely vary as earth works proceed. Earth works will also be conducted up to the site boundaries in some areas and odour or dust will be subject to changes in wind direction and weather conditions. The application and effectiveness of odour suppressant mitigation will need to be well managed under the discretion of the Principal Contractor and the environmental consultant.

The following potential impacts from air quality may occur as part of the works program:

- Complaints from local residents;
- Breaches in Regulatory requirements;
- Unsuitable conditions for construction works
- Safety and Health related issues to workers, visitors and public;
- Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works, but may have longer term impacts to local ecological communities.

7.2 Procedures

A summary of the minimum plan requirements is provided in Table 3.

Table 3: Summary of Air Quality Management Procedures

Element	Air Quality
Performance Objectives	The objective of this management measure is not to generate any odours or dust and to adopt the necessary management strategy and PPE if presented with the occurrence of odours and/or dust if encountered. Avoid or minimise the potential for odour and/or vapour emissions during the handling of exposed soils. Maintain plant and equipment such that exhaust emissions are minimised. Avoid or minimise disruption to amenity of residents and other land users in the vicinity of site works.
Management Actions	Use of sealed cabins on excavation equipment. This should prevent ambient air (potentially contaminated) and asbestos dust to intrude into the cabin. Pressurised air should be initially run through a scrubber and filter first. Heavy equipment and vehicles will be appropriately maintained to minimise exhaust emissions.

	Appropriate methods of dust suppression will be implemented, such as ensuring earthworks and asbestos containing materials remain moist to ensure dust is minimised during works. Evaluate weather conditions prior to works commencing and during any change in wind direction. Cease works if dust or odour generation is excessive. Covering of any stockpiles that are to remain for greater than two days, or if weather forecasts predict strong winds; with plastic or Hessian material. All dust/odour control measures will be kept in good operating condition and functional at all times, with regular maintenance. All loads are to be covered and appropriately fitted with tarpaulins to contain dust and/or odour during transport. A complaints register will be established and maintained to receive and address complaints from the community regarding the detection of nuisance odour and/or dust during the works. Residents in the vicinity of the proposed works will be informed of potential dust/odour impacts prior to the commencement of works.
Performance Indicator	No complaints from location residents, surrounding businesses or site personnel. Goal of nil complaints relating to dust quality issues. All complaints will be responded to within 2 business days No onsite observation of dust generation during excavation works by Project team. No visual evidence of exhaust smoke during idle of equipment. No visual evidence of tracked material on public roads. A reduction in the number of complaints received in relation to air quality each month.
Monitoring	The air quality will be evaluated by the Project Manager. Continuous work zone boundary monitoring for asbestos should be conducted during asbestos removal works. Air monitoring for airborne fibres must be conducted by a licensed asbestos assessor. Should odorous soil be detected then monitoring of the affected work area(s) with a photo-ionisation detector (PID). The PID should be calibrated and record of the calibration reported to a suitably qualified environmental consultant. If monitoring for volatile compounds is required, then the daily average PID levels at the work area boundary should not exceed 2.1 ppm (and 10ppm maximum) at all times. PID levels at the work zone boundary should be measured on an hourly basis using a PID. Furthermore, the following work zone boundary monitoring regime is required at 4 locations (with one location being downwind of the daily site activities) surrounding the work zone or within 10m of the location of asbestos removal work in order to assess impact on offsite sensitive receptors.

	Implementation of visual monitoring of dust, material tracking, truck tarping, water spray use, exhaust plumes and stockpile covering.
Responsibility	The Principal Contractor is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.
Reporting	Maintenance of records on site of visual, PID and Asbestos monitoring undertaken.
Corrective Action (as required)	Replace or repair emission control devices. Provide equipment to enable wetting of exposed soils if required. Should excessive dust be generated during works will also cease, until weather conditions improve and/or additional dust suppression measures have been implemented. The use of PPE with appropriate filters where required. In the event that odours are detected and PID readings exceed the limits set by the environmental consultant for the Site/area, then the following action shall be undertaken: ▪ Backfill any excavation or cover with plastic sheeting; ▪ Temporarily cease works until levels drop; and ▪ Increase the use of suppressant near the excavation. In the event that boundary monitoring exceeds the daily works shall be stopped immediately. The earthworks and/or demolition methods need to be reassessed to minimise the generation of dust and/or odours. If odours are considered to be excessive by the environmental consultant, then the application of odour suppressants may be used. Works can recommence once a suitably qualified environmental consultant has assessed ambient air quality to be satisfactory.

8 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 2: ASBESTOS DUST

8.1 Summary of Potential Impacts

Possible asbestos dust-generating activities include the mechanical removal of building materials, demolition and earth disturbance works along with vehicle movement over asbestos impacted soils. The generation of asbestos dust should be minimised and meet relevant air quality standards as specified in the NOHSC:1003 (1995) *Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment*.

Air monitoring when disturbing the soils across the site should be implemented. Any air monitoring of asbestos should be performed in accordance with the NOHSC:3003 (2005) *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*.

8.2 Procedures

A summary of the minimum Asbestos Air Monitoring plan requirements is provided in Table 4 with addition measures for asbestos removal air monitoring.

Table 4: Summary of Asbestos Dust Management Procedures

Element	Air Quality
Performance Objectives	The objective of this management measure is to prevent the generation of asbestos dust and to adopt the necessary PPE if presented with the occurrence of asbestos dust and to minimise the impacts of dust levels encountered. Avoid or minimise the potential for dust emissions during the handling of exposed soils and asbestos containing material (predominantly located within the existing buildings as identified in the hazardous building materials survey). Maintain plant and equipment such that decontamination procedures are followed and cross contamination outside the impacted work areas are minimised. Avoid or minimise disruption to amenity of residents and other land users in the vicinity of site works.
Management Actions	Use of water spray (onsite in close proximity of the earthworks and at the site boundary/fences) is required for dust suppressant during earthworks. Water sprays might be used during demolition works on the removal of ACM within the current buildings on the site (this is up to the discretion of the Project Manager, licensed asbestos assessor and asbestos removalist). Once the earthworks of each area is finished, this area of the site should be covered with plastic sheeting or the use of water spray to minimise dust generation (this to the discretion of the Project Manager and the environmental consultant). Use of enclosed and sealed cabins on excavation equipment and trucks entering the site or work area (if staged). This should prevent ambient air (potentially contaminated with asbestos dust) and dust to intrude into the cabin. Appropriate methods of dust suppression will be implemented, such as ensuring earthwork and material removal. Soils and

	materials are to remain moist to ensure dust is minimised during works. Evaluate weather conditions prior to works commencing and during any change in wind direction. Cease works if dust generation is excessive. Covering of any stockpiles that are to remain for greater than two days (Waste reclassification stockpiles), or if weather forecasts predict strong winds; with plastic or Hessian material. All dust control measures will be kept in good operating condition and functional at all times, with regular maintenance. All loads are to be covered and appropriately fitted with tarpaulins to contain dust during transport. Were asbestos soils and materials are to be removed offsite, loads are to be encapsulated in black plastic, prior to tarpaulins covering being fitted. A complaints register will be established and maintained to receive and address complaints from the community regarding the detection of nuisance dust during the works. Residents in the vicinity of the proposed works will be informed of potential dust impacts prior to the commencement of works.
Performance Indicator	No complaints from location residents, surrounding businesses or site personnel. Goal of nil complaints relating to dust quality issues. Respirable fibre concentrations are below the threshold criteria. All complaints will be responded to within 2 business days No onsite observation of dust generation during excavation works by Project team. No visual evidence of tracked material on public roads.
Monitoring	The air quality will be evaluated by the Project Manager and assessed by a suitably qualified environmental consultant. Continuous exclusion zone boundary monitoring during excavation works using asbestos air monitoring equipment is required. The air pumps should be calibrated to the required flow rate in accordance with Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC:3003(2005)]. Implementation of visual monitoring of dust, material tracking, truck tarping, water spray use, exhaust plumes and stockpile covering.
Responsibility	The Principal Contractor is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.
Reporting	Maintenance of records on site of visual dust and asbestos monitoring must be undertaken by a licensed asbestos assessor. Daily asbestos air monitoring results should be made available 24hr after collection and notification of the results made available to the Project Manager.

Corrective Action (as required)	Replace or repair dust control devices. Provide equipment to enable wetting of exposed soils and materials if required. Should excessive dust be generated works will also cease, until weather conditions improve and/or additional dust suppression measures have been implemented. The use of PPE with appropriate filters, inside the works zone will be mandatory, in accordance with the requirements outlined in the AMP. The level presented in the CEMP prevails. When the 0.1 f/mL (Fibres per millilitre of air) level with the work area is exceeded the following action shall be undertaken: • Backfill any excavation or cover ground surface with plastic sheeting; • Revise excavation methods to reduce fibre concentrations • Increase the use of suppressant near the excavation. In the event that boundary monitoring exceeds the 0.1 f/mL (Fibres per millilitre of air) works shall be stopped immediately. The earth works shall quickly backfill any excavation and the area cover with black plastic and the situation reassessed if by the Principal Contractor, the application of dust suppressants should be used/increased and then works can recommence once licensed asbestos assessor has assessed ambient air quality to be satisfactory.

9 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 3: SEDIMENTS

9.1 Summary of Potential Impacts

Potential impacts from sediments resulting from the works include dust emissions (Refer to Element 1: Air Quality) and storm water (Refer to Element 4: Surface Water) generated during earthworks/land clearance and construction.

The following potential impacts from sediments may occur as part of the works program:

- Complaints from local residents;
- Breaches in Regulatory requirements;
- Increased turbidity and sediment concentrations due to accidental release;
- Increased sediment load on storm water drains and infrastructure;
- Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works and transport routes, but may have longer term impacts to local ecological communities.

9.2 Procedures

A summary of the minimum plan requirements is provided in Table 5.

Table 5: Summary of Sediment Management Procedures

Element	Sediments
Performance Objectives	The objective will be to avoid an impact on water quality in surface water and drains which eventually discharge offsite by implementing prevention measures to control any sediment that is generated. Avoid or minimise soil migration and loss to surface waters and drains. Avoid or minimise pollution of creeks and waterways. Avoid or minimise increased sediment load on storm water drains and infrastructure.
Management Actions	Prior to the start of the works a stormwater and sediment control plan should be prepared by the Principal Contractor. This Plan should be in accordance with the ACT EPA '*Environment Protection Guidelines for Construction and Land Development in the ACT*'. Site contractors will be required to observe any increases in sediment load in storm water drains when excavations are close to surface drains or waterways. Sediment control structures (i.e. silt fencing and/or hay bales) should be implemented in accordance with the Stormwater and Sediment Control Plan prior to the commencement of works. Evaluate weather conditions prior to works commencing and during any change in wind direction. Cease works if dust generation is excessive (by visual assessment).

	Covering of any stockpiles that are to remain for greater than two days, or if weather forecasts predict strong winds; with plastic or Hessian material. All sediment control measures will be kept in good operating condition and functional at all times, with regular maintenance. Strategic placement of such structures down-gradient of stockpiles and slopes to minimise sediment entrainment. These measures should also be placed on the up-slope side of any storm water collection channels. If a significant rain event occurs, fieldwork will cease. There will be sediment control measures available for placement down gradient of the work area; and Works will also be conducted in a manner to minimise the potential for sediment and soil migration, whereby excavated material will be hauled offsite as soon as practicable and/or reinstated and compacted.
Performance Indicator	The prevention of sediment runoff is the best approach. Site contractors will be required to observe any increases in sediment load in storm water drains when excavating close to surface drains and site boundaries. No complaints from location residents, surrounding businesses or site personnel. Goal of nil complaints relating to sediment issues. No onsite observation of dust generation during excavation works by Project team. No visual evidence of tracked material on public roads.
Monitoring	Regular observations will be made by the Site Manager and mitigation measures put into place if sediment loaded runoff is likely to occur or a rainfall event is predicted. Records of all corrective actions and known sediment releases will be kept. Implementation of visual monitoring of dust, material tracking, truck tarping, water spray use, exhaust plumes and stockpile covering.
Responsibility	The Project Manager is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff.
Reporting	Maintenance of records on site of visual monitoring undertaken
Corrective Action (as required)	Clean-up of sediment. Installation of sediment and erosion controls. Additional storm water control measures. Altered excavation works. Cease works if a major storm event is likely to occur. Replace or repair sediment and erosion control devices. Should excessive dust be generated excavation works will also cease, until weather conditions improve and/or additional dust suppression measures have been implemented.

10 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 4: SURFACE WATER

Works must comply with requirements for storm water management in accordance with ACT EPA (2011) '*Environment Protection Guidelines for Construction and Land Development in the ACT*' to minimise direct or indirect un-authorised release of surface water during site works to minimise impacts to surface water quality of surrounding environs.

Excavation pump out water (if any) shall be pumped from the excavation by a licensed contractor and disposed of off-site as "liquid waste" in accordance with the Environment ACT (2000) '*ACT's Environmental Standards: Assessment & Classification of Liquid & Non-liquid Wastes*'.

10.1 Summary of Potential Impacts

The following potential impacts from surface water may occur as part of the works program:

- Complaints from local residents;
- Breaches in Regulatory requirements;
- Increased turbidity and sediment concentrations due to accidental release;
- Increased sediment load on storm water drains and infrastructure;
- Ruts and gullies in soil surfaces;
- Unsuitable conditions for construction works;
- Safety and Health related issues; and
- Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works, but may have longer term impacts to local ecological communities.

10.2 Procedures

A summary of the minimum plan requirements is provided in Table 6.

Table 6: Summary of Water Quality Management Procedures

Element	Water Quality
Performance Objectives	Avoid or minimise the disturbance to, and release of potentially contaminated soil or sediment laden water to the surrounding environs. Prevent increased water flows causing erosion damage to drainage infrastructure and water ways. Prevent safety related incidents associated with wet or slippery work conditions.
Management Actions	Assessment of weather during excavation operations and consideration of temporarily halting works until more favourable conditions are encountered. Install sediment control structures (i.e. silt fencing and/or hay bales) should be implemented in accordance with ACT EPA (2011) '*Environment Protection Guidelines for Construction and Land Development in the ACT*' prior to the commencement of works. This would include strategic placement of such structures down-gradient of temporary stockpiles and slopes to minimise

	sediment entrainment. These measures should also be placed on the up-slope side of any storm water collection channels. Control of drainage on the site by interception and redirection of clean storm water in a controlled manner. Provide inlet protection to be provided for any potentially impacted locations. Site contractors will be required to observe any sediment control and/or storm water control measures to ensure that they are working at a satisfactory level. Provision of a spill cleanup kit on all sites where bulk fuel is stored or is being transferred. Maintain a hardstand or lined and bunded area for the refueling and storage of equipment. Cease works if excessive surface water makes conditions unsuitable for construction works. Cease works if excessive surface water makes creates safety concerns.
Performance Indicator	The prevention of increased storm water runoff is the best approach. Site contractors will be required to observe any increases in sediment loads and volumes in storm water drains when working close to surface drains and report any discharges beyond the site boundaries. Site contractors will be required to observe any sediment control and/or storm water control measures to ensure that they are working at a satisfactory level. Zero records of near miss or injury in relation to wet conditions
Monitoring	Regular observations will be made by the Site Contractors and the Project Manager and mitigation measures put into place if sediment loaded runoff is likely to occur or a rainfall event is predicted. Monitoring requirements from a pump-out-permit or other required license shall be adhered to at all times.
Responsibility	The Project Manager is responsible for ensuring that each of the monitoring programs is implemented by appropriately trained/qualified staff. These programs may be sub-contracted out to a specialist sub-consultant as required.
Reporting	Records of all corrective actions and known sediment releases will be kept. Records of Near Miss and Injuries will be kept. The Project Manager will immediately report to the Contract Administrator any incidents of water discharging off site.
Corrective Action (as required)	Installation of sediment and erosion controls in accordance with the ACT EPA (2011) '*Environment Protection Guidelines for Construction and Land Development in the ACT*' Additional storm water control measures if and when necessary. Cease works if a major storm event is likely to occur.

	Cease works if excessive surface water or groundwater ingress makes conditions unsuitable for construction works. Cease works if excessive surface water or groundwater ingress makes creates safety concerns. Storm water collected on-site in trenches and sumps will be subject to waste management and offsite disposal.

11 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 5: TREE MANAGEMENT

A tree management plan was prepared in 2011 and works must be completed in accordance with the plan. A copy of the tree management plan is presented in Appendix B. The tree management plan illustrates the following details:

- Regulated trees that are to be removed;
- Non-regulated trees that are to be removed;
- The locations of regulated trees that are to be protected;
- Tree protection zones and the location of temporary protective fencing.

11.1 Summary of Potential Impacts

The following potential impacts may result as a part of the demolition works:

- Complaints from local residents;
- Breaches in Regulatory requirements;
- Damage to regulated trees that need to protected;
- Damage to local ecological habitats.

Any damage to regulated trees is expected to have long term impacts to local ecological communities.

11.2 Procedures

A summary of the minimum plan requirements is provided in Table 7.

Table 7: Summary of Tree Protection Management Procedures

Element	Sediments
Performance Objectives	The objective will be to avoid damage to regulated trees on the site. Avoid or minimise soil damage in the drip line of regulated trees. Avoid or minimise impact to ecological habitats.
Management Actions	Prior to the start of the works protective fencing around regulated trees is to be installed in accordance with the Tree Management Plan. Site contractors will be required to monitor trees for damage, either directly to the trees themselves or the soil conditions around the drip lines of trees. Maintain temporary fencing around regulated trees and monitor fence conditions throughout the demolition process. Evaluate demolition works and manage demolition waste in such a manner that it does not enter the tree protection zones of regulated trees. Cease works if demolition waste enters any tree protection zone. Waste will need to be removed from the protection zone and work practices amended to prevent reoccurrence.

	All temporary fencing around tree protection zones will be kept in good operating condition and functional at all times, with regular maintenance.
Performance Indicator	The prevention of damage to regulated trees and their surrounding drip lines. Site contractors will be required to observe any damage to regulated trees or surrounding drip lines. No complaints from location residents, surrounding businesses or site personnel. Goal of nil complaints relating to sediment issues.
Monitoring	Regular observations will be made by the Site Manager. Records of all corrective actions and known damage to regulated trees.
Responsibility	The Project Manager is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff.
Reporting	Maintenance of records on site of visual monitoring undertaken
Corrective Action (as required)	Stop work should the protective fencing be damaged until such time the fence has been repaired. Waste that enters a tree protection zone should be carefully removed and the tree protection fence repaired where necessary. If the Site Manager considers additional protection around regulated trees is required, then this should be implemented accordingly. Where demolition works occur in close proximity to a regulated tree, care should be taken as to where demolition waste falls.

12 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 6: WASTE MANAGEMENT

Excess soils requiring offsite disposal will require additional assessment and should be stockpiled onsite and assessed by a suitably qualified environmental consultant to classify the soil for disposal. The classification of soil must be completed in accordance with the ACT EPA (2016) '*Information Sheet 4: Requirements for the reuse and disposal of contaminated soil in the ACT*'.

All excavated material must be approved for removal by the ACT EPA prior to transporting soil off the site.

Storm water and/or groundwater collected on-site in trenches and sumps will be subject to waste management if offsite disposal is to take place. Disposal via the storm water system may be undertaken subject to relevant authorities discharge license conditions.

Should excavations require dewatering, water samples will be collected by the Environmental Consultant and analysed prior to pump-out and offsite disposal. Waste liquid disposal dockets should be maintained onsite for inspection.

If during any site earthworks or excavation, asbestos, evidence of gross contamination or unknown type of material not previously detected is observed (Unexpected Finds), site works are to cease until the Project Manager has been notified and appropriate instructions have been provided to field personnel. Further works in such a location should be conducted under the supervision of a suitably qualified environmental consultant.

Other waste, excluding soils and groundwater, generated during the redevelopment works may include:

- Domestic waste generated by site workers;
- Asbestos contaminated waste (refer to the AMP for additional information);
- Concrete Slab;
- Liquid waste; and
- Inert building materials

Asbestos waste and decontamination disposal waste should be conducted as outlined in AMP.

Each outbound truck should be logged as clean prior to dispatch along with information pertaining to the amounts of loads and number of trucks leaving the site in addition to copies of all EPA approvals, waste tracking certificates, weigh bridge dockets, and any council approvals should be maintained onsite for inspection.

12.1 Summary of Potential Impacts

The following potential impacts from waste management may occur as part of the works program:

- Complaints from local residents;
- Breaches in Legislative/Regulatory requirements; and
- Damage to local ecological receptors.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works, but may have longer term impacts to local ecological communities.

12.2 Procedures

A summary of the minimum plan requirements is provided in Table 8.

Table 8: Summary of Waste Management and Minimisation Procedures

Element	Waste Management and Minimisation Quality
Performance Objectives	The objective will be to minimise and control any wastes and waste categories that are generated, and ensure that they will be appropriately disposed of. Avoid or minimise environmental impacts related to waste management and handling of potentially contaminated soils. Avoid or minimise impacts due to unexpected finds. Avoid or minimise health risks associated with potentially contaminated soil exposure and dust generation.
Management Actions	Provision of a spill cleanup kit on all sites where bulk fuel is stored or is being transferred. Maintain a hardstand or lined and bunded area for the refuelling and storage of equipment. Visual assessment of excavated material by the Environmental Specialist. The Environmental Specialist shall direct the Excavator Operator if the soil has to re-assessed onsite or disposed off-based on the in-situ waste classification. Soil to be disposed from the site is to be approved by the ACT EPA. Trucks to be used for transport of soil are to be fitted with cover tarpaulins to contain the load. Each truck prior to exiting site, shall be inspected prior to dispatch and either logged out as clean (wheels and chassis), or hosed down within a wheel wash down bay. Provide waste receptacles for all waste types and ensure that personnel use these correctly. All trucks leaving the site should be tracked and the truck movement recorded. Cease site works until the Project Manager has been notified of any unexpected finds and appropriate instructions have been provided to field personnel to address the issue. Project Manager to inform the Contract Administrator of any unexpected finds.
Performance Indicator	All waste materials are handled and stored in a safe and appropriate manner Material for off-site disposal is transported to an appropriate landfill facility. A completed transportation form and waste dockets shall be returned to the Environmental Specialist who shall maintained a record No environmental impact on, and disturbance to, the surrounding area from waste, no leaks or spills of oil or fuel. No waste is to be disposed of in the surrounding environment.
Monitoring	Regular observations will be made by the Project Manager and measures put into place if sediment loaded runoff is likely to occur or a rainfall event is predicted.

	Records of all corrective actions and known sediment releases will be kept. An up to date record of waste tracking shall be kept by the Environmental Specialist.
Responsibility	The Principal Contractor is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant (the Environmental Specialist) as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.
Reporting	Soil classification reports prepared and provided to the ACT EPA for review and endorsement prior to the removal of soil from the site. Maintenance of records on site of equipment inspections undertaken and landfill disposal/waste tracking and weigh bridge dockets, and any council approvals should be maintained onsite for inspection.
Corrective Action (as required	Revision of the works strategy including relocation and alteration to the operating procedure if waste is shown to be entering the surrounding environment.

13 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 7: NOISE MANAGEMENT

In accordance with the ACT EPA (2011) '*Environment Protection Guidelines for Construction and Land Development in the ACT*' site works can be conducted from 7:00 a.m. to 6:00 p.m. Monday to Saturday. Work outside these hours is not permitted.

13.1 Summary of Potential Impacts

The following potential impacts from Noise may occur as part of the works program:

- Complaints from local residents;
- Breaches in Regulatory requirements; and
- Safety and Health related issues.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works and transport routes, but may have longer term impacts to Safety and Health related issues.

13.2 Procedures

A summary of the minimum plan requirements is provided in Table 9.

Table 9: Summary of Environmental Noise Management Procedures

Element	Noise Management
Performance Objectives	Avoid or minimise the impact of noise emissions from plant, equipment and vehicles used in the works.
Management Actions	Plant and equipment will not be permitted to 'warm-up' before the nominated working hours. Where possible, plant and equipment will be located / orientated to direct noise away from the closest sensitive receivers. Undertake regular maintenance of plant and equipment to minimise noise emissions. All machinery will be kept in good working order and will comply with noise attenuation standards. Other noise control measures, including acoustic barriers, will be examined and put in place should the need arise. Maximum operating noise of equipment is to be 85 db(A). Selection of the quietest suitable machinery reasonably available for each work activity. All plant and equipment to have efficient low noise muffler design and be well-maintained. Offset distance between noisy items of plant/machinery and nearby sensitive receivers to be maximized were possible. Where practicable, ensure that noisy plant/machinery are not working simultaneously in close proximity to sensitive receivers. Queuing of trucks is not to occur adjacent to any residential receiver. Where queuing is required engines are to be switched off. If required, trucks to be fitted with efficient low noise mufflers and be well maintained. Trucks will follow the designated haulage route between locations.

	Trucks will adhere to the designated speed limits. Trucks will refrain from using compression breaking where possible. Any pumps or generators used will be encapsulated or appropriately encased to ensure noise generation is minimised and emissions are muffled.
Performance Indicator	No complaints from surrounding residents.
Monitoring	Noise generation is considered to be minimal if no complaints are received from the neighbours and areas of excavator use are in isolated areas away from any onsite facilities or neighbours. A Pre-Works Noise survey at sensitive receptors and routine noise surveys, nominally monthly, throughout the works program
Responsibility	The Principal Contractor is responsible for ensuring that the monitoring program is implemented by appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.
Reporting	Maintenance of records on site of equipment inspections undertaken, and results of noise surveys.
Corrective Action (as required	Revision of the works plan including revision to working hours as necessary or staggering use of noisy equipment to minimise impacts.

14 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 8: VIBRATION

Due to the close proximity of structures on/near the site boundaries the Principal Contractor may wish to undertake a structural integrity assessment by a suitably qualified engineer or specialised consultant of the buildings and structures within closed proximity to the excavation work area. The findings and recommendations of the integrity assessment will supersede the minimum requirements outlined in Table 10.

14.1 Summary of Potential Impacts

The following potential impacts from Vibration may occur as part of the works program:

- Complaints from local residents;
- Breaches in Regulatory requirements;
- Safety and Health related issues; and
- Damage to local infrastructure.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works and transport routes, but may have longer term impacts to local infrastructure and Heritage listed buildings.

14.2 Procedures

A summary of the minimum plan requirements is provided in Table 10.

Table 10: Summary of Vibration Management Procedures

Element	Vibration Management
Performance Objectives	Minimise the effects of the project has on adjacent public utilities, structures and buildings from vibration.
Management Actions	Prior to activities that may pose a risk to adjacent public utilities, structures and buildings a visual inspection will be undertaken to access potential damage associated with vibration impacts including cracks and other indications of settlement. Select appropriately sized machinery and equipment and design procedures for use in order to comply with vibration limits and to reduce vibration generation. Establish communication with relevant authorities and local residents. Ensure machinery used is appropriately sized to prevent over-loading and over-revving.
Performance Indicator	Goal of nil complaints relating to vibration issues during the project. Zero damage to adjacent public utilities, structures and residential buildings from vibration. Zero detrimental health problems to personnel in the vicinity of the vibration source.
Monitoring	Vibration monitoring to be adopted upon receiving a complaint or under direction from a government agency.
Responsibility	The Principal Contractor is responsible for ensuring that vibration control is implemented. The Principal Contractor is

	to ensure responsible personnel are suitably qualified to inspect buildings and infrastructure for structural integrity.
Reporting	Inspection, monitoring and surveillance by the project manager and contractors. Maintenance of records relating to any complaints received, including subsequent non-compliance forms and corrective actions.
Corrective Action (as required	Where vibration results in damage to structures, temporary protection/ rectification works will be completed prior to recommencement of site works. Work practices will be reviewed and modified as appropriate to ensure ongoing damage is minimised.

15 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 9: TRAFFIC MANAGEMENT

The Principal Contractor may wish to undertake a traffic management study by a suitably qualified consultant prior to completing a detailed Traffic Management Plan. The findings and recommendations in the Traffic Management Plan will supersede the minimum requirements outlined below. A summary of the minimum plan requirements is provided in Table 11.

15.1 Summary of Potential Impacts

The following potential impacts from Traffic may occur as part of the works program:

- Complaints from local residents;
- Breaches in Regulatory requirements;
- Safety and Health related issues;
- Collisions between vehicles; and
- Damage to local infrastructure.

A plan of the proposed traffic routes on the site are illustrated in **Figure 3, Appendix A**.

Any impacts would be expected to be temporary only in nature and generally localised to the area of adjoining active works and transport routes, but may have longer term impacts to Safety and Health related issues.

15.2 Procedures

A summary of the minimum plan requirements is provided in Table 11.

Table 11: Summary of Traffic Management Procedures

Element	Traffic Management
Performance Objectives	Minimise the effect project related traffic movements (including parking availability and pedestrian movement) has on the local area and chosen haulage routes.
Management Actions	Designated vehicle movement routes on the site. It is recommended that vehicles proceed around Academy Close in a clockwise direction (**Figure 3**). Truck loading to be provided for on-site where possible. Truck movements to and from the site to be restricted to designated truck routes through the area. The management of the site works will be the responsibility of the site contractor. Pedestrian warning signs to be utilised in the vicinity of the site access points. Pedestrian arrangements, construction activity and erection of safety fencing will be provided in accordance with Safework requirements.
Performance Indicator	Goal of nil complaints relating to traffic issues during the project
Monitoring	Low potential for impacts, however a log of all truck and other heavy equipment (cranes etc.) movement to be retained by the Principal Contractor.

Responsibility	The Principal Contractor is responsible for ensuring that the traffic management plan is implemented by appropriately trained/qualified staff. The Principal Contractor is to ensure responsible personnel are suitably qualified.
Reporting	Maintenance of records relating to any complaints received, including subsequent non-compliance forms and corrective actions. A log of all truck and heavy equipment movements to be retained by the Principal Contractor.
Corrective Action (as required	Revision of the traffic plan including revision to working hours as necessary, staggering truck access or adopting alternate haulage routes.

16 ENVIRONMENTAL MANAGEMENT MEASURE ELEMENT 10: UNEXPECTED FINDS

During the course of demolition works, unexpected occurrences of contamination may be encountered. To manage the potential for unexpected occurrences of contamination, an unexpected finds protocol has been prepared.

The nature of any undiscovered hazards which may be present at the site are generally expected to be detectable through visual or olfactory means, for example:

- Additional hydrocarbon contaminated soils (staining / discolouration visible);
- Additional excessive VOC contaminated soils (odorous (sweet/chemical);
- Fragments of asbestos-containing materials (visible) or potential friable material;
- Significant ash and/or slag contaminated soils / fill materials (visible); and
- Uncovering of an Underground Storage Tank that had not been previously identified or location approximated precisely.

As a precautionary measure to ensure the protection of the workforce and surrounding environment, should any unexpected potentially hazardous substance be encountered the works should cease immediately before being assessed by a suitably qualified environmental consultant. In addition, the ACT EPA and WorkSafe should be informed of any potential immediate risk to either human health or the environment (except for issues relating to UPSS or groundwater impacts where the EPA should be informed).

The sampling strategy for each ‘unexpected find event’ and remediation works shall be designed by a suitably qualified environmental consultant. The strategy will, however, be aimed at determining the nature of the substance, that is, is it hazardous and, if so, does it exist at concentrations which pose an unacceptable risk to human health or the environment. The sampling frequency of the identified substance / materials meeting the minimum requirements the listed in the NEPM ASC 2013, Australian Standard AS4482.1-2005, AS4482.2-1999 and NSW EPA Sampling Design Guidelines (1995).

The Principal Contractor will ensure that in the event that an unexpected find is of cultural or historical nature, a nominated archaeologist would be available to attend the site, to ensure that there are no extended delays to the program. Should an unexpected relic, archaeological feature or deposit is exposed during works, where an archaeologist is not already on site, work should cease in that area and a suitably qualified archaeologist should be contacted for advice. Depending on the level of integrity and/or significance of the relic, the relic/feature would be assessed and recorded and, if relevant, excavated manually to ensure that important information is not lost, and monitor adjacent works. If the relic/feature is assessed as having state significance the archaeologist would consult with the Heritage Council to develop an appropriate strategy to manage the relic.

Where an unexpected find is of a potential acid sulphate soils (PASS) or acid sulphate soils (ASS) material matter, then an Acid Sulfate Soil Management Plan, in alignment with NSW Acid Sulfate Soils Management Advisory Committee (August 1998) guidelines, must be prepared.

16.1 Procedures

A summary of the minimum requirements is provided in Table 12.

Table 12: Summary of Unexpected Finds Procedures

Element	Unexpected finds Management
Performance Objectives	Avoid or minimise impacts related to management and handling of potentially contaminated soils. Avoid or minimise impacts due to unexpected cultural finds. Avoid or minimise health risks associated with potentially contaminated soil exposure.
Management Actions	Visual assessment of uncovered unexpected finds by the Environmental Specialist. The Environmental Specialist shall direct the Excavator Operator if the soil has to re-assessed onsite or disposed off-based on the waste classification. In the event that an unexpected find is of cultural or historical nature, a nominated archaeologist would be available to attend the site. Cease site works until the Project Manager has been notified of any unexpected finds and appropriate instructions have been provided to field personnel to address the issue. Project Manager to inform the Contract Administrator of any unexpected finds.
Performance Indicator	All unexpected finds are to be disclosed to the Site Auditor for advisement on the suitability of the management and any sampling regime prior to remediation / validation works proceeding. All unexpected finds are to be handled and stored in a safe and appropriate manner Unexpected finds for off-site disposal is classified and transported to an appropriate landfill facility. A completed transportation form and waste dockets shall be returned to the Environmental Specialist who shall maintained a record No environmental impact on, and disturbance to, the surrounding area from waste, no leaks or spills of oil or fuel. No waste is to be disposed of in the surrounding environment.
Monitoring	Regular observations of the earth work surface and excavations will be made by the Project Manager and Excavator Operator or spotter. Records of all unexpected finds will be kept (any asbestos burial pits uncovered during earth works should be surveyed and a geotextile warning layer placed on it). An up to date record of waste tracking and / or PASS/ASS treatment rates (if treated onsite) shall be kept by the Environmental Specialist.
Responsibility	The Principal Contractor is responsible for ensuring that appropriately trained/qualified staff. This program may be sub-contracted out to a specialist sub-consultant (the Environmental Specialist and archaeologist) as required. The Principal Contractor is to ensure responsible personnel are suitably qualified.

Reporting	All unexpected Finds are to be documented, and included into the validation report. Maintenance of records on site of equipment inspections undertaken and landfill disposal/waste tracking and weigh bridge dockets, and any council approvals should be maintained onsite for inspection. A survey of any asbestos burial pits discovered on site should be recorded.
Corrective Action (as required	Revision of the works strategy including relocation and alteration to the operating procedure if waste/leachate is shown to be entering the surrounding environment from the disturbance of the unexpected find.

17 MONITORING REQUIREMENTS

17.1 Auditing and Records

The Project Manager will conduct regular audits of the Principal Contractors implementation of the DMP. Audits will involve a review of all environmental documents, records and reports to ensure compliance with the requirements of the DMP. If non-compliance is detected, the Principal Contractor will initiate to the satisfaction of the Project Manager the appropriate corrective action. Reference should be made to the audit guidelines in Section 4.

Key environmental and procedural issues to be covered by the audit will include, but may not be limited to:

- Environmental management measures presented in Environmental Elements 1 to 9;
- Environmental management measures presented in the AMP;
- Adherence to reporting procedures;
- Complaint and incident management; and
- Legislative requirements.

Records of auditing and reporting will be maintained to demonstrate compliance with environmental requirements.

Environmental and construction records will include, but may not be limited to:

- Complaint records;
- Incident, non-conformance and corrective action reporting;
- Communications with stakeholders;
- Monthly waste management reporting;
- Daily asbestos monitoring; and
- DMP audit documentation.

18 EMERGENCY PREPAREDNESS AND RESPONSE

Specific and immediate responses to emergencies and environmental incidents will be determined by the Principal Contractor.

Table 13: Emergency Contacts

Organisation	Contact Number
Police, Fire, Ambulance	000
Emergency call service - International standard[1]	112
Text Emergency Call	106
ACCESS Canberra (Environment Quality & ACT Parks and Conservation)	13 22 81
State Emergency Service (SES)	24Hrs 132-500
ActewAGL – Electricity Emergency	13 10 93
ActewAGL – Gas Emergency	13 19 09
Icon Water	6248 3111
Campbell Medical Centre	02 6249 7533

19 SECURITY AND PUBLIC SAFETY

19.1 Restriction to Access

Perimeter fencing and/ barricades that restrict access to the proposed work zone and stockpile area should be installed. Only authorised persons wearing the appropriated PPE will be able to enter the excavation/construction and stockpile/staging areas during works.

Whilst excavations remain open, the site is unattended and works are not active, high visibility fencing will be placed around the boundary of the excavation to alert any people on site to the presence of the excavation.

19.2 Pedestrian and Traffic Control

Relevant signage will be in place during the excavation works to warn and protect pedestrians and other traffic of the potential exposures in the vicinity of the work area.

Signage shall also be erected to inform the public whom to contact in case of any complains

20 REPORTING

Environmental Elements 1 to 8 of the Project include Performance Objectives to be applied to specific aspects of the works and Corrective Actions that may be adopted should non-conformances or environmental incidents occur.

20.1 Non-compliance

A non-conformance is defined as a failure to fulfill a requirement of this DMP or other associated environmental document. All non-compliances must immediately be reported to the Contract Administrator, and the appropriate details of the non-compliance should be submitted (in writing via email) within 24 hours of the occurrence of the non-compliance.

The Project Manager or Subcontractors may identify and report a non-conformance.

20.2 Environmental Incident

An environmental incident is defined as an unplanned event that occurs that impacts, or has the potential to impact, on the environment (including natural or built). In the event of an environmental incident, the Contract Administrator should be notified immediately. The details of the environmental incident will be supplied to the Project Manager on reporting of any incident.

20.3 Reporting and Corrective Actions

When reporting a non-compliance or environmental incident, all immediate corrective actions which have been taken to rectify the situation will be documented. Further corrective action should be recommended if required at the time of reporting. Relevant agencies which require notification should also be identified.

The Principal Contractor will maintain a register of all non-compliances and environmental incidents, along with the corrective and preventative actions which have been implemented to mitigate and/or prevent further recurrences. The Principal Contractor must ensure and verify that corrective actions to control environmental impacts, and avoid future non-compliances have been undertaken by the appropriate personnel.

Table 14 details the general procedures to be undertaken when non-compliances and environmental incidents occur.

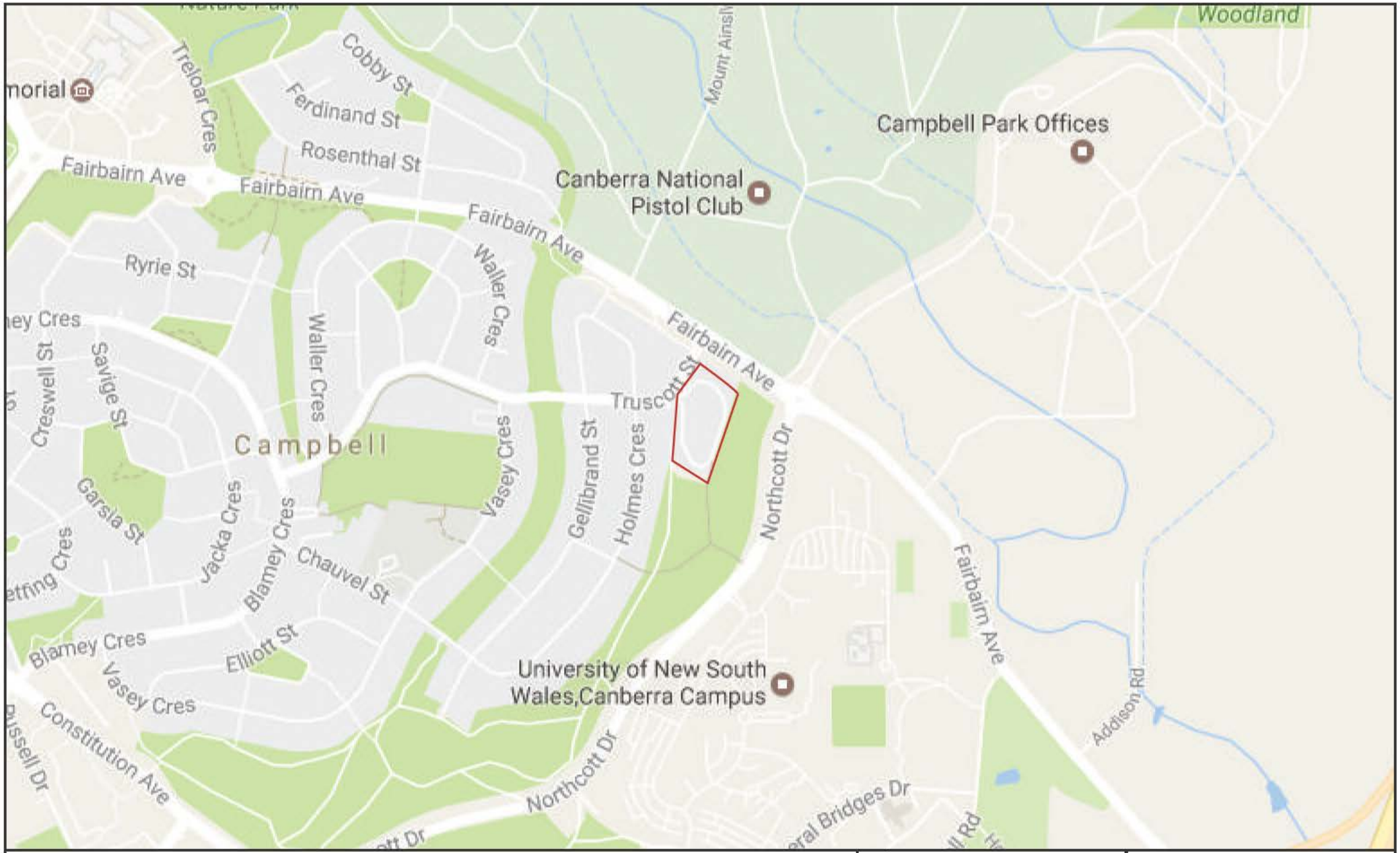
Table 14: Corrective and Preventative Action Procedures

Element	Management
Objective	To implement a system to identify, document, analyse and implement corrective and preventative actions for environmental non-conformance issues
Management Actions	When a non-conformance or environmental incident occurs the Principal Contractor is to ensure corrective and preventive actions are implemented by: • Assigning personnel to undertake investigation as per 'Environmental Incident Investigation Report' Form or 'Non-Compliance Report' Form and designate lead investigator. • Maintain documentation of Investigation Report Forms and their corrective/preventive actions on site; • Report environmental non-conformances identified that cause or have the potential to cause a significant environmental impact immediately to the Contract Administrator.

	• Provide a summary of environmental non-conformances with outstanding corrective actions to the Contract Administrator as requested. • Utilise corrective/preventative actions to revise and update CEMP and/or CEMP objectives, operational controls, and other aspects as required. • Review outstanding corrective action status.
Responsibility	All Staff and Subcontractors are: • Responsible for informing their immediate manager of environmental non-conformances. • Responsible for undertaking corrective/preventative actions and effectiveness determinations as assigned.
Reporting	Maintenance of records of '*Environmental Incident Investigation Report*' Forms and '*Non-Compliance Report*' Forms completed for the duration of the project.

APPENDIX A

Site Figures



Key:

Site Boundary

North

Scale (m)

0 100

Source: Google Maps 2017

Site location:
Academy Close, Campbell

Figure 1:
Site Location

Job: 17067

ARCADIS Design & Consultancy for natural and built assets

Key:

Location of Site Fence

North

Scale (m)

0 20

Source: Google Maps 2017

Site location:

Academy Close, Campbell

Figure 2:

Detailed Site Plan

Job: 17067

ARCADIS Design & Consultancy for natural and built assets

Key:

- Location of Site Fence
- Proposed Location of Site Office and Parking
- Traffic Direction

North

Scale (m) 0 100

Source: Google Maps 2017

Site location:
Academy Close, Campbell

Job: 17067

Figure 3:
Site Office and Traffic Management Plan

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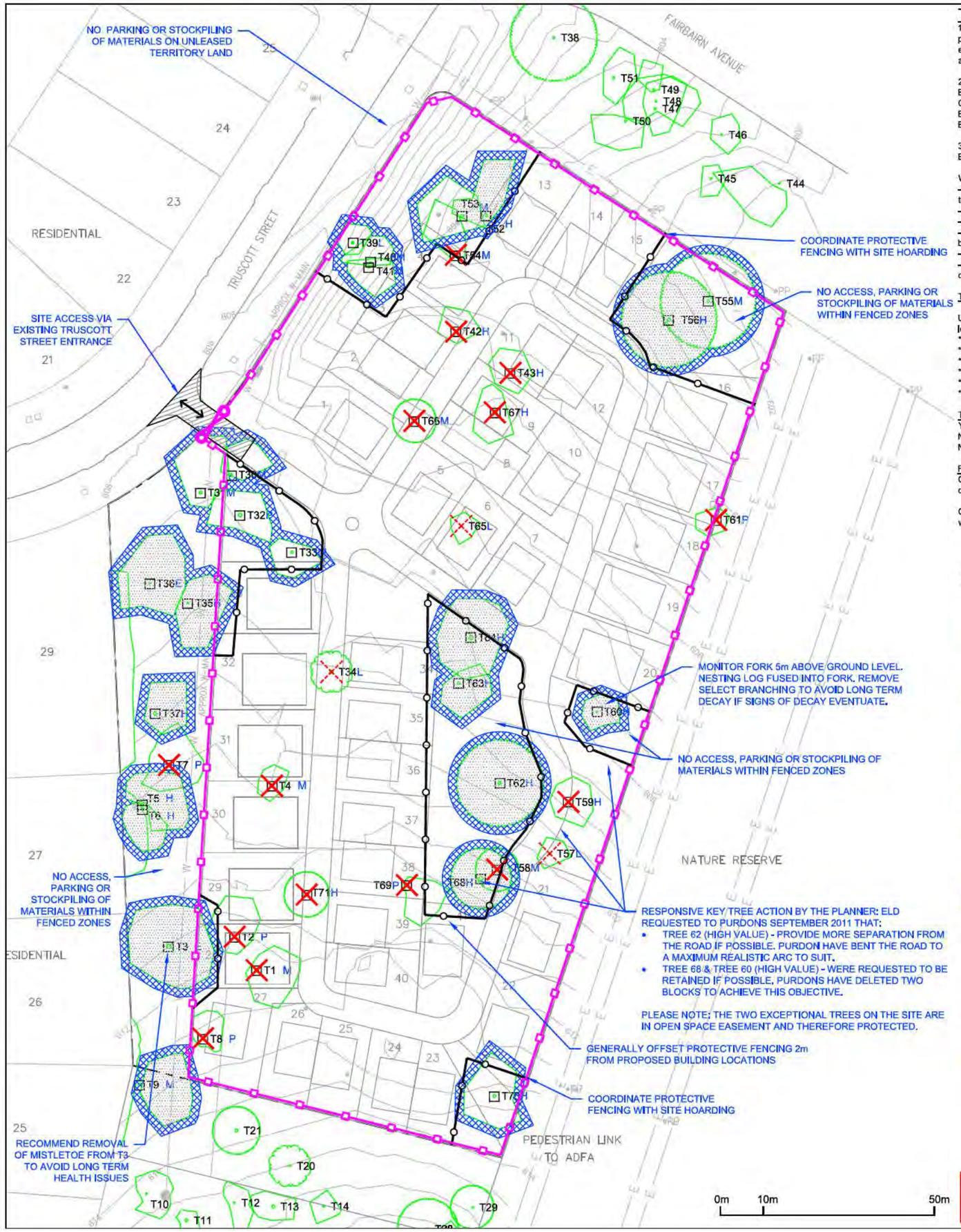
APPENDIX B

Tree Management Plan



TREE PROTECTION NOTES

1. Contractors are reminded that the majority of tree roots grow in the top 300 mm of soil. These are the feeder roots, often very fine roots that provide the tree with water, oxygen and nutrients. These roots typically grow between the tree's trunk to well beyond its 'drip-line' (the canopy edge). Ground works within the drip zone of a tree have the potential to do considerable damage to its root system. It can affect tree stability and tree health to such an extent that it will lead to the decline and possible death of the tree over a period of years.

2. Tree Protection
Existing canopy clearance is not to be altered, unless otherwise approved.
Crowns and apex of canopies are not to be altered or reduced.
Ensure lifting equipment and load can clear height and width of tree canopy without damage to crown.
Ensure construction equipment can pass beneath lowest limb, through driveway access.

3. Tree Root Protection
Excavation greater than 100mm depth that occurs within 2m of the drip zone of a tree must be approved by the relevant government agency.

Where excavation is approved, the following measures are to be adopted for tree protection:
- Do not sever large roots (>30 mm diameter) closer than halfway from the drip-line to the trunk. Hand trenching to a depth of 300mm is required to locate these roots before any mechanical trenching is undertaken.
- All roots must be cut cleanly with equipment specifically designed to cut roots cleanly or other suitable pruning equipment.
- Roots exposed during excavation must be protected from desiccation. Keep lightly watered or cover with hessian, which must be kept moist.
- Water trees that have had disturbance in their root zone. The amount and frequency of water needs to be adapted to the trees requirement, based on seasonal conditions.
- Roots 50mm in diameter or larger shall be protected, including by excavation underneath tree roots where feasible;
- Minimise width of excavation in vicinity of trees as far as possible. shoring of excavations should be adopted in lieu of benching, to minimise overall cut width.

Tree 'Regulated' Status by Virtue of Size

Under the Tree Protection Act 2005 a tree is termed a Regulated Tree and is to be protected if it is growing on Urban Leased Land and has at least one of;
* A height of 12m or more; or
* A trunk circumference of 1.5m (approx 0.5m in diameter) or more at 1m above ground level; or
* Two or more trunks and the total circumference of all the trunks, 1m above ground level, is 1.5m or more, or
* A minimum crown width of 12m or more, and
* Must be alive - all dead trees have been ranked as Non Protected tree.
* Is not a weed species under the Pest Plant & Animals Declaration 2005

Tree Protected Status
YES - The tree has a dimension that any activity must be assessed under the Tree Protection Act.
NO - The tree is sufficiently small or declared a Weed Species that it does not require assessment under the Tree Protection Act.
NA - Not applicable as Off Lease but often protected as these trees are generally on Government (Unleased) Land.

Future Tree Approvals
On-Leased Land: If a tree has protected status then approval must be gained from Tree Protection Unit prior to removal, lopping or ground damaging activty.

Off-Leased (Territory) Land: Please note all trees located external to the block boundary i.e. the verge, cannot be removed, pruned or damaged without the approval of the Urban Tree Management Unit, City Services (13 22 81) as on Government land.

LEGEND

EXTENT OF WORKS - BLOCK 3 SECTION 65 BOUNDARY

Existing non-regulated tree to be retained and protected (L = Low value)

Existing non regulated tree to be removed (L = Low value)

Existing regulated tree to be retained and protected (P = Poor value; M = Medium value)

Existing Significant regulated tree to be retained and protected (E = Exceptional value; H = High value)

Existing regulated tree proposed to be removed (P = Poor value; M = Medium value, H = High value)

Tree protection zone - 2 metre zone beyond crown dripline

Temporary Protective Fencing -Trees to be retained are to be surrounded by 1800 high continuous mesh temporary fencing as shown on plan for the duration of works. No stockpiling of material, installation of services or site sheds or storage is allowed within the fenced area. Fencing may be relocated temporarily for the purpose of landscape works and service installations, but must be re-instated to original alignment immediately upon completion of these operations

Site Hoarding / Construction Fence

Site Gate

Site Access Points

NOTE:
The Construction Tree Management Plan sets in place protective measures during construction of the proposed development. Refer dwg TMP02 for protective measures during demolition of existing buildings and infrastructure.

NOTES:
1) Generally offset protective fencing maximum 2m from location of proposed building.

2) Generally offset protective fencing from proposed road kerbs maximum 500mm

3) If fences are required to be moved for additional access, softwood timber battens are to be applied to any tree trunk likely to be impacted on by construction activities. Fences are to be reestablished immediately upon completion of works in that zone.

4) No access, parking or stockpiling of materials within fenced zones.

NO.	DESCRIPTION	DWN	APPD	DATE
A	CONSTRUCTION TREE MANAGEMENT PLAN FOR DA	SZZ		12/10/11

NOTES
- Copyright and property of Enviro Links Design Pty Ltd. May be used only for the stated project and issue status, and in accordance with terms of engagement for which it was commissioned.
- To be read in conjunction with all relevant contracts, specifications, reports, drawings and development approval conditions. Obtain any outstanding statutory approvals prior to commencement of works.
- Figured dimensions to be taken in preference to scaled measurements. Dimensions in millimetres unless noted otherwise.

Where Issued For Construction:
- Contractor is responsible for locating all services and obtaining necessary clearances and approvals. Contractor to verify dimensions, levels & details to site conditions and prior works, and report all discrepancies to the Superintendent for resolution before commencing work.
- Present samples and gain approval from Superintendent for any nominated materials or finishes.
- Adapt and implement approved Tree Management Plan, Landscape Management & Protection Plan & Environmental authorisations. All works to be in accordance with current TeMS (DUS) Standard Specification for Urban Infrastructure Works unless otherwise prescribed. All disturbance by works must be rehabilated to existing condition.

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CLIENT
PURDON PLANNING SUSTAINABLE FUTURES
DEFENCE HOUSING AUTHORITY (DHA)

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PROJECT
CAMPBELL
(Block 3 Section 65)

TITLE
CONSTRUCTION TREE MANAGEMENT PLAN

SCALE	NORTH
1:1000 (A3)	N/A

JOB NO.	DWG NO.	ISSUE
1120	TMP01	A

ARCADIS Design & Consultancy for natural and built assets

PURDON PLANNING

30 Residential Dwellings, Associated Parking and Landscaping

Planning Report
NCA Works Approval

Block 3 Section 65
Academy Close Campbell

May 2020

Academy Close

CAMPBELL

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Version No	Date	Actioned by	Approved by	Action
0	24/10/18	s22 [redacted]		Working Draft
1	11/04/19			Draft for Client Review
2	15/04/19			Revised Draft
3	18/04/19			Final
4	06/05/20			Revised final

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Contents

1.0 INTRODUCTION 1

1.1 Purpose 1

1.2 History and Background 1

2.0 THE SITE 4

3.0 PROPOSED DEVELOPMENT 6

3.1 Proposed Works 6

3.2 Rationale 6

4.0 STATUTORY PLANNING 8

4.1 National Capital Plan 8

4.2 Territory Plan 11

5.0 CONSULTATION 12

6.0 DESIGN CONCEPT 12

6.1 DHA 12

6.2 PROJECT ASPIRATIONS 12

6.3 DEVELOPMENT CONTEXT 13

6.4 PART OF THE ADFA PRECINCT 14

6.5 DWELLING TYPOLOPGIES 15

6.6 ARCHITECTURAL CHARACTER 16

6.7 LANDSCAPE ARCHITECTURE 17

7.0 IMPACT ASSESSMENT 18

7.1 Residential Character 18

7.2 Trees 19

7.3 Ecology 21

7.4 Traffic and Transport 22

7.5 Pedestrian/Cycle Movement 23

7.6 Parking 24

7.7 Civil Works 24

7.8 Drainage / Flooding 24

7.9 Water Sensitive Urban Design Measures 24

7.10 Contamination 25

7.11 Noise 25

8.0 CONCLUSION 27

Attachments

Attachment A: Statement Against NCP Precinct Code (formerly DCP 12/01)

Figures

Figure 1: Locality Plan 3

Figure 2: Local Context 3

Figure 3: Subject site 5

Figure 4: Site Master Plan 7

Figure 5: Designated Areas under the NCP 8

Figure 6: NCP Land Uses 9

Figure 7: Tree Analysis 20

1.0 Introduction

1.1 Purpose

This Planning Report has been prepared by Purdon Planning for Defence Housing Australia (DHA) as supporting documentation to a Works Approval (WA) application for the redevelopment of Block 3 Section 65 Campbell, known as Academy Close.

The site of the proposed re-development is on land classified as Designated under the National Capital Plan; accordingly jurisdiction for planning consent rests with the National Capital Authority (NCA).

This Report should be read in conjunction with the plans and supporting documentation submitted with this application for Works Approval.

The full list of documents included in this application are:

- Suite of architectural drawings by AMC Architecture
- Suite of engineering design drawings by Northrop Consulting Engineers
- Suite of landscape design plans by DSB
- Tree Assessment report by Envirolinks Design
- Ecological Impact Assessment dated 18 April 2019 by Capital Ecology
- Bushfire report dated 4 March 2019 by Australian Bushfire Protection Planners
- Traffic and Parking Transport Impact Assessment by Northrop Consulting Engineers
- Acoustic Assessment dated 8 March 2019 by Paradigm 42
- Waste Management Plan by Northrop Consulting Engineers
- Contaminated Land Search by ACT Environment Protection Agency
- Flood Assessment dated 18 September 2018 by Northrop Consulting Engineers
- Water Sensitive Urban Design report by Northrop Consulting Engineers

1.2 History and Background

The Defence residential precinct known as Academy Close was developed by the Department of Defence in 1985 for the housing of Defence members and their families in close proximity to the major Defence establishments ADFA & Royal Military College (RMC) Duntroon. In 1987 the Defence Housing Authority Act came into force and management of the land was vested to DHA by Ministerial direction (under the Defence Housing Authority Act 1987). Ownership of the site remained with the Department of Defence until 1999 when by further Ministerial direction made under the same Act the land was formally transferred to DHA for the purposes of creating titles over individual blocks and developing the site to meet the increasing needs for provisioning of Defence housing.

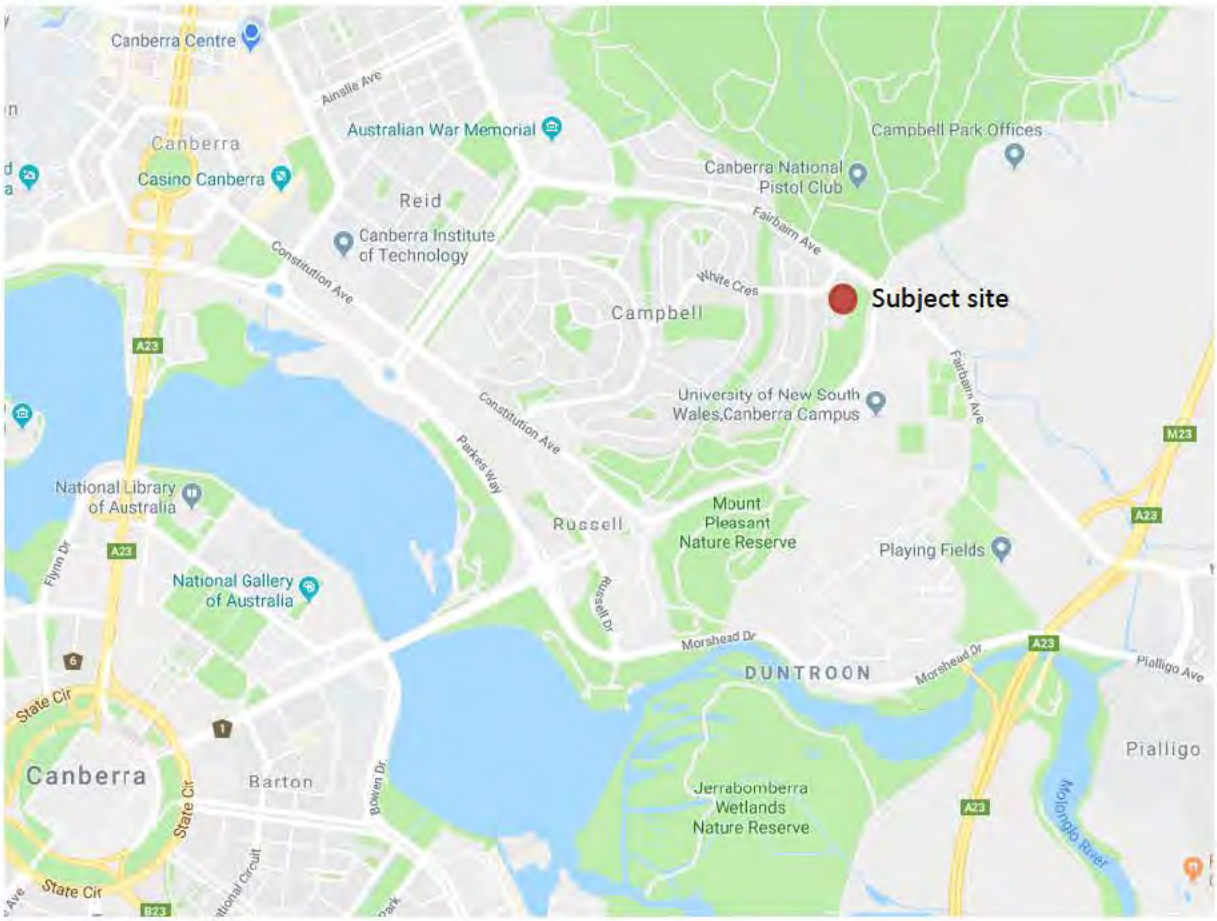
The properties remained in their existing condition and in 2012 the NCA approved a Development Control Plan (DCP) permitting the re-development of the site & construction of 41 new dwellings. Subsequent to this in 2016 Amendment 86 of the National Capital Plan incorporated the requirements of the DCP into the NCP (section 4.9.7) thereby rendering the DCP inoperative. Amendment 86 also classified the site as a Designated area, giving recognition to its national significance and importance to the Department of Defence.

In 2017 the ageing housing stock within the estate became non-compliant with modern Defence housing requirements. In anticipation of re-developing the site to accommodate current Defence housing specifications and the increased housing needs of Defence a Works Approval application to demolish the existing 22 houses was lodged with the NCA in 2017 (WA100347). Works Approval was given that same year and the demolition works were carried out soon after.

DHA has been embarking on the re-design of the Academy Close residential site in Campbell over the past few years. The proposal has been guided by a number of factors, including:

- the detailed requirements of the National Capital Plan
- physical constraints of the site (e.g. authority services, existing trees)
- desire to achieve roads and infrastructure in accordance with the Territory standards
- provision of housing in line with Defence housing needs.

Figure 1: Locality Plan



Source: Google Maps (2018)

Figure 2: Local Context

Source: ACTMAPI (2018) *Boundaries approximate only*

2.0 The Site

The site has frontage to Fairburn Avenue and Truscott Street and has historically been developed for residential use by the Department of Defence. Other site characteristics include:

Cadastral Description	Block 3 Section 65 Campbell
Current Land Use	Vacant
Adjacent Uses	Adjacent land uses west of the site are primarily single residential dwellings with some dual occupancy developments. North and south of the site is characterised predominantly by native bushland. To the east is open grassland area with high voltage power lines. Approximately 200m south-east of the site is the Australian Defence Force Academy (ADFA).
Area	Block 3 has an area of 25,354m^2 (approx. 2.5ha).
Dimensions	The site is broadly rectangular with a frontage to Fairbairn Avenue of approximately 97m and a north-south depth of approximately 210m.
National Capital Plan	The subject site is within a Designated Area and is therefore subject to the provisions of the NCP.
Zoning	The site is within the defined Urban Area of the NCP and subject to a Residential Land Use Policy. The site is not zoned under the Territory Plan.
Heritage	The site is identified on ACTMAPi as being on the ACT Heritage Register. ACT Heritage have confirmed that this is due to a buffer area around a heritage item located on the northern side of Fairbairn Avenue. This buffer encroaches into Block 3 by approximately 1m, as such the property is noted as being subject to the provisions of the Heritage Act. ACT Heritage have confirmed that development of Block 3 will not be affected by the buffer area around a heritage item on land across Fairbairn Avenue.
Easements	There are no registered easements on the subject site (ACTMapi, 2017). There are existing services (water electricity) that affect development of the site.
Topography	ACTMAPi shows that the site has a slope from RL601 up to RL615 at the south. This fall of approximately 14m over 240m represents an average slope of just over 5%.
Drainage	The site will drain to the surrounding street network. Stormwater and drainage infrastructure works are the subject of this WA.
Access	The site has vehicle entry off Truscott Street. Individual residence entries will be off Academy Close.
Parking	Each dwelling will have a minimum of two car parking spaces. In addition, it is proposed to provide 13 off-street car parking spaces for visitors, within the Academy Close precinct.

Vegetation	The site contains a number of mature trees. A tree assessment has been undertaken by EnviroLinks Design and a number of trees will be removed from the site to accommodate development.
Bushfire	The site is within a Bushfire Prone Area under ACTMAPi. Refer Section 5.11 below.

Figure 3: Subject site

Source: Nearmaps (2018)

3.0 Proposed Development

This section describes the proposed development works and should be read in conjunction with plans and reports submitted with this WA.

3.1 Proposed Works

This application seeks to create 30 residential dwellings, 2 public use open space blocks and a publicly accessible access road. The residential blocks will be developed for Defence housing, proposals include 1-storey and 2-storey detached dwellings, providing a variety of 3 and 4 bed dwellings with associated garages. At least two long stay parking spaces are provided per dwelling as well as 12 on-street parallel parking spaces for visitors.

The proposed works involve civil and landscape works to facilitate development of the site as a residential estate. The works involve:

- Construction of internal roads and driveway crossings
- Civil infrastructure (sewer, stormwater, telecommunications, electrical, gas and water)
- Removal of trees
- Associated landscaping, including dedicated areas of open space and the preservation of a number of existing trees, some of which form part of new park areas.

3.2 Rationale

The proposal seeks to achieve the redevelopment of this block for Defence Housing.

The road network is compliant with Roads ACT Standards and all utility services are to be provided to individual blocks as per normal residential estate development infrastructure (i.e. individual blocks to receive separate utility provider meters, each block serviced with its own electricity, sewer, water, gas & telecommunications and municipal waste collection to individual dwellings will be possible).

The scheme proposes a second access from Truscott Street. The Precinct Code prescribes a single entry. This is proposed based primarily on access and safety for residents. Continuity of vehicle access is provided as part of the proposed scheme meaning residents can access the area at all times and would not be encumbered by fire, road maintenance, intersection works, or a road accident. Access for emergency vehicles (fire, police and ambulance) into the estate is also assured by this arrangement. In particular the internal loop road has been designed to accommodate two-way traffic for fire applications with Asset Protection Zone/firefighting interface along the eastern perimeter.

Given the developments location amongst the Mount Pleasant Nature Reserve, the road design provides for a layout that accommodates internal fire emergency movements, access/egress in and out of the development, as well as good access to the large expanse of bushland surrounding the development. Dwellings will also be compliant with bushfire resistance levels of Bal 19 and Bal 12.5 in the National Capital Plan. Accordingly, DHA seek support for the proposed road arrangement as a minor departure from the National Capital Plan.

Figure 4: Site Master Plan

Source: AMC Architects

4.0 Statutory Planning

This section describes the planning context for the subject site and proposed development.

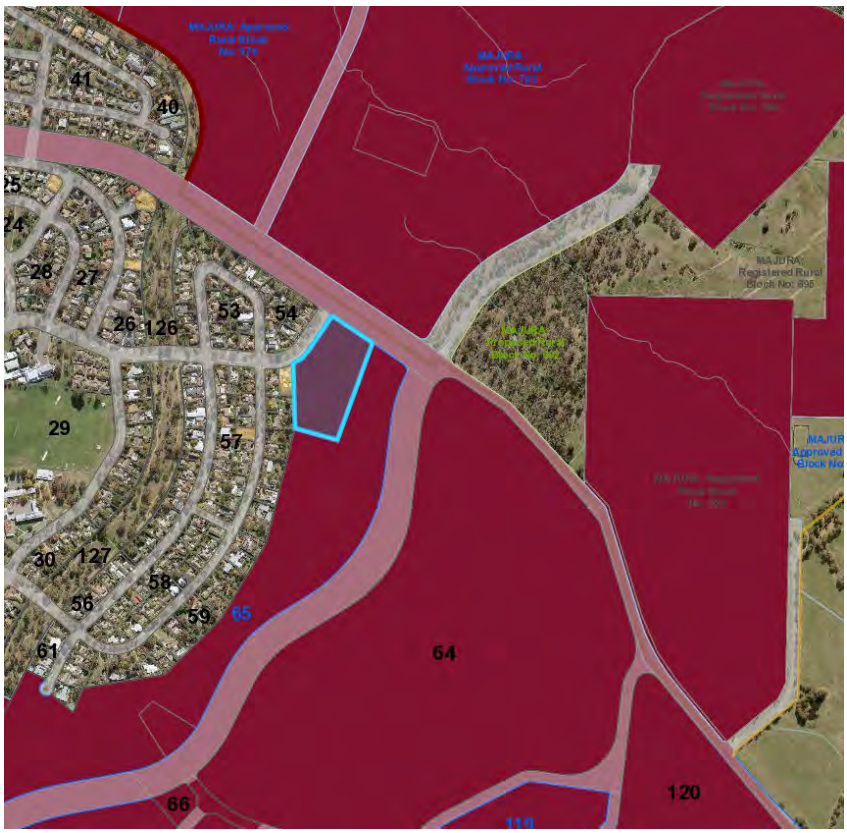
4.1 National Capital Plan

The site is within a Designated Area under the National Capital Plan (NCP) and is within a 'Residential Area' land use policy. The site is also subject to a Main Avenue and Approach Route (MAAR) overlay due to its proximity to Fairbairn Avenue. As such, the site was subject to a 'Development Control Plan' (DCP12/01) adopted by NCA in 2012. The provisions of DCP 12/01 have subsequently been incorporated into the National Capital Plan as the ***Australian Defence Force Academy, Royal Military College Duntroon, and Campbell Park Precinct Code***. The Precinct Code includes ADFA and Duntroon as well as the subject site.

The proposed development will achieve the overall objectives of the Precinct Code which are:

- *To encourage shared use facilities, located centrally to both ADFA and RMC*
- *To achieve greater efficiency and increased flexibility in buildings and infrastructure to reflect changing uses*
- *To consolidate housing within existing residential areas*
- *To maintain and enhance sporting and recreational facilities to meet ADFA and RMC needs*
- *To conserve and manage significant natural, cultural and Indigenous heritage values*

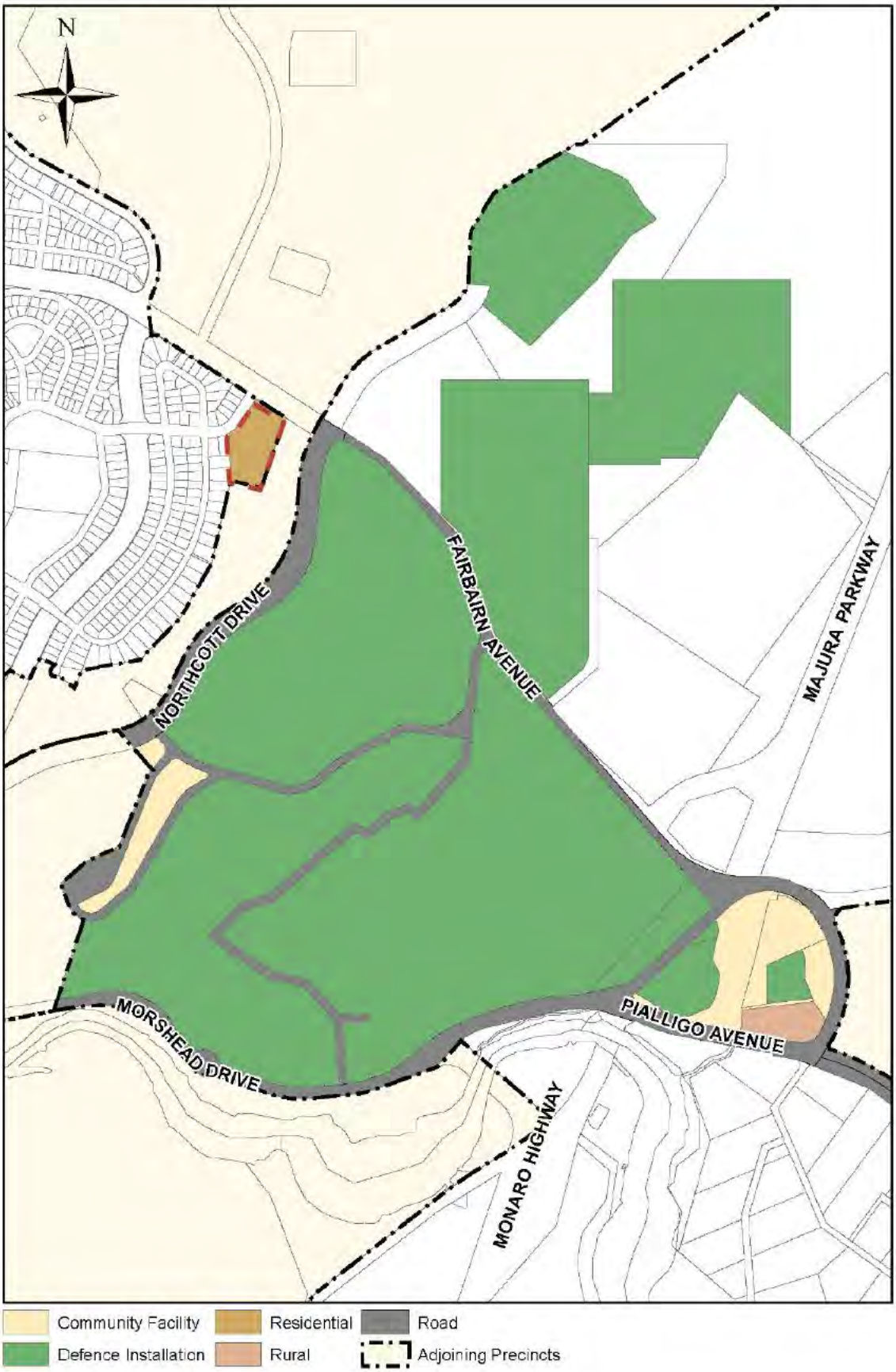
Figure 5: Designated Areas under the NCP



Source: ACTMapi (2018)

Designated Area

Figure 6: NCP Land Uses



Source: NCP (2018)

4.1.1 NCP – Detailed conditions of planning design and development

The NCP Precinct Code includes a number of detailed conditions of planning design and development of the Academy Close site. The specific objectives for the site are:

- *Make provision for Australian Defence Force personnel accommodation;*
- *Respect the natural features, character and scale of the landscape in the locality;*
- *Enhance the landscape character of Fairbairn Avenue as one of Walter Burley Griffin's approach routes and as one of the main approaches to the Australian War Memorial;*
- *Be carefully sited within a landscaped setting and screened from view of Fairbairn Avenue;*
- *Allow for flexibility in design to ensure integration with the surrounding urban context;*
- *Allow for buildings with an appropriate urban scale relationship to Fairbairn Avenue and adjacent suburban Campbell;*
- *Ensure a high level of amenity is provided in site layout and urban design and that noise impacts are mitigated through appropriate building design, materials and construction; and*
- *Maintain and reinforce, where possible, the existing landscape character of the site to achieve a high quality redevelopment within a natural setting.*

The proposed development is considered to respond to these objectives in the following ways:

- Accommodation is provided for Australian Defence Force personnel
- The site character is maintained and reinforced through retention of significant trees and the creation of open space areas
- Residential dwellings will be designed to integrate with the surrounding urban context
- All buildings will be of an appropriate scale

The NCP includes an indicative concept plan for the re-development of Block 3 Section 65 Campbell.

The proposed Site Master Plan shown at Figure 4 has been developed in accordance with the requirements of the NCP and also to meet ACT specifications for design of roads & infrastructure, and as a consequence the proposed design is varied from the NCP indicative concept plan.

A statement of compliance against the NCP Precinct Code provisions is provided at Attachment A.

4.1.2 NCP Concept Plan

There are a few variances between the NCP concept plan and the proposed Master Plan design.

The reasons for these variances are:

- the electrical easement for the high voltage power lines along the Eastern site boundary has not be accounted for in the NCP indicative concept plan - the Master Plan addresses this;
- the water main easement along the southern portion of the Western site boundary is also not accounted for - the proposed Master Plan addresses this; and
- the road network design prevents services (such as waste bin collection) to internal blocks and is not compliant with the ACT public road standards - the proposed Master Plan addresses this.

Upon early discussions with ActewAGL (now Evoenergy) it became apparent that the power authority would require a significant easement along the eastern site boundary to ensure any structures built

on the site were kept clear of the power poles. The width of the easement required from the base of the pole is 22m; this prevents creating any blocks along the Eastern boundary and would result in a loss of 7 dwellings were the NCP concept plan to be adopted.

Additionally, the road network in the NCP concept plan provides for turning circles with radius' that do not allow for ACT standard waste bin collection trucks to navigate through the site. As a result, the NCP concept plan imposes the need for private waste collection contractors to service the site for bin collection (as in the case of typical community title estates); this inherently requires the design of the estate to include several communal waste bin storage rooms throughout the site. The Academy Close site would likely require at least two or three bin storage rooms to house large skip bins, resulting in a further loss of two to three residential blocks. This is not a desirable outcome for the estate.

The NCP indicative concept plan provides for individual blocks having a depth of 22-25m and block areas mostly around 260m^2; this does not provide for the diversity of housing intended for the estate proposed by DHA, and will likely lead to housing designs not meeting Defence specifications and general housing requirements of Defence members. The proposed Master Plan has block sizes ranging from 345-894m^2, with no blocks in the smaller 260m^2 range (excluding open space area blocks). The much larger block areas in the proposed Master Plan will facilitate higher quality and more varied dwelling designs to better complement and serve the surrounding areas and the Campbell community.

The NCP indicative concept plan identifies a number of trees to be removed as part of development of the site. However, the identified trees relate specifically to the design outcome shown in the NCP. The proposed variation to this plan (i.e. wider roads, wider verges, public footpaths, on-street parking areas) required review of the trees as shown on the NCP plan. DHA is proposing removal of additional trees to facilitate the proposed development. The impacts of the proposed tree removal, together with planting of additional trees is detailed in Section 5.2.

4.2 Territory Plan

The Territory Plan does not apply to the site as it is within a Designated Area under the National Capital Plan.

The design and construction of roads, verges, parking and utility services (including service corridors and proposed easements) are proposed to comply with Territory standards to facilitate Design Acceptances and Operational Acceptances from the ACT (including Transport Canberra & City Services, Icon Water, Evoenergy, Jemena) .

5.0 Consultation

Community consultation was undertaken, by Elton Consulting, in accordance with the NCA's 'Commitment to Community Engagement'.

Consultation included a letterbox drop to surrounding neighbours and letters emailed to community groups on 24 February 2020. A community information and feedback session was held on the 12 March 2020 at the Campbell Primary School between 5.30pm and 7.30pm. Information was also provided on a website with the following link : https://www.academyclose.com.au/

Elton Consulting's consultation report concludes that the feedback from the surrounding residents and community organisation representations was generally supportive of the proposal in terms of the development arrangement and architectural style of the dwellings. There were some concerns raised regarding increased traffic generation in Campbell, the removal of trees, and impacts during construction. Please refer to Elton Consulting's Consultation Outcomes Report for responses to these items.

6.0 Design Concept

6.1 DHA

DHA is a statutory authority and operates as a Government Business Enterprise to provide housing and related services to Australian Defence Force (ADF) members and their families. DHA aims to achieve excellence and set new benchmarks for attractive, liveable, safe and sustainable residential communities for ADF members and their families.

6.2 PROJECT ASPIRATIONS

DHA prides itself on delivering high quality residential developments that meet defence operational needs and are sympathetic to the local character and environment. Many of DHAs developments have been undertaken on base or appropriate Defence land parcels holdings in locations across Australia. Academy Close, Campbell is such a project with the 30 dwellings to be constructed and allocated, in the first instance, to Defence personnel associated with ADFA . To this end DHA are seeking to construct a high-quality residential development demonstrating contemporary architectural design that complies with DHA design specifications and is sympathetic with, and complementary to, Australian Defence Force Academy (ADFA), the Royal Military College Duntroon (RMC) and Campbell and its surrounds. Key considerations have included:

- Maximising northern solar aspect and views to the attractive bushland setting
- Achieving a min 6-star NatHERS energy rating for all dwellings
- Creating a vibrant residential community where houses have an active connection to the street, with community park areas and where different "band" levels are met without an obvious distinction in external streetscape presentation or amenity
- Creating an attractive resident and contemporary development which sits comfortably in its context, is coherent to the end residents and which represents value for money and as a long-term asset
- Reducing long term life cycle and asset costs

6.3 DEVELOPMENT CONTEXT

The proposed redevelopment of Academy Close forms part of one of the earliest parts of Canberra's colonial history ultimately named Campbell after Robert Campbell the original owner of Duntroon Station which was established in 1825. The site:

- Is in close proximity to ADFA, Russell and Duntroon which includes Duntroon House as the oldest building in Canberra

Duntroon House, RMC Duntroon Campbell

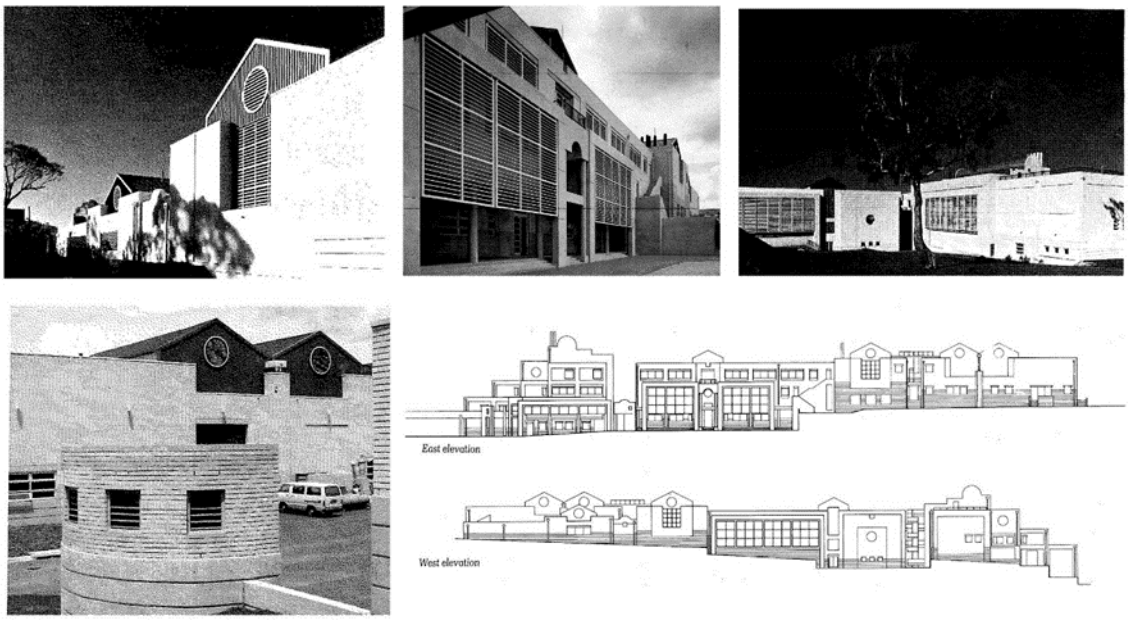
Academy Close – Part of Defence Precinct and the Suburb of Campbell

- Is part of the suburb of Campbell with a population of 5,000 people, a median age of 27 years and Streets which tend to be named after Defence Personnel
- in geological terms, is dominated by the lowest layer of the Ainslie Volcanics, a grey dacite and other erupted particles such as agglomerate and tuff.
- Is part of a highly sought-after suburb which has undergone significant redevelopment including C5, Defence, Ben Chifley Building, Constitution Avenue, Campbell Shops, RZ2 zoning, Mr Fluffy blocks and gentrification of the suburb generally
- Is at the eastern edge of the Suburb which:
  - Includes a higher-quality fabric of well-loved housing and gardens
  - Has a legacy of highly considered modernist and good-quality project homes
  - Has an Eclectic mix of old and new, contemporary and traditional typologies, both horizontal and vertically proportioned
  - Has a predominance of face brick work and pitched roof forms in an established landscaped setting

6.4 PART OF THE ADFA PRECINCT

The redevelopment of Academy Close, Campbell will become an important extension of the ADFA. ADFA is a tri-service military Academy providing military and tertiary academic education for junior officers of the Australian Defence Force in the Royal Australian Navy, Australian Army and Royal Australian Air Force. Tertiary education is provided by UNSW Canberra campus, which is the awarding body for ADFA qualifications. Apart from educating future leaders of the Australian Defence Force, UNSW campus also provides postgraduate programs and short courses both to Department of Defence personnel and the general public. The stated purpose of ADFA is "to serve Australia by providing the Australian Defence Force (ADF) with tertiary graduates who have the attributes, intellect and skills required of an officer." The new DHA Academy Close, will house ADFA personnel including the Commandant.

Academy Close -Relationship to ADFA



School of Mechanical Engineering, ADFA

6.5 DWELLING TYPOLOPGIES

The Academy Close Redevelopment for DHA comprises 5 dwelling typologies including one single-storey and 4 two-storey dwelling options as well as a more substantial Residence for the ADFA Commandant (Block 23). Key features of the dwelling types include the following:

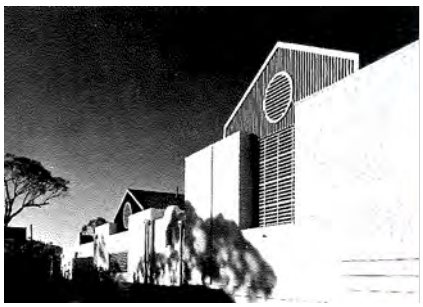
- A range of three and four bedrooms
- Variety in building massing to provide visual interest, legibility and respond to solar access opportunities

- A mixture of single and double car garages – with all dwellings able to accommodate additional parking between the boundary and garage door
- Except for dwelling type 7 which are oriented towards Truscott street and have their garages and driveways off Academy Close, all dwellings have the garages behind the main building line
- Each dwelling type has flexible living room arrangements to best respond to orientation, including fount courtyard spaces to dwellings with a North street location
- All dwellings have well-proportioned and functional rear yards

6.6 ARCHITECTURAL CHARACTER

The proposed architectural character seeks to reference the broader context and in particular the military character expressed in RMC Duntroon and ADFA with a modern materials palette which reinforces and recedes into the bush setting. Key considerations have included the following:

- Referencing Duntroon, ADFA and FCC architecture through the use of gables / strong roof forms, masonry and render
- Acknowledging 20th Century modernism legacy in Campbell - clean lines, minimal ornamentation, simple expressed materiality
- Consistent character / architectural expression across the 30 Dwellings in a stand-alone residential precinct
- Authenticity in the building form which responds to its function - true to a Defence mindset
- Referencing ADFA to ultimately feel connected to, and an extension of, the campus
- Setting a new benchmark in terms of design and sustainability outcomes for DHA
- Develop a common language across both single and two storey dwellings
- Incorporation of an attractive yet constrained palette of resilient materials
- Make use of front garden areas / courtyards walls to provide interest
- Play down impact of garage door



ADFA and RMC Duntroon References

Streetscape View Proposed Redevelopment – Truscott Street, Campbell

6.7 LANDSCAPE ARCHITECTURE

The Landscape intent for the redevelopment of Academy Close, Campbell for DHA draws on the established landscape character of Campbell and the adjacent native landscape of Mt Pleasant Nature Reserve.

The planting selections have been specifically chosen to deliver a variety of colours, forms, textures and sizes to the look and feel of this new residential community. Species selection has considered drought resilience as well as the adjoining landscape environments which includes a combination of native and exotic species. Exotic species for the most part tie into the existing street trees and gardens of Campbell while native plantings enhance the site and the visual connection to the surrounding Mt Pleasant Nature Reserve.

The Truscott St interface provides a continuation of the Fraxinus street tree plantings with a band of native eucalypts set back in the verge which serves to soften the development presentation while acting as a native transition to the Eucalypt street tree plantings along Academy Close and adjoining pocket parks. Each pocket park features retained significant trees providing an established landscape setting. The addition of seating elements and open grass areas promotes use as communal open space.

The streetscape character for each dwelling has been carefully considered maximising soft landscaping to the street frontage with formalised planting arrangements and feature tree plantings. Functionality and usability are achieved with the rear yard designs offering a level grass area, generous paved alfresco area with soft landscaping, feature tree planting and screening to the boundaries in accordance with DHA standards. Where relevant views are maximized to the broader nature reserve.

The use of dark products and natural materials across pavements, walls and fences will allow these structures to recede and in turn further promote the high-quality landscaping associated with this residential redevelopment.

7.0 Impact Assessment

This section provides an assessment of the proposed works against a range of urban planning and design criteria relevant to the project.

7.1 Residential Character

The proposed residential development has been designed to fit in with the residential character of Campbell and form an integral part of the suburb & community, rather than establishing a 'gated' community that may appear somewhat segregated.

Future dwellings will be visible from a short length of Truscott St and Fairbairn Avenue. However, the height and scale of future developments will be consistent with neighbouring properties and not regarded as having a negative visual impact.

There will be a high level of street character and visual appeal from the proposed street landscaping works (refer landscape plans included in the application) which, together with retention of existing large trees will soften any visual impact from the built form developments.

All buildings along Truscott St are set back 20m from the property line, which is consistent with other existing dwellings along this road.

The visual impact of the development is not considered to be significant. The proposed dwellings replace those that previously existed on the site. Dwellings will incorporate a mix of building typologies, facade designs, textures and colours that are sympathetic to and will complement the character of Campbell.

7.2 Trees

The proposed development has been designed to minimise the loss of existing trees on the site, particularly for those classified as having a high and medium value. Some tree loss is unavoidable due to the required road layout and new services corridors and due to the need to raise existing ground levels particularly along Truscott St (north of the existing entrance). The NCP indicative concept plan for the site identifies a number of trees for removal as part of redevelopment of the site.

The site is unleased land and is not classified as a Tree Management Precinct under the *Tree Protection (Criteria for Tree Management Precincts) Determination 2006 (No 1*). The site contains no Regulated or Registered trees. The trees proposed for removal therefore do not present any legislative constraints.

The design process for the current development proposal involved an assessment of trees by EnviroLinks Design based on the proposed residential layout. The TCCS requirement to provide a second access point to the estate results in the need to remove some additional trees not initially identified for removal in the NCP. These trees are noted as T39, T40, T41, T52, T53 and T54 on Figure 7.

The proposed layout is the result of a series of design reviews and design iterations to investigate alternative outcomes that could minimise tree loss. There is no feasible alternative to the proposed design for a second access point to the estate that would meet engineering standards and avoid tree loss. The proposed layout minimises tree loss to the extent possible and identifies four trees that were confirmed in the NCP to be removed, but will now either be retained or subject to further review at detailed engineering stage with the objective to retain such trees if possible.

To offset the required tree loss, it is proposed to plant additional trees along the Truscott St verge to match the existing street trees. In addition, several new street trees will be planted within the new estate.

Overall, the extent of tree retention maintained in the proposed design, together with maintaining the public thoroughfare zone along the western fringe of the site including the high and exceptional value trees in this area , and the extensive planting of new trees within the estate, along with the creation of public open space areas will ensure a good mix of high value tree retention and new trees that will create and maintain a bushland setting and complement and improve the surrounding environment.

Figure 7: Tree Analysis

Source: EnviroLinks Design base with revised overlay

7.3 Ecology

Capital Ecology have undertaken an Ecological Impact Assessment (EIA) on the proposed development. The assessment supports the proposed development and does not raise any concerns or environmental impacts from the proposed works that would prohibit the development from occurring. The EIA describes the heavily disturbed nature of the site given its previous residential use, and this assists the support for the re-development from an ecological perspective. The EIA covers survey & assessment of trees, EPBC (refer section 5.3.1), site vegetation, impacts on flora & fauna and threatened species.

The site comprises a mix of native and exotic tree species and there are no endangered or threatened species occurring on the site. Some of the trees may contain hollows, however the report notes that it is unlikely that these hollows would be utilised by any of the threatened hollow-dependent native birds which may occur in the locality. It also notes that the planted native trees, including eucalypt trees are unlikely to contain hollows.

The report states that the site supports understorey dominated by exotic species and that such areas are unlikely to be of value to threatened fauna species. The report also states that the site is unlikely to constitute important habitat for any EPBC Act listed migratory birds.

The EIA assesses the ecological significance of trees on site and noted that both native and exotic trees and shrubs are present within the study area. The majority of the mature native trees are naturally occurring remnant trees, with Yellow Box *E. melliodora* and Red Gum *E. blakelyi* the most common species. A small proportion of the native trees appear to have been planted over 30 years ago. Exotic tree species present in the study area include Elm Ulmus spp. and Ash Fraxinus spp.

The entire study area has been historically disturbed as it previously contained 22 Defence houses and associated urban infrastructure. As a result, the majority of the study area has been intensively landscaped and regularly mown over a long period of time. This has modified the ground-layer and mid-storey and encouraged the proliferation of garden plants and other exotic species.

The proposed development has been designed to retain as many of the trees as practicable. As a result, 10 'Very High' value trees will be retained, 2 'Very High' value trees will be retained if planning and engineering constraints permit, and 5 'Very High' value trees will be removed (refer Figure 2 and Appendix A). Furthermore, 4 'High' habitat value trees will be retained, and an additional 1 'High' value tree and 1 'Low' value tree will be retained if planning and engineering constraints permit.

The Capital Ecology field survey, confirms that the site includes the following habitat features:

- Some of the mature remnant trees contain hollows with a void which may be of habitat value to hollow dependant fauna. However, given the disturbed nature of the vegetation and location immediately adjacent to Campbell suburbs and Fairbairn Avenue, it is unlikely that these hollows would be utilised by any of the threatened hollow-dependant native birds which may occur in the locality.
- Remnant and planted eucalypt trees would provide a nectar resource for honeyeater species and other birds when in flower. The seeds for other trees (River Sheoak, Radiata Pine and Pinus radiata and Wattles) would also provide a foraging resource for several parrot species, potentially including the Gang-gang Cockatoo and Yellow-tailed Black Cockatoo.
- Planted native trees, including eucalypt trees, are unlikely to contain hollows. They may provide other nesting/roosting habitat for insectivorous bats and some native birds.
- The study area supports a sparse understorey dominated by exotic species which are unlikely to be of value to threatened fauna species but may be used by common native fauna (e.g. birds, kangaroos, reptiles, arthropods).

- Several threatened woodland birds are likely to visit the study area to forage. However, it is unlikely that the foraging resources present within the site constitute an important proportion of those present within the locality for any threatened fauna species.
- The site is unlikely to constitute important habitat for any EPBC Act listed migratory birds

The fauna habitat within site is adjacent to high quality habitat to the north (Mt Ainslie Nature Reserve) and is bordered to the east and south by Box-Gum Woodland. Given that the site previously contained houses and suburban gardens, it is unlikely that it constitutes a significant component of a wildlife movement corridor or is otherwise of high importance for fauna habitat connectivity. This is evident as the study area is not identified as a 'Local Link' or as possessing 'Regional Linkage Value' on ACTMAPi.

7.3.1 Environment Protection and Biodiversity Conservation Act 1999

DHA is a Commonwealth agency and is subject to the provisions of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The EPBC Act requires assessment of the proposed works in relation to the 'whole of environment'. If it is determined that a proposed action (e.g. development works) will, or is likely to, have a significant impact on the 'whole of environment', the action must be referred to the Commonwealth Minister for the Environment and Energy.

Capital Ecology were engaged to undertake an ecological assessment of the proposed works, including an assessment under the provisions of the EPBC Act. The assessment concludes that: "… *the proposed development is unlikely to impact on the 'whole of environment'. As such, EPBC Act referral is unwarranted and is not recommended".*

7.4 Traffic and Transport

Northrop Consulting Engineers were engaged to undertake a traffic and parking study for the proposed development – refer to the Traffic and Parking Transport Impact Assessment included in the application. In summary, the proposed development will have negligible impact on the surrounding streets in terms of increased traffic generation.

The proposed development includes vehicular access from Truscott Street at two entry and exit points. This is inconsistent with the detailed planning and design conditions specified in the NCP which stipulate a single entry/exit point from Truscott St. TCCS require a second access off Truscott Street to service this proposal. For the purpose of minimising any risk of harm to residents within the estate where the only entry/exit point is blocked during an emergency, e.g. during a bushfire, or where emergency vehicles need to gain entry into the site, it is proposed that this specific condition of the NCP be considered in light of the better outcome towards the safety of future residents afforded by the proposed design which facilitates dual vehicular entry/exit points.

The Northrop traffic and parking study confirms there will be negligible impact to Truscott Street resulting from the development, based on traffic counts obtained and extrapolated for the current traffic generation.

Accident data was also collated for the area around the site and confirmed there were no black spots within the area.

The ACTive Travel Infrastructure map indicates there is an effective network of pedestrian and cycle paths through Campbell which link to the public transport network, the major surrounding sites including UNSW and the War Memorial as well as the surrounding Territory path network.

There are bus stops located around Block 3 on Vasey Crescent, White Crescent, Northcott Avenue and Fairbairn Avenue which are within 1km to the site. The services operating at these bus stops allow connections to the Woden and City Interchanges, thus providing direct access to the whole of Canberra's bus network.

7.5 Pedestrian/Cycle Movement

The design provides for continued pedestrian movement through and around the site. The existing pathway along the western side of the site adjacent to existing dwellings will be retained. This path provides access to the Canberra Nature Park. In addition, the estate will include footpaths within the road verge connecting to Truscott St and the existing concrete path south-east of the site linking with ADFA and other Defence establishments.

7.6 Parking

The requirements for parking specified in the National Capital Plan are for all parking to be provided within the site, one long term car parking space to be provided per dwelling and one visitor space to be provided per four dwellings. 12 On-street parallel visitor parking spaces will also be provided.. Each new proposed block is large enough to accommodate as a minimum a secure single car garage so there will be a minimum of one off-street parking space per dwelling (some blocks may facilitate dwellings designs with a double car garage). The proposed Master Plan provides for 12 on-street visitor car parking bays. There will also be additional off-street car parking provided by way of driveways in front of secure garages (where not encroaching into the public footway) and the exact number of these will be confirmed with the detailed site design of each block and dwelling in a separate Works Approval application. Suffice to say that parking provisions required by the NCP are met with the proposed Master Plan design.

The Traffic and Parking Transport Impact Assessment includes for an assessment of the proposed parking provisions against requirements under the ACT estate development code. This planning report does provide comment on this particular assessment as only the requirements under the National Capital Plan need to be considered and met, however it will be mentioned that accessible parking bays, bicycle parking and parking for motorcycles can be accommodated by utilising the proposed design of on-street car parking bays. The number of visitor parking bays provided in the proposed design will not be reduced to compromise on the number required by the NCP.

7.7 Civil Works

Roads and infrastructure within the site have been designed in accordance with Territory standards to ensure that these assets could be managed by the Territory in the future. This assists to ensure the development is compatible with the existing residential character of Campbell and is created without any discernible 'threshold' into a different section of the suburb.

The verges will include new landscape plantings including trees, footpaths and underground services such as stormwater, sewer, water, gas, electricity, communications and streetlighting.

Once constructed, civil works will not have any impacts on adjacent residential areas.

7.8 Drainage / Flooding

Northrop Consulting Engineers were engaged to undertake a Flood Impact Study

The existing catchment was investigated and the amount of water entering Block 3 was determined and used to undertake several flood models. XP-storm was used to undertake flood models for the 1%, 5% and 10% AEP rainfall events.

The 1% AEP event was used to determine the minimum floor levels required across any lots which were found to become inundated. The inclusion of an additional 500mm of freeboard above the 1% AEP water level means that all future dwellings will be above the 1% flood event.

7.9 Water Sensitive Urban Design Measures

The design of the development incorporates a range of Water Sensitive Urban Design (WSUD) measures, including:

- A total of 200kL of rain water Retention being provided from the forty serviced residential blocks; this storage volume shall be provided by a 5KL rain water tank system to each dwelling, capturing water from 3,200m2 of roof space (average 80m2 per roof);

- An additional 54KL of water storage is required from the development. This shall be provided by an underground detention system to be located in the open space area of Block 42. Various proprietary underground storage tanks systems exist in the market place, with discussions on the most appropriate system to be used to take place with the ACT during detailed design stage.
- A total of 200kL of Retention is to be provided with at least 3,200m^2 roof area entering the rain water reuse tank(s);
- 3-Star Shower Fittings and dishwasher fittings;
- 4-Star Toilets and Clothes Washing Machines fittings;

7.10 Contamination

A contaminated land search was undertaken by the ACT Environment Protection Authority (EPA). The letter resulting from the search provided by the EPA is included in this application and confirms that there are no Environmental Protection Orders issued by the EPA over the site, there are no environmental audits requested for the site, there are no environmental notifications issued over the site and the site is not recorded on the register of contaminated sites. There is no evidence of the site ever being used historically for a purpose that may have caused contamination. Accordingly, it is not expected for any issues to arise relating to land contamination.

7.11 Noise

An acoustic assessment was undertaken by Alan Subkey of Paradigm 42 to ascertain the effects of noise particularly from vehicular traffic along Fairbairn Ave during peak periods on the locations of future dwellings. The report from the assessment is included in this application. The report confirms that with standard house construction materials & construction techniques noise levels are well within the acceptable range as given by the guidelines in AS/NZS 2107:2016 Acoustic – Recommended design sound levels and reverberation times for building interiors (AS 2107).

Noise levels were measured at the worst affected boundary of Academy Close at 58 dB (LA_{eq}) during peak hour. The noise report concludes that with standard house construction techniques the internal noise levels of the future proposed houses along Fairbairn Ave should be in the order of 35 dB (LA_{eq}) during peak hour and quieter in the early evening and into the night. This is within the guideline range given by AS2107.

Internal noise levels within houses located further into the estate will be significantly less than this utilising the same construction. Noise levels within bedrooms during hours of use will be significantly quieter than the recommended guideline level of 35 dB (LA_{eq}).

The assessment and accompanying acoustic report are sufficient for the purposes of this Works Approval application to demonstrate that the proposed locations of future dwellings will not be adversely affected by vehicular traffic noise and are suitable for residential purposes. Bushfire

Australian Bushfire Protection Planners (ABPP) were engaged to assess the risk of bushfire to the proposed development – refer to the bushfire report included in the application. The bushfire assessment concludes that a 40 metre wide Inner Asset Protection Zone to the south of the future dwellings located adjacent to the southern boundary of the site should be provided, comprising a minimum 4 metre wide setback to the buildings from the southern boundary and the management of a 36 metre wide zone within the Canberra Nature Park. There is also a need for a fire access track on the outer edge of the Inner Asset Protection Zone.

The bushfire report also nominates Bushfire Attack Levels (BAL) for each dwelling. The requirements of each BAL rating will be incorporated into the design specifications of each dwelling and will be further addressed in the future Works Approval application for the dwellings.

The bushfire report has been endorsed by the Risk and Planning Section within ACT Fire & Rescue.

8.0 CONCLUSION

This planning report has described the proposed re-development of the existing residential Defence precinct known as Academy Close in Campbell. The precinct was first developed by the Department of Defence in the mid-1980's to meet the growing housing needs of Defence and has ever since been occupied by Defence members and their families. The re-development of the site will provide modern attractive housing that complies with current Defence housing standards and will re-vitalise the site and help to enhance the surrounding local area. The thirty new serviced residential blocks and two open space blocks will remain in the ownership of the Commonwealth for meeting the provisioning needs of Defence housing.

The report has assessed the subject site, outlined design principles for the development, and assessed the project against a range of planning criteria including the development control provisions as set out in the National Capital Plan.

The proposed residential use is compatible with the NCA land use policy and the objectives of the NCP Precinct Code and MAAR overlay but there are some provisions of the Precinct Code which cannot be achieved due to constraints such as existing underground and above ground utility infrastructure, the need to remove trees and the inherent necessity to comply with Territory standards for road network design and infrastructure.

The reports and assessments undertaken for the development proposed in this Works Approval application along with this planning report collectively form an impact assessment which in summary provides for the proposed works as having no significant adverse environmental impact, being largely consistent with the requirements of the National Capital Plan (given the constraints of designing to accommodate existing infrastructure and meeting compliance with ACT design standards), a high degree of compliance with ACT design specifications and will significantly improve the aesthetics and amenity of the surrounding area and make a positive contribution to the local Campbell community by re-vitalising the site and re-introducing Defence families back into the precinct.

It is therefore **recommended** that the NCA support this application for Works Approval.

Purdon Planning
May 2020

Attachments

Attachment A: Statement Against NCP Precinct Code (formerly DCP 12/01)

Attachment A: NCP Relevant Principles and Policies

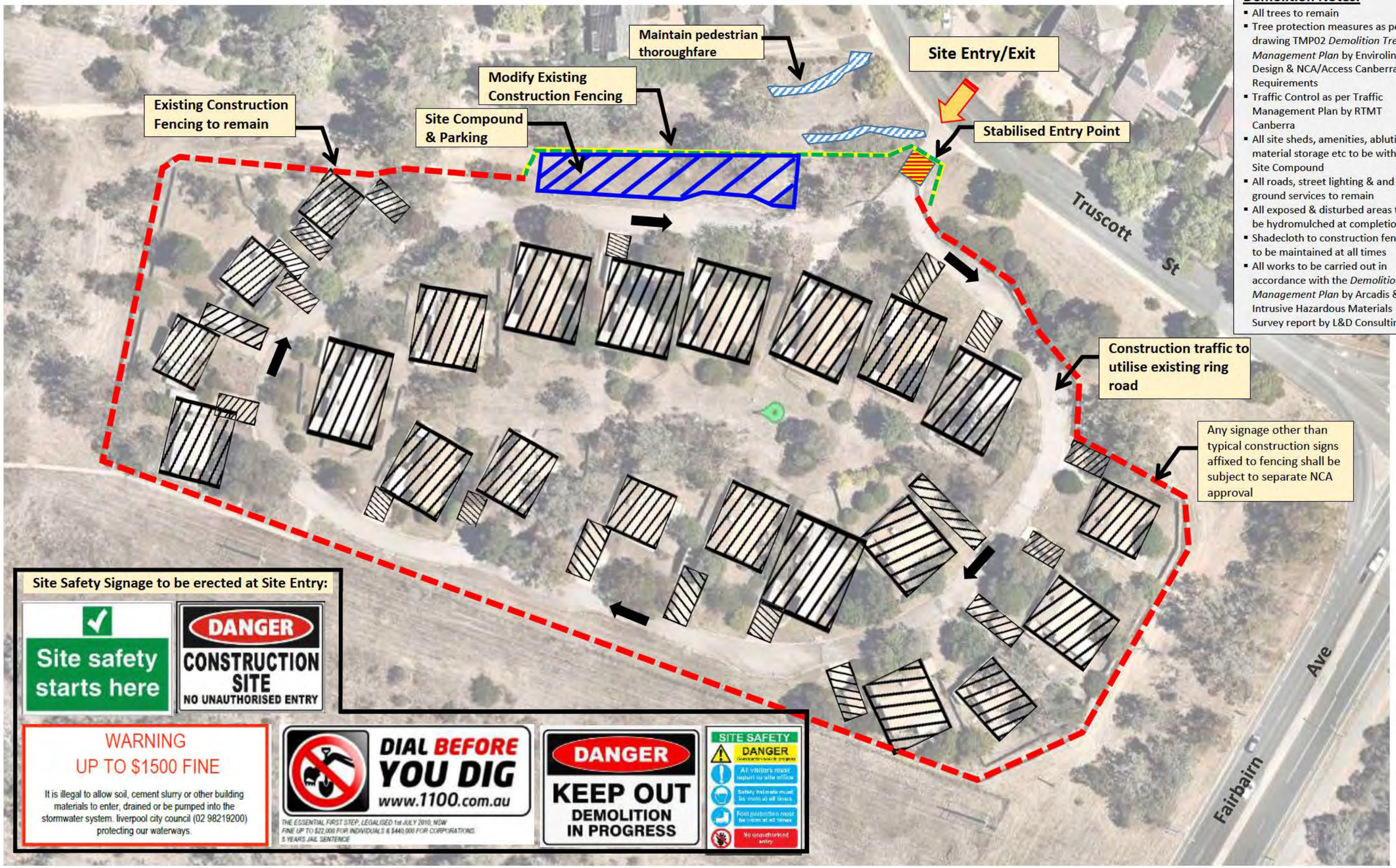
National Capital Plan – Precinct Code Provisions (Previously Development Control Plan 12/01)	
NCP Requirement	**Response**
Concept Plan	
A detailed plan of dwelling layout and densities, that provides for appropriate dwelling orientation to achieve maximum solar access for the majority of dwellings	The WA includes a concept plan showing dwelling layout and densities. This plan shows proposed dwelling orientation, with north-facing living areas and principal open space, and boundary setbacks to achieve good solar access for all dwellings.
Building setbacks, building height and scale (up to a maximum of two storeys above natural ground level),	Dwellings will be a mix of single and two-storeys consistent with the NCP requirement. Setbacks to roads and overall site boundaries are achieved.
Indicative development staging (if necessary)	Not necessary, no staging is proposed
A general landscape plan that encourages the retention of existing trees of high quality and integration of these into the new landscape (where possible)	To provide a second access point to the estate for the purposes of safety, there is a need to remove six additional trees not initially identified for removal in the NCP. Of these six trees, four are assessed as being of 'medium value', one as low value and one as high value. The landscape plan submitted with the WA shows additional trees along the Truscott St verge to match the existing street trees. In addition, new street trees will be planted within the new street.
A parking plan showing scope for all visitor and resident parking on-site	Complies. Resident car parking can be managed on site in garages. 13 Visitor car parking is accommodated off-street within the Academy Close precinct as well as 12 on street Parallel parking areas are provided.
Requirements for fencing, including provision for fencing consistent with nature reserve and bushfire risk management	Fencing has been considered and shown on the plans submitted.
Provisions for continued public right-of-way along the western side of the site adjacent to Blocks 26, 27, 28 and 29 Section 59 Campbell	The existing pathway used by the public is not a "public right-of-way" as it traverses Defence Housing land. The approximate location of the existing path is proposed as a water easement and can therefore continue to be used as an informal pedestrian path.

National Capital Plan – Precinct Code Provisions (Previously Development Control Plan 12/01)	
NCP Requirement	**Response**
Continued vehicular access/egress to Truscott Street.	Complies. Access to the development will be via Truscott St generally in the location of the previous entry driveway. An additional access point onto Truscott St is proposed in response to feedback from ACT TCCS to improve accessibility and emergency response.
Land Use	
The proposed land use on Block 3 Section 65 Campbell shall be for new residential accommodation, for the use of Australian Defence Force personnel.	Complies. The site will be used for Defence Housing accommodation.
Land use on Block 3 Section 65 Campbell shall be consistent with the land use of the National Capital Plan, and the land use of the Territory Plan.	Complies. The NCP land use is 'residential'. The proposed use is consistent.
Site Layout, Built Form, Setbacks and Solar Access	
Site density shall be a maximum of 18 dwellings per hectare.	Complies. The site is approximately 2.5 hectares and 30 dwellings are proposed. This represents a density of 12 dwellings per hectare.
Individual blocks shall not be less than 260m^2.	Complies. No blocks are smaller than 260m^2.
All dwellings shall be setback from the boundary of Block 3 Section 65 Campbell a minimum of four metres. Dwellings shall be setback the following minimum distances from individual internal block boundaries: ▪ Three metres to the front; ▪ Two metres to the side; and ▪ Four metres to the rear.	All dwellings will be sited within individual internal 'blocks' consistent with front and rear setbacks. Side boundary setbacks generally achieve the two metre requirement for at least one side boundary. It is noted that the written requirement of the NCP requiring 2 metre side setbacks is inconsistent with the NCP Concept Plan where a number of duplex (attached) dwellings were shown.
All dwellings shall be sited to allow a minimum of three hours of direct sunlight onto the floor or internal wall of the main daytime living area of the dwelling between the hours of 9.00am and 3.00pm on 21 June (winter solstice).	Complies. Detailed architectural plans are not available at this stage of the proposal, however, the site layout and indicative dwelling layouts achieve 3 hours of sunlight to each dwelling.
A minimum of 36m^2 of private open space shall be provided per dwelling. This area of private open space is to be located to the rear of the dwelling.	The indicative dwelling layouts achieve the required private open space areas for each dwelling.

National Capital Plan – Precinct Code Provisions (Previously Development Control Plan 12/01)	
NCP Requirement	**Response**
A minimum of 120m^2 of open space per dwelling shall be provided in public open space areas.	3,600m^2 is required for this proposal, 5,082m^2 is provided.
Building Materials and Architectural Quality	
Buildings and other permanent structures should be designed to a high architectural design standard.	The proposed dwellings have been designed to a high architectural design standard.
All building materials used on site shall comprise high quality durable materials consistent with the character of Campbell. Highly reflective external materials are not permitted.	The proposal incorporates high quality durable materials.
Building materials, construction and finishes are to be responsive to microclimate issues. A high level of environmentally sustainable design is encouraged	The proposal has considered sustainability in its design.
Building plant such as air conditioners must be contained within building form, or totally screened from view	Building plant is incorporated into individual dwellings and screened from view.
Landscape Treatment and Fencing	
A high standard of landscape design and verge treatment is required for the Truscott Street and Fairbairn Avenue frontages.	Complies. Landscape treatments to the Truscott Street frontage include addition of street trees to match existing street trees in the area. Existing trees and dryland grassing are proposed along the frontage to Fairburn Avenue.
Mature vegetation should be retained to the maximum extent practicable and integrated into the landscape design. Where existing trees must be removed, this should be compensated for by planting elsewhere on the site. A tree report must accompany proposals for development and justification provided for the removal of medium or high quality trees.	Complies. The proposed layout is the result of a series of design reviews to minimise tree loss. Additional trees which were indicated for removal in the NCP concept plan have been retained and incorporated also. Additional trees are proposed to be planted.
All proposed fencing to external site boundaries shall be constructed of high quality materials and integrated with the overall landscape design of the site.	Fencing will be integrated into the landscape design of the site.

National Capital Plan – Precinct Code Provisions (Previously Development Control Plan 12/01)	
NCP Requirement	**Response**
Landscape treatments on site must be sympathetic to the surrounding area. Native species of advanced stock should dominate new plantings	Complies. New deciduous street trees have been incorporated into the landscape plans to ensure the site fits in with its surrounding areas.
Additional landscape planting will be provided along the Truscott Street and Fairbairn Avenue verges adjacent to the site to reinforce the landscape character of this entrance to Campbell.	Complies. Additional street trees are proposed along Truscott Street. Two large trees have been retained at the frontage to Fairburn Avenue.
Dwellings shall be setback a minimum of 20 metres to the Truscott Street site boundary, and 10 metres from the Fairbairn Avenue site boundary	An amendment to the Truscott Street setback is proposed as part of this WA. Dwellings will be setback 20m from the verge of Truscott Street and 10m from the boundary. This is considered to retain the residential character of the area and will not adversely impact on adjacent residents. Additional landscape treatments along this frontage have been applied to reduce the impact on the reduced setback.
Access and Parking	
A single site access point to the site will be from Truscott Street. No access is permitted from Fairbairn Avenue	An additional entry/egress point is proposed off Truscott Street to improve site access particularly for any emergency. The additional access point is provided in response to feedback from TCCS. This will not have any adverse impact on the surrounding street network and a traffic impact assessment has been undertaken. No access is proposed from Fairbairn Avenue.
Access to individual dwellings shall be from an internal, private loop road.	Complies. All dwellings will be accessible via an internal loop road (Academy Close).
Internal roads shall have a minimum road reservation of six metres and a minimum road pavement width of 3.5 metres. Visitor parking and passing bays are permitted on internal roads.	Complies. Road reservations exceed the minimum dimensions.
Parking shall be provided in accordance with the ACT Parking and Vehicular Access General Code.	Complies. Parking is provided on site in accordance with the code.

National Capital Plan – Precinct Code Provisions (Previously Development Control Plan 12/01)	
NCP Requirement	**Response**
All private driveways and garages shall front internal roads. No access to individual blocks will be permitted from Truscott Street or Fairbairn Avenue.	Complies. No access to individual dwellings is proposed off Fairbairn Avenue or Truscott Street.
A traffic and parking assessment shall accompany development proposals for the site	Complies. A traffic assessment has been provided.
Pedestrian right-of-way shall be maintained along the western boundary of the site, to allow direct pedestrian access from Truscott Street through to the Canberra Nature Reserve.	Complies. The pedestrian right-of-way will be retained along the western boundary. Pedestrian access from Truscott Street through to the Canberra Nature Reserve is retained.
Environmental Considerations	
Any adverse environmental impacts from on-site developments or on adjacent land shall be identified and redressed to the extent practicable.	Complies. An ecological assessment has been submitted with the application.
Environmental protection measures shall be adopted to minimize possible adverse impacts of any new development or redevelopment on the physical environment, in terms of air quality, noise, waste water run-off, storm water run-off, dust, steam and smoke.	Complies. It is considered that there will be no risk to air quality, noise or waste as a result of the proposal. Some noise may occur during construction.
Lighting	
All outdoor lighting shall be designed and sited to minimize light pollution. Outdoor lighting shall use full cut-off light fittings.	Complies. All lighting will minimise spill.
Detailed Design	
Detailed plans prepared for the development on the site will be subject to public notification and consultation. Consultation will be undertaken in accordance with the NCA's Commitment to *Community Engagement*	Complies. A consultation report will be provided post notification and prior to a decision.



Demolition Notes:

- All trees to remain
- Tree protection measures as per drawing TMP02 *Demolition Tree Management Plan* by Envirolinks Design & NCA/Access Canberra Requirements
- Traffic Control as per Traffic Management Plan by RTMT Canberra
- All site sheds, amenities, ablutions, material storage etc to be within Site Compound
- All roads, street lighting & and in-ground services to remain
- All exposed & disturbed areas to be hydromulched at completion
- Shadecloth to construction fencing to be maintained at all times
- All works to be carried out in accordance with the *Demolition Management Plan* by Arcadis & Intrusive Hazardous Materials Survey report by L&D Consulting

Date	Description	Rev
24-Mar 2017	For House Demolition Tender	A

Principal:
DHA Defence Housing Australia
Suite 201, Level 2
287 Elizabeth St, Sydney
NSW 2000
T. 139 342
F.02 6222 2223
E. info@dha.gov.au
W. www.dha.gov.au
ABN 72 968 504 934

Project: ACADEMY CLOSE CAMPBELL, A.C.T.

PURDON PLANNING

Drawing Name: Demolition Site Plan

Drawing No. DHA_SK_ACAD.08

Date: Mar 2017 Rev: A

Dilapidation Report

BLOCK: ***3*** SECTION: ***65*** SUBURB: ***CAMPBELL***

STREET ADDRESS: ***ACADEMY CLOSE***

CLIENT: ***DEFENSE HOUSING AUSTRALIA***

DATE: 11/08/2017

Irwin&Hartshorn pty ltd

Photo 1. Front entry - Truscott Street

Condition – Cracks in bitumen

Photo 2. Reserve access gate

Condition – Fine (fitted with Government padlock)

Photo 3. Concrete manhole

Condition – Fine

Photo 4. Concrete footpath

Condition – Fine

Photo 5. Timber post with Wire Fencing

Condition – Fine

Photo 6. Wire Fencing

Condition – Fine

Photo 7. Timber Electrical power pole

Condition – Fine but weathered

Photo 8. Concrete power pole

Condition – Fine

Photo 9. Concrete manhole

Condition – Fresh scratches on right side

Photo 10. – Concrete manholes

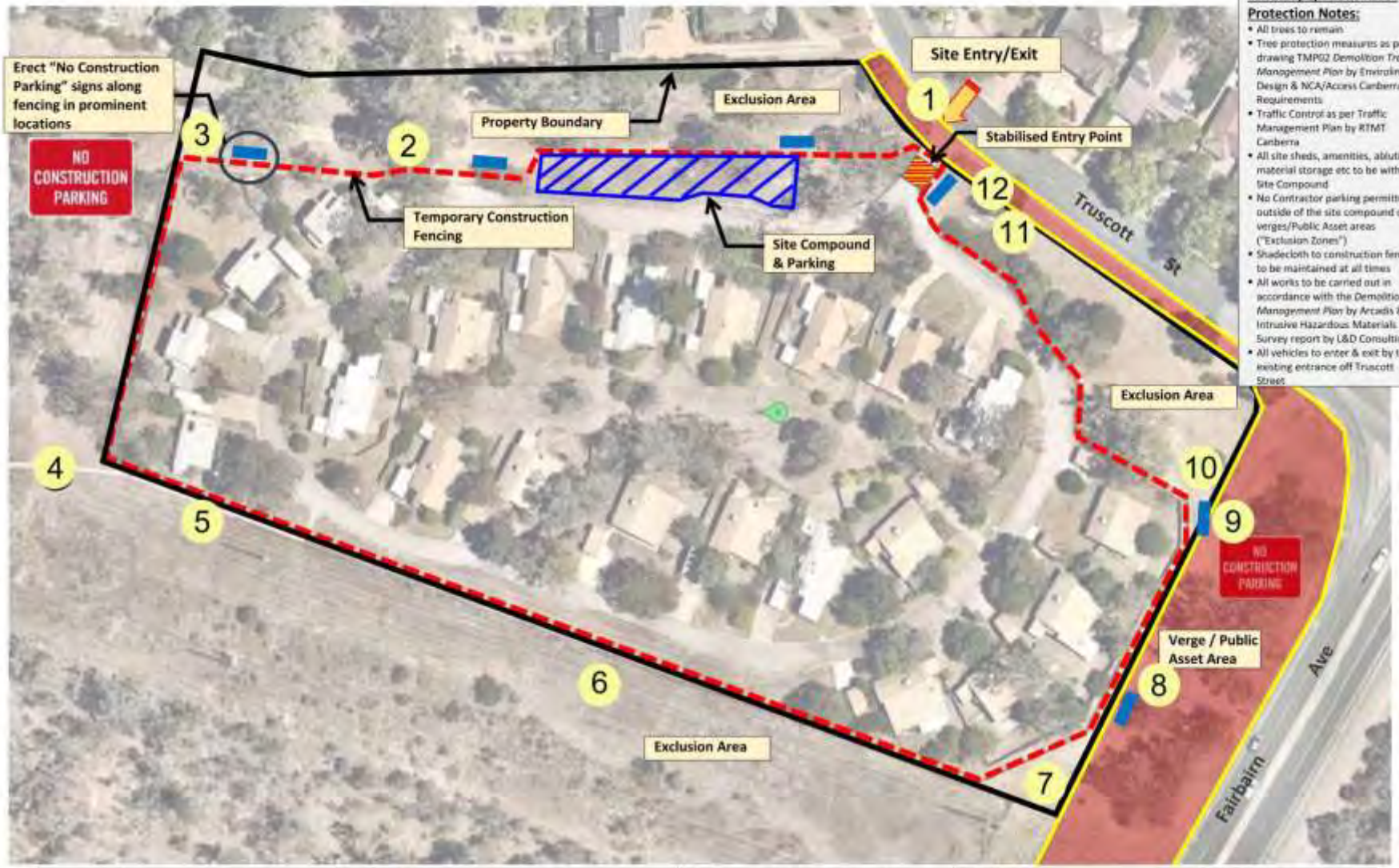
Condition - Fine

Photo 11. Water meter pit with metal plate lids

Condition – Metal plates slightly damaged

Photo 12. – Communications Pit

Conditions – Fine



Landscape/Public Asset Protection Notes:

- All trees to remain
- Tree protection measures as per drawing TMP02 *Demolition Tree Management Plan* by Envirolinks Design & NCA/Access Canberra Requirements
- Traffic Control as per Traffic Management Plan by RTMT Canberra
- All site sheds, amenities, ablutions, material storage etc to be within Site Compound
- No Contractor parking permitted outside of the site compound or in verges/Public Asset areas ("Exclusion Zones")
- Shadecloth to construction fencing to be maintained at all times
- All works to be carried out in accordance with the *Demolition Management Plan* by Arcadis & Intrusive Hazardous Materials Survey report by L&D Consulting
- All vehicles to enter & exit by the existing entrance off Truscott Street

Date	Description	Rev
10-Aug 2017	Waste Management Plan approval	A

Principal: DHA Defence Housing Australia

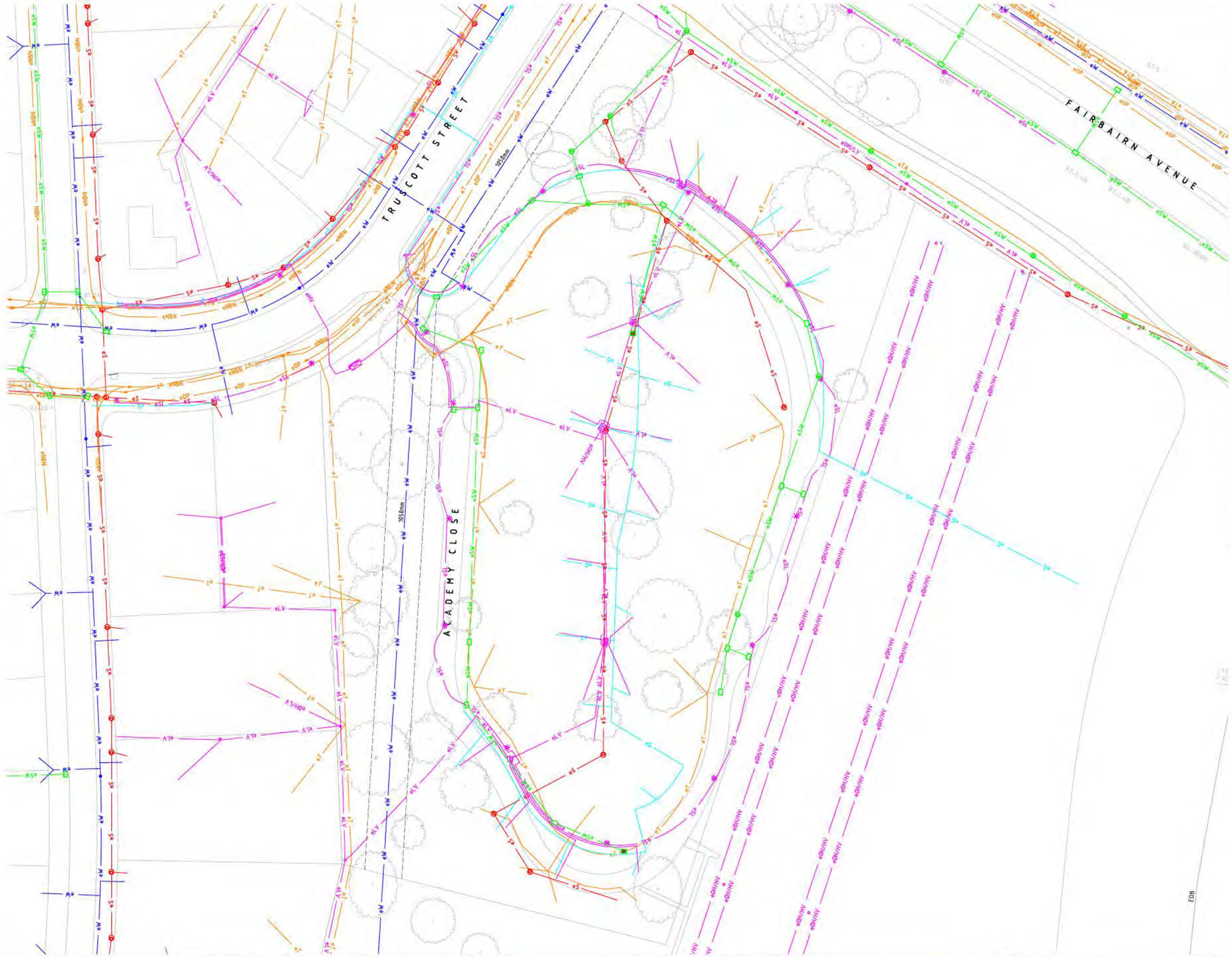
Project: ACADEMY CLOSE CAMPBELL, A.C.T.

Irwin&Hartshorn pty ltd

Drawing Name:

Drawing No.

Date: Aug 2017 Rev: A



EXISTING SERVICES LEGEND

- eSW — STORMWATER PIPE / MAINTENANCE HOLE / SIDE ENTRY PIT
- eS — SEWER PIPE / MAINTENANCE HOLE / VERTICAL DROP
- eSRM — SEWER RISING MAIN / MAINTENANCE HOLE
- H eW HC — EXISTING WATER PIPE HYDRANT – STANDARD / HIGH CAPACITY
- SV eW WM — EXISTING WATER PIPE / SLUICE VALVE / METER PIT
- SV eFS H — EXISTING FIRE SERVICE / SLUICE VALVE / HYDRANT
- SV eEF — EFFLUENT PIPE / SLUICE VALVE
- eE — ELECTRICAL SERVICE / POWER POLE / PIT
- eSL — STREETLIGHT SERVICE / LIGHT POLE
- eG — GAS SERVICE / VALVE / MARKER
- eT — TELSTRA SERVICE / PIT / MINI PILLAR
- eOP — OPTUS SERVICE / PIT
- eK — ICON SERVICE / PIT / MARKER
- eTA — TRANSACT SERVICE / PIT
- eOFC — OPTIC FIBRE

GENERAL NOTES

1. REFER SPECIFICATIONS NOTES DRAWING FOR EXISTING SERVICES GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL, RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. ALL EXISTING SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY. NOTE SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS.
4. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATION.
5. ANY EXISTING COVER DEPTHS SHOWN ARE ASSUMPTIONS BASED ON AUTHORITY MINIMUM DESIGN REQUIREMENTS ONLY. ACCURATE CONFIRMATION BY SAFE POT HOLING OF THE EXISTING SERVICES AND CHECKING DEPTHS IS REQUIRED PRIOR TO CONSTRUCTION AT THE CONTRACTOR'S EXPENSE.
6. COVER DEPTHS THAT DIFFER FROM THAT SPECIFIED ARE TO BE REPORTED TO THE SUPERINTENDENT FOR ADVICE ON CONSTRUCTION REQUIREMENTS.

DIAL BEFORE YOU DIG
www.1100.com.au

NOT FOR CONSTRUCTION

VERIFIER:
JOB MANAGER: D.FIELD
DESIGNED: R.CR-ADD
DRAWN: R.CR-ADD

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
4	FOR INFORMATION	RC		DF	31.08.18
5	FOR DISCUSSION	RC		DF	21.09.18
6	FOR DISCUSSION	RC		DF	12.10.18
7	WORKS APPROVAL	RC		DF	11.04.19
8	DRAFT WORKS APPROVAL	JC		DF	30.04.20
9	WORKS APPROVAL	JC		DF	15.04.20

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL

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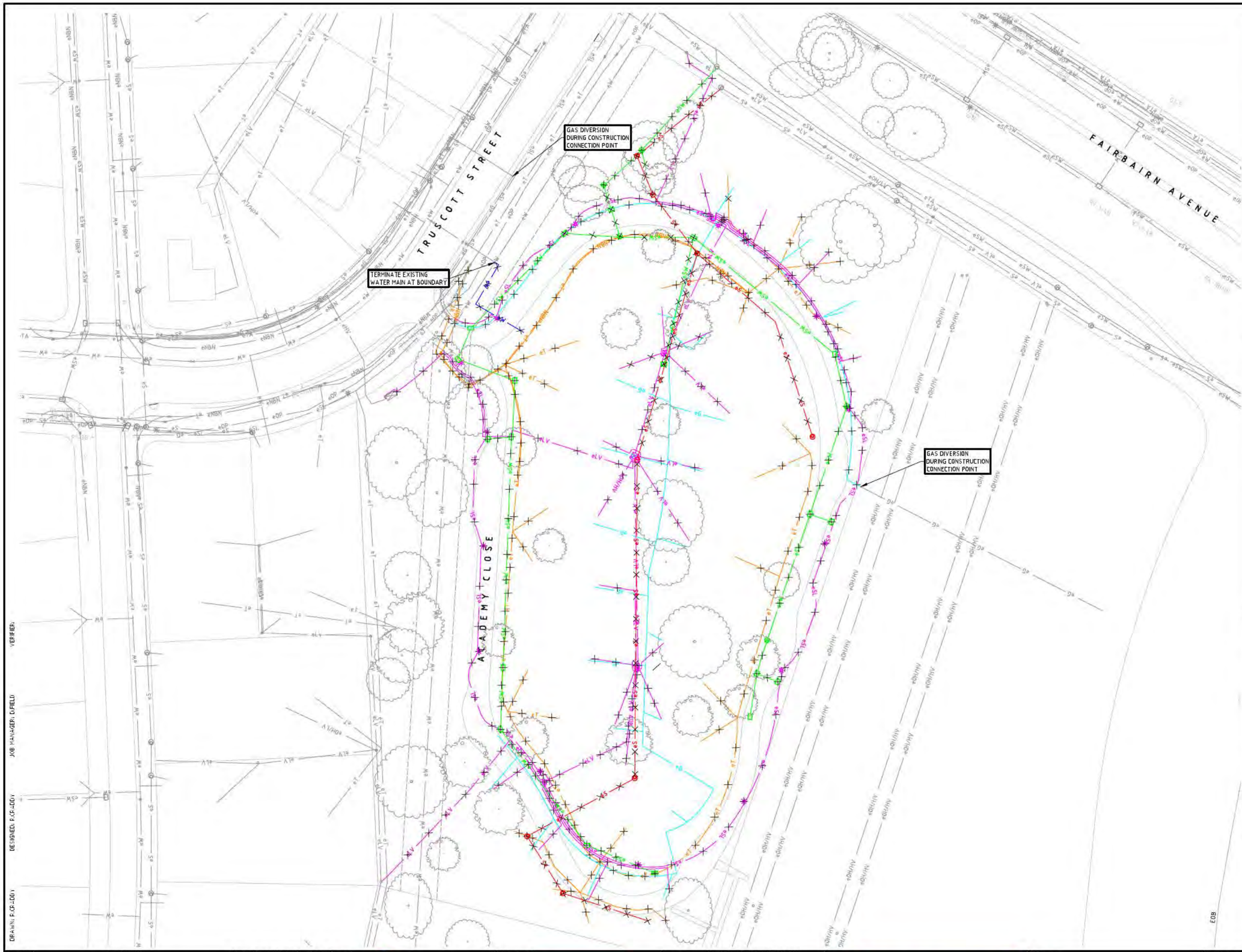
0 5 10 15 20 25m PLAN
SCALE 1:500 @ A1

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT
DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
CIVIL WORKS
EXISTING SERVICES PLAN

JOB NUMBER: CR172699
DRAWING NUMBER: C070
REVISION: 9
DRAWING SHEET SIZE = A1



EXISTING SERVICES TO BE DEMOLISHED

- STORMWATER PIPE / MAINTENANCE HOLE / SIDE ENTRY PIT
- SEWER PIPE / MAINTENANCE HOLE / VERTICAL DROP
- EXISTING WATER PIPE HYDRANT - STANDARD / HIGH CAPACITY
- EXISTING WATER PIPE / SLUICE VALVE / METER PIT
- EXISTING FIRE SERVICE / SLUICE VALVE / HYDRANT
- EFFLUENT PIPE / SLUICE VALVE
- ELECTRICAL SERVICE / POWER POLE / PIT
- STREETLIGHT SERVICE / LIGHT POLE
- GAS SERVICE / VALVE / MARKER
- TELSTRA SERVICE / PIT / MINI PILLAR
- OPTUS SERVICE / PIT
- ICON SERVICE / PIT / MARKER
- TRANSACT SERVICE / PIT
- OPTIC FIBRE

NEW SERVICES DIVERSION

- GAS SERVICE

EXISTING SERVICES

- STORMWATER PIPE / MAINTENANCE HOLE / SIDE ENTRY PIT
- SEWER PIPE / MAINTENANCE HOLE / VERTICAL DROP
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- EXISTING WATER PIPE / SLUICE VALVE / METER PIT
- EXISTING FIRE SERVICE / SLUICE VALVE / HYDRANT
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- STREETLIGHT SERVICE / LIGHT POLE
- GAS SERVICE / VALVE / MARKER
- TELSTRA SERVICE / PIT / MINI PILLAR
- OPTUS SERVICE / PIT
- TRANSACT SERVICE / PIT
- OPTIC FIBRE

GENERAL NOTES

1. REFER SPECIFICATIONS NOTES DRAWING FOR EXISTING SERVICES GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL, RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. ALL EXISTING SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY. NOTE SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS.
4. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATION.
5. ANY EXISTING COVER DEPTHS SHOWN ARE ASSUMPTIONS BASED ON AUTHORITY MINIMUM DESIGN REQUIREMENTS ONLY. ACCURATE CONFIRMATION BY SAFE POT HOLING OF THE EXISTING SERVICES AND CHECKING DEPTHS IS REQUIRED PRIOR TO CONSTRUCTION AT THE CONTRACTOR'S EXPENSE.
6. COVER DEPTHS THAT DIFFER FROM THAT SPECIFIED ARE TO BE REPORTED TO THE SUPERINTENDENT FOR ADVICE ON CONSTRUCTION REQUIREMENTS.

DIAL BEFORE YOU DIG
www.1100.com.au

NOT FOR CONSTRUCTION

DRAWN: P.CR-LOGY
DESIGNED: P.CR-LOGY
JOB MANAGER: D.FIELD
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	RC		DF	23.03.18
2	FOR DISCUSSION	RC		DF	12.10.18
3	WORKS APPROVAL	RC		DF	11.04.19
4	WORKS APPROVAL	RC		DF	17.04.19
5	DRAFT WORKS APPROVAL	JC		DF	30.04.20
6	WORKS APPROVAL	JC		DF	14.05.20

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close CAMPBELL

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NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENSE HOUSING AUSRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
EXISTING SERVICES
TO BE REMOVED/DEMOLISHED

JOB NUMBER: CR172699

DRAWING NUMBER: C071

REVISION: 6

DRAWING SHEET SIZE = A1

Project Management Plan

For

DHA Academy Close

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groupOne

10/02/2021

283.EOT1

Northrop
Level 6, SAP House
224 Bunda Street
Canberra ACT 2608

Attention: s22 [redacted]

Dear Sir,

RE: Contract Number: Construction Contract PROC-46448
DHA – Academy Close
Extension of Time No.1 – Disconnection of Electrical by Evo Energy

Pursuant to Clause 34.5 of the AS4000 General Conditions of Contract, the contractor notifies the Principle's Superintendent that the commencement of works has been delayed due to causes beyond the control of the principal contractor. Existing live electrical services where identified onsite site which required disconnection and relocation. The construction program as provided after award of the contract indicated that we had allowed 19 days in total from award of the contract to lodge and have existing services disconnected by the relevant service authorities. Evo Energy have now completed their component of the disconnections with Zinfra and Icon Water yet to complete their disconnections.

The electrical disconnections where to be completed by the 13/11/2020 with an actual completion date of 10/2/2021.

Therefore an Extension of Time for the disconnection of electrical services is requested for sixty four days (64) including public holidays and the industry Christmas shutdown period.

Note that further EOT's will be requested for the Zinfra gas disconnection and Icon Water sewer and water disconnections which can only be requested once Icon have approved the design.

Should you have any further queries, or require any additional information, please do not hesitate to contact the undersigned.

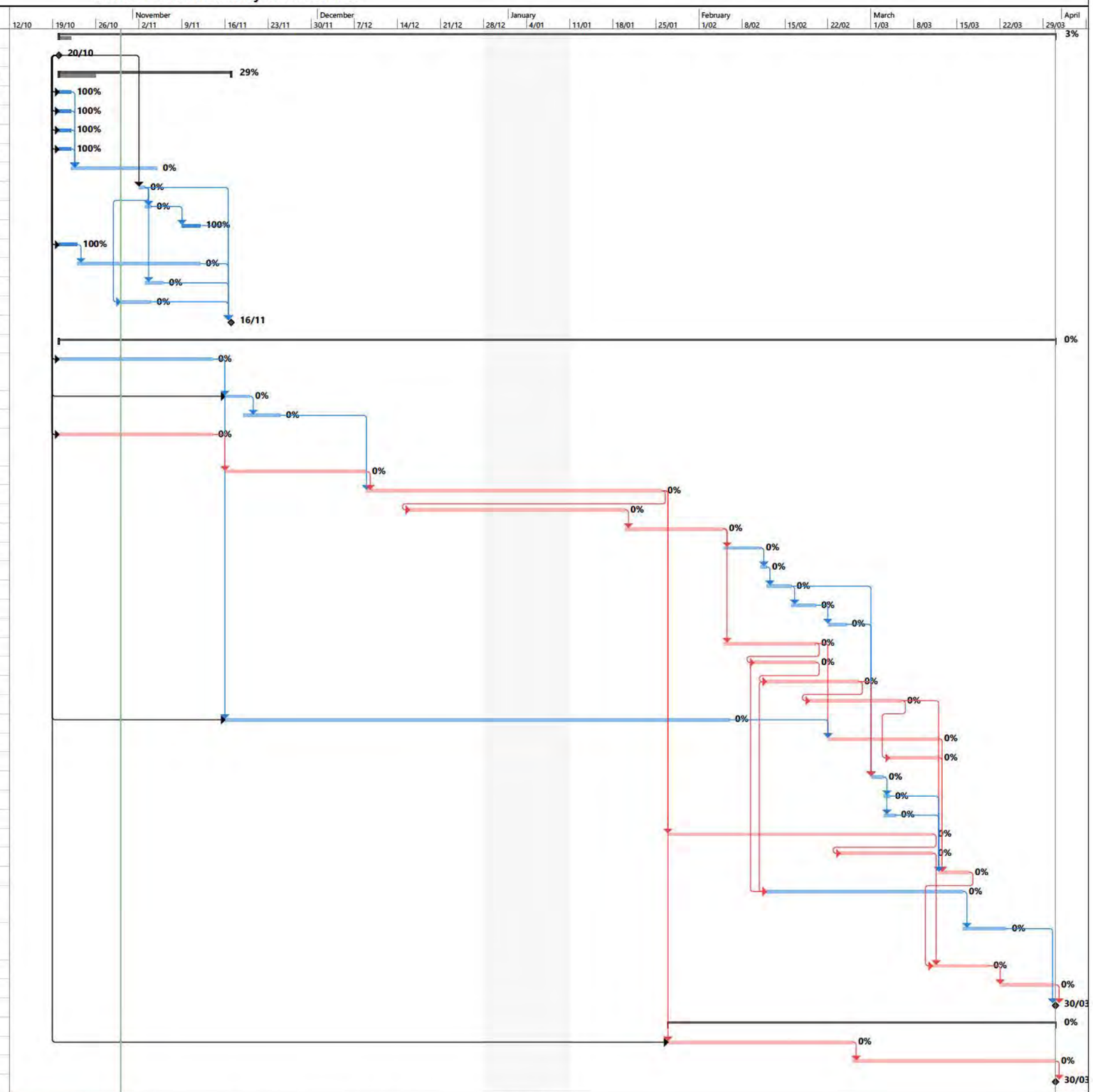
Yours sincerely,

s22 [redacted]

Project Manager

DRAFT - DHA Academy Close 201029

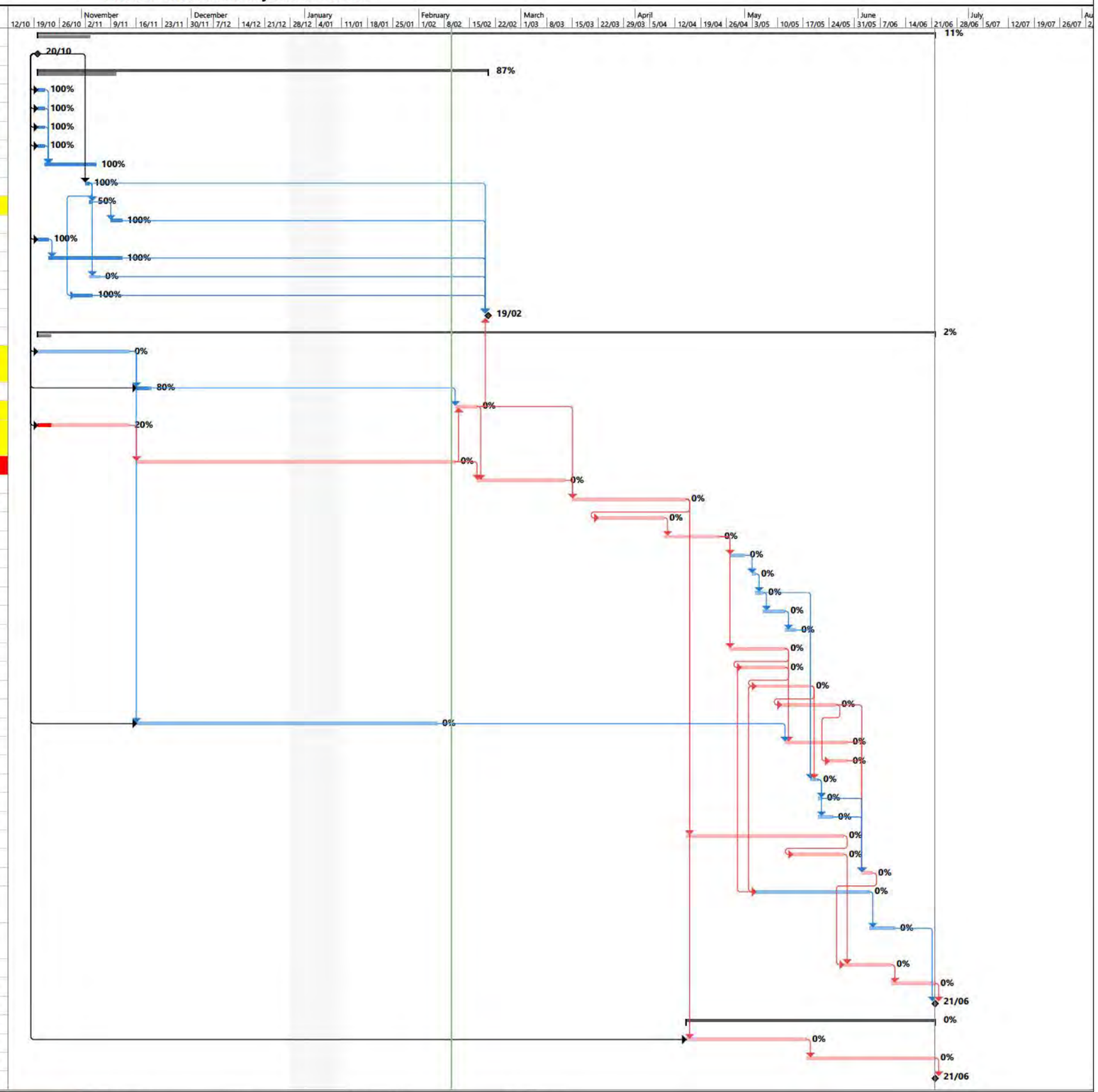
ID		Task Mode	Task Name	Duration	Start	Finish
1			**DHA Academy Close**	**100 days**	**Tue 20/10/20**	**Tue 30/03/21**
2			Contract Award	0 days	Tue 20/10/20	Tue 20/10/20
3			**Site Establishment**	**20 days**	**Tue 20/10/20**	**Mon 16/11/20**
4	✓		Submission of CEMP	2 days	Tue 20/10/20	Wed 21/10/20
5	✓		Submission of Enviromental Management Plan	2 days	Tue 20/10/20	Wed 21/10/20
6	✓		Submission of WHS Plan	2 days	Tue 20/10/20	Wed 21/10/20
7	✓		Submission of PQP	2 days	Tue 20/10/20	Wed 21/10/20
8			Approval of CEMP,EMP,WHS,PQP	10 days	Thu 22/10/20	Wed 4/11/20
9			Partial Possession of Site	1 day	Mon 2/11/20	Mon 2/11/20
10			Issue IFC Drawings and Tin	1 day	Tue 3/11/20	Tue 3/11/20
11	✓		Survey pickup of existing and check	3 days	Mon 9/11/20	Wed 11/11/20
12	✓		TTM submission	3 days	Tue 20/10/20	Thu 22/10/20
13			TTM approval and implementation	14 days	Fri 23/10/20	Wed 11/11/20
14			Implementation of Enviromental Controls	3 days	Tue 3/11/20	Thu 5/11/20
15			Erection of Fences	3 days	Fri 30/10/20	Tue 3/11/20
16			Site Establishment	3 days	Thu 12/11/20	Mon 16/11/20
17			**Civil Works**	**100 days**	**Tue 20/10/20**	**Tue 30/03/21**
18			Design Acceptance & Issue Approved Service plan (ICON, ZNX, Evo)	19 days	Tue 20/10/20	Fri 13/11/20
19			Clearing & Grubing	4 days	Mon 16/11/20	Thu 19/11/20
20			Strip Topsoil	4 days	Thu 19/11/20	Tue 24/11/20
21			Existing Services (Depending upon Disconnection by Authorities)	19 days	Tue 20/10/20	Fri 13/11/20
22			Removal of Existing Services	17 days	Mon 16/11/20	Tue 8/12/20
23			Earthworks	20 days	Wed 9/12/20	Mon 25/01/21
24			Installation of new Hydraulics - Sewer Works	11 days	Wed 16/12/20	Tue 19/01/21
25			Hydraulics - Stormwater incl Special Structures	11 days	Wed 20/01/21	Thu 4/02/21
26			Subsoils	4 days	Fri 5/02/21	Wed 10/02/21
27			Trim Subgrade	1 day	Thu 11/02/21	Thu 11/02/21
28			DGS20	2 days	Fri 12/02/21	Mon 15/02/21
29			Kerb Works	4 days	Tue 16/02/21	Fri 19/02/21
30			DGB20	3 days	Mon 22/02/21	Wed 24/02/21
31			Shared Trench	11 days	Fri 5/02/21	Fri 19/02/21
32			Water Main	8 days	Wed 10/02/21	Fri 19/02/21
33			Verge Fill & Water Services	11 days	Fri 12/02/21	Fri 26/02/21
34			Driveways & Footpaths / Concrete works	11 days	Fri 19/02/21	Fri 5/03/21
35			Lead Time on Street light Delivery	45 days	Mon 16/11/20	Fri 5/02/21
36			Street Light Works	13 days	Mon 22/02/21	Thu 11/03/21
37			Topsoil Spreading	5 days	Thu 4/03/21	Thu 11/03/21
38			Prime & Asphalt	2 days	Mon 1/03/21	Tue 2/03/21
39			Linemarking	1 day	Wed 3/03/21	Wed 3/03/21
40			Road Furniture	2 days	Wed 3/03/21	Thu 4/03/21
41			Retaining Walls	30 days	Wed 27/01/21	Wed 10/03/21
42			Fencing	10 days	Wed 24/02/21	Wed 10/03/21
43			Defects Rectification & Topsoil tidy up	3 days	Fri 12/03/21	Tue 16/03/21
44			Quotation request for Connection of new Services to Authorities	21 days	Fri 12/02/21	Mon 15/03/21
45			Connection of new Sewer, Water, Electricity, Street light	5 days	Tue 16/03/21	Mon 22/03/21
46			WAE & Handover Documentation	7 days	Thu 11/03/21	Fri 19/03/21
47			Inspections and OA	7 days	Mon 22/03/21	Tue 30/03/21
48			Practical Completion	0 days	Tue 30/03/21	Tue 30/03/21
49			**Landscape Works**	**44 days**	**Wed 27/01/21**	**Tue 30/03/21**
50			Stage 1 Works - Hard landscape	22 days	Wed 27/01/21	Thu 25/02/21
51			Stage 1 Works - Soft landscape	22 days	Fri 26/02/21	Tue 30/03/21
52			Practical Completion	0 days	Tue 30/03/21	Tue 30/03/21



Critical | Critical Split | Critical Progress | Task | Split | Task Progress | Manual Task | Start-only | Finish-only | Duration-only | Baseline | Baseline Split | Baseline Milestone | Milestone | Summary Progress | Summary | Manual Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Deadline

DRAFT - DHA Academy Close 210210

ID		Task Mode	Task Name	Duration	Start	Finish
1			**DHA Academy Close**	**152 days**	**Tue 20/10/20**	**Mon 21/06/21**
2			Contract Award	0 days	Tue 20/10/20	Tue 20/10/20
3			**Site Establishment**	**74 days**	**Tue 20/10/20**	**Fri 19/02/21**
4	✓		Submission of CEMP	2 days	Tue 20/10/20	Wed 21/10/20
5	✓		Submission of Enviromental Management Plan	2 days	Tue 20/10/20	Wed 21/10/20
6	✓		Submission of WHS Plan	2 days	Tue 20/10/20	Wed 21/10/20
7	✓		Submission of PQP	2 days	Tue 20/10/20	Wed 21/10/20
8	✓		Approval of CEMP,EMP,WHS,PQP	10 days	Thu 22/10/20	Wed 4/11/20
9	✓		Partial Possession of Site	1 day	Mon 2/11/20	Mon 2/11/20
10			Issue IFC Drawings and Tin	1 day	Tue 3/11/20	Tue 3/11/20
11	✓		Survey pickup of existing and check	3 days	Mon 9/11/20	Wed 11/11/20
12	✓		TTM submission	3 days	Tue 20/10/20	Thu 22/10/20
13	✓		TTM approval and implementation	14 days	Fri 23/10/20	Wed 11/11/20
14			Implementation of Enviromental Controls	3 days	Tue 3/11/20	Thu 5/11/20
15	✓		Erection of Fences	3 days	Fri 30/10/20	Tue 3/11/20
16			Site Establishment	3 days	Wed 17/02/21	Fri 19/02/21
17			**Civil Works**	**152 days**	**Tue 20/10/20**	**Mon 21/06/21**
18			Design Acceptance & Issue Approved Service plan (ICON, ZNX, Evo)	19 days	Tue 20/10/20	Fri 13/11/20
19			Clearing & Grubing	4 days	Mon 16/11/20	Thu 19/11/20
20			Strip Topsoil	4 days	Thu 11/02/21	Tue 16/02/21
21			Existing Services (Depending upon Disconnection by Authorities)	19 days	Tue 20/10/20	Fri 13/11/20
22			EOT1-Disconnection of Elec	48 days	Mon 16/11/20	Wed 10/02/21
23			Removal of Existing Services	17 days	Wed 17/02/21	Fri 12/03/21
24			Earthworks	20 days	Mon 15/03/21	Wed 14/04/21
25			Installation of new Hydraulics - Sewer Works	11 days	Mon 22/03/21	Thu 8/04/21
26			Hydraulics - Stormwater incl Special Structures	11 days	Fri 9/04/21	Fri 23/04/21
27			Subsoils	4 days	Tue 27/04/21	Fri 30/04/21
28			Trim Subgrade	1 day	Mon 3/05/21	Mon 3/05/21
29			DGS20	2 days	Tue 4/05/21	Wed 5/05/21
30			Kerb Works	4 days	Thu 6/05/21	Tue 11/05/21
31			DGB20	3 days	Wed 12/05/21	Fri 14/05/21
32			Shared Trench	11 days	Tue 27/04/21	Tue 11/05/21
33			Water Main	8 days	Fri 30/04/21	Tue 11/05/21
34			Verge Fill & Water Services	11 days	Tue 4/05/21	Tue 18/05/21
35			Driveways & Footpaths / Concrete works	11 days	Tue 11/05/21	Tue 25/05/21
36			Lead Time on Street light Delivery	45 days	Mon 16/11/20	Fri 5/02/21
37			Street Light Works	13 days	Wed 12/05/21	Fri 28/05/21
38			Topsoil Spreading	5 days	Mon 24/05/21	Fri 28/05/21
39			Prime & Asphalt	2 days	Wed 19/05/21	Thu 20/05/21
40			Linemarking	1 day	Fri 21/05/21	Fri 21/05/21
41			Road Furniture	2 days	Fri 21/05/21	Mon 24/05/21
42			Retaining Walls	30 days	Thu 15/04/21	Thu 27/05/21
43			Fencing	10 days	Fri 14/05/21	Thu 27/05/21
44			Defects Rectification & Topsoil tidy up	3 days	Wed 2/06/21	Fri 4/06/21
45			Quotation request for Connection of new Services to Authorities	21 days	Tue 4/05/21	Thu 3/06/21
46			Connection of new Sewer, Water, Electricity, Street light	5 days	Fri 4/06/21	Thu 10/06/21
47			WAE & Handover Documentation	7 days	Fri 28/05/21	Wed 9/06/21
48			Inspections and OA	7 days	Thu 10/06/21	Mon 21/06/21
49			Practical Completion	0 days	Mon 21/06/21	Mon 21/06/21
50			**Landscape Works**	**44 days**	**Thu 15/04/21**	**Mon 21/06/21**
51			Stage 1 Works - Hard landscape	22 days	Thu 15/04/21	Mon 17/05/21
52			Stage 1 Works - Soft landscape	22 days	Tue 18/05/21	Mon 21/06/21
53			Practical Completion	0 days	Mon 21/06/21	Mon 21/06/21



Critical | Critical Split | Critical Progress | Task | Split | Task Progress | Manual Task | Start-only | Finish-only | Duration-only | Baseline | Baseline Split | Baseline Milestone | Milestone | Summary Progress | Summary | Manual Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Deadline

15/03/2021

283.EOT2

Northrop
Level 6, SAP House
224 Bunda Street
Canberra ACT 2608

Attention: s22 [redacted]

Dear Sir,

RE: Contract Number: Construction Contract PROC-46448
DHA – Academy Close
Extension of Time No.2 – Disconnection of Gas (Zinfra)

Pursuant to Clause 34.5 of the AS4000 General Conditions of Contract, the contractor notifies the Principle's Superintendent that the commencement of works has been delayed due to causes beyond the control of the principal contractor. Existing live gas services where identified onsite site which required relocation and disconnection of the service through the site. The construction program as provided after award of the contract indicated that we had allowed 19 days in total from award of the contract to lodge and have existing services disconnected by the relevant service authorities. Zinfra have now completed their component of the disconnections with Icon Water yet to complete their disconnections.

The gas disconnections where to be completed by the 13/11/2020 with an actual completion date of 15/03/2021.

Note that EOT 1 captures from 13/11/20 through to 10/02/21 for the disconnection of electrical which was concurrent with the gas relocation and disconnection and therefore an Extension of Time for the disconnection of gas services is requested for twenty Three days (23) including public holidays, from 11/02/21 through to 15/03/21.

Note that further EOT's will be requested for the Icon Water disconnections of sewer and water services to the site. Note that the request for quotation for the disconnections of sewer and water cannot be done until we have stamped approved drawings.

Should you have any further queries, or require any additional information, please do not hesitate to contact the undersigned.

s22 [redacted]

DRAFT - DHA Academy Close 201029

ID		Task Mode	Task Name	Duration	Start	Finish
1			**DHA Academy Close**	**100 days**	**Tue 20/10/20**	**Tue 30/03/21**
2			Contract Award	0 days	Tue 20/10/20	Tue 20/10/20
3			**Site Establishment**	**20 days**	**Tue 20/10/20**	**Mon 16/11/20**
4	✓		Submission of CEMP	2 days	Tue 20/10/20	Wed 21/10/20
5	✓		Submission of Enviromental Management Plan	2 days	Tue 20/10/20	Wed 21/10/20
6	✓		Submission of WHS Plan	2 days	Tue 20/10/20	Wed 21/10/20
7	✓		Submission of PQP	2 days	Tue 20/10/20	Wed 21/10/20
8			Approval of CEMP,EMP,WHS,PQP	10 days	Thu 22/10/20	Wed 4/11/20
9			Partial Possession of Site	1 day	Mon 2/11/20	Mon 2/11/20
10			Issue IFC Drawings and Tin	1 day	Tue 3/11/20	Tue 3/11/20
11	✓		Survey pickup of existing and check	3 days	Mon 9/11/20	Wed 11/11/20
12	✓		TTM submission	3 days	Tue 20/10/20	Thu 22/10/20
13			TTM approval and implementation	14 days	Fri 23/10/20	Wed 11/11/20
14			Implementation of Enviromental Controls	3 days	Tue 3/11/20	Thu 5/11/20
15			Erection of Fences	3 days	Fri 30/10/20	Tue 3/11/20
16			Site Establishment	3 days	Thu 12/11/20	Mon 16/11/20
17			**Civil Works**	**100 days**	**Tue 20/10/20**	**Tue 30/03/21**
18			Design Acceptance & Issue Approved Service plan (ICON, ZNX, Evo)	19 days	Tue 20/10/20	Fri 13/11/20
19			Clearing & Grubing	4 days	Mon 16/11/20	Thu 19/11/20
20			Strip Topsoil	4 days	Thu 19/11/20	Tue 24/11/20
21			Existing Services (Depending upon Disconnection by Authorities)	19 days	Tue 20/10/20	Fri 13/11/20
22			Removal of Existing Services	17 days	Mon 16/11/20	Tue 8/12/20
23			Earthworks	20 days	Wed 9/12/20	Mon 25/01/21
24			Installation of new Hydraulics - Sewer Works	11 days	Wed 16/12/20	Tue 19/01/21
25			Hydraulics - Stormwater incl Special Structures	11 days	Wed 20/01/21	Thu 4/02/21
26			Subsoils	4 days	Fri 5/02/21	Wed 10/02/21
27			Trim Subgrade	1 day	Thu 11/02/21	Thu 11/02/21
28			DGS20	2 days	Fri 12/02/21	Mon 15/02/21
29			Kerb Works	4 days	Tue 16/02/21	Fri 19/02/21
30			DGB20	3 days	Mon 22/02/21	Wed 24/02/21
31			Shared Trench	11 days	Fri 5/02/21	Fri 19/02/21
32			Water Main	8 days	Wed 10/02/21	Fri 19/02/21
33			Verge Fill & Water Services	11 days	Fri 12/02/21	Fri 26/02/21
34			Driveways & Footpaths / Concrete works	11 days	Fri 19/02/21	Fri 5/03/21
35			Lead Time on Street light Delivery	45 days	Mon 16/11/20	Fri 5/02/21
36			Street Light Works	13 days	Mon 22/02/21	Thu 11/03/21
37			Topsoil Spreading	5 days	Thu 4/03/21	Thu 11/03/21
38			Prime & Asphalt	2 days	Mon 1/03/21	Tue 2/03/21
39			Linemarking	1 day	Wed 3/03/21	Wed 3/03/21
40			Road Furniture	2 days	Wed 3/03/21	Thu 4/03/21
41			Retaining Walls	30 days	Wed 27/01/21	Wed 10/03/21
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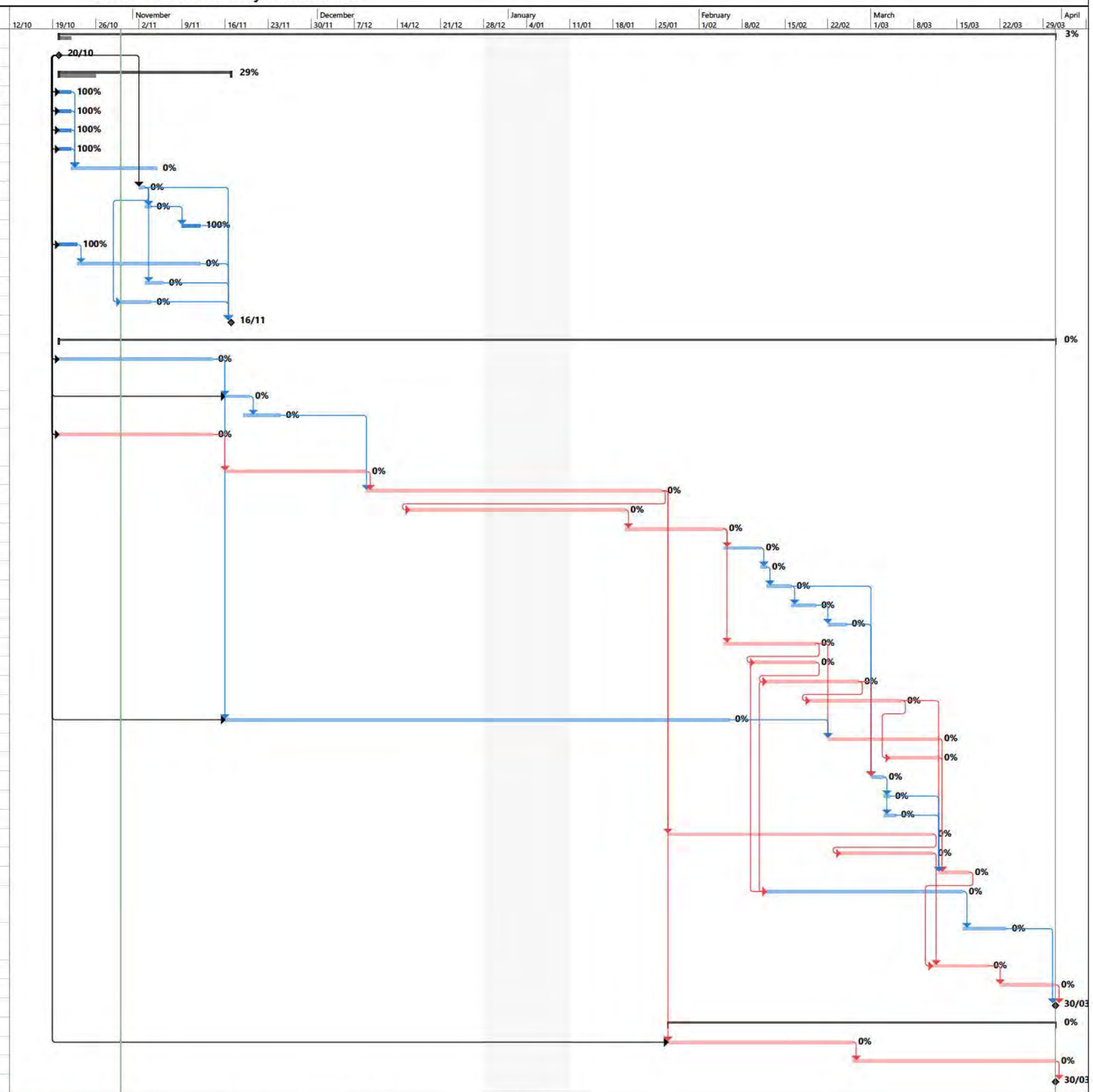
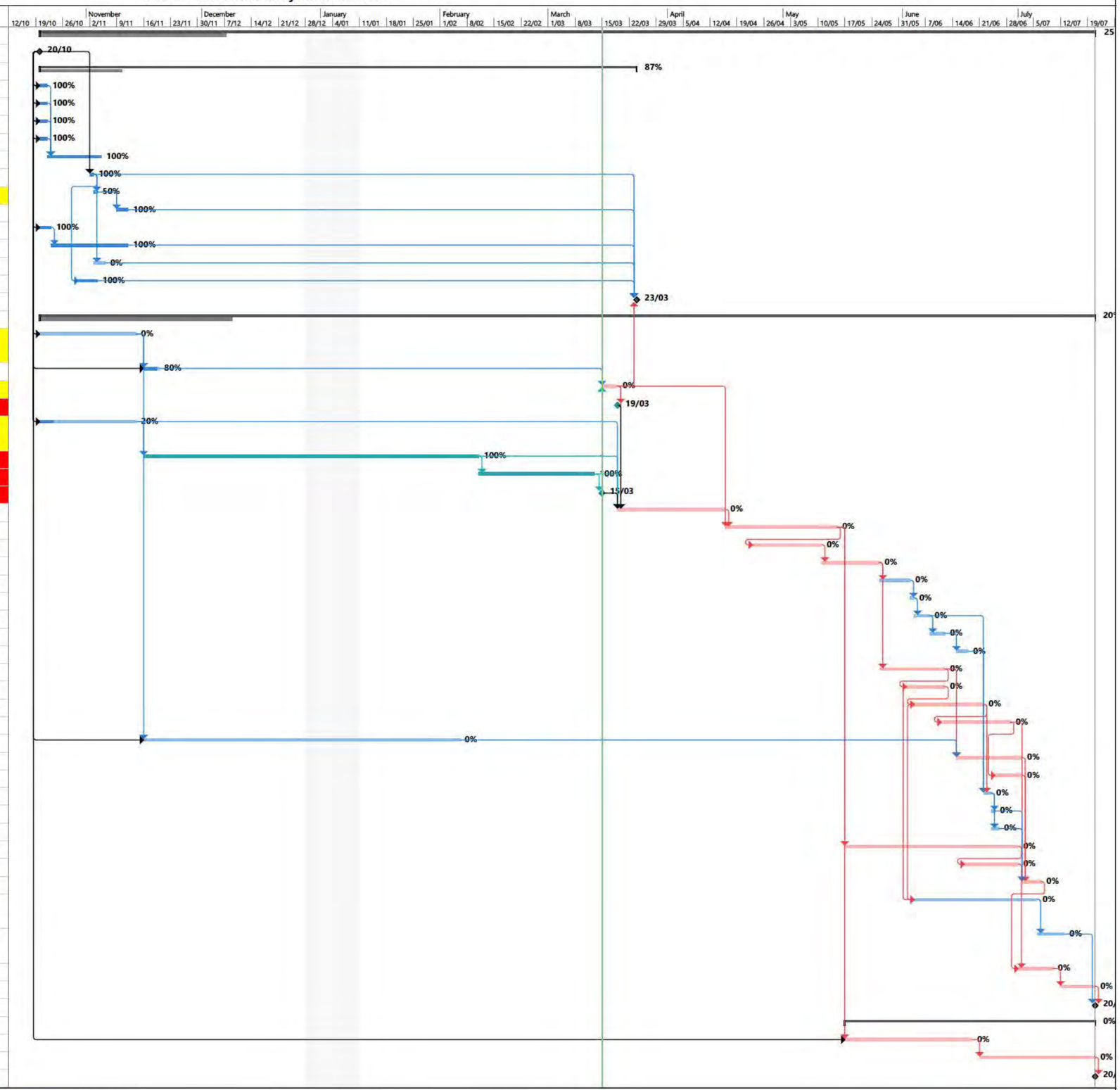
46			WAE & Handover Documentation	7 days	Thu 11/03/21	Fri 19/03/21
47			Inspections and OA	7 days	Mon 22/03/21	Tue 30/03/21
48			Practical Completion	0 days	Tue 30/03/21	Tue 30/03/21
49			**Landscape Works**	**44 days**	**Wed 27/01/21**	**Tue 30/03/21**
50			Stage 1 Works - Hard landscape	22 days	Wed 27/01/21	Thu 25/02/21
51			Stage 1 Works - Soft landscape	22 days	Fri 26/02/21	Tue 30/03/21
52			Practical Completion	0 days	Tue 30/03/21	Tue 30/03/21



Critical | Critical Split | Critical Progress | Task | Split | Task Progress | Manual Task | Start-only | Finish-only | Duration-only | Baseline | Baseline Split | Baseline Milestone | Milestone | Summary Progress | Summary | Manual Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Deadline

DRAFT - DHA Academy Close 210315

ID		Task Mode	Task Name	Duration	Start	Finish
1			**DHA Academy Close**	**173 days**	**Tue 20/10/20**	**Tue 20/07/21**
2			Contract Award	0 days	Tue 20/10/20	Tue 20/10/20
3			**Site Establishment**	**95 days**	**Tue 20/10/20**	**Tue 23/03/21**
4	✓		Submission of CEMP	2 days	Tue 20/10/20	Wed 21/10/20
5	✓		Submission of Enviromental Management Plan	2 days	Tue 20/10/20	Wed 21/10/20
6	✓		Submission of WHS Plan	2 days	Tue 20/10/20	Wed 21/10/20
7	✓		Submission of PQP	2 days	Tue 20/10/20	Wed 21/10/20
8	✓		Approval of CEMP,EMP,WHS,PQP	10 days	Thu 22/10/20	Wed 4/11/20
9	✓		Partial Possession of Site	1 day	Mon 2/11/20	Mon 2/11/20
10			Issue IFC Drawings and Tin	1 day	Tue 3/11/20	Tue 3/11/20
11	✓		Survey pickup of existing and check	3 days	Mon 9/11/20	Wed 11/11/20
12	✓		TTM submission	3 days	Tue 20/10/20	Thu 22/10/20
13	✓		TTM approval and implementation	14 days	Fri 23/10/20	Wed 11/11/20
14			Implementation of Enviromental Controls	3 days	Tue 3/11/20	Thu 5/11/20
15	✓		Erection of Fences	3 days	Fri 30/10/20	Tue 3/11/20
16			Site Establishment	3 days	Fri 19/03/21	Tue 23/03/21
17			**Civil Works**	**173 days**	**Tue 20/10/20**	**Tue 20/07/21**
18			Design Acceptance & Issue Approved Service plan (ICON, ZNX, Evo)	19 days	Tue 20/10/20	Fri 13/11/20
19			Clearing & Grubing	4 days	Mon 16/11/20	Thu 19/11/20
20			Strip Topsoil	4 days	Mon 15/03/21	Thu 18/03/21
21			Disposal of Strip (Including Waste Classification)	0 days	Fri 19/03/21	Fri 19/03/21
22			Existing Services (Depending upon Disconnection by Authorities)	19 days	Tue 20/10/20	Fri 13/11/20
23	✓		EOT1-Disconnection of Elec	48 days	Mon 16/11/20	Wed 10/02/21
24	✓		EOT2-Disconnection of Gas	21 days	Thu 11/02/21	Fri 12/03/21
25			EOT3-Icon Water Disconnections	0 days	Mon 15/03/21	Mon 15/03/21
26			Removal of Existing Services	17 days	Fri 19/03/21	Thu 15/04/21
27			Earthworks	20 days	Fri 16/04/21	Fri 14/05/21
28			Installation of new Hydraulics - Sewer Works	11 days	Fri 23/04/21	Mon 10/05/21
29			Hydraulics - Stormwater incl Special Structures	11 days	Tue 11/05/21	Tue 25/05/21
30			Subsoils	4 days	Wed 26/05/21	Wed 2/06/21
31			Trim Subgrade	1 day	Thu 3/06/21	Thu 3/06/21
32			DGS20	2 days	Fri 4/06/21	Mon 7/06/21
33			Kerb Works	4 days	Tue 8/06/21	Fri 11/06/21
34			DGB20	3 days	Tue 15/06/21	Thu 17/06/21
35			Shared Trench	11 days	Wed 26/05/21	Fri 11/06/21
36			Water Main	8 days	Wed 2/06/21	Fri 11/06/21
37			Verge Fill & Water Services	11 days	Fri 4/06/21	Mon 21/06/21
38			Driveways & Footpaths / Concrete works	11 days	Fri 11/06/21	Mon 28/06/21
39			Lead Time on Street light Delivery	45 days	Mon 16/11/20	Fri 5/02/21
40			Street Light Works	13 days	Tue 15/06/21	Thu 1/07/21
41			Topsoil Spreading	5 days	Fri 25/06/21	Thu 1/07/21
42			Prime & Asphalt	2 days	Tue 22/06/21	Wed 23/06/21
43			Linemarking	1 day	Thu 24/06/21	Thu 24/06/21
44			Road Furniture	2 days	Thu 24/06/21	Fri 25/06/21
45			Retaining Walls	30 days	Mon 17/05/21	Wed 30/06/21
46			Fencing	10 days	Thu 17/06/21	Wed 30/06/21
47			Defects Rectification & Topsoil tidy up	3 days	Fri 2/07/21	Tue 6/07/21
48			Quotation request for Connection of new Services to Authorities	21 days	Fri 4/06/21	Mon 5/07/21
49			Connection of new Sewer, Water, Electricity, Street light	5 days	Tue 6/07/21	Mon 12/07/21
50			WAE & Handover Documentation	7 days	Thu 1/07/21	Fri 9/07/21
51			Inspections and OA	7 days	Mon 12/07/21	Tue 20/07/21
52			Practical Completion	0 days	Tue 20/07/21	Tue 20/07/21
53			**Landscape Works**	**44 days**	**Mon 17/05/21**	**Tue 20/07/21**
54			Stage 1 Works - Hard landscape	22 days	Mon 17/05/21	Fri 18/06/21
55			Stage 1 Works - Soft landscape	22 days	Mon 21/06/21	Tue 20/07/21
56			Practical Completion	0 days	Tue 20/07/21	Tue 20/07/21



Critical | Task | Manual Task | Duration-only | Baseline Milestone | Summary | External Tasks | Inactive Milestone
Critical Split | Split | Start-only | Baseline | Milestone | Manual Summary | External Milestone | Inactive Summary
Critical Progress | Task Progress | Finish-only | Baseline Split | Summary Progress | Project Summary | Inactive Task | Deadline

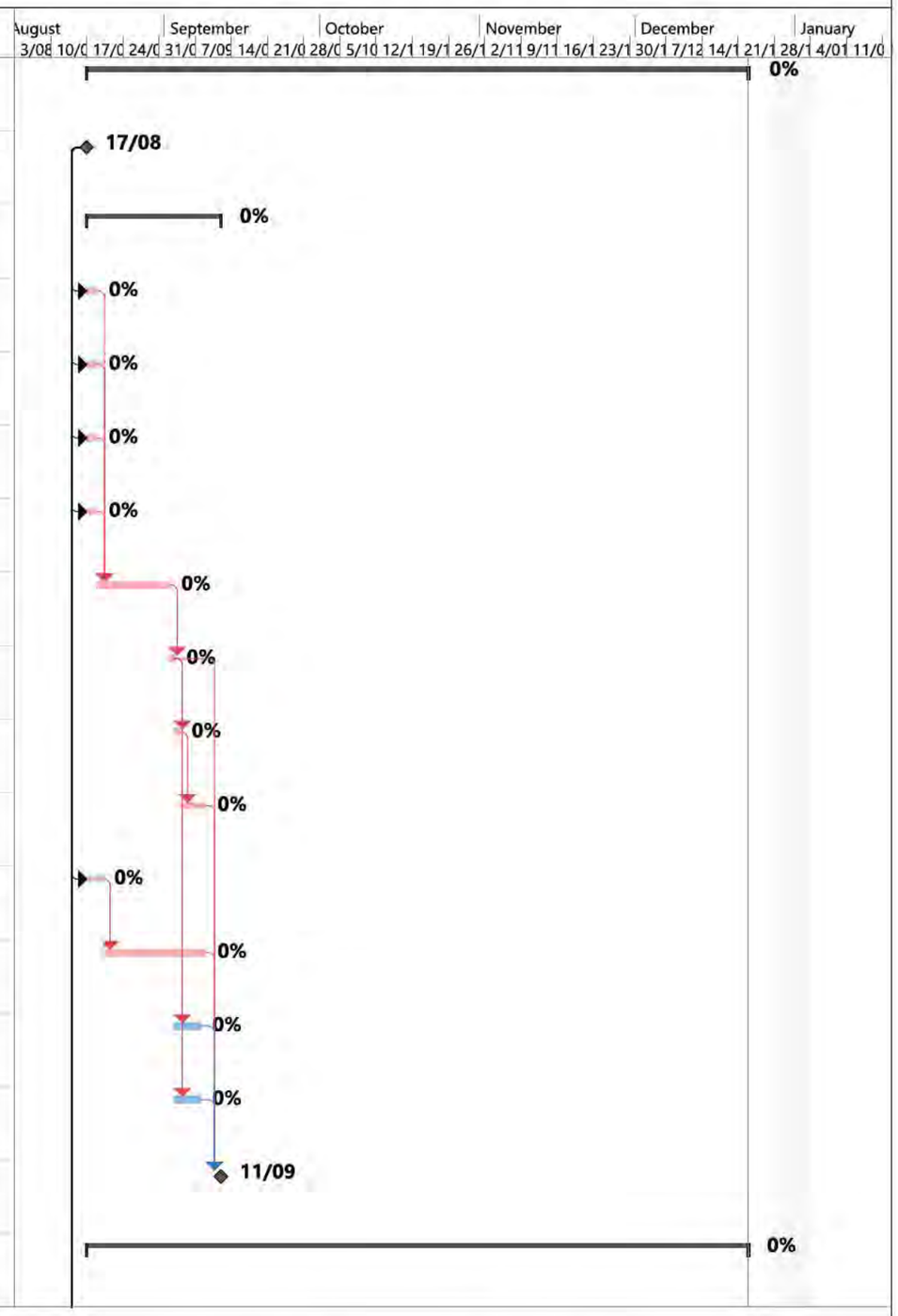
groupOne

Civil Construction. Done Well.

DETAILED CONTRACT PROGRAM

DHA Academy Close Tender Programme

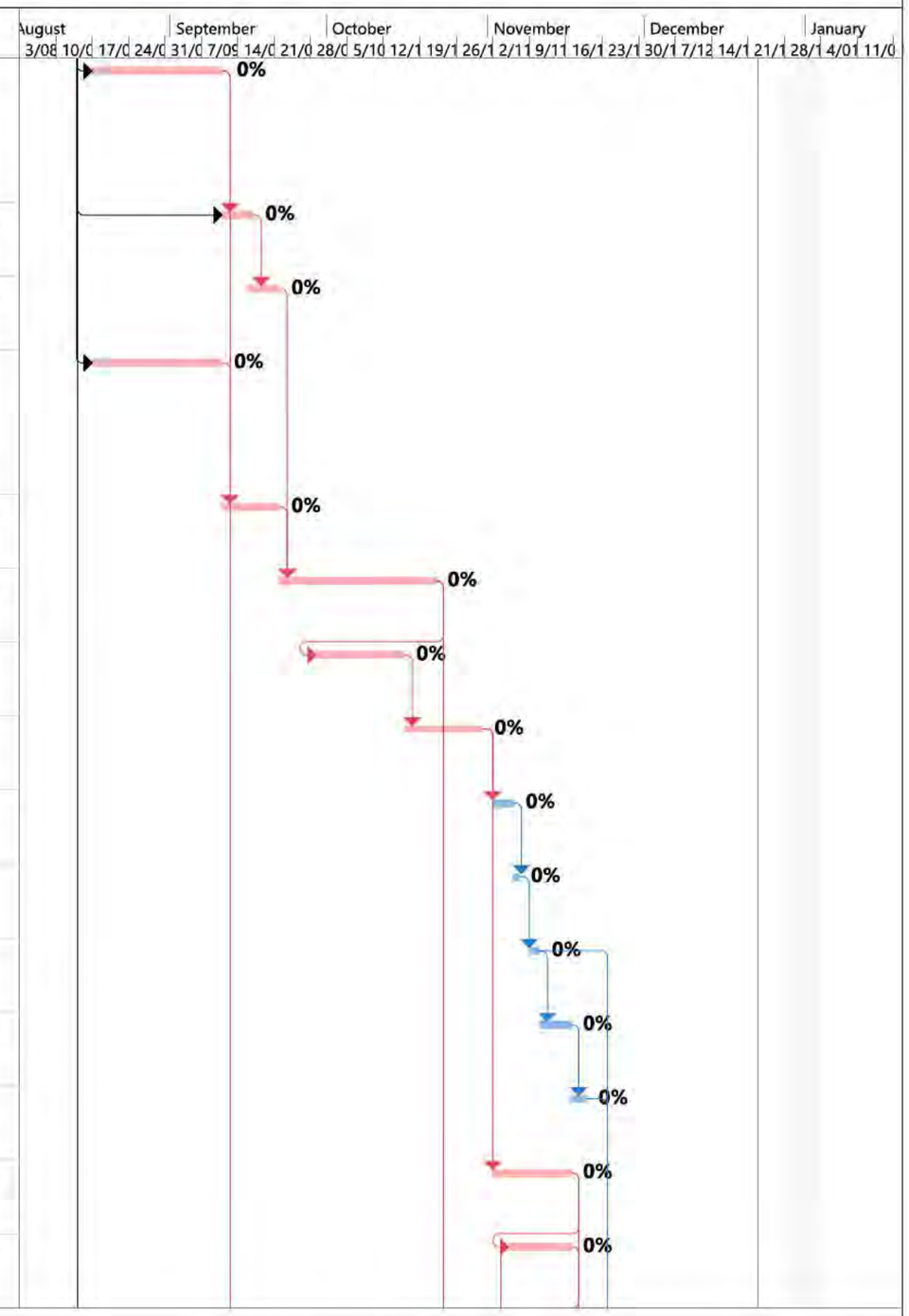
ID	Task Mode	Task Name	Duration	Start	Finish
1		**DHA Academy Close**	**90 days**	**Mon 17/08/20**	**Tue 22/12/20**
2		Contract Award	0 days	Mon 17/08/20	Mon 17/08/20
3		**Site Establishment**	**20 days**	**Mon 17/08/20**	**Fri 11/09/20**
4		Submission of CEMP	2 days	Mon 17/08/20	Tue 18/08/20
5		Submission of Enviromental Management Plan	2 days	Mon 17/08/20	Tue 18/08/20
6		Submission of WHS Plan	2 days	Mon 17/08/20	Tue 18/08/20
7		Submission of PQP	2 days	Mon 17/08/20	Tue 18/08/20
8		Approval of CEMP,EMP,WHS,PQP	10 days	Wed 19/08/20	Tue 1/09/20
9		Possession of Site	1 day	Wed 2/09/20	Wed 2/09/20
10		Issue IFC Drawings and Tin	1 day	Thu 3/09/20	Thu 3/09/20
11		Survey pickup of existing and check	3 days	Fri 4/09/20	Tue 8/09/20
12		TTM submission	3 days	Mon 17/08/20	Wed 19/08/20
13		TTM approval and implementation	14 days	Thu 20/08/20	Tue 8/09/20
14		Implementation of Enviromental Controls	3 days	Thu 3/09/20	Mon 7/09/20
15		Erection of Fences	3 days	Thu 3/09/20	Mon 7/09/20
16		Site Establishment	3 days	Wed 9/09/20	Fri 11/09/20
17		**Civil Works**	**90 days**	**Mon 17/08/20**	**Tue 22/12/20**



Critical		Split		Finish-only		Baseline Milestone		Manual Summary		Inactive Task	
Critical Split		Task Progress		Duration-only		Milestone		Project Summary		Inactive Milestone	
Critical Progress		Manual Task		Baseline		Summary Progress		External Tasks		Inactive Summary	
Task		Start-only		Baseline Split		Summary		External Milestone		Deadline	

DHA Academy Close Tender Programme

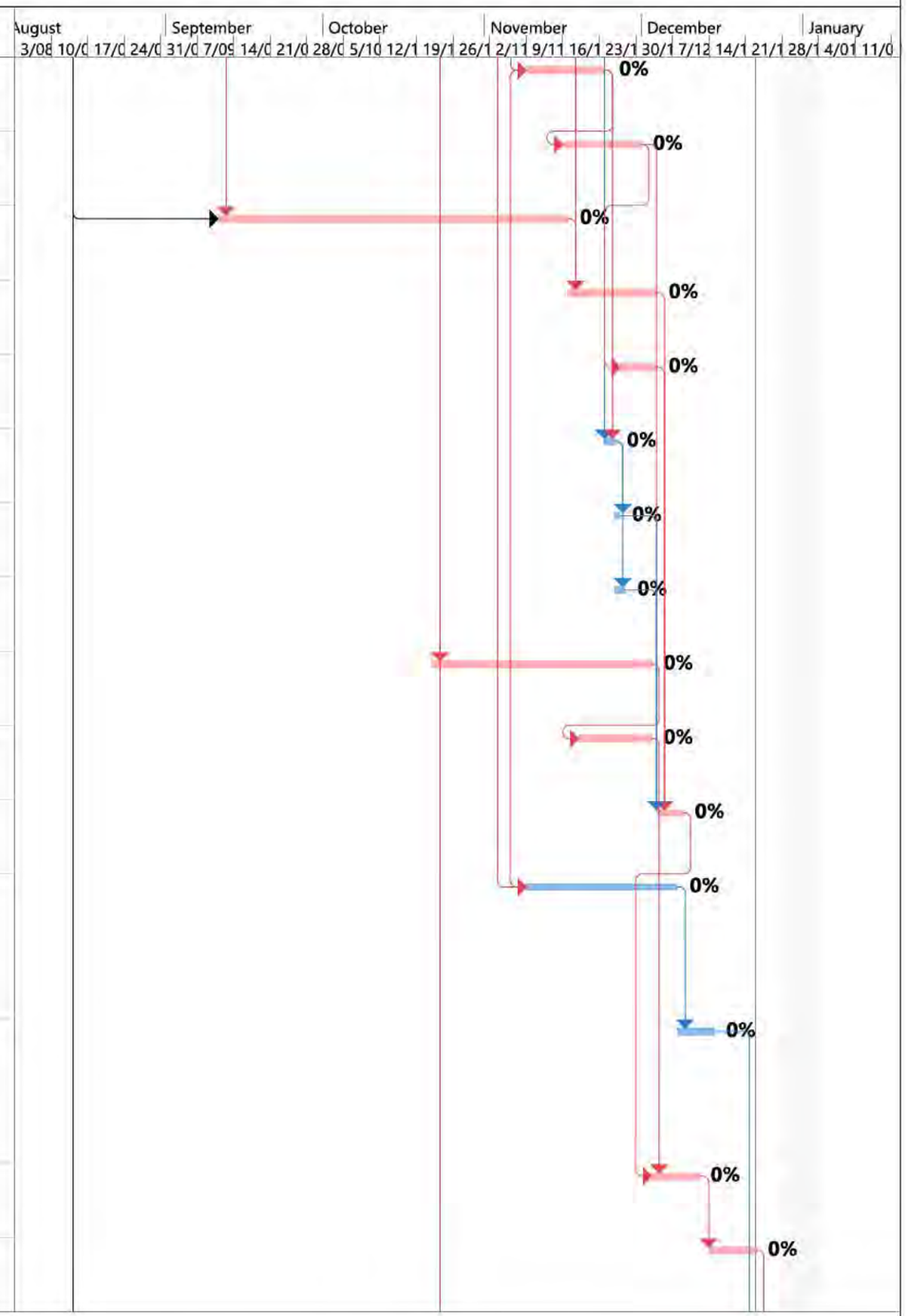
ID	Task Mode	Task Name	Duration	Start	Finish
18		Design Acceptance & Issue Approved Service plan (ICON, ZNX, Evo)	19 days	Mon 17/08/20	Thu 10/09/20
19		Clearing & Grubing	4 days	Fri 11/09/20	Wed 16/09/20
20		Strip Topsoil	4 days	Wed 16/09/20	Mon 21/09/20
21		Existing Services (Depending upon Disconnection by Authorities)	19 days	Mon 17/08/20	Thu 10/09/20
22		Removal of Existing Services	7 days	Fri 11/09/20	Mon 21/09/20
23		Earthworks	20 days	Tue 22/09/20	Wed 21/10/20
24		Installation of new Hydraulics - Sewer Works	11 days	Tue 29/09/20	Thu 15/10/20
25		Hydraulics - Stormwater incl Special Structures	11 days	Fri 16/10/20	Fri 30/10/20
26		Subsoils	4 days	Mon 2/11/20	Thu 5/11/20
27		Trim Subgrade	1 day	Fri 6/11/20	Fri 6/11/20
28		DGS20	2 days	Mon 9/11/20	Tue 10/11/20
29		Kerb Works	4 days	Wed 11/11/20	Mon 16/11/20
30		DGB20	3 days	Tue 17/11/20	Thu 19/11/20
31		Shared Trench	11 days	Mon 2/11/20	Mon 16/11/20
32		Water Main	8 days	Thu 5/11/20	Mon 16/11/20



Critical | Critical Split | Critical Progress | Task | Split | Task Progress | Manual Task | Start-only | Finish-only | Duration-only | Baseline | Baseline Split | Baseline Milestone | Milestone | Summary Progress | Summary | Manual Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Deadline

DHA Academy Close Tender Programme

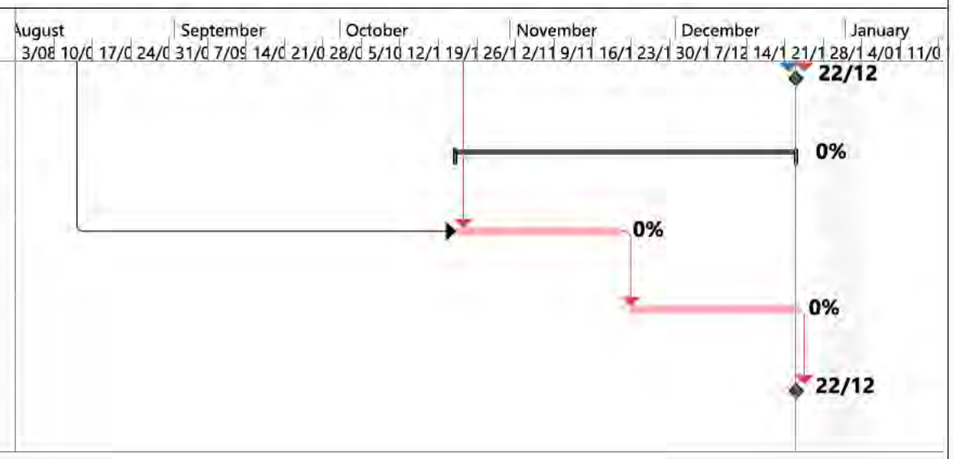
ID	Task Mode	Task Name	Duration	Start	Finish
33		Verge Fill & Water Services	11 days	Mon 9/11/20	Mon 23/11/20
34		Driveways & Footpaths / Concrete works	11 days	Mon 16/11/20	Mon 30/11/20
35		Lead Time on Street light Delivery	45 days	Fri 11/09/20	Mon 16/11/20
36		Street Light Works	13 days	Tue 17/11/20	Thu 3/12/20
37		Topsoil Spreading	5 days	Fri 27/11/20	Thu 3/12/20
38		Prime & Asphalt	2 days	Tue 24/11/20	Wed 25/11/20
39		Linemarking	1 day	Thu 26/11/20	Thu 26/11/20
40		Road Furniture	2 days	Thu 26/11/20	Fri 27/11/20
41		Retaining Walls	30 days	Thu 22/10/20	Wed 2/12/20
42		Fencing	10 days	Thu 19/11/20	Wed 2/12/20
43		Defects Rectification & Topsoil tidy up	3 days	Fri 4/12/20	Tue 8/12/20
44		Quotation request for Connection of new Services to Authorities	21 days	Mon 9/11/20	Mon 7/12/20
45		Connection of new Sewer, Water, Electricity, Street light	5 days	Tue 8/12/20	Mon 14/12/20
46		WAE & Handover Documentation	7 days	Thu 3/12/20	Fri 11/12/20
47		Inspections and OA	7 days	Mon 14/12/20	Tue 22/12/20



Critical		Split		Finish-only		Baseline Milestone		Manual Summary		Inactive Task	
Critical Split		Task Progress		Duration-only		Milestone		Project Summary		Inactive Milestone	
Critical Progress		Manual Task		Baseline		Summary Progress		External Tasks		Inactive Summary	
Task		Start-only		Baseline Split		Summary		External Milestone		Deadline	

DHA Academy Close Tender Programme

ID	Task Mode	Task Name	Duration	Start	Finish
48		Practical Completion	0 days	Tue 22/12/20	Tue 22/12/20
49		**Landscape Works**	**44 days**	**Thu 22/10/20**	**Tue 22/12/20**
50		Stage 1 Works - Hard landscape	22 days	Thu 22/10/20	Fri 20/11/20
51		Stage 1 Works - Soft landscape	22 days	Mon 23/11/20	Tue 22/12/20
52		Practical Completion	0 days	Tue 22/12/20	Tue 22/12/20



Critical		Split		Finish-only		Baseline Milestone		Manual Summary		Inactive Task	
Critical Split		Task Progress		Duration-only		Milestone		Project Summary		Inactive Milestone	
Critical Progress		Manual Task		Baseline		Summary Progress		External Tasks		Inactive Summary	
Task		Start-only		Baseline Split		Summary		External Milestone		Deadline	

Proposed Variation

		Ref # :	**PV-03**
Project/Site:	Academy Close, Campbell A.C.T.	**Date :**	8-Apr 2021
Contract :	AS4000 Construction Contract (Civil Works)	**Contract no:**	PROC-46448
Principal:	Defence Housing Australia		
Contractor:	Group One Pty Ltd	**ABN :**	24 124 956 154
Superintendent:	Northrop Consulting Engineers		
Principal's Representative:	s22 [redacted]		
Contractor's Representative:			
Superintendent's Representative:			

Pursuant to *Clause 36.2* of the Contract, the Principal hereby provides written notice of a proposed variation to the Works under the Contract (*WUC*). The Contractor shall provide the following:

Description: Tree Removal

Please provide a price to remove & dispose Tree no. T31 within Block 3 near the entrance off Truscott St. Refer Attachment A for photo identifying the tree.

Defence Housing Australia
s22 [redacted]

Development Manager
Defence Housing Australia |

02 8836 5709 | s22 [redacted] | www.dha.gov.au

Appendix A

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
6	PROGRESS	RC		JW	26.11.19
7	DRAFT WORKS APPROVAL	RC		DF	30.04.20
8	WORKS APPROVAL	RC		DF	14.05.20
9	WORKS APPROVAL	JC		DF	26.05.20
10	FOR COMMENT	RC		DF	02.02.21
A	CONSTRUCTION	RC	NG	DF	05.02.21

CLIENT: DHA Defence Housing Australia

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close

THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD.

ALL SETOUT TO ARCHITECT'S DRAWINGS, DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

0 5 10 15 20 25m PLAN
SCALE 1:500 @ A1

NORTHROP
Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1883
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT
DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE
GRADING
KEY PLAN
SHEET 1 OF 4

JOB NUMBER: CR172699
DRAWING NUMBER: C110
REVISION: A
DRAWING SHEET SIZE = A1

Australian Government
National Capital Authority

Application Number: WA101918-B

s22 [redacted]
Purdon Planning
Unit 5, Level 1, 243 Northbourne Avenue
Braddon ACT 2602

Dear s22

Block 3 Section 65 Campbell – Academy Close - Amendment to the landscaping plan

I refer to the works approval application, drawings and supporting information on the above works submitted to the National Capital Authority (NCA) for consideration on 03 August 2022. I also refer to further information submitted on 4, 7 and 26 October 2022.

The NCA advises that:

> Works Approval is granted pursuant to Section 12(1)(b) of the *Australian Capital Territory (Planning and Land Management) Act 1988* for the amendment to the landscaping plan located at Academy Close, Campbell as shown on Drawing Nos. 3715-F201 J, 3715-F202 H and as outlined in the supporting documentation submitted.
>
> The term "works" is defined in the Act to exclude anything done inside buildings or structures. Under the Act works approval may be given where the works are in accordance with the National Capital Plan. This works approval is given only on the basis of satisfaction that the works are in accordance with the National Capital Plan and does not constitute building approval. It does not constitute any form of warranty as to the structural sufficiency of the proposed works, as to safety of the works or as to safety of the performance of the works. It is the responsibility of the applicant to ensure the safety of the works and the safety of the performance of the works and to ensure that any approvals required under separate legislation are also obtained.

The approved plans are available for download from your Works Approval eLodgement account. Should you have any query or need further advice on the matter please contact Caroline Carrick on (02) 6271 2814 and please quote the application number above.

Yours sincerely

s22 [redacted]

DELEGATE OF THE NATIONAL CAPITAL AUTHORITY
27 October 2022

NORTHROP

22 April 2022

CR172699
CR172699_XC01V5

s22
Icon Water
GPO Box 366
Canberra ACT 2601

Dear s22

Re: Academy Close Permanent Crossing at the Icon Water 1050 dia Bulk Main

Pursuant to Regulation 295(1) of the Work Health and Safety Regulations 2011, so far as we are reasonably aware and based on the designs for which we have been commissioned (those presented on design drawings listed in Table 1), we note in Table 2 the hazards/ risks relating to the permanent crossings at the Icon Water 1050 dia Bulk Main design elements that:

- Create a risk to the health or safety of persons who are to carry out any construction work on the structure or part.
- Are associated only with the particular design and not with other designs of the same type of structure or part.
- Are considered to be unusual or atypical.

Table 1: Design drawings to which this SID report relates

Job No.	Drawing No.	Drawing Name	Revision
CR172699	C176	Civil Works Existing 1050mm Water Main Long Section CH 00.000 – CH263.093	D
CR172699	C179	Civil Works Proposed Ø150mm Water Tie Long Section	3
CR172699	C240	Civil Works Permanent Water Main Protection Site Plan	C
CR172699	C241	Civil Works Water Main Protection	C
CR172699	ES01	Civil Works External Services Plan	6
CR172699	ES02	Civil Works External Services Plan with Proposed Planting	6
CR172699	ES03	Civil Works External Services Plan Water Meter Detail	6
CR172699	S001	Cover Sheet and Drawing Index	3
CR172699	S002	Structural Works - General Notes Sheet 1	2
CR172699	S003	Structural Works - General Notes Sheet 2	3
CR172699	S005	Structural Works - Southern Watermain Protection Bridge Plans & Details	3

Job No.	Drawing No.	Drawing Name	Revision
CR172699	S006	Structural Works - Northrop Watermain Protection Bridge Plans & Details	3

Table 2: Unusual or Atypical Hazard/Risk and Proposed Control

No.	Unusual or Atypical Hazard/Risk Description	Proposed Control
1.	Construction within pipe envelope of Icon Water 1050 Bulk Watermain.	a. Concrete works (piles, capping beam, planks) to be designed and certified by a structural engineer in accordance with AS1170 (Loading Code), AS3600 (Concrete Code) and AS5100 (Bridge Code), including recommended bridge loadings for W80, A160 etc. b. Degradable void former to provide gap suitable to cater for deflection due to design loads under the planks (eg 50mm) so as not to load the soil on top of the pipe. c. Plank extent to cover the zone of influence of the pipe and trench d. Works to be completed in line with the latest edition of Academy Close Re-development Campbell A.C.T. Construction Management Plan for Working Near Existing Icon Water 1050 Bulk Water Supply Main. e. Works to be approved by Icon Water prior to commencement of construction. f. Works to be supervised by Icon Water as required. g. Pipe outside diameter to be fully located prior to commencement of construction. h. Undertake Services Search/locating prior to works i. Geotechnical engineer to inspect works prior to pouring piles, to confirm bearing pressures adopted in the design are acceptable. j. Structural engineer to inspect reinforcement works prior to pouring concrete k. Concrete test results to be provided by contractor l. Precast plank certification to be provided by contractor
2.	Maintenance of pipe under the crossing	a. Visual inspection requirements for the cast in 2 x 5T stainless steel lifters in the bridge planks b. Agreed lifting controls for temporary removal of precast concrete bridge planks including Temporary Traffic Control arrangements, suitability of lifting equipment, temporary storage of precast concrete bridge planks and safe lifting arrangements for reinstallation of bridge planks. c. Structural engineer to provide design certification that the piles are sufficient to remain standing during excavation of the trench.

		d. Contractor to provide certification that the piles have been installed as per the certified design
3.	Demolition of structure.	a. Works to be complete in line with the latest edition of Academy Close Re-development Campbell A.C.T. Construction Management Plan for Working Near Existing Icon Water 1050 Bulk Water Supply Main. b. Works to be approved by Icon Water prior to commencement of demolition. c. Works to be supervised by Icon Water as required. d. Demolition contractor to make suitable assessment of whether the proposed demolition methodology a the time is appropriate prior to commencing demolition. e. Experienced contractors to be used for demolition process. f. Undertake Services Search/locating prior to works. g. Obtain WAE for permanent bridge installation.

The method of construction and the maintenance of safety during construction is the responsibility of the contractor.

If any element under our Civil design presents an unmanageable risk in respect to safety, the matter shall be referred to Northrop Consulting Engineers through the appropriate channels for resolution before proceeding with the work.

This report is prepared solely for the purposes of the person conducting the business or undertaking who commissioned the design (under Regulation 295(1)) and is not prepared for the benefit of any other party or for any other purpose.

Yours sincerely,

s22 [redacted]

This certificate is provided to you for your sole benefit and only for the purpose of the Academy Close Permanent Crossing at the Icon Water 1050 dia Bulk Main project. You may not provide this certificate to any third party without our prior written consent. A third party may not rely on this certificate unless otherwise agreed in writing by us, or required by law. To the extent permitted by law, we disclaim and exclude all liability for any loss, damage, cost or expense suffered by any third party relating to or resulting from the unauthorised use of, or reliance on, any information contained in this certificate.

CIVIL WORKS LOCATION:	DEFENCE HOUSING AUSTRALIA BLOCK 3, SECTION 65 CAMPBELL, A.C.T
TOTAL WORKS AREA: APPROX. 2241$4m^2$	
HOURS OF OPERATION: MONDAY–SATURDAY, BETWEEN 7A.M–6P.M	
CONTACT DETAILS	

COMPANY:	SITE MANAGER:	PROJECT MANAGER:
Name: TBC Ph: TBC	Name: TBC Ph: TBC	Name: TBC Ph: TBC

NOTE
REFER C010A FOR SEDIMENT AND EROSION CONTROL DETAILS

NOTES

GENERAL:

- THE CONTRACTOR MUST ENTER INTO AN ENVIRONMENT PROTECTION AGREEMENT WITH THE EPA
- ENSURE THAT ALL ENVIRONMENT PROTECTION WORKS ARE IN PLACE BEFORE COMMENCING CONSTRUCTION ON THE SITE.
- LIAISE AS NECESSARY WITH THE EPA AND OBTAIN AGREEMENT TO THE ADEQUACY OF THE PROTECTION WORKS.
- KEEP A COPY OF THE EPA SIGNED EROSION AND SEDIMENT CONTROL PLAN ON SITE AT ALL TIMES. DISPLAY IN A PROMINENT LOCATION.
- LOCATE ALL PROTECTION WORKS WHOLLY WITHIN THE SITE UNLESS OTHERWISE PRE-APPROVED.
- CONSTRUCT AND MAINTAIN PROTECTION WORKS IN ACCORDANCE WITH THE "ENVIRONMENT PROTECTION GUIDELINES FOR CONSTRUCTION AND LAND DEVELOPMENT IN THE ACT" (2011) AND THE NSW BLUE BOOK AS APPROPRIATE.
- ASSIGN A DESIGNATED PARKING AREA. ALL WORKERS VEHICLES ARE TO BE PARKED IN LEGAL PARKING ZONES, WHERE POSSIBLE VEHICLES TO BE PARKED WITHIN THE BLOCK.
- MINIMISE DISTURBANCE OF THE EXISTING SURFACE AND VEGETATION.

SPOIL MANAGEMENT:

- DESIGNATE AN AREA ON SITE FOR CONCRETE TRUCK WASH-DOWNS.
- BRICK CUTTING TO OCCUR ON SITE WITHIN THE MATERIALS AND WASTE STORAGE AREA.
- SPOIL TO BE DISPOSED OF APPROPRIATELY TO AN APPROVED LOCATION OFF SITE.

NOISE:

- ENSURE ALL CONSTRUCTION WORK THAT GENERATES NOISE TAKES PLACE ONLY WITHIN THE PRE-APPROVED OPERATING HOURS FOR THE PROJECT: MONDAY TO SATURDAY, BETWEEN 7A.M AND 6P.M.

SEDIMENT CONTROLS AND STORMWATER:

- MAINTAIN STRICT SITE ACCESS CONTROL WITH A STABILISED ACCESS POINT THAT ALL VEHICLES MUST USE.
- AT THE END OF EACH DAY OR WHEN DIRT OCCURS OR PRIOR TO ANY RAIN EVENT, REMOVE ANY SEDIMENT FROM PUBLIC ROADS ADJACENT TO THE WORK AREA. DO NOT WASH INTO THE STORMWATER SYSTEM.
- MAINTAIN AS MUCH VEGETATIVE COVER AS PRACTICAL PARTICULARLY BESIDE MAIN DRAINAGE LINES. FENCE OFF BUFFER AREAS TO PREVENT DISTURBANCE
- PROTECT ALL CUT AND FILL BATTERS FROM RUN-OFF AND STABILISE IMMEDIATELY AFTER CONSTRUCTION.
- USE CONTOUR PLOUGHING AND/OR SURFACE ROUGHENING OF FINISHED LANDFORM TO SLOW WATER FLOW DURING RAIN EVENTS.
- INSTALL SILT FENCES ON THE LOW SIDE OF ANY STOCKPILE
- INSTALL PERMANENT DRAINAGE FACILITIES AT AN EARLY STAGE.
- FILTER SOCKS TO BE INSTALLED AT ALL OPEN PITS AND KERB SIDE SUMPS PROGRESSIVELY AS CONSTRUCTION PROCEEDS
- PROVIDE PROTECTION TO NEW DRAINAGE INLETS IMMEDIATELY ON CONNECTION TO THE DRAINAGE SYSTEM
- ESTABLISH ALTERNATIVE STABLE DRAINAGE SYSTEMS THROUGH THE SITE WHILE PERMANENT FACILITIES ARE BEING INSTALLED.
- USE DIVERSION STRUCTURES TO CONVEY RUN-OFF TO A STABLE DISPOSAL AREA.
- STABILISE AND GRASS ALL DIVERSION SWALES AND DRAINS. WHERE MAJOR TEMPORARY DRAINAGE PATHS ARE CREATED CONSTRUCT HAY BALE WEIRS (WRAPPED IN BIDDUM) ACROSS THE ENTIRE FLOW PATH AND AT 25M INTERVALS.
- STABILISE AND GRASS ALL DIVERSION SWALES AND DRAINS.
- INSTALL SEDIMENT TRAPS AT DRAINAGE INLETS AND OTHER POINTS OF DISCHARGE FROM AREAS OF DISTURBANCE.
- UNDERTAKE VEGETATIVE STABLISATION MEASURES IMMEDIATELY AFTER COMPLETION OF FINAL LAND FORMING.
- PLACE HAY BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE HAY TO FILL ANY GAPS BETWEEN BALES, - ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
- EMBED EACH BALE IN THE GROUND 75mm-100mm AND ANCHOR WITH TWO 1.2M STAR PICKETS OR STAKES. ANGLE FIRST STAR PICKET/STAKE IN EACH BALE TOWARDS PREVIOUSLY LAID BALE. DRIVE 600mm INTO THE GROUND AND. WHERE STAR PICKETS PROTRUDE ABOVE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.

INSPECTIONS AND MAINTENANCE SCHEDULE:

(RECORD MAINTENANCE ACTIVITIES AND DETAILS TO PROVIDE TO EPA.)

DAILY:

- CHUTES, BARRELS, WHEELBARROWS AND OTHER EQUIPMENT TO BE RINSED IN THE SITE WASH-DOWN AREA.
- REMOVE ANY SEDIMENT FROM PUBLIC ROADS ADJACENT TO THE WORK AREA. DO NOT WASH INTO THE STORMWATER SYSTEM.
- SUPPRESS DUST BY REGULAR SPRAYING OF WATER AND COVERING AND SECURING VEHICLE LOADS ENTERING/EXITING SITE.
- MAINTAIN AND INSPECT POLLUTION CONTROL MEASURES DURING CONSTRUCTION AND UNTIL FULL STABILISATION. REPAIR AND REINSTATE WORKS AS NEEDED.

MONTHLY:

- MAINTAIN AND INSPECT STABILISED SITE ACCESS POINTS.
- MAINTAIN AND INSPECT HAY BALES, REPLACE AS REQUIRED IF DEGRADED OR DAMAGED.

AIR QUALITY:

SUPPRESS DUST BY THE INCLUDING FOLLOWING METHODS WHERE APPLICABLE:

a. STAGE WORKS TO LIMIT THE EXTENT OF EXPOSED AND UNPROTECTED AREAS.
b. REGULAR SPRAYING OF WATER
c. COVER AND SECURE VEHICLE LOADS ENTERING/EXITING SITE
d. USE AN ENVIRONMENTALLY FRIENDLY CHEMICAL SPRAY TO BIND SOIL TOGETHER THUS STABILISING UNUSED SOIL
e. RESTRICT SPEED OF VEHICLES ONSITE
f. COVER STOCKPILES TO PROTECT FROM THE WIND

- IMPLEMENT MEASURES TO LIMIT AIR POLLUTION BY VEHICLES AND PLANT WORKING ON OR PASSING THROUGH THE SITE.
- MAINTAIN POLLUTION CONTROL MEASURES DURING CONSTRUCTION AND UNTIL FULL STABILISATION. ROUTINELY INSPECT EACH WEEK AND AFTER SIGNIFICANT RAINFALL EVENTS. REPAIR AND REINSTATE WORKS AS NEEDED TO MAINTAIN PROTECTION. RECORD MAINTENANCE ACTIVITIES AND DETAILS AND PROVIDE TO EPA FOR INSPECTION WHEN REQUESTED.

FIRE:

- BURNING OF WASTE MATERIALS MUST NOT BE UNDERTAKEN.
- FIRE MAY BE PERMITTED FOR GENERAL HEATING PURPOSES IF IN A BRAZIER OR CONSTRUCTED FIREPLACE, USING SEASONED, UNTREATED TIMBER.

TREE PROTECTION

GENERAL

- INSTALL ALL PROTECTIVE MEASURES PRIOR TO COMMENCING CONSTRUCTION WORKS. ADVISE TRANSPORT CANBERRA AND CITY SERVICES (AA) IN WRITING THAT THE PROTECTIVE MEASURES HAVE BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED LMPP.
- ALL VERGE VEGETATION INCLUDING GRASS SHALL BE PROTECTED AND RETAINED UND ON THE DRAWINGS. ROUTINELY WATER TO RETAIN VEGETATION IN GOOD CONDITION.
- A SUITABLY QUALIFIED LANDSCAPE ARCHITECT OR HORTICULTURIST SHALL BE ENGAGED BY THE CONTRACTOR TO OVERSEE ALL MAJOR WORK IN THE VERGE.
- CONSTRUCTION MATERIAL SHALL NOT BE STORED ON VERGES OR PUBLIC OPEN SPACES.
- CAR PARKING OR EQUIPMENT PARKING SHALL NOT BE PERMITTED ON VERGES OR ADJACENT PARKLAND.
- SITE SHEDS, STORAGE SHEDS, SITE AMENITIES OR BILLBOARDS SHALL NOT BE ERECTED ON VERGES OR PUBLIC OPEN SPACES WITHOUT THE PRIOR WRITTEN APPROVAL OF THE MANAGER, TCCS, FOR THE USE OF VERGES, PUBLIC OPEN SPACES OR UNLEASED TERRITORY LAND.

PROTECTIVE FENCING

- ALL TEMPORARY PROTECTIVE FENCES SHALL BE IN ACCORDANCE WITH THE APPROVED LMPP.
- FENCE OFF TREES, PLANTINGS AND GRASS MARKED FOR RETENTION TO ENCLOSE THE STREET VERGE, PUBLIC OPEN SPACE OR UNLEASED TERRITORY LAND AREA.
- THE STANDARD LOCATIONS FOR FENCING SHALL BE:
- FOR EACH TREE ALONG ITS DRIP-LINE 1.2m OFFSET TO THE BACK OF THE KERB FOR THE FULL FRONTAGE OF THE LEASE, ALONG THE PROPERTY BOUNDARY AND ALONG APPROVED DRIVEWAY ACCESS TO ENSURE THAT THE VERGE IS COMPLETELY ENCLOSED.
- FENCING SHALL BE ERECTED BEFORE THE COMMENCEMENT OF ANY SITE WORKS, SHALL BE REMAIN IN PLACE THROUGHOUT THE WORKS AND REMOVED PRIOR TO RESTORATION OF THE VERGE.
- USE TEMPORARY 1800mm CONTINUOUS MESH FENCE SUPPORTED BY STEEL POSTS WITH CONCRETE BASES UNLESS OTHERWISE APPROVED IN WRITING BY TCCS.
- MAINTAIN ALL EXISTING FOOTPATHS AND PROVIDE SAFE PEDESTRIAN MOVEMENT AT ALL TIMES.
- WHERE A CONSTRUCTED FOOTPATH/CYCLEWAY EXISTS IN THE VERGE, OFFSET FENCING 600mm EACH SIDE.
- IF THERE IS NO CONSTRUCTED FOOTPATH/CYCLEWAY PROVIDE A FENCED CLEARWAY 1800mm WIDE FOR PEDESTRIAN ACCESS ALONG THE ENTIRE FRONTAGE.
- FENCING SHALL NOT BE REMOVED FOR THE SERVICE INSTALLATION UNLESS OTHERWISE APPROVED IN WRITING FROM TCCS. ENSURE ALL TREES ARE ADEQUATELY PROTECTED BEFORE COMMENCING TRENCHING. ON COMPLETION RETURN THE FENCE TO ORIGINAL ALIGNMENT.

SERVICES AND UTILITIES

- SERVICES AND UTILITIES SHALL BE LAID ONLY IN THE LOCATIONS SHOWN ON THE DRAWINGS. TRENCHING ACROSS THE VERGE SHALL BE UNDERTAKEN ONLY WHERE SHOWN ON THE DRAWINGS.
- UNLESS OTHERWISE SHOWN ON THE DRAWINGS NO TRENCHING SHALL BE CARRIED OUT WITHIN THE DRIP LINE OF ANY TREE.
- THE NUMBER OF VERGE CROSSINGS SHALL BE MINIMISED. WHERE PRACTICAL AND PERMITTED SHARED TRENCHING SHALL BE ADOPTED.
- TRENCHES SHALL BE LOCATED MIDWAY BETWEEN TREES.

SITE ACCESS

- SITE ACCESS SHALL ONLY BE VIA THE ACCESS POINTS SHOWN ON THE DRAWINGS.
- PRIOR WRITTEN APPROVAL FOR ALTERNATIVE OR ADDITIONAL ACCESS POINTS SHALL BE OBTAINED THROUGH TCCS.
- NEW ACCESS POINTS SHALL BE LOCATED MIDWAY BETWEEN EXISTING TREES WHERE SPACE IS ADEQUATE. DO NOT LOCATE ANY ACCESS WITHIN THE DRIP LINE OF ANY TREE.

WORKING NEAR TREES

- ALL TREES LOCATED IN THE ROAD RESERVE, PUBLIC OPEN SPACE AND UNLEASED TERRITORY LAND SHALL BE PROTECTED FROM DISTURBANCE, DAMAGE OR DESTRUCTION. PRIOR WRITTEN AUTHORISATION FROM TCCS IS REQUIRED FOR ANY DISTURBANCE, DAMAGE OR DESTRUCTION OF ANY TREE OR LANDSCAPE ASSET.
- EXISTING CANOPY CLEARANCES SHALL NOT BE ALTERED. CROWNS AND APEX OF CANOPIES SHALL NOT BE ALTERED OR REDUCED.
- ENSURE LIFTING EQUIPMENT AND LOAD CAN CLEAR HEIGHT AND WIDTH OF TREE CANOPY WITHOUT DAMAGE TO CROWN. ENSURE CONSTRUCTION EQUIPMENT CAN PASS BENEATH LOWEST LIMB.
- DO NOT EXCAVATE OR OTHERWISE DISTURB THE SURFACE LAYER WITHIN THE DRIP-LINE OF ANY TREE WITHOUT THE PRIOR WRITTEN APPROVAL OF TCCS.
- DO NOT SEVER ROOTS >30MM DIAMETER CLOSER THAN HALFWAY FROM THE DRIP-LINE TO THE TRUNK.
- HAND EXCAVATE TO A DEPTH OF 300MM TO LOCATE ROOTS BEFORE COMMENCING MACHINE EXCAVATION.
- CUT ROOTS CLEANLY WITH EQUIPMENT SPECIFICALLY DESIGNED FOR PRUNING ROOTS.
- PROTECT ANY EXPOSED ROOTS FROM DESICCATION. KEEP LIGHTLY WATERED OR COVER WITH MOIST HESSIAN. AFTER REPLACEMENT OF TOPSOIL REGULARLY WATER TREES UNTIL REESTABLISHED.

CONDITION AND RESTORATION

- PRIOR TO COMMENCEMENT NOTIFY TCCS OF COMMENCEMENT OF WORK AND UNDERTAKE A JOINT CONDITION SURVEY.
- AT THE COMPLETION OF WORK ENSURE THAT THE CONDITION OF ALL VEGETATION IS CONSISTENT WITH THE INITIAL CONDITION SURVEY.
- PROVIDE CONTINUOUS CARE AND MAINTENANCE BY HORTICULTURAL PRACTICES OF SOFT LANDSCAPE ASSETS ON ROAD RESERVES, STREET VERGES, PUBLIC OPEN SPACE AND UNLEASED TERRITORY LAND ADJACENT TO THE DEVELOPMENT FOR THE DURATION OF THE WORKS (INCLUDING RESTORATION WORKS)
- GRASS AREAS SHALL HAVE A HEALTHY AND VIGOROUS GRASS SWARD APPROPRIATE TO THE AREA. IF THE STANDARD OF GRASS COVER IS TO BE IMPROVED, THE FOLLOWING REQUIREMENTS APPLY:-
  a. LIGHTLY CULTIVATE THE SOIL TO 25-50mm DEPTH (50mm MAXIMUM TO MINIMISE DAMAGE TO TREE ROOTS). CULTIVATE ONLY IN ONE DIRECTION. AVOID MAJOR TREE ROOTS AND KEEP A MINIMUM OF ONE METER (1.0m) AWAY FROM TREE TRUNKS.
  b. ADD TYPE 'B' TOPSOIL AT 25-50mm DEPTH. LEVEL THE TOPSOIL AND ADD NPK FERTILISER (EQUIVALENT TO MULTIGRO) AT 40g/m^2.
  c. LAY TURF OR SOW SEED OF SUITABLE DROUGHT TOLERANT SPECIES AS SPECIFIED IN THE ACT GOVERNMENT 'SPECIFICATION FOR URBAN INFRASTRUCTURE WORKS' (ISSUE 1, REVISION 0, 2002). KEEP MOIST DURING ESTABLISHMENT.
- PLANT DAMAGE: DAMAGE TO TREES OR OTHER PLANTINGS TO BE RECTIFIED BY REPLACEMENT OR REHABILITATION AT CONTRACTORS EXPENSE AND TO THE SATISFACTION OF THE TCCS SPECIFICATION.

LEGEND

- EXISTING CONTOUR
- 1.8m HIGH STEEL MESH TEMPORARY SITE FENCE
- TEMPORARY SEDIMENT CONTROL FENCE
- OVERLAND FLOW DIRECTION
- STABILISED ACCESS
- SITE ACCESS
- EXISTING STORMWATER PIT WITH DROP INLET SEDIMENT TRAP
- PROPOSED LOCATION OF FILTER SOCKS
- EXISTING TREES TO BE RETAINED. REFER LANDSCAPE MANAGEMENT PLAN FOR TREE REMOVAL
- SWALE

NOT FOR CONSTRUCTION

DRAWN: B.CASTLE DESIGNED: K.PHANVANKHANH JOB MANAGER: D.FIELD VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
7	WORKS APPROVAL	RC		DF	11.04.19
8	WORKS APPROVAL	RC		DF	17.04.19
9	DRAFT WORKS APPROVAL	JC		DF	30.04.20
10	WORKS APPROVAL	JC		DF	14.05.20
11	TCCS DESIGN REVIEW	TE		DF	25.09.20
12	FOR INFORMATION	BC		NG	10.02.23

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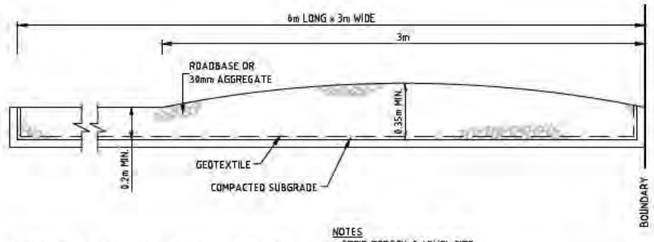
PROJECT: DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS
CONCEPT EROSION, SEDIMENT AND POLLUTION CONTROL PLAN

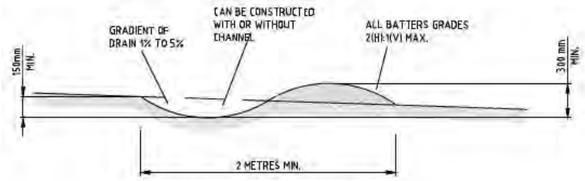
JOB NUMBER: CR172699
DRAWING NUMBER: C010
REVISION: 12
DRAWING SHEET SIZE = A1



GEOTEXTILE FABRIC DESIGNED TO PREVENT INTERMIXING OF SUBGRADE & BASE MATERIALS & TO MAINTAIN GOOD PROPERTIES OF THE SUB-BASE LAYERS. GEOTEXTILE MAY BE WOVEN OR NEEDLE PUNCHED PRODUCT WITH A MINIMUM CBR BURST STRENGTH (AS3706.4-90) OF 2500N.

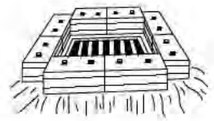
NOTES
- STRIP TOPSOIL & LEVEL SITE.
- COMPACT SUB-GRADE.
- COVER AREA WITH NEEDLE PUNCHED GEOTEXTILE.
- CONSTRUCT GRAVEL PAD OVER GEOTEXTILE USING ROADBASE OR 30mm AGGREGATE. MINIMUM 3m WIDE.
- CONSTRUCT HUMP IMMEDIATELY WITHIN BOUNDARY TO DIVERT WATER TO A SEDIMENT FENCE OR TRAP

STABILISED SITE ACCESS DETAIL



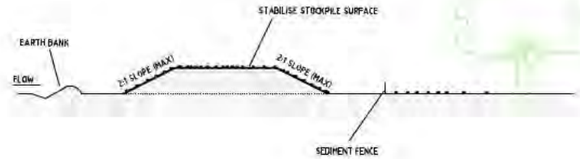
EARTH BANK (LOW FLOW)

NOTES
1. BUILD WITH GRADIENTS BETWEEN 1 PERCENT AND 5 PERCENT.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.



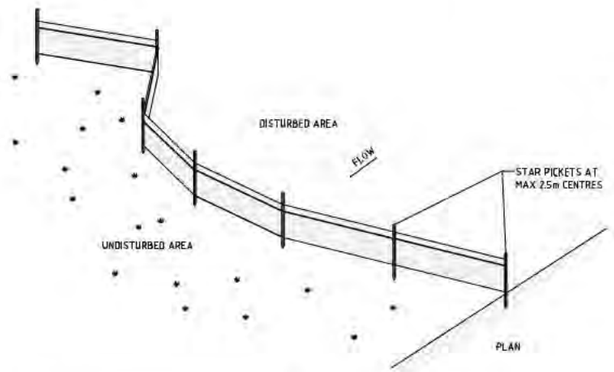
DROP INLET SEDIMENT TRAP

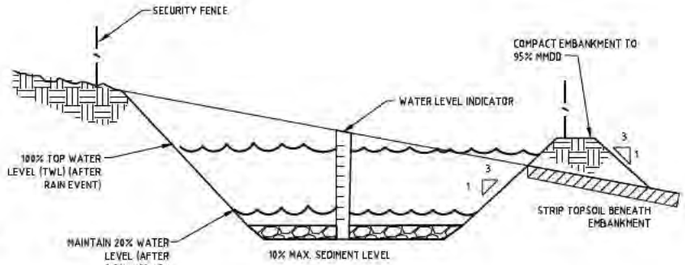
NOTES
1. ALL BALES EMBEDDED TO A DEPTH OF 100mm TO 200mm
2. BALES ARE TO BE STAKED WITH STAKES 50mm SQUARE AND 900mm IN LENGTH



STOCKPILES

NOTES
1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-4) 1m TO 2m DOWN SLOPE.





SECTION A
N.T.S.

SEDIMENT POND NOTES:

THE STANDARDS AND SPECIFICATIONS OF THE POND INCLUDING BASIN, OUTLET, SPILLWAYS AND EMBANKMENT ARE TO BE IN ACCORDANCE WITH THE BLUE BOOK. INSTALL A WATER LEVEL INDICATOR IDENTIFYING 'SEDIMENT AT 10% CAPACITY' AND 'WATER AT 20%'.

STABILISATION

STABILISE THE EMBANKMENT AND EMERGENCY SPILLWAY IN ACCORDANCE WITH THE APPROPRIATE VEGETATIVE STANDARDS AND SPECIFICATIONS IMMEDIATELY FOLLOWING CONSTRUCTION (I.E. GRASSEDm JUTE MES, MULCH AND BITUMEN SPRAY). IN NO CASE SHALL THE EMBANKMENT REMAIN UNSTABILISED FOR MORE THAN 7 DAYS AFTER COMPLETION. POINTS OF ENTRANCE OF SURFACE RUN-OFF INTO EXCAVATED SEDIMENT CONTROL PONDS SHALL BE PROTECTED TO PREVENT EROSION.

LENGTH TO WIDTH RATIO SHOULD BE GREATER THAN 2:1, WHERE LENGTH IS THE DISTANCE BETWEEN THE INLET AND OUTLET. A WEDGE SHAPE IS PREFERRED WITH THE INLET LOCATED AT THE NARROW END. HOWEVER, IT IS ACCEPTED THAT IT WILL NEED TO BE FITTED INTO THE AVAILABLE LAND.

SAFETY:

CARE SHALL BE TAKEN TO KEEP BASIN SLOPES BELOW WATER LEVEL TO 1 IN 4, OTHERWISE SECURITY FENCING IS REQUIRED

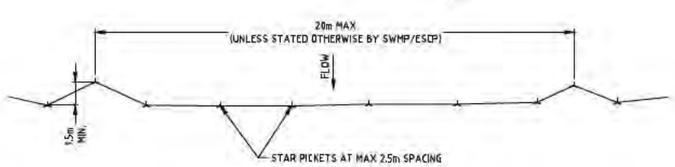
DE-WATERING

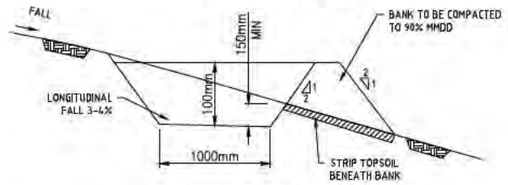
MANAGE WATER SO DOSING AND DISCHARGE CAN BE ACHIEVED IN A TIMELY MANNER BEFORE THE NEXT RAIN EVENT. WATER SHOULD BE CHEMICALLY DOSED AND DISCHARGED WHEN IT IS ABOVE 20% OF THE POND'S FULL CAPACITY (INDICATED BY WATER LEVEL INDICATOR)

WATER SHOULD BE CHEMICALLY DOSED WITH GYPSUM TO ACCELERATE SETTLEMENT OF SUSPENDED SOLIDS. GYPSUM MAY BE MIXED EITHER IN A TANK OR TANKER OR INTO A SLURRY IN A CONCRETE MIXER AND THEN DISTRIBUTED TO SEVERAL POINTS IN THE BASIN BY A SPRAY OR SPREADING TECHNIQUE. SPRAYING OVER THE SURFACE IS PREFERRED AND IN-DAM MIXING MAY BE REQUIRED. GYPSUM DOSING RATE SHOULD BE APPLIED AT ABOUT 30KG/100M3 OF STORED WATER IN SOME INSTANCES, HIGHER RATES MAY APPLY, TYPICALLY LESS THAN 50MG/LITRE. IF DOSING WITH ALUM, ENSURE IT IS DONE IN ACCORDANCE WITH BLUE BOOK.

DISCHARGE PERMISSIBLE WHEN THE WATER PH IS 6.5-8.5 AND IS CLARIFIED TO AT OR BELOW 60MG/L (50NTU) FOR URBAN ENVIRONMENTS. CLARIFICATION WOULD GENERALLY BE ACHIEVED WITHIN A PERIOD OF 24-36 HOURS.

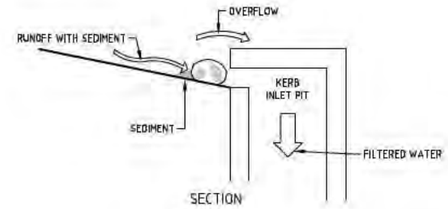
DEWATERING SHALL BE DONE IN SUCH A MANNER AS TO REMOVE THE RELATIVELY CLEAN WATER WITHOUT REMOVING ANY OF THE SEDIMENT THAT HAS SETTLED OUT AND WITHOUT REMOVING ANY APPRECIABLE QUANTITIES OF FLOATING DEBRIS. THE PUMP SHOULD BE MONITORED AT ALL TIME DURING PUMPING TO ENSURE SEDIMENT IS NOT BEING DISTURBED CREATING TURBID WATER. IF WATER EXCEEDS 60MG/L (50NTU) DURING DEWATERING, PUMPING MUST CEASE IMMEDIATELY AND FURTHER TREATMENT SHOULD BE CARRIED OUT BEFORE PUMPING IS RECOMMENCED. RECORDS MUST BE KEPT OF ALL MEASUREMENTS PRIOR TO, DURING AND AFTER DISCHARGE.





EARTH BANK DETAIL

NOTES
1. BUILD WITH GRADIENTS BETWEEN 1 PERCENT AND 5 PERCENT.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.



SECTION
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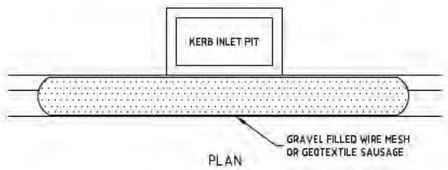
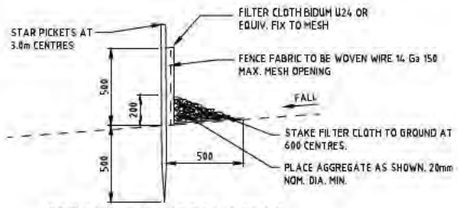


PLAN
N.T.S.

NOTES
- FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIPE.
- FILL THE SLEEVE WITH 25mm TO 50mm GRAVEL.
- PLACE THE FILTER AT THE OPENING OF THE KERB INLET LEAVING A 50mm GAP AT THE TOP TO ACT AS AN EMERGENCY SPILLWAY.
- FORM A SEAL WITH THE KERBING AND PREVENT SEDIMENT BYPASSING THE FILTER.
- FIT TO ALL KERB INLETS AT SAG POINTS.

FILTER SOCK DETAIL

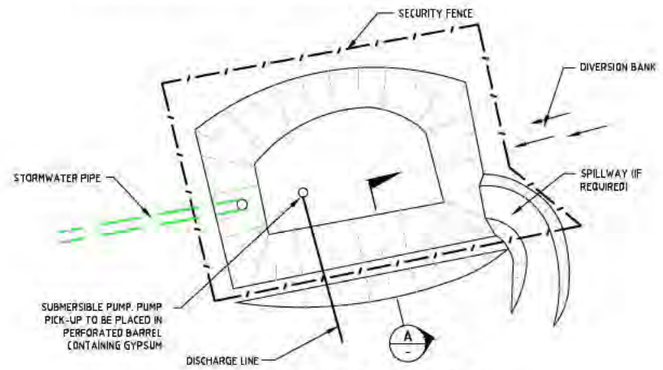
N.T.S.



SEDIMENT CONTROL FENCE

N.T.S.

SEDIMENT NOTES
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50L/sec IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO THE GROUND AT 2.5m INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH THE WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.



SEDIMENT CONTROL POND

THE SEDIMENT CONTROL POND SHOULD BE LOCATED TO OBTAIN THE MAXIMUM STORAGE BENEFIT FROM THE TERRAIN, AND FOR EASE CLEANOUT OF THE TRAPPED SEDIMENT. THE POND/S SHALL BE MONITORED AND MAINTAINED ON A DAILY BASIS THROUGHOUT CONSTRUCTION AND SHALL NOT BE REMOVED UNTIL 85% OF THE DEVELOPMENT IS COMPLETE, OR ALL THE DISTURBED AREAS ARE STABILISED

NOT FOR CONSTRUCTION

DRAWN B.CASTLE | DESIGNED K.PHANVANKHANH | JOB MANAGER D.FIELD | VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
5	FOR DISCUSSION	RC		DF	21.09.18
6	WORKS APPROVAL	RC		DF	11.04.19
7	DRAFT WORKS APPROVAL	JC		DF	30.04.20
8	DRAFT WORKS APPROVAL	JC		DF	14.05.20
10	TCCS DESIGN REVIEW	TE		DF	25.09.20
11	FOR INFORMATION	BC		NG	10.02.23

CLIENT: DHA Defence Housing Australia
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: Academy Close Canberra
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Canberra
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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: CIVIL WORKS CONCEPT EROSION, SEDIMENT AND POLLUTION CONTROL DETAILS

JOB NUMBER: CR172699
DRAWING NUMBER: C010A
REVISION: 11
DRAWING SHEET SIZE = A1

LEGEND

PROPOSED STEEL PLATE LOCATIONS. STEEL PLATES 1.2m WIDE X 2.4m LONG, 25mm THICK. (REFER TO NORTHROP CONSULTING ENGINEERS SKETCH "PIPE BRIDGING (TEMPORARY) CR172699_SK03 PAGES 1 AND 2 DATED 25/06/2021)

TEMPORARY CONTRACTOR SITE ACCESS

RL608.14 — EXISTING LEVELS

RL608.14 — PROPOSED LEVELS

EXISTING WATER PIPE
FIRE HYDRANT / SLUICE VALVE

PROPOSED WATER PIPE

PROPOSED SLUICE VALVE

PROPOSED WATER METER CABINET

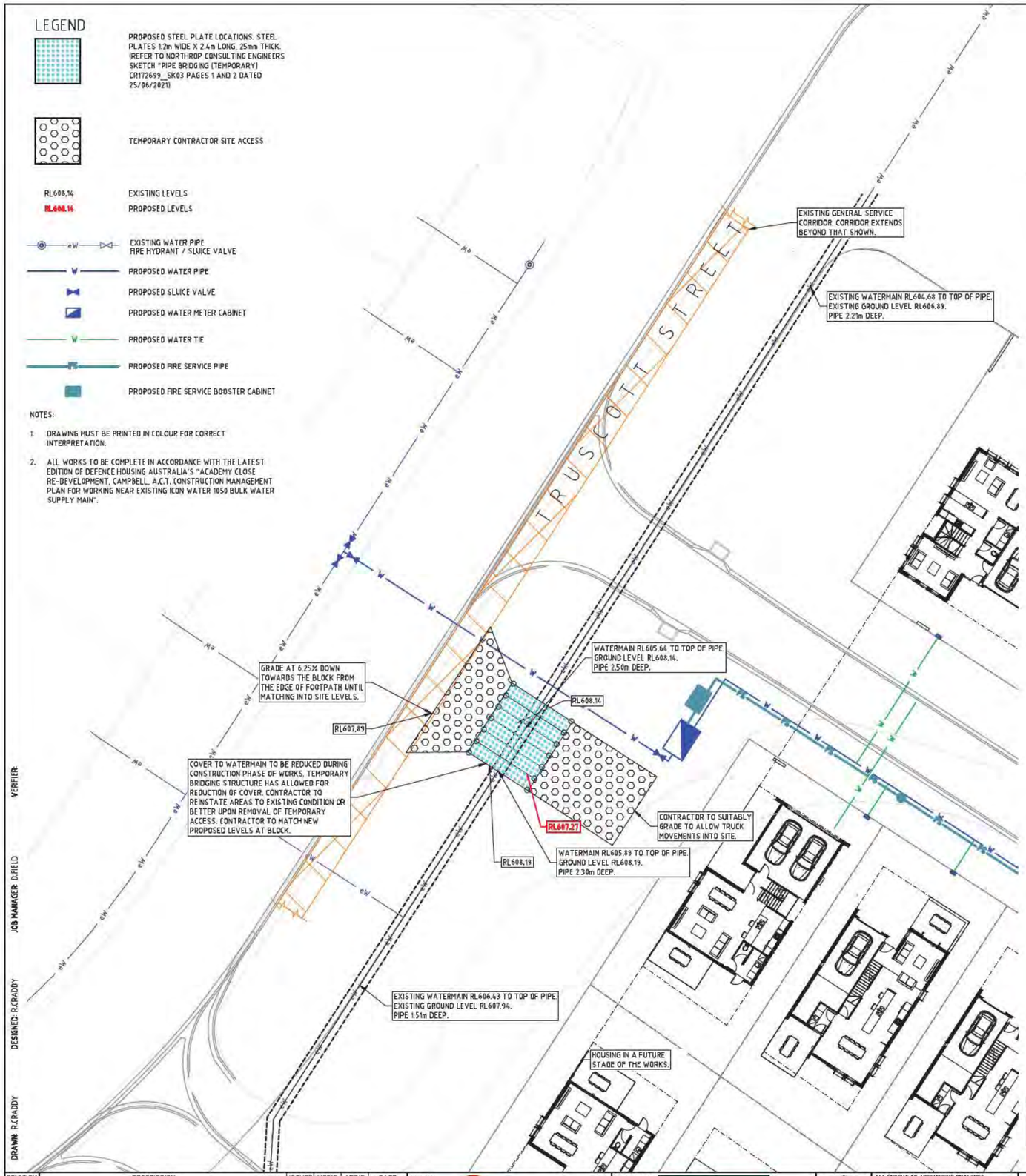
PROPOSED WATER TIE

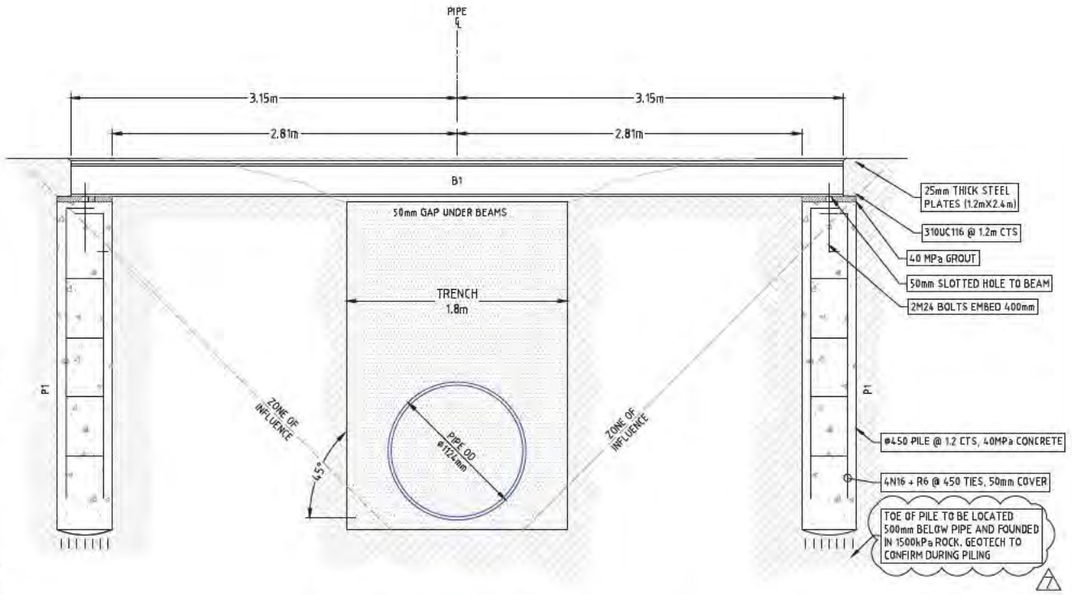
PROPOSED FIRE SERVICE PIPE

PROPOSED FIRE SERVICE BOOSTER CABINET

NOTES:

1. DRAWING MUST BE PRINTED IN COLOUR FOR CORRECT INTERPRETATION.
2. ALL WORKS TO BE COMPLETE IN ACCORDANCE WITH THE LATEST EDITION OF DEFENCE HOUSING AUSTRALIA'S "ACADEMY CLOSE RE-DEVELOPMENT, CAMPBELL, A.C.T. CONSTRUCTION MANAGEMENT PLAN FOR WORKING NEAR EXISTING ICON WATER 1050 BULK WATER SUPPLY MAIN".





ENTRY CROSS SECTION DURING CONSTRUCTION WORKS (A / SK04)
NTS

WORK AS EXECUTED DRAWINGS REQUIRED

icon WATER

Work As Executed Drawings must be submitted to Icon Water and accepted prior to the works being approved for connection.

A Provisional Certificate of Operation will be issued on request

INSPECTION REQUIRED

icon WATER

Icon Water inspection of new work is required before connection to main. Ensure notification of commencement is submitted.

Contact 02 6248 3111 before commencing work.

DESIGN ACCEPTANCE

icon WATER

- This design has been assessed against Icon Water's *Water Supply and Sewerage Standards*.
- Icon Water confirms it accepts the design for the purpose of commencing construction of Icon Water hydraulic assets only.
- This acceptance is subject to any conditions set out in Icon Water's *Certificate of Design Acceptance*. Construction must be in accordance with this drawing and the *Water Supply and Sewerage Standards*.
- This design must be resubmitted to Icon Water for reassessment if there are any changes to relevant information, including site conditions.
- This acceptance is not approval for connection purposes - a separate application for a Connection Certificate is required once construction is complete.
- The proposed development may require payment of a charge under the *Water and Sewerage* be notified separately.

s22 [redacted] 5/09/2021 F2018-007900

Hydraulic Asset Acceptance Officer — Date — File #

NOTES

1. EARTHWORKS TO ALLOW GROUND BELOW TEMPORARY STRUCTURE IS FREE DRAINING (MINIMUM 1% SLOPE).
2. PIERS TO BE CONSTRUCTED WITH AN AUGER ON AN EXCAVATOR.
3. DRAWING MUST BE PRINTED IN COLOUR FOR CORRECT INTERPRETATION.
4. ALL WORKS TO BE COMPLETE IN ACCORDANCE WITH THE LATEST EDITION OF DEFENCE HOUSING AUSTRALIA'S "ACADEMY CLOSE RE-DEVELOPMENT, CAMPBELL, A.C.T. CONSTRUCTION MANAGEMENT PLAN FOR WORKING NEAR EXISTING ICON WATER 1050 BULK WATER SUPPLY MAIN".
5. PIPE OD AS SPECIFIED BY ICON WATER 09/12/2020 BY EMAIL CORRESPONDENCE.

SPECIFIC INSTALLATION REQUIREMENTS

THE FOLLOWING SPECIFIC INSTALLATION REQUIREMENTS REFER TO THE INSTALLATION AND OPERATION OF THE TEMPORARY CROSSING AS SHOWN ON THIS DRAWING.

1. THE CONTRACTOR IS TO INSTALL VIBRATION MONITORS WITH 5mm/sec THRESHOLD AND MAX 10mm/sec DURING THE PILE INSTALLATION IN LINE WITH ADVICE FROM A SUITABLE QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER. THE CONTRACTOR MUST PROVIDE ICON WATER WITH A FORMAL REPORT OUTLINING INSTALLATION OF THE VIBRATION MONITORS UPON COMPLETION OF THIS WORK.
2. THE CONTRACTOR MUST LIAISE WITH ICON WATER IN REGARDS TO THE START DATE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION OF THE TEMPORARY CROSSING, THE PILE INSTALLATION AND THE BRIDGE CONSTRUCTION. THE CONTRACTOR MUST CONTINUE TO LIAISE WITH ICON WATER AS REQUESTED BY THE AUTHORITY.
3. THE CONTRACTOR MUST LIAISE WITH ICON WATER THE TIMING FOR CONDUCTING THE FIRST WITNESSED SETTLEMENT SURVEY. THE CONTRACTOR IS TO ALLOW FOR ATTENDANCE BY ICON WATER IF REQUESTED BY THE AUTHORITY.
4. THE CONTRACTOR MUST PROVIDE WEEKLY SETTLEMENT SURVEY RESULTS TO ICON WATER FOR REVIEW.

DESIGN ACCEPTANCE FOR TEMPORARY PROTECTION MEASURES ONLY

NOT FOR CONSTRUCTION

DRAWN: R.CRADDY
DESIGNED: R.CRADDY
JOB MANAGER: D.FIELD
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
3	PRELIMINARY V3	NG		NG	16.07.21
4	PRELIMINARY V4	NG		DF	23.07.21
5	PRELIMINARY V5	NG		DF	13.08.21
6	PRELIMINARY V6	NG		DF	20.08.21
7	PRELIMINARY V7	NG		DF	24.08.21
8	PRELIMINARY V8	NG		DF	31.08.21

CLIENT: DHA Defence Housing Australia
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0 1 2 3 4 5m
PLAN
SCALE 1:100 @ A1

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Canberra
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Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: TEMPORARY SITE ENTRANCE OVER ICON WATER MAIN

JOB NUMBER: CR172699
DRAWING NUMBER: SK02
REVISION: 8
DRAWING SHEET SIZE = A1

SPECIFIC INSTALLATION REQUIREMENTS

THE FOLLOWING SPECIFIC INSTALLATION REQUIREMENTS REFER TO THE INSTALLATION AND OPERATION OF THE TEMPORARY CROSSING AS SHOWN ON THIS DRAWING.

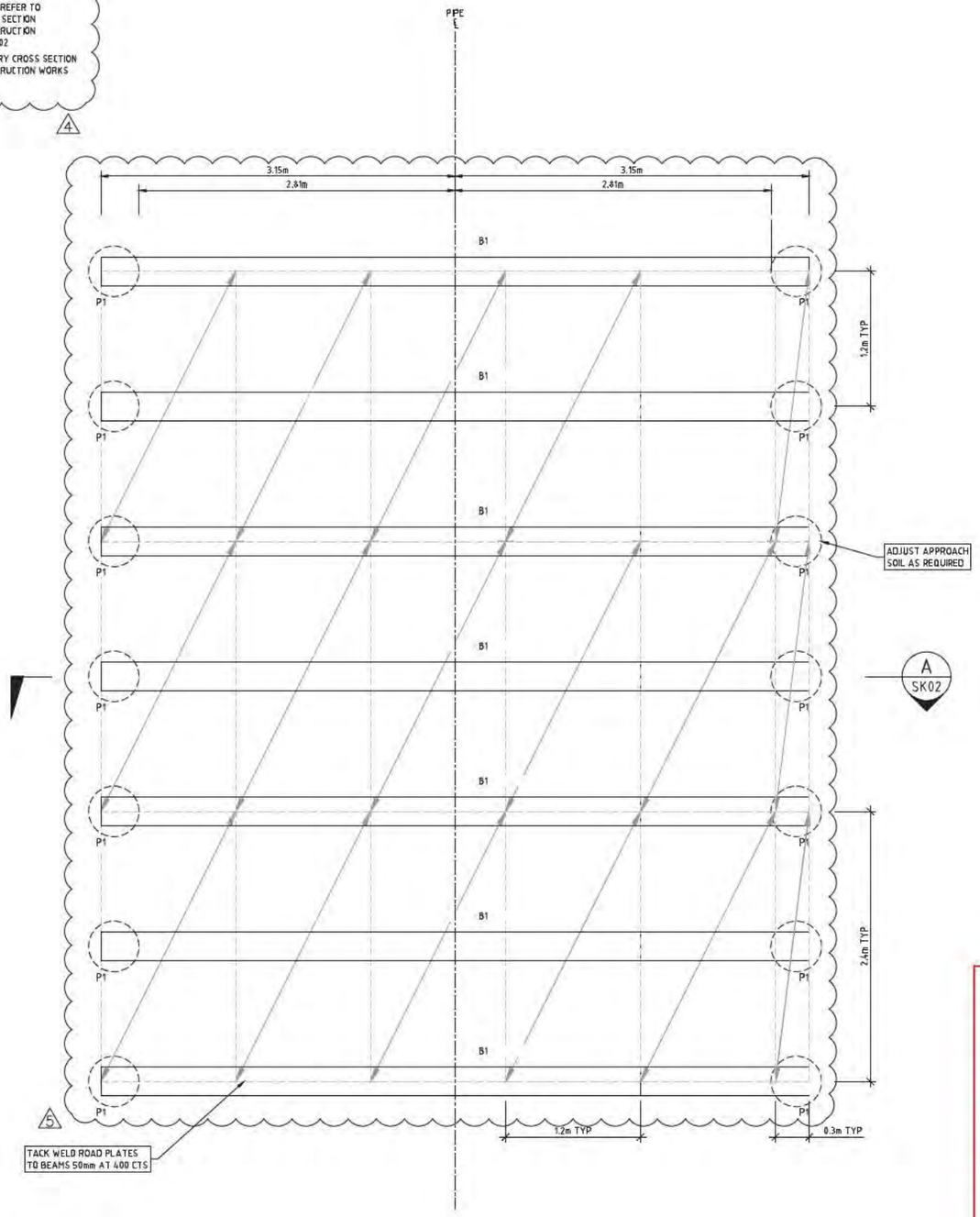
1. THE CONTRACTOR IS TO INSTALL VIBRATION MONITORS WITH 5mm/sec THRESHOLD AND MAX 10mm/sec DURING THE PILE INSTALLATION IN LINE WITH ADVICE FROM A SUITABLE QUALIFIED AND EXPERIENCED GEOTECHNICAL ENGINEER. THE CONTRACTOR MUST PROVIDE ICON WATER WITH A FORMAL REPORT OUTLINING INSTALLATION OF THE VIBRATION MONITORS UPON COMPLETION OF THIS WORK.
2. THE CONTRACTOR MUST LIAISE WITH ICON WATER IN REGARDS TO THE START DATE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION OF THE TEMPORARY CROSSING, THE PILE INSTALLATION AND THE BRIDGE CONSTRUCTION. THE CONTRACTOR MUST CONTINUE TO LIAISE WITH ICON WATER AS REQUESTED BY THE AUTHORITY.
3. THE CONTRACTOR MUST LIAISE WITH ICON WATER THE TIMING FOR CONDUCTING THE FIRST WITNESSED SETTLEMENT SURVEY. THE CONTRACTOR IS TO ALLOW FOR ATTENDANCE BY ICON WATER IF REQUESTED BY THE AUTHORITY.
4. THE CONTRACTOR MUST PROVIDE WEEKLY SETTLEMENT SURVEY RESULTS TO ICON WATER FOR REVIEW.

4

B1 – 7 OF 310UC116. REFER TO ENTRY CROSS SECTION DURING CONSTRUCTION WORKS ON SK02

P1 – REFER TO ENTRY CROSS SECTION DURING CONSTRUCTION WORKS ON SK02

4



WORK AS EXECUTED DRAWINGS REQUIRED

icon WATER

Work As Executed Drawings must be submitted to Icon Water and accepted prior to the works being approved for connection.

A Provisional Certificate of Operation will be issued on request

INSPECTION REQUIRED

icon WATER

Icon Water inspection of new work is required before connection to main. Ensure notification of commencement is submitted.

Contact 02 6248 3111 before commencing work

DESIGN ACCEPTANCE

icon WATER

- This design has been assessed against Icon Water's *Water Supply and Sewerage Standards*.
- Icon Water confirms it accepts the design for the purpose of commencing construction of Icon Water hydraulic assets only.
- This acceptance is subject to any conditions set out in Icon Water's *Certificate of Design Acceptance*. Construction must be in accordance with this drawing and the *Water Supply and Sewerage Standards*.
- This design must be resubmitted to Icon Water for reassessment if there are any changes to relevant information, including site conditions.
- This acceptance is not approval for connection purposes - a separate application for a Connection Certificate is required once construction is complete.
- The proposed development may require payment of a charge under the *Water and Sewerage* [redacted] be notified separately.

s22 [redacted]

15/09/2021 F2018-007900

Date File #

NOT FOR CONSTRUCTION

DRAWN R.CRADDY DESIGNED R.CRADDY JOB MANAGER D.FIELD VERIFIER

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	NG		DF	16.07.21
2	PRELIMINARY V2	NG		DF	23.07.21
3	PRELIMINARY V3	NG		DF	13.08.21
4	PRELIMINARY V4	NG		DF	20.08.21
5	PRELIMINARY V5	NG		DF	24.08.21

CLIENT: DHA Defence Housing Australia

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ARCHITECT: Academy Close CAMPBELL

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Canberra
SAP House, level 6, 224 Bunda Street Canberra ACT 2608
Ph (02) 6285 1822 Fax (02) 6285 1863
Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT: DEFENCE HOUSING AUSTRALIA ACADEMY CLOSE BLOCK 3 SECTION 65 CAMPBELL ACT

DRAWING TITLE: TEMPORARY SITE ENTRANCE OVER ICON WATER MAIN TEMPORARY PIPE BRIDGING DETAILS

JOB NUMBER: CR172699

DRAWING NUMBER: SK04 REVISION: 5

DRAWING SHEET SIZE = A1

s22 [redacted]

From: s22 [redacted] @northrop.com.au>
Sent: Friday, 26 November 2021 5:42 PM
To: s22 [redacted]
Cc: s22 [redacted]
Subject: FW: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]
Attachments: Campbell S65 B3 TempWorks Plans IWDesAcc.pdf; Campbell S65 B3 TempWorks Certificate IWDesAcc.pdf

Hi s22 [redacted]

Please see attached Icon Water Design Acceptance for the Temporary Crossing.

During construction, operation and demolition of the structure, could you please ensure Group One follows Icon Water's conditions.

Group One must liaise with Northrop prior to the commencement of works on site as so Northrop are able to lodge the appropriate documentation with Icon Water.

Group One must also prepare a suitable ITP and construction checklist, product/material list and construction program for the works for Northrop to lodge to Icon Water prior to the commencement of works on site. Icon Water must approve the documentation prior to commencement of works on site.

Please consider this in the timing for the works understanding Icon Water review time line (document STD-SPE0G-019 advises at least 2 weeks for Icon Water review) as well as Northrop review times.

Note I have also saved these documents into the project onedrive.

If you have any questions or would like to discuss, please do not hesitate to contact me.

Kind regards,

s22 [redacted]

Northrop Consulting Engineers Pty Ltd
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D 02 6151 1021
SAP House, Level 6, 224 Bunda Street (PO Box 213)
Canberra ACT 2608
www.northrop.com.au

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From: s22 [redacted]
Sent: Tuesday, 23 November 2021 1:09 PM
To: s22 [redacted]
Cc: s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Hi Nicholas,

Following release of the cessation of works order 19/11/2021, please find attached design acceptance for the temporary protection works.

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

icon WATER

Icon Water
GPO Box 366 Canberra ACT 2601
T s22 [redacted]
iconwater.com.au | Twitter | YouTube | LinkedIn | Facebook

From: s22 [redacted]
Sent: Monday, 6 September 2021 6:11 PM
To: s22 [redacted] s22 [redacted] s22 [redacted]
Cc: s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

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Hi s22 [redacted]

Thanks for the below.

We have addressed your comments in red as per the below.

Attached will be the design form pack, drawing transmittal, structural engineers certification, structural engineers design calculations, geotechnical report and revised drawings.

We understand the deed is in working progress between Icon Water and DHA.

If you have any questions or would like to discuss, please do not hesitate to contact me.

Kind regards,

s22 [redacted]
s22 [redacted]

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D 02 6151 1021
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Canberra ACT 2608
www.northrop.com.au

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From: s22 [redacted] s22 [redacted]
Sent: Tuesday, 31 August 2021 9:20 AM
To: s22 [redacted] s22 [redacted] s22 [redacted]
Cc: s22 [redacted] s22 [redacted] Simon.Mortess@dha.gov.au>; s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Hi s22 [redacted]

Thank you for the additional information, I am preparing design acceptance for the temporary protection works only, noting the following conditions are applicable. I have also just provided the Hydraulic Services Deed to s22 [redacted] at DHA for sign off. Can we please have a copy of the signed deed provided to Icon Water to allow release of the accepted plans.

1. Please arrange for s22 [redacted] from Icon Water (s22 [redacted] to be on site during the pier construction works and other applicable works as nominated to be supervised by Icon Water in the proposed construction methodology. We would be particularly interested in the depth of rock encountered for the piers.

   We understand the contractor will be in contact with Icon Water upon release of the cessation of works. The contractor can copy in Icon Water representatives other than yourself as nominated by Icon Water.

2. On page 2 of the calculations, it states "if no rock is encountered, pile is to be 4m long". This could be an issue based on the following.
   - No calculations have been provided to show that a 4m long pile will work, ie design based on shear instead of end bearing. We would require confirmation/calculations the piers will be sound at 4m depth if rock is not encountered as planned.

     The structural engineer has advised the toe of the piers will need to be 500mm below the Icon Water main and founded into 1500 kPa rock. The structural engineer's assumptions will be assessed by suitably qualified geotechnical and structural engineers on site when works on the temporary crossing commence.

   - In our email Tuesday, 3 August 2021 3:45 PM, we asked for the following, which have not been addressed:

Submit geotechnical investigation report to justify construction method, type of pile, etc.

See attached geotechnical report calculations were based on.

If the piles are constructed on-site, will it be tested to ensure it has achieved the design capacity? How will it be tested?

The geotechnical engineer on the project has advised "Each pier foundation shall be visually inspected by a Geotechnical Engineer to ensure the end bearing pressure of 1500kPa is achieved. A summary report of the inspections will be provided."

They have also advised if requested by Icon Water, concrete compressive strength testing of the piers could be undertaken at a frequency of on test per pour.

Previously an email from ACT Geotechnical Engineers was submitted, where these have been discussed without providing any information eg. the presence and type of rock encountered. This information can be confirmed by the Geotechnical Engineer during pier construction.

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

icon WATER

Icon Water
GPO Box 366 Canberra ACT 2601
s22 [redacted]
iconwater.com.au | Twitter | YouTube | LinkedIn | Facebook

Care for water
Sprinklers should only be used before 9am or after 6pm
iconwater.com.au/rules

From: s22 [redacted]
Sent: Wednesday, 25 August 2021 12:53 PM
To: s22 [redacted] s22 [redacted] s22 [redacted]
Cc: s22 [redacted] s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

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Hi s22 [redacted]

See attached revised drawings, structural design and design certificate to address the below.

We have also included the drawing transmittal, safety in design report and the corresponding DHA report.

In regards to point 1 of your email below, we have used an OD of 1124mm as per email on 9/12/2020 from Icon Water.

In regards to points 2 and 3, see attached.

In regards to points 4-7, these have been included on the attached drawings and have also been attached the DHA report.

If you have any question or would like to discuss, please do not hesitate to contact me.

Kind regards,

s22 [redacted]

Northrop Consulting Engineers Pty Ltd
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D 02 6151 1021
SAP House, Level 6, 224 Bunda Street (PO Box 213)
Canberra ACT 2608
www.northrop.com.au

NORTHROP

Follow us on LinkedIn

From: s22 [redacted]
Sent: Thursday, 19 August 2021 6:34 PM
To: s22 [redacted] s22 [redacted]
Cc: s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Hi Peter / s22 [redacted]

Please find below what Icon Water require based on the submitted documents.

1. We confirm all piles are required to be located sufficiently clear of the pipe to ensure side support is maintained per AS2566 (being 5 times the pipe diameter between piers);

2. Correct legend reference for “B1” on drawing SK04-3;

3. Provide the structural design certificate signed by a structural engineer confirming/providing relevant design calculations in a formal document;

4. Install vibration monitors with 5mm/sec threshold and max of 10mm/sec during the pile installation and provide a formal report upon completion of this work.

5. Liaise with Icon Water during the pile installation and bridge construction;

6. Liaise with Icon Water to conduct the first witnessed settlement survey of the crossing structure;

7. Provide weekly settlement survey results for Icon Water review.

Please provide Icon Water assurance through confirming your ability to comply with the above requirements and provide updated documentation as necessary.

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

Icon Water
GPO Box 366 Canberra ACT 2601
T s22 [redacted]
iconwater.com.au | Twitter | YouTube | LinkedIn | Facebook

Care for water
Sprinklers should only be used before 9am or after 6pm
iconwater.com.au/rules

From: s22 [redacted]
Sent: Friday, 13 August 2021 7:39 PM
To: s22 [redacted] s22 s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

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OFFICIAL

s22 s47F [redacted]

Attached are our responses to the questions put to us on 3-August. Northrop have re-designed the temporary bridge to increase the span of the piers/piles across the pipe. The drawings for the new design are contained in the attached email. We can go to a 300 deep steel beam section which I'm sure is a size that we can readily source, however they are just over 6m long. Despite this new design we provide, our preference would be to maintain the previous design proposed (per rev. 2 of the Construction Management Plan document), & emphasise that this structure is only required very temporarily & for a maximum period of 6~8 weeks (whilst we are doing bulk earthworks & until the permanent entry protection slabs are constructed).

Attached also is an email from ACT Geotechnical Engineers assisting our response to the geotechnical related questions. We will have ACT Geotech on site monitoring the augering of the piers. In regards to effects of vibration on the pipe we can also have ACT Geotech install a vibration monitor over the top of the pipe (at ground surface level) adopting the 5mm/s~10mm/s thresholds which ACT Geotech have adopted in the past working on Icon Water

pipes. Noting the vibration issue did not appear to be of paramount concern to your Principal Engineer at Wednesday's meeting.

I also note that your engineer seemed to be o.k. that the piles could be left in situ. This would be our preference , as vacuum excavation of the piers to remove them and the effort/vehicle loading associated only constitutes more 'risk' work near the main which could be avoided if the piers can be left in place. Piers could be removed under Icon supervision (if necessary) but all precautions would be taken to not produce loading on the pipe during this work.

I think from here the actions should be:

- Icon review sufficiency of our answers to the 3-Aug questions
- Icon review draft new Section 5.0 to be inserted into the Construction Management Plan
- Icon confirm piers can be left insitu (we can do a WAE survey on them if necessary, we will add this to the WAE plan we did on the pipe)
- Icon review new proposed design & advise if DHA must adopt this new design or if we can stick with the previous design
- Icon confirm if vibration monitoring is required
- DHA update the Construction Management Plan with new Section 5.0 added & new design drawings added if required – re-issue the CMP to Icon

As discussed Stan we have now done all we can to satisfy Icon's concerns and many questions raised and we hope that a final workable resolution on this can be found next week to allow the stop work order to be released.

The two main leads on this as of next week will be DHA's Peter Gurkin & David Field from Northrop.

s2

From: s22 [redacted]
Sent: Tuesday, 10 August 2021 2:40 PM
To: s22 [redacted]
Cc: s22 s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Hi s22 [redacted]

I tried to call earlier today. I think it may be best to arrange a meeting to discuss this project between the Icon Water Principal Engineer and the design team with the aim of resolving any outstanding items.

Please let me know if you would like to arrange a meeting with Icon Water to discuss further.

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

icon WATER

Icon Water
GPO Box 366 Canberra ACT 2601
s22 [redacted]
iconwater.com.au | Twitter | YouTube | LinkedIn | Facebook

Care for water
Sprinklers should only be used before 9am or after 6pm
iconwater.com.au/rules

From: s22 [redacted]
Sent: Tuesday, 3 August 2021 3:45 PM
To: s22 [redacted] ; s22 [redacted] >
Cc: s22 [redacted] s22 [redacted] s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Hi Jonathan / s22 [redacted]

Please find comments as follows from our Principal Engineer on the temporary design proposed.

Report: Construction Management Plan for Working near existing Icon Water 1050 Bulk Water Supply Main dated 26 July 2021, Rev 2.

Section 4: Working within the Pipe Protection Envelope (Civil Works)

- These should be subject to individual application and case-to-case approval based on type of work, methodology, size/weight of vehicles, proximity of vehicles to the pipe.

Section 5, Section 6 and SK02 Rev 4:

- The Zone of Influence has been incorrectly drawn.

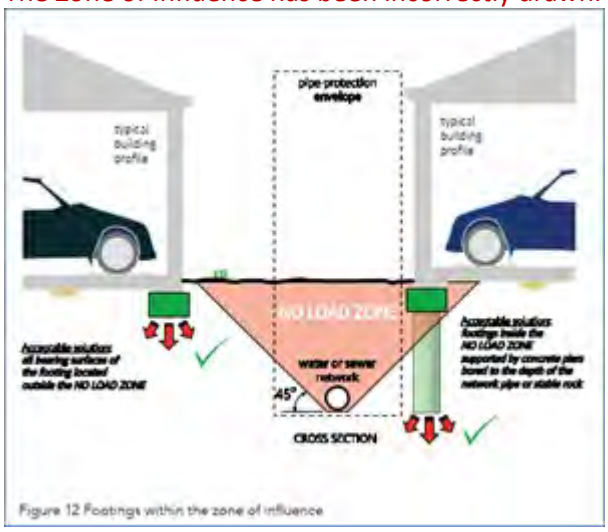

Figure 12 Footings within the zone of influence

- Proposed bridge
  - How will the proposed bridge be excavated? And reinstated thereafter?
  - For the artificially created 50mm gap, include 4 simple settlement plates. The developer will monitor this bridge settlement and if bridge deflects >10mm, site work shall cease and notify Icon Water.
- Piles
  - The piles are too close to the pipe. Piles should be placed outside the Zone of Influence. The code provides that minimum.
  - Submit geotechnical inv report to justify construction method, type of pile, etc.
    - Note 2 says “pier to be constructed with an auger on an excavator”. Will vibration load be transferred to the pipe?

- If the piles are constructed on-site, will it be tested to ensure it has achieved the design capacity? How will it tested?
- Will the piles be temporary or permanent? If temporary, how will the piles be removed?

- What risk scenario have been considered in the SiD workshop?
  - Bridge collapse (over-sag mid-span) and implications on the pipe
  - Load falling off the vehicle and implications on the pipe.

Attachment F: The analysis was based on 20T concrete truck instead of 35T excavator on float (Section 6)? Review calculations based on max load, axle dimensions to be brought onto the site and re-submit detailed calcs.

Please let me know if you require any clarification or a meeting to discuss the comments.

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

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From: s22 [redacted]
Sent: Tuesday, 27 July 2021 1:39 PM
To: s22 [redacted] s22 [redacted]
Cc: s22 [redacted] s22 [redacted] s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

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s22 [redacted]

To assist Icon Water, see attached documents referred to in the previously attached other than the Construction Management Plan. This has been sent to you in the email from s22 [redacted] along with the crossing drawings.

I have also attached our safety in design report to accompany the design for the temporary crossing.

If you have any questions or would like to discuss, please do not hesitate to contact me.

Kind regards,

s22 [redacted]
s22 [redacted]

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From: s22 [redacted]
Sent: Tuesday, 27 July 2021 10:00 AM
To: s22 [redacted]
Cc: s22 [redacted] s22 [redacted] s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Hi s22 [redacted]

I tried to call earlier, there appears to be attachments listed in the attached document which are missing. Could you please provide these documents to facilitate our review?

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

icon WATER

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From: s22 [redacted]
Sent: Monday, 26 July 2021 6:36 PM
To: s22 [redacted]
Cc: s22 [redacted] s22 [redacted]

Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

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s22 revision 2 of the Construction Methodology/Management plan addressing Icon's questions and concerns attached. Due to the complexity of integrating the temporary crossing design with the permanent protection slab design we have decided that the better solution for the temporary crossing is to separate it from the permanent entrance locations, so we now propose the crossing to be in between the two future permanent entrance roads. This will also negate any need to re-locate the temporary crossing. We have done all the necessary assessments and calculations to make sure we can locate our temporary site entrance in the new proposed location, & re-designed the crossing to be a bridge structure which transfers loads below the zone of influence of the existing Icon pipe and which will sit above the ground level to ensure deflection of the structure does not transmit load through the ground to the pipe.

The Construction Management Plan shows edits made from rev 1. of the document so you can clearly see the minor changes made (edits shown in 'track-changes' style text). I've also attached separately a letter from Northrop responding to each of the below points (however note all points covered in the Construction Management Plan ~ note also the letter refers to Rev. 1 of the Construction Management Plan however take this as meaning to refer to rev. 2).

I've also attached the two main design drawings for the bridge separately in case you want to issue to others. Please have your team review as soon as possible so we can immediately address any further issues Icon still has or have the stop work order released.

Thankyou.

s22 | Development Manager
Defence Housing Australia
s22 | T 02 8836 5709
s22 | W www.dha.gov.au

From: s22
Sent: Wednesday, 7 July 2021 1:04 PM
To: s22 s22
Cc: s22 s22 s22
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Hi s22 / s22

On the next submission can you please provide the complete documentation addressing all of the points listed in the cessation of works with a response in writing to each point. Since this appears very close now and some points have already been partially or fully addressed we want to ensure we can close this completely on the next submission.

1. Cessation of construction activity and heavy vehicular access and travel over the pipe, and within the influence lines of the pipe. A suitably qualified design engineer should conduct an engineering assessment of the pipe, including load calculations to determine the load capacity of the pipe.
2. No further crossing of the pipe by heavy construction equipment until the pipe has been assessed and adequate protective measures have been put in place. Barricades should be put in place to prevent heavy construction vehicles crossing over the pipe.
3. A construction methodology provided to and approved by Icon Water for review prior to any work being undertaken over and within the influence zone of the pipe.
4. An assessment of all construction equipment to be used for future work, as per the submitted design, must be carried out and submitted for review by Icon Water.
5. No heavy vibrating roller compactor will be allowed within the influence lines of the pipe.

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

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From: s22 [redacted]
Sent: Tuesday, 6 July 2021 2:29 PM
To: s22 [redacted]
Cc: s22 [redacted] s22 [redacted] s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Hi s22 [redacted]

Thank you, we provide the following comments focusing on the temporary arrangement to remove the cessation of works.

- The documentation in sketch form attached needs to be updated to proper documentation with sign off/certification letter by the structural engineer.
- The SF1 footings still act on the trench width, this is acceptable for the temporary arrangement but not for the permanent arrangement (during a pipe leak the saturated ground may lead to unstable footings upon excavation of the trench.

For the permanent arrangement, we have some further comments related to the footings.

1. If the protection slabs are at surface level and extend beyond the road edge, We're interested to know how the kerb and landscaping in the area around/over the slab work? This may affect the SF1 heights constructed in the temporary arrangement.

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

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From: s22 [redacted]
Sent: Tuesday, 6 July 2021 9:20 AM
To: s22 [redacted]
Cc: s22 [redacted] s22 [redacted] s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

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s22 as this is an integrated 'permanent-temporary' structure solution we would also like to know as soon as you can advise please that the temporary bridge solution can be approved separately (& more imminently) than the permanent bridging solution. If Icon are going to wait until the detailed & preliminary design applications are approved before approving the temporary bridge solution then we will consider if we need to come up with another temporary bridge solution which could be approved a lot quicker.

s2

From: s22 [redacted]
Sent: Monday, 5 July 2021 2:31 PM
To: s22 [redacted] s22 [redacted]
Cc: s22 [redacted] s22 [redacted] 2 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Hi s22

See attached drawings C223, C224 and SK03 as well as calculations for the temporary bridge structure.

The steel structure would be the temporary solution until the concrete slab is constructed in its place.

We have kept the SF1 footing zone of influence below the trench width.

For the temporary structure, water ponding above the main is not high risk. To reduce the likelihood of this, minor grading of the area can occur if required to ensure drainage from the void between the steel and the ground surface.

Could you please confirm if Icon Water provides approval for this temporary structure.

If you have any questions or would like to discuss, please do not hesitate to contact me.

Kind regards,

s22 [redacted]

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From: s22 [redacted]
Sent: Tuesday, 29 June 2021 11:41 AM
To: s22 [redacted] s22 [redacted] >
Cc: s22 [redacted] s22 [redacted] s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Hi s22 [redacted]

It seems you are on the right track with some comments as follows:

- It's up to Northrop to determine an adequate engineering solution and present all necessary information prior to acceptance
- Ensure the temporary/final arrangement will work from an construction/operation/demolition perspective and the mass of slabs isn't excessive for maintenance (being 300mm thick and 4m wide).
- Keeping the SF1 footing zone of influence below the trench width and ensure they are stable in the event of excavating the watermain.
- Consider if there is any risk created by water ponding above the main in the void with traffic (perhaps draining this area or filling the void with a flexible material).

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

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From: s22 [redacted]
Sent: Friday, 25 June 2021 2:41 PM
To: s22 [redacted] s22 [redacted]
Cc: s22 [redacted] s22 [redacted] 2 [redacted] s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

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Hi s22

See attached sketches and calculations from our structural engineer.

Our structural engineer has provided the following advice:

To ensure the pipe is never loaded (dot point 3 below), we would need to create a gap under the road plates.

Please see attached suggested steel beams to span across the pipes (with a 50mm gap under), with the road plates placed on top.

Footings are positioned so load is outside a 45deg zone of influence on the pipe.

In future, the footings could be reused in current position with a 300mm thick precast concrete slab, dropped on top – allowing future excavation of the trench without disturbing the footings.

Could you please review the attached sketches in terms of construction a temporary access into Block 3, Section 65 Campbell.

If you have any questions or would

s22 [redacted]

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From: s22 [redacted]
Sent: Wednesday, 23 June 2021 2:45 PM
To: s22 [redacted]
Cc: s22 [redacted] s22 [redacted] s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

Thank you s22 [redacted]

Noting the temporary protection design is a remaining item to be addressed prior to release of the cessation of works.

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

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From: s22 [redacted]
Sent: Wednesday, 23 June 2021 2:21 PM
To: s22 [redacted]
Cc: s22 [redacted] s22 [redacted] 22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [TOOLBOX TALK] [SEC=OFFICIAL]

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s22 toolbox talk has now been done by our civil contractor inducting the site management team into the Construction Methodology report, see attached. And just for clarity these are the participants (Greg & Yaaman are the two most senior managers who we have fortnightly site meetings with):

- Yaaman Majeed – Operations Manager
- Greg Garner - Project Manager
- Sam Guerit – WHS Manager
- Todd Berry – Foreman
- Shayan PK – Site Engineer
- Mine Thamsongsana – Project Manager/Site Engineer

I trust this adequately addresses the below request.

s22 | Development Manager
Defence Housing Australia
s22 | T 02 8836 5709
s22 | W www.dha.gov.au

From: s22
Sent: Friday, 18 June 2021 2:57 PM
To: s22 >
Cc: s22 s22
2

Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [PART 2 OF 2] [SEC=OFFICIAL]

Hi s22

Further to the below email, please find comments from the Builder Services team.

1. Section 1.5, please ensure that the Contractor/Superintendent forward evidence that they have gone through the plan with site personnel, e.g. provide a tool box talk form with signoff of attendees.

Kind Regards,

s22
s22
Developer Services, Urban Development Services

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From: s22
Sent: Thursday, 10 June 2021 7:59 PM
To: s22 s22 s22
2

s22 [redacted]

Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [PART 2 OF 2] [SEC=OFFICIAL]

Thank you for this s22 [redacted]

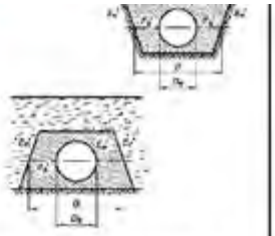
We have assessed the documentation and provide the following comments. I note as discussed today there may be further comments applicable from our Builder Services team for which Tim Healy will provide further if needed. I will be on leave until the 17/06 so please feel free to contact Stan Robb or Tim Healy with further questions related to the Cessation of Works.

Icon Water Principal Civil Engineer

- . Using the design input from the AS2566 Calculations (Ref: Academy Close Buried Pipe r2), I still get different values, and the calculation shows that the pipe fail under buckling.

  There is a difference in the E'. My calculation shows a much reduced E'

Trench Width, B	=	1.800	m	
Cover to top of Pipe, H	=	1.500	m	
Water Surface above top of Pipe, H_w	=	1.500	m	
Embedment Soil Modulus, E'_e	=	5.00	MPa	
Native Soil Modulus, E'_n	=	1.00	MPa	
$\Delta_r = (B / D_e - 1) / [1.154 + 0.444 (B / D_e - 1)]$	=	0.460		(not greater than 1.44). Eq 3.4.3(3)
Leonhardt Correction Factor, ξ				
$\xi = 1.44 / [\Delta_r + (1.44 - \Delta_r)(E_e/E_n)]$	=	0.269		(when $B>5D_e$, $\xi = 1$). Eq 3.4.3(2)
Effective Combined Soil Modulus, E'				
$E = \xi \times E_e$	=	1.343	MPa	Eq 3.4.3(1)



There is a difference in the buckling calculation. My calculation shows the pipe failing under buckling.

				Calculation of Buckling Pressure
Poisson's Ratio, υ	=	0.3		AS2566 Table 2.1
Design Factor for Buckling, F_s	=	2.5		(usually F_s = 2.5), Clause 5.4
Initial 3 min				
$q_{all1} = 1/F_s \times 24/(1-\upsilon^2) \times S_{OI} \times 10^{-3}$	=	75.63	kPa	Eq 5.4(4)
$q_{all2} = (S_{OI} \times 10^{-6})^{1/3} \times (E\ I)^{2/3} \times 10^3 / F_s$	=	93.89	kPa	Eq 5.4(5)
Allowable 3 min buckling pressure, q_{all}	=	93.89	kPa	(If H>=0.5, use greater of q_{all1} and q_{all2}) or (If H<0.5, use q_{all1})
12 hour				
$q_{all1} = 1/F_s \times 24/(1-\upsilon^2) \times S_{OL12hr} \times 10^{-3}$	=	75.63	kPa	Eq 5.4(4)
$q_{all2} = (S_{OL12hr} \times 10^{-6})^{1/3} \times (E\ I)^{2/3} \times 10^3 / F_s$	=	93.89	kPa	Eq 5.4(5)
Allowable 12 hr buckling pressure, q_{all}	=	93.89	kPa	(If H>=0.5, use greater of q_{all1} and q_{all2}) or (If H<0.5, use q_{all1})
2 years				
$q_{all1} = 1/F_s \times 24/(1-\upsilon^2) \times S_{OL2} \times 10^{-3}$	=	75.63	kPa	Eq 5.4(4)
$q_{all2} = (S_{OL2} \times 10^{-6})^{1/3} \times (E\ I)^{2/3} \times 10^3 / F_s$	=	93.89	kPa	Eq 5.4(5)
Allowable 2 year buckling pressure, q_{all}	=	93.89	kPa	(If H>=0.5, use greater of q_{all1} and q_{all2}) or (If H<0.5, use q_{all1})
Long Term (50 year)				
$q_{all1} = 1/F_s \times 24/(1-\upsilon^2) \times S_{OL50} \times 10^{-3}$	=	75.63	kPa	Eq 5.4(4)
$q_{all2} = (S_{OL50} \times 10^{-6})^{1/3} \times (E\ I)^{2/3} \times 10^3 / F_s$	=	93.89	kPa	Eq 5.4(5)
Allowable long term buckling pressure, q_{all}	=	93.89	kPa	(If H>=0.5, use greater of q_{all1} and q_{all2}) or (If H<0.5, use q_{all1})
Actual Buckling Pressure				
due to w_g trench backfill				
For H>=H_w, $\gamma(H - H_w) + (\gamma_L + \gamma_{sub})(D_e/2 + H_w)$	=	45.80	kPa	
For H< H_w, $\gamma_L(De/2 + H_w) + \gamma_{sub}(D_e/2 + H)$	=	45.80	kPa	
due to surface dead load, w_{gs}	=	5.00	kPa	
due to superimposed live load, w_q	=	16.66	kPa	
due to internal vacuum, q_v		50.00	kPa	
$\gamma(H-H_w)+(\gamma_L+\gamma_{sub})(D_e/2+H_w)+w_{gs}+$(larger of w_q, q_v)	=	100.80	kPa	(for H >= H_w), Eq 5.4(1)
$\gamma_L(De/2+H_w)+\gamma_{sub}(D_e/2+H)+w_{gs}+$(larger of w_q, q_v)	=	100.80	kPa	(for H < H_w), Eq 5.4(3)
Total buckling pressure (w_g + q_v, not likely)	=	100.80	kPa	>qall 3min, no good! >qall 12hr, no good! >qall 2 years, no good! >qall long term, no good!

- In addition, there does not appear to be any allowance for loss of pipe wall thickness due to corrosion.
- Please note that the proposed steel plate cover, as per current arrangement, still allows transference of load onto the pipe

Kind Regards,

s22 [redacted]

Developer Services, Urban Development Services

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From: s22 [redacted]
Sent: Friday, 4 June 2021 4:51 PM
To: s22 [redacted]
Cc: s22 [redacted] Gurkin, Peter

s22 [redacted]

Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [PART 2 OF 2] [SEC=OFFICIAL]

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Email 2 of 2

From: s22 [redacted]
Sent: Tuesday, 18 May 2021 2:55 PM
To: s22 [redacted] >
Cc: s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [SEC=OFFICIAL]

Hi s22 [redacted]

We have reviewed the documentation attached and there appears to be insufficient information provided on the below points to allow Icon Water to lift the cessation of works.

- ☐. A suitably qualified design engineer should conduct an engineering assessment of the pipe, including load calculations to determine the load capacity of the pipe. (Provide the analysis/calculations).
- ☐. A construction methodology provided to and approved by Icon Water for review prior to any work being undertaken over and within the influence zone of the pipe.
- ☐. An assessment of all construction equipment to be used for future work, as per the submitted design, must be carried out and submitted for review by Icon Water.

Kind Regards,

s22 [redacted]
Developer Services, Urban Development Services

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From: s22 [redacted]
Sent: Monday, 17 May 2021 5:00 PM
To: s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [SEC=OFFICIAL]

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Please replace the previous sketch drawing with this revised one for orientation of the steel plates (they are now orientated 90deg. to the direction of the main to ensure the length of each plate spans the full width of the main trench).

From: s22 [redacted]
Sent: Monday, 17 May 2021 3:06 PM
To: s22 [redacted]
Subject: RE: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close [SEC=OFFICIAL]

OFFICIAL

Stan, Northrop have done the assessment & are happy with 25mm thick steel plate over the main, which includes when the main is empty/not in use; refer attached letter from Northrop. I've also done a rough mark-up of the location/configuration of the plates installed for orientation (FYI). We will direct the contractor to have these installed tomorrow. If you could please advise what further Icon requires on this in order for the cessation of work order to be lifted.
Thankyou.

[redacted] Development Manager
Defence Housing Australia
s22 [redacted] | T 02 8836 5709
s22 [redacted] | W www.dha.gov.au

From: s22 [redacted]
Sent: Friday, 7 May 2021 4:52 PM
To: s22 [redacted]
Cc: s22 [redacted]
Subject: Cessation of Works - DHA Development, Section 65 Block 3 Campbell - Academy Close

s22 [redacted]

It has been brought to my attention that works are being undertaken in the vicinity of a significant Icon Water asset without appropriate network protection being in place to ensure the continued operation and maintenance of this asset.

It is understood that construction traffic is traversing a 1050mm diameter water main that runs through a Defence Housing Authority (HAD) development referred to as Section 65 Block 3 Campbell - Academy Close, raising considerable concerns over the integrity of the said infrastructure.

You are therefore required under Section 249 the Utilities Act 2000 to **immediately cease all works in the vicinity of the pipeline until further notice is provided in writing by Icon Water** to remove the likelihood of that interference, including:

- ☐. Cessation of construction activity and heavy vehicular access and travel over the pipe, and within the influence lines of the pipe.
  A suitably qualified design engineer should conduct an engineering assessment of the pipe, including load calculations to determine the load capacity of the pipe.

- ☐. No further crossing of the pipe by heavy construction equipment until the pipe has been assessed and adequate protective measures have been put in place.
  Barricades should be put in place to prevent heavy construction vehicles crossing over the pipe.

- ☐. A construction methodology provided to and approved by Icon Water for review prior to any work being undertaken over and within the influence zone of the pipe.

- ☐. An assessment of all construction equipment to be used for future work, as per the submitted design, must be carried out and submitted for review by Icon Water.

- ☐. No heavy vibrating roller compactor will be allowed within the influence lines of the pipe.

I am also informed that Icon Water has yet to approve the proposed sewer and water design.

I am cognisant that a meeting has been arranged with staff from DHA and Icon Water on Monday 10th May 2021 at our Mitchell offices and it hopeful that this meeting can resolve these concerns and allow the works to continue.

I look forward to our meeting and successful resolution off this matter.

Regards,

s22 [redacted]
Manager Urban Development Services

Icon Water
GPO Box 366 Canberra ACT 2601
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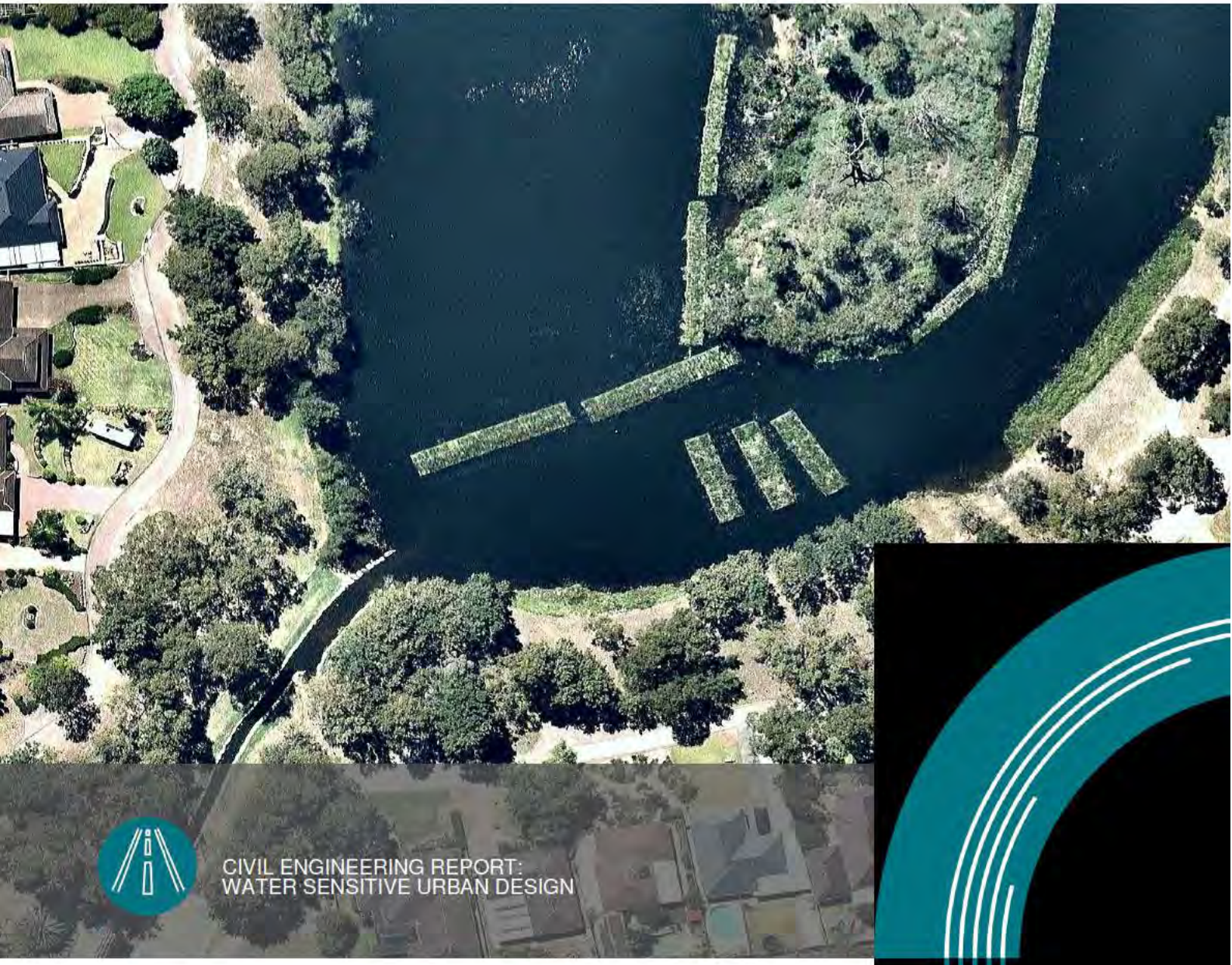

CIVIL ENGINEERING REPORT:
WATER SENSITIVE URBAN DESIGN

DHA Academy Close
Block 3 Section 65, Campbell

PREPARED FOR
Defence Housing Australia
Level 2, 287 Elizabeth St
Sydney NSW

Ref: CR172699-EC04
Rev: 1
Date: 14.05.2020

Civil Engineering Report:

Water Sensitive Urban Design

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
14.05.2020	1	Works Approval Application	WB	DF

Northrop Consulting Engineers Pty Ltd

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Table of Contents

1. General 3
1.1 Introduction 3
1.2 Site Context and Existing Characteristics 3
1.3 Proposed Development 4
2. WSUD Management 5
2.1 WSUD Requirements 5
2.2 Element 1: Mains Water Use Reduction 5
2.3 Element 2: Stormwater Quantity 6
2.4 Element 3: Stormwater Quality 7
2.5 Climate Change Adaptation 9
3. Summary 11

1. General

1.1 Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Defence Housing Australia (DHA) to assess the Water Sensitive Urban Design (WSUD) requirements in support of a Works Approval (WA) for the proposed redevelopment at Block 3, Section 65 Campbell.

The WSUD requirements outlined in this report are based on the current Site + Context Plan drawing NCA-002 Revision 3 issued by AMC Architecture (AMC).

1.2 Site Context and Existing Characteristics

The subject site is described as Block 3, Section 65 Campbell and is located at the corner of Truscott Street and Fairbairn Avenue. The existing site characteristics of Block 3 can be summarised as:

- The site has a total area of approximately 25,354m^2.
- The block is primarily underdeveloped and is grassed with numerous trees across the site approximately 90% if the site. Approximately 10% of the site is composed of impervious area (existing Academy Close roadway).
- The site slopes to the Northeast at an average grade of 6%.
- The block is registered as DES: Designated as per the ACT Government Territory Plan.
- The site is located with Designated National Capital Authority land known as the "Australian Defence Force Academy, Royal Military College Duntroon, and Campbell Park Precinct". The WSUD requirements of this precinct are not explicitly mentioned; as such the requirements fall back to the NCA Plan which notes that they should be met by adhering to the TCCS specifications. The WSUD requirements for the proposed development have been assessed using the Waterways: Water Sensitive Urban Design General Code (21 February 2020)

The site locality of Block 3 is presented in Figure 1.

Figure 1 - Aerial Photography of Proposed Site (ACTMapi, May 2020)

1.3 Proposed Development

Northrop understands that the proposed redevelopment was proposed to be a Defence Housing Site and will deliver 30 dwellings. Figure 2 is an extract from the architectural site plan.

Figure 2 – Site Layout (AMC Architecture, 3 December 2019)

The current architectural site plan shows that the proposed development will have the following properties:

- The site is proposed to have a pervious area (gardens, lawns, open spaces etc) of approximately 57%.
- The site is proposed to have an impervious area (roof and pavement areas) of approximately 43%.
- The roof area is approximately 6,400m^2.

2. WSUD Management

2.1 WSUD Requirements

The WSUD requirements for the proposed development have been assessed using the Waterways: Water Sensitive Urban Design General Code (21 February 2020).

The Waterways: Water Sensitive Urban Design General Code applies to development and redevelopment on sites across all zones of the Territory Plan that:

- Are currently connected to or are intended to be connected to the mains water supply; or
- Are likely to alter the stormwater regime of the site;

However, the code does not apply to the following:

- Single dwellings and secondary residences subject to the single dwelling housing development code; and
- As excepted within the provisions of this code.

2.2 Element 1: Mains Water Use Reduction

2.2.1 R1

2.2.1.1 Rule

This rule applies to all development currently connected or intended to be connected to mains water supply except any of the following:

a) development subject to the estate development code

b) development for minor alterations or extensions involving 50% or less of the existing floor area.

Development achieves a minimum 40% reduction in mains water consumption compared to an equivalent development constructed in 2003.

2.2.1.2 Compliance

In summary to comply with this rule the proposed development requires:

- 3-Star Shower Fittings and Dishwasher Fittings;
- 4-Star Toilets and Clothes Washing Machines fittings; and
- A combined capacity of 200kL of rainwater and retention storage collecting from at least 2,400m^2 of the roof area to be used for all gardens across all 30 of the proposed dwellings.

Refer to Appendix A for the full Water Reduction Spreadsheet showing the required 40% reduction in water mains consumption.

2.3 Element 2: Stormwater Quantity

2.3.1 R2

2.3.1.1 Rule

Development complies with at least one of the following:

a) stormwater retention management measures are provided and achieve all of the following:

i) Stormwater storage capacity of 1.4kL per 100m² of the total impervious area of the site is provided specifically to retain and reuse stormwater generated on site as a whole

ii) Retained stormwater is used on site

b) development captures, stores and uses the first 15mm of rainfall falling on the site.

For this rule, on-site stormwater retention is defined as the storage and use of stormwater on site.

2.3.1.2 Compliance

The retention storage capacity is to be at least:

$1.4kL \times 11{,}000\ m^2 \div 100m^2 = 154\text{kL}$

This retention storage is to be reused on site.

2.3.2 R3

2.3.2.1 Rule

Stormwater detention measures are provided and achieve all of the following:

a) capture and direct runoff from the entire site

b) Stormwater storage capacity of 1kL per 100m² of impervious area is provided to specifically detain stormwater generated on site

c) The detained stormwater is designed to be released over a period of 6 hours after the storm event.

For this rule on-site stormwater detention is defined as the short-term storage and release downstream of stormwater runoff.

2.3.2.2 Compliance

The detailed design is to ensure that the detention tank is capable of collecting runoff from at least 70% of the site.

As per the note included in the Waterways: Water Sensitive Urban Design General Code (21 February, 2020), as there is retention storage on the site, the size of the detention tank can be reduced by 50% of the size of the retention tank.

Therefore, the detention storage capacity is to be at least:

$1.0kL \times 11{,}000\ m^2 \div 100m^2 - 50\% \times 154kL = 33kL$

This detention is proposed to be met by the use of SPEL Stormchambers. Assuming a tank nominal water depth of 1.35m, an orifice 12mm in diameter will be required to drain the tank over a period exceeding 6 hours. During the detailed design, this will need to be reviewed should the tank depth alter.

2.3.3 R4

2.3.3.1 Rule

This rule applies to development of major roads involving sites greater than 2000m^2.

Development complies will all of the following:

a) The capacity of existing pipe (minor) stormwater connection to the site is not exceeded in the 1 in 10-year storm event

b) The capacity of the existing overland (major) stormwater system to the site is not exceeded in the 1 in 100-year storm event.

2.3.3.2 Compliance

This rule is not applicable as the development is not a major road.

2.3.4 C5

2.3.4.1 Criteria

This criterion applies to estate development plans.

Stormwater detention measures are provided and the peak rate of stormwater runoff from the estate does not exceed the peak rate of runoff from an unmitigated (rural) site of the same area for minor and major storms.

2.3.4.2 Compliance

This criterion does not apply as the development is not at an estate development scale.

2.4 Element 3: Stormwater Quality

2.4.1 R6

2.4.1.1 Rule

This rule applies to development for all of the following:

a) where the development site is greater than 2,000m^2.

b) where development involves works that have potential to alter the stormwater regime for the site.

This rule does not apply to development of major roads.

The average annual stormwater pollutant export is reduced when compared with an urban catchment of the same area with no water quality management controls for all of the following:

a) gross pollutants by at least 90%

b) suspended solids by at least 60%

c) total phosphorous by at least 45%

d) total nitrogen by at least 40%.

2.4.1.2 Compliance

The model demonstrated that when the storm chambers (or equivalent treatment device) are installed on site, the targets for pollution reduction are met. The total number of SPEL Stormchambers required

is 17, given that each chamber has a detention design storage capacity of 3.26m^3 (each chamber is nominally 1.6m x 2.6m) when installed in accordance with the manufacturers specifications. A good location for the SPEL Stormchambers is at the North eastern corner of the block near the proposed stormwater tie under the open landscaped space to avoid the existing trees. As there as there is in excess of 350m^2 available in this area the approximate space required for the tanks of 75m^2 is unlikely to be a problem when installed at this location. A diagrammatic layout of the MUSIC Model is presented in Figure 3.

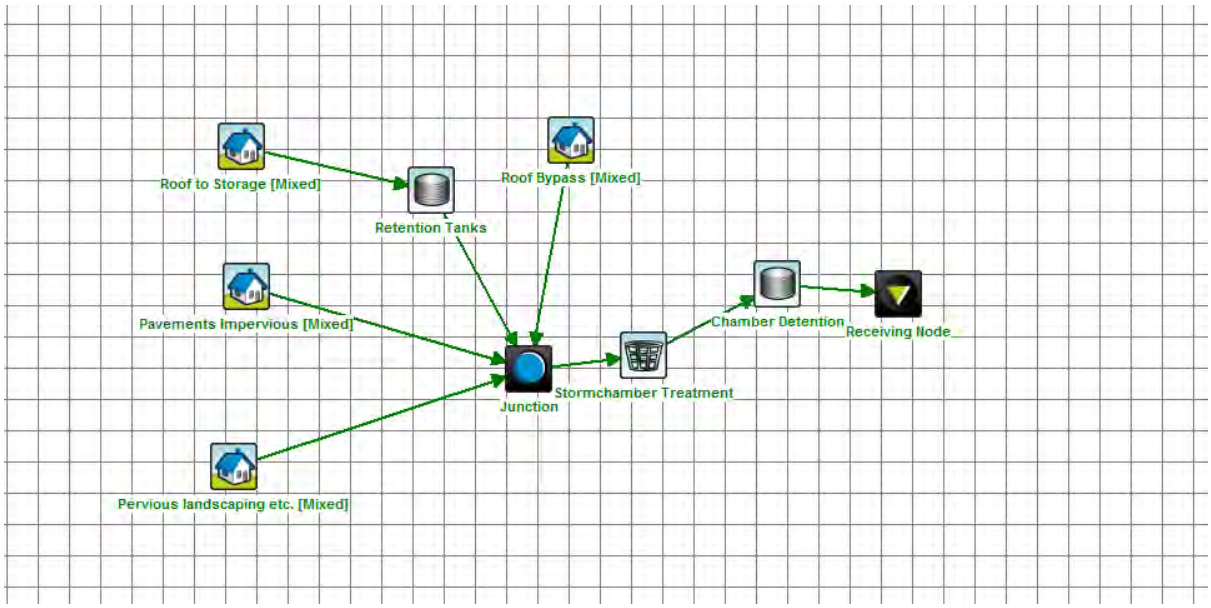


Figure 3 - MUSIC Model Configuration

The modelling results shown in Table 1 demonstrates that the treatment train will achieve the water quality targets outlined in R6 of the Water Sensitive Urban Design General Code.

Table 1 – MUSIC Model Results

	Sources	Residual Load	% Reduction
Flow (ML/yr)	8.42	7.65	9.1
Total Suspended Solids (kg/yr)	1300	109	91.6
Total Phosphorus (kg/yr)	1.88	0.757	59.8
Total Nitrogen (kg/yr)	22.4	4.66	79.2
Gross Pollutants (kg/yr)	242	0	100

2.4.2 R7

2.4.2.1 Rule

This rule applies to development of major roads, including the duplication of an existing major road in full or in part.

The average annual stormwater pollutant export is reduced when compared with a road catchment of the same area with no water quality management controls for all of the following:

a) gross pollutants by at least 90%

b) suspended solids by at least 60%

c) total phosphorous by at least 45%

d) total nitrogen by at least 40%.

2.4.2.2 Compliance

This rule is not applicable as the site is not a major road.

2.5 Climate Change Adaptation

2.5.1 C8

2.5.1.1 Criteria

This criterion applies to development on sites greater than 2,000m^2 involving works that have potential to alter the existing drainage and overland flow regime for the site.

Overland flow paths are provided and achieve all of the following:

a) accommodate overland stormwater flows up to the 1% AEP

b) reduce nuisance flooding.

2.5.1.2 Compliance

Hydrological modelling of the developed site has been modelled using DRAINS to anticipate the subject site's post-development overland flow for the 1% AEP storm event. The ILSAX hydrological model was adopted as the hydrological model. The modelling completed is for the purpose of the development application criteria – the detailed design engineer is to complete an analysis with all new pipe sizes and tank outlets confirmed.

The modelling appears to show that minimal to no overland flow based on using the aforementioned retention and detention tank sizes.

2.5.2 R9

2.5.2.1 Rule

This rule applies to at least one of the following developments:

a) Development on sites greater than 2000m^2 involving works that have potential to alter the stormwater regime for the site

b) Development within existing urban areas that increase the impervious area of the site by 100m^2 or more.

Development achieves a minimum of 20% of the site area to be permeable.

2.5.2.2 Compliance

There is approximately 43% pervious area across the site. The landscape architect for the works is to ensure that there is a minimum of 20% pervious area by the completion of the works.

2.5.3 C10

2.5.3.1 Rule

This criterion applies to development that will result in municipal water sensitive urban design infrastructure being handed to the ACT Government.

An operation and maintenance plan is to be endorsed by the ACT Government for the water sensitive urban design assets that are to be handed to the ACT Government.

2.5.3.2 Compliance

As the water sensitive urban design assets are not being handed back to the ACT Government, no operation or maintenance plans have been included as part of this report.

3. Summary

The WSUD requirements have been determined using the Waterways: Water Sensitive Urban Design General Code (21 February 2020). The following WSUD measure are required for the proposed development at Block 3 Section 65, Campbell:

- 3-Star Shower Fittings and Dishwasher Fittings;
- 4-Star Toilets and Clothes Washing Machines fittings; and
- A combined capacity of 200kL of rainwater and retention storage collecting from at least 2,400m^2 of the roof area to be used for all gardens across all 30 of the proposed dwellings.
- 33kL of detention (nominally though 17 SPEL Stormchambers with water depth of 1.35m) is required and is to be fitted with a 12mm diameter orifice plate over the outlet.
- 154kL of reuse tank storage is to be provided.
- It is proposed that a SPEL Stormchambers (or equivalent) to be installed to treat all surface runoff that is not captured by the retention tanks to meet water quality compliance.
- Based on the results of the DRAINS model (which incorporates the 154kL retention and 33kL detention tanks), it is anticipated that there is minimal overland flow for the 1% AEP storm event.
- The pervious area for the block is not to decrease to less than 20% during detailed design and construction phases.

This spread sheet is an online tool for individuals, designers and developers to gauge possible methods of reducing mains water consumption on Multi-unit developments. Please enter ALL the relevant information for your development before using the reduction percentage.

Percentage Reduction =	41%

Indoor information	
Number of bedrooms in the entire complex	94
What is the water rating of the shower heads?	3 Star
What is the water rating of the clothes washing machines?	4 Star
What is the water rating of the dishwashers?	3 Star
What is the water rating of the toilets?	4 Star

Site information	
Site area (m^2)?	25,354
Total Roof area (m^2)?	6,400
Lawn area (m^2)?	3,000
Irrigated garden area (m^2)?	0
Imperveous pavement or driveway (m^2)?	4,600

Rain water tank information	
Are there going to be water tanks installed?	Yes
What is the total size of all the tanks (L)?	200,000
What is the total roof area flowing into the tanks (m^2)?	2,400
What will be the use for the water in the tanks?	Garden

Grey Water information	
What type of grey water system is installed?	None
What is the size of the grey water storage tank (L)?	0
Where will the grey water be collected from?	
What will be the use for the grey water?	

Pool, Spa or Pond information	
Is there going to be a pool, spa, or pond?	No
Is there going to be a cover on the pool or spa?	No
Average depth of the pool, spa or pond (m)?	0
Average length of the pool, spa or pond (m)?	0
Average width of the pool, spa or pond (m)?	0
The volume of the pool, spa or pond is (L) =	0

Principal's Direction

		Ref # :	PD-07
Project/Site:	Academy Close, Campbell A.C.T.	**Date :**	17-May-21
Contract :	AS4000 Construction Contract- Civil Works	**Contract no:**	PROC-46448
Principal:	Defence Housing Australia	**ABN :**	72 968 504 934
Contractor:	Group One Pty Ltd	**ACN :**	124 956 154
Superintendent:	Northrop Consulting Engineers Pty Ltd		
Principal's Representative:	s22 [redacted]	[redacted]	
Contractor's Representative:	s22 [redacted]		
Superintendent's Representative:	[redacted]		

The Principal hereby provides a Direction under the contract to the Contractor pursuant to Clause ***22.3*** *as follows (note: terms written in italics are defined in the Contract):*

Description: Steel Road Plates to Existing Site Entrance (Icon Water Main Protection)

The Contractor is directed to supply (hire) and install steel protection plates to the existing entrance road to protect the Icon Water 1050 water main under the entrance road. Plates to be located as depicted in the attached DHA sketch drawing. Four steel plates required, plates to be min. 25mm thick. Illustration of plates in attached sketch drawing are based on plate size 1.2m x 3.0m.

Allow to install with sand levelling & cold mix bitumen as required (per usual practice). The Principal may elect to make use of Provisional Sum items 006, 007 or 13 (as referenced in the contract BOQ) to cover the cost of this work.

Attachments

A Photo & Approximate cost

B Email from Contractor re costs

C DHA sketch drawing DHA_SK_ACAD.10 [B] dated 17 May 2021

Defence Housing Australia

s22 [redacted]

Defence Housing Australia

Attachment A

	Plate Size	RRP (incl. GST)	Float
Group One	25mm x 3.0m x 1.5m	s22 [redacted]	
	Say 2 months hire (8 w		
	No. days		
	No. Plates		
	Total Cost **Group One**		

Attachment B

Email from Contractor re costs

s47F [redacted]

From: Greg Garner <ggarner@groupone.com.au>
Sent: Tuesday, 11 May 2021 8:12 AM
To: s47F [redacted]
Cc: s22 [redacted]
Subject: RE: DHA - Academy Close - Steel Road Plates [SEC=OFFICIAL]

s47F [redacted]
s22 [redacted]

I also forgot that our largest piece of plant crossing the watermain will be the water truck GVM 22.5t for the earthworks. We haven't had much use due to the rain.

Greg Garner
Project Manager

p: 02 6241 1955
f: 02 6241 8955
m: 0475 555 311

From: s47F [redacted] @dha.gov.au>
Sent: Monday, 10 May 2021 5:07 PM
To: s22 [redacted]
Cc: s22 [redacted]
s22 [redacted]
Subject: RE: DHA - Academy Close - Steel Road Plates [SEC=OFFICIAL]

OFFICIAL

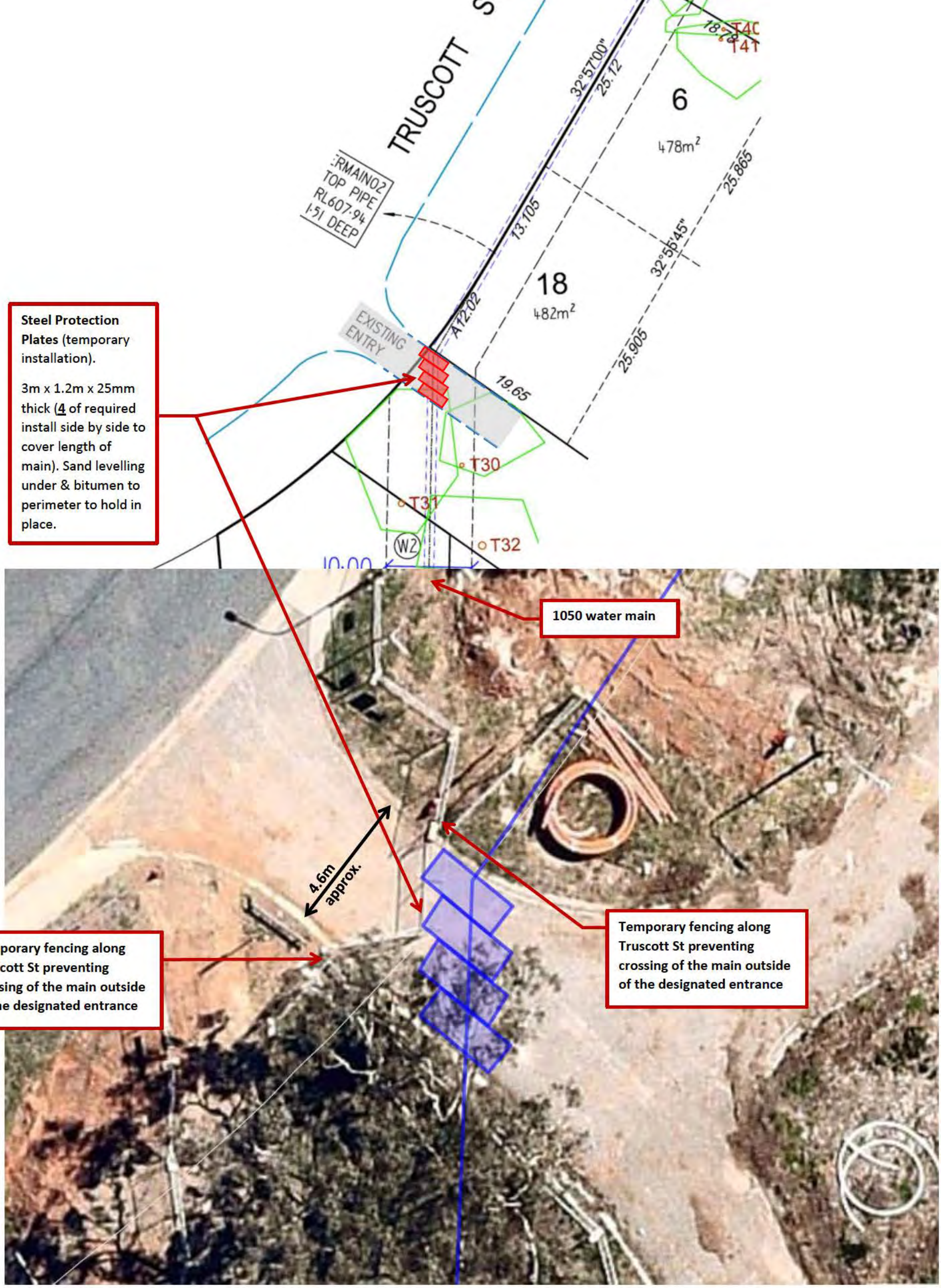
s22 [redacted]

s4 [redacted]

From: Greg Garner <ggarner@groupone.com.au>
Sent: Monday, 10 May 2021 12:46 PM
To: s47F [redacted] @dha.gov.au>
Cc: s22 [redacted]
s22 [redacted]
Subject: DHA - Academy Close - Steel Road Plates

Attachment C

DHA sketch drawing DHA_SK_ACAD.10 [B] dated 17 May 2021



References:

Letter from Northrop Consulting Engineers dated 17 May 2021 (ref. CR172699_BC18)
Cessation of Work order by email from Icon Water dated 7 May 2021

			DHA Defence Housing Australia ABN 72 968 504 934 Suite 201, Level 2 287 Elizabeth St, Sydney NSW 2000 T. 139 342 F.02 6222 2223 E. info@dha.gov.au W. www.dha.gov.au	Project: **ACADEMY CLOSE CAMPBELL, A.C.T.**	Drawing Name: **Temporary Protection to 1050 Water Main**	Drawing No. **DHA_SK_ACAD.10**
17 May 2021	Submission to Icon Water	B				Date: May 2021 / Rev: **B**
17 May 2021	Submission to Icon Water	A				
Date	**Description**	**Rev**				

Deed

Design and Construction of 30 Houses at Academy Close Campbell, ACT and the associated Civil construction works.

Design and Construct Contract **PROC-67082**

Defence Housing Australia

Projex Building Group Pty Ltd

This Formal Instrument of Agreement

Date ►

Between the parties

Defence Housing Australia
ABN 72 968 504 934
of 26 Brisbane Avenue Barton ACT 2600
(Principal)

Projex Building Group Pty Ltd
ABN 77 109 570 863 of Unit G09, 50 Eastlake Parade Kingston ACT 2604
Builder's Licence No [2007904
(Contractor)

Recitals

1. The Principal wishes to enter into a contract with the Contractor for the performance of the work under the Contract in accordance with the Contract.
2. The Principal wishes to novate the Consultant Agreements to the Contractor.
3. The Contractor has agreed to carry out the work under the Contract and, if required by the Principal, accept a novation of the Consultant Agreements in accordance with the Contract.

This deed witnesses as follows:

1 Interpretation

1.1 Definitions

The meanings of the terms used in this Formal Instrument of Agreement are set out below:

Term	Meaning
Conditions Precedent	means Security has been received from the contractor in accordance with the contract.
Contract	the documents set out in clause 5 of this Formal Instrument of Agreement.
General Conditions of Contract	the General Conditions of Contract (AS 4300-1995) (as amended) set out in Schedule 1.
Risk Allocation Outline	the 'DHA standard form AS 4300 Design and Construct Contract Template Risk Allocation Outline' provided by the Principal to the Contractor at the time of tender.

1.2 Terms

In this Formal Instrument of Agreement, all defined terms used and which are defined in the General Conditions of Contract have the same meaning as given to them in the General Conditions of Contract.

2 Completion of the Works

The Contractor must perform the work under the Contract in accordance with the Contract.

3 Payment of Contract Sum

The Principal must pay the Contractor the fixed lump sum amount of s22 [redacted] ncluding GST) as adjusted in accordance with the Contract (**Contract Sum**).

4 Warranties

The Contractor represents and warrants to the Principal that:

(a) it is a company duly incorporated and validly existing under the laws of its place of incorporation;

(b) it has taken all necessary action to authorise the execution, delivery and performance of the Contract, in accordance with its terms;

(c) it has power to enter into and perform its obligations under the Contract and to carry out the transactions contemplated by the Contract;

(d) its obligations under the Contract are valid and binding and are enforceable against it in accordance with its respective terms subject to any necessary stamping and registration, the availability of equitable remedies and laws relating to the enforcement of creditor's rights;

(e) it has the corporate power to own its own assets and to carry on its business as it is now being conducted;

(f) it is not the responsible entity of any trust nor does it hold any property subject to or impressed by any trust; and

(g) no litigation, arbitration, tax claim, dispute or administrative or other proceeding (which has not been disclosed to the Principal in writing prior to the Execution Date) has been commenced, is pending or, to its knowledge, threatened in writing against it which is likely to have an adverse effect upon it or its ability to perform its financial or other obligations under the Contract.

5 Contract documents

The Contract consists of the documents listed below:

(a) this Formal Instrument of Agreement;

(b) the General Conditions of Contract; and

(c) the Annexures, Schedules and Attachments referred to in the General Conditions of Contract.

6 Conditions precedent *(Not Used)*

7 Entire agreement

7.1 Previous agreements

The Contract supersedes all previous agreements in respect of its subject matters and embodies the entire agreement between the parties.

7.2 No reliance

No reliance shall be placed by either party on any representations, promise or other inducement made or given or alleged to be made or given by one party to the other party prior to the Execution Date.

7.3 Risk Allocation Outline

(a) The Contractor acknowledges and agrees that the Contractor has read and agrees with the terms of the "Disclaimer and qualifications" contained in section 2 of the Risk Allocation Outline.

(b) The Contractor warrants to the Principal that it has not in any way relied (and will not rely) upon the Risk Allocation Outline, including in entering into this Contract and in determining the Contract Sum.

(c) The Contractor acknowledges and agrees the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make any Claim) arising out of or in connection with the Risk Allocation Outline.

Executed as a deed

Signed, sealed and delivered by
[redacted] 109 570 863
s22 [redacted] *ns Act 2001* (Cth)

sign here ▶

print name

sign here ▶

print name

Signed, sealed and delivered for
Defence Housing Australia
Executed for and on behalf of Defence Housing Australia by its delegate duly authorised pursuant to s.65 of the *Defence Housing Australia Act* (Cth) 1987

sign here ▶ _____
Delegate

print name _____

in the presence of

sign here ▶ _____
Witness

print name _____

print address 35 Hinder Street, Gungahlin ACT 2912
_____

Schedule 1

General Conditions of Contract for Design and Construct

These General Conditions of Contract for Design and Construct are based on AS4300 – 1995 edition as amended by Defence Housing Australia and reproduced with the permission of Standards Australia under a licensing arrangement.

Australian Standard™

Amended from AS 4300-1995 General conditions of contract for design and construct

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This Australian Standard was prepared by Committee OB/3, General Conditions of Contract. It was approved on behalf of the Council of Standards Australia on 17 February 1995 and published on 5 April 1995

The following interests are represented on Committee OB/3:

Australian Chamber of Commerce and Industry

AUSTROADS

Construction Industry Engineering Services Group

Construction Policy Steering Committee

Electricity Supply Association of Australia

Institution of Professional Engineers New Zealand

Law Council of Australia

Master Builders Australia

National Construction Council/MTIA

National Public Works Council

Process Engineers and Constructors Association

Railways of Australia

Royal Australian Institute of Architects

The Association of Consulting Engineers Australia

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This Standard was issued in draft form for comment as DR 93139 (in part).

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PREFACE

The original Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee on General Conditions of Contract and issued as an Australian Standard. *Note this version has been significantly amended by DHA.*

This Standard incorporates Amendment No. 1 (October 2000). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure, or part thereof affected.

This Standard covers the following types of project procurement methods—

(a) Design and Construct Contract.

(b) Design Development and Construct Contract.

(c) Design, Novate and Construct Contract.

If the project procurement method chosen by the Principal is:

(i) *Design and construct*—the Principal would provide the Principal's Project Requirements, would not normally provide a detailed Preliminary Design and would not require Novation of any subcontractors (including consultants);

(ii) *Design development and construct*—the Principal would provide the Principal's Project Requirements, would always provide a Preliminary Design and accordingly would complete Annexure Part A Items 10 and 11;

(iii) *Design, novate and construct*—the Principal would provide the Principal's Project Requirements, would always provide a Preliminary Design, would complete Annexure Part A Items 10 and 11 and would complete Annexure Part A Item 24 stating which subcontractors (including consultants) or Selected Subcontractors are to be novated to the Contractor.

This Standard is part of the suite of contracts based on AS 2124—1992 *General conditions of contract.*

See important note on page 1 above.

AS 4301—1995 *General condition of tendering and tender form for design and construct contract and* AS 4302—1995 *Form of formal instrument of agreement for design and construct contract* should be used with this Contract.

WARNINGS:

1 Users of this Australian Standard are warned that Clause 17 (Damage to persons and property) does not limit the liability of parties for special, indirect or consequential losses.

This unlimited liability overrides any limitations or exclusions permitted under Insurance Clauses 18 (Insurance of the work under the Subcontract) and 19 (Public Liability Insurance).

Parties wishing to limit their liability should seek legal and insurance advice before entering a subcontract under this Standard.

2 Where the Principal effects insurance policies under Clause 18 or 19, copies of such policies should be made available to tenderers at the time of tender.

3 For the purposes of Clause 30.2, the inclusion of Quality Assurance requirements in a contract will require detailed clauses in the Contract which have regard to the Quality Standard selected for the work.

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4 **Principals should ensure that their specific requirements are fully and completely incorporated in the 'Principal's Project Requirements' obtaining specialist advice if necessary. Where a Contractor provides a proposed design as part of its tender the parties should give consideration to whether that design should form part of the Preliminary Design.**

5 **Not used.**

6 **Items in Annexure Part A which are marked with a hash symbol (#) indicate that these items are to be deleted where the Contract provides for Separable Portions. If so, the items marked with a hash symbol (#) are to be deleted in Annexure Part A and that part of Annexure Part A entitled Separable Portion is to be completed for each Separable Portion.**

7 **Clauses which are prefixed by an asterisk symbol (*) may be omitted without making consequential amendments to these General Conditions of Contract.**

A1

Legislation has come into force in some jurisdictions dealing with security of payments. Parties intending to use this Standard should seek expert advice as to their rights and obligations under such legislation.

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CONTENTS

		Page
Formal Instrument of Agreement		
1	CONSTRUCTION OF CONTRACT	13
2	DEFINITIONS AND INTERPRETATION	13
3	NATURE OF CONTRACT	24
4	WARRANTIES	25
5	SECURITY AND PERFORMANCE UNDERTAKINGS	27
6	EVIDENCE OF CONTRACT	28
7	SERVICE OF NOTICES	28
8	CONTRACT DOCUMENTS	29
9	ASSIGNMENT AND SUBCONTRACTING	34
10	NOVATION OF CONSULTANT AGREEMENTS	37
11	PROVISIONAL SUMS	37
12	SITE AND LATENT CONDITIONS	38
13	PATENTS, COPYRIGHT AND OTHER INTELLECTUAL PROPERTY RIGHTS	42
14	LEGISLATIVE REQUIREMENTS	43
15	PROTECTION OF PEOPLE AND PROPERTY	45
16	CARE OF THE WORK AND REINSTATEMENT OF DAMAGE	45
17	DAMAGE TO PERSONS AND PROPERTY	46
18	INSURANCE OF THE WORK UNDER THE CONTRACT	47
19	PUBLIC LIABILITY INSURANCE	48
20	INSURANCE OF EMPLOYEES	48
20A	MOTOR VEHICLE INSURANCE	48
21	PROFESSIONAL INDEMNITY INSURANCE	49
22	INSPECTION AND PROVISIONS OF INSURANCE POLICIES	49
23A	PRIMARY	51
23	SUPERINTENDENT	51
24A	RELEASE	52
24	SUPERINTENDENT'S REPRESENTATIVE	52
25	PARTY REPRESENTATIVES AND KEY PERSONNEL	53
26	CONTROL OF CONTRACTOR'S EMPLOYEES AND SUBCONTRACTORS, THE PROJECT AND OTHER CONTRACTORS	53
27	SITE	55
28	SETTING OUT THE WORKS	56
29	MATERIALS, LABOUR AND CONSTRUCTIONAL PLANT	57
30	MATERIALS AND WORK	57
31	EXAMINATION AND TESTING	59
31A	ASBESTOS TESTS	60
32	WORKING HOURS	61
33	PROGRESS AND PROGRAMMING OF THE WORKS	61
34	SUSPENSION OF THE WORKS	63
35	TIMES FOR COMMENCEMENT AND PRACTICAL COMPLETION	64
36	DELAY OR DISRUPTION COSTS	67
37	DEFECTS LIABILITY	68
38	CLEANING UP	69
39	URGENT PROTECTION	70
40	VARIATIONS	70
41	DAYWORK	72
42	CERTIFICATES AND PAYMENTS	72
43	PAYMENT OF WORKERS AND SUBCONTRACTORS	76
44	DEFAULT OR INSOLVENCY	78
45	TERMINATION BY FRUSTRATION	82

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46 NOTIFICATION OF CLAIMS 82
47 DISPUTE RESOLUTION 83
48 WAIVER OF CONDITIONS 84
49 PRIVACY 84
50 EQUAL EMPLOYMENT OPPORTUNITY 85
51 DISABILITY DISCRIMINATION ACT 86
52 ENGAGEMENT OF ILLEGAL WORKERS PROHIBITED 86
53 [NOT USED] 86
54 GST 86
55 TAXES OTHER THAN GST 87
56 LONG SERVICE LEAVE LEVIES 88
57 PPSA 88
58 WORK HEALTH AND SAFETY 89
59 GENERAL 92
60 ADDITIONAL CLAUSES SPECIFIC TO STATES AND TERRITORIES 93
61 MODERN SLAVERY 93
62 CONFLICT OF INTEREST 94

ANNEXURE PART A 95
1. Schedule A1 TO ANNEXURE PART A – NoT USED 103
2. Schedule A2 to Annexure Part A – Contractor's Program 104

ANNEXURE PART B DELETIONS, AMENDMENTS AND ADDITIONS 105

ANNEXURE PART C PRINCIPAL'S PROJECT REQUIREMENTS/SCOPE OF WORKS (SOW) 106
Schedule C1 to Annexure Part C – DHA Specification 132
Schedule C2 to Annexure Part C – DHA Property Inclusion 133
Schedule C4 to Annexure Part C – Tender Schedule of Inclusions 135
Schedule C5 to Annexure Part C – DHA Builders Checklist 136
Schedule C6 to Annexure Part C – Practical Completion, Handover Requirements and Defects Regime 137
PART 1 – PRACTICAL COMPLETION 137
PART 2 – DEFECTS REQUIREMENTS DURING DEFECT LIABILITY PERIOD 139
PART 3 – DHA's RIGHTS 141
PART 4 – USING THE Residential Maintenance Services (RMS) Panel for defectS 142
PART 5 – DEFINITIONS EMERGENCY DEFECTS 142
PART 6 – OTHER DEFINITIONS AND INTERPRETATION 143
Appendix 1: Handover Proforma 144
Appendix 2: PAL Spreadsheet and Warranties 146

ANNEXURE PART D 148
Schedule D1 to Annexure Part D – Milestones payments schedule 149
Schedule D2 to Annexure Part D – Provisional Sum items 150
Schedule D3 to Annexure Part D – Tender Negotiations Register 151

ANNEXURE PART E SCHEDULE OF RATES 152

ANNEXURE PART F DHA AND DEFENCE SPECIFIC REQUIREMENTS 153
Schedule F1 to Annexure Part F – WHS 154
Schedule F2 to Annexure Part F – On base requirements 156

ANNEXURE PART G SPECIAL CONDITIONS 158

ANNEXURE PART H ADDITIONAL CLAUSES SPECIFIC TO STATES AND TERRITORIES 159
Schedule I1 to Annexure Part I – Approved form of unconditional undertaking 164
Schedule I2 to Annexure Part I – Deed of novation for consultants 165
Schedule I3 to Annexure Part I – Form of Parent Company Guarantee 171
Schedule I4 to Annexure Part I – Form of statutory declaration 186

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Australian Standard
General conditions of contract for design and construct

1 CONSTRUCTION OF CONTRACT

1.1 Governing law

The Law governing the Contract, its interpretation and any agreement to arbitrate is the Law of the State or Territory stated in Item 1 of Annexure Part A applicable to Clause 1, or if the State or Territory is not stated, the law of the State or Territory where the Site is located.

1.2 Currency

Unless otherwise provided, amounts specified in the Contract are in Australian currency and payments shall be made in Australian currency.

1.3 Language and units

Communications between the Principal, the Superintendent and the Contractor shall be in the English language.

Measurements of physical quantities in documents prepared or provided under or in connection with the Contract shall be in Australian legal units of measurement within the meaning of the *National Measurement Act 1960* (Cth), as amended from time to time.

2 DEFINITIONS AND INTERPRETATION

2.1 Definitions

In the Contract, except where the context otherwise requires:

'**Acceleration Direction**' means a written direction of the Superintendent given in accordance with Clause 36A and expressly identified as an acceleration direction;

'**Approvals**' means any certificates, licences, consents, permits, approvals, authority or requirements of any Authorities;

'**Asbestos Tests**' has the meaning given in Clause 31A.2;

'**As-built Documents**' means the records, documents, drawings and other information required by the Contract and created (and including, where the context so requires, those to be created) by the Contractor detailing the Works as constructed;

'**Authorised Person**' has the meaning given in clause 13.4(a);

'**Authorities**' means any statutory, public, municipal, governmental or administrative department, commission, authority, agency or entity with jurisdiction in connection with work under the Contract;

'**Bank Guarantee**' means an irrevocable and unconditional bank guarantee which:

(a) is issued in favour of the Principal by an authorised deposit-taking institution authorised under the *Banking Act 1959* (Cth) (or other financial institution approved in writing by the Principal in its absolute discretion) with a long term Standard & Poor's credit rating of at least A- (or equivalent rating with another recognised international rating agency);

(b) is payable on demand in Australian dollars;

(c) is capable of being called upon at a branch office of the issuer in ACT, Australia;

(d) has no expiry date; and

(e) is in the form set out in Schedule I1 of Annexure Part I or as otherwise approved in writing by the Principal;

'Business Day' means:

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(a) except in Clause 42 and Clause 43, a day on which banks are open for general banking business in the State or Territory where the Site is located excluding a Saturday, Sunday, statutory or public holiday; and

(b) in Clause 42 and Clause 43, has the same meaning as in the SOP Act.

'**Certificate of Practical Completion**' means the certificate referred to in Clause 42.3;

'**Certification Functions**' means the following functions of the Superintendent under the Contract:

(a) assessing the proportional contribution of Excepted Risks and other risks to loss or damage under Clause 16.2;

(b) certifying the cost of reinstatement under Clause 22.5(b);

(c) assessing whether the Contractor is entitled to an extension of time to the Date for Practical Completion under Clause 35.8;

(d) making valuations under Clause 40.5;

(e) determining whether Practical Completion has been reached and issuing a Certificate of Practical Completion under Clause 42.3; and

(f) assessing amounts under Clause 44.6;

'**Change in Legislative Requirements'** has the meaning given in Clause 14.2;

'**Claim'** includes any claim, action, right or demand for payment of money (including damages) or for an increase in the Contract Sum, extension of time or any other entitlement:

(a) under, arising out of, or in any way in connection with, the Contract, work under the Contract or the Works, including in relation to any direction of the Superintendent; or

(b) otherwise arising at law or in equity including:

(c) by Law;

(i) in tort for negligence or otherwise, including negligent misrepresentations; or

(ii) for restitution;

'**Commencement Date**' means:

(a) where clause 1.1 (*Definitions*) of the Formal Instrument of Agreement includes Conditions Precedent, the date on which the Conditions Precedent have been satisfied or waived in writing by the Principal; or

(b) where paragraph (a) of this definition does not apply, the Execution Date;

'**Compensable Cause**' means:

(a) a breach of the Contract by the Principal;

(b) any negligent act or negligent omission of the Principal; or

(c) suspension by the Principal or the Superintendent under Clause 34.1(a)(i) as long as the suspension is not caused by any act, default or omission by the Contractor or any of the Contractor's Personnel;

'**Competent Contractor'** means an experienced and competent design and construction contractor of the highest skill and quality, with particular experience in Australia;

'**Constructional Plant**' means appliances and things used in the execution of the work under the Contract but not forming part of the Works;

'**Consultant**' means the consultants listed in Item 24 of Annexure Part A (if any) whose contracts are to be (or, as the context requires, have been) novated to the Contractor under Clause 10;

'**Consultant Agreements**' means the contracts between the Principal and the Consultants which are to be (or, as the context requires, have been) novated to the Contractor under Clause 10;

'**Contamination**' means a solid, liquid, gas, odour, heat, sound, vibration, radiation, pollutant or substance of any kind which makes or may make any segment of the Environment unsafe, unfit or harmful for habitation, use or occupation by any person or animal or not comply with any Law or otherwise damages or may damage the Environment;

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'**Contract**' has the meaning given in clause 1.1 of the Formal Instrument of Agreement;

'**Contract Materials**' means all IP Materials created or produced by, or on behalf of, the Contractor for the Principal as part of, or in the course of performing, the work under the Contract;

'**Contract Sum**' has the meaning given in clause 3 of the Formal Instrument of Agreement;

'**Contractor**' means the person named in the Formal Instrument of Agreement and in Item 5 of Annexure Part A;

'**Contractor Background Materials**' means all IP Materials:

(a) created by, or on behalf of, the Contractor or a third party prior to the Execution Date or independently of this Contract; and

(b) used or otherwise provided by the Contractor in the course of performing the work under the Contract,

but excluding the Contract Materials;

'**Contractor's Design Obligations'** means all tasks necessary to design and specify the Works required by the Contract, including the use, selection, application or preparation of the Design Documents and, if the documents stated in Annexure Part A as describing the Principal's Project Requirements include a Preliminary Design, developing the Preliminary Design;

'**Contractor Documents'** means the Design Documents and all other documents required by the Contract and created (or, where the context requires, to be created), used or applied by the Contractor (including Contractor Background Materials) for the performance of the work under the Contract or the Works;

'**Contractor's Personnel'** means the Contractor's officers, employees, agents, consultants and subcontractors employed or engaged in performance of the work under the Contract, and the officers, employees, consultants and subcontractors of the Contractor's consultants and subcontractors;

'**Contractor's Program'** is referred to in Clause 33.2;

'**Contractor's Representative'** means the person identified as such in Item 6A of Annexure Part A or as replaced by the Contractor from time to time in accordance with Clause 25;

'**Controller'** has the same meaning as in the Corporations Law;

'**Corporation'** has the same meaning as in the Corporations Law;

'**Corporations Law'** means the *Corporations Act 2001* (Cth);

'**Date for Practical Completion**' means:

(a) where Annexure Part A provides a date for Practical Completion, that date; or

(b) where Annexure Part A provides a period of time for Practical Completion, the last day of the period,

but if any extension of time for Practical Completion is granted by the Superintendent or allowed in any litigation, it means the date resulting from that extension;

'**Date of Practical Completion**' means:

(a) the date certified by the Superintendent in a Certificate of Practical Completion to be the date upon which Practical Completion was reached; or

(b) where another date is determined in any litigation as the date upon which Practical Completion was reached, that other date;

'**Day**' means calendar day;

'**Daywork**' means work referred to in Clause 41;

'**Defect**' means:

(a) any error, deficiency, omission, non-conformity, fault, flaw, failure, malfunction, irregularity or other defect (including any Minor Defect);

(b) any aspect of the work under the Contract or the Works which is not in accordance with the requirements of this Contract;

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(c) any aspect of the work under the Contract or the Works which the Principal reasonably regards as a defect; or

(d) without limiting paragraphs (a), (b) or (c), in respect of work under the Contract that must comply with any sample or prototype approved by the Superintendent, such work under the Contract does not comply with the approved sample or prototype (as relevant);

'**Defence**' means the Department of Defence (ABN 68 706 814 312);

'**Defects Liability Period**' means the period or periods referred to in Clause 37;

'**Design Documents**' means the drawings, specifications and other information, samples, models, patterns and the like required by the Contract and created (and including, where the context so requires, those to be created), used or applied by the Contractor (including Contractor Background Materials) for the construction of the Works, but does not include the DHA Design Guidelines;

'**DHA Design Guidelines**' means the design guidelines for the work under the Contract set out or referred to in Schedule C2 to Annexure Part C;

'**DHA Specification**' means the specifications set out or referred to in Schedule C1 to Annexure Part C;

'**Direction'** includes agreement, approval, authorization, certificate, decision, demand, determination, explanation, instruction, notice, order, permission, rejection, request or requirement;

'**Discrepancy**' means any inconsistency, conflict, ambiguity or discrepancy;

'**Dispute**' means any dispute (of any kind or type, whether based in contract, tort, statute, regulation, equity or otherwise) arising out of, relating to, or connected with the Contract, or the performance of the work under the Contract or the Works, including any dispute concerning the existence, validity, interpretation, breach or termination of the Contract;

'**Dispute Resolution Executives**' means the representatives of the Contractor and the Principal set out in Item 53 of Annexure Part A;

'**Environment**' means all:

(a) physical factors including the land (and subsurface), weather, waters, atmosphere, climate (including wind), sounds, odours and tastes;

(b) biological factors of animals and plants;

(c) social factors of aesthetics; and

(d) properties and occupants of those properties,

at, around, nearby or affecting the Site;

'**Excepted Risk**' means any of the risks referred to in Clause 16.3;

'**Execution Date**' means the date on which the Formal Instrument of Agreement is executed by all parties;

'**Final Payment Certificate**' means a certificate issued by the Superintendent to the Principal and to the Contractor pursuant to Clause 42.6;

'**Final Payment Claim**' means the final payment claim referred to in Clause 42;

'**Formal Instrument of Agreement**' means the agreement between the parties to which these General Conditions of Contract are attached;

'**Good Design and Construction Practices**' means practices followed when work is undertaken in accordance with all of the following:

(a) in a sound and workmanlike manner;

(b) with due care and skill;

(c) using materials of new and merchantable quality which are fit for the intended purpose;

(d) to the standard expected of a Competent Contractor;

(e) in accordance with all applicable Laws and all relevant standards, codes and guidelines; and

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(f) consistently with best practice for the design and construction of works similar to the Works;

'**Inclement Weather Event**' means the existence of weather conditions on Site:

(a) which renders it unsafe for employees of the Contractor (or its subcontractors) to continue performance of the work under the Contract on the Site if directly exposed to such conditions; or

(b) where the work under the Contract or the Works are unable to continue during such conditions; or

(c) which prevents the Contractor (or its subcontractors) from accessing the Site,

provided that the circumstances described in paragraphs (a), (b) or (c), as applicable, continue for 1 full working day;

'**Insolvency Event**' means in respect of a person:

(a) an order being made, or the person passing a resolution, for its winding up;

(b) an application being made to a court for an order for its winding up, unless the application is withdrawn or dismissed within 5 Business Days;

(c) an administrator being appointed to the person;

(d) the person resolving to appoint a Controller or analogous person to the person or any of the person's property, assets or undertaking to make:

  (i) an application to a court for an order to appoint a Controller, provisional liquidator, trustee for creditors or in bankruptcy or analogous person to the person or any of the person's property, unless the application is withdrawn or dismissed within 5 Business Days; or

  (ii) an appointment of the kind referred to in subparagraph (d)(i) being made (whether or not following a resolution or application);

(e) the holder of a Security Interest (as defined under the PPSA) taking possession of any of the person's property;

(f) the person being taken under section 459F(1) of the Corporations Law to have failed to comply with a statutory demand;

(g) the person:

  (i) suspending payment of its debts, ceasing (or threatening to cease) to carry on all or a material part of its business, stating that it is unable to pay its debts or being or becoming otherwise insolvent; or

  (ii) being taken by applicable law to be (or if a court would be entitled or required to presume that the person is) unable to pay its debts or is otherwise insolvent;

(h) the process of any court or Authority being invoked against the person or any of its property to enforce any judgment or order for the payment of money or the recovery of any property, unless the person is able, within 5 Business Days to satisfy the other party that there is no substantial basis for the judgment or order in respect of which the process was invoked;

(i) the person dying, ceasing to be of full legal capacity or otherwise becoming incapable of managing its own affairs for any reason;

(j) the person taking any step that could result in the person becoming an insolvent under administration (as defined in section 9 of the Corporations Law);

(k) the person taking any step toward entering into a compromise or arrangement with, or assignment for the benefit of, any of its members or creditors; or

(l) any analogous event,

unless this takes place as part of a solvent reconstruction, amalgamation, merger or consolidation that has been approved by the other party;

'**Intellectual Property Rights**' means all current and future intellectual and industrial property rights and interests throughout the world, whether registered or unregistered, including:

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(a) patents, trade marks (including goodwill in those marks), domain names, design rights, copyright, circuit layout rights, trade secrets, know-how and the right to confidentiality;

(b) applications for, or right to apply for registration of, any of them;

(c) rights under licences and consents in relation to any of them; and

(d) other forms of protection of a similar nature or having equivalent or similar effect to any of them;

'**Interest Rate**' for a relevant interest period means the rate set out in Item 14 of Annexure Part A;

'**IP Materials**' means material in whatever form, including documents, specifications, designs, plans, reports, products, equipment, information, data, concepts, inventions, processes, formulae, know-how, graphic layouts, images and software and includes, as the context requires, the Contractor Documents, Constructional Plant and Temporary Works;

'**Item**' means an item in Annexure Part A;

'**Key Personnel**' means the personnel of the Contractor set out in Item 34B of Annexure Part A in the roles identified in Item 34B of Annexure Part A;

'**Latent Condition**' means any of the conditions referred to in Clause 12.1;

'**Law**' means any act, ordinance, regulation, subordinate legislation, by-law, award, order or proclamation of the Commonwealth or the State or Territory in which work under the Contract or any part thereof is being carried out;

'Legislative Requirements' includes:

(a) Law (including WHS Law);

(b) Approvals (including Principal's Approvals); and

(c) fees and charges payable in connection with the foregoing;

'**LSL Laws**' has the meaning given in Clause 56(a);

'**LSL Levies**' has the meaning given in Clause 56(b);

'**Minor Defect**' means any Defect:

(a) which does not prevent the Works from being reasonably capable of being used for their Stated Purpose; and

(b) which the Superintendent or Principal determines the Contractor has reasonable grounds for not rectifying prior to the issue of a Certificate of Practical Completion;

(c) the existence and rectification of which will not inconvenience or adversely affect the Principal having regard to the purpose for which it intends to use and occupy the Works; and

(d) which does not cause any legal impediment to the use or occupation of the Works by the Principal; and

'**Month**' means calendar month;

'**Moral Rights**' has the meaning given in the *Copyright Act 1968* (Cth);

'**Non-rippable Rock**' means rock located below the surface of the Site that:

(a) prevents the Contractor from excavating the Site using a 20 tonne excavator; and

(b) requires hammering to break up and remove,

as determined by the Principal or the Superintendent in accordance with clause 12.5;

'**Non-Standard Fittings**' means any fittings or fixtures described as such in the Principal's Project Requirements or otherwise identified in a written notice issued to the Contractor by the Principal or the Superintendent from time to time;

'**Parent Company**' means the entity set out in Item 47A of Annexure Part A;

'**Parent Company Guarantee**' means a deed of guarantee and indemnity provided by the Parent Company in favour of the Principal in the form set out in Schedule I3 of Annexure Part I;

'**Person**' includes a firm or body corporate or unincorporate or an individual;

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'**Practical Completion**' is that stage in the execution of the work under the Contract when:

(a) the Works are complete in accordance with the Contract and are fit for use or occupation by the Principal except for Minor Defects;

(b) those tests which are required by the Contract to be carried out and passed before the Works reach Practical Completion, have been carried out and passed to the satisfaction of the Superintendent and the results have been provided to the Superintendent;

(c) all documents and other information required to have been delivered by the Contractor to the Principal or the Superintendent prior to Practical Completion, including:

(i) all As-built Documents;

(ii) all Subcontractor Warranties required by Clause 9.7;

(iii) any such documents or information set out or referred to in the DHA Specification, the DHA Design Guidelines and/or the handover requirements set out in Schedule C6 to Annexure Part C;

(iv) evidence of compliance with all documents created in accordance with the Contractor's quality assurance system, including final inspection and lists; and

(v) the manuals to be prepared by the Contractor for the operation, maintenance and repair of the Works,

have been supplied to the Principal or the Superintendent;

(d) all other warranties, guarantees, certificates, manuals, documents and other information required under the Contract which, in the opinion of the Superintendent, are reasonably necessary for the lawful use, operation and maintenance of the Works or any part of the Works, have been supplied to the Principal or the Superintendent;

(e) the Contractor has provided to the Superintendent two copies of written certification from each Consultant in accordance with Clause 9.8;

(f) the Contractor has provided to the Superintendent all fire rating certificates as specified for various materials and the Works;

(g) the Contractor has provided a certificate from an independent consultant that the fire services function under normal and simulated emergency operating conditions are in accordance with the requirements of the Contract;

(h) all services, plant and equipment have been physically completed, commissioned, initially tested and are in a continuously useable condition having passed demonstration of operation under normal and simulated emergency operating conditions and including final acceptance testing to the satisfaction of the Superintendent;

(i) all Intellectual Property Rights have vested and been granted in accordance with Clause 13;

(j) all rubbish, surplus material and minor items of plant and equipment have been removed from the Site so as to leave the Site in a clean and tidy condition;

(k) the Works otherwise also comply with the Principal's Project Requirements;

(l) the Site and the Works have been cleaned to a professional standard in accordance with the cleaning requirements set out in Schedule C6 of Annexure Part C and the DHA Specification and DHA Design Guidelines;

(m) certification from a licensed surveyor to the effect that the Works are within the boundaries required by the Contract and that the structural elements of the Works are within the spatial tolerances specified in the Contract, has been provided to the Principal or the Superintendent;

(n) all Approvals which are necessary for the use of the Works have been obtained and are in effect and copies of which have been provided to the Principal or the Superintendent;

(o) the Contractor (at its own cost, and in a matter approved by the Principal), assigned full right, title and interest in and to any part of the Works in respect of which property has not already passed to the Principal;

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(p) the number of sets of keys for the Works specified in the Principal's Project Requirements, each set fitted with plastic tags having approved label inserts, have been supplied by the Contractor to the Superintendent in accordance with a schedule or register of keying which has been approved by the Superintendent and all construction locks have been replaced with the final lock barrels and have been checked and adjusted; and

(q) any other matters or conditions required by the Contract in order to achieve Practical Completion have been satisfied;

'**PPSA**' means the Personal Property Securities Act 2009 (Cth);

'**PPS Law**' means:

(a) the PPSA and any regulations made at any time under the PPSA, as amended from time to time;

(b) any relevant amendment made at any time to any other legislation as a consequence of paragraph (a);

(c) any provision of the PPSA or regulations referred to in paragraph (a);

(d) any amendment to any of the above, made at any time; or

(e) any amendment made at any time to the Corporations Law or any other legislation in connection with the implementation or as a consequence of the PPSA;

'**Preliminary Design**' means the preliminary design of the Works included in the documents stated in Annexure Part A as describing the Principal's Project Requirements and includes all work already performed on the design of the Works by the Consultants prior to the Commencement Date;

'**Preliminary Report**' means the safety in design report and matrix set out in Schedule I6 of Annexure Part I.

'**Prescribed Notice**' has the meaning in Clause 46.3;

'**Principal**' means the Principal stated in Item 3 of Annexure Part A and named in the Formal Instrument of Agreement;

'Principal-caused Delay' means:

(a) any delay or disruption caused by the Principal, the Superintendent, or an employee, consultant, other contractor or agent of the Principal or Superintendent;

(b) a Variation directed under Clause 40, other than a Variation requested by the Contractor under Clause 40.4 or a Variation that is necessary due to the Contractor's default; or

(c) suspension by the Superintendent under Clause 34.1(a)(i) as long as the suspension is not caused by any act, default or omission by the Contractor of any of the Contractor's Personnel,

but excluding any events in paragraphs (a) to (c) of this definition which would not have occurred but for:

(d) an act or omission of the Contractor or any of the Contractor's Personnel;

(e) the occurrence of an event or the existence of a circumstance the risk of which has been accepted by the Contractor under the Contract; or

(f) the lack of legal capacity, or corporate power, of the Contractor;

'**Principal's Approvals**' means the Approvals to be obtained by the Principal as set out in Item 11A of Annexure Part A;

'**Principal's Background Materials**' means all IP Materials owned or licenced by the Principal and provided by, or on behalf of, the Principal to the Contractor for the purposes of this Contract;

'**Principal's Project Requirements**' means the written summary or outline of the Principal's requirements for the Works and the scope of Works described in the documents stated in Item 11 of Annexure Part A and:

(a) shall include the stated purpose for which the Works are intended;

(b) may include the Principal's design, timing and cost objectives for the Works; and

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(c) where stated in Annexure Part A, shall include a Preliminary Design;

'**Principal's Representative**' means the person nominated in Item 4A of Annexure Part A or any other person appointed by the Principal from time to time under Clause 25.3;

'**Principal-supplied Information**' has the meaning given in Clause 4.1(c)(ii);

'**Privacy Act**' means the *Privacy Act 1988* (Cth);

'**Project**' means the project identified in Item 6B of Annexure Part A which the Works form part;

'**Proportionate Liability Legislation**' means:

(a) Part 4 of the *Civil Liability Act 2002* (NSW);

(b) Part IVAA of the *Wrongs Act 1958* (Vic);

(c) Part 2 of the *Civil Liability Act 2003* (Qld);

(d) Part 1F of the *Civil Liability Act 2002* (WA);

(e) section 72 of the *Development Act 1993* (SA) and Part 3 of the *Law Reform (Contributory Negligence and Apportionment of Liability) Act 2001* (SA);

(f) Part 9A of the *Civil Liability Act 2002* (Tas);

(g) section 141 of the *Building Act 2004* (ACT) and Chapter 7A of the *Civil Law (Wrongs) Act 2002* (ACT);

(h) *Proportionate Liability Act 2005* (NT); and

(i) Part IVA of the *Competition and Consumer Act 2010* (Cth);

'**Provisional Sum**' means any Provisional Sum specified in Item 26 of Annexure Part A;

'**Related Activities**' means works or services, performed or undertaken to be performed or undertaken by the Principal, contractors, consultants or suppliers of the Principal, or Authorities, either concurrently or sequentially with the work under the Contract at, on, over or adjacent to the Site or which may be connected to, associated with, ancillary to, or otherwise related or relevant to the work under the Contract;

'**Related Activities Contractors**' means any person engaged to perform the Related Activities, which may include persons engaged to perform or supply items or work to which a Provisional Sum relates;

'**Relevant Person**' has the meaning given in Clause 14.4(b);

'**Residential Contract of Sale**' means a contract for the sale of a residential lot forming part of the Works;

'**Sale Contract Review**' has the meaning given in Clause 8.7(b);

'**Schedule of Rates**' means the schedule of rates included in Annexure Part E (if any);

'**Security**' means the Bank Guarantee(s) provided pursuant to Clause 5 and any replacement or additional Bank Guarantee provided by the Contractor in accordance with this Contract;

'**Selected Subcontract Work**' means that work or the supply of those items subcontracted to a Selected Subcontractor pursuant to Clause 9.4;

'**Selected Subcontractor**' means a subcontractor carrying out Selected Subcontract Work;

'**Separable Portion**' means a portion of the work under the Contract described in the Contract as a Separable Portion or which the Principal or the Superintendent has determined pursuant to Clause 35.3 shall be a Separable Portion;

'**Site**' means the lands identified as the 'Site' in the Principal's Project Requirements and other places to be made available and any other lands and places made available to the Contractor by the Principal for the purpose of the Contract;

'**SOP Act**' means the relevant security of payment law of the State or Territory in which work under the Contract or any part thereof is being carried out, specifically being either the:

(a) *Building and Construction Industry (Security of Payment) Act 2009* (ACT);

(b) *Construction Contracts (Security of Payments) Act 2004* (NT);

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(c) *Building Industry Fairness (Security of Payment) Act 2017* (Qld);

(d) *Building and Construction Industry Security of Payment Act 2009* (SA);

(e) *Building and Construction Industry Security of Payment Act 2009* (Tas);

(f) *Building and Construction Industry Security of Payment Act 1999* (NSW);

(g) *Building and Construction Industry Security of Payment Act 2002* (Vic); *or*

(h) *Construction Contracts Act 2004* (WA),

or such other Act or Acts which replace these Acts;

'**Stated Purpose**' means the intended purpose of the Works:

(a) as stated in the Principal's Project Requirements; and

(b) as could reasonably be inferred by a Competent Contractor from what is stated in the Contract;

'**subcontractor**' in Clauses 9 and 10 includes any person engaged by the Contractor to perform consultancy services in connection with the work under the Contract;

'**Subcontractor Warranties**' means the warranties from subcontractors for those parts of the Works and for the respective durations specified in Item 18 of Annexure Part A and the DHA Specification and DHA Design Guidelines;

'**Superintendent**' means the person stated in Item 7 of Annexure Part A as the Superintendent or other person from time to time appointed in writing by the Principal to be the Superintendent and notified as such in writing to the Contractor by the Principal and, so far as concerns the functions exercisable by a Superintendent's Representative, includes a Superintendent's Representative;

'**Superintendent's Representative**' means the person identified as such in Item 8A of Annexure Part A and any person or replacement appointed by the Superintendent pursuant to Clause 24;

'**survey mark**' in Clause 28, means a survey peg, bench mark, reference mark, signal, alignment, level mark or any other mark for the purpose of setting out, checking or measuring work under the Contract;

'**Tax**' means any income (including payroll), land, indirect and other taxes, excise, levies (including LSL Levies), imposts, deductions, charges, duties, compulsory loans and withholdings, including Withholding Payments, financial institutions duty, debits tax or other taxes whether incurred by, payable by return or passed on to another person and includes any interest, penalties, charges, fees, fines or other amounts imposed in respect of any of the above, but does not include GST;

'**Temporary Works**' means works used in the execution of the work under the Contract but not forming part of the Works;

'**Test**' in Clause 31, includes examine and measure;

'**Transition Services**' has the meaning given in Clause 44.10(b)(iii);

'**Variation**' has the meaning in Clause 40;

'**Variation Order**' means a written direction by the Principal pursuant to Clause 40.1 and identified as a 'Variation Order';

'**WHS Law**' means all Laws, codes of practice, other compliance codes, regulations, directions on safety or notices issued by any relevant Authorities, and standards (including those of the Commonwealth of Australia and of the State or Territory where the work under the Contract is being carried out) relevant and applicable to any part of the Works or dealing with or relevant to health and safety at work and of workers and others who may be affected by the carrying out of the Works as amended from time to time, and includes any Approvals in respect of such matters;

'**Withholding Payments**' has the meaning given in Schedule 1 of the *Taxation Administration Act 1953* (Cth);

'**Work under the Contract**' or '**WUC**' means the work which the Contractor is or may be required to execute under the Contract and includes the Contractor's Design Obligations, Variations directed pursuant to a Variation Order, remedial work, demolition work, project management functions, Constructional Plant and Temporary Works, all work described in the Principal's Project Requirements and all work ancillary to that set out above necessary for the Contractor to comply

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with its obligations under the Contract including anything which can be reasonably inferred from the Contract even though not expressly stated; and

'**Works**' means the whole of the work to be executed in accordance with the Contract, including Variations directed pursuant to a Variation Order, which by the Contract is to be handed over to the Principal.

2.2 **Interpretation**

In the Contract:

(a) the clause headings and sub-clause headings in the Contract are for convenience only and do not affect the interpretation of the Contract;

(b) words in the singular include the plural and words in the plural include the singular, according to the requirements of the context;

(c) words importing a gender include every gender;

(d) if the time for giving any notice, issuing any certificate or making any payment required or permitted by the Contract, falls on a Saturday, Sunday or Statutory or Public Holiday, then the time for giving the notice, issuing the certificate or making the payment shall be deemed to be on the day next following which is not a Saturday, Sunday or Statutory or Public Holiday;

(e) a reference to time is to local time in the capital city of the State stated in the Annexure Part A item applicable to Clause 1;

(f) a reference to a 'day', 'month' or 'year' is a reference to a calendar day, month and year (respectively);

(g) specifying anything in the Contract after the word "includes" or "for example" or similar expressions does not limit what else is included;

(h) an expression importing a person includes any company, partnership, joint venture, association, corporation or other body corporate, any government agency and an individual;

(i) a reference to anything (including, but not limited to, any right) includes a part of that thing but nothing in this Clause 2.2(i) implies that performance of part of an obligation constitutes performance of the obligation;

(j) a reference to a part, clause, party, annexure, attachment exhibit or schedule is a reference to a part, clause, party, annexure, attachment, exhibit and schedule to or of the Contract;

(k) a reference to any legislation includes all delegated legislation made under it and amendments, consolidations, replacements or re-enactments of it;

(l) a reference to a document includes all amendments, supplements, replacements or novations to or of that document;

(m) a reference to a party to a document includes that party's successors and permitted assigns;

(n) no provision of the Contract will be construed adversely to a party solely on the ground that the party was responsible for the preparation of the Contract or that provision;

(o) a promise on the part of 2 or more people binds them jointly and severally;

(p) a reference to a body, other than a party to the Contract (including, without limitation, an institute, association or authority), whether statutory or not:

(i) which ceases to exist; or

(ii) whose powers or functions are transferred to another body,

is a reference to the body which replaces it or which substantially succeeds to its powers or functions.

(q) A reference in these terms to the "DHA Specification" and/or "DHA Design Guidelines" only applies/takes effect where the Project involves the design and construction of residences.

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2.3 **Trust Provisions (Not Used)**

3 NATURE OF CONTRACT

3.1 **Performance and Payment**

(a) The Contractor shall execute and complete the work under the Contract in accordance with the requirements of the Contract.

(b) The Principal shall pay the Contractor the Contract Sum in accordance with the Contract.

3.2 **No adjustment to Contract Sum**

The Contractor acknowledges and agrees that:

(a) the Contract Sum represents its full and complete payment, and includes an allowance for:

(i) all matters and things necessary for the performance and completion of the work under the Contract in accordance with the Contract;

(ii) all of the Contractor's obligations under the Contract; and

(iii) without limiting this Clause 3.2(a):

(A) anything that a Competent Contractor would have anticipated would be part of, or involved in, the work under the Contract; and

(B) anything required to perform the work under the Contract in accordance with Legislative Requirements, and

(b) except as expressly provided for in the Contract:

(i) the Contractor is not entitled to any adjustment in the Contract Sum or to additional payment under the Contract or arising out of or in connection with the work under the Contract; and

(ii) the Contract Sum and any rates or prices included in the Contract are not subject to adjustment for rise and fall in respect of any site allowance or by reason of fluctuations in exchange rates or changes in the cost of labour and materials, or for any other matter, even where the Contractor is entitled to an extension of time to the Date for Practical Completion.

3.3 **Quantities**

(a) The Schedule of Rates is only to be used for the purposes of valuing Provisional Sum work or items pursuant to Clause 11.1, valuing Variations under Clause 40.5 and assessing payment claims under Clause 42.

(b) The Contractor acknowledges and agrees that:

(i) except as provided for in Clause 3.3(a), the Schedule of Rates is not to be relied on, or referred to, as an aid in interpreting or construing the Contract;

(ii) the Schedule of Rates does not in any way limit or reduce the Contractor's obligation to perform the work under the Contract in accordance with the Contract nor any other obligation of the Contractor under the Contract; and

(iii) the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of, or in connection with the Schedule of Rates, or any errors, inaccuracies or omissions in the Schedule of Rates.

(c) For the avoidance of doubt, and without limiting Clauses 3.3(a) and 3.3(b), where the actual quantity of an item required to perform the Contract is greater or less than the quantity shown in the Schedule of Rates or any other document or drawing forming part of the Contract, or is omitted from the quantities shown in the Schedule of Rates or any other document or drawing forming part of the Contract, there shall be no adjustment to the Contract Sum nor any extension of time for Practical Completion.

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4 WARRANTIES

4.1 Contractor's Warranties

Without limiting the generality of Clause 3.1, the Contractor represents and warrants to the Principal that the Contractor:

(a) is and at all times shall be suitably qualified and experienced, and shall perform the work under the Contract with the degree of professional skill, care and diligence which could reasonably be expected of a Competent Contractor;

(b) subject to Clause 9, shall engage and retain the subcontractors identified in the Contractor's tender and who are suitably qualified and experienced and, without limiting any other obligation of the Contractor under the Contract, will coordinate the activities of the subcontractors so that the Works are executed in a proper and workmanlike manner;

(c) has examined and carefully checked:

(i) the Principal's Project Requirements and the Preliminary Design included in the Principal's Project Requirements (including all work already performed on the design of the Works by the Consultants prior to the Commencement Date (if any));

(ii) all information, data, representations, statements and documents made, or supplied to the Contractor, by the Principal, the Superintendent or any other person whether or not on behalf of the Principal, in relation to the work under the Contract or the Works (including all information, data, representations, statements and documents with respect to the Site) ('**Principal-supplied Information**'),

and that each are suitable, appropriate and adequate for the Stated Purpose and the purpose of enabling the Contractor to perform the work under the Contract in accordance with the Contract;

(d) has not relied, and will not rely, upon any Principal-supplied Information;

(e) shall execute and complete the Contractor's Design Obligations and use, select, apply and produce the Design Documents to accord with the Principal's Project Requirements and, in respect of the Consultant Agreements novated to the Contractor under Clause 10, retain the Consultants for any work the subject of the Consultant Agreements;

(f) shall execute and complete the work under the Contract in accordance with the Design Documents so that the Works, when completed, will:

(i) be fit for the Stated Purpose; and

(ii) comply with all the requirements of the Contract including:

(A) all Legislative Requirements;

(B) Good Design and Construction Practices; and

(C) the Principal's Project Requirements; and

(iii) comply and be consistent with all samples and prototypes approved by the Superintendent pursuant to Clause 8.2A;

(g) has examined the Contract, the Site and its surroundings including the Environment, existing services and all other information relevant or necessary to determine the Contract Sum and in agreeing the Date for Practical Completion;

(h) has examined and relied solely upon its own assessment, skill, expertise and enquiries in respect of all information relevant to the risks, contingencies and other circumstances having an effect on determining the Contract Sum or on the Contractor achieving Practical Completion by the Date for Practical Completion;

(i) has examined the condition of the roads to the Site, including access to the Site and any other conditions affecting transportation, disposal, handling and storage of materials and equipment required for or in the course of the work under the Contract;

(j) has examined and carefully checked, and has relied solely upon its own assessment, expertise and enquiries in respect of, all Approvals (including any Approvals issued by

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local authorities and any development approval requirements or conditions) having an effect on determining the Contract Sum or on the Contractor achieving Practical Completion by the Date for Practical Completion; and

(k) has made full and adequate allowance in the Contract Sum for the costs of, and in the Date for Practical Completion for the time required for:

(i) all matters and things necessary for the performance and completion of the work under the Contract in accordance with the Contract; and

(ii) complying with all of the Contractor's obligations under the Contract.

With the exception of the design for the Civil construction works the Contractor acknowledges that the Principal's Project Requirements and Preliminary Design included in the Principal's Project Requirements (including the work already performed on the design of the Works by the Consultants prior to the Commencement Date):

(l) are not a comprehensive or complete design (and that the development and completion of a detailed design for the Works forms part of the work under the Contract and is the sole responsibility of the Contractor); and

(m) do not set out an exhaustive description of the scope of the work under the Contract and the Works.

In relation to the design for the Civil construction works, the Contractor acknowledges that:

(n) the design for the Civil construction works has been completed and has reached the "For Construction" stage;

(o) the Contractor must not amend the design for the Civil construction works, or vary the Civil construction works to be performed under the Contract, unless first directed by the Principal in writing and otherwise in accordance with Clause 40;

(p) should the Contractor wish to amend the design for the Civil construction works for the benefit of the Contractor, the Contractor's entitlement to time and costs, and the Principal's obligations, are limited in accordance with Clause 40.4.

4.2 Warranties Unaffected

The Contractor acknowledges that the warranties in Clause 4.1, the Contractor's Design Obligations and all other obligations and liabilities of the Contractor under the Contract shall remain unaffected notwithstanding:

(a) that design work (including the Preliminary Design) has been carried out by or on behalf of the Principal and included in the Principal's Project Requirements;

(b) that the Contractor has entered into deeds of novation in respect of the novation of the Consultant Agreements under Clause 10 and thereafter has retained the Consultants in connection with the work under the Contract;

(c) any receipt or review of, or comment or direction on, the Design Documents by the Superintendent or the Principal;

(d) the Principal-supplied Information;

(e) any Variation under Clause 40; and

(f) any acceptance, receipt, review, comment, rejection or expression of satisfaction or dissatisfaction by or on behalf of the Principal or the Superintendent, whether under the Contract or otherwise, of, with or in relation to:

(i) any of the Contractor's selection of subcontractors;

(ii) any of the Contractor's material, plant or equipment selections used in the Works; or

(iii) the execution of any work under the Contract.

4.3 Reliance

The Contractor acknowledges and agrees that the Principal:

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(a) has relied on each of the warranties, acknowledgements, agreements and representations given in Clauses 3, 4 and 8; and

(b) would not have entered into the Contract but for those warranties, acknowledgements, agreements and representations.

5 SECURITY AND PERFORMANCE UNDERTAKINGS

5.1 Purpose

Security is to be held by the Principal for the purpose of ensuring the due and proper performance of the Contract and any other contracts the Contractor has with the Principal.

5.2 Provision of Security

Security must be provided by the Contractor in the amount stated in Item 13 in Annexure Part A and in accordance with Clause 5.

5.3 Form of Security

The Security must be in the form of one or more Bank Guarantees in favour of the Principal in accordance with Item 13 of Annexure Part A.

The Principal may, in its sole discretion, approve or disapprove of the form of Bank Guarantee and the financial institution giving it. The unconditional undertaking in the form of Schedule I1 to Annexure Part I is approved.

5.4 Time for Provision of Security

Security shall be provided within 5 Business Days of the Execution Date.

5.5 Retention Moneys

[Not used]

5.6 Conversion of Security

(a) Without limiting the unconditional nature of the Security, the Principal may at any time demand, receive and use the proceeds of, and otherwise have recourse to, the Security where the Principal asserts a right to the payment of money by the Contractor under, arising out of, or in connection with the Contract, any other contract with DHA or otherwise at Law.

(b) The Contractor must not institute any proceedings, or exercise any right or take any steps to injunct or otherwise restrain:

(i) the financial institution that issued the Security from paying the Principal pursuant to the Security;

(ii) the Principal from taking any steps for the purpose of making a demand under the Security or receiving payment under the Security, or otherwise exercising its rights under the Security; or

(iii) the Principal using the money received under the Security,

even where the Contractor disputes the Principal's right to payment pursuant to Clause 47.

(c) Where the Principal has had recourse to the Security and it is subsequently found that the amounts drawn down were not payable by the Contractor, the Principal will repay the amount not payable by the Contractor plus interest on that amount at the Interest Rate (per annum) within 20 Business Days and the repayment of this amount will be the sole and exclusive remedy of the Contractor against the Principal with respect to such recourse to the Security.

5.7 Not used

5.8 Reduction of Security

Where specified in Item 17, upon the issue of:

(a) the Certificate of Practical Completion; or

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(b) if the Works are divided into Separable Portions, the last Certificate of Practical Completion,

(as applicable) the Principal's entitlement to Security shall be reduced to the amount stated in Item 17 of Annexure Part A.

The Principal shall release the Security in excess of the entitlement within 14 days of the entitlement being so reduced.

5.9 **Release of Security**

The Principal shall release the Security when required by Clause 42.6. If the Contractor has provided additional Security for any item of unfixed plant and materials pursuant to Clause 42.2, the Principal shall release that additional Security within 14 days after the incorporation into the Works of the unfixed plant or materials.

5.10 **Holding of and Interest on Cash Security**

[Not used]

5.11 **Deed of Guarantee, Undertaking and Substitution**

Where specified in Item 47, the Contractor must procure the execution of a Parent Company Guarantee by the Parent Company and deliver the executed Parent Company Guarantee to the Principal within 5 days after the Execution Date.

6 EVIDENCE OF CONTRACT

[Not used]

7 SERVICE OF NOTICES

7.1 **Form of notice**

A notice or other communication to a party under the Contract:

(a) must be in writing and comply with Clause 1.3;

(b) where the sender is the Contractor, must be signed by either the Contractor's Representative, an officer, authorised signatory or under the common seal of the Contractor;

(c) where the sender is the Principal, must be signed by either the Principal's Representative, an officer or authorised signatory, or under the common seal of the Principal; and

(d) must be addressed as follows:

(i) if to the Principal, as set out in Item 4 or Item 4A (as applicable);

(ii) if to the Contractor, as set out in Item 6 or Item 6A (as applicable);

(iii) if to the Superintendent, as set out in Item 8 or Item 8A (as applicable),

(e) or to a substitute address notified to the sender by the party.

(f) Any notice addressed to the Principal must be copied to the Principal's Representative and the Superintendent also.

7.2 **How notice must be given and when notice is received**

A notice must be given by one of the methods set out in the table below.

A notice is regarded as given and received at the time set out in the table below.

However, if this means the notice would be regarded as given and received outside the period between 9.00 am and 5.00 pm (addressee's time) on a Business Day, then the notice will instead be regarded as given and received at 9.00 am (addressee's time) on the following Business Day.

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Method of giving notice	When notice is regarded as given and received
By hand to the nominated address	When delivered to the nominated address
By pre-paid trackable (registered or express) post to the nominated address	At 9.00am (addressee's time) on the second Business Day after the date of posting
By email to the nominated email address	When the email or notification has been recorded as sent in the sender's email records, provided that: 1 the subject line of the email is in accordance with the requirements of Item 4A or Item 8A, if applicable; 2 the email (including any attachments) does not exceed the file size specified in Item 4A and Item 8A, if applicable; and 3 where an "out of office" or "delivery notification failure" or similar reply or response is delivered to the computer from which the email or notification was sent, the email will not be taken to be received and the sender must use an alternative method of sending the notice in accordance with this Clause 7.2.

8 CONTRACT DOCUMENTS

8.1 Order of Precedence

(a) If there is any Discrepancy:

(i) within or between any document prepared for the purpose of executing the work under the Contract, the Superintendent will direct the Contractor as to the interpretation to be followed by the Contractor;

(ii) between any of the documents forming this Contract, subject to Clause 8.1(a)(iv), then the order of precedence (in descending order of precedence) of the documents comprising the Contract listed in Item 15 shall apply to resolve the Discrepancy, unless the Superintendent determines that a different order of precedence would impose on the Contractor a greater or higher requirement, standard, level of services or scope, in which case that different order of precedence will apply to the extent necessary to allow the greater or higher requirement to prevail;

(iii) within any of the documents forming this Contract, then the provision which imposes a greater or higher requirement, standard, level of service or scope on the Contractor will prevail; and

(iv) between figured and scaled dimensions, the figured dimensions shall prevail.

(b) Without limiting this Clause 8.1, the Contractor must comply with the special conditions set out in Annexure Part G (if any).

8.1A Discrepancies

(a) If the Contractor discovers, or becomes aware of, any Discrepancy within or between any documents forming the Contract or within or between any document prepared for the purpose of executing the work under the Contract, then the Contractor must immediately notify the Superintendent in writing of that Discrepancy, and the Contractor's proposed interpretation of the relevant documents to resolve the Discrepancy having regard to the relevant principles set out in Clause 8.1.

(b) The Superintendent will notify the Contractor of the interpretation to apply having regard to the relevant principles set out in Clause 8.1 within 10 Business Days of receiving notice from the Contractor pursuant to Clause 8.1A(a), or if the Superintendent or Principal discovers any Discrepancy within or between any documents forming the Contract or

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within or between any document prepared for the purpose of executing the work under the Contract.

8.1B No Claim for Discrepancies

The Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of or in connection with any:

(a) Discrepancy within or between any documents prepared for the purpose of carrying out the work under the Contract;

(b) Discrepancy within or between any documents forming the Contract; or

(c) action or interpretation of the Principal or the Superintendent under Clauses 8.1 or 8.1A.

8.2 Supply of Documents by Principal

(a) The Principal shall supply to the Contractor the number of copies stated in Item 20 of Annexure Part A or, if no number is stated, then 1 copy of the documents describing the Principal's Project Requirements and other documents required by the Contract to be supplied by the Principal to the Contractor.

(b) Documents supplied by the Principal to the Contractor shall remain the property of the Principal and shall be returned by the Contractor to the Principal on demand in writing. The documents must not, without the prior written approval of the Principal, be used, copied or reproduced for any purpose other than the execution of the work under the Contract.

(c) Any Principal-supplied Information shall not constitute a warranty or representation of any kind by the Principal and the Contractor acknowledges and agrees that such information, data, representations, statements or documents have been checked and verified by the Contractor.

(d) The Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of, or in connection with, any Principal-supplied Information.

8.2A Samples and Prototypes

(a) If there is:

(i) a sample listed in the Contract or directed by the Principal or the Superintendent, the Contractor shall source a sample of that work under the Contract and obtain the Superintendent's approval of that sample; and

(ii) a prototype listed in the Contract or directed by the Principal or the Superintendent, the Contractor shall design and construct a prototype of that work under the Contract and obtain the Superintendent's approval of that prototype,

before undertaking any work under the Contract.

(b) The Contractor shall notify the Superintendent in writing when a sample or prototype is ready for inspection.

(c) The Superintendent shall advise the Contractor in writing whether the samples or prototypes are approved within 10 Business Days of being advised that the sample or prototype is available for inspection under Clause 8.2A(b).

(d) If the Superintendent does not approve of a sample or prototype offered by the Contractor, the Contractor must source other samples or carry out any alterations to the prototype (as relevant) and resubmit these to the Superintendent for approval in accordance with this Clause 8.2A.

(e) If the Superintendent does not respond to any samples or prototypes within the time stipulated in Clause 8.2A(c), the samples or prototypes are deemed to be approved by the Superintendent provided that the sample or prototype complies with the requirements of the Principal's Project Requirements and this Contract.

(f) The Superintendent shall only be entitled to withhold approval under Clause 8.2A(c) where the sample or prototype does not comply with the requirements of the Principal's Project Requirements or this Contract.

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8.3 **Supply of Documents by Contractor**

In relation to those Contractor Documents stated in Annexure Part A the Contractor shall supply the number of copies stated in Item 21 of Annexure Part A or, if no number is stated, 1 copy.

The Contractor must supply to the Superintendent the Contractor Documents required by the Superintendent and as required by the Contract at those times or within those stages applicable to the Contractor Documents stated in Annexure Part A or, if no times or stages are stated, not less than 14 days before the work contained in those Contractor Documents is commenced.

8.3A Form of documents

The Contractor must ensure that all Contractor Documents:

(a) are in English;

(b) accord with the format requirements as directed by the Principal or the Superintendent;

(c) contain no errors, omissions or Discrepancies;

(d) are consistent with the requirements of the Contract; and

(e) are adequate for the purposes of the Contractor performing its obligations under the Contract.

8.3B Contractor's Design Obligations

The Contractor must:

(a) perform the Contractor's Design Obligations, and review, develop, use, select, apply and complete the Design Documents, in accordance with the requirements of the Contract including:

(i) the Principal's Project Requirements;

(ii) Good Design and Construction Practices;

(iii) all relevant Legislative Requirements; and

(iv) all relevant industry standards, codes and guidelines; and

(b) not make, cause or permit to be made any changes or amendments to Design Documents which have been submitted to the Superintendent under Clause 8.3D without the prior written approval of the Superintendent.

8.3C Design Document review meetings

The Contractor must attend, and ensure that the Consultants attend, meetings as reasonably required by the Superintendent from time to time to facilitate the review and approval by the Superintendent of all Design Documents and to discuss and resolve design issues.

8.3D Submission and review of Contractor Documents

(a) The Contractor must submit all Contractor Documents for review by the Superintendent:

(i) as each Contractor Document is completed; and

(ii) in sufficient time to enable amendments suggested by the Superintendent to be incorporated into those Contractor Documents.

(b) If the Superintendent notifies the Contractor that any Contractor Document does not comply with the requirements of this Contract:

(i) at the election of the Superintendent, the Superintendent and the Contractor must meet to discuss the respect in which the Contractor Document does not comply; and

(ii) subject to Clause 8.3D(e), Clause 8.3E and Clause 4.2:

(A) the Superintendent may direct the Contractor to amend the Contractor Document; and

(B) the Contractor must amend the Contractor Document in accordance with the directions of the Superintendent.

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(c) The Contractor must promptly submit the amended Contractor Document to the Superintendent for approval in accordance with Clause 8.3D(a) and the procedure under this Clause 8.3D applies to the amended Contractor Document.

(d) If the Contractor disagrees with an amendment directed by the Superintendent pursuant to Clause 8.3D(b)(ii), the Contractor may:

(i) refer the matter to dispute resolution in accordance with Clause 47; and

(ii) proceed with the work under the Contract in accordance with the Contractor Documents that the Superintendent has advised do not comply with the Contract.

(e) Where the Contractor proceeds with the work under the Contract in accordance with Clause 8.3D(d), the Contractor:

(i) does so entirely at the Contractor's own risk and will not be entitled to any Claim arising out of or in connection with having done so; and

(ii) must, if it is subsequently determined under Clause 47 that the Contractor Documents do not comply with the Contract, immediately replace and rectify any work under the Contract that does not comply with the Contract and amend and resubmit the relevant Contractor Documents at the Contractor's sole cost and expense.

8.3E Contractor's acknowledgements

The Contractor acknowledges and agrees that:

(a) the Principal or the Superintendent does not assume or owe any duty of care to the Contractor to review or comment on, direct any amendments to or approve, any Contractor Documents pursuant to Clause 8.3D;

(b) any:

(i) review or comment on, amendments directed to or approval of, any Contractor Documents by the Principal or the Superintendent pursuant to Clause 8.3D; or

(ii) failure by the Principal to review or comment on any Contractor Documents or the Superintendent to perform (including any failure to perform correctly) any of the functions referred to in Clause 8.3D;

will not:

(iii) limit, or relieve the Contractor of, any obligation or liability under the Contract;

(iv) limit any right of the Principal under the Contract;

(v) constitute acceptance by the Principal of the performance of the Contractor's obligations under the Contract; or

(vi) be considered as a representation or an acknowledgment by the Principal or the Superintendent that the relevant Contractor Documents comply with the Contract;

(c) the Contractor has not in any way relied (and will not rely) upon any:

(i) review or comment on, direction or approval, in relation to any Contractor Document by the Principal or the Superintendent; or

(ii) failure by the Principal to review or comment on any Contractor Documents or the Superintendent to perform (including any failure to perform correctly) any of the functions referred to in Clause 8.3D;

(d) the Contractor has carefully reviewed all Contractor Documents and is satisfied that those Contractor Documents:

(i) contain no Discrepancy or inadequacy;

(ii) are adequate for the purposes of the Contractor performing its obligations under the Contract; and

(iii) are adequate for the purposes of the Contractor performing the work under the Contract so that upon completion the Works will be fit for the Stated Purpose; and

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(e) the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of or in connection with the matters referred to in this Clause 8.3E.

8.4 **Availability of Contractor Documents**

Whilst work under the Contract is being performed, one complete set of the Principal's Project Requirements, the Design Documents and other Contractor Documents and other written information supplied by the Principal, the Superintendent and the Contractor, the Contractor's Consultants and subcontractors, must be kept by the Contractor at the Site or other location approved in writing by the Principal and must be available at all times for reference by the Principal, the Superintendent and any persons nominated in writing by either of them.

During the manufacture or assembly of any significant part of the work under the Contract away from the part of the Site where the Works are to be constructed, a set of the drawings and written information relevant to that part of the work must be kept by the Contractor at the place of manufacture or assembly and must be available for reference by the Principal, the Superintendent and any persons nominated in writing by either of them.

8.5 **Confidential Information**

(a) Drawings, specifications and other information, samples, models, patterns and the like, supplied by either the Contractor or the Principal and marked or otherwise identified as confidential, shall be regarded as confidential and shall not be disclosed to a third party except with the prior agreement of the other party to the Contract or to the extent required by Law or to comply with the mandatory requirements of any recognised stock exchange.

(b) If required in writing by a party, the other party shall enter into a separate agreement not to disclose to anyone else any confidential matter even after the issue of the Final Payment Certificate pursuant to Clause 42.6 or the earlier termination of the Contract.

(c) To avoid doubt, the Contractor acknowledges and agrees that if an Insolvency Event occurs with respect to the Contractor, Principal may (in its absolute discretion) provide:

(i) a copy of the Contract;

(ii) details of amounts paid and outstanding to or by the Contractor under the Contract as calculated by the Principal;

(iii) copies of statutory declarations executed by or on behalf of the Contractor,

or any portion or summary thereof, to:

(iv) any subcontractor who provides the Principal with a statutory declaration to the effect that they are a subcontractor to the Contractor with respect to any part of the work under the Contract and they have not been paid by the Contractor with respect to that Work; or

(v) any Authority that notifies the Principal in writing of its interest in the status of the contractual arrangements between the Contractor and the Principal,

and such information will not comprise confidential information of the Contractor for the for the purpose of this Clause 8.5.

* 8.6 **Media Releases**

The Contractor shall not issue for publication or publish any information (including photographs and films), publication, document or article concerning the Contract, the work under the Contract, the Works or the Project in any media without prior written approval of the Principal.

The Contractor shall refer to the Principal any enquiries concerning the Contract, the work under the Contract, the Works or the Project from any media.

8.7 **Residential Contracts of Sale**

(a) This Clause 8.7 applies only if the Project involves the design and construction of residences.

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(b) The Contractor must review all Residential Contracts of Sale ('**Sale Contract Review**') to ensure that the work under the Contract at all times complies (where relevant) with each Residential Contract of Sale.

(c) The Contractor acknowledges that the Contract Sum includes an allowance for all costs incurred in relation to the Sale Contract Review.

(d) The Sale Contract Review must be carried out as follows:

(i) Within 5 Business Days of receipt of a Residential Contract of Sale, the Contractor must carefully check and review it and notify the Superintendent and the Principal in writing of any inconsistency between the Residential Contract of Sale and the Principal's Project Requirements and whether ensuring the work under the Contract complies with the Residential Contract of Sale will require a Variation. The notice must include details of any cost and time implications of performing the Variation.

(ii) The Superintendent must notify the Contractor within 5 Business Days of receipt of a notice under paragraph 8.7(d)(i) whether the Principal requires the Contractor to vary the work under the Contract to ensure the work under the Contract complies with the relevant Residential Contract of Sale. Any notification by the Superintendent to the Contractor must be in the form of a Variation Order.

9 ASSIGNMENT AND SUBCONTRACTING

9.1 Assignment

(a) The Contractor must not, without the prior written approval of the Principal and except on such reasonable terms and conditions as are determined in writing by the Principal, assign or novate the Contract or any payment or any other right, benefit or interest thereunder.

(b) The Principal may at any time, after giving 30 days' notice, and at its sole discretion assign any right, benefit or interest under the Contract to any person or entity without the Contractor's consent, notwithstanding that the relevant right, benefit or interest may not otherwise be assignable as a matter of law and whether or not that right, benefit or interest is severable from the other rights and obligations provided under the Contract.

9.2 Subcontracting (Including Work Performed by Consultants)

The Contractor must not without the written approval of the Superintendent, which approval shall not be unreasonably withheld:

(a) allow a subcontractor to assign a subcontract or any payment or any other right, benefit or interest thereunder; or

(b) subcontract or allow a subcontractor to subcontract any work described in Item 23 of Annexure Part A.

With a request for approval, the Contractor must provide to the Superintendent particulars in writing of the work to be subcontracted and the name and the address of the proposed subcontractor.

The Contractor must provide to the Superintendent other information which the Superintendent reasonably requests, including the proposed subcontract documents without prices.

Within 14 days of a request by the Contractor for approval, the Superintendent shall notify the Contractor of approval or the reasons why approval is not given.

The Superintendent's approval may be conditional upon the subcontract including:

(a) provision that the subcontractor shall not assign or subcontract without the consent in writing of the Contractor;

(b) provisions which may be reasonably necessary to enable the Contractor to fulfil the Contractor's obligations to the Principal;

(c) provision that if the Contract is terminated and upon the subcontractor being paid the sum certified by the Superintendent as owing to the subcontractor, the Contractor and the subcontractor shall, after the Principal has done so, promptly execute a deed of novation

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in the form required by the Principal. For the purposes of effecting such novation only, the Contractor hereby irrevocably appoints the Principal to be the Contractor's attorney with authority to execute such documents as are necessary to give effect to the novation and to bind the Contractor accordingly; and

(d) where the subcontractor is a Consultant, provision that the subcontractor shall effect and maintain professional indemnity insurance on the same terms as are required of the Contractor under Clause 21.

9.3 **Contractor's Responsibility**

Despite any other provision of the Contract:

(a) approval to subcontract and any subcontract entered into by the Contractor will not relieve the Contractor from any liability or obligation under the Contract;

(b) the Contractor will be liable to the Principal for the acts and omissions of the Contractor's subcontractors and employees and agents of the Contractor's subcontractors as if they were acts or omissions of the Contractor; and

(c) the Principal will have no obligation or liability to the Contractor for any act, omission, default, breach of contract or insolvency of a subcontractor of the Contractor.

9.4 **Selected Subcontract Work**

If the Contract includes Selected Subcontract Work, the Contractor must subcontract the Selected Subcontract Work to a Selected Subcontractor. A Selected Subcontractor is the subcontractor identified in the Contractor's tender from a list of not less than two subcontractors provided by the Principal in the tender documents for Selected Subcontract Work.

If the tender documents specify the terms and conditions upon which the subcontract is to be entered into, the subcontract shall include those terms and conditions.

9.5 **Provisions Applying Generally to Selected Subcontract Work**

If the Contractor is required by Clause 9 or 10 to enter into a subcontract, or to execute a deed of novation or to accept an assignment, the Contractor shall proceed promptly to do so and shall notify the Superintendent in writing as soon as the subcontract or novation has been effected or the assignment has been accepted.

With the Contractor's consent, the Superintendent may direct the Contractor to perform Selected Subcontract Work.

Except as herein provided:

(a) the Principal shall have no liability to a Selected Subcontractor arising from the subcontract between the Contractor and the Selected Subcontractor; and

(b) the Principal shall not be liable to the Contractor for any act, Claim, default or omission or breach of contract by a Selected Subcontractor arising from the subcontract between the Contractor and the Selected Subcontractor.

9.6 **Termination of Selected Subcontract**

The Contractor must:

(a) comply with its obligations set out in Schedule C6 of Annexure Part C;

(b) not terminate a subcontract for Selected Subcontract Work without the Principal's written consent;

(c) notify the Superintendent in writing of the Contractor's intention to terminate a subcontract for Selected Subcontract Work as soon as practicable and provide reasons for its decision; and

(d) engage a replacement subcontractor approved by the Superintendent with appropriate professional qualifications and membership of appropriate professional associations when a subcontract for Selected Subcontract Work has been terminated or frustrated.

If a Selected Subcontractor repudiates or abandons a subcontract or it is terminated by the Selected Subcontractor, the Contractor must immediately notify the Superintendent of that fact.

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The Superintendent shall promptly issue a direction as to the manner of completing the Selected Subcontract Work. With the Contractor's consent, the Superintendent may direct the Contractor to perform Selected Subcontract Work, otherwise the Superintendent will direct the Contractor:

(e) to choose another subcontractor from the list of subcontractors provided by the Principal in the tender documents for Selected Subcontract Work; or

(f) to enter into a subcontract with a subcontractor chosen by the Superintendent and agreed to by the Contractor.

The Contractor will not be obliged to enter into a subcontract with a subcontractor referred to in Clause 9.6(e) against whom the Contractor raises reasonable objection.

The Contractor will, as soon as practicable, enter into a subcontract with the subcontractor so chosen and notify the Superintendent accordingly.

If compliance with such a direction causes the Contractor to incur more or less cost than otherwise would have been incurred had the Contractor not been given the direction, the difference shall be valued under Clause 40.5 except where a Provisional Sum for the Selected Subcontract Work has been included in the Contract, in which case the provisions of Clause 11.1 shall apply.

9.7 Subcontractor Warranties

The Contractor must give the Principal 2 originals and 2 copies of all Subcontractor Warranties (if any are set out in Item 18 of Annexure Part A or if the Superintendent gives the notice referred to below in this Clause 9.7). The Contractor must ensure that the Principal and persons claiming through the Principal and its successors, purchasers (if any) and assignees:

(a) have the benefit of the Subcontractor Warranties and of any warranties or rights relating to goods, materials and services and works whatsoever which are part of the WUC; and

(b) are able to directly enforce the Subcontractor Warranties and the warranties and rights referred to above, against the subcontractors.

Unless otherwise agreed in writing by the Principal, each of the Subcontractor Warranties:

(c) must be in the form set out in Schedule I5 to Annexure Part I and on the terms and for the durations set out or referred to in Item 18 of Annexure Part A; and

(d) signed by the relevant subcontractor under seal (if the subcontractor is a corporation) or by a duly authorised person (if the subcontractor is not a corporation).

The Contractor acknowledges that the Superintendent may, by written notice to the Contractor at any time before the Date of Practical Completion, amend the list of Subcontractor Warranties by adding or deleting warranty items. The Contractor must use its best endeavours to obtain a warranty from the relevant subcontractor for an item added to the list of Subcontractor Warranties.

The Contractor must use its best endeavours to provide any other Subcontractor Warranties not set out in the list of Subcontractor Warranties in a form which is reasonably and commercially obtainable.

If the Contractor fails to procure warranties in accordance with this Clause 9.7, the Contractor is deemed to personally provide the Principal the same warranty for the same duration on the same terms and conditions as the Contractor was obliged to procure under this Clause 9.7.

9.8 Certification by Consultants

It is a condition precedent to the achievement of Practical Completion that all Consultants certify in writing (in a form acceptable to the Principal) that the relevant work under the Contract:

(a) has been completed in accordance with:

(i) the Contract;

(ii) the Design Documents prepared, used, selected or supplied by the Consultant responsible for the design of the relevant work under the Contract;

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(iii) all Legislative Requirements;

(b) is fit for its intended purpose; and

(c) where relevant has been installed and is fully commissioned and operable.

Certification is required from Consultants for the parts of the work under the Contract that relate to the following disciplines:

(a) architectural;

(b) structural engineer;

(c) civil engineer;

(d) mechanical engineer;

(e) electrical, security and communications engineer;

(f) fire services engineer. The certificate issued by fire services engineers must also certify that the fire services function under normal and simulated emergency operating conditions;

(g) hydraulics services engineer;

(h) land surveying; and

(i) any other disciplines set out in the handover requirements set out in Schedule C6 to Annexure Part C,

and if necessary, the Contractor must appoint Consultants for that purpose.

10 NOVATION OF CONSULTANT AGREEMENTS

The Contractor, without being entitled to compensation, must if requested by the Principal or the Superintendent, in respect of each Consultant Agreement, execute a deed of novation in the form of Schedule I2 of Annexure Part I, between the Principal, the Contractor and each of the Consultants stated in Item 24 of Annexure Part A (if any) within 10 Business Days after the Commencement Date.

The Contractor must:

(a) not terminate a Consultant Agreement without the Principal's written consent;

(b) notify the Superintendent in writing of the Contractor's intention to terminate a Consultant Agreement with a Consultant as soon as practicable and provide reasons for its decision;

(c) engage a replacement consultant with appropriate professional qualifications and membership of appropriate professional associations when a Consultant Agreement with a Consultant has been terminated or frustrated; and

(d) allow the Principal access to any of the Consultants for the purpose of consultation in relation to the work under the Contract at no cost to the Principal.

If a Consultant repudiates or abandons a Consultant Agreement or it is terminated by the Consultant, the Contractor must immediately notify the Superintendent of that fact.

11 PROVISIONAL SUMS

11.1 Direction to perform Provisional Sum work or item

(a) Subject to Clause 11.1(b), the Contractor must not begin to carry out any work or item to which a Provisional Sum relates unless the total scope and cost of the work or item to which a Provisional Sum relates has been agreed with the Principal and the Principal has directed the Contractor in writing to proceed to execute the agreed scope of the work or item to which a Provisional Sum relates for the agreed total cost.

(b) Even where no agreement has been reached as to the total cost, the Principal may direct the Contractor in writing to proceed with the execution of the work or item to which a Provisional Sum relates specifically noting on the direction that it is to proceed without agreement as to its total cost. In these circumstances, the total cost of the work or item to which a Provisional Sum relates is to be determined in accordance with Clause 40.5.

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(c) A Provisional Sum included in the Contract shall not itself be payable by the Principal but where at the direction of the Principal the work or item to which the Provisional Sum relates is performed or supplied, the Contract Sum will be adjusted by the difference between:

(i) the amount of the Provisional Sum set out or referred to in Item 26 applicable to that work or item; and

(ii) the amount determined pursuant to Clauses 11.1(a) or 11.1(b) (as applicable).

11.2 Deletion of Provisional Sum work or item

If the Principal does not direct the Contractor in writing to proceed with work or any item to which a Provisional Sum relates under Clause 11.1:

(a) the Contract Sum will be reduced by the relevant Provisional Sum set out or referred to in Item 26 applicable to such work or item;

(b) the Principal may engage another contractor to carry out the work or item; and

(c) the Principal will not be liable upon any Claim by the Contractor arising out of, or in any way in connection with, such work or item to which the Provisional Sum relates.

12 SITE AND LATENT CONDITIONS

12.1 Definition

'Latent Conditions' means:

(a) any physical conditions on the Site which constitute Contamination caused by any previous use of the Site or any other previous use in proximity to the Site;

(b) any physical conditions on the Site which constitute valuable minerals, fossils, articles or objects of antiquity or of anthropological or archaeological interest, treasure trove, coins and other articles of value;

(c) subsurface conditions at the Site which constitute Non-rippable Rock (provided that Item 27 of Annexure Part A indicates that subclause 12.5 applies); and

(d) any other physical conditions on the Site, including artificial things but excluding weather conditions and rock which is not Non-rippable Rock,

which differ materially from the physical conditions which could have been anticipated by a Competent Contractor at the Execution Date if the Contractor had:

(e) examined all information made available in writing by, or on behalf of, the Principal to the Contractor;

(f) examined all information relevant to the risks, contingencies and other circumstances having an effect on the Site and obtainable by the making of reasonable enquiries;

(g) undertaken those things which the Contractor represents it has done under Clauses 4.1, 8.3E, 12.3 and 12.4; and

(h) inspected the Site and its surroundings and having regard to the Site and the Environment.

12.2 Notification of Latent Conditions

(a) If during the execution of the work under the Contract, the Contractor becomes aware of any physical condition on the Site which may be a Latent Condition, the Contractor must, before the physical Site condition is disturbed, give written notice thereof to the Principal.

(b) Any notice required to be given pursuant to Clause 12.2(a) must be in writing specifying:

(i) the physical Site condition encountered and in what respects it differs materially;

(ii) the additional work and additional resources which the Contractor estimates to be necessary to deal with the physical Site condition;

(iii) the time the Contractor anticipates will be required to deal with the physical Site condition and the expected delay in achieving Practical Completion;

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(iv) the Contractor's estimate of the additional direct cost (if any) of the measures necessary to deal with the physical Site condition; and

(v) other details reasonably required by the Principal.

(c) Following receipt of a notice required to be given pursuant to Clause 12.2(a), if the physical Site condition is determined by the Principal to be a Latent Condition, the Principal may (in the Principal's absolute discretion) either:

(i) direct the Contractor to take action to deal with the Latent Condition as a Variation under Clause 40; or

(ii) direct the Contractor to not to take action to deal with the Latent Condition.

(d) If the Principal directs the Contractor to take action to deal with the Latent Condition under Clause 12.2(c)(i) in a Variation Order, then to the extent that performing the Variation causes the Contractor to incur more cost than otherwise would have been incurred, the Contract Sum will be increased by the difference:

(i) as agreed between the Principal and the Contractor; or

(ii) where the Principal and the Contractor cannot agree, as valued under Clause 40.5.

12.3 **Site Inspections**

(a) The Contractor acknowledges that it has had access to the Site and has carried out its own inspections of the Site and the improvements on the Site and conducted its own enquiries in order to establish, understand and satisfy itself as to the nature and status of the Site and the improvements on the Site and all risks and contingencies associated with the Site and the improvements on the Site.

(b) Except as provided for in Clauses 12.2 and 35.8, the Contractor accepts sole responsibility for and assumes the risk of all increased costs, losses and expenses and delays arising out of the physical conditions and characteristics of the Site and its surroundings (and any indirect or consequential costs, losses, expenses and delays) and including inclement weather, wind, water, atmospheric and sub-surface conditions and characteristics encountered in the execution of the work under the Contract.

(c) Without limiting the generality of Clauses 12.3(a) and 12.3(b), but subject to Clauses 12.4, 12.5 and 35.8, the Contractor's responsibilities and risks related to the physical conditions and characteristics of the Site and the improvements thereon and to the ground conditions as referred to in Clauses 12.3(a) and 12.3(b) will include all costs associated with:

(i) the location and adequacy of existing services, including all pipes, cables and plumbing;

(ii) the adequacy and position of all load bearing and support structures;

(iii) removal of any services or structures or execution of any Work in relation to services or structures as required by the Superintendent or any Authorities; and

(iv) all other physical conditions and characteristics of the Site above, on or below the surface which may affect the performance by the Contractor of its obligations under the Contract,

and it is agreed by the Contractor that the Contract Sum includes an allowance for all costs associated with the Contractor's risk and responsibilities pursuant to Clauses 12.3, 12.4 and 12.5 and the Contractor will not be entitled to any Claim, extension of time or any other form of relief in respect of the risks and responsibilities.

12.4 **Contamination and Environment**

(a) Without limiting any other provision of this Contract, the Contractor must in performing the work under the Contract:

(i) comply with all Legislative Requirements and other requirements of this Contract for the protection of the Environment;

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(ii) not bring on to, or produce on, the Site any contaminants, or otherwise cause Contamination, other than as required for the work under the Contract and in compliance with all relevant Legislative Requirements;

(iii) ensure that each of the Contractor's Consultants or subcontractors or the employees or agents of any of these complies with the requirements referred to in this Clause 12.4(a); and

(iv) make good any Contamination caused by the Contractor or the Contractor's Consultants or subcontractors or the employees or agents of any of these, whether or not it has complied with all Legislative Requirements or other requirements of the Contract for the protection of the Environment.

(b) The Contractor must comply with any direction by the Principal or any Authorities in respect of Contamination caused by the Contractor or the Contractor's Consultants or subcontractors or the employees or agents of any of these.

(c) The Contractor indemnifies and holds harmless the Principal for the full extent permitted by Law against:

(i) any liability to, or a claim by, a third party; and

(ii) all losses suffered or incurred by the Principal,

arising out of or in connection with any Contamination caused by the Contractor or the Contractor's Consultants or subcontractors or the employees or agents of any of these or the Contractor's breach of this Clause 12.4.

12.5 **Non-rippable Rock**

(a) This subclause 12.5 applies only if Item 27 of Annexure Part A indicates that this subclause applies.

(b) If during the performance of work under the Contract, the Contractor becomes aware of any physical condition of the Site which may be Non-rippable Rock and is required to be removed or remediated to enable the Contractor to perform work under the Contract, the Contractor must, before disturbing the physical Site condition, give written notice of the physical Site condition to the Principal.

(c) Any notice required to be given pursuant to subclause 12.5(b) must be in writing and detail:

(i) the Contractor's proposed approach for removing or remediating the physical Site condition including the method of excavating;

(ii) the additional direct cost to the Contractor (if any) of removing or remediating the physical Site condition, applying the applicable rates in the Schedule of Rates, or if there are no applicable rates in the Schedule of Rates, reasonable or market rates;

(iii) the impact (if any) that the removal or remediation of the physical Site condition would have on the Contractor achieving Practical Completion by the Date for Practical Completion;

(iv) the obligations under this Contract that the Contractor would not be able to comply with (if any) if the Principal does not direct the Contractor to remove or remediate the physical Site condition; and

(v) a list of alternative approaches available to complete work under the Contract without removing or remediating the physical Site condition and the additional direct cost, and impact on achieving Practical Completion by the Date for Practical Completion of these approaches applying the applicable rates in the Schedule of Rates, or if there are no applicable rates in the Schedule of Rates, reasonable or market rates.

(vi) Where a 20 tonne excavator is not practical to be used on site as defined in clause 2.1, the contractor shall engage and pay for an independent geotechnical engineer to provide confirmation that the rock is equivalent to that of the definition under clause 2.1 and to the satisfaction of the superintendent representative.

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(d) Following receipt of a notice required to be given pursuant to subclause 12.5(b), the Principal or the Superintendent may elect to visit the Site and assess the physical Site condition. If the physical Site condition is determined by the Principal or the Superintendent to be Non-rippable Rock, the Principal may (in the Principal's absolute discretion) either:

(i) direct the Contractor to remove or remediate the Non-rippable Rock as a Variation under Clause 40; or

(ii) direct the Contractor to not remove or remediate the Non-rippable Rock.

(e) If the Principal directs the Contractor to remove or remediate the Non-rippable Rock under subclause 12.5(d)(i) in a Variation Order, then to the extent that performing the Variation causes the Contractor to incur more cost than otherwise would have been incurred, the Contract Sum will be increased by the difference:

(i) as agreed between the Principal and the Contractor; or

(ii) where the Principal and the Contractor cannot agree, as valued under subclause 40.5.

(f) If the Principal directs the Contractor not to remove or remediate the Non-rippable Rock under subclause 12.5(d)(ii), then the Principal may direct the Contractor to perform work under the Contract in an area not affected by the Non-rippable Rock as a Variation under Clause 40.

12.6 **Nuisance Suppression**

(a) The Contractor must utilise and ensure that the Contractor's Personnel utilise the most practical methods available of noise suppression on all machinery of whatsoever description to ensure that the noise level emanating from the Site during the execution of the work under the Contract is kept to a minimum.

(b) The Contractor must ensure that the Contractor and the Contractor's Personnel avoid nuisance and trespass to:

(i) adjacent and adjoining properties (including the owners or occupiers of such properties); and

(ii) the public,

from dust, debris, noise, obstruction or vibration or from any other cause and howsoever caused. Without limiting the requirements of this Clause 12.6 the Contractor must comply with all relevant Laws and shall also erect screens or take other reasonably necessary preventative measures to prevent damage to adjacent and adjoining properties (public and private) and shall arrange for the programming of the execution of the work under the Contract so as to prevent any such nuisance occurring.

(c) The Contractor must comply with all instructions given by the Principal or any Authorities whether in regard to matters of noise, dust or otherwise and the cost of carrying out any preventative work required by reason of any such instruction shall be met by the Contractor. If the Contractor fails to carry out such work after the Principal has given written notice to the Contractor together with a reasonable time for the Contractor to show cause or carry out the work, the Principal may have the work carried out by others and the cost of any such work will be a debt due from the Contractor to the Principal.

(d) The Contractor must in carrying out the work under the Contract, avoid the risk or threat of injunctions from adjacent or adjoining owners or occupiers requiring that the execution of the work under the Contract to cease or be restricted.

(e) The Contractor must indemnify the Principal from and against all loss, cost, expense or damage suffered or incurred by the Principal (including but not limited to legal costs) arising out of any claim, demand or proceedings made or commenced against the Principal resulting from the Contractor's failure to comply with its obligations under this Clause 12.6.

(f) Nothing in this Clause 12.6 limits the obligations of the Contractor under Clause 15.

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13 PATENTS, COPYRIGHT AND OTHER INTELLECTUAL PROPERTY RIGHTS

13.1 Contract Materials and Principal's Background Materials

(a) All Contract Materials are the sole and exclusive property of the Principal as and when they are created.

(b) The Contractor hereby unconditionally assigns, and must procure that the Contractor's Personnel and any other third party involved in the creation of any Contract Materials, unconditionally assign, to the Principal:

(i) all Intellectual Property Rights (other than copyright) in the Contract Materials, without the need for further assurance; and

(ii) all copyright in the Contract Materials, as an assignment of future property under section 197 of the *Copyright Act 1968* (Cth) and in equity.

(c) The Contractor acknowledges that it does not own any Intellectual Property Rights in the Principal's Background Materials.

(d) The Principal grants to the Contractor a non-exclusive, royalty free licence during the term of this Contract to use, reproduce, modify, adapt and further develop all Intellectual Property Rights in those portions of the Contract Materials and the Principal's Background Materials which are required to enable the Contractor to perform the work under the Contract.

13.2 Warranties and Indemnities

Unless otherwise provided in the Contract, the Principal shall indemnify the Contractor against any Claim or loss brought against, suffered or incurred by, the Contractor as a result of the Principal's Background Materials infringing the Intellectual Property Rights of any person.

(a) The Contractor warrants that:

(i) the Contractor owns, or is entitled to use, the Intellectual Property Rights in the Contractor Background Materials;

(ii) it is able to assign the Intellectual Property Rights in all Contract Materials as required by Clause 13.1; and

(iii) the Contractor is entitled to grant the licence required by Clause 13.3.

(b) The Contractor shall indemnify the Principal against any Claim or loss brought against, suffered or incurred by, the Principal as a result of:

(i) the Contractor Background Materials or the Contract Materials infringing or allegedly infringing the Intellectual Property Rights of any person; or

(ii) any breach of the warranties set out in this Clause 13.2.

13.3 Intellectual Property Rights granted to Principal

The Contractor grants to the Principal a non-exclusive, perpetual, irrevocable, assignable, sublicensable, royalty-free licence (including the right to sub-licence on the same terms) to use the Contractor Background Materials for any purpose related to the Works, Site or the Project including:

(a) completing the design, construction and testing of the Works; and

(b) operating, maintaining, repairing, upgrading, extending, altering, selling or financing the Works.

The Contractor must ensure that the Contract Materials and the Principal's Background Materials are used, copied and supplied only for the purpose of the work under the Contract.

13.4 Moral Rights

(a) The Contractor must obtain from the Contractor's Personnel irrevocable consent to all or any acts or omissions (whether occurring before or after the date the consent is given) by the Principal, its assignees, licensees, successors in title and persons authorised by the Principal, and any of their officers, employees, agents and contractors (each an '**Authorised Person**') in respect of all works made or to be made by the Contractor's Personnel during the course of their involvement in the work under the Contract, including

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the Contractor Documents and any design, equipment, materials, documents, methods or working or other deliverable provided to the Principal that would otherwise be contrary to any present or future Moral Rights.

(b) The consent must be legally binding and must acknowledge that such consent is a genuine consent given under Part IX of the *Copyright Act 1968* (Cth) and has not been induced by duress or any false or misleading statement.

(c) The Contractor must indemnify each Authorised Person against all Claims, cost, expense, damage or loss that the Authorised Person suffers or incurs arising out of a failure by the Contractor to comply with this clause 13.4.

13.5 Survival of rights

The rights and obligations of the parties under this Clause 13 survive expiry or termination of the Contract.

14 LEGISLATIVE REQUIREMENTS

14.1 Complying with Legislative Requirements

(a) The Contractor must perform and complete the work under the Contract in accordance with all Legislative Requirements (including, to the extent permissible by Law, complying with any obligation or requirement which a Legislative Requirement places on the Principal as though it had been placed on the Contractor).

(b) If a Legislative Requirement is at variance with a provision of the Contract or the Principal's Project Requirements, as soon as the Contractor discovers the variance, the Contractor shall notify the Superintendent in writing specifying the difference. The Superintendent shall direct the Contractor as to how the inconsistency must be addressed. Such inconsistency shall be at the Contractor's risk and the Principal shall not be liable for, or in connection with, any Claim (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of or in connection with any such direction.

14.2 Changes in Legislative Requirements

If a Legislative Requirement:

(a) necessitates:

(i) a change to the Works;

(ii) a change to so much of the Temporary Works, Constructional Plant or method of working as may be specified in the Principal's Project Requirements;

(iii) a change, being the provision or expansion of services of a municipal, public or statutory authority in connection with the Works or Temporary Works; or

(iv) an increase or decrease in a fee or charge or payment of a new fee or charge;

(b) comes into effect after the Execution Date; and

(c) could not reasonably have been anticipated prior to the Execution Date by a Competent Contractor performing work in the nature of the work under the Contract,

('**Change in Legislative Requirements**') then to the extent that such Change in Legislative Requirements causes the Contractor to incur more or less cost than otherwise would have been incurred, the difference shall be valued by the Superintendent under Clause 40.5 and added to or deducted from the Contract Sum.

The Contractor shall use all reasonable endeavours to minimise or mitigate the effects of a Change in Legislative Requirements.

14.3 Approvals

(a) The Contractor must, at its own cost:

(i) obtain all Approvals (other than the Principal's Approvals) which are necessary for the performance of the work under the Contract or the Works before the commencement of the work under the Contract on Site;

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(ii) do all things necessary to keep such Approvals valid and effective;

(iii) take all steps necessary to renew, extend or amend such Approvals when appropriate;

(iv) provide evidence to the Principal that it has obtained and continues to maintain all such Approvals if requested at any time by the Principal;

(v) immediately notify, and copy to, the Principal all notices, requisitions and other correspondence relevant to the work under the Contract received in respect of such Approvals by the Contractor or any subcontractor; and

(vi) use reasonable endeavours to assist the Principal in obtaining any Principal's Approvals, including providing any documents or information requested by the Principal.

(b) The Contractor must, to the extent permitted by Law, indemnify and hold harmless the Principal against any Claim against, or loss suffered or incurred by, the Principal arising out of, or in connection with, the Contractor failing to obtain an Approval, not complying with an Approval (including any Principal's Approval) or causing the Principal to be in breach of an Approval (including any Principal's Approval).

(c) The Contractor must give the Principal copies of Approvals or other documents issued to the Contractor or any of the Contractor's subcontractors by any Authorities in respect of work under the Contract or the Works within 7 days of receipt or upon request and in any event as a condition of Practical Completion.

14.4 Proportionate Liability Legislation

(a) To the extent permitted by Law, the operation of the Proportionate Liability Legislation in relation to any right, obligation or liability of a party, in respect of this Contract, whether those rights, obligations or liabilities are sought to be enforced in contract, in tort or pursuant to any statute, and any Claim, is excluded.

(b) To the extent that the operation of the Proportionate Liability Legislation cannot be excluded as contemplated by Clause 14.4(a), where any loss or damage sustained by the Principal is wholly or partly caused by:

(i) any act or omission involving a failure to exercise reasonable care;

(ii) negligence;

(iii) breach of any contractual or statutory duty; or

(iv) any other wrongdoing,

of the subcontractors, consultants or other people engaged by the Contractor to act in connection with the work under the Contract ("**Relevant Person**") (whether or not under the Principal's direction, supervision or control), then as a separate and independent obligation the Contractor covenants with the Principal that the Contractor:

(v) is solely liable for the whole of that loss or damage, regardless of any act or omission of any Relevant Person;

(vi) is solely liable for and assumes an obligation, at the request of the Principal, to prevent any Relevant Person from failing to take reasonable care; and

(vii) to the extent permitted by Law:

(A) must not seek to apply the provisions of the Proportionate Liability Legislation in relation to any Claim by the Principal against the Contractor;

(B) must not seek to attribute responsibility to any other person (whether or not a party to the relevant proceedings);

(C) must indemnify the Principal against any loss or damage which the Principal is not entitled to recover from the Contractor because of the operation of those provisions, if and to the extent that the provisions of the Proportionate Liability Legislation are applied in relation to any Claim by the Principal against the Contractor;

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(D) must procure each Relevant Person to covenant with the Contractor for the benefit of the Principal that it must not seek to apply the provisions of the Proportionate Liability Legislation in relation to any claim by the Principal against the Contractor or by the Contractor against that Relevant Person; and

(E) must procure each Relevant Person to covenant with the Contractor for the benefit of the Principal on the terms of Clause 14.4(b)(vii)(A).

(c) The Contractor must procure that each Relevant Person, by the contracts between the Contractor and that Relevant Person (and any intermediate person), is and as between the Principal and the Contractor, will be deemed to be, the agent of the Contractor in respect of the carrying out of the work under the Contract, and:

(i) the Contractor will be directly liable to the Principal for any such failure to take reasonable care; and

(ii) to the extent permitted by Law, the Contractor and the Relevant Person will be jointly and severally liable to the Principal for any claim in respect of any failure by that Relevant Person to take reasonable care.

14.5 Gender Equality Act

The Contractor must:

(a) comply with its obligations, if any, under the *Workplace Gender Equality Act 2012* (Cth); and

(b) notify the Workplace Gender Equality Agency of any failure by the Contractor to comply with the *Workplace Gender Equality Act 2012* (Cth).

15 PROTECTION OF PEOPLE AND PROPERTY

In so far as compliance with the requirements of the Contract permits and without limiting the Contractor's obligations under Clause 58, the Contractor shall:

(a) provide all things and take all measures necessary to protect people and property;

(b) avoid unnecessary interference with the passage of people and vehicles;

(c) prevent nuisance and unreasonable noise and disturbance;

(d) take full responsibility for the adequacy, stability and safety of all Temporary Works, Construction Plant, operations on Site and methods of construction and transportation; and

(e) establish and maintain and comply with emergency, safety and security procedures applicable to the work under the Contract or the Works as may be notified to the Contractor by the Superintendent or required by WHS Law from time to time.

Without limiting the generality of the Contractor's obligations, they include the provision of barricades, guards, fencing, temporary roads, footpaths, warning signs, lighting, watching, traffic flagging, safety helmets and clothing, removal of obstructions and protection of services.

If the Contractor or any of the Contractor's Personnel damage property, including but not limited to public utilities and services and property on or adjacent to the Site, the Contractor shall promptly make good the damage and pay any compensation which the Law or this Contract requires the Contractor to pay.

If the Contractor fails to comply with an obligation under this Clause 15, in addition to any other remedies of the Principal, the Principal may after giving reasonable notice in writing to the Contractor, have the subject work carried out by other persons and the reasonable cost incurred by the Principal shall be a debt due from the Contractor to the Principal.

16 CARE OF THE WORK AND REINSTATEMENT OF DAMAGE

16.1 Care of the Work Under the Contract

Except as provided in Clause 16.3, the Contractor is responsible for:

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(a) the care of the whole of the work under the Contract from and including the earlier of the date on which the Contractor is given access to the Site in accordance with Clause 27.1(b) and the date of commencement of the work under the Contract to 4:00 pm on the Date of Practical Completion, at which time the responsibility for the care of the Works (except to the extent provided in Clause 16.1(b)) shall pass to the Principal; and

(b) the care of outstanding work and items to be removed from the Site by the Contractor after 4:00 pm on the Date of Practical Completion until completion of outstanding work or compliance with the Contractor's obligations under Clauses 30, 31 and 37.

Without limiting the generality of the Contractor's obligations in Clause 16.1(a), the Contractor is responsible for the care of unfixed items the value of which has been included in a payment certificate under Clause 42.1, things in the course of transportation or delivery to the Site, and the care and preservation of things entrusted to the Contractor by the Principal for the purpose of carrying out the work under the Contract, and things brought onto the Site by subcontractors for that purpose. The Contractor shall provide the storage and protection necessary to preserve those items and things.

16.2 Reinstatement

If loss or damage occurs to the work under the Contract during the period for which the Contractor is responsible for the care thereof (other than loss or damage caused by any of the Excepted Risks referred to in Clause 16.3), the Contractor shall, at the Contractor's cost, rectify such loss or damage so that the work under the Contract conforms in every respect with the provisions of the Contract.

In the event of loss or damage being caused by any of the Excepted Risks (whether or not in combination with other risks), the Contractor shall, if and to the extent directed by the Principal, rectify the loss or damage, which shall be deemed to be a Variation under Clause 40. In the case of loss or damage being caused by a combination of Excepted Risks and other risks, any such direction and consequential valuation made under Clause 40.5 shall take into account the proportional responsibility of the Contractor and the Principal.

16.3 Excepted Risks

The Excepted Risks causing loss or damage, for which the Principal is liable, are:

(a) any negligent act or omission of the Principal, the Superintendent or the employees, consultants or agents of the Principal;

(b) war, invasion, act of foreign enemies, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection or military or usurped power, martial Law or confiscation by order of any Government or public authority;

(c) ionising radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel not caused by the Contractor or the Contractor's Consultants or subcontractors or the employees or agents of any of these; and

(d) use or occupation by the Principal or the employees or agents of the Principal, the Principal's consultants or other contractors of the Principal (not being employed by the Contractor), of any part of the work under the Contract (but does not include the proper exercise of the Principal's rights, duties or obligations under the Contract or the proper exercise of the Superintendent's functions under the Contract).

17 DAMAGE TO PERSONS AND PROPERTY

17.1 Indemnity by Contractor

Insofar as this Clause 17.1 applies to property, it applies to property other than the work under the Contract.

The Contractor shall indemnify the Principal and the directors, officers, employees and agents of the Principal against any action, claim, demand, cost or expense arising from:

(a) loss of or damage to any of the property of the Principal, real or personal, including existing property in or upon which the work under the Contract is being carried out; and

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(b) claims by any person against the Principal in respect of personal injury (which expression will include illness) or death or loss of or damage to any other property,

arising out of or as a consequence of the carrying out by the Contractor of the work under the Contract, or any activity for which the Contractor is responsible and which is directly or indirectly associated with the work under the Contract or the Works (including the remedying of any Defect in the Works) but the Contractor's liability to indemnify the Principal shall be reduced proportionally to the extent that the act or omission of the Principal, the Superintendent or the employees or agents of the Principal contributed to the loss, damage, death or injury.

The Principal holds the benefit of the indemnities contained in Clause 17.1 for itself and on trust for each of its directors, officers, employees and agents.

This Clause 17.1 shall not apply to:

(a) exclude any other right of the Principal to be indemnified by the Contractor;

(b) things the care of which the Contractor is responsible under Clause 16.1; and

(c) claims in respect of the right of the Principal to have the work under the Contract carried out.

17.2 **Indemnity by the Principal**

[Not used]

17.3 **Indemnity ongoing**

Each indemnity given by the Contractor under the Contract is:

(a) a continuing obligation, separate and independent from the obligations of the Contractor under the Contract and survives termination or expiry of the Contract; and

(b) absolute and unconditional and unaffected by anything that might have the effect of prejudicing, releasing, discharging or affecting in any other way the liability of the Contractor under those indemnities.

18 INSURANCE OF THE WORK UNDER THE CONTRACT

Before the Contractor commences work under the Contract, the Contractor shall effect an insurance policy covering all the things referred to in Clause 16.1 against loss or damage resulting from any cause whatsoever until the Contractor ceases to be responsible for their care.

Without limiting the generality of the obligation to insure, the policy shall cover the Contractor's liabilities under Clause 16.2 and things in storage off Site and in transit to the Site.

The insurance cover under this Clause 18 may exclude:

(a) the cost of making good fair wear and tear or gradual deterioration but shall not exclude the loss or damage resulting therefrom;

(b) the cost of making good faulty design, workmanship and materials but shall not exclude the loss or damage resulting therefrom;

(c) consequential loss of any kind, but shall not exclude loss of or damage to the Works;

(d) damages for delay in completing or for the failure to complete the Works; and

(e) loss or damage resulting from ionising radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel resulting from any cause

The insurance cover shall be for an amount not less than the aggregate of:

(a) the Contract Sum;

(b) the amount stated in Item 28 of Annexure Part A to provide for costs of demolition and removal of debris;

(c) the amount stated in Item 28 of Annexure Part A to cover fees of the consultants;

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(d) the value stated in Item 28 of Annexure Part A of any materials or things to be supplied by the Principal for the purposes of the work under the Contract; and

(e) the additional amount or percentage stated in Item 28 of Annexure Part A of the total of the items referred to in Clause 18(a) to (d), for increases in the cost of labour and materials until completion of the reinstatement of the Works.

The insurance policy shall be in the joint names of the Principal and the Contractor, and shall cover the Principal, the Contractor and all Consultants, and all subcontractors employed from time to time in relation to the work under the Contract for their respective rights, interests and liabilities and, unless otherwise specified elsewhere in the Contract, shall be effected with an insurer and in terms both approved in writing by the Principal which approvals shall not be unreasonably withheld. The policy shall be maintained until the Contractor ceases to be responsible under Clause 16.1 for the care of anything.

19 PUBLIC LIABILITY INSURANCE

Before the Contractor commences work under the Contract, the Contractor shall effect a public liability policy of insurance in the joint names of the Principal and the Contractor which covers the Principal, the Contractor, the Superintendent, all Consultants and all subcontractors employed from time to time in relation to the work under the Contract for their respective rights and interests and covers their liabilities to third parties. The policy shall also cover the Contractor's liability to the Principal and Principal's liability to the Contractor for loss of or damage to property (other than property required to be insured by Clause 18) and the death of or injury to any person (other than liability which is required by Law to be insured under a workers compensation policy of insurance).

The public liability policy of insurance shall be for an amount in respect of any one occurrence not less than the sum stated in Item 30 of Annexure Part A and, unless otherwise specified elsewhere in the Contract, shall be effected with an insurer and in terms both approved in writing by the Principal which approvals shall not be unreasonably withheld. The policy shall be maintained until the Final Payment Certificate is issued pursuant to Clause 42.6.

20 INSURANCE OF EMPLOYEES

Before commencing work under the Contract the Contractor shall insure against liability for death of or injury to persons employed, or deemed by a Legislative Requirement to be employed, by the Contractor including liability by statute and at common law. The insurance cover shall be maintained until all work under the Contract, including remedial work, is completed.

Where permitted by Law, the insurance policy or policies shall be extended to indemnify the Principal for the Principal's statutory liability to persons employed by the Contractor.

The Contractor shall ensure that all Consultants and all subcontractors have similarly insured their employees.

20A MOTOR VEHICLE INSURANCE

Before commencing the work under the Contract, the Contractor at its own cost shall effect insurance in respect of any motor vehicles used for the purposes of the work under the Contract:

(a) covering liability for death or personal injury of any person as required by Legislative Requirements; and

(b) covering loss to property for at least the amount specified in Item 30A of Annexure Part A for any one occurrence and unlimited in the aggregate.

The insurance cover shall be maintained whilst any motor vehicle is used for the purposes of the work under the Contract.

Cover will be extended to the Principal.

The Contractor shall ensure that all subcontractors similarly insure their motor vehicles.

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21 PROFESSIONAL INDEMNITY INSURANCE

Before the Contractor commences work under the Contract, the Contractor shall effect a professional indemnity insurance policy with a total aggregate cover of not less than the sum stated in Item 31 of Annexure Part A for any one occurrence which may arise during the existence of such policy in respect of liability arising from a breach of professional duty or otherwise by reason of a negligent act or omission by the Contractor or its employees, agents, Consultants or subcontractors.

The policy and such level of cover shall be maintained until the Final Payment Certificate is issued pursuant to Clause 42.6 and thereafter for a period as is stated in Item 32 of Annexure Part A.

The Contractor shall ensure that every Consultant, if within a category stated in Item 33 of Annexure Part A, is insured for professional indemnity with a cover not less than the sum stated in Item 33 of Annexure Part A.

Each Consultant's policy shall be maintained until the Final Payment Certificate is issued pursuant to Clause 42.6 and thereafter for a period as is stated in Item 32 of Annexure Part A.

22 INSPECTION AND PROVISIONS OF INSURANCE POLICIES

22.1 Proof of Insurance

Before the Contractor commences work under the Contract and whenever requested in writing by the Principal, the Contractor must produce evidence of insurance required to be effected and maintained by the Contractor under the Contract to the satisfaction and approval of the Principal.

The effecting of insurance shall not limit the liabilities or obligations of a party under other provisions of the Contract.

Any insurance policy to be effected or maintained pursuant to the Contract shall be in a form acceptable to the Principal with an insurer approved by the Principal which approval shall not be unreasonably withheld.

22.2 Failure to Produce Proof of Insurance

If after being requested in writing by the Principal to do so, the Contractor fails to produce satisfactory evidence of compliance with insurance obligations under Clause 18, 19, 20, 20A or 21 and this Contract, the Principal may effect and maintain the insurance and pay the premiums. The amount paid by the Principal will be a debt due from the Contractor to the Principal.

The Contractor will not be entitled to lodge any claim for payment until it has provided proof of insurance effected and maintained by the Contractor in accordance with Clauses 18, 19, 20, 20A, and 21. The rights given by this Clause 22.2 are in addition to any other right of the Principal under the Contract.

22.3 Notices from or to the Insurer

The Contractor shall ensure that each policy of insurance contains provisions acceptable to the Principal that will:

(a) require the insurer, whenever the insurer gives the Principal, the Contractor or a subcontractor a notice of cancellation or other notice concerning the policy at the same time to inform both parties in writing that the notice has been given;

(b) provide that a notice of claim given to the insurer by the Principal, the Superintendent, the Contractor, a Consultant or a subcontractor shall be accepted by the insurer as a notice of claim given by the Principal, the Superintendent, the Contractor, the Consultant and the subcontractor; and

(c) require the insurer, whenever the party fails to renew the policy or to pay a premium, to give notice in writing thereof forthwith to the Principal and the Contractor prior to the insurer giving any notice of cancellation.

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22.4 **Notices of Potential Claims**

(a) The Contractor shall, as soon as practicable, inform the Principal in writing of any occurrence that may give rise to a claim under a policy of insurance required by Clause 18, 19, 20, 20A, 21 and this Contract and shall keep the Principal informed of subsequent developments concerning the claim. The Contractor shall ensure that subcontractors in respect of their operations similarly inform the Principal.

(b) Where a policy of insurance required by the Contract has been effected by the Principal, the Principal shall similarly inform the Contractor.

(c) On the occurrence of death or injury, damage to, loss or destruction of property or the use of property, arising out of an event, whether negligent or not, the Contractor shall claim against any insurance policies effected under and in accordance with this Contract, and diligently pursue its rights under those policies unless the Contractor elects to settle the claim without claiming on any policy of insurance.

22.5 **Settlement of Claims**

Upon settlement of a claim under the insurance required by Clause 18:

(a) to the extent that the work under the Contract needing reinstatement has been the subject of a payment or allowance by the Principal to the Contractor, if the Contractor has not completed reinstatement of that work, moneys received shall, if requested by either party, be paid into a bank agreed upon by the parties in an account in the joint names of the Contractor and the Principal. As the Contractor proceeds to reinstate the loss or damage, the Superintendent shall certify against the joint account for the cost of reinstatement; and

(b) to the extent that the work to be reinstated has not been the subject of a payment or allowance by the Principal to the Contractor, the Contractor shall be entitled immediately to receive from moneys received, the amount of money so paid in relation to any loss suffered by the Contractor relating to that work under the Contract (including the supply of goods and materials on site whether or not incorporated into the Works).

22.6 **Cross Liability**

The insurance policies required by Clauses 18, 19, 20 and 20A shall include a cross liability clause in which the insurer agrees to waive all rights of subrogation or action against any of the persons comprising the insured and for the purpose of which the insurer accepts the term 'insured' as applying to each of the persons comprising the insured as if a separate policy of insurance had been issued to each of them (subject always to the overall sum insured not being increased thereby).

22.7 **Terms of Insurance policies**

The insurance policies required by Clauses 18 and 19:

(a) must provide that any breach of the insurance policies by an insured other than the Principal must not in any way prejudice or diminish any rights which the Principal has under the insurance policy;

(b) must provide that the insurance policy is primary with respect to the interests of the Principal and that any other insurances maintained by the Principal are excess to, and not contributory with, the insurance policy; and

(c) where the policies are issued by insurers without an address for service in Australia, a clause that the insurance policies are governed by the Laws of the State set out in Item 1 and consenting to the exclusive jurisdiction of the Courts of that jurisdiction, and appointing an address for service in Australia.

22.8 **Information required for insurance**

The Contractor shall promptly provide any information regarding the Contractor, its subcontractors or the work under the Contract reasonably requested by the Principal for the purposes of obtaining or renewing any insurance policy.

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22.9 **Compliance with insurance policies**

The Contractor must comply with its obligations to disclose information under the insurance policies to the insurers.

The Contractor shall not do or omit to do anything which might prejudice its or the Principal's rights under the insurance policies.

22.10 **Deductible**

(a) Subject to Clause 22.10(b), the Contractor shall pay any deductible payable under any insurance policy required by Clauses 18, 19, 20, 20A, 21 in respect of insurance claims made by it.

(b) The Principal shall pay any deductible payable in relation to a claim made by it under any insurance required by Clauses 18, 19, 20 or 20A to the extent the Loss or liability which the claim related to was caused by the Principal, its employees, contractors or agents, provided that the Principal's liability for deductibles will not exceed the limits referred to in Clause 22.10(d).

(c) Notwithstanding Clause 22.10(b), the Contractor will pay all deductibles in respect of insurance claims made by the Principal where the claim against the Principal is based on its vicarious liability in relation to the acts or omissions of the Contractor or the Contractor's Personnel.

(d) The deductibles payable in respect of the insurances required to be effected and maintained by the Contractor under the Contract must not exceed the deductible limits set out in item 34 of Annexure Part A.

22.11 **Rating of insurers**

The insurance required to be effected under the Contract shall be effected with an insurer which has a minimum Standard & Poor's credit rating of A- (or equivalent rating with another recognised rating agency).

23A PRIMARY

The parties acknowledge that it is intended that the insurance policies to be effected and maintained under the Contract are primary and not secondary to the indemnities referred to in the Contract in respect of any claim, loss or liability to which such indemnities apply. However, no party is obliged to make a claim or institute proceedings against any insurer before enforcing any of its rights or remedies under any of the indemnities referred to in the Contract. The parties acknowledge to the other that if a claim is made under an insurance policy that extends protection to a relevant party, it is their intention that the insurer cannot require a party to exhaust any remedies referred to in the Contract before the insurer considers or meets the relevant claim.

23 SUPERINTENDENT

The parties acknowledge that in the exercise of the Certification Functions of the Superintendent under the Contract, the Superintendent will:

(a) act honestly and fairly;

(b) act within the time prescribed under the Contract or where no time is prescribed, within a reasonable time; and

(c) arrive at a reasonable measure or value of work, quantities or time.

If pursuant to a provision of the Contract enabling the Superintendent to give directions, the Superintendent gives a direction, the Contractor must comply with the direction.

Except where the Contract otherwise provides, a direction may be given orally but the Superintendent shall as soon as practicable confirm it in writing.

If the Contractor in writing requests the Superintendent to confirm an oral direction, the Contractor shall not be bound to comply with the direction until the Superintendent confirms the oral direction in writing.

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The Contractor must give the Superintendent:

(a) access to the Site and the work under the Contract;

(b) after reasonable notice to the Contractor, access to any place other than the Site where work under the Contract is being carried out or materials are being prepared or stored; and

(c) all information relating to the work under the Contract as reasonably requested by the Superintendent,

for the purposes of discharging the functions of the Superintendent under the Contract.

The Contractor acknowledges that:

(a) the Superintendent is a representative of the Principal; and

(b) the Superintendent may discuss with and have regard to the views of the Principal in relation to the functions of the Superintendent under the Contract.

The Principal is not responsible for the conduct of the Superintendent and in no circumstances shall any failure or alleged failure of the Superintendent to comply with the requirements of this clause constitute a substantial breach of the Contract by the Principal.

24A RELEASE

(a) This Clause 24A applies only if Item 34A of Annexure Part A indicates that this clause applies.

(b) The Contractor releases the Superintendent and any delegate appointed under Clause 24 from all Claims which might be made by the Contractor in connection with or arising from the Contract.

(c) The Contractor acknowledges that:

(i) the release under Clause 24A(b) is made for the benefit of, and may be enforced, by the Superintendent and any delegate of the Superintendent appointed under Clause 24 pursuant to any legislation permitting the enforcement of third party promises and at common law;

(ii) in accepting the release under Clause 24A(b), the Principal is acting as agent of the Superintendent and any delegate of the Superintendent appointed under Clause 24;

(iii) the Principal has entered into the Contract in reliance on the Contractor's warranty and representation that the release under Clause 24A(b) is binding and effective on the Contractor and that it will make no Claims of any nature against the Superintendent or any delegate of the Superintendent appointed under Clause 24; and

(iv) neither the Superintendent or any delegate of the Superintendent appointed under Clause 24 owe to it any separate duty of care arising out of or in connection with the Contract.

24 SUPERINTENDENT'S REPRESENTATIVE

The Superintendent may from time to time appoint individuals as the Superintendent's Representative to exercise any functions of the Superintendent under the Contract but not more than one Superintendent's Representative shall be delegated the same function at the same time. The appointment of a Superintendent's Representative shall not prevent the Superintendent from exercising any function.

The Superintendent shall forthwith notify the Contractor in writing of:

(a) the appointment and the name of any Superintendent's Representative and the functions delegated to the Superintendent's Representative; and

(b) the termination of the appointment of a Superintendent's Representative.

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If the Contractor makes a reasonable objection to the appointment of a Superintendent's Representative and the Superintendent agrees that this objection is reasonable, the Superintendent shall terminate the appointment.

25 PARTY REPRESENTATIVES AND KEY PERSONNEL

25.1 Contractor's Representative

(a) The Contractor must ensure that there is an individual appointed as the Contractor's Representative to personally supervise the execution of the work under the Contract, and exercise the functions of the Contractor under the Contract, at all times during which any activities relating to the execution of the work under the Contract are taking place at the Site and at other places at which activities relating to the execution of the work under the Contract are taking place.

(b) The Contractor's Representative will represent the Contractor for all purposes of the Contract. The Contractor's Representative is authorised to negotiate with the Principal on behalf of the Contractor and to bind the Contractor contractually in respect of matters arising from the performance of the work under the Contract.

(c) A direction or notice given by the Principal, the Principal's Representative or the Superintendent to the Contractor's Representative is deemed to have been given to the Contractor.

(d) Matters within the knowledge of the Contractor's Representative are deemed to be within the knowledge of the Contractor.

25.2 Key Personnel

The Contractor shall engage the Key Personnel in the execution of the work under the Contract until the expiry of the Defects Liability Period, unless:

(a) the Principal, acting reasonably, approves the substitution, promotion or reassignment of a member of the Key Personnel; or

(b) a member of the Key Personnel resigns (other than to accept other employment with any other related entity of the Contractor), dies, retires or otherwise suffers from ill health.

The Contractor must promptly fill any vacancy in the Key Personnel with a person approved of in writing by the Principal, acting reasonably.

The Contractor's Representative will be maintained as one of the Key Personnel and this Clause 25.2 will apply if the Contractor's Representative needs to be replaced.

If the Principal or the Superintendent makes a reasonable objection to the appointment of an individual as the Contractor's Representative or other member of the Key Personnel, the Contractor must terminate the appointment and appoint another individual as the Contractor's Representative or other member of the Key Personnel, as applicable.

25.3 Principal's Representative

The Principal's Representative may give directions and carry out all functions of the Principal under the Contract as agent of the Principal. The Principal may at any time revoke the appointment of the Principal's Representative or replace the Principal's Representative, in which event the Principal will notify the Contractor of that revocation or replacement, as the case may be.

Nothing in this Clause 25.3 limits the Principal's right to exercise any of the Principal's, or the Principal's Representative's, powers or functions under the Contract.

26 CONTROL OF CONTRACTOR'S EMPLOYEES AND SUBCONTRACTORS, THE PROJECT AND OTHER CONTRACTORS

26.1 Persons employed by the Contractor

The Contractor must employ in activities connected with work under the Contract only such persons or subcontractors as are careful, skilled, competent and experienced in their respective trades and professions.

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26.2 **Removal**

(a) The Superintendent may direct the Contractor to have removed from the Site or from any activity connected with the work under the Contract, within such time as the Superintendent directs, any person employed in connection with the work under the Contract who, in the reasonable opinion of the Superintendent, is:

(i) performing work under the Contract whilst under the influence of alcohol or illegal drugs;

(ii) a risk to the safety of any person, property or the Environment; or

(iii) guilty of misconduct or is incompetent or negligent.

(b) The person must not thereafter be employed on the Site or on activities connected with the work under the Contract without the prior written approval of the Superintendent, such approval not to be unreasonably withheld.

26.3 **Industrial relations**

(a) The Contractor shall be responsible for industrial relations with all persons for whom it is responsible whether employed by itself or its subcontractors and shall implement and maintain a best practice workplace relations program.

(b) The Contractor and its subcontractors shall cooperate with the Principal's other contractors and their subcontractors and employees on the Site in order to maintain uniform industrial practice in accordance with the Contractor's practices on the Site.

(c) Subject to the Contractor's entitlement to make a Claim for an extension of time for delay resulting from the qualifying cause of delay stated in Clause 35.8A(b)(i), the Contractor is not entitled to make any Claim whether for payment, adjustment of the Contract Sum, extension of time or otherwise in respect of any industrial action or other industrial relations matter and any cost and time consequences of any industrial action or other industrial relations matter shall be deemed to be included in the Contract Sum and the Date for Practical Completion.

26.4 **Meetings**

The Contractor must attend, and ensure that the Contractor's Personnel attend, any meetings as set out in the Principal's Project Requirements or otherwise as reasonably required by the Principal or the Superintendent.

26.5 **Interaction with Related Activities**

The Contractor must:

(a) plan, coordinate, program and integrate the performance of the work under the Contract (including the work of subcontractors) with the Related Activities;

(b) carry out the work under the Contract so as to avoid interfering with, disrupting or delaying the work of Related Activities Contractors;

(c) not issue any instruction to a Related Activities Contractor or do anything which may give rise to any Claim by a Related Activities Contractor against the Principal;

(d) attend all coordination meetings called by the Principal to plan, review and determine coordinated activities of the management of interfaces (including access) between the work under the Contract and the Related Activities;

(e) notify the Principal of the reasonable precautions required to be taken by Related Activities Contractors to ensure that the work under the Contract is protected from accidental damage by such contractors or users; and

(f) indemnify the Principal against all claims by, or liability to, Related Activities Contractors arising out of, or in connection with, the Contractor's failure to comply with this Clause 26.5.

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27 SITE

27.1 Access to the Site

(a) Subject to Clause 27.1(c), the Principal shall, by the time stated in Item 35 of Annexure Part A, give the Contractor access to the Site in accordance with this Clause 27.1 sufficient to enable the Contractor to commence and carry out the Contractor's Design Obligations in accordance with the Contract. The Principal shall notify the Contractor in writing of the date when access will be available.

(b) If the Principal has not given the Contractor access to the whole Site, the Principal shall from time to time give the Contractor access to such further parts of the Site as may be necessary to enable the Contractor to execute the work under the Contract in accordance with the requirements of the Contract. The Principal shall notify the Contractor in writing of the date upon which the Site or any part thereof will be available.

(c) Notwithstanding the provisions of this Clause 27.1, if the Contractor is in breach of Clauses 5, 22.1 or 58.2(b)(ii), the Principal may refuse to give the Contractor access to the Site or any part of the Site until the Contractor has complied with the requirements of Clauses 5, 22.1 and 58.2(b)(ii).

(d) The Contractor acknowledges that it is not entitled to exclusive access to the Site while performing the work under the Contract and access to the Site shall confer on the Contractor a right only to such use and control as is necessary to enable the Contractor to execute the work under the Contract.

(e) If the Principal fails to provide access to the Site in accordance with this Clause 27.1 and the Contractor suffers delay, the period of delay will be treated as a 'Principal-caused Delay' and the Contractor may be entitled to an extension of time if the requirements of Clause 35.8 are satisfied, and extra costs under Clause 36 if the requirements of Clause 36 are satisfied.

(f) Except as expressly provided for in Clause 27.1(e), the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of, or in connection with, any failure by the Principal to provide access in accordance with the Contract or any delay in the Contractor accessing the Site.

27.2 Access for the Principal and Others

(a) The Contractor will provide access to the Principal and any others in accordance with the Principal's Project Requirements.

(b) The Contractor acknowledges and agrees that any Authorities, the Principal and the Principal's employees, contractors (and their subcontractors), consultants and agents may at any time after reasonable notice to the Contractor have access to any part of the Site or the work under the Contract for any purpose and the Contractor must not obstruct the Principal from accessing the work under the Contract or any place where materials and equipment are being prepared or stored.

(c) The Contractor shall permit the execution of work on the Site by persons engaged by the Principal and shall cooperate with them and coordinate the Contractor's work with their work.

(d) If requested by the Contractor, the Principal shall provide to the Contractor the names of the persons so engaged.

(e) The Contractor shall at all reasonable times after reasonable notice give the Principal and other persons authorized in writing by the Principal or by the Superintendent access to the work under the Contract at any place where the work is being carried out or materials are being prepared or stored.

(f) The Principal shall use all reasonable endeavours to ensure that the Contractor is not impeded in the execution of the Contractor's work by the Superintendent whilst exercising the right of access given by Clause 23 or by any persons exercising the right of access given to those persons by this Clause 27.2.

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27.3 **Delivery of Materials to and Work on the Site Before Possession**

Until access to the Site or part of the Site is given to the Contractor under Clause 27.1(b), the Contractor shall not deliver materials to or perform work (except as permitted by Clause 27.1 for executing and completing the Contractor's Design Obligations) on the Site or part of the Site, as the case may be, unless approval in writing is given by the Superintendent.

27.4 **Use of the Site by the Contractor**

Unless the Contract otherwise provides or the Superintendent gives prior written approval, the Contractor shall not use the Site or allow it to be used for:

(a) camping;

(b) residential purposes; or

(c) any purpose not connected with the work under the Contract.

27.5 **Access to adjoining properties**

By entering into this Contract, the Contractor shall be deemed to have made arrangements for any access to, over, under, upon or for, use of any adjoining site or property (including any air space required in connection with work under the Contract) which the Contractor may require for any purpose in the execution of work under the Contract, and the Contractor shall be deemed to have accepted liability for and will indemnify the Principal in respect of any Claim or any other form of relief arising out of the Contractor's access including any loss, expense or damage suffered or incurred by such arrangements including any loss, expense or damage suffered or incurred by the Principal directly or indirectly, as a result of any such use of any adjoining site or property or of any failure on the part of the Contractor to make such arrangements for access, except to the extent such loss is caused by the Principal.

27.6 **Finding of Minerals, Fossils and Relics**

Valuable minerals, fossils, articles or objects of antiquity or of anthropological or archaeological interest, treasure trove, coins and other articles of value found on the Site shall, as between the parties, be and remain the property of the Principal and the Contractor must comply with its obligations under Clause 12 in relation to such items.

27.7 **Access to Contractor's premises and records**

Without limiting clause 27.2, the Contractor must at all reasonable times:

(a) upon DHA providing not less than 24 hours' notice, give to DHA and Defence, and to any persons authorised in writing by Defence, including, without limitation, the Auditor General or any other auditor, access to any premises occupied or controlled by the Contractor where any work under the Contract is being undertaken; and

(b) permit DHA, Defence and those persons to:

(i) observe the carrying out of the work under the Contract; and

(ii) inspect and copy all Contractor Documents and all other accounts, records, documents and procedures relating to the work under the Contract including the books of account and relevant information in relation to work health and safety.

28 SETTING OUT THE WORKS

28.1 **Setting Out**

The Superintendent may supply to the Contractor information, data and survey marks in addition to the survey marks specified in the Contract. After setting out and establishing levels for the Works, the Contractor must:

(a) verify and establish that the position, levels, dimensions and alignments of the work under the Contract are correct; and

(b) submit to the Superintendent a certificate signed by a licensed surveyor stating that the setting out and levels are in accordance with the Contract and any information provided by the Principal or the Superintendent.

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28.2 **Care of Survey Marks**

(a) The Contractor shall keep in their true positions all survey marks.

(b) If a survey mark is disturbed or obliterated, the Contractor shall immediately notify the Superintendent and, unless the Superintendent otherwise directs, the Contractor shall reinstate the survey mark.

(c) The Contractor acknowledges that it will not be entitled to any Claim, additional costs or an extension of time or any other form of relief as a result of complying with its obligations under this Clause 28.2.

28.3 **Errors in Setting Out**

(a) If the Contractor discovers an error in the position, level, dimensions or alignment of any work under the Contract, the Contractor shall immediately notify the Superintendent and, unless the Superintendent otherwise directs, the Contractor shall rectify the error.

(b) Provided that the Contractor has properly complied with its obligations under Clause 28.1, if the error has been caused by incorrect survey data supplied by the Principal, then the cost incurred by the Contractor in rectifying the error shall be assessed under Clause 40.5 by the Superintendent and added to (or subtracted from) the Contract Sum.

(c) Except as expressly provided for in Clause 28.3(b), the Contractor acknowledges that it shall not be entitled to any Claim, additional costs or an extension of time or any other form of relief as a result of complying with its obligations under this Clause 28.3.

29 MATERIALS, LABOUR AND CONSTRUCTIONAL PLANT

29.1 **Provision of Materials, Labour and Constructional Plant**

Except to the extent that the Contract otherwise provides, the Contractor shall supply everything necessary for the proper performance of the Contractor's obligations and discharge of the Contractor's liabilities under the Contract.

29.2 **Removal of Materials and Constructional Plant**

From time to time the Superintendent may, by written notice to the Contractor, direct the Contractor not to remove from the Site, materials or Constructional Plant. Thereafter, the Contractor shall not remove the materials or the Constructional Plant without the prior written approval of the Superintendent, which approval shall not be unreasonably withheld.

29.3 **Manufacture and Supply of Materials**

The Superintendent may direct the Contractor to supply particulars of:

(a) the mode and place of manufacture;

(b) the source of supply;

(c) the performance capacities; and

(d) other information,

in respect of any materials, machinery or equipment to be supplied by the Contractor under or used in connection with the Contract.

The Superintendent may direct the Contractor to arrange reasonable inspection at such place or sources by the Superintendent, the Principal and persons authorised by the Principal.

30 MATERIALS AND WORK

30.1 **Quality of Material and Work**

The Contractor shall use the materials and standards of workmanship required by the Contract. In the absence of any requirement to the contrary, the Contractor shall use suitable new materials and proper and tradesman like workmanship.

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30.2 Quality Assurance

Prior to commencing the work under the Contract, the Contractor shall, if requirements relating to quality assurance are so stated in the Contract:

(a) plan, establish and maintain a quality system which conforms to those requirements; and

(b) provide the Superintendent, subcontractors and suppliers with access to the quality system of each of the Contractor and subcontractors to enable monitoring and quality auditing.

Any such quality system shall be used only as an aid to achieving compliance with the Contract and to document such compliance. Such system shall not relieve the Contractor of the responsibility to comply with the Contract.

30.3 Defective Material or Work

If the Principal discovers material, equipment or work provided by the Contractor which is not in accordance with the Contract, the Principal shall as soon as practicable notify the Contractor.

If the Contractor discovers material, equipment or work which is not in accordance with the Contract, the Contractor must notify the Principal in writing of such defective or non-conforming materials, equipment or work as soon as practically possible and in any event, before removal or replacement of the defective or non-conforming materials, equipment or work, except where such materials, equipment or work should be removed earlier for the safety or protection of any person.

The Principal may direct the Contractor to do any one or more of the following (including times for commencement and completion) at the Contractor's own cost:

(a) remove the material from the Site;

(b) demolish the work;

(c) redesign, reconstruct, replace or correct the material or work; or

(d) not deliver the material or work to the Site.

The Principal may direct the times within which the Contractor must commence and complete the removal, demolition, redesign, reconstruction, replacement or correction.

The Contractor must comply with the Principal's direction under this Clause 30.3.

Notwithstanding that the Principal has not given a direction under this Clause 30.3, the Contractor must promptly remove, demolish, redesign, reconstruct, replace or correct any materials and equipment or the Works that are not in accordance with this Contract.

If the Contractor fails to comply with a direction issued by the Principal pursuant to this Clause 30.3 within the time specified by the Principal in the direction and provided the Principal has given the Contractor notice in writing that after the expiry of 8 days from the date on which the Contractor receives the notice the Principal intends to have the work of removal, demolition, redesign, reconstruction, replacement or correction carried out by other persons, the Principal may have that work carried out by other persons and that cost incurred by the Principal shall be a debt due from the Contractor to the Principal.

The Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make any Claim) arising out of or in connection with the Contractor complying with the Contractor's obligations under this Clause 30.3.

30.4 Variations due to Defective Material or Work

Instead of issuing a direction pursuant to Clause 30.3, the Principal may direct a Variation under Clause 40. The Variation shall be valued under Clause 40.5 and the Principal will have regard to the following:

(a) if the Variation causes an increase or decrease in the value to the Principal of the Works, and

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(b) if the Variation results in the Contractor incurring more or less cost than would reasonably have been incurred had the Contractor been given a direction pursuant to Clause 30.3.

The Contractor shall not, in respect of a Variation directed pursuant to Clause 40 as a result of defective materials or work for which the Contractor is responsible, be entitled to Claim any extension of time or delay costs.

30.5 **Acceptance of Defective Material or Work**

(a) Instead of issuing a direction pursuant to Clauses 30.3 or 30.4, the Principal may direct the Contractor that the Principal elects to accept the material or work notwithstanding that it is not in accordance with the Contract, whereupon there shall be a deemed Variation.

(b) In that event the resulting increase or decrease in the value to the Principal of the Works and any other loss suffered by the Principal shall be valued under Clause 40.5 and the Contract Sum will be adjusted accordingly.

30.6 **Generally**

(a) If the Principal gives a direction pursuant to Clause 30.3, 30.4 or 30.5, the direction shall be given as soon as practicable after the Superintendent becomes aware that material or work is not in accordance with the Contract. The Principal may give such a direction at any time before the issue of the Final Payment Certificate under Clause 42.6.

(b) Except to the extent that to do so would be inconsistent with a direction pursuant to Clause 30.4 or 30.5 and notwithstanding that the Principal has not given a direction pursuant to Clause 30.3, the Contractor shall promptly remove, demolish, redesign, reconstruct, replace or correct material or work that is not in accordance with the Contract.

(c) A progress payment, or a test or a failure by the Principal or anyone else to disapprove any material or work, shall not prejudice the power of the Principal to subsequently give a direction pursuant to Clause 30.3, 30.4 or 30.5.

(d) The Contractor shall not be entitled to rely upon any inspections or tests carried out by the Principal.

(e) Nothing in Clause 30 shall prejudice any other right which the Principal may have against the Contractor arising out of the failure of the Contractor to provide material or work in accordance with the Contract.

(f) The Principal shall not be obliged to give a direction pursuant to Clause 30.3, 30.4 or 30.5 to assist the Contractor.

31 EXAMINATION AND TESTING

31.1 **Superintendent May Order Tests**

At any time before the issue of the Final Payment Certificate, the Principal may direct that any material or work under the Contract be tested or inspected or both. The Contractor shall provide such assistance and samples and make accessible such parts of the work under the Contract as may be required by the Principal. On completion of the tests, the Contractor shall promptly make good the work tested so that it fully complies with the Contract.

31.2 **Covering Up of Work**

The Principal may direct that any part of the work under the Contract shall not be covered up or made inaccessible without the Principal's prior written approval and the Contractor must comply with this direction.

31.3 **Who Conducts Tests**

Tests shall be conducted as provided in the Contract or by the Principal or a person (which may include the Contractor) nominated by the Principal.

31.4 **Notice of Tests**

Before conducting a test under the Contract, the party conducting the test, being the Principal or the Contractor, shall give reasonable notice in writing to the other of the time, date and place of the test. If the other does not then attend, the test may nevertheless proceed.

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31.5 **Procedure if Tests Delayed**

Without prejudice to any other right, if the Principal or the Contractor delays in conducting a test, the other, after giving reasonable notice in writing of intention to do so, may conduct the test.

31.6 **Results of Tests**

Results of tests shall be promptly made available by each party to the other.

31.7 **Costs of Testing**

Costs of and incidental to testing pursuant to this Clause 31 shall be valued under Clause 40.5. Such costs shall be borne by the Principal or paid by the Principal to the Contractor unless:

(a) the Contract provides that the Contractor shall bear the costs, or the test is one which the Contractor was required to conduct other than a test directed pursuant to Clause 31.1;

(b) the test shows that the material or work is not in accordance with the Contract;

(c) the test is in respect of work under the Contract covered up or made inaccessible without the Principal's prior approval where such was required; or

(d) the test is consequent upon a failure of the Contractor to comply with a requirement of the Contract.

Where such costs are not to be borne by the Principal, they shall be borne by the Contractor or paid by the Contractor to the Principal.

Except as expressly provided for in this Clause 31.7, the Contractor shall not be entitled to any Claim, extension of time or any other form of relief due to any delay in the progress of the Works resulting from complying with the requirements of this Clause 31 or any act permitted by this Clause 31 by either the Principal or the Contractor.

31.8 **Access for Testing**

If before the issue of the Final Payment Certificate:

(a) the Principal or the Superintendent asserts that material or work is not in accordance with the Contract; and

(b) the Contractor requests permission to test the material or work,

the Principal shall not unreasonably refuse the Contractor access to test the material or work.

31A ASBESTOS TESTS

31A.1 Installation of asbestos containing materials prohibited

Without limiting any other provisions under this Contract, the parties agree that the Contractor is not permitted to use any material that is asbestos containing material, and that if any such material is detected at any stage, the Contractor shall at its own costs, replace those materials with a comparable substitute which does not contain asbestos.

For the avoidance of any doubt, this prohibition applies to materials imported or otherwise supplied to the Contractor.

31A.2 Superintendent May Order Asbestos Tests

At any time before the issue of the Final Payment Certificate, the Principal direct that any material that the Contractor imports for use in carrying out the work under the Contract be tested or inspected for the presence of any asbestos (**Asbestos Tests**). The Contractor shall provide such assistance and samples and make accessible such parts of the work under the Contract as may be required by the Principal. On completion of the Asbestos Tests, the Contractor shall promptly make good the work tested so that it fully complies with the Contract.

31A.3 Principal may conduct Asbestos Tests

In addition to the tests referred to in Clause 31A.2, tests may also be conducted at any time by the Principal or any person nominated by the Principal.

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31A.4 Notice of Asbestos Tests

Before conducting an Asbestos Test under the Contract, the party conducting the test, being the Principal or the Contractor, shall give reasonable notice in writing to the other of the time, date and place of the test. If the other does not then attend, the test may nevertheless proceed.

31A.5 Results of Asbestos Tests

Results of Asbestos Tests shall be promptly made available by each party to the other.

31A.6 Costs of Asbestos Testing

Costs of and incidental to testing pursuant to this Clause 31A shall be valued under Clause 40.5. Such costs shall be borne by the Principal or paid by the Principal to the Contractor unless:

(c) the Contract provides that the Contractor shall bear the costs, or the test is one which the Contractor was required to conduct other than a test directed pursuant to Clause 31A.2;

(d) the Asbestos Test shows that the material or work is not in accordance with the Contract; or

(e) the Asbestos Test is consequent upon a failure of the Contractor to comply with a requirement of the Contract.

Where such costs are not to be borne by the Principal, they shall be borne by the Contractor or paid by the Contractor to the Principal.

Except as expressly provided for in this Clause 31A.6, the Contractor shall not be entitled to any Claim, extension of time or any other form of relief due to any delay in the progress of the Works resulting from complying with the requirements of this Clause 31A or any act permitted by this Clause 31A by either the Principal or the Contractor.

32 WORKING HOURS

(a) The working hours and working days for work on the Site shall be as stated in Item 36 of Annexure A and if not so stated, as notified by the Contractor to the Superintendent prior to commencement of work on Site and shall not be varied without the prior written approval of the Superintendent except when, in the interests of safety of the work under the Contract or to protect life or property, the Contractor finds it necessary to carry out work outside the working hours or on other than the working days stated in the Contract. In such cases the Contractor shall notify the Superintendent in writing of the circumstances as early as possible.

(b) All costs attributable to the contract administration by or on behalf of the Principal of work during times approved pursuant to the previous paragraph shall be borne by the Principal.

33 PROGRESS AND PROGRAMMING OF THE WORKS

33.1 Rate of Progress

(a) The Contractor shall proceed with the work under the Contract with due expedition and without delay.

(b) The Contractor shall not suspend the progress of the whole or any part of the work under the Contract except where the suspension is pursuant to Clause 44.9 or is directed or approved by the Superintendent pursuant to Clause 34.

(c) The Superintendent shall furnish to the Contractor the information, materials, documents and instructions stated in Annexure Part A by the times or within the periods stated in Annexure Part A.

(d) The Contractor shall give the Superintendent reasonable advance notice of when the Contractor requires any other information, materials, documents or instructions from the Superintendent or the Principal.

(e) The Principal and the Superintendent shall not be obliged to furnish any other information, materials, documents or instructions earlier than the Principal or the Superintendent, as the case may be, should reasonably have anticipated at the Execution Date.

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(f) The Superintendent may direct in what order and at what time the various stages or parts of the work under the Contract shall be performed. If the Contractor can reasonably comply with the direction, the Contractor shall do so. If the Contractor cannot reasonably comply, the Contractor shall notify the Superintendent in writing, giving reasons.

(g) If compliance with the direction causes the Contractor to incur more or less cost than otherwise would have been incurred had the Contractor not been given the direction:

(i) the Contractor must immediately notify the Superintendent of the amount of the additional costs (or reduced costs) and the Superintendent will determine whether or not he or she wishes to withdraw the direction; and

(ii) if the direction is not withdrawn then the difference shall be valued under Clause 40.5 by the Superintendent and added to or deducted from the Contract Sum.

33.2 **Contractor's Program**

For the purposes of Clause 33, a 'Contractor's Program' is a statement in writing showing the major activities in the work under the Contract, the dates by which or the times within which key decisions are to be made and information is to be provided and the various stages or parts of the work under the Contract are to be executed or completed.

The Contractor's Program must:

(a) be drawn as a critical path network in the form of a time scaled bar chart:

(i) showing key dates, working and non-working days, float, logic links and constraints; and

(ii) on a weekly basis with each week ending on the Sunday evening,

(b) which network consists of appropriate activities or tasks numbered in a sequential logical order and of sufficiently small duration to represent accurately the Contractor's proposed method of completing the Works;

(c) have the critical path clearly marked;

(d) take into account the requirements and the program constraints set out in this Contract;

(e) include a project plan, being a brief description of how the work under the Contract is to be undertaken;

(f) include a schedule of development activities, incorporating a "level 1" (as that term is customarily understood in the construction industry) degree of detail;

(g) include the activities undertaken by subcontractors of the Contractor;

(h) take into account the programmes (of "level 1") of the Related Activities Contractors; and

(i) also include, for all activities with sufficient detail to enable the Superintendent to reasonably assess any Claim for an extension of time in accordance with Clause 35.5.

A Contractor's Program shall not affect rights or obligations in Clause 33.1.

The Superintendent may direct the Contractor to furnish to the Superintendent a Contractor's Program and the Contractor must comply with this direction within the time and in the form and having the content directed by the Superintendent.

The Contractor shall not depart, without reasonable cause, from:

(j) a Contractor's Program included in the Contract; or

(k) a Contractor's Program furnished to the Superintendent.

The furnishing of a Contractor's Program or of a further Contractor's Program, or any review, comment, request or approval by the Principal or the Superintendent in respect of any Contractor's Program, will not:

(l) relieve the Contractor of any obligations under the Contract including the obligation not to depart, without reasonable cause, from an earlier Contractor's Program;

(m) constitute acceptance of the Contractor's Program or a direction by the Principal to accelerate, disrupt, prolong or vary any or all of the work under the Contract; or

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(n) constitute a claim for an extension of time to, or entitle the Contractor to any extension of time to, the Date for Practical Completion.

34 SUSPENSION OF THE WORKS

34.1 Suspension by the Superintendent

If the Superintendent considers that the suspension of the whole or part of the work under the Contract is necessary:

(a) because of an act or omission of:

(i) the Principal, the Superintendent or an employee, consultant, other contractor or agent of the Principal; or

(ii) the Contractor, a Consultant, a subcontractor or an employee or agent of any of them;

(b) for the protection or safety of any person or property; or

(c) to comply with an order of a court,

the Superintendent shall direct the Contractor to suspend the progress of the whole or part of the work under the Contract for such time as the Superintendent thinks fit.

34.2 Suspension by the Contractor

If the Contractor wishes to suspend the whole or part of the work under the Contract, otherwise than under Clause 44.9, the Contractor shall obtain the prior written approval of the Superintendent. The Superintendent may approve of the suspension and may impose conditions of approval.

34.3 Recommencement of Work

As soon as the Superintendent becomes aware that the reason for any suspension no longer exists, the Superintendent shall direct the Contractor to recommence work as soon as reasonably practicable on the whole or on the relevant part of the work under the Contract.

If work is suspended pursuant to Clause 34.2 or 44.9, the Contractor may recommence work at any time:

(a) for suspension under Clause 34.2, before the expiry of the period of the suspension approved by the Superintendent; or

(b) for suspension under Clause 44.9, before the Principal remedies the breach in accordance with Clause 44.9,

after reasonable advance notice to the Superintendent.

34.4 Cost of Suspension

(a) Subject to Clause 34.4(b), any cost incurred by the Contractor by reason of a suspension pursuant to Clause 34.1 or 34.2 shall be borne by the Contractor.

(b) If the suspension under Clause 34.1(a) is due to an act or omission of the Principal, the Superintendent or an employee, consultant, other contractor or agent of the Principal and the suspension causes the Contractor to incur more or less cost than otherwise would have been incurred but for the suspension, the difference shall be assessed by the Superintendent and added to or deducted from the Contract Sum.

(c) The Contractor must take all reasonable steps to mitigate the costs arising from any suspension under this Clause 34.4.

34.5 Effect of Suspension

Suspension shall not affect the Date for Practical Completion but the cause of suspension may be a ground for extension of time under Clause 35.8.

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35 TIMES FOR COMMENCEMENT AND PRACTICAL COMPLETION

35.1 Commencement

The Contractor shall promptly commence the work under the Contract immediately following the Commencement Date.

35.2 Time for Practical Completion

(a) The Contractor shall execute the work under the Contract to achieve Practical Completion by the Date for Practical Completion.

(b) Upon the Date of Practical Completion the Contractor shall give possession of the Site and the Works to the Principal.

35.3 Separable Portions

(a) If the 'Separable Portion' sections of Annexure Part A have been completed, the performance of work under the Contract and the Works is divided into Separable Portions.

(b) The Principal or the Superintendent, in their sole discretion, may at any stage direct that any part of the Works be a Separable Portion and shall clearly identify for each:

(i) the portion of the Works forming that Separable Portion; and

(ii) the Date for Practical Completion for that Separable Portion,

and may identify for each:

(iii) respective amounts for Security if required by the Principal; and

(iv) the rate of liquidated damages applicable to that Separable Portion under Clause 35.9.

(c) Unless otherwise specified, the interpretations of:

(i) the rate of liquidated damages applicable under Clause 35.9;

(ii) Defects Liability Period;

(iii) Certificate of Practical Completion;

(iv) Date for Practical Completion;

(v) Date of Practical Completion; and

(vi) Practical Completion,

and Clauses 16, 35, 37 and 42.3 shall apply separately to each Separable Portion and references therein to the Works, the Site and to work under the Contract shall mean so much of the Works, the Site and the work under the Contract as is comprised in (or, in the case of references to the Site, identified by reference to) the relevant Separable Portion.

(d) If the Contract does not make provision for:

(i) the amount of Security applicable to a Separable Portion, then, without limiting Clause 5.8 and Item 17, the amount of Security shall be such proportion of the Security applicable to the whole of the work under the Contract as the value of the Separable Portion bears to the value of the whole of the work under the Contract; or

(ii) the liquidated damages rate applicable to a Separable Portion, the rate shall be determined by the Principal (acting reasonably) having regard to the Principal's genuine pre-estimate of the losses it is likely to suffer if the Contractor fails to achieve Practical Completion by the Date for Practical Completion.

35.4 Use of Partly Completed Works

In using a Separable Portion that has reached Practical Completion, the Principal shall not hinder the Contractor in the performance of the work under the Contract.

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35.5 **Notice of delay**

As soon as the Contractor reasonably considers that anything, including an act or omission of the Principal, the Superintendent or the Principal's employees, consultants, other contractors or agents, may delay the work under the Contract, the Contractor must promptly notify the Superintendent in writing with details of the possible delay and the cause of the possible delay and any proposals for mitigating the potential delay of work under the Contract.

35.6 **Extension of Time claim**

(a) Subject to Clauses 35.7(a) and 35.8, if:

(i) a Principal-caused Delay or a cause described in Clause 35.8A(b) (*Qualifying causes of delay*) occurs on or before the Date for Practical Completion and the Contractor is or will be delayed in reaching Practical Completion by the Date for Practical Completion by that cause; or

(ii) a Principal-caused Delay occurs after the Date for Practical Completion and the Contractor is or will be delayed in reaching Practical Completion by that Principal-caused Delay,

and within 14 days of the cause of the delay commencing the Contractor gives the Superintendent a written Claim for an extension of time for Practical Completion setting out the facts on which the Claim is based, and the period for which an extension of time is claimed, the Contractor will be entitled to an extension of time for Practical Completion.

(b) If a cause of delay continues for a period longer than 14 days from the time it commenced, the Contractor may amend any written claim for an extension of time for Practical Completion given to the Superintendent.

35.7 **Assessment**

(a) It is a condition precedent to any entitlement to an extension of time that:

(i) the Contractor must submit a written Claim with all necessary supporting documentation to the Superintendent for an extension of time within 14 days of the cause of the delay commencing, together with an updated Contractor's Program;

(ii) the cause of the delay must cause a delay to the activities on the critical path; and

(iii) the Contractor has taken all reasonable steps to minimise the delay and no reprogramming or alteration of sequences of activities or other method could avoid the delay.

(b) Where more than one event causes concurrent delays and the cause of at least one of those events, but not all of them, is not a cause of delay listed in Clause 35.8A(a) or (b), then to the extent that the delays are concurrent, the Contractor shall not be entitled to an extension of time for Practical Completion.

(c) Notwithstanding the preceding paragraph the Contractor shall be entitled to an extension of time if the concurrent delay occurs after the Date for Practical Completion and the cause of the delay is a Principal-caused Delay.

(d) With any claim for an extension of time for Practical Completion, the Contractor must give the Superintendent written notice of the period of extension claimed.

35.8 **Extension of time**

(a) If the Contractor is entitled to an extension of time for Practical Completion the Superintendent must, within 28 days of receipt of the notice of the number of days extension claimed, grant an extension of time as follows:

(i) subject to Clause 35.8(a)(iii), in the case of a Principal-caused Delay or a cause of delay listed in Clause 35.8A(b) which occurs on or before the Date for Practical Completion, the extension of time will be limited to the actual delay in achieving Practical Completion by the Date for Practical Completion caused by the relevant cause of delay;

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(ii) subject to Clause 35.8(a)(iii), in the case of a Principal-caused Delay which occurs after the Date for Practical Completion, the extension of time will be limited to the actual delay in achieving Practical Completion caused by the relevant Principal-caused Delay;

(iii) where, prior to the issue of a Variation, the Contractor has advised the Principal in a Variation quotation or otherwise of the impact that the proposed Variation (including in respect of a Change in Legislative Requirements), will, or is likely to, have on the Date for Practical Completion, the extension of time will not exceed the amount of time advised by the Contractor in the Variation quotation or otherwise; and

(iv) the Superintendent will reduce any extension to the Date for Practical Completion otherwise available to the extent that the Contractor contributed to the delay or failed to take all reasonable steps necessary to minimise the consequences of the delay.

(b) If within the 28 days the Superintendent does not grant an extension of time or the full extension of time claimed, the Superintendent must before the expiration of the 28 days give the Contractor notice in writing of the reason.

(c) In determining a reasonable extension of time for an event causing delay, the Superintendent must have regard to whether the Contractor has taken all reasonable steps to preclude the occurrence of the cause and minimise the consequences of the delay.

(d) Notwithstanding that the Contractor is not entitled to or has not claimed an extension of time, the Principal may, in its absolute and sole discretion at any time and from time to time before the issue of the Final Payment Certificate by notice in writing to the Contractor extend the Date for Practical Completion for any reason.

(e) A delay by the Principal or the failure of the Superintendent to grant a reasonable extension of time or to grant an extension of time within 28 days, shall not cause the Date for Practical Completion to be set at large but nothing in this paragraph shall prejudice any right of the Contractor to damages.

(f) If the Contractor fails to give a notice in accordance with Clause 35.5, or a written Claim for an extension of time in the form or within the time prescribed under Clause 35.6(a) or the conditions precedent in Clause 35.7(a) are not met:

(i) the Principal is not liable on any Claim by the Contractor; and

(ii) the Contractor is absolutely barred from making any Claim against the Principal,

arising out of, or in any way in connection with, the relevant period of delay and the cause of delay.

35.8A Qualifying causes of delay

The Contractor bears all risk of delay to the progress of the Works except for:

(a) Principal-caused Delays whether occurring before, on or after the Date for Practical Completion; and

(b) the following causes of delay occurring on or before the Date for Practical Completion:

(i) a strike, lockout, demarcation or industrial dispute occurring on or before the Date for Practical Completion, which:

(A) concurrently affects the Site and the building industry on a State-wide or nationwide basis;

(B) is not specific to the Contractor, any Contractor's Personnel or the Site; and

(C) is beyond the reasonable control of the Contractor; and

(ii) a Change in Legislative Requirements;

(iii) a Latent Condition which is the subject of a Variation Order issued by the Principal in accordance with Clause 12.2(c)(i); and

(iv) an Inclement Weather Event.

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35.9 **Liquidated Damages for Delay in Reaching Practical Completion**

If the Contractor fails to reach Practical Completion by the Date for Practical Completion, the Contractor shall be indebted to the Principal for liquidated damages at the rate stated in Item 39 of Annexure Part A for every day after the Date for Practical Completion to the Date of Practical Completion or the date that the Contract is terminated pursuant to Clause 44, whichever first occurs.

Notwithstanding anything in this Contract to the contrary, the Principal may have recourse to any security provided under the Contract in relation to any liquidated damages for which the Contractor may be indebted.

If after the Contractor has paid or the Principal has deducted liquidated damages, the time for Practical Completion is extended, the Principal shall forthwith repay to the Contractor any liquidated damages paid or deducted in respect of the period to and including the new Date for Practical Completion.

The payment of liquidated damages will not relieve the Contractor from its obligations to complete the work under the Contract or from any of its obligations and liabilities under the Contract. Liquidated damages shall become due upon the issue of a notice by the Superintendent setting out the amount of liquidated damages payable by the Contractor to the Principal.

The Principal may recover the amount of liquidated damages:

(a) on demand from the Contractor; or

(b) by deducting such amount from any amount certified by the Superintendent under Clause 42.1 or from any Security held under Clause 5,

after the elapse of the Date for Practical Completion, even though Practical Completion has not occurred.

The Contractor acknowledges that all sums payable by the Contractor to the Principal pursuant to this Clause 35.9 represent the Principal's genuine pre-estimate of the damages likely to be suffered by it if the Works do not reach Practical Completion by the Date for Practical Completion and such sums shall not be construed as a penalty.

If it is determined by a court of competent jurisdiction or in accordance with Clause 47 that the Contractor's liability for liquidated damages is deemed to be or becomes unenforceable in any way so as to disentitled the Principal from claiming liquidated damages, then the Principal is entitled to claim against the Contractor damages at law as an alternative to liquidated damages if Practical Completion is later than the Date for Practical Completion.

*35.10 **Limit on Liquidated Damages**

[Not used]

*35.11 **Bonus for Early Practical Completion**

[Not used]

36 DELAY OR DISRUPTION COSTS

Where the Contractor has been granted an extension of time under Clause 35.8 for any Compensable Cause, and for which the Contractor gives the Superintendent a Claim for delay or disruption costs pursuant to Clause 46.1, the Principal shall pay to the Contractor such extra costs as are necessarily incurred by the Contractor by reason of the delay as assessed and certified by the Superintendent in accordance with Clause 40.5, to a maximum amount per day stated in Item 40.

The Contractor will not be entitled to make any Claim for payment or compensation in relation to any delay or disruption costs which could have been reasonably avoided by the Contractor if the Contractor had taken appropriate steps or actions to mitigate the extent and quantum of costs of such delay.

Nothing in this Clause 36 or this Contract shall:

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(a) oblige the Principal to pay extra costs for delay or disruption which have already been included in the value of a Variation or any other payment under the Contract; or

(b) oblige the Principal to pay any extra costs for any cause of delay other than a Compensable Cause.

36A ACCELERATION OF THE WORKS

(a) The Principal may in its absolute discretion by notice in writing (expressly identified as an acceleration direction) direct the Contractor to:

(i) alter the sequence of activities comprising the work under the Contract; or

(ii) accelerate the progress of any one or more activities comprising work under the Contract,

or both ('**Acceleration Direction**'), so as to complete such activities by a date earlier than the date shown on the approved Contractor's Program or to overcome the effects of a delay.

(b) Without prejudice to Clauses 36A(e), 36A(f) and 36A(g), within 5 days of receipt by the Contractor of an Acceleration Direction under this Clause 36A (or any longer time the Principal may prescribe), the Contractor must supply to the Principal in writing its advice as to the extent to which the Contractor is reasonably able to comply with the Acceleration Direction together with the assessed total cost of carrying out the Acceleration Direction supported by evidence of costs including subcontract quotations.

(c) Subject to Clause 36A(d), the Contractor must not begin to carry out any Acceleration Direction unless the total scope and cost of the Acceleration Direction has been agreed with the Principal and the Principal has directed the Contractor in writing to proceed to execute the agreed scope of the Acceleration Direction for the agreed total cost.

(d) Even where no agreement has been reached as to the total cost, the Principal may direct the Contractor in writing to proceed with the execution of the Acceleration Direction specifically noting on the Acceleration Direction that it is to proceed without agreement as to its total cost. In these circumstances, without prejudice to Clauses 36A(e), 36A(f) and 36A(g), the total cost of the Acceleration Direction is to be determined in accordance with Clause 40.5 (for the purpose of which the measures taken by the Contractor pursuant to the Acceleration Direction will be deemed to be a Variation pursuant to a Variation Order).

(e) The Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make any Claim) arising out of or in connection with any direction to accelerate the work under the Contract which is not the subject of both:

(i) an Acceleration Direction issued in accordance with this Clause 36A; and

(ii) a direction by the Principal under Clauses 36A(c) or 36A(d) (as applicable).

(f) The Contractor is not entitled to recover any costs resulting from an Acceleration Direction if in the Principal's opinion the need for the Acceleration Direction was due to work under the Contract being behind schedule through causes for which the Contractor is responsible. In all other circumstances of an Acceleration Direction, the Contractor is only entitled to payment of the additional costs incurred as a result of complying with an Acceleration Direction if the Contractor clearly demonstrates to the Principal's satisfaction that the costs:

(i) were reasonable and necessarily incurred; and

(ii) are substantiated.

(g) The Contractor's entitlement to an extension of time and costs under this Contract for a delay in the performance of work under the Contract will be reduced proportionately to the extent that the measures taken pursuant to an Acceleration Direction are intended to overcome some or all of that delay.

37 DEFECTS LIABILITY

(a) The Defects Liability Period shall commence at 4:00 pm on the Date of Practical Completion and shall continue until the expiry of the period stated in Item 44 of Annexure Part A. In respect of all rectification work performed by the Contractor pursuant to this

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Clause 37, a separate Defects Liability Period will commence on the date that rectification work is completed and will expire after the period stated in Item 44 of Annexure Part A.

(b) Where the work under the Contract involves the construction of one or more residences, the Contractor must comply with the defect rectification obligations set out in the DHA Specification and DHA Design Guidelines. To the extent that there are Discrepancies between the requirements of this Clause 37 and the DHA Specification and DHA Design Guidelines, the DHA Specification and DHA Design Guidelines will prevail (unless otherwise directed in writing by the Principal).

(c) As soon as possible after the Date of Practical Completion, the Contractor shall promptly rectify any Defects (including Minor Defects) in the work under the Contract existing at the Date of Practical Completion to the Principal's or Superintendent's satisfaction within the timeframe directed by the Principal or the Superintendent (and in default of the direction specifying a timeframe, then all Defects must be rectified within 10 Business Days after the Date of Practical Completion).

(d) At any time during the Defects Liability Period, the Superintendent or the Principal or any person acting on behalf of the Principal, may direct the Contractor to rectify any Defect in the work under the Contract for which the Contractor is responsible, within the timeframe directed by the Principal or the Superintendent. The Contractor must carry out the rectification work in accordance with a direction under this Clause 37(d) and the DHA Specification and DHA Design Guidelines and Schedule C6 – Practical Completion, Handover Requirements and Defects Regime. The Contractor must rectify the Defect and notify the Principal of the rectification in writing within:

(i) the timeframe specified by the Principal or Superintendent in the direction under this Clause 37(d); or

(ii) if none is specified, then within 10 Business Days of the date of the direction,

whichever is earlier.

(e) If the rectification work for a Defect is not commenced or completed by the required dates or otherwise in accordance with this Clause 37 and (in the case of residences) the DHA Specification and DHA Design Guidelines, then without prejudice to any other rights that the Principal may have against the Contractor with respect to such Defect:

(i) the Principal may have the rectification works carried out at the Contractor's expense; and

(ii) the reasonable cost of the rectification work incurred by the Principal shall be a debt due from the Contractor to the Principal and the Principal may make a drawing on the Security for such amounts pursuant to Clause 5.6.

(f) If it is necessary for the Contractor to carry out rectification work the Contractor shall do so at times and in a manner which causes as little inconvenience to the occupants or users of the Works as is reasonably possible.

38 CLEANING UP

The Contractor shall keep the Site and the work clean and tidy. The Contractor shall regularly remove rubbish and surplus material.

Within 14 days after the Date of Practical Completion, the Contractor shall remove Temporary Works and Constructional Plant.

The Superintendent may extend the time for removal of Temporary Works or Constructional Plant necessary to enable the Contractor to perform remaining obligations.

Notwithstanding the provisions of Clause 44, if the Contractor fails to comply with any obligation imposed on the Contractor by this Clause 38, the Superintendent may direct the Contractor to rectify the non-compliance and the time for rectification.

If:

(a) the Contractor fails to comply with such a direction; and

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(b) that failure has not been made good within 5 days after the Superintendent has given reasonable notice in writing to the Contractor that the Principal intends to have the subject work carried out by others,

the Principal may have the work of cleaning and tidying up carried out by other persons and the reasonable cost incurred by the Principal certified by the Superintendent in having the work so carried out may be recovered by the Principal as a debt due from the Contractor to the Principal. The rights given by this paragraph are in addition to any other right and remedies in the Contract.

39 URGENT PROTECTION

If urgent action is necessary to protect the work under the Contract, other property or people and the Contractor fails to take the action, in addition to any other remedies of the Principal, the Superintendent may take the necessary action. If the action was action which the Contractor should have taken at the Contractor's cost, the reasonable cost incurred by the Principal in the circumstances shall be a debt due from the Contractor to the Principal.

If time permits, the Superintendent shall give the Contractor prior written notice of the intention to take action pursuant to this Clause 39.

40 VARIATIONS

40.1 Variations to the Work under the Contract

The Contractor shall not vary the work under the Contract except as directed by the Principal in writing pursuant to this Clause 40.

The Principal, before the Date of Practical Completion, may direct the Contractor to do any one or more of the following:

(a) increase, decrease, substitute or omit any part of the work under the Contract;

(b) change the character or quality of any material or work or of anything described in the Principal's Project Requirements or the Design Documents;

(c) change the levels, lines, positions or dimensions of anything described in the Principal's Project Requirements, the Design Documents or any part of the work under the Contract;

(d) execute additional work; or

(e) demolish or remove material or work no longer required by the Principal,

each a '**Variation**'.

If the Contractor is of the opinion that it has been required to carry out a Variation, but the Principal has not given a written instruction for a Variation in a Variation Order identifying the work as constituting a Variation, the Contractor shall give written notice to the Principal of:

(f) its opinion; and

(g) the effect which the Contractor anticipates that the Variation will have on:

  (i) the Contractor's Program;

  (ii) the Contract Sum; and

  (iii) the Date for Practical Completion.

If the Contractor does not give the notice referred to in this Clause 40 prior to commencing work on the Variation, the Contractor shall not be entitled to have the valuation of the Variation determined under Clause 40 or to make any Claim whether for payment, adjustment of the Contract Sum, extension of time or otherwise in respect of the Variation. Any cost and time consequences of the Variation shall be deemed to be included in the Contract Sum and the Date for Practical Completion. Whether or not the Contractor gives the notice referred to in this Clause 40.1, it shall carry out the work required by the Principal without prejudice to its entitlement to compensation if the work is a Variation and provided that the notice has been given.

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The Contractor acknowledges and agrees that if a Variation directed pursuant to a Variation Order under this Clause 40 omits or decreases any part of the work under the Contract, the Principal may thereafter carry out this omitted work either itself or by engaging another contractor.

No Variation, either alone or in combination with other Variations, will invalidate this Contract. Subject to this Clause 40, the Principal's entitlement to direct a Variation is unlimited and is not subject to any restriction under any principle of Law including the restrictions as to the nature, extent, value or timing of the Variation which may be directed.

40.2 **Proposed Variations**

Upon receipt of a notice in writing from the Principal notifying the Contractor of a proposed Variation under Clause 40, the Contractor shall, within 5 Business Days after receiving such notice, notify the Principal whether the proposed Variation can be effected, together with, if it can be effected, the Contractor's detailed estimate of the:

(a) effect which the Contractor anticipates that the Variation will have on the Contractor's Program and time for Practical Completion; and

(b) cost (including delay or disruption costs, if any, and the cost or effect on any applicable warranty) of the proposed Variation.

The Contractor acknowledges that it will not be entitled to Claim any delay or disruption costs or compensation in respect of an approved Variation unless those costs or that compensation was included in the Contractor's detailed quotation of the Variation.

40.3 **Pricing the Variation**

(a) Unless the Principal and the Contractor agree upon the price for a Variation, the Variation directed or approved by the Principal pursuant to Clause 40.1 shall be valued under Clause 40.5. For the avoidance of doubt, the Contractor must proceed to carry out a Variation in accordance with the relevant Variation Order regardless of whether or not the parties have agreed on the price of the Variation.

(b) The Principal may direct the Contractor to provide a detailed quotation for the work of a Variation supported by measurements or other evidence of cost.

40.4 **Variations for the Convenience of the Contractor**

If the Contractor requests the Principal to approve a Variation for the convenience of the Contractor, the Principal may do so in writing. The approval may be conditional.

Unless the Principal otherwise directs in the notice approving the Variation, the Contractor shall not be entitled to:

(a) an extension of time for Practical Completion; or

(b) extra payment,

in respect of the Variation or anything arising out of the Variation which would not have arisen had the Variation not been approved.

The Principal shall not be obliged to approve a Variation for the convenience of the Contractor.

40.5 **Valuation**

Where the Contract provides that a valuation shall be made under this Clause 40.5, the Principal shall pay or allow the Contractor or the Contractor shall pay or allow the Principal, as the case may require, an amount ascertained by the Superintendent as follows:

(a) if the Contract prescribes specific rates or prices to be applied in determining the value, those rates or prices shall be used;

(b) if Clause 40.5(a) does not apply, the rates or prices in the Schedule of Rates shall be used to the extent that it is reasonable to use them;

(c) to the extent that neither Clause 40.5(a) nor (b) applies, reasonable rates or prices shall be used;

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(d) to the extent that neither Clause 40.5(a), (b) nor (c) applies, as Daywork valued in accordance with Clause 41; and

(e) if the valuation is of an increase or decrease in a fee or charge or is a new fee or charge under Clause 14.2, the value shall be the actual increase or decrease or the actual amount of the new fee or charge without regard to overheads or profit.

For the purposes of a valuation to be made in accordance with Clause 40.5(a), (b), (c) or (d):

(f) in determining the deduction to be made for work which is taken out of the Contract, the deduction shall include a reasonable amount for profit and overheads; and

(g) if the valuation relates to extra costs incurred by the Contractor for delay or disruption, the valuation shall include a reasonable amount for overheads but shall not include profit or loss of profit.

41 DAYWORK

Where the Contract does not include a rate or rates for Daywork, in determining the value of Daywork regard shall be had to:

(a) the amount of wages and allowances paid or payable by the Contractor at the rates obtained on the Site at the time as established by the Contractor to the satisfaction of the Superintendent or at such other rates as may be approved by the Superintendent;

(b) the amount paid or payable by the Contractor in accordance with any statute or award applicable to day labour additional to the wages paid or payable under Clause 41(a);

(c) the amount of hire charges in respect of Constructional Plant approved by the Superintendent for use on the work in accordance with such hiring rates and conditions as may be agreed between the Superintendent and the Contractor or, in the absence of agreement, in accordance with such rates and conditions as may be determined by the Superintendent;

(d) the amounts paid for services, subcontract work and professional fees;

(e) the actual cost to the Contractor at the Site of all materials supplied and required for the work; and

(f) the charge stated in Item 45 of Annexure Part A or, if no charge is stated, a charge agreed between the Superintendent and the Contractor, to cover overheads, administrative costs, site supervision, establishment costs, attendance and profit, or, in the absence of agreement, a reasonable charge determined by the Superintendent.

Amounts payable for Daywork shall not be subject to adjustment for rise and fall in costs notwithstanding that the Contract may provide for adjustment for rise and fall in costs.

If a Variation relates to work which is on the critical path and the Contractor is directed by the Principal, the Contractor must carry out the work the subject of the Variation as Daywork pending determination of the scope and cost of the Variation and agreement on a detailed quotation in respect of the Variation between the parties.

42 CERTIFICATES AND PAYMENTS

42.1A Conditions for Payment

(a) Notwithstanding anything else in this Contract, the Contractor will not be entitled to make any payment claim or be entitled to receive payment in respect of any invoice submitted to the Principal unless:

(i) the Security has been provided by the Contractor and continues to be maintained in accordance with this Contract;

(ii) where the provision of a Parent Company Guarantee is required in accordance with Clause 5, a Parent Company Guarantee executed by the Parent Company has been provided by the Contractor to the Principal;

(iii) all insurances that the Contractor is required to effect pursuant to this Contract have been effected and continue to be maintained in accordance with this Contract;

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(iv) the Contractor has provided all documents which are required to have been provided (including, if requested by the Superintendent, any Subcontractor Warranty relating to any part of the work under the Contract which has been completed by the relevant subcontractor);

(v) the Contractor has complied with its obligations under Clause 8.3 which are required to have been complied with; and

(vi) the Contractor has complied with all of its other obligations under this Contract which are required to have been complied with.

(b) If the Contractor has not satisfied the conditions in Clause 42.1A(a) at the time of submitting a payment claim to the Principal for payment, then:

(i) the payment claim will be deemed to have been invalidly submitted under this Clause 42;

(ii) the Principal will not be obliged to include in any payment certificate any amount included in the payment claim; and

(iii) the Principal will not be liable to pay any amount included in the payment claim.

42.1 **Payment Claims, Certificates, Calculations and Time for Payment**

(a) At the times for payment claims for the Civil works (Civil Works Reference Date), or upon completion of the stages of any other work under the Contract (Reference Date) stated in Item 46 of Annexure Part A (as applicable) and within the time prescribed by Clause 42.5, the Contractor shall deliver to the Superintendent (and provide a copy to the Principal by email) claims for payment supported by evidence of the amount due to the Contractor and such information as the Superintendent may reasonably require. Claims for payment shall:

(i) The Contractor shall ensure that its claims for the Civil works to be submitted on the Civil Works Reference Date, are submitted separately to any claim for other work under the Contract and are submitted to the Civil Works Superintendent identified in Item 7 of Annexure Part A. The Contractor shall ensure that all other claims are submitted to the Superintendent for the 'House build and remaining works' identified in Item 7 of Annexure Part A.

(ii) include the value of work carried out by the Contractor in the performance of the Contract to that time together with all amounts then otherwise due to the Contractor arising out of the Contract;

(iii) include the total amount previously certified;

(iv) include the amount of the Contract Sum being claimed by the Contractor;

(v) include certificates from the relevant Consultants certifying that the work the subject of the payment claim has been completed in accordance with those parts of the Principal's Project Requirements and the Design Documents prepared by the Consultant responsible for the design of the relevant work under the Contract;

(vi) be calculated in accordance with Item 46A of Annexure Part A;

(vii) include statutory declarations required under Clause 43;

(viii) separately identify work attracting GST and work which does not attract GST; and

(ix) separately identify work under the Contract comprising the supply and/or installation of Non-Standard Fittings, if any.

(b) If the time for any payment claim under the preceding paragraph falls due on a day which is not a Business Day, the Contractor shall submit the claim either on the day before or next following that date which itself is not a Business Day.

(c) The Superintendent shall, within 10 Business Days after receiving such a payment claim assess the claim as agent of the Principal including (if applicable) for the purposes of the SOP Act, and issue to the Principal and the Contractor:

(i) a payment certificate identifying the payment claim to which it relates evidencing the Superintendent's opinion of the moneys due from the Principal to the

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Contractor pursuant to the payment claim and reasons for any difference ('**payment certificate**'); and

(ii) a certificate identifying the payment claim to which it relates evidencing the Superintendent's assessment of moneys due from the Contractor to the Principal pursuant to the Contract.

(d) If the Contractor fails to make a claim for payment under this Clause 42.1, the Superintendent may nevertheless issue a payment certificate with details of the calculations.

(e) If the Superintendent does not issue the payment certificate within 7 Business Days of receiving a payment claim in accordance with Clause 42.1, the Contractor must as soon as reasonably practicable and in any case within 1 Business Day, give the Principal notice in writing of the Superintendent's failure to issue the payment certificate.

(f) If the Superintendent does not issue the payment certificate within 10 Business Days of receiving a payment claim in accordance with Clause 42.1, that payment claim shall be disputed in its entirety.

(g) Subject to Clause 42.1A, the Principal shall within 15 Business Days after:

(i) the Principal receives the Contractor's payment claim in accordance with Clauses 42.1A and 42.1; or

(ii) if the Contractor does not make a payment claim in accordance with Clauses 42.1A and 42.1, the Principal receives a payment certificate from the Superintendent,

pay to the Contractor the amount of the payment certificate after setting off any amount certified under in Clause 42.1(c)(ii) as the Principal elects to set off. If that setting off produces a negative balance, the Contractor shall pay that balance to the Principal within 15 Business Days of receiving written notice thereof.

(h) The Contractor must pay an amount certified as payable in a certificate issued under Clause 42.1(c)(ii) or clause 42.1(d) within 15 Business Days.

(i) Neither a payment certificate or payment of moneys shall be evidence of the value of work or an admission of liability or evidence that the subject work under the Contract has been carried out satisfactorily. Payment other than final payment under Clause 42.6 shall be a payment on account only.

(j) At any time and from time to time, the Superintendent may by a further certificate correct any error which has been discovered in any previous certificate, other than a Certificate of Practical Completion or Final Payment Certificate.

42.2 Unfixed Plant and Material

The Principal shall not be liable to pay for any item of unfixed plant and materials which are not incorporated in the Works unless:

(a) that item is listed in Item 48 of Annexure Part A;

(b) the Contractor provides the amount of additional Security stated in Item 49 of Annexure Part A separately approved by the Principal under Clause 5.3; and

(c) the Contractor establishes to the satisfaction of the Superintendent that the Contractor has paid for the item, the item is properly stored, labelled the property of the Principal and is adequately protected.

Upon payment to the Contractor of the amount which includes the value of the item, and upon the release of any Security, the item shall be the property of the Principal free of any lien or charge.

42.3 Inspections and Certificate of Practical Completion

(a) The Contractor shall give the Superintendent and the Principal at least 14 days' notice of the date upon which the Contractor anticipates that Practical Completion will be reached.

(b) The Principal and the Superintendent (and, in respect of work under the Contract on a Defence Base or involving the construction of one or more residences, the Department of

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Defence) may inspect the Site and the Works on as many occasions as is necessary (in the discretion of the Principal, Superintendent or Department of Defence) to identify:

(i) any Defects;

(ii) whether identified Defects have been rectified; and

(iii) whether the other requirements for Practical Completion have been met,

and the Contractor must attend any such inspections as requested by the Principal, the Superintendent or the Department of Defence.

(c) The parties agree and acknowledge that there will be no less than 3 inspections by the Principal, Superintendent and/or Department of Defence with the Contractor in attendance. The Principal, Superintendent and Department of Defence may identify new Defects at each inspection under this Clause 42.3(b).

(d) When the Contractor is of the opinion that Practical Completion has been reached and all Defects identified in the inspections under clause 42.3(b) have been rectified, the Contractor shall in writing request the Superintendent to issue a Certificate of Practical Completion. Within 14 days of the receipt of the request, the Superintendent shall give to the Contractor and to the Principal a Certificate of Practical Completion certifying the Date of Practical Completion or give the Contractor in writing the reasons for not issuing the Certificate. To avoid doubt and notwithstanding anything contained in the Contract, the Superintendent is not obliged to issue a Certificate of Practical Completion unless and until the requirements, matters and conditions for Practical Completion have been reached or met.

(e) When the Superintendent is of the opinion that Practical Completion has been reached, the Superintendent may issue a Certificate of Practical Completion, whether or not the Contractor has made a request for its issue.

42.4 **Effect of Certificates**

(a) The issue of a payment certificate or a Certificate of Practical Completion shall not constitute approval of any work or other matter nor shall it prejudice any claim by the Principal or the Contractor.

(b) Prior to and as a condition precedent of the granting of a Certificate of Practical Completion, the Contractor shall (at its own cost, and in a manner approved by the Principal), assign full right, title and interest in and to any part of the Works in respect of which property has not already passed to the Principal.

42.5 **Final Payment Claim**

Within 28 days of the expiry of the Defects Liability Period, or where there is more than one, the last to expire, the Contractor shall provide the Superintendent with a final payment claim and endorse it 'Final Payment Claim' including all Claims whatsoever in connection with the subject matter of the Contract including all claims which the Contractor considers exist under or arising out of any alleged breach of the Contract whether or not such claims have been made at any time previously. All such Claims, which have not already been barred, shall be barred after the expiration of the period for lodging a 'Final Payment Claim'.

42.6 **Final Payment Certificate**

Within 10 Business Days of receipt of the Contractor's Final Payment Claim or, where the Contractor fails to provide such claim, the expiration of the period specified in Clause 42.5 for the lodgement of the Final Payment Claim by the Contractor, the Superintendent shall issue to the Contractor and to the Principal a final payment certificate endorsed 'Final Payment Certificate'. In addition to satisfying the requirements of Clause 42.1, the Superintendent shall set out in the Final Payment Certificate the amount which, in the Superintendent's opinion, is finally due from the Principal to the Contractor or from the Contractor to the Principal under the Contract.

If the Superintendent fails to issue a Final Payment Certificate to the Contractor within 10 Business Days or at all, the Final Payment Claim shall be deemed to be disputed in its entirety. Those moneys certified as due and payable shall be paid by the Principal or the Contractor, as the case may be, within 10 Business Days after the debtor receives the Final Payment Certificate.

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Within 28 days after the later of:

(a) the issue of the Final Payment Certificate; and

(b) a written request by the Contractor,

and subject to any other conditions set out in Item 17 of Annexure Part A and the terms of this Contract, the Principal shall release to the Contractor any Security held by the Principal.

42.7 Interest on Overdue Payments

If any moneys due to either party remain unpaid after the date upon which or the expiration of the period within which they should have been paid, then interest shall be payable thereon from but excluding the date upon which or the expiration of the period within which they should have been paid to and including the date upon which the moneys are paid. The rate of interest shall be the rate stated in Item 50 of Annexure Part A. Interest shall be compounded at six monthly intervals.

42.8 Set Offs by the Principal

The Principal may deduct from moneys due to the Contractor any money due from the Contractor to the Principal (including liquidated damages under Clause 35.9) under the Contract, any other contract with the Principal or otherwise and if those moneys are insufficient, the Principal may have recourse to Security under the Contract.

The Principal's entitlement to set off or deduct will not be affected by:

(a) whether the Contractor has reached Practical Completion or not; or

(b) the existence of a dispute or disputes in relation to the Principal's right to set off or deduct or the amount which the Principal intends to set off or deduct.

43 PAYMENT OF WORKERS AND SUBCONTRACTORS

43.1 Payment of Workers

The Principal will not be obliged to make a payment to the Contractor under Clauses 42.1 or 42.5 in connection with a payment claim or a final payment claim unless the Contractor has provided to the Superintendent with the payment claim or the final payment claim, each of the following:

(a) a statutory declaration in the form set out at Schedule I4 of Annexure Part I (or in such other form as reasonably required by the Superintendent) that all workers, subcontractors, suppliers and consultants who have at any time been employed by the Contractor on work under the Contract have at the date the statutory declaration is provided been paid all moneys due and payable to them in respect of their employment on the work under the Contract; and

(b) documentary evidence that at the date of the Claim all workers, subcontractors, suppliers and consultants who have been employed by a subcontractor of the Contractor have been paid all moneys due and payable to them in respect of their employment on the work under the Contract.

Documentary evidence, contractor's statements, subcontractor's statements and statutory declarations, except where the Contract otherwise provides, shall be to the Superintendent's satisfaction.

43.2 Security of Payment

(a) If the Contractor receives a notice from a subcontractor under any section of the SOP Act, the Contractor must promptly and without delay give the Principal and the Superintendent a copy of such notice.

(b) The Contractor must ensure that if a subcontractor receives a notice from another party under any section of the SOP Act, the subcontractor promptly and without delay gives the Principal and the Superintendent a copy of such notice.

(c) Where applicable, if within the time allowed under the SOP Act for the service of a 'payment schedule' by the Principal, the Principal does not:

(i) serve the payment schedule itself; or

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(ii) notify the Contractor that the Superintendent does not have authority from the Principal to issue the payment schedule on its behalf,

then a payment certificate provided by the Superintendent under Clause 42.1(c) constitutes a 'payment schedule' provided by the Superintendent as agent for the Principal.

(d) If the Principal becomes aware that any subcontractor is entitled to suspend work (which forms part of the work under the Contract) under any section of the SOP Act, the Principal may (at its absolute discretion) pay the subcontractor such money as is or may be owing to the subcontractor in respect of work forming part of the work under the Contract, and any amount paid by the Principal is a debt due to the Principal from the Contractor and the Principal may set off any such amount from any amounts due to the Contractor.

(e) The Contractor shall indemnify the Principal against all damage, expense (including lawyers' fees and expenses on a solicitor/client basis), loss (including financial loss) or liability of any nature suffered or incurred by the Principal arising out of:

(i) a suspension by a subcontractor of work which forms part of the work under the Contract under any section of the SOP Act;

(ii) a failure by the Contractor to comply with its obligations under Clause 43.2(a); and

(iii) a notice or claim under the SOP Act or any other Law being served on the Principal in connection with a Subcontractor exercising a lien or charge over the Works.

(f) For the purposes of Clauses 43.1 and 43.2, a reference to:

(i) a subcontractor refers to any party engaged by the Contractor, its subcontractors or any other party to carry out work which forms part of the work under the Contract; and

(ii) work refers to work which the Contractor is or may be required to execute or provide under the Contract and includes equipment, services (including design work), materials, plant and temporary works.

(g) If the Contractor applies for adjudication of a payment dispute under the SOP Act, the prescribed appointer, registered adjudicator or authorised nominating authority (as applicable in the relevant jurisdiction) for the purposes of the SOP Act is the Chair of the Chapter of the Resolution Institute in the relevant jurisdiction.

43.3 Withholding of Payment

[Not used]

43.4 Direct Payment

Before final payment, the Principal, if not aware of a relevant relation-back day (as defined in the Corporations Law) may pay unpaid moneys the subject of Clause 43.1 directly to a worker or a subcontractor where:

(a) permitted by Law;

(b) given a court order in favour of the worker or subcontractor; or

(c) requested in writing by the Contractor.

Such payment and a payment made to a worker or subcontractor in compliance with a Legislative Requirement shall be deemed to be payment on account of the Contract Sum and will therefore reduce the total amount due to the Contractor by the amount paid pursuant to this Clause 43.4.

43.5 Passing of title

All rights, title and ownership in each part of the materials, equipment constituting part of the Works passes to the Principal upon the earlier of:

(a) installation of that part of the Works on the Site; or

(b) payment by the Principal in relation to that part of the Works.

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44 DEFAULT OR INSOLVENCY

44.1 Preservation of Other Rights

If a party breaches or repudiates the Contract, nothing in Clause 44 shall prejudice the right of the other party to terminate at Law or recover damages or exercise any other right or remedy.

44.2 Default by the Contractor

If the Contractor commits a substantial breach of contract and the Principal considers that damages may not be an adequate remedy, the Principal may give the Contractor a written notice to show cause.

Substantial breaches include but are not limited to:

(a) failing to perform properly the Contractor's Design Obligations;

(b) failing to provide Security;

(c) failing to provide evidence of insurance;

(d) failing to comply with a direction of the Superintendent pursuant to Clause 30.3;

(e) failing to use the materials or standards of workmanship required by the Contract;

(f) suspension of work in breach of Clause 34.1;

(g) failing to proceed with due expedition and without delay in breach of Clause 33.1;

(h) any breach of clause 62 (Conflict of Interest) by the Contractor;

(i) failing to accelerate the progress of the work under the Contract (where such a requirement arises as a result of the operation of Clause 33);

(j) substantial departure from the Contractor's Program without reasonable cause or the Superintendent's approval;

(k) in respect of Clause 43, knowingly providing a statutory declaration or documentary evidence which contains a statement that is untrue;

(l) any breach of Clause 14 by the Contractor; and

(m) any other breach of the Contract which is in the reasonable opinion of the Principal or the Superintendent, material and significant.

44.3 Requirements of a Notice by the Principal to Show Cause

A notice given under Clause 44.2 shall:

(a) state that it is a notice under Clause 44 of these General Conditions of Contract;

(b) specify the alleged substantial breach;

(c) require the Contractor to show cause in writing why the Principal should not exercise a right referred to in Clause 44.4;

(d) specify the time and date by which the Contractor must show cause (which time shall not be less than 5 Business Days after the notice is given to the Contractor); and

(e) specify the place at which or manner in which, cause must be shown.

44.4 Rights of the Principal

If by the time specified in a notice given under Clause 44.2, the Contractor fails to show reasonable cause why the Principal should not exercise a right referred to in this Clause 44.4, the Principal may by notice in writing to the Contractor:

(a) take out of the hands of the Contractor the whole or part of the Work remaining to be completed; or

(b) terminate the Contract.

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Upon giving a notice under Clause 44.2, the Principal may suspend payments to the Contractor until the earlier of:

(c) the date upon which the Contractor shows reasonable cause;

(d) the date upon which the Principal takes action under Clause 44.4(a) or 44.4(b); or

(e) the date which is 7 days after the last day for showing cause in the notice under Clause 44.2.

If the Principal exercises the right under Clause 44.4(a), the Contractor shall not be entitled to any further payment in respect of the work taken out of the hands of the Contractor unless a payment becomes due to the Contractor under Clause 44.6.

44.5 **Procedure when the Principal Takes Over Work**

If the Principal takes work out of the hands of the Contractor under Clause 44.4(a), the Principal shall complete or procure completion of that work and the Principal may without payment of compensation take possession of:

(a) such of the Constructional Plant and other things on or in the vicinity of the Site as are owned by the Contractor; and

(b) the Design Documents and other documents, information, materials and the like produced by the Contractor,

which are reasonably required by the Principal to facilitate completion of the work. The Principal shall keep records of the cost of completing the work.

If the Principal takes possession of Constructional Plant, Design Documents or other things, the Principal shall maintain them and, subject to Clause 44.6, on completion of the work, the Principal shall return to the Contractor the Constructional Plant and any things taken under this Clause 44.5 which are surplus and, subject to Clause 13, the Design Documents.

The Superintendent shall keep records of the cost of completing the work.

The Contractor shall assign to the Principal all such sub-contracts, supply agreements, hiring agreements, Design Documents and other things as may be stipulated by the Superintendent. The Contractor shall also make all Constructional Plant of its suppliers and subcontractors available to the Principal subject to being able to obtain agreement with those suppliers and subcontractors. The Principal shall pay the relevant supplier and subcontractors the normal commercial rates for the hire of that Constructional Plant.

If the Contractor does not complete the transfer or assignment of those items or documents, the Contractor hereby unconditionally and irrecoverably appoints the Principal as the Contractor's attorney for and on behalf of the Contractor to do, perform and execute such things and documents as may be necessary or desirable to transfer or assign such things, agreements or arrangements.

44.6 **Adjustment on Completion of the Work Taken Out of the Hands of the Contractor**

When work taken out of the hands of the Contractor under Clause 44.4(a) is completed, the Superintendent shall ascertain the cost incurred by the Principal in completing the work and shall issue a certificate pursuant to this Clause 44.6 to the Principal and the Contractor certifying:

(a) the amount of that cost, and setting out the calculations employed to arrive at that cost;

(b) the amount which would otherwise have been paid to the Contractor if the work had been completed by the Contractor; and

(c) the difference.

If the cost incurred by the Principal is greater than the amount which would have been paid to the Contractor if the work had been completed by the Contractor, the difference shall be a debt due from the Contractor to the Principal. If the cost incurred by the Principal is less than the amount that would have been paid to the Contractor if the work had been completed by the Contractor, the difference shall be a debt due to the Contractor from the Principal.

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If the Contractor is indebted to the Principal, the Principal may retain Constructional Plant or other things taken under Clause 44.5 until the debt is satisfied. If after reasonable notice, the Contractor fails to pay the debt, the Principal may sell the Constructional Plant or other things and apply the proceeds to the satisfaction of the debt and the costs of sale. Any excess shall be paid to the Contractor.

44.7 **Default of the Principal**

If the Principal commits a substantial breach of contract and the Contractor considers that damages may not be an adequate remedy, the Contractor may, by hand or by certified post, give the Principal a written notice to show cause.

Substantial breaches include but are not limited to:

(a) failing, in breach of Clause 42.1, to pay an amount certified as due under the Contract which is not the subject of a dispute; and

(b) failure by the Superintendent either to issue a Certificate of Practical Completion or give the Contractor the reasons in writing for not issuing that Certificate within 14 days of receipt of a request by the Contractor to issue that Certificate, in breach of Clause 42.3.

44.8 **Requirements of a Notice by the Contractor to Show Cause**

A notice given under Clause 44.7 shall:

(a) state that it is a notice under Clause 44 of these General Conditions of Contract;

(b) specify the alleged substantial breach;

(c) require the Principal to show cause in writing why the Contractor should not exercise a right referred to in Clause 44.9;

(d) specify the time and date by which the Principal must show cause (which shall not be less than 5 Business Days after the notice is given to the Principal); and

(e) specify the place at which cause must be shown.

44.9 **Rights of the Contractor**

If by the time specified in a notice given under Clause 44.7, the Principal fails to show reasonable cause why the Contractor should not exercise a right referred to in this Clause 44.9, the Contractor may by notice in writing to the Principal suspend the whole or any part of the work under the Contract.

The Contractor shall lift the suspension if the Principal remedies the breach but if within 28 days of the date of suspension under this Clause 44.9, the Principal fails to remedy the breach or, if the breach is not capable of remedy, fails to make other arrangements to the reasonable satisfaction of the Contractor, the Contractor may by notice in writing to the Principal terminate the Contract.

Damages suffered by the Contractor by reason of the suspension shall be assessed by the Superintendent, who shall certify them as moneys due and payable to the Contractor.

44.10 **Rights of the Parties on Termination**

(a) If the Contract is terminated pursuant to Clause 44.4(b) or 44.9, the rights and liabilities of the parties shall be the same as they would have been at common Law had the defaulting party repudiated the Contract and the other party elected to treat the Contract as at an end and recover damages.

(b) Without limiting the Principal's rights under Clause 44.4, upon termination or expiration of the Contract for any reason, the Contractor must:

(i) immediately return to the Principal any property of the Principal in the possession of the Contractor, its employees, agents or subcontractors, including original copies of all Approvals, Contractor Documents, certificates, warranties and other documents provided to, or procured by, the Contractor in the performance of the work under the Contract and the Contract Materials;

(ii) give the Principal (and its nominees) reasonable access to the documentation referred to in Clause 44.10(b)(i); and

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(iii) if required by the Principal, do all things reasonably necessary and provide the Principal with all reasonable assistance to enable the completion of the Works by the Principal or a third party as specified by the Principal (**Transition Services**).

(c) The documentation provided to the Principal pursuant to Clause 44.10(b)(i) must be provided:

(i) as an electronic document and in a readable format where such documentation was created in an electronic form; and

(ii) in paper where such documentation was received or sent as paper.

(d) If the Contract is terminated pursuant to Clauses 44.7 or 44.13, the Principal will pay the Contractor for the provision of any Transition Services required under Clause 44.10(b)(iii), determined based on the hourly rates which must not exceed market rates in respect of the performance of equivalent services by equivalent contractors. Except as expressly provided for in this Clause 44.10(d), the Contractor shall not be entitled to any Claim or any other form of relief for the performance of Transition Services.

(e) If the Contract is wrongfully terminated by a party, the other party, having elected to terminate the Contract shall then only be entitled to recover damages in respect of the wrongful termination of the Contract and shall not be entitled to claim on a quantum meruit basis.

44.11 Insolvency

If a party commits or suffers an Insolvency Event then, to the extent permitted by law, where the other party is:

(a) the Principal, the Principal may, without giving a notice to show cause, exercise the right under Clause 44.4(a) or 44.4(b); or

(b) the Contractor, the Contractor may, without giving a notice to show cause, exercise the right under Clause 44.9.

The rights given by this Clause 44.11 are in addition to any other rights and may be exercised notwithstanding that there has been no breach of contract. For clarity, an Insolvency Event represents a substantial breach of contract by the relevant party.

44.12 Consequences of termination by Principal

In the event that the Contractor's employment is terminated pursuant to Clauses 44.4(b) or 44.11, the Principal may employ any other person, firm or corporation (referred to as 'Replacement Contractor') to complete the Works in accordance with the terms of the Contract.

The Principal shall be required to mitigate reasonably the cost for completion of the Works but may make such expenditures as in the Principal's sole judgment will best accomplish the timely completion of the Works, provided that the Principal shall not be required or expected to mitigate any such cost by terminating, repudiating or renegotiating any contract entered into between the Contractor and any subcontractor.

The Principal, as soon as practicable after termination, shall determine the total expenses incurred and accrued by the Principal in connection with the termination of the Contract (including all legal fees and expenses on an indemnity basis) in the completion of the Works over and above the estimated Contract Sum had the Contractor performed the Works in accordance with the Contract. The total expenses referred to in the preceding sentence shall include all additional amounts charged by any Replacement Contractor to complete the Works and any additional overhead reasonably incurred by the Principal to effect such takeover and completion of the Works. The Contractor will be liable for such additional amounts charged by the Replacement Contractor or otherwise incurred by the Principal as a debt due from the Contractor to the Principal.

The Principal's entitlements under this Clause 44.12 are in addition to any other rights of the Principal under the Contract or at common law.

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44.13 **Termination for the Principal's convenience**

Notwithstanding anything in this Contract, the Principal may at any time, after giving 14 days' notice, terminate this Contract in whole or in part (including one or more Separable Portions) for any reason by giving the Contractor a notice of termination which refers to this Clause 44.13 irrespective of whether it or the Contractor are in breach of the Contract at the time of termination.

If the Principal terminates the Contract in whole under this Clause 44.13, the Contractor will be entitled to be paid:

(a) the Contract Sum attributable to the work under the Contract performed as at the date of termination;

(b) the costs, if any, necessarily incurred in protecting the work under the Contract and leaving the Site in a clean and safe condition; and

(c) the Contractor's reasonable demobilisation costs,

less the aggregate of all previous payments allocated to the work under the Contract. Any sums due to the Principal from the Contractor accruing prior to the date of termination will be deducted from the amount to be paid to the Contractor under this Contract.

If the Principal terminates the Contract in part under this Clause 44.13:

(d) the Contract Sum will be reduced by the value of the terminated portion of the works under the Contract as determined by the Superintendent;

(e) subject to Clause 44.13(f), if there is any dispute in relation to the reduction of the Contract Sum under Clause 44.13(d), the Contractor may request the valuation to be undertaken by the Principal's quantity surveyor (the cost of which will be borne equally between the parties) and such valuation will be final and binding on the parties; and

(f) if a party disputes the valuation under Clause 44.13(e) within 10 Business Days of receipt of the valuation,, either party may refer the matter to dispute resolution in accordance with Clause 47.

Except for the amounts which the Contractor is entitled to under this Clause 44.13, the Contractor is not entitled to any compensation, including consequential loss and profit, as a result of the exercise of the right under this Clause 44.13. If the Principal's purported termination under any clause of this Contract is ineffective, it is not a breach of the Contract, but is considered to be an exercise of the right of termination under this Clause 44.13.

45 TERMINATION BY FRUSTRATION

[Not used]

46 NOTIFICATION OF CLAIMS

46.1 **Notices of other claims**

Except for claims for:

(a) an extension of time under Clause 35.6;

(b) payment under Clause 42.1; or

(c) a variation expressly directed under Clause 40.1 in a Variation Order,

the Contractor must give the Superintendent the notices required by Clause 46.3 if it wishes to make a Claim against the Principal in respect of any direction by the Superintendent or any other matter (including a breach of the Contract by the Principal) under, arising out of, or in any way in connection with, the work under the Contract or the Contract, including anything in respect of which:

(d) it is otherwise given an express entitlement under the Contract; or

(e) the Contract provides that the Contract Sum will be increased.

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46.2 **Liability for Failure to Communicate**

[Not used]

46.3 **Prescribed Notices**

The notices referred to in Clause 46.1 are:

(a) a written notice within 14 days of the first occurrence of the direction or other fact, matter or thing upon which the Claim is based expressly specifying:

(i) that the Contractor proposes to make a Claim; and

(ii) the direction or other fact, matter or thing upon which the Claim will be based; and

(b) a written Claim within 30 days of giving the written notice under Clause 46.3(a), which must include:

(i) particulars concerning the direction or other fact, matter or thing upon which the Claim is based;

(ii) the legal basis for the Claim, whether based on a term of the Contract or otherwise, and if based on a term of the Contract, clearly identifying the specific term;

(iii) the facts relied upon in support of the Claim in sufficient detail to permit verification; and

(iv) details of the amount claimed and how it has been calculated.

46.4 **Continuing events**

If the direction or matter on which the Claim under Clause 46.1 is based or the consequences of the direction or matter are continuing, the Contractor shall continue to give the information required by Clause 46.3(b) every 28 days after the written Claim under this Clause 46.1 was submitted or given to the Superintendent, until after the direction or matter on which the Claim is based has, or the consequences of it have, ceased.

46.5 **Time bar**

If the Contractor fails to comply with Clause 46.1:

(a) the Principal will not be liable (so far as it is possible to exclude liability) on any Claim by the Contractor; and

(b) the Contractor is absolutely barred from making any Claim against the Principal,

arising out of, or in any way in connection with, the relevant direction or matter (as applicable) to which Clause 46.1 applies.

46.6 **Other provisions unaffected**

Nothing in Clauses 46.1 to 46.5 limits the operation or effect of any other provision of the Contract which requires the Contractor to give notice to the Superintendent in order to preserve an entitlement to make a Claim against the Principal.

47 DISPUTE RESOLUTION

47.1 **Notice of Dispute**

If a dispute or difference (hereafter called a 'dispute') between the Contractor and the Principal arises in connection with the Contract or the subject matter thereof, including a dispute concerning:

(a) a direction given by the Superintendent; or

(b) a Claim:

(i) in tort;

(ii) under statute;

(iii) for restitution based on unjust enrichment; or

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(iv) for rectification or frustration,

then either party shall deliver by hand or send by certified mail to the other party and to the Superintendent a notice of dispute in writing adequately identifying and providing details of the dispute.

Notwithstanding the existence of a dispute, the Principal and the Contractor shall continue to perform the Contract and, subject to Clause 44, the Contractor shall continue with the work under the Contract and the Principal and the Contractor shall continue to comply with Clause 42.1.

47.2 **Further Steps Required Before Proceedings**

[Not used]

47.3 **Arbitration**

[Not used]

47.4 **Conference**

If a party delivers a notice of dispute to the other party and the Superintendent pursuant to Clause 47.1 and that dispute has not been able to be resolved, then:

(a) within 10 Business Days of receipt of the dispute notice under Clause 47.1, senior representatives of the parties at Project level must meet and use reasonable endeavours acting in good faith to resolve the dispute by joint discussions;

(b) if the dispute is not resolved in accordance with Clause 47.4(a) within the time specified in this clause, the dispute shall be referred to the respective dispute resolution executives of the parties specified in Item 53 of Annexure Part A who must meet within 20 Business Days of receipt of the dispute notice under Clause 47.1, and use reasonable endeavours acting in good faith to resolve the dispute by joint discussions; and

(c) if the dispute is not resolved in accordance with Clause 47.4(b), either party may submit to the exclusive jurisdiction of the courts of the State or Territory in which the Site is located.

47.5 **Summary Relief**

Nothing herein shall prejudice the right of a party to institute proceedings to enforce payment due under the Contract or to seek injunctive or urgent declaratory relief in respect of a dispute under Clause 47 or any matter arising under the Contract.

47.6 **Related disputes**

In circumstances where a dispute arises under this Contract that is connected to a dispute arising under any agreement between the Principal and Defence, the Contractor must provide input into the dispute resolution process required by the relevant agreement between DHA and Defence and must, to the extent directed to do so by DHA, participate in good faith in any negotiations and consultations between DHA and Defence and provide information reasonably requested by DHA in relation to such dispute.

48 WAIVER OF CONDITIONS

[Not used]

49 PRIVACY

49.1 **Application of this clause**

This Clause applies only where the Contractor deals with personal information when, and for the purpose of, performing its obligations under the Contract but does not detract from the obligations of the Contractor under the Privacy Act.

49.2 **Obligations**

The Contractor acknowledges that it is a 'contracted service provider' within the meaning of section 6 of the Privacy Act, and agrees in respect of the performance of the Contractor's obligations under the Contract:

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(a) to use or disclose personal information obtained during the course of performing its obligations under this Contract only for the purposes of fulfilling its obligations under this Contract;

(b) not to do any act or engage in any practice that would breach an APP, which if done or engaged in by an agency, would be a breach of that APP;

(c) to carry out and discharge the obligations contained in the APPs as if it were an agency under the Privacy Act;

(d) to notify individuals whose personal information the Contractor holds, that complaints about acts or practices of the Contractor may be investigated by the Information Commissioner who has power to award compensation against the Contractor in appropriate circumstances;

(e) not to use or disclose personal information or engage in an act or practice that would breach a registered APP Code, where that registered APP Code is applicable to the Contractor;

(f) not to use or disclose personal information or engage in an act or practice that would breach APP 7, unless the Contractor collected the personal information for the purpose of meeting, directly or indirectly, an obligation under this Contract, and the use or disclosure is necessary to meet, directly or indirectly, such an obligation;

(g) to disclose in writing to any person who asks, the content of the provisions of the Contract that are inconsistent with an APP;

(h) to immediately notify the Principal if the Contractor becomes aware of a breach or possible breach of any of the obligations contained in, or referred to in, this Clause whether by the Contractor or any subcontractor of the Contractor;

(i) to comply with any directions, guidelines, determinations or recommendations of the Privacy Commissioner to the extent that they are not inconsistent with the requirements of this Clause 49; and

(j) to ensure that any person who may have access to personal information in connection with the Contract is made aware of and undertakes to observe the obligations of the Contractor set out in this Clause 49.

49.3 Subcontracts

The Contractor must ensure that any subcontract entered into by the Contractor for the purpose of fulfilling its obligations under the Contract contains provisions to ensure that the subcontractor has the same awareness and obligations as the Contractor has under this Clause 49 including the requirement in relation to subcontracts.

49.4 Definitions

In this Clause the terms 'agency', 'registered APP code' (**APC**), 'personal information' and 'Australian Privacy Principles' (**APPs**) have the same meaning as they have in section 6 of the *Privacy Act*.

49.5 Publicity

The Contractor must not, nor permit any of employees, agents or representatives to:

(a) issue any press or publicity release; or

(b) publish or otherwise disclose any photograph or other information,

concerning the terms of this Contract or the nature of the Works or the project without the express prior written consent of the Principal.

50 EQUAL EMPLOYMENT OPPORTUNITY

50.1 The Contractor to comply with its obligations under the Act

The Contractor must comply with its obligations, if any, under the *Workplace Gender Equality Act 2012* (Cth) (the 'Act' for the purposes of this Clause 50).

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50.2 **Limitation on permitted subcontractors**

The Contractor must not enter into a subcontract under this Contract with a subcontractor named by the Workplace Gender Equality Agency as an employer currently not complying with the Act.

50.3 **Subcontracts to contain certain provisions**

Any subcontract must include a provision which requires the subcontractor to notify the Workplace Gender Equality Agency of any failure to comply with the Act.

51 DISABILITY DISCRIMINATION ACT

The Contractor must comply with its obligations under the *Disability Discrimination Act 1992* (Cth).

52 ENGAGEMENT OF ILLEGAL WORKERS PROHIBITED

52.1 **Interpretation**

For the purposes of this Clause 52 an 'illegal worker' is a person who:

(a) has unlawfully entered and remains in Australia;

(b) has lawfully entered Australia, but remains in Australia after his/her visa has expired; or

(c) is working in breach of his/her visa conditions.

52.2 **Prohibition on employers**

The Contractor must ensure that all its employees, agents and any other persons engaged by the Contractor to carry out work under this Contract, including those engaged by any subcontractor are at all times:

(a) Australian citizens; or

(b) in the case of persons who are not Australian citizens, not illegal workers.

52.3 **Removal of illegal workers**

The Contractor must remove or cause to be removed any illegal worker from any involvement in the carrying out work under this Contract and arrange for their replacement at no cost to the Principal immediately once it becomes aware of the involvement of the illegal worker. The Contractor must immediately notify the Principal of the involvement of the illegal worker and of the removal.

52.4 **No entitlement**

For the avoidance of doubt, compliance with the Contractor's obligations under this Clause will not give rise to an entitlement to Claim any delay or otherwise excuse the Contractor from compliance with its obligations under this Contract.

52.5 **The Contractor to provide evidence of compliance**

(a) When requested by the Principal, the Contractor will provide evidence that it has taken all reasonable steps to ensure that it has complied and is complying with its obligations under this Clause 52, including in relation to any subcontractors.

(b) The Contractor must provide to the Principal evidence referred to in subparagraph (a) within 5 Business Days of receiving the Principal's request.

53 [NOT USED]

54 GST

54.1 **Definition and interpretation**

In this Clause 54:

(a) 'GST' means goods and services tax or similar value added tax levied or imposed in Australia pursuant to the GST law or otherwise on a supply;

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(b) 'GST Act' means *A New Tax System (Goods and Services Tax) Act 1999* (Cth);

(c) 'GST law' has the same meaning as in the GST Act;

(d) 'Tax Invoice' includes any document or record treated by the Commissioner of Taxation as a tax invoice or as a document entitling a recipient to an input tax credit.

(e) Words used in this Clause 54 which have a defined meaning in the GST law have the same meaning as in the GST law unless the context otherwise indicates.

54.2 **Adjustment for GST**

(a) Unless expressly included, the consideration for any supply under or in connection with this Contract does not include GST.

(b) To the extent that any supply made under or in connection with this Contract is a taxable supply, the consideration for that supply is increased by an amount determined by the supplier, not exceeding the amount of that consideration (or its market value) multiplied by the rate at which GST is imposed in respect of the supply.

(c) If an adjustment event occurs following a determination under Clause 54.2(b):

(i) the supplier must make a further determination under Clause 54.2(b) of the amount of consideration payable; and

(ii) if the GST component of that consideration differs from the amount originally determined, the amount of the difference must be paid by, refunded to or credited to the recipient, as the case may be.

(d) Any amount referred to in this Contract which is relevant in determining a payment to be made by one party to the other, including any amount of income, revenue, loss, cost or expense, is to be expressed exclusive of GST unless indicated otherwise.

(e) If a party to this Contract is entitled to be reimbursed for an expense or outgoing incurred in connection with this Contract, then the amount of the reimbursement will be net of any input tax credit which may be claimed by the party being reimbursed in relation to that expense or outgoing.

54.3 **Tax Invoices**

The supplier must issue a Tax Invoice to the recipient of a supply to which Clause 54.2 applies prior to the date on which payment of the GST inclusive consideration determined under Clause 54.2 is due. In respect of payments to be made to the Contractor pursuant to Clause 42, the Contractor must issue a Tax Invoice to the Principal within 5 Business Days of receipt of a payment certificate, for an amount certified in the payment certificate.

Each party shall pay its own legal costs and expenses in respect of the negotiation, preparation, completion and stamping of the Contract.

55 TAXES OTHER THAN GST

(a) Subject to Clauses 55(b) and 55(c), the Contractor:

(i) must pay all Taxes arising out of or in connection with this Contract and any transaction evidenced or contemplated by it; and

(ii) indemnifies and holds harmless the Principal against any Taxes payable by the Principal arising out of or in connection with this Contract and any transaction evidenced or contemplated by it that are discharged or otherwise satisfied by the Principal.

(b) The Contractor's liability to pay all Taxes under Clause 55(a)(i) does not include a liability to pay income tax of the Principal.

(c) The Contractor acknowledges and agrees that if the Principal is required to make a Withholding Payment (as defined in the *Taxation Administration Act 1953* (Cth)) from any amount payable to the Contractor, the Principal will pay the Contractor the balance of the amount payable after deduction of the amount of the Withholding Payment.

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56 LONG SERVICE LEAVE LEVIES

(a) The Contractor must comply with its obligations under any relevant Legislative Requirements dealing with or relating to long service leave in the building and/or construction industry and any other Legislative Requirements relating to long service leave (**LSL Laws**).

(b) If any levy, charge, contribution or amount is required to be paid under any LSL Laws (**LSL Levy**) in relation to this Contract or the work under the Contract, the Contractor must pay and bear the cost of the LSL Levy. The Contractor indemnifies and holds harmless the Principal against any LSL Levies payable by the Principal arising out of or in connection with this Contract and any transaction evidenced or contemplated by it that are discharged or otherwise satisfied by the Principal.

(c) All LSL Levies paid or payable by the Contractor are deemed to be included in the Contract Sum and the Principal is not liable for, or in connection with, any Claim (and the Contractor is not entitled to make, and releases the Principal from, any Claim) arising out of, or in connection with any LSL Levies, LSL Laws or this Clause 56.

(d) The Contractor must promptly provide any information relating to the Contractor, work under the Contract and this Contract in relation to LSL Laws and LSL Levies reasonably requested by the Principal .

57 PPSA

57.1 Definitions

In this Clause 57:

'Security Interest' has the meaning given to it in the PPS Law.

'Transaction Document' means:

(a) this Contract;

(b) any guarantee by which any person guarantees the Contractor's compliance with its obligations under any of the Transaction Documents;

(c) agreements between the Contractor and its subcontractors;

(d) any agreement which the Principal and the Contractor agree is a Transaction Document for the purposes of this Contract;

(e) any agreement or instrument created under any of the above documents; and

(f) each document entered into for the purpose of amending, novating, restating or replacing any of the above documents.

57.2 Enforcement of liquid assets

The parties agree that paragraphs (a) to (r) inclusive of Section 115 of the PPS Act do not apply to this Contract or the transactions contemplated under this Contract.

57.3 Application of PPS Law

If one party (the "**Secured Party**") determines that a Transaction Document (or a transaction in connection with it) is or contains a Security Interest in favour of the Secured Party, the other party agrees to do anything (such as obtaining consents, signing and producing documents, getting documents completed and signed and supplying information) which is requested by the Secured Party and which is reasonably necessary for the purposes of:

(a) ensuring that the Security Interest is enforceable, perfected (including, where possible, by control in addition to registration) and otherwise effective;

(b) enabling the Secured Party to apply for any registration, or give any notification, in connection with the Security Interest so that the Security Interest has the priority required by the Secured Party. This includes registration under the PPSA for whatever collateral class the Secured Party thinks appropriate, acting reasonably; and

(c) enabling the Secured Party to exercise rights in connection with the Security Interest,

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57.4 **Specific obligations**

For the avoidance of doubt:

(a) the Principal intends to register any Security Interest the Principal acquires in any Works or materials and equipment immediately upon title in that works or materials and equipment passing to the Principal in accordance with Clause 43.5 and the Security Interest arising; and

(b) the Contractor must assist the Principal to register and / or improve that Security Interest by:

(i) removing any Security Interest the Contractor has in the relevant Works or materials and equipment; and

(ii) ensuring that all subcontractors remove any Security Interest the subcontractors have in the relevant Works or materials and equipment.

57.5 **General**

The Principal and the Contractor acknowledge that nothing in this Clause 57:

(a) affects (or will require either party to amend any Transaction Document so as to affect) the time at which title in any of the Works or materials and equipment passes in accordance with Clause 43.5; or

(b) relieves either party of any obligation under this Contract.

58 WORK HEALTH AND SAFETY

58.1 **Definitions and interpretation**

In this Clause 58:

(a) 'WHS Document Suite' includes the following documentation as updated from time to time:

(i) the overall company/contractor WHS Plan;

(ii) the site specific WHS management plan;

(iii) the safe work method statement(s); and

(iv) any other safety-related documentation:

(A) provided to the Principal by the Contractor;

(B) required by WHS Law; or

(C) as reasonably required by the Principal.

(b) words used in this Clause 58 which have a defined meaning in WHS Law have the same meaning as in WHS Law (for example worker, workplace, inspector, incident, notifiable incident, principal contractor, structure and regulator).

58.2 **General**

(a) The Contractor must comply with and ensure compliance with:

(i) all WHS Laws;

(ii) all policies or requirements relating to work health and safety which the Principal has directed are applicable to the carrying out of the work under the Contract;

(iii) the obligations set out in Schedule F1 to Annexure Part F; and

(iv) the WHS Document Suite.

(b) The Contractor must provide the Principal with:

(i) a draft of the WHS Document Suite for review and input by the Principal in sufficient time to allow at least 4 Business Days for the Principal to review the draft WHS Document Suite; and

(ii) the WHS Document Suite in final form approved by the Principal prior to obtaining access to the Site and commencing the work under the Contract.

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(c) In the event of any inconsistency between the requirements outlined in this Clause 58.2 the Contractor will comply with the requirement which imposes the higher level or standard of work health and safety.

58.3 **Principal Contractor**

(a) Unless otherwise specified in Item 55 of Annexure Part A, as from the Commencement Date the Principal engages the Contractor to be the principal contractor under WHS Law in relation to the work under the Contract and authorises the Contractor to:

(i) have management and control of the Site; and

(ii) discharge the duties of the principal contractor under WHS Law including consultation and liaison with Related Activities Contractors with respect to WHS Law and safety and health matters at the Site.

(b) The Contractor accepts the appointment as principal contactor from the Principal and agrees to fulfil all requirements of WHS Law in this regard. The Contractor further agrees that:

(i) it will immediately notify the Principal in writing if it believes the authorisation referred to in Clause 58.3(a) is not sufficient to enable it to discharge the duties of a principal contractor under WHS Laws;

(ii) it will comply with all obligations imposed on a principal contractor under WHS Laws regardless of whether the engagement of the Contractor as principal contractor under this Clause 58.3 is a valid engagement for the purposes of WHS Law; and

(iii) it will, before accessing the Site, take any preparatory steps necessary to ensure that it can meet the WHS Law obligations of a principal contractor at the Site, as from the first date of accessing the Site.

(c) The Contractor must, in performing its obligations under the Contract, take into account and take appropriate action having regard to, any information given to the Contractor by the Principal or any other person, about hazards and risks at or in the vicinity of the Site sufficient to meet WHS Law.

58.4 **WHS Design Obligations**

(a) The Contractor must comply with all obligations on designers of structures under WHS Law, including ensuring that:

(i) it consults with the Principal and any other person as required, in relation to the Site and on the design of the structure for the purposes of ensuring compliance with WHS Law;

(ii) risks to health and safety arising from the design of the structure to all downstream users (including construction, use, maintenance and demolition) are assessed and:

(A) where reasonably practicable, risks are eliminated; or

(B) if not, risks are minimised so far as is reasonably practicable; and

(iii) it provides sufficient information to each person who is provided with the design including any necessary features or conditions (if any) with respect to health and safety.

(b) To the extent that there are hazards associated only with the particular design under this Contract (and not with other designs of the same type of structure), the Contractor must provide the Principal a written safety report that specifies these hazards.

(c) The Contractor must review and be liable for the Preliminary Report.

58.5 **WHS Incidents**

(a) If a notifiable incident occurs at the Site or in relation to the work under the Contract, the Contractor must immediately notify:

(i) the appropriate Authority within the state or territory where the work is being undertaken;

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(ii) the Superintendent and the Principal; and

(iii) the Principal's WHS team in accordance with Clause 58.5(b),

of the notifiable incident. The Contractor must take all reasonably practicable steps to secure the Site where the notifiable incident occurred until an inspector arrives at the Site or advises otherwise.

(b) The reporting to the Principal's WHS team must:

(i) be made immediately (when safe to do so) by calling 139 DHA(342); and

(ii) thereafter, the Contractor must prepare and send an incident report containing such information as the Principal's WHS team reasonably requests to the Principal's WHS team:

(A) at https://www.dha.gov.au/partnering/work-health-and-safety/report-an-incident; or

(B) by emailing a copy of the incident report to whs@dha.gov.au.

(c) If a WHS incident, that is not notifiable under WHS Laws, occurs at the Site or in relation to the work under the Contract, the Contractor must promptly:

(i) inform the Principal's WHS team in accordance with Clause 58.5(b) within 24 hours of the incident and co-operate with the Principal who may undertake its own investigation into the incident; and

(ii) provide the Principal with an incident report within 48 hours of its occurrence and if requested in writing by the Principal, an incident investigation report containing such information as the Principal's WHS team reasonably requests and any other documents or information and co-operation relevant to the incident.

58.6 **High Risk Construction Work**

(a) The Contractor must familiarise itself with the type of work which constitutes high risk construction work under WHS Law and must comply with the specific WHS Law requirements for this type of work.

(b) Without limitation, high risk construction work includes:

(i) work involving a risk of a 2 metre (or above) fall by a person;

(ii) work involving excavation to a depth of more than 1.5 meters;

(iii) work near gas pipes or near electrical lines;

(iv) construction work involving alteration to a structure that requires the structure to be temporarily supported to prevent its collapse; and

(v) construction work involving demolition or removing or disturbing asbestos.

58.7 **WHS – DHA Impacts**

(a) The Contractor agrees to comply with any reasonable direction or requirement of the Principal in relation to work health and safety including by providing co-operation with all lawful requests of the Principal at all times, including but not limited to:

(i) facilitating and responding to work health and safety audits by or on behalf of the Principal whether by providing information, revising the WHS Document Suite or changing practices on Site; and

(ii) providing construction work documentation on written request from the Principal.

(b) The Contractor acknowledges that any action or direction by the Principal shall not relieve the Contractor of its obligation to carry out the work under the Contract in accordance with the Contract or entitle the Contractor to an extension of time to the Date for Practical Completion or any damages for delay.

(c) The Contractor agrees to indemnify the Principal against any claim, action, demand, loss, damage, cost or expense which may be brought against, or suffered or incurred by, the Principal as a result of or in connection with:

(i) any breach of this Clause 58 by the Contractor;

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(ii) any breach by the Contractor of its obligations under WHS Law;

(iii) any need for the Principal to take action to enforce the obligations imposed on the Contractor under this Contract or WHS Law; and

(iv) investigations, actions or orders imposed upon the Principal by an Authority, as a result of any breach of this Clause 58 or its obligations under WHS Law by the Contractor or any need for the Principal to take action to enforce the obligations imposed on the Contractor under this Contract or WHS Law.

59 GENERAL

59.1 Costs and expenses

Each party shall pay its own legal costs and expenses in respect of the negotiation, preparation, completion and stamping of the Contract.

59.2 Prohibition and enforceability

(a) Any provision of, or the application of any provision of, the Contract or any right, power, authority, discretion or remedy which is prohibited in any jurisdiction is, in that jurisdiction, ineffective only to the extent of that prohibition.

(b) Any provision of, or the application of any provision of, the Contract which is void, illegal or unenforceable in any jurisdiction does not affect the validity, legality or enforceability of that provision in any other jurisdiction or of the remaining provisions in that or any other jurisdiction.

(c) Where a clause is void, illegal or unenforceable, it shall be read down, or if incapable of being read down, it may be severed without affecting the enforceability of the other provisions in the Contract.

59.3 Waivers

(a) Waiver of any right arising from a breach of the Contract or of any right, power, authority, discretion or remedy arising upon default under the Contract shall be in writing and signed by the party granting the waiver.

(b) A failure or delay in exercise, or partial exercise, of:

(i) a right arising from a breach of the Contract; or

(ii) a right, power, authority, discretion or remedy created or arising upon default under the Contract,

shall not result in a waiver of that right, power, authority, discretion or remedy.

(c) A party shall not be entitled to rely on a delay in the exercise or non-exercise of a right, power, authority, discretion or remedy arising from a breach of the Contract or on a default under the Contract as constituting a waiver of that right, power, authority, discretion or remedy.

(d) A party shall not rely on any conduct of another party as a defence to exercise of a right, power, authority, discretion or remedy by that other party.

This Clause 59.3 may not itself be waived except by writing.

59.4 Cumulative rights

The rights, powers, Authorities, discretions and remedies arising out of or under the Contract are cumulative and do not exclude any other right, power, authority, discretion or remedy of any party.

59.5 Further action

Each party must do all things and execute all further documents necessary to give full effect to the Contract.

59.6 Counterparts

(a) The Contract may be executed in any number of counterparts.

(b) All counterparts, taken together, constitute one instrument.

(c) A party may execute the Contract by signing any counterpart.

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59.7 **To the extent not excluded by Law**

The rights, duties and remedies granted or imposed under the provisions of the Contract operate to the extent not excluded by Law.

59.8 **Attorneys**

Each of the attorneys executing the Contract states that the attorney has no notice of the revocation of the power of attorney appointing that attorney.

59.9 **Survival of obligations**

(a) If this Contract is terminated then, except where this Contract provides otherwise:

(i) the parties are released from their obligations to continue to perform this Contract except the obligations which are expressed to or by their nature, survive termination;

(ii) each party retains the rights and claims it has against the other party for any past breach of this Contract; and

(iii) the provisions of this Contract survive termination to the extent necessary to give effect to Clause 59.9(a)(i).

(b) The following survive termination of this Contract:

(i) any warranties provided by the Contractor including pursuant to Clause 4; and

(ii) Clauses 1, 2, 8.3A, 12, 13, 14, 17, 26.5(f), 27.5, 43.2, 44, 46, 47, 49 55, 58.7(c) and 59.

60 ADDITIONAL CLAUSES SPECIFIC TO STATES AND TERRITORIES

The Contract is subject to the additional clauses set out in Annexure Part H to the extent that such clauses relate to the jurisdiction specified in Annexure Part H.

61 MODERN SLAVERY

(a) In this clause 61:

(i) 'Grievance Mechanism' means a process for handling a complaint or grievance about Modern Slavery practices that is consistent with the criteria set out in the Guiding Principles on Business and Human Rights.

(ii) 'Guiding Principles on Business and Human Rights' means the United Nations' *Guiding Principles on Business and Human Rights: Implementing the United Nations "Protect, Respect and Remedy" Framework* available at https://www.ohchr.org/documents/publications/guidingprinciplesbusinesshr_en.pdf.

(iii) 'Modern Slavery' has the same meaning as it has in the *Modern Slavery Act 2018* (Cth).

(b) The Contractor must take reasonable steps to identify, assess and address risks of Modern Slavery practices in the operations and supply chains used in the provision of the Works.

(c) The Contractor will ensure that the Contractor's Personnel responsible for managing the operations and supply chains used in the performance of the Contract have undertaken suitable training to be able to identify and report Modern Slavery.

(d) Within one month after the Execution Date, the Contractor will prepare and implement a Modern Slavery Risk Management Plan in relation to its performance of this Contract and, if requested by the Principal, provide a copy of this plan to the Principal. The Modern Slavery Risk Management Plan should at a minimum detail:

(i) the Contractor's steps to identify and assess risks of Modern Slavery practices in the operations and supply chains used in the performance of the Contract;

(ii) the Contractor's processes for addressing any Modern Slavery practices of which it becomes aware in the operations and supply chains used in the performance of the Contract;

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(iii) the content and timing of training for Contractor's Personnel about Modern Slavery; and

(iv) the Grievance Mechanism/s available to the Contractor's Personnel.

(e) The Contractor must comply with the Modern Slavery Risk Management Plan in its performance of this Contract. For the avoidance of doubt, nothing in this clause 61 derogates from the Contractor' s other obligations arising under this Contract or otherwise in relation to the provision of the Works.

(f) If at any time the Contractor becomes aware of Modern Slavery practices in the operations and supply chains used in the performance of the Contract, the Contractor must as soon as reasonably practicable:

(i) take all reasonable action to address or remove these practices, including where relevant by addressing any practices of other entities in its supply chains; and

(ii) take all reasonable steps to remediate any adverse impacts caused or contributed to by the Contractor from these practices in accordance with the Guiding Principles on Business and Human Rights.

(g) Without limiting clause 61(f), in performing the Contract, the Contractor must:

(i) not require the Contractor's Personnel to pay fees, charges, expenses or financial obligations incurred in order for the Personnel to secure their employment or placement ('Recruitment Fees'), regardless of the manner, timing or location of the imposition or collection of these Recruitment Fees;

(ii) not destroy or exclusively possess, whether permanently or otherwise, the travel or identity documents of any Contractor's Personnel; and

(iii) ensure that the Contractor's Personnel can access a Grievance Mechanism to safely report any instances of Modern Slavery in the operations and supply chains used by the Contractor in its performance of this Contract.

62 CONFLICT OF INTEREST

(a) The Contractor warrants that at the date of this Contract, no conflict of interest (real or perceived) exists or is likely to arise for it, or any related parties (including subcontractor or third-parties) in the performance of this Contract

(b) If during the performance of this Contract, a conflict of interest arises or is likely to arise, the Contractor agrees:

(i) to notify the Principal immediately;

(ii) to make full disclosure of all relevant information relating to the conflict; and

(iii) to take any steps the Principal reasonably requires (at any time, and from time to time) to resolve or otherwise deal with the conflict.

(c) A failure of the Contractor to comply with this clause is a substantial breach pursuant to clause 44.2.

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ANNEXURE PART A

This Annexure shall be completed and issued as part of the tender documents and subject to any amendments to be incorporated into the Contract, is to be attached to these General Conditions of Contract and shall be read as part of the Contract.

Item		
1	The Law applicable is that of the State or Territory of: (Clause 1)	Australian Capital Territory
2	[Not used]	
3	The Principal: (Clause 2)	Defence Housing Australia established under the *Defence Housing Australia Act 1987* (Cth).
4	The address of the Principal	Defence Housing Australia, 26 Brisbane Avenue, Barton ACT 2600
4A	Principal's Representative (Clause 2)	Martin Goodchild Martin.goodchild@dha.gov.au Emails (including any attachments) must not exceed the file size of 20 MB unless otherwise advised by the Principal.
5	The Contractor: (Clause 2)	Projex Building Group Pty Ltd ACN 109 570 863
6	The address of the Contractor:	Unit G09 50 Eastlakes Parade, Kingston, ACT 2604
6A	Contractor's Representative (Clause 2)	John Glass john@projexbuilding.com.au
6B	Project (Clause 2)	Design and Construction of 30 residences including Civil Works Construction
6C	Project/site address	Block 3 section 65, Academy Close Campbell ACT 2902
7	The Superintendent: (Clause 2)	Civil Works Superintendent: Richard Chalmer – Case Mealin. House build and remaining works: Viet Nguyen - Defence Housing Australia.
8	The address of the Superintendent:	35 Hinder Street, Gungahlin ACT 2912

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8A	The Superintendent's Representative (Clause 2)	Viet Nguyen Email: viet.nguyen@dha.gov.au **Email protocols:** • The subject line of all notices sent by email from the Contractor to the Superintendent must begin with the following: ***"PROC-67082"*** • Emails (including any attachments) must not exceed the file size of 20 MB.
9	The Date for Practical Completion: (Clause 2)	**89** Weeks from date of contract execution not taking into account 2 weeks standdown period per Christmas Holiday periods.
10	Preliminary Design: (Clause 2)	The Preliminary Design is described in the Principal's Project Requirements and includes the design documents attached to the Principal's Project Requirements These documents form part of the work under the Contract (as defined in Clause 2.1 of the Contract) and are included in the Principal's Project Requirements attached to, or provided with, this Contract (see Item 11 below).'
11	The Principal's Project Requirements are described in the following documents (additional to those listed in the Annexure item for Preliminary Design): (Clause 2)	The Principal's Project Requirements are attached to, or provided with, Annexure Part C of this Contract.
11A	Principal's Approvals (Clause 2)	Not Applicable
12	[Not used]	
13	Contractor shall provide Security in the amount of: (Clause 5.2)	One unconditional and irrevocable bank guarantee equal to 3% of the GST inclusive Contract Sum to be released at the end of the Defects Liability Period.

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14	Interest Rate (Clause 5.6)	At the following interest rate as published by the Reserve Bank: • Indicator Lending Rates – F5; and • Lending rates; Large business; Weighted-average rate on credit outstanding; Variable'. See : http://www.rba.gov.au/statistics/tables/index.html#interest-rates In calculating interest due, it is calculated on a simple interest basis determined monthly at the rate relevant to the 15th day of each month or as an average for the period at the option of the Principal.
15	Order of precedence (Clause 8.1)	(a) Formal Instrument of Agreement. (b) General Conditions of Contract (c) NCA Works Approval drawings (d) Schedule C1 to Annexure Part C – DHA Specification V7.0 (e) Schedule C2 to Annexure Part C - DHA Property Inclusions version 4 June 2022 (f) Schedule C3 to Annexure Part C - Tender Design Drawings and Tender documents to Annexure Part C (g) Other Annexure Part C schedules (h) The balance of the Annexures
16	[Not used]	
17	SECURITY:	
	A. Reduction of Security upon Practical Completion (Clause 5.8)	A. Not Applicable
	B. Release of Security – other conditions (Clause 42.6)	B. Notwithstanding Clauses 37(a) and 42.5, if there are outstanding Defects at the date of issue of the Final Payment Certificate, the Principal may retain the Security until all the Defects are rectified to the satisfaction of the Principal and the Contractor has requested the return of the Security (in writing).
18	Subcontractor Warranties (Clause 9.7)	Clause 9.7 applies. • If the work under the Contract involves the construction of one or more residences, refer to Warranty Schedule within the DHA Specification V7.0 of schedule C1 to Annexure Part C.

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19	[Not used]	
20	The number of copies of documents to be supplied by the Principal: (Clause 8.2)	1 electronic copy
21	Documents, number of copies, and the times or design stages at which they are to be supplied by the Contractor: (Clause 8.3)	**Design Documents:** 1 electronic copy – to be provided to the Principal in accordance with Clause 8.3D. **As-Built Documents:** 1 electronic copy – to be provided as a condition of Practical Completion.
22	[Not used]	
23	Work which cannot be subcontracted without approval: (Clause 9.2)	Not Applicable
24	Consultants whose contracts are to be novated to the Contractor: (Clause 10)	

Consultant Type	Company name
Not Applicable	

25	[Not used]	
26	Provisional Sums (Clause 11)	$740,300.00 incl GST Refer to Schedule D2 of Annexure Part D
27	Non-rippable Rock	The entitlement for the Contractor to claim the cost of excavation and removal of Non-rippable Rock under subclause 12.5: Does not apply [ ] Does apply [✓] If nothing indicated, subclause 12.5 does not apply.
28	Insurance of the work under the Contract (Clause 18)	
(a)	The amount for demolition and removal of debris: (Clause 18(b))	Not applicable
(b)	The amount for consultants' fees: (Clause 18(c))	Not applicable
(c)	The value of materials or things to be supplied by the Principal: (Clause 18(d))	Not applicable
(d)	The additional amount or percentage: (Clause 18(e))	[7.5]% of the Contract Sum

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29	Not used	
30	Amount of public liability insurance shall be not less than: (Clause 19)	$20 million
30A	Amount of motor vehicle insurance covering loss to property shall not be less than: (Clause 20A(b))	$[500,000]
31	Amount of Contractor's professional indemnity insurance shall be not less than: (Clause 21)	$[10] million
32	Period for which Contractor's professional indemnity insurance shall be maintained after issue of the Final Payment Certificate: (Clause 21)	6 years
33	Categories of Consultants and amounts of Consultants' professional indemnity insurance: (Clause 21)	CATEGORY / AMOUNT$ Architect / $[10,000,000] Structural Engineer / $[10,000,000] Others / $[10,000,000]

34 Deductible limits
(clause 22.10(d))

POLICY	DEDUCTIBLE LIMIT
Insurance of the work under the Contract (Clause 18)	Minor Plant & Equipment $1,000 each & every loss Major Perils $20,000 each & every loss All Other Losses $5,000 each & every loss
Public liability insurance (Clause 19)	Injury to Subcontractor or Labour Hire Personnel on Site - $30,000 each & every occurrence All Other Occurrences $10,000 each & every occurrence

34A Release of Superintendent:
(Clause 24A)

Clause 24A Does not apply to the Civil Superintendent but Applies to the House Build and remaining works superintendent

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34B Key Personnel
(Clause 25)

POSITION	NAME
Contractor's Representative	See item 6A
Site Manager	Luke Carroll
Safety Manager	David Lenehan

35 The time by which access to the Site shall be given
(Clause 27.1)

Items:

- Evidence of insurances required under the Contract (Clauses 18, 19, 20, 20A, 21);
- Security (Clause 5);
- work, health and safety Contractor Documents from the Contractor to the Principal in accordance with this Contract and WHS Laws;

36 Working hours and working days for work under the Contract on the Site
(Clause 32)

Working hours:7am-5pm Monday to Friday, 8am to 3pm Saturdays
Working days: Monday to Friday (excluding Public Holidays)

37 The time by, or periods within which the Superintendent is to furnish information, materials, documents or instructions to the Contractor:
(Clause 33.1)

All documentation to be provided by the Superintendent is contained in the Principal's Project Requirements.

38 [Not used]

39 # Rate of liquidated damages:
(Clause 35.9)

$200 per day per house.
If the Superintendent directs a Separable Portion pursuant to clause 35.3(b), the daily rate of liquidated damages in respect of that Separable Portion will be calculated as follows –
$200 per day multiplied by the number of houses comprising the Separable Portion.

40 Maximum amount of delay damages
(Clause 36)

$280 per day

41 [Not used]

42 [Not used]

43 [Not used]

44 Defects Liability Period:
(Clause 37)

[52] weeks

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45	The charge for overheads, administrative costs, Site supervision, establishment costs, attendance and profit for: (Clauses 40 and 41)	(1) Daywork: [10]% (2) Variations: [10]%
46	(a) Times under the Contract for payment claims: (Clause 42.1)	25th day of each month for Civil works only, completed to that date ('Civil Works Reference Date'), and for all other work under the Contract, on completion of the Stages of work described in Schedule D1 of Annexure Part D ('Reference Date').
	AND (b) Stages of the work under the Contract for payment claims: (Clause 42.1)	The Stages of the work under the Contract for payment claims in relation to all work under the Contract other than Civil works, is described in Schedule D1 of Annexure Part D.
	AND (c) The Principal's email address to receive copies of all payment claims: (Clause 42.1)	PPGInvoicesACT@dha.gov.au
46A	Payment claims (Clause 42.1)	Each payment claim for Civil works, submitted for the Civil Works Reference Date, shall be calculated on the basis the value of the work under the Contract for Civil works performed since the previous payment claim up to the Civil Works Reference Date, together with any other monies due to the Contractor pursuant to the Contract as at the date of the current payment claim for the Civil works. Each payment claim for any other work under the Contract, submitted for the Reference Date, shall be calculated on a milestone basis as per Schedule D1 of Annexure Part D.
47	The Contractor shall provide a deed of guarantee, undertaking or substitution	Applicable (Parent Company Guarantee must be in the form set out in Schedule I3 of Annexure Part I.)
47A	Parent Company	Projex Holdings Pty Ltd (ACN 645 164 941) 'G09' 50 EASTLAKE PARADE KINGSTON ACT 2604
48	Unfixed plant and materials in respect of which Clause 42.2 applies: (Clause 42.2(a))	Nil

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49	The amount of additional security for unfixed plant and materials: (Clause 42.2(b))	The value of the unfixed plant and materials plus delivery costs.
50	The rate of interest on overdue payments: (Clause 42.7)	At the interest rate (per annum) as published by the Reserve Bank: • Indicator Lending Rates - F5; and • *Lending rates; Large business; Weighted-average rate on credit outstanding; Variable'.*
51	[Not Used]	
52	[Not Used]	
53	Dispute Resolution Executives (Clause 47)	The Principal: Brett Jorgensen, General Manager Service Delivery, DHA The Contractor: John Glass, Director, Projex Building Group Pty Ltd
54	[Not used]	
55	Principal Contractor (Clause 58.3)	The Contractor is the 'principal contractor' under WHS Law

Schedules Index to Annexure Part A

1. Schedule A1 to Annexure Part A – Separable Portions (Not Used)
2. Schedule A2 to Annexure Part A – Contractor's Program

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1. SCHEDULE A1 TO ANNEXURE PART A – SEPARABLE PORTIONS

NOT USED

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2. SCHEDULE A2 TO ANNEXURE PART A – CONTRACTOR'S PROGRAM

To be included as separate attachment

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ANNEXURE PART B

DELETIONS, AMENDMENTS AND ADDITIONS

The Contractor acknowledges that:

A. the General Conditions of Contract have been amended and differ from the AS 4300-1995 general conditions of contract; and

B. the Principal can provide a copy of the General Conditions of Contract with relevant mark-ups on request.

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ANNEXURE PART C

PRINCIPAL'S PROJECT REQUIREMENTS/SCOPE OF WORKS (SOW)

(Item 11)

Schedules index to Annexure Part C – Principal's Project Requirements

Schedule C1 to Annexure Part C – DHA Specification V7.0
Schedule C2 to Annexure Part C – DHA Property Inclusion version 4 June 2022
Schedule C3 to Annexure Part C – Tender Design Drawings
Schedule C4 to Annexure Part C – Tender Schedule of Inclusions
Schedule C5 to Annexure Part C – Builders Checklist
Schedule C6 to Annexure Part C – Practical Completion, Handover Requirements and Defects Regime

General description

The Contractor will provide all works and services in connection with the completion of the civil works, landscaping works and the design and construction of 30 single and double storey residences at Academy Close, Campbell ACT and as described specifically in the Principal's Project Requirements. However, the Contractor acknowledges that the works and services described in this Annexure Part C and the Principal's Project Requirements:

(a) are not a definitive description of the work under the Contract; and

(b) will not limit or affect the Contractor's general obligation to perform the work under the Contract and to do all things that might reasonably be expected of the Contractor from time to time as necessary or appropriate to secure the proper and timely performance of the work under the Contract in accordance with this Contract.

Detailed description

Please Refer to the following scope of works

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SCOPE OF WORKS – DWELLING DESIGN & CONSTRUCTION WORKS

Introduction / Project Description

Defence Housing Australia (DHA) require the services of a licenced builder for the design and construction of thirty (30) single and double storey houses as part of DHA's development site at Academy Close, Campbell ACT. Each house is to be constructed on a designated residential block. For each house the Contractor is to develop and complete the preliminary designs provided in the contract and achieve Building Approvals (via a private certifier). All 30 houses are to be completed by September 2023.

Services and Works to be provided

The contractor is required to develop and complete the design of the dwellings and construct all dwellings including civil works, retaining wall works, landscaping works, underground service works and obtain all necessary construction approvals for thirty (30) houses on the designated vacant blocks within the Academy Close estate (Block 3, Section 65 Campbell). The Contractor is required to take possession of the sites as Principal Contractor and undertake all design and construction works required by the contract documentation to complete the design, construction and development of each Lot in accordance with the conditions of the Works Approval (by the National Capital Authority) any other authority approvals and any Building Approvals achieved by the Contractor. The Contractor shall undertake and manage all dealings with the ACT Government and the National Capital Authority and other authority agencies relevant to the works in regard to all site related matters and development approvals.

This Scope of Works along with any Bill of Quantities are not intended to constitute a conclusive and definitive list of works and services required to be undertaken by the contractor, the items listed in these documents describe the minimum requirements and expectations of the Contractor in general terms in order to complete the contract, all other miscellaneous and sundry works and services not explicitly listed which are required to fulfil the intent of this scope and which are inherently required to complete the works shall be deemed included in the scope. This scope of works will not limit or affect the Contractor's general obligation to perform the Works Under the Contract (WUC – as defined by the General Conditions of Contract).

Hours of Operation

The Contractor shall undertake all works on site during the hours stipulated in the Building Approval (BA) or as otherwise determined/permitted by the NCA or ACT government. As a minimum the contractor should allow for the following working hours:

Construction works within the Site:

Monday to Friday:	7:00am to 5:00pm
Saturday:	8:00am to 3:00pm
Sundays & Public Holidays:	Closed

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Interpretation

Headings and sub-headings are provided for convenience only and do not form part of the Scope of Works and shall not be used in the interpretation of the Scope.

Nothing in this Scope of Works shall prejudice or prevail over any term or condition in the formal instrument of agreement.

The project consultant team and authority agencies are:

Authority: Local Council	National Capital Authority (NCA)
Authority: Power	EvoEnergy
Authority: Water, Sewer	Icon Water
Authority: Communications	NBN
Authority: Stormwater	Icon Water
Engineer:	Northrop Consulting Engineers (civil works only)

Works to be carried out

The contractor shall provide all labour, plant, materials, tools and equipment, machinery, site facilities, temporary structures and temporary fencing, traffic management, safety devices and safety equipment, scaffolding, bracing, shoring, propping, de-watering, environmental controls, site sundries & consumables and the like to properly and safely carry out the following in accordance with the drawings, specifications, reports, industry codes of practice, authority requirements and regulations, all Australian Standards, National Construction Code (formerly the Building Code of Australia), WorkSafe ACT requirements, the construction program and contract documents:

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1. General

1.1. The work included in the contract comprises the provision of all plant, labour and materials of whatever kind necessary for the complete and properly construct the 30-lot residential development. The contractor acknowledges that the works and services listed below:

- are not necessarily a definitive description, and that other work in connection (WIC) with the described works may be required to achieve those work; and
- that the contractor understands and has allowed for such WIC; and
- that any such WIC will not limit or affect the contractor's general obligation to perform the works under contract (WUC), and that the contractor can do all things that might reasonably be expected of the contractor from time to time as necessary or appropriate to secure the proper and timely performance of WUC in accordance with this contract
- that the contractor is required to hold appropriate accreditation with all service authorities including Icon Water to undertake the full scope of works
- the contractor or nominated subcontractors are required to be suitable accredited to undertake electrical reticulation works for Evo-energy and construction of national broadband network infrastructure
- the contractor or nominated subcontractors are required to be suitable accredited to undertake NBN pit and pipe works.

1.2. The Contractor shall provide all site facilities and site set-up items required under legislation and as required by WorkSafe ACT including site offices, ablution blocks, lunch and change room facilities, water bubblers, security fencing to full perimeter of the site, supply and connection of temporary services (e.g. power, water, sewer), statutory site signage, safety signage, emergency wash down facilities, chemical spill kits and the like

1.3. Allow for all temporary power, temporary water and communication equipment required to conduct the works.

1.4. Allow for the preparation of a site identification sign that incorporates the site plan (approx. size 1500x1000 mm), DHA logo and details, together with the details and logos of the major project consultants. Details to be provided to DHA for approval prior to making and erecting the sign.

1.5. The Contractor shall provide and update from time to time as required site management plans including as a minimum an Environmental Management Plan, Waste Management Plan, Project Management Plan, Site Management Plan, Traffic Management Plans and Workplace Health & Safety (WHS) Plan

1.6. Prepare and implement / maintain required traffic management plans (TMPs) to the satisfaction of the NCA, TCCS and the DHA superintendent. The TMPs must address earthmoving vehicles, trucks and machines, delivery and work vehicles entering and leaving site. They shall address areas for parking of site machinery, and visiting vehicles, location of site sheds. Refer to reference documents for current site access and temp fencing. The contractor is responsible for satisfying themselves as to the temporary traffic management (TTM) requirements to satisfy their construction methodologies

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1.7. The Contractor shall undertake a dilapidation report of all existing roads and authority infrastructure/services that will be or have the potential to be disturbed or damaged as a result of carrying out the contract works. The report shall contain sufficient detail including GPS located (geo-tag) photographs so as to verify the pre-existing condition of any existing public structure or public asset should a claim for damage be made by the ACT government or services authority or any other public entity having ownership or control over an area outside of the site. The report is to be completed prior to works commencing and a copy provided to DHA and the Superintendent prior to construction

1.8. Allow for the temporary delineation fencing (barrier mesh fencing or similar) sufficient to prevent access to the conservation area by personnel, plant and vehicles

1.9. The Contractor has visited the Site and is familiar with the Site and its surroundings and has made all necessary allowances in the contract price in consideration of the existing Site conditions, features and structures

1.10. The Contractor shall inform the Superintendent (in writing, with photo's as evidence) of any unacceptable site conditions for each lot prior to taking possession, e.g. excessive construction waste or rubbish, illegal dumping etc. Once the Contractor has taken possession of the lot any unacceptable site condition identified thereafter shall be the responsibility of the Contractor

1.11. In managing all activities on site the contractor shall have due regard for and comply with the following in respect of environmental management
- Protection of the Environment Operations Act 1997
- Managing Urban Stormwater: Soils & Construction (the "Blue Book")
- Requirements of the NA.C.T. Environment Protection Authority (EPA)
- Requirements by the NCA, TCCS and ACT government
- Industry best practices

1.12. The contractor is responsible for the design and regulatory compliance of all erosion and sediment control measures throughout the duration of the contract, including any E&SC measures required to be maintained during the defects liability period

1.13. The contractor shall prepare and implement a construction management plan (CMP) including environmental, safety and quality to the satisfaction of TCCS and DHA superintendent. The CMP shall include all issues related to this type of work and be specific to this site. Current work health safety (WHS) legislation, regulation and authority directions shall be included.

1.14. The contractor shall ensure the installation and maintenance of environmental / erosion and sediment controls are in accordance with the CMP and as approved by ACT EPA (approval to be undertaken by the contractor)

1.15. At commencement of the Contract the Contractor shall prepare and provide DHA with a list of witness points and hold points required by the Certifier and DHA Design & Construction specification for review. The Contractor shall not undertake any works the subject of a witness point or hold point until the relevant persons(s) (consultant, NCA, ACT government, DHA etc) required to give consent for the works to proceed, has given the consent

1.16. The Contractor shall undertake all necessary services searches and physical locating of all existing in-ground services in line and depth (potholing and non-destructive testing if

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necessary) to ensure locations of all services are identified and shall ensure all appropriate protection measures are undertaken to prevent damage to services

1.17. There is currently temporary fencing located around the perimeter of the site which is contracted with 1300 Temp Fence by DHA. This fencing contract can either be taken over by the successful contractor at their cost or the contract can be cancelled by DHA and the fencing removed. Temporary site fencing must be installed as detailed on the temp fencing layout plan

1.18. The contractor shall provide all necessary survey works & services for the setting out of works, checking of levels, identification of site boundaries, survey of site levels etc

1.19. The Contractor shall provide Works As Executed plans for all stormwater and drainage works

1.20. The Contractor shall immediately action and remedy any defect notice (non-compliance notice) issued by Icon Water and shall provide a copy of any such notice to the Principal

1.21. The Contractor shall generally conduct all works and maintain the site to the satisfaction of the NCA & ACT government, the Principal and the project Superintendent nominated by DHA. Any defect notices or improvement notices or such other notices issued by the NCA or ACT government or DHA's Workplace Health & Safety representative to the contractor shall be actioned immediately by the contractor in order to rectify and comply with the notice and a copy of any such notices shall be provided to DHA and the project superintendent on the day it is received by the contractor

1.22. The contractor shall obtain all relevant ACT government & Icon Water design drawings and specifications required for the project (e.g. driveway crossover designs) and shall ensure compliance with all authority requirements unless the contract documentation takes precedence. Any ambiguity or inconsistency between Contract documentation and authority agency design standards or specifications shall be referred to the project Superintendent for determination as to which drawing or specification to follow and the Contractor shall be deemed to have allowed for either

1.23. The Contractor shall liaise with and accommodate as necessary any consultants engaged by the Principal for the purpose of carrying out tests and investigations on site and for general site inspections required from time to time e.g. geotechnical testing, soil validation testing, contamination testing, independent inspections and the like

1.24. The Contractor shall arrange, coordinate and liaise with any authority (e.g. Icon Water, Evo energy, NBN, Zinfra/Jemena etc) as to inspections required to be undertaken and in seeking approvals and certifications from authorities

1.25. the Contractor shall provide a defects list for each dwelling to the Superintendent and the Principal upon achieving Practical Completion; the defects lists shall contain all defects identified by the Contractor & defects raised by DHA and shall be updated and maintained during the Defects Liability Period. The Contractor shall be obliged to immediately carry out and rectify all defects so as not to cause undue stress & inconvenience to Defence Members occupying the premises

1.26. Upon demobilisation the Contractor shall leave the site in a clean, tidy and presentable state including but not limited to removal of all site facilities, making good any site vehicle tracks,

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making any repairs, leaving turfed areas mowed, street trees/tree stakes and tree guards well maintained and in good condition, footpaths clean of any stains, breakages, structural cracking, removal of all builders waste and stockpiles, removal of all E&SC devices, all nearby and adjacent roads clean of any vehicle tyre marks/dirt/mud etc and other such deleterious materials tracked on the roads by construction vehicles

1.27. The contractor will include all DHA's induction requirements into their own induction documentation & processes and fully participate in DHA's WHS system & requirements including logging & reporting of incidents, attendance at audits, monthly WHS reporting – the requirements to comply with DHA's WHS system will be covered in a WHS Principal Contractor Induction/Start-up to be conducted by DHA's WHS representative with the Contractor (refer contract document WHS Principal Contractor Induction/Start-up). Participation in DHA's WHS system includes providing information and reporting within DHA's internet based online portal "DHA Online Services"

1.28. If any requests or complaints from neighbouring property owners and local residents are received by the Contractor, the Contractor shall use its best endeavours to comply with the request and remedy the complaint providing the contractor shall not claim for delays to the Date for Practical Completion or claim for variation costs. Any complaint or request that shall cause delays or additional costs to the Principal shall be referred to the Principal for advice on actions to be followed. The Principal shall be informed immediately or as soon as practical thereafter of all complaints and requests from neighbouring property owners and local residents. The contractor shall have allowed to appease neighbours during the construction period where necessary. For example, this may come in the form of washing dust from neighbouring properties when complaints are received, or investigate complaints regarding vibration during the works.

1.29. Allow for all required water cart to be available seven days a week as required by the works. The inclusion of a minimum 90 days of water cart hire is to be included.

1.30. DHA seeks to maintain a positive and cooperative relationship and reputation with neighbouring property owners and residents; the Contractor shall fully participate and cooperate with this endeavour and shall adopt the same approach in all dealings with neighbours and residents

1.31. The Contractor shall provide any site/project related information to the Superintendent or DHA's appointed representative (e.g. Development Manager)

1.32. A fortnightly site meeting will be held on a mutually agreed day, attended by the principal and its representatives and contractor's supervisor and project manager

1.33. the contractor is to provide a weekly update of its construction program when requested. This should be provided by way of a "status" version of the contract program

1.34. The contractor shall provide an Operation and Maintenance Manual for all permanent equipment and devices that form part of the completed works, e.g. hot water systems, solar panel (PV) systems (if any), kitchen appliances, air-conditioning systems, pumps

1.35. The Contractor shall provide all necessary traffic & pedestrian management devices & services

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1.36. The Contractor has allowed for any requirements of the ACT government for recycling of materials

1.37. The Contractor shall provide all information required on the document "Handover Proforma" for each property, this information is required by DHA for the handing over of each dwelling to Department of Defence

1.38. The Contractor will comply with all conditions of the Works Approval issued by the NCA

1.39. The DHA "Safety Management Plan Audit" is included in the contract so the contractor is aware of DHA's site safety requirements which shall be audited from time to time. The contractor shall consider all items in this document and ensure the requirements contained within form part of the contractor's Site Safety and WHS Management Plans and works carried out on site each day

1.40. The Contractor shall have due regard in all designs for all restrictions on the use of land, positive covenants, easements and the like as shown on any plans of subdivision

1.41. The Contractor shall provide a Critical Path Construction Program using Microsoft Project and shall update the program regularly to accurately reflect fortnightly status of the project. The program shall be presented at each site meeting and provided to DHA from time to time as requested. The program shall be submitted with all Extension of Time Claims clearly showing the effect of the cause(s) of delay on critical path activities

1.42. The Contractor will fully participate with and comply with DHA's requirements for the submission of Inspection & Test Plans (ITP's) and Hold Points and Witness Points

1.43. Design Drawings:

- The Contractor will provide construction issue drawings after Building Approvals are achieved and prior to site works commencing. All drawings to be issued 'For Construction'
- Drawings to be fully dimensioned internally & externally, inclusive of room dimensions, all site levels and levels within each dwelling, steps to laundries and front entry steps, side yard/passage clearances, site setbacks, driveway grades, kitchen layout dimensions, hallway widths and the like
- Provide clear dimensioned levels from final ground levels and Laundry access, front entries and rear alfresco

2. Building Approvals & Occupation Certificates

2.1. The Contractor shall develop and detail the design of each dwelling and block in order to achieve a Building Approval (BA) & Certificate of Occupancy (CO) from the Certifier

2.2. The Contractor shall procure the services of and engage any design consultant as required to produce reports, provide designs, pay all fees, carry out any site tests and the like as required in order to achieve BA's & CO's for each dwelling

2.3. The Contractor shall engage and liaise with the certifier including attending any meetings and making design changes in order to achieve a BA & CO for each dwelling

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3. Civil Construction Works

3.1. All works are to be constructed will be contained in the approved plans and statutory approvals. These include, but are not limited to;

- civil construction drawings marked tender issue Northrop plan set
- landscape plans marked tender issue
- Icon Water plans for sewer and potable water
- electrical reticulation plans prepared by Northrop
- NBN plans; and
- structural plans
- statutory and service authority approvals
- bushfire Risk Assessment

3.2. All quantities listed in the schedule of quantities have been measured net unless otherwise stated and are given in good faith. It is the contractor's responsibility to confirm quantities for purposes to complete the works. There will be no claim if the quantities provided by DHA are not correct. The quantities have been calculated from the works as shown or as implied on the drawings or in the specifications. Items in the quantities marked with (PQ) or (provisional) are provisional and shall be determined by joint survey once the full extent of the required works can be determined.

3.3. The technical specification applying to the works described in this contract are:

- development construction specifications and standard drawings by TCCS municipal infrastructure technical specification / municipal infrastructure technical specifications (MITS) and any addenda included herein and related thereto
- Icon Water contract, standards, specifications and requirements
- Evoenergy network standards, specifications and requirements
- conditions contained within works approval (to be provided) contract specifications and special conditions as detailed herein
- pavement design prepared by Northrop
- technical specification (landscape) prepared by DSB Landscape Architecture

3.4. set out of road centrelines and /or calculations for GPS machine control. Contractor to provide superintendent a copy of calculations in AutoCAD(.dwg) format prior to commencement

3.5. Earthworks for the works under the contract are to include but not be limited to;

- strip topsoil to on-site stockpile location agreed with the principal for re-use
- complete earthworks in accordance with civil construction drawings, including excavation and haulage to/from cut area(s)
- all excess cut from bulk earthworks or other activities (detailed excavations, trench spoil etc) to be removed from site
- excavation in rock (as defined under the contract) and any import deemed to be required by the contractor
- excavation of any unsuitable material within road subgrade and replacement with select fill of CBR appropriate for the pavement design, as required. The contractor must allow for disposal or re-use of any unsuitable material.
- any over-wet material that is not unsuitable must be stockpiled to dry for use in future stages

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- compact fill to layers in accordance with the geotechnical specification under Level 1 geotechnical supervision. In addition to the requirements of AS3798-2007, all "lot" fill to be placed to minimum 98% standard compaction
- re-spread topsoil to roads and footpath areas
- seed or hydromulch to disturbed areas
- construction of the fire access track external to the site in accordance with the bushfire report and authority standards

3.6. The contractor shall make provision to properly barricade off the works to ensure public safety and to prevent vehicles from travelling over the works site as required by NCA and TCCS until the project is completed. The contractor shall supply and maintain all barricades, signs and other materials necessary to protect the works

3.7. Prior to the commencement of these works, the contractor shall ascertain the position and depth of all public utility or other services which may be interfered with during the excavation and/or construction of these works.

3.8. All damage caused in execution of works under this contract to any public utility shall be repaired at once and the contractor shall arrange for all necessary work to be executed at their own expense to the satisfaction of the superintendent.

3.9. All road crossing conduits, conduits in pathways and easements are to be laid in accordance with the approved plans and to the requirements and specifications of Evoenergy. All trenches are to be back filled and compacted to the requirements of Evoenergy at the time of works.

3.10. The principal will enter into a contract with a suitably qualified telecommunication contractor to install telecommunication pit and pipe network. The contractor shall liaise directly with the nominated contractor to ensure that the necessary street crossings, conduits are installed as the work proceeds. All trenches are to be back filled and compacted by the contractor to the requirements of relevant authority at the time of works.

3.11. The contractor acknowledges that temporary bridges have already been installed at the two entry points to the site as per the construction drawings. The contractor is responsible for the removal of these bridges and the installation of new permanent bridging structures in accordance with the construction drawings. All works in relation to these temporary and permanent bridging structures must be in accordance with Icon Water policies and specifications. The contractor must liaise with Icon Water and the superintendent prior to any works involving the crossing of or interruption to the bridging structures.

3.12. Shared Services Trenching:

- Shared trenching is to be adopted for services. The width of the shared trench is to be as per the ACT standard shared trench details such that the electricity cables, telecommunications ducts, and gas mains can be installed in the correct footpath allocations.
- The contractor shall liaise directly with the location construction office of Evoenergy, Jemena and the "telecommunication contractor" to ensure that the necessary street crossings and reticulation are installed as the work proceeds. The contractor shall co-ordinate the laying of all services within the shared trench

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- All testing, reporting and commissioning of electrical services is to be completed expeditiously to facilitate the timely release of the notification of arrangements.
- The contractor is to take all necessary steps to prevent interruption of electricity supply and telecommunication services to the surrounding properties.
- The contractor is to send a marked up copy of the duct, easement and trenching drawing showing 'as installed' information, signed by the contractor's chartered professional engineer certifying the accuracy of the duct installation, to the superintendent within five working days of the completion of the installation.
- As the contractor carries out the excavations required during trenching operations, Evoenergy and "telecommunication contractor" field staff will confirm duct positions prior to accepting trenches and installing cables.
- The contractor will allow in the programming of the works for the expeditious and timely completion, connection and commissioning of the electrical works such that the applicable notification of arrangements for the electrical works within that stage can be released, without delay, by Evoenergy.
- The contractor is therefore required to facilitate the completion and compilation of all data, test results and reports that may be required and forward this date to Evoenergy without delay.
- The contractor will be responsible for the excavation to alignment and depth of trenches, bedding and backfilling telecommunication trenches, to authority requirements. All road crossing conduits and conduits in pathways and easements are to be laid in accordance with the specification and the requirement of the relevant authority.
- The contractor will be responsible for providing set out levels for finished ground levels, as required, for electrical, and telecommunications. Should the services not be finished to the correct ground or footpath level, or should the services settle or subside for whatever reason during the contract or maintenance period, the contractor at their expense will adjust the services accordingly back to the correct levels.

3.13. Electrical:

- Contractors are responsible to ensure that the electrical sub-contractor provides any appropriate bonds to Evoenergy.
- Prior to the commencement of works (or within 3 weeks of approval of electrical reticulation), the contractor is to notify the superintendent of the nominated electrical sub-contractor to enable completion of documentation with Evoenergy. Any delays in commencement of Evoenergy works due to failure of contractor to provide details of ASP1 will not be grounds for extension of time.

3.14. The contractor shall note that some electrical infrastructure has already been installed on the site. The BOQ nominates the extent of the existing infrastructure.

3.15. Geotechnical:

- a pavement design was prepared by Northrop engineers based on a geotechnical investigation by a geotechnical engineer
- the contractor shall pay for quality assurance testing associated with "lot" filling operations and pavement construction. Any failures will be retested at the contractor's full expense

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- any costs associated with geotechnical requirements for backfilling of trenches etc. to TCCS or relevant service authorities' requirements will be borne by the contractor and needs to be allowed for in the contractor's rates
- level 1 and level 2 testing, certification and lot classification to be co-ordinated and allowed for the by civil works contractor

3.16. Validation of Imported Fill:

- It is anticipated that suitable clean fill material will be available from the site where cutting is required. In the event of shortfalls, and fill that has been approved by the superintendent and geotechnical engineer is to be imported from sources outside of the site by the contractor. This must be sampled and analysed by the contractor's geotechnical engineer to validate the material as clean fill. If the material for importation is virgin excavated natural material (VENM) then a validation sampling density of 1 sample per 100m3 would be acceptable. All fill introduced to the site must undergo a contaminated site assessment and must be approved by the site geotechnical engineer and TCCS (if applicable). This assessment may consist of either
  - full site history of the source of the fill (if known) examining previous land uses or geotechnical reports associated with the source site to determine potential contamination; or
  - chemical analysis of the fill where the site history of a preliminary contamination assessment indicates potential contamination or contamination of fill material; and
  - must provide the superintendent / TCCS with copies of validation certificate verifying the material to be used is free of contaminants and fit for purpose i.e., residential, commercial or industrial use
    - The contractor must at its own cost validate the imported fill and provide the superintendent and TCCS with copies of validation certificates verifying the material to be used is free of contaminants and fit for purpose re use in residential, commercial, or industrial use.
    - Records of the following must be submitted to Northrop - monthly and at the completion of earth works if required.
- source (including the address and owner of the source site), nature and quantity of all incoming loads including the date, the name of the carrier, and the vehicle registration
- the results of a preliminary contamination assessment carried out on any fill material used in the development
- the results of any chemical testing of fill material
- no material is to be imported without the approval of superintendent and in accordance with the TCCS standards and specifications

3.17. Bulk Earthworks

- Bulk earthworks on the site are to be carried out to achieve the best possible utilisation of material available. In the case that there is a surplus of excavated material to be either relocated on site or carted off site contractor shall make their own arrangements for the disposal of any surplus material. The rate for carting the surplus material off site shall cover all applicable fees and charges associated with its disposal.
- The contractor is to provide details of volume of surplus material (including detailed excavation and trench spoil) to be stockpiled on site. Any material in excess of the nominated volume is to be carted off site at the full expense of the contractor.

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- Filling is to be placed, compacted and tested by a NATA registered laboratory so that on completion, a "lot" classification in accordance with AS2870-2011 can be given by the contractor's geotechnical consultant.
- Bulk earthworks are to form part of the contract lump sum costs, and no variation will be applicable if additional material is to be imported.

3.18. Non-Conforming Pavement

- A pavement which does not conform to the general and specific requirements of the specification will be deemed to be nonconforming for either its entire area or such areas as can be delineated by geotechnical testing.
- If a pavement is classed as nonconforming by the superintendent or TCCS then the contractor may elect to have further geotechnical testing, at their expense, undertaken by a geotechnical engineer approved by the superintendent to determine compliance with the requirements of the specification. The results of this testing shall include all testing that has been carried out on the nonconforming section or sections of road.
- All nonconforming sections of the pavement shall be rectified by the contractor in accordance with all the requirements of the specification at no cost to the principal.
- The superintendent shall notify the contractor and the principal of all nonconforming areas within three days of written test results being made available to the superintendent.
- The contractor shall state in writing within three days of notification by the superintendent, the methods proposed to be utilised to ensure that the pavement meets the requirements of the specification. It is the contractor's responsibility for ensuring that the modified pavement meets the requirements of the specification.
- The cost of any nonconforming tests shall be deducted from progress claim certificates and the contract sum.
- Any pavement layer which has been placed by the contractor which deteriorates from optimum moisture content, specified compaction or design thickness as a result of rainfall or other reasons, shall be rectified, re-compacted and re-trimmed to achieve the specified compaction and tolerances. The cost of this work shall be at the contractor's expense.

3.19. Diverting Water, Dewatering

- The contractor at their own expense shall take all necessary action to divert any surface and/or subsoil water from interfering with the progress of the works. The contractor shall keep these works free from such water and shall take all the reasonable measures to prevent any injury to works by water due to flood seepage or other causes.
- At the same time the contractor shall be responsible for any damage to adjacent properties caused by the concentration of water and shall take all precautions to avoid scouring or siltation downstream by using established soil conservation techniques.
- Any work or material damaged by water from any source shall be taken up, replaced with fresh material and reconstructed by the contractor at their own cost to the satisfaction of the superintendent.

3.20. Inspections

- The contractor shall arrange for all inspections as required by NCA, TCCS, Icon Water and any other service authorities to be undertaken and shall also notify the superintendent of the time of those inspections.

3.21. Water and Sewer Construction

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- Construction is required to be in accordance with Icon Water requirements, contract, standards and specifications.
- The contractor shall provide all testing required by Icon Water. All costs associated with testing shall be included in the lump sum.
- Costs for connection works required to be done by Icon Water will be borne by the principal.

3.22. Public Roadways

- Public roadways adjacent to the site shall be maintained free of construction material at all times.

3.23. Contamination

- It is possible during construction that unexpected finds of contamination may be found and require remediation – should unexpected finds of contamination be found these will need to be addressed accordingly.
- During the performance of the work the contractor should stop work immediately if any contamination (discolouration, building rubble, asbestos pieces, ash) is found on any particular area of the site. The contractor shall immediately contact/advise the superintendent and cease work at this location and implement precautionary measures to contain the material.
- No additional payment will be made for delays due to discontinuity of work.
- Work sites are to be left clean and tidy to the satisfaction of the project manager/superintendent, and if remediation occurs also to the hygienist. All material dropped on roads is to be regularly cleared by and at the contractor's expense. All site construction fences are to be maintained at all times by the contractor.

3.24. Pollution Control-Erosion and Sediment Control

- Where operations involve excavation, filling or grading of land, or removal of vegetation, including ground cover, dust is to be suppressed, until such time as the soil is stabilised.
- All topsoil, sand, aggregate, spoil or any other material shall be stored clear of any drainage line, easement, water body, stormwater drain, footpath, kerb or road surface.
- Sediment and erosion control measures are to be adequately maintained during the works and must be specifically inspected and repaired/maintained before and after each and every storm event.
- The contractor will ensure that all applicable statutes are not breached.
- All sediment and erosion control measures shall be maintained in a satisfactory working order throughout the contract or up until such time as the area that they protect is rehabilitated.
- The contractor shall inspect the site regularly and following rainfall events to ensure that:
  - control measures operate effectively and to initiate repairs or maintenance as required
  - spilled material is removed from temporary basins, silt fencing or traps when 10% capacity is trapped in the settling zone. All collected sediment is to be removed to areas where further pollution to downslope lands and waters is unlikely
  - gravel or other materials are clean and have been reinstated or replaced to maintain effective performance

- All devices are to be inspected after each storm for structural damage or clogging by silt or other debris and to make prompt repairs or replacement.

3.25. Interruption to Existing Services

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- The contractor is required to make enquiries to all public utilities and to determine the location & level of all services in the work area prior to commencement of works.
- The contractor shall take all precautions necessary to prevent damage to existing fencing, drainage structures, telephone and power lines, water mains and services, and/or other improvements during the construction period. Any damage caused by the contractor shall be made good by the contractor at their expense, or the superintendent shall arrange for such damage to be made good by others and for the costs involved to be deducted from payments due to the contractor. It is the contractor's responsibility to establish what services or improvements exist or are under construction at the site.
- Any damage caused by the contractor shall be notified immediately to the superintendent and to the public utilities or persons concerned.

3.26. Connections to Existing Works

- Where the works are continuous with or adjacent to existing work, the contractor is responsible for making the proper junction between the two sections and for making good any damage to the adjoining works. The contractor shall confirm that the existing works conform in level and location with those shown on the drawings before commencing any work on site. No claim will be considered consequent upon the contractor failing to ensure that this condition is met.

3.27. Services Search

- It is the contractor's responsibility to make all necessary enquiries of service authorities and 'dial before you dig' to ascertain the type and location of all existing services infrastructure that exists adjacent to and within the project site.
- The protection of maintenance of and if necessary, the adjustment of any existing services is to be allowed for by the contractor in their pricing and programming of the works.
- The principal will not be responsible for any cost implications or time delays resulting from the existing services impeding the normal progress of works.

3.28. Survey Setout

- The principal shall provide the successful tenderer with a digital plan of centrelines, "lot" boundaries and sewer access chamber positions.
- The contractor shall carry out all survey set out works from the information provided on the drawings or subsequently provided by the superintendent. The cost of all survey required during construction shall be deemed to be included in the lump sum schedule.
- If the contractor finds any variance between survey information supplied by the principal and the drawings, the contractor shall be responsible to inform the superintendent of this and will await the superintendent's written advice before proceeding with the work.
- The contractor shall take every precaution not to disturb or destroy any boundary pegs, survey marks or stakes. Any boundary pegs, survey marks or stakes disturbed or destroyed shall be re-established at the entire cost of the contractor.
- The contractor shall set out such line and level pegs as are necessary for the construction of the works as detailed in this specification. The contractor shall continuously employ on the works a person approved by the superintendent as capable of exercising control of line and level and the carrying out of the survey work involved. The contractor shall make available as required by the superintendent, survey crew, level staff and tape for the checking of line, level and distance.

3.29. Lot Pegging

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- "Lots" are to be pegged by the contractor for the purpose of positioning services. It will be the responsibility of the contractor to care for and maintain all "lot" pegs.

3.30. Works-as-Executed-Drawings

- The contractor will engage a project surveyor to progressively prepare the works-as-executed drawings in relation to all aspects of the works.
- It will be the contractor's responsibility to liaise and arrange directly with the project surveyor to progressively carry out this works-as-executed survey upon completion of each part of the works.

3.31. Damage to Public Roads and Private Property

- The use of public roads, the points of access to and crossing of public roads shall be minimised. Where public roads are used, the contractor shall maintain these roads free of any loose earth, rock or other materials. Should such material be dropped on to public roads, it shall be promptly removed, the roads cleaned, and any damage caused made good to the satisfaction of the superintendent and the authorities concerned without additional charge.
- The contractor is not required to carry out works on private property. The contractor shall not enter private property without notification or the required permission and shall restore the property and leave it in a neat and clean condition on completion of the works.
- The contractor shall prepare a dilapidation report prior to the commencement of works. The report shall cover all TCCS / NCA roads and public assets bounding the site and shall include clear photos and descriptions of all infrastructure and improvements on both public and private property adjacent to the site. The contractor shall submit four copies of the report to the superintendent.

3.32. Final inspection

- The contractor must ensure that at the time of final inspection all works are presented in a clean & tidy manner including pipes and pits cleaned of all silt & debris, footpaths trimmed, gutters and pavements swept and cleaned, grass seeding established and mown and all construction debris and surplus materials removed from site and disposed of.

3.33. Retaining walls and fences

- The contractor will be constructing all retaining, perimeter fencing and all dividing fencing as shown on the plans. The retaining walls to be delivered throughout the dwelling construction phase are noted on civil design plans C051-C053. The retaining walls noted as by others are part of the scope of works for the dwelling construction, however the contractor may choose to do them as part of stage 1 civil works

3.34. Final Wearing Course

- The pavement will be delivered in two phases-
  - Phase 1- for completion of the civil works the bituminous scratch coat <9.5mm aggregate.
  - Phase 2- final 40mm wearing course- to be complete on finalisation of dwelling construction.
- The objective of the two-phase delivery is to ensure that the road's wearing surface is protected from the intensive dwelling construction activity.

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3.35. Landscaping

- Allow to complete the installation of all landscaped areas including hard and soft landscaping works in accordance with the approved landscape designs.
- Allow for any necessary importing of soil, topsoil and fill material for all soft and hard landscaped areas
- The Contractor shall ensure proper establishment of all soft landscaping works in a staged approach in coordination with the construction of the dwellings
- Provide landscaping maintenance for 12 months commencing on the Date of Practical Completion for all soft landscaping works. All trees, plants, shrubs, grass/turfing, bushes, mulch and the like are to be regularly watered each week and generally maintained to ensure at the end of the maintenance period all soft landscaping is in a good healthy condition and established to the satisfaction of DHA. DHA may elect for an independent landscape architect or landscape contractor to review the condition of all landscaping works at expiry of the maintenance period; any soft landscaping found to be in poor health, poorly established, diseased, dead or dying shall be replaced by the Contractor within two weeks of receipt of a defects list from the Principal or project Superintendent. The defects list shall be issued within one week of expiry of the maintenance period. Determination of the condition of any soft landscaping works shall be at the discretion of the project Superintendent

4. Dwellings Design and Construction

4.1. Dwellings (STAGE 2) constructed at Campbell are to be slab on ground homes, together with associated ground works & landscaping, designed in accordance with DHA Property Inclusions Version 4 dated June 2022 and DHA Specifications dated October 2017 Version 7.0, any other DHA guidelines attached to the contract or otherwise noted and council requirements.

4.2. The Preliminary Design comprises the architectural and landscape designs plans by AMC Architecture and DBS Landscapes. The Contractor is to develop and complete the Preliminary Design to achieve Building Approvals for each dwelling

4.3. The contractor is responsible for all engineering design and completing detailed documentation for construction of the dwellings under DHA's AS4300 contract.

4.4. The Contractor shall not vary or substitute any specified material, finish or product without approval by the Principal. The Superintendent shall assess and determine any adjustment to the contract value resulting from an approved change to a material, finish or product specified in the Preliminary Design

4.5. The Contractor shall design and document all necessary works including as a minimum all house floor plans, driveway crossovers, floor, wall and roof construction, structural designs, landscaping designs (hard and soft), fittings and fixtures, electrical design, National Broadband Network (NBN) designs, potable water, recycled water, sewer, stormwater & drainage, all internal and external colours and finishes

4.6. The Contractor shall allow to provide a 'colours and finishes' sample board for each colour & finishes scheme/option and allow to attend at least two Colours/finishes sample meetings.

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4.7. The Contractor shall construct all weather proofing works to ensure dwellings are water tight; provide water proofing details to the Superintendent prior to construction if requested

4.8. Provide design and construction of all letterboxes including affixing of street numbers

4.9. In addition to floor plans, roof plans, site plans & elevations, the Contractor shall provide the following design drawings & schedules during design and documentation for BA for review and approval of the Principal and Superintendent's Representative:

- Proposed furniture layout (supply of furniture not part of this scope)
- Electrical fit-off layout
- Landscape design
- Joinery (shop drawings)
- FFE Schedule (Furnishings, Fittings & Equipment)
- Proposed locations of external air-con compressor units (hand mark-ups acceptable)
- A panoramic streetscape view/elevation showing each continuous row of houses (showing the façade designs of each elevation). This will assist in confirming the variety of design elements chosen
- Internal & external colour selection schedules

4.10. All houses to comply with NatHERS certification and the NCC minimum requirements as per the tender drawings and documents. Dwellings are to be developed in accordance with the National Capital Authority works approval, the DHA guidelines and specifications. The Contractor is responsible for achieving and providing EER certificate for each dwelling

4.11. The Contractor shall ensure all designs & the construction of each dwelling meet and comply with the relevant bushfire requirements.

4.12. The Contractor shall provide all fittings, fixtures & equipment in accordance with Appendix A of contract document Principal's Project Specific Requirements (Fittings, Fixtures & Equipment Schedule). Alternative products can be proposed however must be of equivalent standard (incl. quality, colour, finish, warranty period, performance etc); DHA is to approve of any alternative products for use in the project

4.13. The Contractor shall provide design details for walls along "zero-lot line" boundaries showing the proposed construction of the roof, guttering/fascia, flashings, framing, waterproofing etc

4.14. The Contractor shall incorporate all 'red pen hand mark-up' design amendments shown on the accepted design plans included in the contract. Amendments to be reflected in final detailed design plans for DHA approval prior to lodging with the Certifier for BA

4.15. The Contractor shall ensure the design of all single car garages incorporates the required minimum area for storage (9m2) in addition to the minimum area required for the designated car parking space as illustrated in DHA sketch drawing DHA_SK_DWEL.01 'Single Car Garage Compliant Design Layouts'

4.16. Avoid "reverse-fall" grades to driveways wherever possible (i.e. driveways must fall away from the house/garage). Only where significant extra costs would be incurred for a design which eliminates a reverse fall or where a poor alternate design outcome would be required (e.g. significant flight of stairs to front door entrance) will a reverse fall grade be acceptable

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4.17. Where approval for a "reverse-fall" driveway is given by the Principal, provide a robust stormwater drainage system comprising as a minimum: 1) grate & channel (strip drain) at driveway-garage transition; 2) stormwater pit(s); 3) connection to stormwater system. Refer DHA sketch drawings for minimum design & specification requirements

4.18. When all post construction erosion and sediment control measures have been installed, including but not limited to, footpath grassing, water quality basins, spray grassing of exposed areas, the contractor shall remove all erosion screen fencing, site sheds, and building materials, make good any temporary access and site vehicle tracks, gravel and other non-soil stockpile areas

4.19. Structural Design

- The Contractor shall design and document all structural elements required for the dwellings, including concrete slabs on ground, suspended concrete slabs, footings (including strip footings, pad footings, piers, piles- e.g. screw piles, retaining wall footings (other than those already designed by Northrop engineers), drop edge beams etc), 'Building Over Sewer' (BOS) and 'Building Adjacent Sewer' (BAS) foundations & sewer encasement works (as required by Icon Water), retaining walls (other than those already designed by Northrop Engineers), structural steel, timber roof trusses and timber wall frames, timber beams and columns, stairs, balustrades, timber decking and all other such load bearing structural members

- Allow for any necessary designs, inspections & certifications by a structural engineer

- The Contractor has allowed for the following soil classification (Site Classification) in accordance with Australian Standard AS2870-2011 (Residential Slabs & Footings) for all slabs and footings/foundation designs:

Soil Classification 1.: M (Moderately Reactive)

4.20. Carpentry and Joinery

- The Contractor shall design and construct all carpentry and joinery works including but not limited to timber/steel wall framing, timber/steel roof trusses, timber/steel floors, roof fascias and gutters, stairs, handrails and balustrades, skirtings, architraves, window sills, joinery cupboards and shelving, bedroom robes, door hanging, wall wrapping/sarking, windows & glazing, ceiling joists, propping, bracing, eaves, timber blockouts and structural framing for installation of fittings and fixtures, shower screens and the like. The Contractor shall supply & install all fittings and fixtures including but not limited to door hardware, bathroom and ensuite and powder room fixtures (e.g. towel rails and rings, toilet roll holders, soap holders, hand rails, mirrors, grab rails), any fixtures to laundries, coat hooks, door chimes, DHA specified Lock-Box (location to be approved by the Superintendent)

- The Contractor shall provide any shop drawings requested by the Superintendent for review and approval including joinery, wall frames, roof trusses, structural steel, windows and glazing, any metalworks (e.g. handrails, balustrades, pergolas etc)

- To each dwelling the Contractor shall supply & install a lock box as per specification information sheets provided. Lock boxes to be located adjacent the meter box and under cover such as under an eave, and shall not be visible from the street

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4.21. Façade & External Cladding

- The Contractor shall develop and complete the design and construct all external facades and finishes in line with the original design intent. The Contractor shall provide any samples requested by the Superintendent, e.g. bricks sample panels, fittings & fixtures, colour selection boards and cards, carpets, roof materials, garage door make/model/manufacturer, internal floor & wall tiles, external cladding materials, paving, retaining wall blocks

- The Contractor shall paint all unpainted and unfinished external facades and external works, e.g. eave linings, timber & metal posts and beams to outdoor areas, timber and steel elements to balconies, timber and composite material wall facades (e.g. weather boards, panel systems), downpipes

4.22. Internal Finishes

- The Contractor shall design and construct all internal finishes including joinery, floor finishes (carpeted areas, tiled areas), gyprock walls & ceilings, wall finishes (painted gyprock walls, tiled walls etc), ceiling finishes, painted surfaces, bench and vanity tops, bedroom robes etc

- The Contractor shall paint all unfinished/unpainted surfaces including gyprock walls and ceilings, cornices, timber doors (all edges), architraves, sills, stair handrails & posts, skirtings, mouldings, columns and the like

- The Contractor shall provide samples of any internal materials and finishes requested by the Superintendent for review and approval prior to construction and ordering of materials (e.g. tiles)

4.23. Waterproofing Membrane and Termite Protection

- The Contractor shall design and construct all waterproofing membranes and termite protection systems

- The Contractor shall flood test all wet areas to ensure no leaking of waterproof membranes and to ensure waterproofing installations perform their intended function and are fit for purpose

- Prior to construction the Contractor shall provide details of all waterproofing membrane systems and termite protection/management systems proposed to be used

- The Contractor shall follow any advice or instruction given by the Superintendent or DHA's Project Manager as to a method of waterproofing installation to implement

- The Contractor will provide design drawings of any waterproofing membrane details proposed by the Contractor for review and approval by the Superintendent if requested

- The Contractor shall furnish DHA with the required ITCP upon waterproofing is tested and completed.

4.24. Kitchen Equipment and Appliances

- The Contractor shall select, supply and install all kitchen equipment and appliances including gas & electric cooktops, ovens, grills, dishwashers, rangehoods, sinks, tapware etc

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- The Contractor shall provide all kitchen equipment, appliances, fittings & fixtures as per the inclusion schedule and any other PPR documents. Should alternatives be proposed, prior to construction and prior to ordering seek the project Superintendent's approval.

4.25. Plumbing

- The Contractor shall design and construct all plumbing works including gutters and downpipes, internal hydraulic pipes fittings and fixtures, in-ground drainage and stormwater pits and pipes, rain water tanks and pumps

- The Contractor shall design and construct all plumbing and hydraulic connections into the mains network infrastructure

- The Contractor shall supply and install all plumbing fit-off items including pans & cisterns, vanities to bathrooms and ensuites and powder rooms, sinks, tapware, hose cocks, gas points, instantaneous hot water units, hot water storage tanks, shower heads, dishwashers, gas appliances etc

- Outdoor areas including front, rear and side yards must not hold water or cause ponding in moderate or heavy rain events. Contractor is to design the stormwater drainage for each lot accordingly however should allow for at least two of (2x) 400mm x 400mm stormwater pits to rear yards, two of (2x) 200mm x 200mm stormwater pits to side yards and two of (2x) 200mm x 200mm stormwater pits to front yards

- Inspection Outlets (IO's) to finish flush with ground level, projections above finished ground level not permitted

- All instantaneous hot water units shall be installed using vandal/theft resistant enclosures

4.26. Roofing

- The Contractor shall design and construct all roofing works including roof sheeting materials, box gutters, flashings, roof battens and rafters, ridge flashings, eave overhangs, bracing and propping, fascias and gutters, roof fittings and fixtures

- The Contractor shall submit all designs for roof finishing materials prior to construction for review and approval by the Superintendent (e.g. products to be used for Colorbond roof sheeting and tiled roofs), Colour selection included

4.27. External Works

- The Contractor shall design and construct all letterboxes, clothes lines, covered outdoor areas, footpaths, paved areas, water tanks, external A/C units, bin storage area, and the like

4.28. Bushfire Rating

- The contractor shall comply with the bushfire requirements of any bushfire risk assessment report included in the contract, with particular regard to construction requirements of any Bushfire Attack Level (BAL) ratings and external fire access tracks specified in the report located outside of the site

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5. Services

5.1. General

- The Contractor shall design all services required for each property including power, electrical, potable water, stormwater and drainage, sewer, recycled water, telecommunications including NBN and any other such services required for each Lot. All services shall comply with design and construction specifications and requirements of service authorities (utility providers), Codes of Practice, Australian Standards, National Construction Code (incorporating the Building Code of Australia), industry best practices and all other such relevant regulations

- The Contractor shall obtain all necessary approvals and certifications from service authorities (utility providers e.g. NBN, Icon Water, Zinfra/Jemena) as required to obtain all necessary approvals

- The Contractor shall allow for all fees, charges and costs required to be paid to authorities for all works relating to connection of authority services from mains infrastructure to each dwelling (e.g. inspection fees, connection fees and the like). Authority services include power/electrical, stormwater, potable water, recycled water, gas, sewer, communications (e.g. NBN connections)

- The contractor shall establish and hold the necessary accounts with each service authority until Practical Completion is awarded and until hand over of each dwelling from DHA to Department of Defence (Defence) has occurred. Once each property is handed over from DHA to Defence the contractor shall liaise with each service authority to have each account closed down ready for an incoming Member to establish a new account for the property. The Contractor shall pay all account keeping fees, authority service fees & usage charges (e.g. water usage) until each account is closed down

- The Contractor has allowed for any required concrete encasement works to sewer

- The Contractor shall make all connections to the existing network infrastructure for all services

- Provide all detailed excavation and trenching, backfilling, compaction, bedding layers, provide compaction certificates if requested

- The Contractor will obtain any necessary plan stamping e.g. plumbing plans to be stamped by Icon Water

- The Contractor shall ensure all inspections required to be carried out by the Icon Water. The Builder shall provide evidence that all required inspections have been carried out & passed

5.2. Power & Electrical

- The Contractor shall design and construct all power and electrical required to service each property

- The Contractor shall coordinate electrical designs with the approved electrical design plans

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- The Contractor shall engage any Level 1 and Level 2 Accredited Service Providers (ASP) as required to complete all electrical design services and electrical/power works

- The Contractor shall avail themselves of any information regarding electrical network infrastructure which is not provided in the contract and which is required to complete the design and construction of electrical and power supply works

- The Contractor shall make all connections to the existing electrical supply network infrastructure

- The Contractor shall provide L.E.D. lighting to all ceiling lights

- The Contractor shall make an "Application For Connection of Load" to the local power authority for each dwelling & allow for any application fee & associated charges

5.3. Stormwater, plumbing, potable water, gas, recycled water

- The Contractor shall design and construct all stormwater and drainage services, all plumbing works, potable water supply services, gas services

- Complete Stormwater drainage connections lines to the street verge kerb outlet (PVC pipe connection under the concrete footpath provided by the civil contractor)

5.4. NBN (National Broadband Network)

- Each dwelling is to be "NBN ready", the Contractor shall make provisions to enable future connection to the NBN network for each dwelling. The Contractor shall ensure current requirements including design drawings and specifications produced by NBN Co. are obtained and complied with

- All NBN network provisioning works shall be in accordance with the "Key Information for builders and cablers" information sheets produced by NBN Co. and included in the contract

- The Contractor shall be fully aware of the most current specifications and requirements of NBN Co. and shall allow for all necessary requirements and specifications of NBN

5.5. Sewer

- The Contractor shall design, document and construct all sewer reticulation works, including but not limited to sewer pipes, maintenance shafts, falls, access pits & chambers, manholes, compaction testing, backfilling, all fittings & fixtures, jointing, flow gauges, bedding materials and the like

- The Contractor has allowed for all necessary inspections required to be undertaken by Icon Water

- Any defect notice issued by Icon Water for the works shall be actioned and remedied immediately by the Contractor

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- The Contractor has allowed to construct the works in accordance with any other drawings, codes and specifications published or otherwise available from Icon Water

- The Contractor shall allow to construct all piers adjacent to or over existing sewer infrastructure in accordance with structural engineering designs provided by the Contractor and to meet any requirements by Icon Water; the Contract shall not be varied due to pier designs required for any 'Building Over Sewer' (BOS) or 'Building Adjacent Sewer' (BAS) works

- The contractor shall provide a leak tight sewer system

- The Contractor shall use any Icon Water listed/accredited subcontractor to perform any specific works as specified in the drawings

6. Site Works

6.1. General

- The final 40mm asphalt wearing course (internal road network within the site) and landscaping behind kerb shall be completed by the Contractor at completion of the housing constructions.

- The Contractor (for this Scope of Works) will remain as the Principal Contractor (for WHS purposes) for the site and will ensure the civil contractor (and his sub-contractors) are properly inducted into the site prior to commencing any works on site.

- The Contractor shall undertake all necessary bulk earthworks, site cut/fill & benching to achieve design RL's of each lot

- The Contractor shall allow for all necessary importing and exporting of fill material including all material handling on site and allow for any necessary validation testing and disposal fees

- The Contractor shall allow for all detailed excavation works, including for services trenching, footings, piers, slabs, drop edge beams, retaining wall footings, pad and strip footings, piling (e.g. screw piles), excavation for paving slabs and the like.

- The Contractor shall ensure any survey information provided in the contract (e.g. contour survey) is correct and accurate to complete the works. The Contractor shall take all responsibility for survey information provided in the contract and shall undertake any necessary additional survey works required to satisfy itself that as-built site levels are in accordance with the civil design drawings. Any discrepancies or errors found between civil design drawings (RL's and contour information) and as-built site levels shall be brought to the attention of the Superintendent (or the Superintendent's Representative) prior to commencing construction and as early as possible for advice and resolution

- In addition to any geotechnical information provided by the Principal the Contractor shall undertake any necessary geotechnical tests and investigations to satisfy themselves of the exact conditions and nature of the site including soil profiles, soil density, presence of rock and all other such geotechnical information which is required to adequately describe the site

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- Allow for all detailed site benching to achieve the approved pad levels in accordance with the approved architectural and structural design drawings, including if required the importing and exporting of any suitable fill materials in order to achieve the approved design levels

- Allow for the design and construction of all driveways, driveway crossovers and laybacks. The Contractor shall avail themselves of any design drawings, standards and specifications produced by the local authority in regards to the design and construction of these works

- Provide design and construction of any required retaining walls. Retaining wall finishing materials such as masonry block types and masonry capping are to be submitted to the Superintendent for review and approval. For retaining wall materials allow for a minimum product specification similar and equal to [N/A]; the project Superintendent to approve of block type & manufacturer and colour selection proposed by the Contractor

- Where there is a retaining wall on a boundary the Contractor shall provide a site plan & details (cross sections, elevations etc) showing the relationship between the fencing, boundary and retaining wall. Minimum clear path width to sides of dwellings to be 900mm

6.2. Landscaping

- Allow to complete the design for all landscaped areas including hard and soft landscaping works. Submit all landscape designs to DHA for review and approval prior to submission of Building Approval applications (refer to section J.1.1). DHA may elect to have landscape designs reviewed by an independent landscape architect for comment and advice as to compliance with DHA design intent.

- Allow for any necessary importing of soil, topsoil and fill material for all soft and hard landscaped areas

- The Contractor shall ensure proper establishment of all soft landscaping works

- Provide landscaping maintenance for four weeks commencing on the Date of Practical Completion for all soft landscaping works. All trees, plants, shrubs, grass/turfing, bushes, mulch and the like are to be regularly watered each week and generally maintained to ensure at the end of the maintenance period all soft landscaping is in a good healthy condition and established to the satisfaction of DHA. DHA may elect for an independent landscape architect or landscape contractor to review the condition of all landscaping works at expiry of the maintenance period; any soft landscaping found to be in poor health, poorly established, diseased, dead or dying shall be replaced by the Contractor within two weeks of receipt of a defects list from the Principal or project Superintendent. The defects list shall be issued within one week of expiry of the maintenance period. Determination of the condition of any soft landscaping works shall be at the discretion of the project Superintendent

7. Practical Completion and Handover

7.1. PC and DHA Handover

- The Contractor shall use its best endeavours to ensure each property is defect free at the time of requesting a certificate of Practical Completion. Any defects or incomplete works of

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a minor, significant or trivial nature that exist at the time of being granted Practical Completion shall be rectified within 14 days of the Date of Practical Completion

- As a condition precedent to achieving Practical Completion the Builder shall fill in the Property Attribute Loader (PAL) forms to the satisfaction of the project Superintendent for each dwelling using the Microsoft Excel file provided in the contract

- The Contractor shall use the provided "Property Handover Folders – TEMPLATE" file folder structure for saving all copies of electronic handover documentation and ensure each folder is populated to the satisfaction of the project Superintendent

- Contractor must provide a sufficient "Builder's Clean" to each lot and dwelling at completion; this is a condition precedent to achieving Practical Completion. Refer Annexure A of the Principal's Project Requirements for minimum requirements

7.2. Defects

- Prior to issuing a Certificate of Practical Completion, the project Superintendent and/or the Superintendent's Representative shall undertake a defects inspection of all works external to the lot boundary (i.e. civil works and authority works/services) including roads, asphalt/bitumen pavements (including wearing courses), kerbs, kerb/pram ramps, gutters, footpaths, street trees & turfing/landscaping to verges, street signs, stormwater kerb inlet pits, electrical pillars and street lighting, communications pits, fire access tracks etc to ascertain if any damage has occurred and if the damages have occurred due to the Contractors works occurring on site. The Superintendent shall make the final decision if any dispute should arise as to persons responsible for the damage being caused. Any damage to such external works and infrastructure found to be caused by the Contractor (or the Contractor's subcontractors) shall be immediately actioned and rectified

- A representative from the local authority (NCA, ACT government) may be requested by the Superintendent to attend such a defect inspection to assist in identifying any defects to the authority infrastructure, utility services and the like

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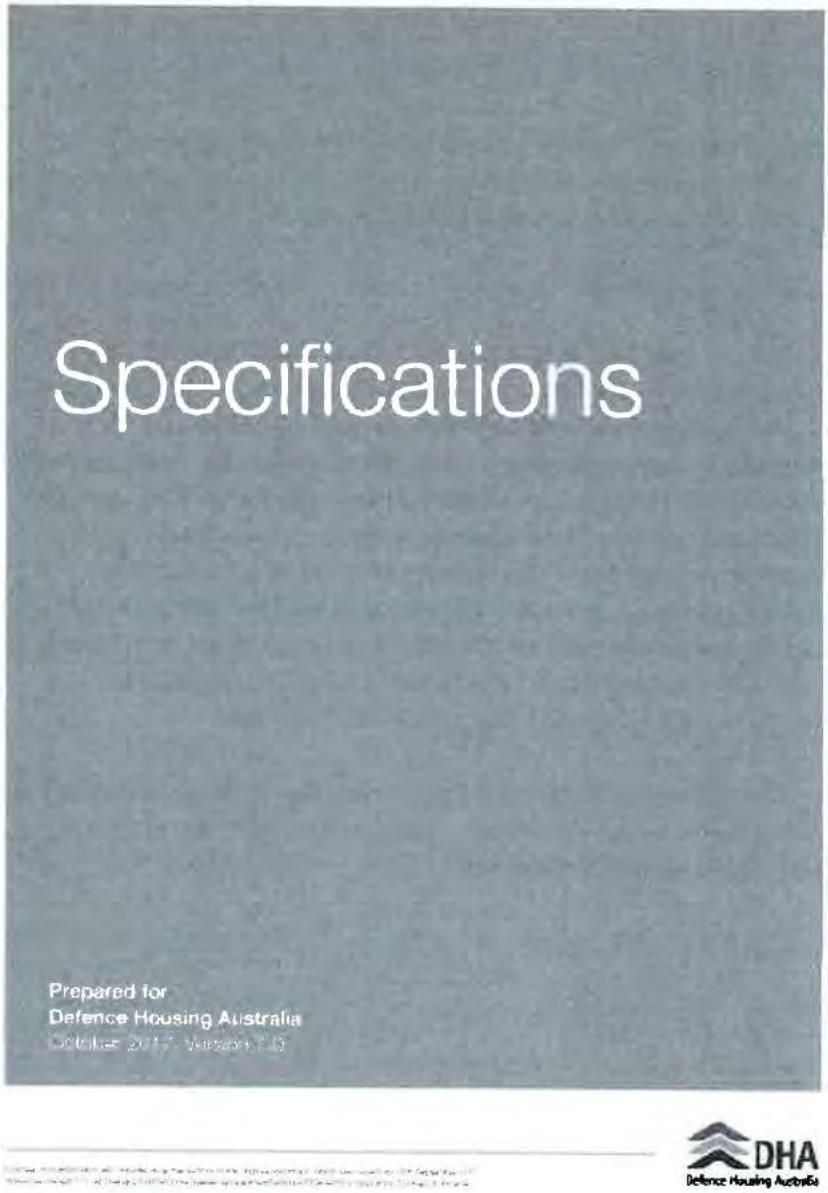
SCHEDULE C1 TO ANNEXURE PART C – DHA SPECIFICATION

DHA Specification&ICTPs_V7.01

Refer to Design Specifications – DHA Specification V7.0 dated October 2017 as supplied in the Approach to Market documentation issued under DHA Reference: DHA-PROC-67082 on 24 March 2023. Please see below the cover page for visual reference.



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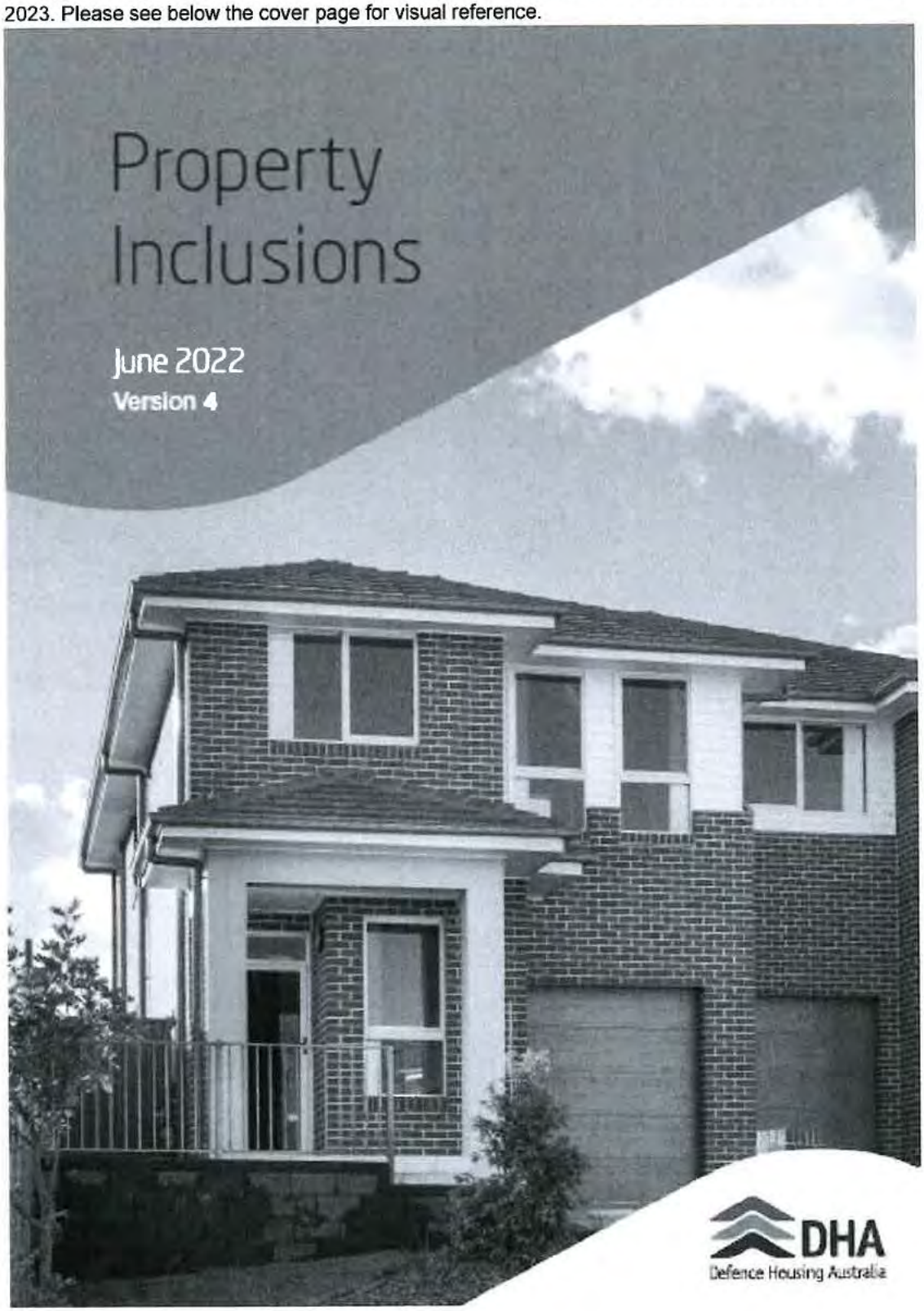
SCHEDULE C2 TO ANNEXURE PART C – DHA PROPERTY INCLUSION

DHA Property Inclusion version 4 June 2022

Refer to DHA Property Inclusions version - 4 - June 2022 as supplied in the Approach to Market documentation issued under DHA Reference: DHA-PROC-67082 on 24 March 2023. Please see below the cover page for visual reference.



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Schedule C3 to Annexure Part C – Tender Design Drawings

To be inserted

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SCHEDULE C4 TO ANNEXURE PART C – TENDER SCHEDULE OF INCLUSIONS

To be inserted

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SCHEDULE C5 TO ANNEXURE PART C – DHA BUILDERS CHECKLIST

To be inserted

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SCHEDULE C6 TO ANNEXURE PART C – PRACTICAL COMPLETION, HANDOVER REQUIREMENTS AND DEFECTS REGIME

PART 1 – PRACTICAL COMPLETION

These Practical Completion Requirements are in addition to those set out in the Contract to which this Annexure is attached.

1.1 Background and Inspections

Defence Acceptance: As required by the Department of Defence (**Defence**), DHA has strict handover requirements in place which facilitate acceptance of the dwelling by Defence for occupation by a Defence tenant. Any delay in this acceptance by Defence means that DHA is unable to allow the Defence tenant to occupy the dwelling and furthermore, DHA cannot receive rent for the property.

Inspections: In addition to the DHA inspections to determine all requirements have been met and defects have been rectified, an inspection will be undertaken by a Defence representative—confirming acceptance of the property and any defects for rectification.

1.2 Defects and Practical Completion

The Contract and this Attachment, will govern the handling of Defects and Practical Completion (PC).

In summary:

1. Contractors must fix any minor defects (accepted as such at PC) to DHA's satisfaction within 10 Business Days from the date of the PC Certificate or as agreed by Superintendent.
2. If minor defects are not rectified properly to the satisfaction of DHA and within the specified timeframe, DHA has the right to engage another contractor to rectify the defect at the Contractor's expense without further notice. If so, DHA can claim these costs from the Contractor as a debt due to DHA.

1.3 Site Services and other requirements

At the PC inspection, the Contractor must ensure that the following requirements are met to the satisfaction of the Superintendent. Otherwise, the Certificate of PC will not be issued:

- the dwelling and site cleaned (inside and out) to the satisfaction.
- all temporary fencing and rubbish removed.
- any damage of public and/or private land/or property adjacent to the site repaired.
- any verge restoration (if required) completed.
- telephones, telecommunications connected and working.
- all utility services including electricity, gas, water, sewer connected, approved and tested ready for occupation.
- all telephone, electricity and gas accounts must be terminated by the Contractor to allow connection by the new tenant.

1.4 Items required by DHA (refer to Appendix 1)

As part of the requirements for PC, the Contractor must provide DHA with the items below:

a) minimum of 2 keys per lock and as listed in the Proforma Handover document in Appendix 1.

b) three (3) garage remote control units, one of which is to be affixed to the garage adjacent to the door into the house.

1.5 Certificates and warranties (refer to Appendix 1 and 2)

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All requisite appliance guarantees/warranties (paper or electronic), must be completed, nominating DHA as the beneficiary. They must be dated as per day of installation, not the product purchase date.

The Contractor must complete and provide DHA, with respect to each property which is the subject of the works:

1. A completed Property Attribute Loader (PAL spreadsheet) in an excel spreadsheet in the format provided to you by DHA must be supplied a maximum of five, but no less than three days prior to the requested Practical Completion Inspection. A Practical Completion Inspection cannot be arranged until three days after the completed PAL Spreadsheet is provided.
2. Appliance warranty cards and/or fittings manuals and the dwellings telephone number
3. 'As constructed' and/or amended version of plans for the site, dwelling, electrical and landscaping
4. 'As constructed' dwelling survey (building envelope, easements, residence outline and block boundaries)

You may also be required to provide some of these documents earlier by DHA (upon request.)

1.6 Professional Clean

The standard of cleaning required for the Property (inside and out) for Practical Completion is:

1. to a professional standard
2. fit for the purpose of occupation by DHA's tenants
3. to DHA's satisfaction.

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PART 2 – DEFECTS REQUIREMENTS DURING DEFECT LIABILITY PERIOD

2.1 Defects liability regime

Where defects arise with a dwelling under DHA ownership or management, Defence and Defence tenants require DHA to meet strict turnaround times for the rectification of defects. This applies to new residences during the Defects Liability Period (DLP) and thereafter. Notification of defects and management facility is provided through your Online Services Account.

2.2 Assessing defects

Where a defect arises during the DLP, they will be assessed by DHA to identify them as either:

- An emergency defect (see definition below) or
- Routine defect.

2.3 Identifying defects

Defects can be identified by the tenant DHA staff or Defence staff who inspect DHA owned or managed dwellings. These will then be recorded and issued to the contractor via DHA's Online Services platform.

2.4 Handling defects

Outside normal business hours, the handing of emergency defects will be done by DHA's after-hours contact centre (AHCC) run by DHA's contracted service provider from time to time.

For routine enquiries or further information on defect items you have been issued, you can contact DHA's Maintenance Contact Centre (MCC) on 139 342. You will need to provide the Maintenance Item Number (MITM) you are enquiring about.

The DLP team can be contacted for further advice or escalated issues during the DLP.

Contact details are: technicalsupport@dha.gov.au or contact 139 342 and ask to speak with the National Building Defects Manager.

DHA has an RMS Panel *(see definition below)* which provides maintenance and repairs services for the 17,000 plus dwellings owned or managed by DHA. This panel provide repairs to DHA's portfolio across Australia. The contractors on this panel are selected on a value for money basis by tender, and are considered to represent good value. DHA will utilise this panel to carry out repairs in stances where a Contractor fails to meet the timeframes outlines in this regime or otherwise authorises DHA to utilise this panel to carry required repairs. Costs of defect repairs will be passed onto the Contractor without DHA mark-up.

2.5 DLP Process

The builder constructing DHA dwellings, must provide DHA with contact details for DLP issues including:

1. contact name of the person managing the defect work schedules in the organisation.
2. a valid email address (preferably a generic company address).
3. phone contact details (including a mobile number).

IMPORTANT: All Contractors must keep the DLP Contact details current via their Online Services account.

2.5.1. DHA Account

The above details will be utilised to create an Online Services Account for the Contractor to use, update and keep track of builder-defect items lodged by DHA. A user guide to Contractors on how to utilise their Online Services Account is available on DHA's

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website. Use and monitoring of DHA's Online Services is a mandatory requirement of your contract.

IMPORTANT: The notification of defects via your online account is considered a valid request by DHA for the Contractor to rectify the notified defects.

2.5.2. Notification of Routine Builder Defects

The Contractor will receive notice of new defect items via the Online Services Account during the DLP. This notice includes a system generated email every time a job is created or updated. DHA will also specify a date range for the work to be completed, which will generally be 14 days from the date notified, or the 14 days prior to the end of the DLP for items that can be held over to this time. The dates provided are considered a valid direction under 37 (d) of the contract.

2.5.3. Notification of Emergency Builder Defects

For emergency defects during business hours, a representative from DHA will contact the contractor by phone before issuing an emergency repair item. As time is tight, if they are unable to reach the contractor, a voice message will be left and 2 hours will be allowed to return the call. If the Contractor answer/return the call in the 2 hours, the Contractor will be provided the opportunity to accept and perform the emergency maintenance item, or accept the cost of having a DHA contractor attend. If the job is accepted, an emergency MITM will be sent via online services. If the job is not accepted or the contact timeframes cannot be met, the job will be issued to a DHA maintenance contractor and the cost invoiced.

Outside normal business hours, the handling of emergency defects will be done by DHA's after-hours contact centre **(AHCC)** run by DHA's contracted service provider from time to time. Even though DHA does not contact you with these defects, DHA may pass the cost to on to you for payment where clear evidence exists the issue was due to defective workmanship

2.5.4. Response Times

Once a defect is notified to the Contractor's contact point, he/she must contact the tenant and book a time to attend the issue via Online Services. If a booking is not made by the Contractor in Online Services, this is not considered to be a 'response' by the Contractor to the defect.

Mandatory response times are:

a. Two (2) hrs for emergency defects; and

b. 48 hours for routine defects.

If the Contractor cannot successfully contact the tenant, they must utilise the *'Unable to Contact'* function within their Online Services account.

IMPORTANT: this function requires at least three separate attempts to contact the tenant.

2.5.5. Rectification Times

The repairs must be both rectified to DHA's reasonable satisfaction and marked as complete within Online Services. Commencing from the time the defect/s were first notified to the Contractor, all repairs must be carried out within the timeframes provided with the job.

2.5.6. Notification of Fix

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In all circumstances where the Contractor is to rectify the Defects, the Contractor/Builder must inform DHA when the repair has been completed by completing the MITM through the online services account. If this process is not finalised, DHA may assume the defect has not been repaired and engage another contractor to undertake or complete the repair at the Contractors expense.

2.5.7. Non-defect maintenance items or DHA Tenant Damage

Sometimes a defect/repair that DHA has asked to be rectified (or which we have had rectified by our R & M Panel) proves to be as a result of:

a. fair wear and tear; or

b. was or is caused by fault on the part of a DHA Tenant, occupant or invitee; or

c. is the result of insured events (in commonly available property owner insurance).

If this occurs, you are not responsible for the repair or its cost, provided DHA agrees and you notify DHA either by calling 139 342 or utilising the further actions section in Online Services.

2.5.8. Notification of non-defect maintenance item

Where the Contractor inspects a defect and believes it to be a Non-defect maintenance item, he/she needs to immediately notify DHA the reason why via 139 342, so that the matter can be assessed by DHA and the defect rectification actioned promptly within the mandatory timeframe. In this situation, it is important you do not undertake any work on the specified property prior to receiving further instruction.

2.5.9. False Call outs

If a property is attended and the defect is found to be a Non-defect maintenance item, then provided DHA is notified in accordance with the above and agrees the contractor is not responsible for the repair or its cost, and there was no other reason for the contractor (or trade) to attend the property at that time, the Contractor may invoice DHA a 'call out fee' equivalent to one hour of the attending trades time (and never exceeding $150 GST inc.).

2.6.0. Defects after DLP

This defects regime applies to any defect notified during the DLP and to any defects in the rectification of any such defects.

IMPORTANT: DHA still has rights under the contract with respect to quality, workmanship and warranties, even if the issue is outside DLP.

PART 3 – DHA'S RIGHTS

If the mandatory requirements are not met, DHA reserves the right to engage a contractor(s) from the RMS Panel to complete the repair and recover costs for the defect repair as a debt due from the Contractor. For example:

- The Contractor does not satisfy either the response times or the rectification time; or
- The Contractor does not rectify the defect/s to DHA reasonable satisfaction; or
- The Contractor does not book or complete the repair within online Services.

3.1 DHA cost recovery invoice

DHA will invoice the Contractor for costs associated with any DLP defect(s) where applicable. The invoice is a debt due to DHA and will be payable by the Contractor within 30 days of issue.

3.2 Failure to pay

If the invoiced costs are not paid in accordance with DHA's credit terms, DHA may recover these costs from any security held or take appropriate legal action.

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3.3 Disputes

If the Contractor has a dispute with any matter relating to this regime, the Contactor may escalate the matter to the DHA National Builders Defects Manager. This is done by sending a Dispute Notice, along with all relevant facts to the National Builders Defects Manager for his or her review. This should be done via email with the subject heading ***"Dispute Notice—Builders Defects"***. (Please note this does not amount to a Dispute Notice under Contract Clause 47). You need to provide any information to the National Builders Defects Manager reasonably requested by him or her.

IMPORTANT: If the dispute is not resolved by the National Builders Defect Manager, the Dispute Resolution Clause 47 within the Contract may be invoked by either party.

PART 4 – USING THE RESIDENTIAL MAINTENANCE SERVICES (RMS) PANEL FOR DEFECTS

DHA recognises that not all Contractor/Builders are set up in such a way that allows them to meet the mandatory timeframes required by the Department of Defence reflected in this regime, particularly with regard to Emergency Maintenance. Therefore, DHA allows its Contractors to authorise DHA to undertake defect repairs on their behalf.

4.1 Charges from use of RMS Panel

Where a Contractor wishes to authorise DHA confirmation will be requested in writing wherever possible. Where the use of the panel is for an emergency defect, the Contractor may provide verbal authority to DHA. DHA will record this verbal authorisation in writing and is entitled to rely on the verbal authorisation so given and charge the Contractor accordingly. DHA will accept the verbal authorisation from anyone within the Contractors business structure which it reasonably believes is authorised to provide the authorisation at the time.

PART 5 – DEFINITIONS EMERGENCY DEFECTS

Emergency defects means any request for maintenance or repairs arising from events that affect the immediate health, safety or security of Defence tenants including the loss of any of the Essential Amenities such as:

- Burst water pipes or no water
- Serious flooding/water ingress (i.e. water entering the home)
- Sewer blockage including blocked drains causing flooding
- Complete loss of power (electricity and gas), electrical faults and expose wiring
- Wet lights and power fittings
- Gas leaks

Fire or storm damage

- A loss of an essential amenity where DHA considers the loss of the amenity to require emergency attendance (i.e. loss of air conditioning during hot weather)
- Any other failure which causes (or if not resolved, will cause) significant further damage or significant loss of the amenity of the property for the Defence tenants, in the reasonable opinion of DHA.

Essential amenities for a Service Residence are:

- Hot water service
- All toilet facilities
- Heating or air conditioning
- Oven and hotplates
- Smoke alarms

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PART 6 – OTHER DEFINITIONS AND INTERPRETATION

The **RMS Panel** means both:

a. DHA's Residential Maintenance Services Panel and
b. The contractors utilised by DHA's After Hours Call Centre (AHCC) for emergency repairs after hours.

Normal business hours for DLP Regime are Monday to Friday 8.30am to 7.00pm EDST, excluding public holidays.

After hours or **outside normal business hours** means outside the times specified above including public holidays.

Response times defined in Item 2.5.4 above.

Defect is as defined in your Contract with DHA and will also be referred to as a 'maintenance item' or 'MITM'

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APPENDIX 1: **HANDOVER PROFORMA**

Note: Complete one form per dwelling

BLOCK SECTION LOT No:

Street Address:

State: Postcode:

KEYS	KEY QUANTITY NUMBERS	DHA Rep Only KEYS Received
External doors		
Sliding doors		
Security doors		
Windows		
Letterbox		
Roller door		
Garage remote control		
Storeroom/shed		
Manhole		

*Minimum key requirement for all areas is 2 keys per lock.

- Before handover the DHA Project Manager will provide contractors with a DHA Key Tag per dwelling. All internal and external keys are to be handed over using the key tag shown below.

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CERTIFICATES AND DOCUMENTS	RECEIVED
Certificate of Occupancy (notice of compliance, statement of compliance and form 21)	
ACT Compliance Certificate (ACT Only)	
Builders Approved Plans	
Site Plan	
Retaining Walls Approvals (if over relevant height/size)	
Energy rating certificate	
Electrical certificate	
Plumbing certificate	
Title Certificate	
Home Owners Warranty Insurance Certificate	
Drainage Plan	
Survey Certificate	
Wet area Waterproofing certificate/Warranty	
Termite Protection Certificate/Warranty	
Insulation Certificate	
Roof Truss Certificate	
Glazing Certificate	
Gas Certificate	

MANUALS AND WARRANTY CERTIFICATES	RECEIVED
Proof of Purchase for all appliances	
Appliance manuals, if available in hard copy	
Smoke Detectors	
Hot Water System	
Garage Remote Control	
Heating System	
Air-Conditioning System	
Sensor Lights	
Water Pump	
Solar Panels	
Other (keyless entry, room controller etc)	

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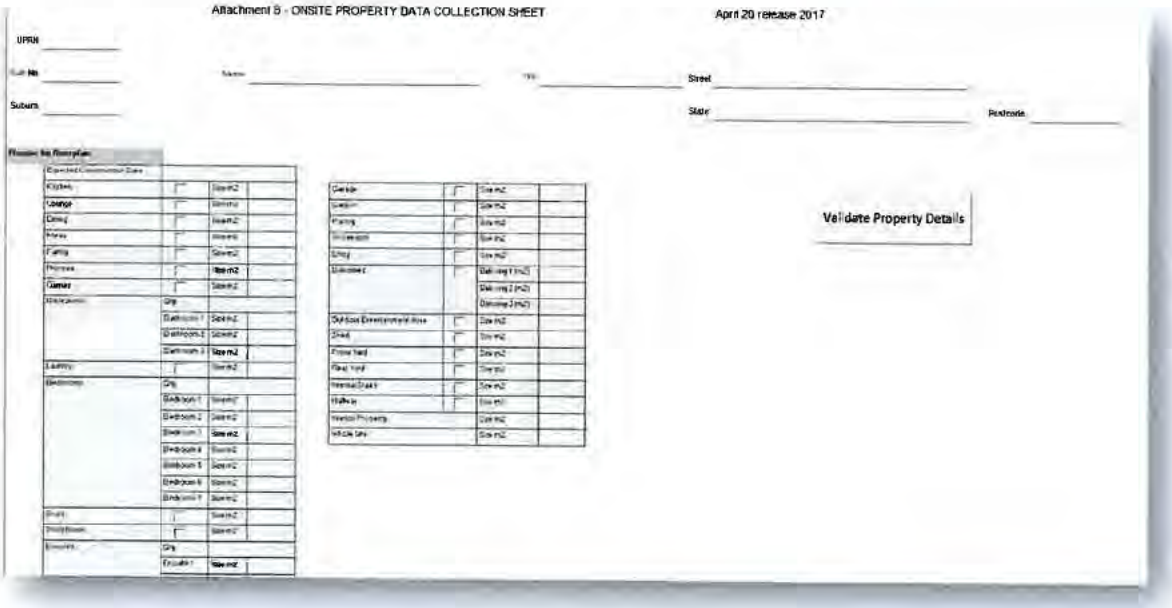
APPENDIX 2: PAL SPREADSHEET AND WARRANTIES

1. The excel spreadsheet called 'Property Attribute Loader' **must be completed by the Contractor** for <u>each</u> dwelling and provided to DHA. It must be in the same excel format provided by DHA to the Contractor.

2. As a guide, the PAL spreadsheet contains four main sections: Property Details, Climate Control, Exterior Grounds, Warranty. All section need to be completed with as much detail available for each individual dwelling.

3. From time to time, DHA may update, add or change the format, items or subheadings of the PAL spreadsheet. DHA will <u>always</u> provide the latest available version of the PAL spreadsheet to the contractors.

4. When completing the PAL spreadsheet:
   a. Ensure the actual or 'expected construction date' is entered in. Generally, that date will always be the expected Certificate of Practical Completion date (sign off date between DHA and Contractor).
   b. By ticking a room area in the *room by floorplans* section will open fields throughout the rest of the spreadsheet.
   c. Input all cavity dimensions including, refrigerator, microwave, dishwasher, washing machine and dryer.
   d. Input the gas and power meter numbers.



5. Warranty tab:
   a. Builders ID, Manufacturer ID and Installer ID numbers will be completed by DHA.
   b. Contractor is responsible for the input of all model and serial numbers for each appliances.
   c. If a manufacturer company is not listed in the drop down field, complete the 'Contractors details form' (DHA will provide this document when requested).

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Construction Warranty

	Warranty Period	Builder ID
Defect Liability		
Structural Liability		

Climate Control

	Manufacturer	Model	Serial Number	Purchase Date	Retailer	Invoice Number	Warranty Period	Manufacturer ID	Warranty Period	Installer ID
Split System - Fixture Type 1 (Inside)										
Split System - Fixture Type 1 (Outside)										
Split System - Fixture Type 2 (Inside)										
Split System - Fixture Type 2 (Outside)										
Split System - Fixture Type 3 (Inside)										
Split System - Fixture Type 3 (Outside)										
Split System - Fixture Type 4 (Inside)										
Split System - Fixture Type 4 (Outside)										
Split System - Fixture Type 5 (Inside)										
Split System - Fixture Type 5 (Outside)										
Split System - Fixture Type 6 (Inside)										
Split System - Fixture Type 6 (Outside)										
Split System - Fixture Type 7 (Inside)										
Split System - Fixture Type 7 (Outside)										
Non Split System - Fixture Type 1										
Non Split System - Fixture Type 2										
Non Split System - Fixture Type 3										
Non Split System - Fixture Type 4										

Appliance Information

	Manufacturer	Model	Serial Number	Purchase Date	Retailer	Invoice Number	Manufacturer Warranty Period	Manufacturer ID	Installation Warranty Period	Installer ID
Hot Water System										
Hot Water System Backup/Heat Pump										
Solar Panel										
Inverter										
Ducted Vacuum Cleaner										
Kitchen Rangehood										
Dishwasher										
Microwave										

Property Details | Climate Control | Exterior Grounds | Warranty

When the spreadsheet has been filled out completely, the contractor needs to go back to the property details worksheet and click on the Validate Property Details button. This button will identify if any sections and data have been omitted throughout the spreadsheet.

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ANNEXURE PART D
PRICING DETAILS

Schedules Index to Annexure Part D – Pricing Details

Schedule D1 to Annexure Part D – Milestones payments schedule
Schedule D2 to Annexure Part D – Provisional Sum Items
Schedule D3 to Annexure Part D – Tender Negotiations Register

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SCHEDULE D1 TO ANNEXURE PART D – MILESTONES PAYMENTS SCHEDULE

To Be Inserted

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SCHEDULE D2 TO ANNEXURE PART D – PROVISIONAL SUM ITEMS

(See Item 26)

To Be Inserted

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SCHEDULE D3 TO ANNEXURE PART D – TENDER NEGOTIATIONS REGISTER

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ANNEXURE PART E
SCHEDULE OF RATES

(Nort Used)

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ANNEXURE PART F
DHA AND DEFENCE SPECIFIC REQUIREMENTS

Schedules Index to Annexure Part F – DHA and Defence Specific Requirements

1. Schedule F1 to Annexure Part F – WHS
2. Schedule F2 to Annexure Part F – (Not used)

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SCHEDULE F1 TO ANNEXURE PART F – WHS

In addition to Clause 58, the Contractor must comply with the following further WHS requirements:

1.1 Training

(a) The Contractor must not direct or allow any persons to undertake construction work at the Site unless the person has completed a course of work health and safety induction training relating to construction and the training identified in the risk assessment for the work to be undertaken.

(b) The Contractor must provide to all persons at the Site, appropriate information and training, including in relation to any hazards that have been identified, the risk arising from those hazards and the measures that have been implemented to eliminate or minimise those risks including training on the applicable Safe Work Method Statement(s).

1.2 Work Health and Safety Management Plans (SOW)

(a) The Contractor must prepare, implement and maintain a Work Health and Safety Management Plan that describes how health and safety will be managed at the Site and overall during the Works and which has been signed and dated. The Work Health and Safety Management Plan must, at a minimum, include the following:

(ii) list of all persons on the Site who have specific responsibilities for work health and safety including their names, positions and the aspects of work health and safety for which they are responsible;

(iii) the safety of pedestrians from motor vehicles or plant moving on or near the Site;

(iv) the provision of a level of lighting to allow work or passage without risk to health or safety of persons at the Site;

(v) the provision of means of access to and egress from all places where persons may be required to work;

(vi) the safety of members of the public in relation to risks arising from the construction work at the Site;

(vii) evacuation of persons in the event of an emergency and the provision of first aid and medical assistance to injured persons on Site;

(viii) arrangements for the provision of training;

(ix) arrangements for the co-ordination of health and safety issues of persons undertaking construction work;

(x) arrangements for managing work health and safety incidents when they occur including having the names and contact details of persons available to prevent such incidents or prepare for, respond to and manage the recovery from any work health and safety incidents;

(xi) the Site safety rules and arrangements for ensuring that all persons at the Site are informed of the Site safety rules;

(xii) the hazard identification, the risk assessment and measures for control of risk for each work activity assessed as posing a risk to health or safety;

(xiii) for all high risk construction work (as defined under WHS Law), the Safe Work Method Statements; and

(xiv) procedures for minimising risks to health and safety arising from or associated with:

(A) the commissioning, installation, use, maintenance, repair, transport, decommissioning and disposal of plant;

(B) the use, storage and disposal of substances;

(C) manual handling;

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(D) confined spaces at the Site;

(E) working with or near electrical apparatus;

(F) noise arising from the construction work;

(G) exposure to sun;

(H) falling objects;

(I) working in excavations;

(J) use, handling, storage, labelling, disposal, transport and exposure to hazardous substances including the collection and maintenance of material safety data sheets and a hazardous substances register;

(K) asbestos in buildings or materials;

(L) moving plant; and

(M) the provision and use and maintenance of personal protective equipment;

(xv) procedures for the provision of adequate information, instruction and training to persons who perform construction work including verifying the qualification, competence and licensing of such persons in accordance with any legal requirement for holding a licence or permit to perform the relevant work; and

(xvi) procedures for the provision of adequate supervision to ensure compliance with the Work Health and Safety Management Plan.

(c) The Contractor is required to ensure that the Work Health and Safety Management Plan is available for inspection at the Site throughout the course of the project and that each relevant person at the Site is provided with a copy of the Work Health and Safety Management Plan before they commence work at the Site.

(d) If any part of the Work Health and Safety Management Plan changes throughout the course of the project, the Contractor must provide a copy of the changed parts of the Work Health and Safety Management Plan to the relevant persons working at the Site.

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SCHEDULE F2 TO ANNEXURE PART F – ON BASE REQUIREMENTS

A. ON DEFENCE BASE REQUIREMENTS

1 Base Induction

(d) The Contractor must ensure that the Contractor and the Contractor's Personnel undertake any necessary induction training, processing or security clearances to obtain access to the Site as required by the Department of Defence (**DoD**).

(e) The Principal will advise the Contractor of the contact person within DoD in order for the Contractor to arrange for any necessary induction training, processing or security clearance for Site access.

(f) The Contractor must at its cost comply with any requirements referred to in this clause.

2 Safe Base Alert State System

(g) Nothing that the Contractor is or may be required to do under this clause 2 will derogate from, or otherwise limit, the Contractor's other obligations under this Contract.

(h) The Contractor must be, and must ensure that the Contractor's Personnel are fully familiar with the requirements of the SAFE BASE Alert State System as amended from time to time available at the web site: http://www.defence.gov.au/dpe/pac/DWRM/DW_07_08_02_safebase.htm; (**SAFE BASE**).

(i) The Contractor must attend, and must arrange for the Contractor's Personnel to attend, a security briefing as requested by the Principal from time to time.

(j) In carrying out the work under the Contract, the Contractor must, and must ensure that the Contractor's Personnel comply with the requirements of SAFE BASE:

(i) subject to subparagraph (ii), at level **CHARLIE**; and

(ii) at any alternative level (or individual measure from a higher alert state to meet a specific threat or threats) applicable to the Site from time to time.

(k) Where agreed in writing, the Principal will pay the Contractor the extra costs (if any) reasonably incurred by the Contractor which arise directly from a change to the SAFE BASE level or individual measure (if it involves a variation) in accordance with clause 2(d), as determined by the Principal.

(l) The Contractor's entitlement (if any) under clause 2(e) will be a limitation on the Principal's liability to the Contractor arising out of, or in any way in connection with:

(i) the Principal's direction; or

(ii) the application of the alternative level or individual measure of SAFE BASE to the work under the Contract under clause 2(d)(ii),

and the Contractor will not be entitled to make, nor will the Principal be liable upon, any Claim in these circumstances other than for the amount (if any) which is payable by the Principal under clause 2(e).

(m) The Contractor must, and must ensure that the Contractor's Personnel participate in a rehearsal of SAFE BASE as directed by the Principal from time to time.

3 DoD Directions

Whilst performing work under the Contract on a DoD base, the Contractor must (and must ensure the Contractor's Personnel) comply with DoD's directions from time to time, whether relating to the work under the Contract, the DoD base or the Contractor or the Contractor's Personnel's presence on Site and this requirement is deemed to be included within the scope of the work under the Contract and within the Contract Sum.

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4 Novation

The Principal may at any time and at its sole discretion novate this Contract to the DoD without the consent of the Contractor. For the purpose of giving effect to this Clause, the Contractor hereby irrevocably and unconditionally appoints the Principal as its agent and attorney, and the Principal accepts such appointments, to sign any document or documents for and on behalf of the Contractor that may reasonably be required to effect such novation of this Contract, including without limitation a novation agreement without seeking any further instructions or consent from the Contractor.

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ANNEXURE PART G
SPECIAL CONDITIONS

(Not Used)

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ANNEXURE PART H
ADDITIONAL CLAUSES SPECIFIC TO STATES AND TERRITORIES

(Clause 60)

Schedules Index to Annexure Part H – Additional Clauses specific to States and Territories
Schedule H2 to Annexure Part H – Australian Capital Territory

SCHEDULE H2 TO ANNEXURE PART H – AUSTRALIAN CAPITAL TERRITORY

Where the work under the Contract is being performed in the Australian Capital Territory, the following sections are additional to the General Conditions of Contract:

1 CONTRACTOR'S LICENCE

The Contractor warrants that it has, and will hold, a valid licence when doing the work under the Contract, to the extent that it is required under the *Building Act 2004* (ACT).

2 COMPLIANCE WITH LEGISLATION

The Contractor warrants that it will comply with the requirements of the *Building Act 2004* (ACT) and *Construction Occupations (Licensing) Act 2004* (ACT) to the extent that it applies to the Works.

3. CONTRACTUAL WARRANTIES COVENANT FOR THE Australian Capital Territory

a. Contractual obligations akin to ACT Building Act Warranties

The Contractor warrants in respect to work under the Contract that is residential building work that:

(a) the work under the Contract has been or will be carried out in accordance with the *Building Act 2004* (ACT) requirements as if they were restated herein;

(b) the work under the Contract has been or will be carried out in a proper and skilful way and:

  (i) in accordance with the approved plans; or

  (ii) if the work under the Contract involves or involved handling asbestos or disturbing friable asbestos—in accordance with approved plans that comply with the *Building Act 2004* (ACT) provisions in relation to asbestos;

(c) good and proper materials for the work under the Contract have been or will be used in carrying out the work under the Contract;

(d) if the work under the Contract has not been completed, and the Contract does not state a date by which, or a period within which, the work under the Contract is to be completed (e.g. a Date for Practical Completion)that the work under the Contract will be carried out with reasonable promptness;

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(e) and acknowledges ;

i. that the Principal has expressly made known to the Contractor, or an employee or agent of the Contractor, the particular purpose for which the work is required, and the result that the owner desires to be achieved by the work under the Contract;

ii. this shows (and the Contractor acknowledges) that the owner/Principal is relying on the Contractor's skill and judgment;

iii. that the work under the Contract and any material used in carrying out the work under the Contract is or will be reasonably fit for the purpose or of such a nature and quality that they might reasonably be expected to achieve the result;

(f) and; the above warranties apply for :

i. A period of 2 years after the Date of Practical Completion , for non-structural elements of a building or buildings which comprises or which is part of the works under the Contract;

ii. a period of 6 years from the Date of Practical Completion for structural elements of such a building or buildings:

a. being a load –bearing component of the building (whether internal or external) that is essential to the stability of the building or part of it ; or

b. a component (including weatherproofing) forming part of the external walls or roof of the building.

3.2 Subsequent Purchasers benefit from above Warranties

The Contractor further agrees that the warranties in 3.1 above:

i. Are for the benefit of the Principal (or the Department of Defence) and for the benefit of any subsequent purchaser or successors in title (being relevant assignees/assigns) of the relevant land ("**Purchaser(s)**") and may be enforced by the Purchasers against the Contractor, notwithstanding that the Purchasers are not a party to this Contract ;

ii. Represent covenants subject to and for the purposes of Section 109-110 of the Land Titles Act 1925 (ACT) which can be enforced by the Purchaser(s) ;

iii. By way of further assurance for the benefit of the Purchaser(s) the Contractor covenants that :

A. The Principal may, without further notice, but in writing assign its rights under the Warranties to the Purchaser(s), and upon such assignment which will be as effective as if a novation of these rights was signed by the Purchasers, Contractor and the Principal;

B. The Contractor agrees not to and irrevocably waives its rights to raise or utilise any defence or claim to strike out the effect of these provisions in this Schedule H 2 for the benefit of the Purchaser, for any reasons including that the Purchaser(s) is not a party to this Contract;

C. The Principal, upon so declaring to the Purchasers in writing at any time, holds the benefit of these Warranties for the Purchaser on trust for the Purchaser (on any conditions agreed between the Purchasers and the Principal which are not inconsistent with the above provisions;

D. the Contractor will upon request by the Principal sign a document or deed that reflects the Purchaser(s) right to enforce these Warranties as if the Purchaser was a party to them.

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4. CONTRACTOR'S STATEMENT

Where the work under the Contract is being performed in the Australian Capital Territory, the following Contractor's Statement constitutes the 'Contractor's Statement' referred to in the General Conditions of Contract:

CONTRACTOR'S STATEMENT

Contractor: _____ ABN: _____

(Business name)

of _____

(Address of contractor)

has entered into a contract with _____Defence Housing Australia_____ (Note 1)

(Business name of principal)

ABN: ___72 968 504 934__ For work between: / / and / /

Date Date

and/or Payment Claim Details: _____ (Note 2)

Nature of contract work: _____ _____ (Note 3)

DECLARATION

I, _____ ☐ a Director of / ☐ a person authorised by the contractor on whose behalf this declaration is made, hereby declare that I am in a position to know the truth of the matters which are contained in this Contractor's Statement and declare to the best of my knowledge and belief that the abovementioned contractor either:

☐ not required by the *Workers Compensation Act 1951* (ACT) to hold workers compensation insurance (Note 4).

OR

☐ has either employed or engaged workers during the period of the contract and has and will maintain in force valid workers compensation insurance, policy

(*Policy Number*) held with

_____as indicated on the attached Certificate

(*Insurance Company*)

of Currency dated: / / , in respect of work done in connection with the contract, during any period of the contract and has paid all workers compensation insurance premiums payable in connection with the contract (Note 5).

☐ Is ☐ Is not also a principal contractor in connection with the work under contract (Note 6).

☐ Has ☐ Has not been given a written statement by subcontractors in connection with the work.

☐ Is ☐ Is not required to be registered as an employer under the Payroll Tax Act 2011 (ACT)

_____

(*Pay-roll tax client No.*)

☐ Has paid all pay-roll tax due in respect of employees who performed the work for the principal, as required at the date of this statement (Note 7).

☐ Has paid all remuneration payable to relevant employees, for work done under the contract at the date of this statement (Note 8).

Signature _____ Full Name _____

(*please print*)

Position/Title _____ Dated : / / (Note 9)

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NOTES

1 For the purpose of this statement, a principal is a person (or other legal entity), who has entered into a contract with another person (or other legal entity), referred to as the contractor, and employees/workers of that contractor will perform the work under contract. The work must be connected to the business undertaking of the principal.

2 Payment claim details – Where a subcontractor has entered into a payment schedule with a principal they must identify the period or payment to which the statement applies.

3 An accurate description of the work covered by the contract must be included.

4 In completing the statement, a contractor declares that they are not required to hold workers compensation insurance in accordance with the *Workers Compensation Act 1951* (ACT) and under laws.

5 In completing the statement, a contractor declares that workers compensation premiums payable up to and including the date(s) on the statement have been paid, and all premiums owing during the term of the contract will be paid.

6 It is important to note that a business could be both a contractor and a principal contractor, if a business 'in turn' engages contractors to carry out work. If your business falls within this category you should also obtain statements from your subcontractors.

7 In completing the statement, a contractor declares that all pay-roll tax payable relating to work undertaken as part of the contract has been paid.

8 In completing the statement, a contractor declares that all remuneration payable has been paid.

9 Failure to complete this statement may result in the principal withholding any payment due to the contractor. Any penalty for late payment under the contract does not apply to any payment withheld under this subsection. Contractors may wish to keep a copy of the statement for their own records.

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ANNEXURE PART I
FORMS AND DOCUMENTS

Schedules Index to Annexure Part I – Forms and Documents

Schedule I1 to Annexure Part I – Approved Form of Unconditional Undertaking
Schedule I2 to Annexure Part I – Deed of novation for Consultants
Schedule I3 to Annexure Part I – Form of Parent Company Guarantee
Schedule I4 to Annexure Part I – Form of Statutory Declaration
Schedule I5 to Annexure Part I – Form of Subcontractor Warranty
Schedule I6 to Annexure Part I – Preliminary Report

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SCHEDULE I1 TO ANNEXURE PART I – APPROVED FORM OF UNCONDITIONAL UNDERTAKING

(Clause 5.3)

At the request of ..... ACN ..... ("the Contractor") and in consideration of ..... ACN ..... ("the Principal") accepting this undertaking in respect of the contract for .....
.....("the Contract")
..... ACN ..... ("the Financial Institution")
unconditionally undertakes to pay on demand any sum or sums which may from time to time be demanded by the Principal to a maximum aggregate sum of $.....
(.....) ("Sum").
The undertaking will come into full force and effect from the date of this undertaking and is to continue until notification has been received from the Principal that this undertaking is no longer required by the Principal or until this undertaking is returned to the Financial Institution or until payment to the Principal by the Financial Institution of the whole of the Sum.
This undertaking and the obligations of the Financial Institution under this undertaking are not released, discharged or otherwise affected by anything which, but for this provision, might have that effect including:

- any variation (with or without the knowledge or consent of the Financial Institution) to any provisions of the Contract or the works or services required to be performed by the Contractor under the Contract, or in any acts or things to be performed under or in connection with the Contract; or
- any breach of the Contract by the Contractor or the Principal.

Should the Financial Institution be notified in writing, purporting to be signed by or on behalf of the Principal that the Principal desires payment to be made of the whole or any part or parts of the Sum, it is unconditionally agreed that the Financial Institution will make the payment or payments to the Principal forthwith without reference to the Contractor and notwithstanding any notice given by the Contractor not to pay same.
The Sum secured by this undertaking will be automatically reduced by any payment made by the Financial Institution to the Principal under this undertaking.
Provided always that the Financial Institution may at any time without being required so to do pay to the Principal the Sum less any amount or amounts it may previously have paid under this undertaking and thereupon the liability of the Financial Institution hereunder shall immediately cease.

This undertaking is governed by and interpreted in accordance with the laws of ***[insert]*** and each party submits to the exclusive jurisdiction of the courts of ***[insert]*** in connection with matters arising out of or in connection with this undertaking.
Executed as a deed poll

DATED at ..... this ..... day of .....20.....

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SCHEDULE I2 TO ANNEXURE PART I – DEED OF NOVATION FOR CONSULTANTS

(Clause 10)

This deed made the ..... day of ..... 20..... between
..... ("Principal") of
.....ACN ..... and
and..... ("the Contractor") of
.....ACN .....
and..... ("the Consultant") of
.....ACN .....
witness that -

INTRODUCTION

A The Principal and the Contractor have entered into the Contract.

B Pursuant to the Contract the Contractor is to complete the design and carry out the construction of the Works.

C The Principal and the Consultant have entered into the Consultant Agreement for the provision of the Services in connection with the Works.

D The Consultant has carried out work for the Principal under the Consultant Agreement in relation to the Works.

E The parties have agreed to the novation of the Consultant Agreement in accordance with and upon the terms and conditions of this deed.

OPERATIVE PROVISIONS:

1 General

1.1 Definitions

In this deed unless otherwise defined or the context otherwise requires the following terms have the meanings indicated:

(a) 'Consultant' means the party named as such in Item 3 of the schedule to this deed;

(b) 'Consultant Agreement' means the agreement between the Principal and the Consultant referred to in Item 4 of the schedule to this deed;

(c) 'Contractor' means the party named as such in Item 2 of the schedule to this deed;

(d) 'Contract' means the agreement between the Principal and the Contractor for the design and construction of the Works;

(e) 'Documents' means all material stored by any means and produced or used by the Consultant relevant to the performance by the Consultant of the Services including drawings and specifications, sketches, plans, designs, estimates, calculations, reports, models, computer source codes, articles, equipment, information, files and data;

(f) 'Intellectual Property Rights' means all current and future intellectual and industrial property rights and interests throughout the world, whether registered or unregistered, including:

(i) patents, trade marks (including goodwill in those marks), domain names, design rights, copyright, circuit layout rights, trade secrets, know-how and the right to confidentiality;

(ii) applications for, or right to apply for registration of, any of them;

(iii) rights under licences and consents in relation to any of them; and

(iv) other forms of protection of a similar nature or having equivalent or similar effect to any of them;

(v) includes all copyright, patents and all rights in relation to inventions, registered and unregistered trademarks (including service marks) and registered designs;

(g) 'Novated Consultant Agreement' means the agreement between the Contractor and the Consultant which results from novation of the Consultant Agreement by virtue of the execution of this deed;

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(h) 'Principal' means the party named as such in Item 1 of the schedule to this deed;

(i) 'Principal's Project Requirements' means the Principal's Project Requirements as defined in the Contract;

(j) 'Services' means the work carried out by the Consultant in relation to the Works including work carried out pursuant to the Consultant Agreement prior to the date of this deed and work carried out by the Consultant directly for the Contractor subsequent to the date of this deed; and

(k) 'Works' means the Works as defined in the Contract.

1.2 General Interpretation

In this deed, unless the context otherwise requires:

(a) unless otherwise defined in this deed, terms defined in the Contract have the same meaning as they do in the Contract;

(b) unless otherwise defined in this deed, terms defined in the Consultant Agreement have the same meaning as they do in the Consultant Agreement;

(c) the singular includes the plural and vice versa;

(d) a reference to any gender includes all other genders;

(e) headings and the table of contents are intended for ease of reference only and are not to be taken to affect the interpretation or construction of this deed;

(f) a reference to any obligation includes a liability and a duty and a reference to performance includes observance;

(g) a reference to a recital, clause, schedule, annexure or exhibit is to a recital, clause, schedule, annexure or exhibit of or to this deed;

(h) a reference to any deed or document is to that deed or document (and, where applicable, any of its provisions) as amended, novated, supplemented or replaced from time to time; and

(i) a reference to a person includes a corporation, firm, partnership, association, trust, joint venture, authority, state or government or other legal entity and vice versa.

2 Novation

As from the date of this deed:

(a) the Consultant Agreement will be novated from the Principal to the Contractor and will take effect:

(i) as the Novated Consultant Agreement being an agreement between the Contractor and the Consultant; and

(ii) as if the Contractor has been named as the Principal;

(b) the Contractor must punctually perform the obligations of the Principal under the Consultant Agreement as far as they are not, as at the date of this deed, performed, as if the provisions of the Consultant Agreement were incorporated in this deed;

(c) the Consultant must punctually perform the obligations of the Consultant under the Consultant Agreement, as far as they are not performed as at the date of this deed, as if the provisions of the Consultant Agreement were incorporated in this deed; and

(d) the Consultant releases and forever discharges the Principal its servants, officers and agents from the further performance of the Consultant Agreement and from all claims and demands in connection with the Consultant Agreement which the Consultant has (known or unknown, direct or indirect of any nature whatsoever).

3 Consultant's Covenants

The Consultant covenants with the Principal that:

(a) in carrying out the Services that have been carried out as at the date of this deed the Consultant has complied with all of its obligations under the Consultant Agreement;

(b) the Consultant will fully comply with all of its obligations under the Novated Consultant Agreement;

(c) the Consultant will continue to carry out the Services for the Contractor under the Novated Consultant Agreement;

(d) the Consultant will notify the Principal if at any time during the Works and the performance of its Services it believes that:

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(iii) the design for the Works differs materially from the Principal's Project Requirements; or

(iv) having regard to the Principal's Project Requirements the integrity of the Works is or may be compromised in the design development for the Works.

4 Contractor's Warranties and Indemnities

(a) The Contractor warrants to the Principal that:

(i) the Contractor will fully comply with all of its obligations under the Novated Consultant Agreement; and

(ii) it will at all times ensure to the best of its ability that the Consultant will fully comply with all of its obligations under this deed.

(b) The Contractor agrees to indemnify and hold harmless the Principal and its respective officers, employees, agents and representatives from and against all costs and expenses (including all consequential or subsequent loss, expense or damage sustained by the Principal) arising out of or in any way connected with a breach of the Contractor's warranties contained in this deed.

(c) If any loss, damage or expense is caused partly by an act, default or omission of the Principal or the Principal's agents or employees, then any entitlement of the Principal pursuant to any indemnity provided for in this deed shall be reduced proportionally having regard to the direct impact of the act, default or omission.

5 Restriction on Termination of Novated Consultant Agreement

(a) Neither the Consultant nor the Contractor may:

(i) terminate the Novated Consultant Agreement, either at common law or pursuant to the terms of the Novated Consultant Agreement, other than in accordance with this deed; and

(ii) assert that the Novated Consultant Agreement has been brought to an end other than in accordance with this deed.

(b) If either the Consultant or the Contractor attempts or purports to terminate the Novated Consultant Agreement other than in accordance with this deed or if either the Consultant or Contractor asserts that the Novated Consultant Agreement has been brought to an end and this deed has not been complied with in every respect, the Novated Consultant Agreement is not terminated or brought to an end and remains on foot.

(c) Notwithstanding any breach of the Novated Consultant Agreement and any provision in the Novated Consultant Agreement, the Consultant and the Contractor must continue to diligently fulfil each and every one of their respective obligations under the Novated Consultant Agreement until the Novated Consultant Agreement has been brought to an end pursuant to this deed.

6 Termination of Novated Consultant Agreement

(a) If either the Consultant or the Contractor desires to terminate the Novated Consultant Agreement or assert that the Novated Consultant Agreement has been brought to an end the party so desiring must give a notice in writing to the Principal stating:

(i) that the notice is a notice under this clause of this deed;

(ii) that the party desires to terminate the Novated Consultant Agreement or assert that the Novated Consultant Agreement has been brought to an end;

(iii) the grounds upon which the party relies upon to terminate the Novated Consultant Agreement;

(iv) details of the events, acts or omission that the party relies upon to establish the grounds referred to in the preceding paragraph; and

(v) the clause or clauses or term or terms of the Novated Consultant Agreement, whether express or implied, which the party asserts have been breached.

(b) Following the delivery of a notice under the preceding clause the party delivering the notice must not:

(i) terminate the Novated Consultant Agreement, either at common law or pursuant to the terms of the Novated Consultant Agreement; or

(ii) assert that the Novated Consultant Agreement has been brought to an end,

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unless and until the Principal has consented to the party taking the relevant step.

(c) The consent of the Principal may be subject to any conditions that the Principal considers appropriate, in the Principal's sole and unfettered discretion. If the consent is subject to conditions the consent is not effective until all conditions have been fully met.

(d) If the Novated Consultant Agreement is terminated or expires, the Consultant irrevocably and unconditionally grants to the Principal an exclusive, unconditional and perpetual licence to use, reproduce and modify the Documents including any Intellectual Property Rights in the Documents produced, prepared or submitted by the Consultant and any of its employees or sub-consultants, including copyright in the Documents.

7 Termination of the Contract – Novation Notice

(a) If the Contract is terminated for any reason the Principal may serve a Novation Notice upon the Consultant.

(b) The Principal must serve a Novation Notice within 28 days of the termination of the Contract.

(c) In giving a Novation Notice the Principal may nominate a third party to which the Novated Consultant Agreement will be novated in place of the Principal.

(d) If, in giving a Novation Notice, the Principal does not nominate a third party to which the Novated Consultant Agreement will be novated in place of the Principal, the Principal may at any subsequent time give a further notice in which the Principal does nominate a third party to which the Novated Consultant Agreement will then be novated in place of the Principal.

(e) If the Principal gives the Consultant a Novation Notice then, as from the date of the notice:

(i) the third party or the Principal as the case may be will punctually perform the obligations of the Contractor under the Novated Consultant Agreement as far as they are not, as at the date of the Novation Notice, performed, as if the provisions of the Novated Consultant Agreement were incorporated in this deed;

(ii) the Consultant will punctually perform the obligations of the Consultant under the Novated Consultant Agreement, as far as they are not performed as at the date of the Novation Notice, as if the provisions of the Novated Consultant Agreement were incorporated in this deed; and

(iii) the Novated Consultant Agreement will take effect:

(A) as an agreement between the Principal and the Consultant; and

(B) as if the Principal had been named as the Contractor.

(f) Notwithstanding any provision in this deed the Principal will not, following the service of a Novation Notice, become liable to the Consultant in any way in relation to:

(i) any failure of the Contractor to fulfil any obligation which it owed to the Consultant prior to the date of the Novation Notice;

(ii) any act, default or omission of the Contractor irrespective of the date of that act, default or omission; or

(iii) any claim of the Consultant where the act, default, omission or event that gives rise to the claim occurred prior to the date of the Novation Notice.

8 Principal's Rights

The rights of the Principal pursuant to:

(a) this deed are in addition to and do not derogate from any other rights the Principal may have; and

(b) any clause of this deed are cumulative and the rights arising under one clause do not derogate from rights arising under any other clause.

9 Assignment by Principal

The Principal may assign its interest in this deed at any time without notice to or consent of the Consultant.

10 Notices

(a) A notice required or permitted to be given by one party to another under this deed must be in writing, addressed to the other party and:

(i) delivered to that party's address;

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(ii) sent by registered mail to that party's address; or

(iii) sent by email.

(b) A notice given to a party in accordance with clause 10(a) is treated as having been given and received:

(i) if delivered to a party's address, on the day of delivery if delivered before 4.00pm on a Business Day, otherwise on the next Business Day; or

(ii) if sent by pre-paid mail, 3 days after the date of posting; or

(iii) if sent by email, when the email has been recorded as sent in the sender's email records provided that where an "out of office" or "delivery notification failure" reply or similar response is delivered to the computer from which the email was sent, the email will not be taken to be received and the sender must use an alternative method of sending the notice in accordance with this clause 10.

(c) For the purpose of this clause the address of a party is the address set out in the Consultant Agreement, the Contract or the address which that party notifies to the other party in writing.

11 Waiver

A failure of a party at any time to require full or part performance of any obligations under this deed will not affect in any way the rights of that party to require that performance subsequently.

12 Governing Law

The laws applying in WA govern this deed. Each party irrevocably and unconditionally submits to the non-exclusive jurisdiction of the Courts of WA and Courts entitled to hear appeals from those Courts.

13 Further Assurances

Each party to this deed must do or cause to be done anything necessary or desirable to give effect to this deed, and will refrain from doing anything that might prevent full effect being given to this deed.

14 Counterparts

This deed may be executed in any number of counterparts. All counterparts taken together will be deemed to constitute the one document.

15 Severability

(a) The parties agree that a construction of this deed which results in all provisions being enforceable is to be preferred to a construction which does not so result.

(b) If, despite the application of the preceding paragraph, a provision of this deed is illegal or unenforceable then (subject to any application altering the basic nature of this deed or is contrary to public policy):

(i) if the provision would not be illegal or unenforceable if a word or words were omitted, that word or those words are severed; and

(ii) in any other case, the whole provision is severed,

and the remainder of this deed continues to have full force and effect.

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EXECUTED as a deed.

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

....
Director/Secretary Director

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

....
Director/Secretary Director

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

....
Director/Secretary Director

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JH

SCHEDULE I3 TO ANNEXURE PART I – FORM OF PARENT COMPANY GUARANTEE

(Clause 5.11)

This deed made the ..... day of ..... 20..... between
..... ("Principal") of
.....ACN ..... and
and Proex Building Group Pty Ltd ("the Contractor") of
4.09/50 Eastlake Parade Kingston ACT ACN 109570863
and Proex Holdings Pty Ltd ("the Guarantor") of
4.09/50 Eastlake Parade Kingston ACT 2604 ACN 645 164 941
witnesses that –

INTRODUCTION

A The Principal, at the request of the Guarantor, has agreed to enter into the Principal Agreement.

B It is a condition of the Principal Agreement that the Guarantor grants the guarantee and indemnities in this deed.

1 Definitions and interpretation

1.1 Definitions

The meanings of the terms used in this deed are set out below.

(n) 'Additional Amount' has the meaning given in clause 7.2.

(o) 'Authorisation' means any approval, authorisation, code of conduct, government policy, consent, exemption, filing, licence, notarisation, permit, registration, waiver and conditions attaching to any of them (as applicable) by any Authority, and includes any renewal of, or variation to, any of them.

(p) 'Authority' means any government or governmental, administrative, monetary, fiscal or judicial body, department, commission, authority, tribunal, agency or entity in any part of the world.

(q) 'Business Day' means a day other than a Saturday or Sunday or a day that is partly or wholly observed as a public holiday in the capital city of the Relevant Jurisdiction.

(r) 'Collateral Security' means any present or future Encumbrance, Guarantee or other document or agreement created or entered into by the Guarantor, the Contractor or any other person as security for, or to credit enhance, the payment of any of the Guaranteed Moneys.

(s) 'Contractor' has the meaning given in item 3 of Schedule 1.

(t) 'Default Interest Rate' has the meaning given in item 5 of Schedule 1.

(u) 'Dollars, A$ and $' means the lawful currency of the Commonwealth of Australia.

(v) 'Encumbrance' means an interest or power:

(i) reserved in or over an interest in any asset including any retention of title; or

(ii) created or otherwise arising in or over any interest in any asset under a bill of sale, mortgage, charge, lien, pledge, trust or power,

by way of, or having similar commercial effect to, security for the payment of a debt, any other monetary obligation or the performance of any other obligation, and includes any agreement to grant or create any of the above.

(w) 'GST' means the goods and services tax imposed under the GST Law.

(x) 'GST Law' has the same meaning as in A New Tax System (Goods and Services Tax) Act 1999 (Cth).

(y) 'Guarantee' means any guarantee, suretyship, letter of credit, letter of comfort or any other obligation:

(i) to provide funds (whether by the advance or payment of money, the purchase of or subscription for shares or other securities, the purchase of assets or services, or otherwise) for the payment or discharge of;

(ii) to indemnify any person against the consequences of default in the payment of; or

(iii) to be responsible for,

any debt or monetary liability of another person or the assumption of any responsibility or obligation in respect of the insolvency or the financial condition of any other person but excludes this deed.

(z) 'Guaranteed Moneys' means all debts and monetary liabilities (whether actual, contingent or otherwise) which the Contractor (whether alone or with any other person) is, or at any time becomes, liable to pay to, or for the account of, the Principal [on any account/ under or in relation to the Principal Agreement] including by way of interest, fees, costs, indemnities, charges, Taxes or damages (whether for breach of contract or tort or incurred on any other ground), losses or on any other account.

(aa) 'Guaranteed Obligations' means the liabilities and obligations (whether present or future, ascertained or unascertained, or actual, prospective, contingent or otherwise) of the Contractor to the Principal under or in relation to the Principal Agreement or any other document or agreement, but excluding the Guaranteed Moneys.

(bb) 'Guarantor' has the meaning given in item 1 of Schedule 1.

(cc) 'Indemnified Party' has the meaning given in clause 12.8.

(dd) 'Notice' has the meaning given in clause 11.1.

(ee) 'Officer' means:

(i) in relation to the Guarantor, a director or a secretary or a person notified to the Principal to be an authorised officer, of the Guarantor; and

(ii) in relation to the Principal, a director or a secretary or any other person appointed by the Principal to act as its authorised officer for the purposes of this deed

(ff) 'Payment Currency' means the currency in which a payment is actually made.

(gg) 'Power' means any right, power, authority, discretion or remedy conferred on the Principal by this deed or any applicable law.

(hh) 'Principal' has the meaning given in item 2 of Schedule 1.

(ii) 'Principal Agreement' has the meaning given in item 4 of Schedule 1.

(jj) 'Project Document' means:

(i) this deed;

(ii) the Collateral Security;

(iii) the Principal Agreement; or

(iv) any agreement or document entered into or signed under this deed, the Collateral Security or the Principal Agreement.

(kk) 'Relevant Currency' means the currency in which a payment is required to be made under the Principal Agreement and, if not expressly stated to be another currency, is Dollars.

(ll) 'Relevant Jurisdiction' has the meaning given in item 6 of Schedule 1.

(mm) 'Same Day Funds' means immediately available and freely transferable funds.

(aa) 'Surety' means a person, other than the Guarantor and the Contractor, who is or may be responsible for any of the Guaranteed Moneys under any present or future Collateral Security or otherwise.

(bb) 'Tax' means any income (including payroll), land, indirect and other taxes, GST, excise, levies, imposts, deductions, charges, duties, compulsory loans or withholdings, financial institutions duty, debits tax or other taxes whether incurred by, payable by return or passed on to another person and includes any interest, penalties, charges, fees, fines or other amounts imposed in respect of any of the above.

1.2 Interpretation

(a) In this deed, unless expressly stated otherwise:

(i) the singular includes the plural and the plural includes the singular;

(ii) words of any gender include all genders;

(iii) other parts of speech and grammatical forms of a word or phrase defined in this deed have a corresponding meaning;

(iv) an expression importing a person includes any company, partnership, joint venture, association, corporation or other body corporate and any Authority as well as an individual;

(v) a reference to anything (including any right) includes any part of that thing, but nothing in this clause 1.2(a)(v) implies that performance of part of an obligation constitutes performance of the entire obligation;

(vi) a reference to a part, clause, party, annexure, attachment, exhibit or schedule is a reference to a part and clause of, and a party, annexure, attachment, exhibit and schedule to, this deed;

(vii) a reference to any legislation includes all delegated legislation made under it and amendments, consolidations, replacements or re-enactments of any of them;

(viii) a reference to a document includes all amendments or supplements to, or replacements or novations of, that document;

(ix) a reference to a party to a document includes that party's successors and permitted assignees and that party's employees, agents, consultants and contractors;

(x) a promise on the part of 2 or more persons binds them jointly and severally;

(xi) a reference to an agreement other than this deed includes a deed and any legally enforceable undertaking, agreement, arrangement or understanding whether or not in writing;

(xii) a reference to an asset includes property of any nature, including a business, right, revenue and benefit;

(xiii) headings are for convenience only and do not affect the interpretation of this deed; and

(xiv) no provision of this deed will be construed adversely to a party because that party was responsible for the preparation of this deed or that provision.

(b) A reference to a body, other than a party to this deed (including an institute, association or Authority), whether statutory or not:

(i) which ceases to exist; or

(ii) whose powers or functions are transferred to another body,

is a reference to the body which replaces it or substantially succeeds to its powers or functions.

(c) Specifying anything in this deed after the words 'includes', 'including' or 'for example' or similar expressions does not limit what else is included.

(d) Where the day on or by which any thing is to be done is not a Business Day, that thing must be done on or by the next Business Day.

(e) Each of the obligations of the Guarantor under this deed is unconditional and irrevocable.

2 Acknowledgement by the Guarantor

(a) The Guarantor acknowledges it has received a copy of the Principal Agreement and understands the terms of the Principal Agreement.

3 Guarantee

3.1 General guarantee

The Guarantor guarantees to the Principal:

(a) the payment of the Guaranteed Moneys; and

(b) the full and complete performance of the Guaranteed Obligations.

3.2 Guarantee payment

(a) If any of the Guaranteed Moneys are not paid when due, the Guarantor must immediately, on demand from the Principal, pay to the Principal the Guaranteed Moneys in the same manner and currency as the Guaranteed Moneys are or were required to be paid.

(b) A demand under clause 3.2(a) may be made at any time and from time to time.

4 Indemnity

4.1 General indemnity

The Guarantor indemnifies the Principal against any claim, action, demand, damage, loss, liability, cost, charge, expense, outgoing or payment that the Principal pays, suffers, incurs, or is liable for in respect of any of the following:

(a) any failure by the Contractor to pay any of the Guaranteed Moneys when due or in the manner and currency in which they were required to be paid;

(b) any failure of the Contractor or the Guarantor or any other person to observe, perform or comply with any of the Guaranteed Obligations;

(c) any fact or circumstance not being as represented or warranted to the Principal by the Contractor or the Guarantor; and

(d) the Principal exercising its Powers consequent upon or arising out of any such failure, fact or circumstance.

4.2 Indemnity for avoidance of Guaranteed Moneys

(a) If any of the Guaranteed Moneys (or moneys that would have been Guaranteed Moneys had they not been irrecoverable) are irrecoverable by the Principal:

(i) from the Contractor; or

(ii) from the Guarantor on the footing of a guarantee,

the Guarantor, as a separate and principal obligation:

(iii) indemnifies the Principal against any loss suffered, paid or incurred by the Principal in relation to the non payment of that money; and

(iv) must pay the Principal an amount equal to that money.

(b) Clause 4.2(a) applies to the Guaranteed Moneys (or moneys that would have been Guaranteed Moneys had they not been irrecoverable) that are or may be irrecoverable irrespective of whether:

(i) the transactions or any of them relating to those moneys are void or illegal or avoided or otherwise unenforceable;

(ii) any matters relating to the Guaranteed Moneys are or should have been within the knowledge of the Principal;

(iii) they are or may be irrecoverable by reason of any event described in clause 10.1; or

(iv) they are or may be irrecoverable by reason of any other fact or circumstance.

4.3 Foreign currency indemnity

(a) If, at any time, the Payment Currency is not the Relevant Currency and the Principal receives or recovers any part of the Guaranteed Moneys or any amount payable by the Guarantor under this deed for any reason including:

(i) any judgment or order of any Authority;

(ii) any breach of the Principal Agreement;

(iii) the liquidation of the Contractor, the Guarantor or any Surety or any proof or claim in that liquidation; or

(iv) any other thing into which the obligations of the Guarantor, Contractor or Surety may have become merged,

the Guarantor indemnifies the Principal against any shortfall between the amount payable in the Relevant Currency and the amount actually received or recovered by the Principal after the Payment Currency is converted into the Relevant Currency in accordance with clause 4.3(b).

(b) The Principal may itself or through its bankers purchase one currency with another, whether or not through an intermediate currency, whether spot or forward, in the manner and amounts and at the times it thinks fit.

4.4 Indemnity payment

The Guarantor must immediately, on demand from the Principal, pay to the Principal all amounts that the Principal states are owing to it or any Indemnified Party under any indemnity under this deed.

5 Payment

5.1 Manner of payment

All payments to the Principal under this deed must be made:

(a) in Same Day Funds;

(b) in the Relevant Currency; and

(c) not later than 11.00am on the date specified in the demand from the Principal,

to the Principal's account specified by the Principal to the Guarantor or in any other manner as the Principal directs from time to time.

5.2 Payments in gross

All payments that the Guarantor is required to make under this deed must be without:

(a) any set-off, counterclaim, condition or legal formality such as protest or notice; or

(b) any deduction or withholding for any Tax or any other reason, unless the Guarantor is required to make a deduction or withholding by applicable law,

and the Guarantor waives all privileges or rights which it may have as a guarantor, including any right to require the Principal to claim payment or to exhaust remedies against the Contractor or any other person.

5.3 Additional payments

If:

(a) the Guarantor is required to make a deduction or withholding in respect of Tax from any payment it is required to make to the Principal under this deed; or

(b) the Principal is required to pay any Tax in respect of any payment it receives from the Guarantor under this deed,

then the Guarantor:

(c) indemnifies the Principal against that Tax; and

(d) must pay to the Principal an additional amount that the Principal determines to be necessary to ensure that the Principal receives when due a net amount (after payment of any Tax in respect of each additional amount) that is equal to the full amount it would have received if a deduction or withholding or payment of Tax had not been made.

5.4 Taxation deduction procedures

If clause 5.3 applies, the Guarantor must pay the amount deducted or withheld to the appropriate Authority as required by law.

5.5 Amounts payable on demand

If any amount payable by the Guarantor under this deed is not expressed to be payable on a specified date, that amount is payable by the Guarantor on demand by the Principal.

6 Representations and warranties

6.1 Representations and warranties

The Guarantor represents and warrants for the benefit of the Principal that:

(a) (**registration**) it is a corporation, registered (or taken to be registered) and validly existing under ***[insert statute or law of the particular jurisdiction]***;

(b) (**corporate power**) it has the corporate power to own its assets and to carry on its business as it is now being conducted;

(c) (**authority**) it has power and authority to enter into and perform its obligations under this deed;

(d) (**authorisations**) it has taken all necessary action to authorise the execution, delivery and performance of this deed;

(e) (**binding obligations**) this deed constitutes its legal, valid and binding obligations and, subject to any necessary stamping and registration, is enforceable in accordance with its terms subject to laws generally affecting creditors' rights and to principles of equity;

(f) (**transaction permitted**) the execution, delivery and performance by it of this deed will not breach, or result in a contravention of:

(i) any law, regulation or Authorisation;

(ii) its constitution or other constituent documents; or

(iii) any Encumbrance or document that is binding upon the Guarantor or any asset of the Guarantor,

and will not result in:

(iv) the creation or imposition of any Encumbrance on any asset of the Guarantor;

(v) the acceleration of the date of payment of any obligation under any agreement that is binding upon the Guarantor or any of its subsidiaries;

(g) (**solvency**) it is not insolvent and will not become insolvent on execution of this deed or by reason of its execution of this deed;

(h) (**not a trustee**) it does not enter into this deed as trustee of any trust or settlement; and

(i) (**commercial benefit**) the entering into and performance by it of its obligations under this deed is for its commercial benefit and is in its commercial interests.

6.2 Reliance by Principal

The Guarantor acknowledges that the Principal has entered into the Principal Agreement in reliance on the representations and warranties given under this deed.

7 Tax, costs and expenses

7.1 Tax

(a) The Guarantor must pay any Tax that is payable in respect of this deed (including in respect of the execution, delivery, performance, release, discharge, amendment, enforcement or attempted enforcement of this deed).

(b) The Guarantor must pay any fine, penalty or other cost in respect of a failure to pay any Tax described in clause 7.1(a) except to the extent that the fine, penalty or other cost is caused by the Principal's failure to lodge moneys received from the Guarantor within 5 Business Days before the due date for lodgement.

(c) The Guarantor indemnifies the Principal against any amount payable under clause 7.1(a) or clause 7.1(b).

7.2 GST

(a) Any reference in this clause 7.2 to a term defined or used in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth) is, unless the context indicates otherwise, a reference to that term as defined or used in that Act.

(b) Unless expressly included, the consideration for any supply under or in connection with this deed does not include GST. To the extent that any supply made under or in connection with this deed is a taxable supply, subject to the receipt of a tax invoice, the recipient must pay, in addition to the consideration provided under this deed for that supply (unless it expressly includes GST) an amount ("**Additional Amount**") equal to the amount of that consideration (or its GST exclusive market value) multiplied by the rate at which GST is imposed in respect of the supply. The recipient must pay the Additional Amount at the same time as the consideration to which it is referable.

(c) If a party is entitled under this deed to be reimbursed or indemnified by another party for a cost or expense incurred in connection with this deed, the reimbursement or indemnity payment must not include any GST component of the cost or expense for which an input tax

credit may be claimed by the party being reimbursed or indemnified, or by its representative member.

8 Interest on overdue amounts

8.1 Payment of interest

The Guarantor must pay interest on any amount due and payable under this deed, but unpaid, at the Default Interest Rate.

8.2 Accrual of interest

The interest payable under clause 8.1 accrues from day to day from and including the due date for payment up to the actual date of payment, before and, as an additional and independent obligation, after any judgment, decree or order into which the liability to pay any amount under this deed becomes merged.

9 Saving provisions

9.1 No merger of security

(a) Nothing in this deed merges, extinguishes, postpones, lessens or otherwise prejudicially affects this deed, any other document or agreement or any Power.

(b) Nothing referred to in clause 9.1(a) in any way prejudicially affects any Power under this deed.

9.2 Exclusion of moratorium

To the extent not excluded by law, a provision of any legislation which at any time directly or indirectly:

(a) lessens or otherwise varies or affects in favour of a Guarantor any of the Guarantor's obligations under or any provision of this deed or any Collateral Security; or

(b) stays, postpones or otherwise prevents or prejudicially affects the exercise by the Principal of any Power,

is negatived and excluded from this deed and any Collateral Security and all relief and protection conferred on any Guarantor by or under that legislation is also negatived and excluded.

9.3 Conflict

Where any right, power, authority, discretion or remedy of the Principal under this deed or any Collateral Security is inconsistent with the powers conferred by applicable law then, to the extent not prohibited by that law, the powers conferred by applicable law are regarded as negatived or varied to the extent of the inconsistency.

9.4 Consent of Principal

(a) Whenever the doing of anything by the Guarantor is dependent upon the consent or approval of the Principal, the Principal may withhold its consent or approval or give it conditionally or unconditionally in its absolute discretion unless expressly stated otherwise in this deed.

(b) Any conditions imposed on the Guarantor by the Principal under clause 9.4(a) must be complied with by the Guarantor.

9.5 Non avoidance

(a) If any payment, conveyance, transfer or other transaction relating to or affecting the Guaranteed Moneys or the Guaranteed Obligations is:

(i) void, voidable or unenforceable in whole or in part; or

(ii) claimed to be void, voidable or unenforceable and that claim is upheld conceded or compromised in whole or in part,

the liability of the Guarantor under this deed and any Power is the same as if:

(iii) that payment, conveyance, transfer or transaction (or the void, voidable or unenforceable part of it); and

(iv) any release, settlement or discharge made in reliance on anything referred to in clause 9.5(a)(iii),

had not been made and the Guarantor must immediately take all action and sign all documents necessary or required by the Principal to restore to the Principal this deed and any Encumbrance held by the Principal immediately before the payment, conveyance, transfer or transaction.

(b) Clause 9.5(a) applies whether or not the Principal knew, or ought to have known, of anything referred to in clause 9.5(a).

9.6 Principal obligation

This deed and each Collateral Security is:

(a) a principal obligation and is not to be treated as ancillary or collateral to any other right or obligation; and

(b) independent of and not in substitution for or affected by any other Collateral Security that the Principal may hold in respect of the Guaranteed Moneys, the Guaranteed Obligations or any obligations of the Guarantor, the Contractor or any other person.

9.7 No obligation to marshal

The Principal is not required to marshal or to enforce or apply under or appropriate, recover or exercise:

(a) any Encumbrance, Guarantee or Collateral Security or other document or agreement held, at any time, by the Principal; or

(b) any money or asset which the Principal, at any time, holds or is entitled to receive.

9.8 Continuing guarantee and indemnities

(a) The guarantee and each indemnity contained in this deed is a continuing obligation of the Guarantor, despite:

(i) any settlement of account; or

(ii) the occurrence of any other thing,

and remains in full force and effect until:

(iii) the Guaranteed Moneys and all other moneys owing, contingently or otherwise, under this deed, have been paid in full;

(iv) the Guaranteed Obligations and all other obligations owing, contingently or otherwise, under this deed, have been performed in full; and

(v) this deed has been finally discharged by the Principal.

(b) The guarantee and each indemnity contained in this deed is an additional, separate and independent obligation of the Guarantor and neither the guarantee nor any indemnity limits the generality of the guarantee or any other indemnity.

(c) The guarantee and each indemnity contained in this deed survives the termination of this deed.

10 Third party provisions

10.1 Unconditional nature of obligations

(a) This deed and the obligations of the Guarantor under this deed are absolute, binding and unconditional in all circumstances and are not released, discharged or otherwise affected by anything that but for this provision might have that effect, including:

(i) the grant to the Contractor, Guarantor, any Surety or any other person of any time, waiver, covenant not to sue or other indulgence;

(ii) the release (including a release as part of any novation) or discharge of the Contractor, Guarantor, any Surety or any other person;

(iii) the cessation of the obligations, in whole or in part, of the Contractor, Guarantor, any Surety or any other person under any document or agreement;

(iv) the liquidation of the Principal or the Contractor, Guarantor, any Surety or any other person;

(v) any arrangement, composition or compromise entered into by the Principal, the Contractor, Guarantor, any Surety or any other person;

(vi) any forbearance or indulgence by the Principal towards the Contractor or the Guarantor whether as to payment, time, performance or otherwise;

(vii) any document or agreement being in whole or in part illegal, void, voidable, avoided, unenforceable or otherwise of limited force or effect;

(viii) any extinguishment, failure, loss, release, discharge, abandonment, impairment, compounding, composition or compromise, in whole or in part, of this deed or any other document or agreement;

(ix) any alteration, amendment, variation, supplement, renewal or replacement of this deed or any other document or agreement;

(x) the moratorium of other suspension of any Power;

(xi) the Principal exercising or enforcing, delaying or refraining from exercising or enforcing, or being not entitled or unable to exercise or enforce, any Power;

(xii) any transaction, agreement or arrangement that may take place with the Principal, the Contractor, Guarantor, any Surety or any other person;

(xiii) any payment to the Principal, including any payment that at the payment date or at any time after the payment date is, in whole or in part, illegal, void, voidable, avoided or unenforceable;

(xiv) the acceptance of the repudiation of, or termination of this deed or any other document or agreement;

(xv) any Guaranteed Moneys being irrecoverable for any reason;

(xvi) any assignment, novation, assumption or transfer of, or other dealing with, any Powers or any other rights or obligations under this deed or any other document or agreement; or

(xvii) any other act, omission, matter or thing whether negligent or not.

(b) Clause 10.1(a) applies irrespective of:

(i) the consent or knowledge or lack of consent or knowledge of the Principal, the Guarantor or any other person of any event described in clause 10.1(a) (and the Guarantor irrevocable waives any duty on the part of the Principal to disclose such information); or

(ii) any rule of law or equity to the contrary.

10.2 No competition

(a) Until the Guaranteed Moneys have been fully paid, the Guaranteed Obligations have been fully performed and this deed has been finally discharged, the Guarantor is not entitled to:

(i) be subrogated to the Principal;

(ii) claim or receive the benefit of any Encumbrance, Guarantee or other document or agreement of which the Principal has the benefit;

(iii) claim or receive the benefit of any moneys held by the Principal;

(iv) claim or receive the benefit of any Power;

(v) except in accordance with clause 10.2(b), either directly or indirectly prove in, claim or receive the benefit of any distribution, dividend or payment arising out of or relating to the liquidation of the Contractor or any Surety; or

(vi) make a claim or exercise or enforce any right, power or remedy (including under an Encumbrance or Guarantee or by way of contribution) against the Contractor or any Surety.

(b) If required by the Principal, the Guarantor must prove in any liquidation of the Contractor or any Surety for all moneys owed to the Guarantor.

(c) All moneys recovered by the Guarantor must be received and held in trust by the Guarantor for the Principal to the extent of the unsatisfied liability of the Guarantor under this deed.

(d) The Guarantor must not do, or seek, attempt or purport to do, any thing referred to in clause 10.2(a).

11 Notices

11.1 Form of notice

A notice or other communication to a party under this deed (**notice**) must be:

(a) in writing and in English;

(b) signed by an Officer of the sender; and

(c) addressed as follows:

(i) if to the Guarantor, as set out in Schedule 1;

(ii) if to the Principal, as set out in Schedule 1,

or a substitute address notified to the sender by the party.

11.2 How notice must be given and when notice is received

(a) A notice must be given by one of the methods set out in the table below.

(b) A notice is regarded as given and received at the time set out in the table below.

(c) However, if this means the notice would be regarded as given and received outside the period between 9.00 am and 5.00 pm (addressee's time) on a Business Day, then the notice will instead be regarded as given and received at 9.00 am (addressee's time) on the following Business Day.

Method of giving notice	**When notice is regarded as given and received**
By hand to the nominated address	When delivered to the nominated address
By pre paid post to the nominated address	At 9.00am (addressee's time) on the second Business Day after the date of posting
By email to the nominated email address	When the email has been recorded as sent in the sender's email records provided that where an "out of office" or "delivery notification failure" reply or similar response is delivered to the computer from which the email was sent, the email will not be taken to be received and the sender must use an alternative method of sending the notice in accordance with this clause 11.2.

12 General

12.1 Costs and expenses

The Guarantor must pay all costs and expenses of the Principal and any employee, Officer, agent or contractor of the Principal in relation to:

(a) the negotiation, preparation, execution, delivery, stamping, registration, completion, variation and discharge of this deed;

(b) the enforcement, protection or waiver, or attempted or contemplated enforcement or protection, of any rights under this deed;

(c) the consent or approval of the Principal given under this deed; and

(d) any enquiry by any Authority involving the Guarantor,

including:

(e) any administration costs of the Principal in connection with the matters referred to in clauses 12.1(b) and 12.1(d); and

(f) any legal costs and expenses and any professional consultant's fees on a full indemnity basis.

12.2 Governing law and jurisdiction

(a) This deed is governed by the laws of the Relevant Jurisdiction.

(b) The parties irrevocably submit to the exclusive jurisdiction of the courts of the Relevant Jurisdiction and courts of appeal from them in respect of any proceedings arising out of or in connection with this deed.

(c) Each party irrevocably and unconditionally waives any:

(i) objection to the venue of any legal process on the basis that the process has been brought in an inconvenient forum; and

(ii) immunity in respect of its obligations under this deed that it may acquire from the jurisdiction of any court or any legal process for any reason including the service of notice, attachment before judgement, attachment in aid of execution or execution.

12.3 Severability and enforceability

(a) Any provision of this deed which is prohibited or unenforceable in any jurisdiction is ineffective as to that jurisdiction to the extent of the prohibition or unenforceability.

(b) This does not invalidate the remaining provisions of this deed nor affect the validity or enforceability of that provision in any other jurisdiction.

12.4 Waivers

(a) No party to this deed may rely on the words or conduct of any other party as a waiver of any right unless the waiver is in writing and signed by the party granting the waiver.

(b) In this clause 12.4:

(i) conduct includes delay in the exercise of a right;

(ii) right means any right arising under or in connection with this deed and includes the right to rely on this clause 12.4; and

(iii) waiver includes an election between rights and remedies, and conduct which might otherwise give rise to an estoppel.

12.5 Entire agreement and no reliance

(a) This deed supersedes all previous agreements in respect of its subject matter and embodies the entire agreement between the parties in respect of its subject matter.

(b) No reliance is to be placed by the Guarantor on any representation, promise or other inducement made or given or alleged to be made or given by the Principal prior to the date of execution of this deed.

12.6 Amendment to this deed

An amendment of any term of this deed must be in writing and signed by the parties.

12.7 Counterparts

This deed may be executed in any number of counterparts.

12.8 Effect of indemnities

(a) In the indemnities contained in clauses 4, 5.3 and 7.1, a reference to 'Principal' includes a reference to:

(i) the Principal;

(ii) each Related Body Corporate of the Principal; and

(iii) the officers, directors and employees of the entities referred to in clauses 12.8(a)(i) and 12.8(a)(ii),

(each an **Indemnified Party**).

(b) The Principal holds the benefit of the indemnities in the clauses identified in clause 12.8(a) for itself and on trust for each other Indemnified Party.

(c) The Principal need not incur any cost or make any payment before enforcing any right of indemnity under clauses 4, 5.3 and 7.1.

12.9 Further assurance

The Guarantor must:

(a) when requested by the Principal, do or cause to be done anything that aids the exercise of any Power including the execution of any document or agreement;

(b) obtain and renew when necessary all Authorisations required under any law or document or agreement:

(i) to enable the Guarantor to perform the obligations of the Guarantor under this deed; or

(ii) for the validity or enforceability of this deed; and

(c) comply with the terms of the Authorisations referred to in clause 12.9(b).

12.10 Assignment

(a) The Principal may assign its rights under this deed without the consent of the Guarantor.

(b) The Guarantor may not assign any of its rights under this deed without the prior written consent of the Principal.

Schedule 1

Document details

Item	Issue	Detail
1	Guarantor	PROJEX HOLDINGS PTY LTD (ACN) 645 164 941
	Address	609/55 EASTLAKE PARADE KINGSTON ACT 2604
	Attention	JOHN GLASS
2	Principal	Defence Housing Australia ABN 72 968 504 934
	Address	***35 Hinder Street, Gungahlin, ACT, 2912***
	Attention	VIET NYUGEN
3	Contractor (Clause 1.1)	PROJEX BUILDING GROUP PTY LTD ACN 109 570 863
4	Principal Agreement (Clause 1.1)	The contract entered into by the Contractor and the Principal entitled for dated
5	Default Interest Rate (Clause 8.1)	At the following interest rate plus 2% as published by the Reserve Bank: • Indicator Lending Rates - F5; and • Lending rates; Large business; Weighted-average rate on credit outstanding; Variable'. See: http://www.rba.gov.au/statistics/tables/index.html#interest-rates In calculating interest due, it is calculated on a simple interest basis determined monthly at the rate relevant to the 15th day of each month.
6	Relevant Jurisdiction (Clause 12.2)	AUSTRALIAN CAPITAL TERRITORY

EXECUTED as a deed.

THE COMMON SEAL of) PROJEX HOLDINGS PTY LTD ACN 645164941
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

.....
John Glass
.....
Director/Secretary

Brad Elton
Director

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

.....

.....
Director/Secretary

Director

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

.....

.....
Director/Secretary

Director

SCHEDULE I4 TO ANNEXURE PART I – FORM OF STATUTORY DECLARATION

(Clause 43.1)

Statutory declaration in the matter of the Design and Construct Contract for ***[insert]*** dated ***[insert]*** 20 ('**Contract**')
between
Defence Housing Australia ABN: 72 968 504 934 ('**Principal**')
and
[insert Contractor name] ABN: ***[insert]*** ('**Contractor**')
Unless otherwise stated, capitalised terms in this statutory declaration have the same meaning given to them in the Contract.
I,

insert full name

of:

insert address

in the state of [***insert state/territory***], [***insert occupation***] do hereby solemnly declare and affirm that, after having made enquiries:

1 I am the representative of [***insert Contractor name***] ***ACN*** [***insert***] in the office bearer capacity of: [***insert position title of declarant***] and I am in the position to know the facts attested to in this declaration.

2 This statutory declaration is made pursuant to clause 43.1 of the Contract in relation to the payment of a payment claim in respect of payment claim no. [***insert***] submitted by the Contractor.

3 All workers who have at any time been engaged by the Contractor have been paid all moneys due and payable to them for the performance of work under the Contract and the supply of materials for use in work under the Contract, with the exception of the workers and the respective amounts listed below: [***insert names and addresses of workers, the amounts owing, and whether in respect of wages, holiday pay, allowances, etc.***]

4 All subcontractors, consultants and suppliers to the Contractor have been paid all moneys due and payable to them for the performance of work under the Contract and the supply of materials for use in work under the Contract, with the exception of the subcontractors, consultants and suppliers and the respective amounts listed below: [***insert names and addresses of subcontractors and suppliers, the amount owing and whether in respect of materials supplied, work performed, etc.***]

5 All amounts which have been included in the calculation of previous payments paid by the Principal to the Contractor have been duly paid by the Contractor to the relevant subcontractors, consultants and suppliers.

6 Other than as set out in this declaration, no fees or wages are due and owing by the Contractor in respect of the work under the Contract for the period to which the payment claim relates.

7 I understand that a person who intentionally makes a false statement in a statutory declaration is guilty of an offence under section 11 of the *Statutory Declarations Act 1959* (Cth), and I believe that the statements in this declaration are true in every particular.

JR

DECLARED at
this [ ] day of [ ] before me:

_____
Signature of authorised witness

_____
Name of authorised witness
(block letters)

_____
Address of authorised witness

Capacity in which authorised witness takes the statutory declaration

Justice of the Peace */ Solicitor of ***[insert]*** holding a current practising certificate under ***[insert]****
* Delete whichever is not applicable

_____
Signature of declarant

JR

SCHEDULE I5 TO ANNEXURE PART I – FORM OF SUBCONTRACTOR WARRANTY

(Clause 9.7)

This deed made the ..... day of ..... 20.....
between
.....
..... ("Warrantor") of
.....
.....ACN ..... and
and.....
..... ("the Principal") of
.....
.....ACN .....
and.....
..... ("the Contractor") of
.....
.....ACN .....

witness that -

INTRODUCTION

A The Warrantor is providing:

(a) equipment or materials ("Goods"); and
(b) works or services ("Services"),
(c) under a Subcontract dated ***[insert]*** (the "Subcontract") in connection with the ***[insert]*** ("Works").

B. The Warrantor has agreed to warrant the Goods and Services to the Principal and Contractor on the terms of this deed.

OPERATIVE PROVISIONS:

1. WARRANTY

The Warrantor warrants to the Principal and the Contractor that:

(a) (**Goods**) the Goods shall:
  (i) be of merchantable quality, free from defects and fit for their purpose (including utility, performance and appearance); and
  (ii) conform to the requirements of the Subcontract; and
(b) (**Services**) the Services shall:
  (i) be provided in a proper and workmanlike manner;
  (ii) be free from defects and fit for their purpose; and
  (iii) conform to the requirements of the Subcontract.

2. RECTIFICATION

The Warrantor agrees that it shall promptly, after notice from the Principal or Contractor requiring it to do so, at its own cost and expense replace, repair or otherwise rectify to the reasonable satisfaction of the Principal any of the Goods or Services which are found by the Principal or the Contractor during the period of ***[insert warranty period]*** from the date of Practical Completion of the Works to:

(a) not comply with the warranty set out in Clause 1 of this deed; or
(b) show deterioration to an extent that, in the opinion of either the Principal or the Contractor, the Goods or Services require replacement, repair or rectification in order to achieve compliance with the warranty set out in Clause 1 of this deed.

3. LIABILITY

The Warrantor shall indemnify the Principal and the Contractor for any loss, expense, cost or damage (including consequential loss or damage) arising from the Goods or Services failing to comply with the warranty set out in Clause 1 of this deed or the Warrantor failing to comply with any of its obligations under this deed.

4. GENERAL

The Warrantor agrees:

(a) (**Interpretation of Warranty**) the warranties in Clause 1 apply to all and every part of the Goods and Services whether supplied or installed by the Warrantor or others;
(b) (**Other Rights Preserved**) this deed does not limit or otherwise prejudice any other rights of the Principal or the Contractor against the Warrantor;
(c) (**Consequential Damages**) despite any limitations (express or implied) under this deed, if:
  (i) any failure of the Goods and Services to comply with the warranties in Clause 1 would be reasonably expected to result in consequential damage to any of the Works; and
  (ii) the Warrantor, after receiving notification of the failure or defects, does not diligently rectify the failure or defect,

JR

(iii) the Warrantor shall be responsible for any consequential damage occurring after the time when the Warrantor should have rectified the Goods and Services;

(d) (**Owner and Contractor Benefit Separately**) each of the warranties and obligations of the Warrantor shall be capable of enforcement independently by each of the Principal and the Contractor and any acts or omissions or waiver by the Principal or the Contractor shall not prejudice the rights of the others;

(e) (**Assignment**) the Principal and the Contractor may assign, novate or otherwise deal with this deed or any of their rights and benefits under it in their absolute discretion and without the Warrantor's consent.

5. INTERPRETATION

If any provision of this deed is legally invalid or unenforceable, it shall be severed or read down to the extent of the invalidity or unenforceability but so as to otherwise maintain as far as possible the full force and effect of this deed.

6. MANUFACTURER'S WARRANTIES

The Warrantor:

(a) (**Provision by Warrantor**) warrants to the Principal and the Contractor that it has annexed to this deed all related product warranties available on products incorporated into the Goods or Services by virtue of the fact that the manufacturer of the product has published the warranty in connection with purchasers and users of the product without regard to specific applications ("Manufacturer's Warranties"); and

(b) (**Effect of Other Warranties**) nothing in the Manufacturer's Warranties shall be taken to limit or otherwise prejudice the Warrantor's warranties or obligations under this deed.

7. GST

The parties agree that:

(a) with any payment of amounts payable under or in connection with this deed including without limitation, by way of indemnity, reimbursement or otherwise, the party paying the amount must also pay any GST in respect of the taxable supply to which the amount relates;

(b) the party receiving the payment will provide a tax invoice; and

(c) the payment of any amount referred to in paragraph (a) which is a reimbursement or indemnification of a cost, expense, loss or liability will exclude any part of the amount for which the other party can claim an input tax credit.

8. RIGHTS OF PRINCIPAL

The entities comprising the Principal shall benefit from rights under this Deed jointly and severally.

The parties have signed, sealed and delivered this deed on the day and year mentioned above.

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

.....
.....

Director/Secretary
Director

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

.....
.....

Director/Secretary
Director

THE COMMON SEAL of)
[ ] was affixed in)
accordance with section 127 of the)
Corporations Act in the presence of:)

.....

.....

Director/Secretary
Director

JR

SCHEDULE I6 TO ANNEXURE PART I - PRELIMINARY REPORT

(Clause 58.4(c))

72

Standards Australia

Standards Australia is an independent company, limited by guarantee, which prepares and publishes most of the voluntary technical and commercial standards used in Australia. These standards are developed through an open process of consultation and consensus, in which all interested parties are invited to participate. Through a Memorandum of Understanding with the Commonwealth government, Standards Australia is recognized as Australia's peak national standards body.

Australian Standards

Australian Standards are prepared by committees of experts from industry, governments, consumers and other relevant sectors. The requirements or recommendations contained in published Standards are a consensus of the views of representative interests and also take account of comments received from other sources. They reflect the latest scientific and industry experience. Australian Standards are kept under continuous review after publication and are updated regularly to take account of changing technology.

International Involvement

Standards Australia is responsible for ensuring that the Australian viewpoint is considered in the formulation of international Standards and that the latest international experience is incorporated in national Standards. This role is vital in assisting local industry to compete in international markets. Standards Australia represents Australia at both ISO (The International Organization for Standardization) and the International Electrotechnical Commission (IEC).

Electronic Standards

All Australian Standards are available in electronic editions, either downloaded individually from our Web site, or via on-line and CD ROM subscription services. For more information phone 1300 65 46 46 or visit us at
www.standards.com.au

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Internet www.standards.com.au

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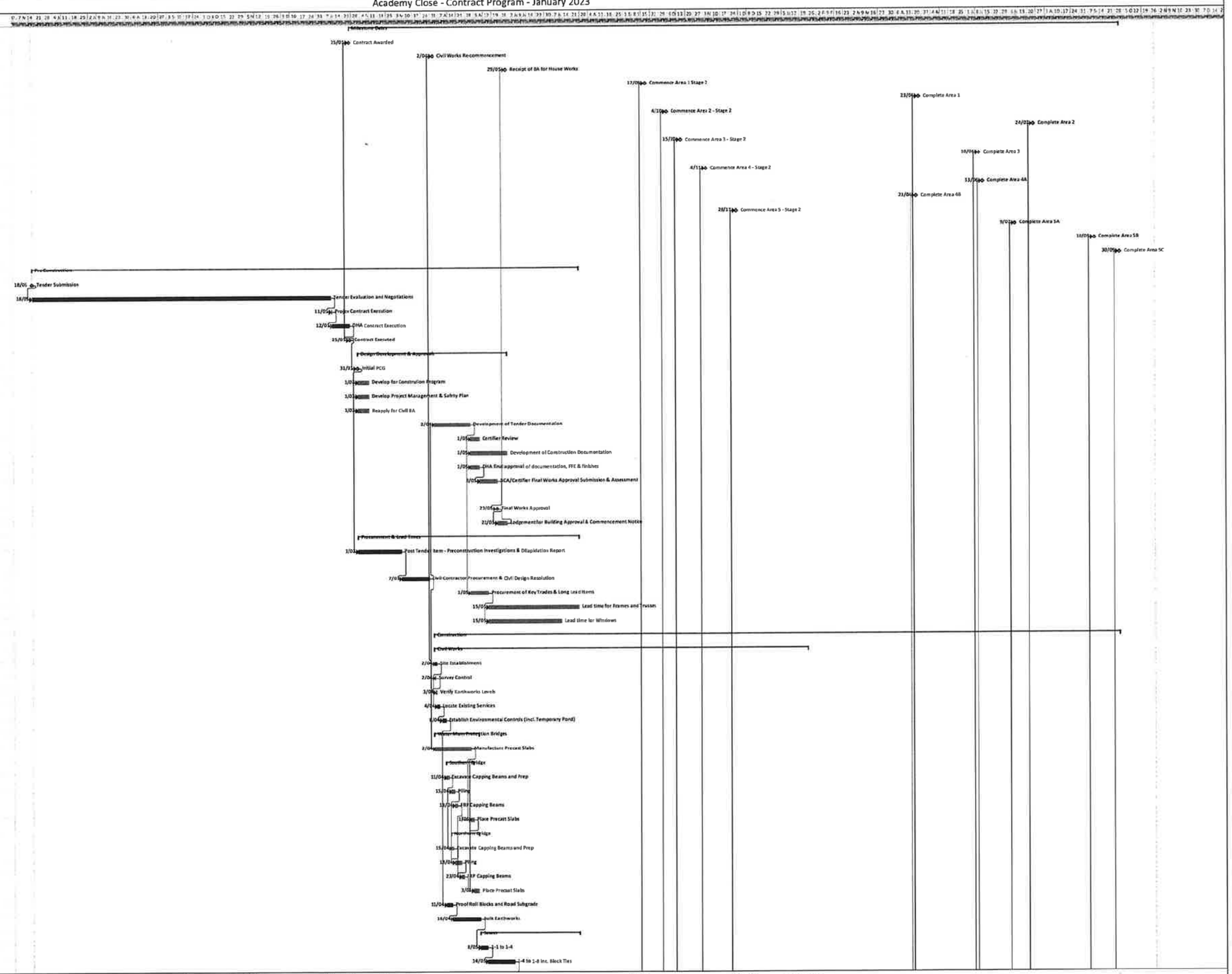
Academy Close - Contract Program - January 2023

ID	Task Name	Duration	Start	Finish
1	**Milestone Dates**	420 days	25 Jan	30 Sep
2	Contract Awarded	0 days	25 Jan	25 Jan
3	Civil Works Re-commencement	0 days	2 Apr	2 Apr
4	Receipt of BA for House Works	0 days	29 May	29 May
5	Commence Area 1 Stage 2	0 days	17 Sep	17 Sep
6	Complete Area 1	0 days	23 Apr	23 Apr
7	Commence Area 2 - Stage 2	0 days	4 Oct	4 Oct
8	Complete Area 2	0 days	24 Jul	24 Jul
9	Commence Area 3 - Stage 2	0 days	15 Oct	15 Oct
10	Complete Area 3	0 days	10 Jun	10 Jun
11	Commence Area 4 - Stage 2	0 days	4 Nov	4 Nov
12	Complete Area 4A	0 days	13 Jun	13 Jun
13	Complete Area 4B	0 days	21 Apr	21 Apr
14	Commence Area 5 - Stage 2	0 days	28 Nov	28 Nov
15	Complete Area 5A	0 days	9 Jul	9 Jul
16	Complete Area 5B	0 days	10 Sep	10 Sep
17	Complete Area 5C	0 days	30 Sep	30 Sep
18	Pre Construction	289 days	18 May	25 Jul
19	Tender Submission	0 days	18 May	18 May
20	Tender Evaluation and Negotiations	155 days	18 May	10 Jan
21	Project Contract Execution	1 day	11 Jan	11 Jan
22	**DHA Contract Execution**	10 days	12 Jan	25 Jan
23	Contract Executed	0 days	25 Jan	25 Jan
24	Design Development & Approvals	80 days	31 Jan	29 May
25	Initial PCG	0 days	31 Jan	31 Jan
26	Develop for Construction Program	7 days	1 Feb	9 Feb
27	Develop Project Management & Safety Plan	7 days	1 Feb	9 Feb
28	Reapply for Civil BA	7 days	1 Feb	9 Feb
29	Development of Tender Documentation	20 days	2 Apr	30 Apr
30	Certifier Review	5 days	1 May	7 May
31	Development of Construction Documentation	20 days	1 May	29 May
32	DHA final approval of documentation, FFE & finishes	5 days	1 May	7 May
33	NCA/Certifier Final Works Approval Submission & Assessment	10 days	8 May	21 May
34	Final Works Approval	0 days	21 May	21 May
35	Lodgement for Building Approval & Commencement No	5 days	22 May	29 May
36	**Procurement & Lead Times**	120 days	1 Feb	25 Jul
37	Post Tender Item - Preconstruction Investigations & Dilapidation Report	5 wks	1 Feb	6 Mar
38	Civil Contractor Procurement & Civil Design Resolution	15 days	7 Mar	28 Mar
39	Procurement of Key Trades & Long Lead Items	10 days	1 May	14 May
40	Lead time for Frames and Trusses	10 wks	15 May	25 Jul
41	Lead time for Windows	8 wks	15 May	11 Jul
42	Construction	377 days	2 Apr	30 Sep
43	Civil Works	200 days	2 Apr	24 Jan
44	Site Establishment	2 days	2 Apr	3 Apr
45	Survey Control	1 day	2 Apr	2 Apr
46	Verify Earthworks Levels	1 day	3 Apr	3 Apr
47	Locate Existing Services	2 days	4 Apr	5 Apr
48	Establish Environmental Controls (incl. Temporary Pond	3 days	8 Apr	10 Apr
49	Water Main Protection Bridges	24 days	2 Apr	6 May
50	Manufacture Precast Slabs	4 wks	2 Apr	30 Apr
51	Southern Bridge	15 days	11 Apr	2 May
52	Excavate Capping Beams and Prep	2 days	11 Apr	12 Apr
53	Piling	3 days	15 Apr	17 Apr
54	FRP Capping Beams	2 days	18 Apr	19 Apr
55	Place Precast Slabs	2 days	1 May	2 May
56	Northern Bridge	15 days	15 Apr	6 May
57	Excavate Capping Beams and Prep	2 days	15 Apr	16 Apr
58	Piling	3 days	18 Apr	22 Apr
59	FRP Capping Beams	2 days	23 Apr	24 Apr
60	Place Precast Slabs	2 days	3 May	6 May
61	Proof Roll Blocks and Road Subgrade	3 days	11 Apr	15 Apr
62	Bulk Earthworks	3 wks	16 Apr	7 May
63	Sewer	55 days	8 May	25 Jul
64	1-1 to 1-4	4 days	8 May	13 May
65	1-4 to 1-8 inc. Block Ties	14 days	14 May	3 Jun



Project: Housing
Date: 11 Jan

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Critical | Critical Split | Progress

Academy Close - Contract Program - January 2023

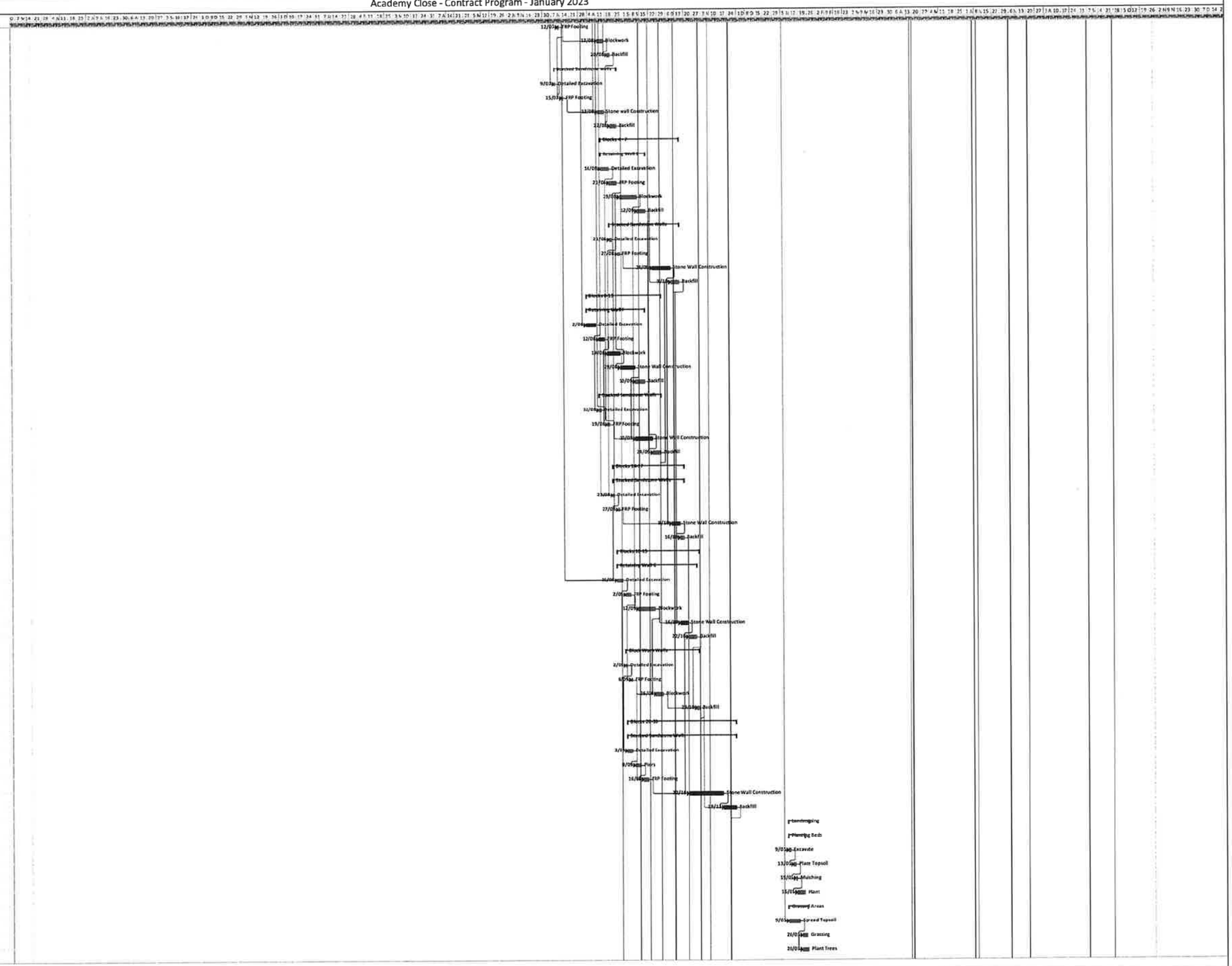
ID	Task Name	Duration	Start	Finish
66	1-4 to 2-2 inc. Block Ties	9 days	4 Jun	17 Jun
67	2-1 to 3-3 inc. Block Ties	8 days	18 Jun	27 Jun
68	3-1 to 4-1 inc. Block Ties	5 days	28 Jun	4 Jul
69	3-3 to 5-1 inc. Block Ties	3 days	5 Jul	9 Jul
70	3-3 to 3-6 inc. Block Ties	12 days	10 Jul	25 Jul
71	Stormwater	63 days	4 Jun	30 Aug
72	1-1 to Detention Tank	2 days	4 Jun	5 Jun
73	Detention Tank	5 days	6 Jun	13 Jun
74	Detention Tank to 2-4 inc. Block Ties	5 days	14 Jun	20 Jun
75	Detention Tank to 1-3	2 days	21 Jun	24 Jun
76	1-3 to 1-6 inc. Block Ties and Branches	13 days	25 Jun	11 Jul
77	1-3 to 3-2	2 days	12 Jul	15 Jul
78	3-2 to 3-5 inc. Block Ties and Branches	5 days	16 Jul	22 Jul
79	3-2 to 8-5	8 days	23 Jul	1 Aug
80	5-1 to 8-4 inc. Block Ties	6 days	2 Aug	9 Aug
81	5-3 to 9-2 inc. Block Ties	3 days	12 Aug	14 Aug
82	5-3 to 5-7 inc. Block Ties and Branches	12 days	15 Aug	30 Aug
83	Water and Fire Service	48 days	26 Jul	1 Oct
84	Chainage 420 to 330 inc. Block Ties	9 days	26 Jul	7 Aug
85	Chainahe 330 to 200 inc. Block Ties	13 days	8 Aug	26 Aug
86	Chainage 200 to 30 inc. Block Ties	17 days	27 Aug	18 Sep
87	Truscott Street Water Tie Crossing	4 days	19 Sep	24 Sep
88	Meter Cabinet and Hydrant Booster	5 days	25 Sep	1 Oct
89	Shared Trench	50 days	2 Sep	11 Nov
90	Chainage 430 to 330 inc. Block Ties	12 days	2 Sep	17 Sep
91	Chainage 330 to 200 inc. Block Ties	13 days	18 Sep	4 Oct
92	Chainage 200 to 20 inc. Block Ties	20 days	8 Oct	4 Nov
93	MSB and POE	5 days	5 Nov	11 Nov
94	Road Construction	25 days	5 Nov	9 Dec
95	Subsoil Drainage	4 days	5 Nov	8 Nov
96	Subgrade Preparation	3 days	11 Nov	13 Nov
97	Subbase Gravels	5 days	14 Nov	20 Nov
98	Kerbs	4 days	21 Nov	26 Nov
99	Base Gravels	4 days	27 Nov	2 Dec
100	FRP Parking Bays	3 days	3 Dec	5 Dec
101	Prime	2 edays	2 Dec	4 Dec
102	Asphalt	1 day	6 Dec	6 Dec
103	Streetlights	3 days	27 Nov	29 Nov
104	Road Signs	1 day	3 Dec	3 Dec
105	Line Marking	1 day	9 Dec	9 Dec
106	Footpaths and Driveways	14 days	6 Dec	8 Jan
107	Subgrade Preparation	3 days	6 Dec	10 Dec
108	Place Gravel	3 days	11 Dec	13 Dec
109	FRP Driveways and Paths	8 days	16 Dec	8 Jan
110	Retaining Walls	114 days	21 Jun	28 Nov
111	Blocks 1-3	47 days	21 Jun	26 Aug
112	Retaining Wall A	30 days	21 Jun	1 Aug
113	Detailed Excavation	4 days	21 Jun	26 Jun
114	Piers	4 days	27 Jun	2 Jul
115	FRP Footing	3 days	3 Jul	5 Jul
116	Blockwork	10 days	8 Jul	19 Jul
117	Stone Cladding	5 days	22 Jul	26 Jul
118	Backfill	4 days	29 Jul	1 Aug
119	Retaining Wall B and B1	36 days	27 Jun	15 Aug
120	Detailed Excavation	4 days	27 Jun	2 Jul
121	FRP Footing	3 days	8 Jul	10 Jul
122	Blockwork	10 days	22 Jul	2 Aug
123	Stone Cladding	5 days	5 Aug	9 Aug
124	Backfill	4 days	12 Aug	15 Aug
125	Retaining Wall C	34 days	3 Jul	19 Aug
126	Detailed Excavation	2 days	3 Jul	4 Jul
127	FRP Footing	1 day	11 Jul	11 Jul
128	Blockwork	5 days	5 Aug	9 Aug
129	Backfill	2 days	16 Aug	19 Aug
130	Retaining Wall D	34 days	5 Jul	21 Aug
131	Detailed Excavation	2 days	5 Jul	8 Jul

Project: Hunting
Date: 11 Jan

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish only | Deadline | Critical | Critical Split | Progress

Academy Close - Contract Program - January 2023

ID	Task Name	Duration	Start	Finish
132	FRP Footing	1 day	12 Jul	12 Jul
133	Blockwork	5 days	12 Aug	16 Aug
134	Backfill	2 days	20 Aug	21 Aug
135	**Stacked Sandstone walls**	**35 days**	**9 Jul**	**26 Aug**
136	Detailed Excavation	1 day	9 Jul	9 Jul
137	FRP Footing	1 day	15 Jul	15 Jul
138	Stone wall Construction	5 days	12 Aug	16 Aug
139	Backfill	3 days	22 Aug	26 Aug
140	**Blocks 4 - 7**	**44 days**	**14 Aug**	**15 Oct**
141	**Retaining Wall E**	**26 days**	**14 Aug**	**18 Sep**
142	Detailed Excavation	5 days	14 Aug	20 Aug
143	FRP Footing	4 days	21 Aug	26 Aug
144	Blockwork	10 days	29 Aug	11 Sep
145	Backfill	5 days	12 Sep	18 Sep
146	**Stacked Sandstone Walls**	**39 days**	**21 Aug**	**15 Oct**
147	Detailed Excavation	2 days	21 Aug	22 Aug
148	FRP Footing	2 days	27 Aug	28 Aug
149	Stone Wall Construction	10 days	24 Sep	8 Oct
150	Backfill	5 days	9 Oct	15 Oct
151	**Blocks 8-13**	**42 days**	**2 Aug**	**30 Sep**
152	**Retaining Wall F**	**33 days**	**2 Aug**	**17 Sep**
153	Detailed Excavation	6 days	2 Aug	9 Aug
154	FRP Footing	5 days	12 Aug	16 Aug
155	Blockwork	8 days	19 Aug	28 Aug
156	Stone Wall Construction	8 days	29 Aug	9 Sep
157	Backfill	6 days	10 Sep	17 Sep
158	**Stacked Sandstone Walls**	**36 days**	**12 Aug**	**30 Sep**
159	Detailed Excavation	2 days	12 Aug	13 Aug
160	FRP Footing	2 days	19 Aug	20 Aug
161	Stone Wall Construction	10 days	10 Sep	23 Sep
162	Backfill	5 days	24 Sep	30 Sep
163	**Blocks 14-17**	**40 days**	**23 Aug**	**18 Oct**
164	**Stacked Sandstone Walls**	**40 days**	**23 Aug**	**18 Oct**
165	Detailed Excavation	1 day	23 Aug	23 Aug
166	FRP Footing	1 day	27 Aug	27 Aug
167	Stone Wall Construction	5 days	9 Oct	15 Oct
168	Backfill	3 days	16 Oct	18 Oct
169	**Blocks 18-19**	**47 days**	**26 Aug**	**30 Oct**
170	**Retaining Wall G**	**45 days**	**26 Aug**	**28 Oct**
171	Detailed Excavation	5 days	26 Aug	30 Aug
172	FRP Footing	4 days	2 Sep	5 Sep
173	Blockwork	10 days	12 Sep	25 Sep
174	Stone Wall Construction	4 days	16 Oct	21 Oct
175	Backfill	5 days	22 Oct	28 Oct
176	**Block Work Walls**	**42 days**	**2 Sep**	**30 Oct**
177	Detailed Excavation	1 day	2 Sep	2 Sep
178	FRP Footing	1 day	6 Sep	6 Sep
179	Blockwork	4 days	26 Sep	1 Oct
180	Backfill	2 days	29 Oct	30 Oct
181	**Blocks 20-30**	**62 days**	**3 Sep**	**28 Nov**
182	**Stacked Sandstone Walls**	**62 days**	**3 Sep**	**28 Nov**
183	Detailed Excavation	4 days	3 Sep	6 Sep
184	Piers	5 days	9 Sep	13 Sep
185	FRP Footing	4 days	16 Sep	19 Sep
186	Stone Wall Construction	20 days	22 Oct	18 Nov
187	Backfill	8 days	19 Nov	28 Nov
188	**Landscaping**	**12 days**	**9 Jan**	**24 Jan**
189	**Planting Beds**	**9 days**	**9 Jan**	**23 Jan**
190	Excavate	2 days	9 Jan	10 Jan
191	Place Topsoil	2 days	13 Jan	14 Jan
192	Mulching	1 day	15 Jan	15 Jan
193	Plant	4 days	16 Jan	23 Jan
194	**Grassed Areas**	**11 days**	**9 Jan**	**23 Jan**
195	Spread Topsoil	7 days	9 Jan	17 Jan
196	Grassing	4 days	20 Jan	23 Jan
197	Plant Trees	5 days	20 Jan	24 Jan

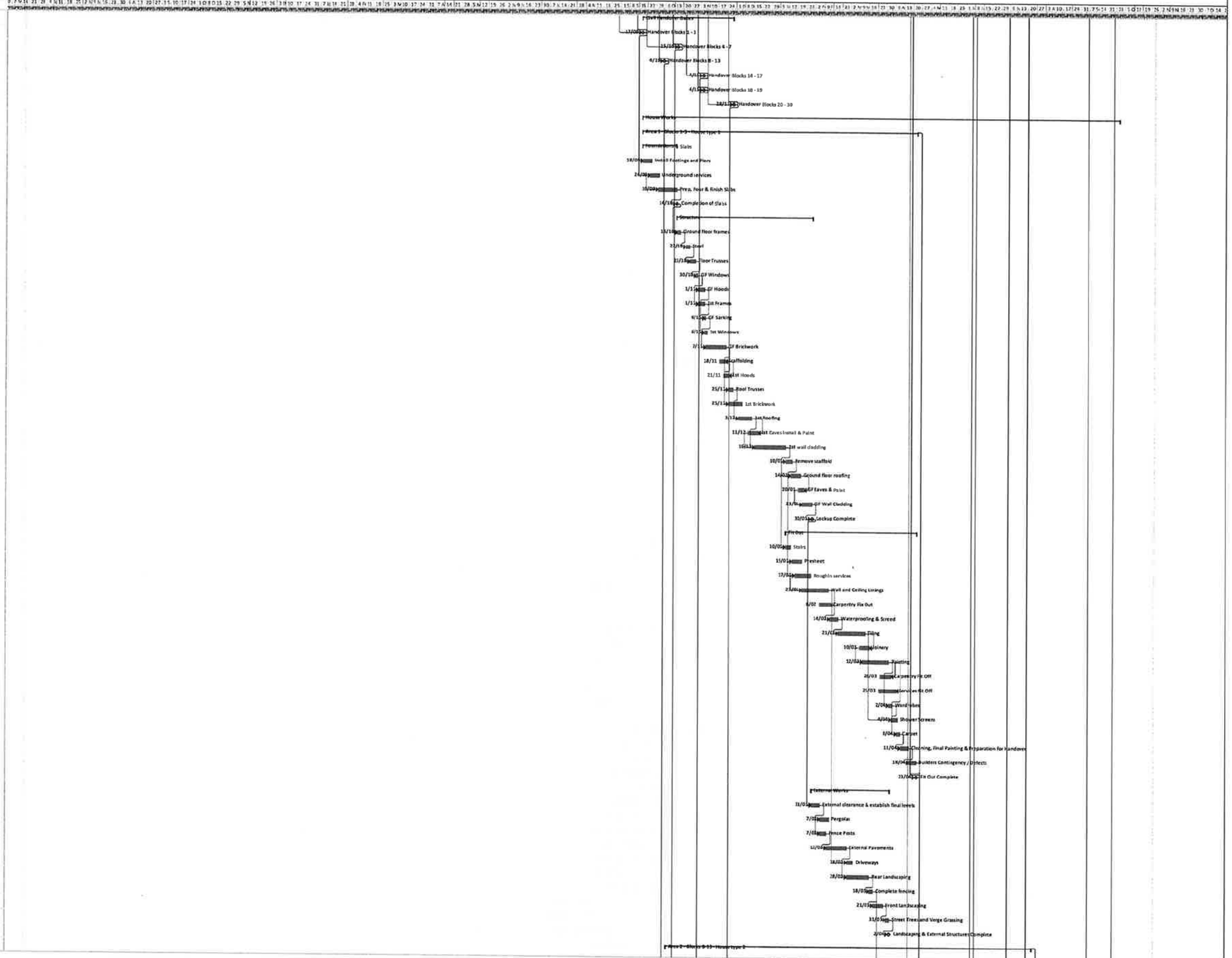


Project: Housing
Date: 11 Jan

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Critical | Critical Split | Progress

Academy Close - Contract Program - January 2023

ID	Task Name	Duration	Start	Finish
198	**Civil Handover Dates**	**51 days**	**17 Sep**	**28 Nov**
199	Handover Blocks 1 - 3	0 days	17 Sep	17 Sep
200	Handover Blocks 4 - 7	0 days	15 Oct	15 Oct
201	Handover Blocks 8 - 13	0 days	4 Oct	4 Oct
202	Handover Blocks 14 - 17	0 days	4 Nov	4 Nov
203	Handover Blocks 18 - 19	0 days	4 Nov	4 Nov
204	Handover Blocks 20 - 30	0 days	28 Nov	28 Nov
205	House Works	**259 days**	**18 Sep**	**30 Sep**
206	**Area 1 - Blocks 1-3 - House type 1**	**145 days**	**18 Sep**	**23 Apr**
207	**Foundations & Slabs**	**18 days**	**18 Sep**	**14 Oct**
208	Install Footings and Piers	5 days	18 Sep	24 Sep
209	Underground services	5 days	24 Sep	30 Sep
210	Prep, Pour & Finish Slabs	10 days	30 Sep	14 Oct
211	Completion of Slabs	0 days	14 Oct	14 Oct
212	Structure	**68 days**	**15 Oct**	**30 Jan**
213	Ground floor frames	3 days	15 Oct	17 Oct
214	Steel	3 days	22 Oct	24 Oct
215	Floor Trusses	3 days	25 Oct	29 Oct
216	GF Windows	2 days	30 Oct	31 Oct
217	GF Hoods	3 days	1 Nov	5 Nov
218	1st Frames	3 days	1 Nov	5 Nov
219	GF Sarking	1 day	6 Nov	6 Nov
220	1st Windows	2 days	6 Nov	7 Nov
221	GF Brickwork	12 days	7 Nov	22 Nov
222	Scaffolding	5 days	18 Nov	22 Nov
223	1st Hoods	3 days	21 Nov	25 Nov
224	Roof Trusses	4 days	25 Nov	28 Nov
225	1st Brickwork	9 days	25 Nov	5 Dec
226	1st Roofing	9 days	3 Dec	13 Dec
227	1st Eaves Install & Paint	6 days	11 Dec	18 Dec
228	1st wall cladding	9 days	16 Dec	9 Jan
229	Remove scaffold	3 days	10 Jan	14 Jan
230	Ground floor roofing	6 days	14 Jan	21 Jan
231	GF Eaves & Paint	5 days	20 Jan	24 Jan
232	GF Wall Cladding	6 days	23 Jan	30 Jan
233	**Lockup Complete**	**0 days**	**30 Jan**	**30 Jan**
234	Fit Out	**74 days**	**30 Jan**	**23 Apr**
235	Stairs	2 days	10 Jan	13 Jan
236	Presheet	6 days	15 Jan	22 Jan
237	Roughin services	9 days	17 Jan	29 Jan
238	Wall and Ceiling Linings	15 days	23 Jan	12 Feb
239	Carpentry Fix Out	7 days	6 Feb	14 Feb
240	Waterproofing & Screed	5 days	14 Feb	20 Feb
241	Tiling	15 days	21 Feb	13 Mar
242	Joinery	6 days	10 Mar	17 Mar
243	Painting	15 days	12 Mar	1 Apr
244	Carpentry Fit Off	7 days	26 Mar	3 Apr
245	Services Fit Off	10 days	25 Mar	7 Apr
246	Wardrobes	3 days	2 Apr	4 Apr
247	Shower Screens	3 days	4 Apr	8 Apr
248	Carpet	3 days	8 Apr	10 Apr
249	Cleaning, Final Painting & Preparation for Handove	5 days	11 Apr	17 Apr
250	Builders Contingency / Defects	4 days	18 Apr	23 Apr
251	**Fit Out Complete**	**0 days**	**23 Apr**	**23 Apr**
252	External Works	**44 days**	**31 Jan**	**2 Apr**
253	External clearance & establish final levels	5 days	31 Jan	6 Feb
254	Pergolas	5 days	7 Feb	13 Feb
255	Fence Posts	3 days	7 Feb	11 Feb
256	External Pavements	12 days	12 Feb	27 Feb
257	Driveways	3 days	28 Feb	4 Mar
258	Rear Landscaping	12 days	28 Feb	17 Mar
259	Complete fencing	3 days	18 Mar	20 Mar
260	Front Landscaping	6 days	21 Mar	28 Mar
261	Street Trees and Verge Grassing	3 days	31 Mar	2 Apr
262	Landscaping & External Structures Complete	0 days	2 Apr	2 Apr
263	**Area 2 - Blocks 8-13 - House type 2**	**158 days**	**8 Oct**	**24 Jul**



Project: Housing
Date: 11 Jan

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Critical | Critical Split | Progress

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Academy Close - Contract Program - January 2023

ID	Task Name	Duration	Start	Finish
264	**Foundations & Slabs**	**21 days**	**8 Oct**	**7 Nov**
265	Install Footings and Piers	5 days	8 Oct	14 Oct
266	Underground services	8 days	15 Oct	24 Oct
267	Prep, Pour & Finish Slabs	14 days	21 Oct	7 Nov
268	Completion of Slabs	0 days	7 Nov	7 Nov
269	Structure	100 days	5 Nov	7 Apr
270	Ground floor frames	7 days	5 Nov	13 Nov
271	Steel	5 days	14 Nov	20 Nov
272	Floor Trusses	7 days	20 Nov	28 Nov
273	GF Windows	4 days	29 Nov	4 Dec
274	GF Hoods	5 days	5 Dec	11 Dec
275	1st Frames	7 days	5 Dec	13 Dec
276	GF Sarking	2 days	12 Dec	13 Dec
277	1st Windows	4 days	16 Dec	19 Dec
278	GF Brickwork	21 days	16 Dec	27 Jan
279	Scaffolding	8 days	16 Jan	27 Jan
280	Roof Trusses	10 days	21 Jan	3 Feb
281	1st Hoods	7 days	21 Jan	29 Jan
282	1st Roofing	21 days	24 Jan	21 Feb
283	1st Brickwork	15 days	28 Jan	17 Feb
284	**1st Eaves Install & Paint**	10 days	13 Feb	26 Feb
285	1st wall cladding	21 days	18 Feb	18 Mar
286	Remove scaffold	7 days	13 Mar	21 Mar
287	Ground floor roofing	10 days	17 Mar	28 Mar
288	GF Eaves & Paint	10 days	20 Mar	2 Apr
289	GF Wall Cladding	10 days	25 Mar	7 Apr
290	**Lockup Complete**	**0 days**	**7 Apr**	**7 Apr**
291	Fit Out	97 days	12 Mar	24 Jul
292	Stairs	5 days	12 Mar	18 Mar
293	Presheet	10 days	17 Mar	28 Mar
294	Roughin services	14 days	20 Mar	8 Apr
295	Wall and Ceiling Linings	25 days	26 Mar	29 Apr
296	Carpentry Fix Out	14 days	14 Apr	1 May
297	Waterproofing & Screed	8 days	25 Apr	6 May
298	Tiling	22 days	1 May	30 May
299	Joinery	10 days	21 May	3 Jun
300	Painting	28 days	23 May	1 Jul
301	Carpentry Fit Off	14 days	16 Jun	3 Jul
302	Services Fit Off	18 days	12 Jun	7 Jul
303	Shower Screens	5 days	23 Jun	27 Jun
304	Wardrobes	5 days	27 Jun	3 Jul
305	Carpet	5 days	4 Jul	10 Jul
306	Cleaning, Final Painting & Preparation for Handove	5 days	9 Jul	15 Jul
307	Builders Contingency / Defects	7 days	16 Jul	24 Jul
308	**Fit Out Complete**	**0 days**	**24 Jul**	**24 Jul**
309	External Works	72 days	8 Apr	16 Jul
310	External clearance & establish final levels	7 days	8 Apr	16 Apr
311	Pergolas	5 days	17 Apr	23 Apr
312	Fence Posts	5 days	17 Apr	23 Apr
313	External Pavements	21 days	24 Apr	22 May
314	Driveways	7 days	23 May	2 Jun
315	Rear Landscaping	21 days	23 May	20 Jun
316	Complete fencing	5 days	23 Jun	27 Jun
317	Front Landscaping	10 days	30 Jun	11 Jul
318	**Street Trees and Verge Grassing**	3 days	14 Jul	16 Jul
319	**Landscaping & External Structures Complete**	**0 days**	**16 Jul**	**16 Jul**
320	**Area 3 - Blocks 4-7 - House types 3 & 7**	160 days	16 Oct	10 Jun
321	**Foundations & Slabs**	18 days	16 Oct	8 Nov
322	Install Footings and Piers	5 days	16 Oct	22 Oct
323	Underground services	5 days	22 Oct	28 Oct
324	Prep, Pour & Finish Slabs	10 days	28 Oct	8 Nov
325	Completion of Slabs	0 days	8 Nov	8 Nov
326	Structure	79 days	11 Nov	13 Mar
327	Ground floor frames	4 days	11 Nov	14 Nov
328	Steel	4 days	19 Nov	22 Nov
329	Floor Trusses	4 days	25 Nov	28 Nov

Project: Housing
Date: 11 Jan

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Critical | Critical Split | Progress

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Academy Close - Contract Program - January 2023

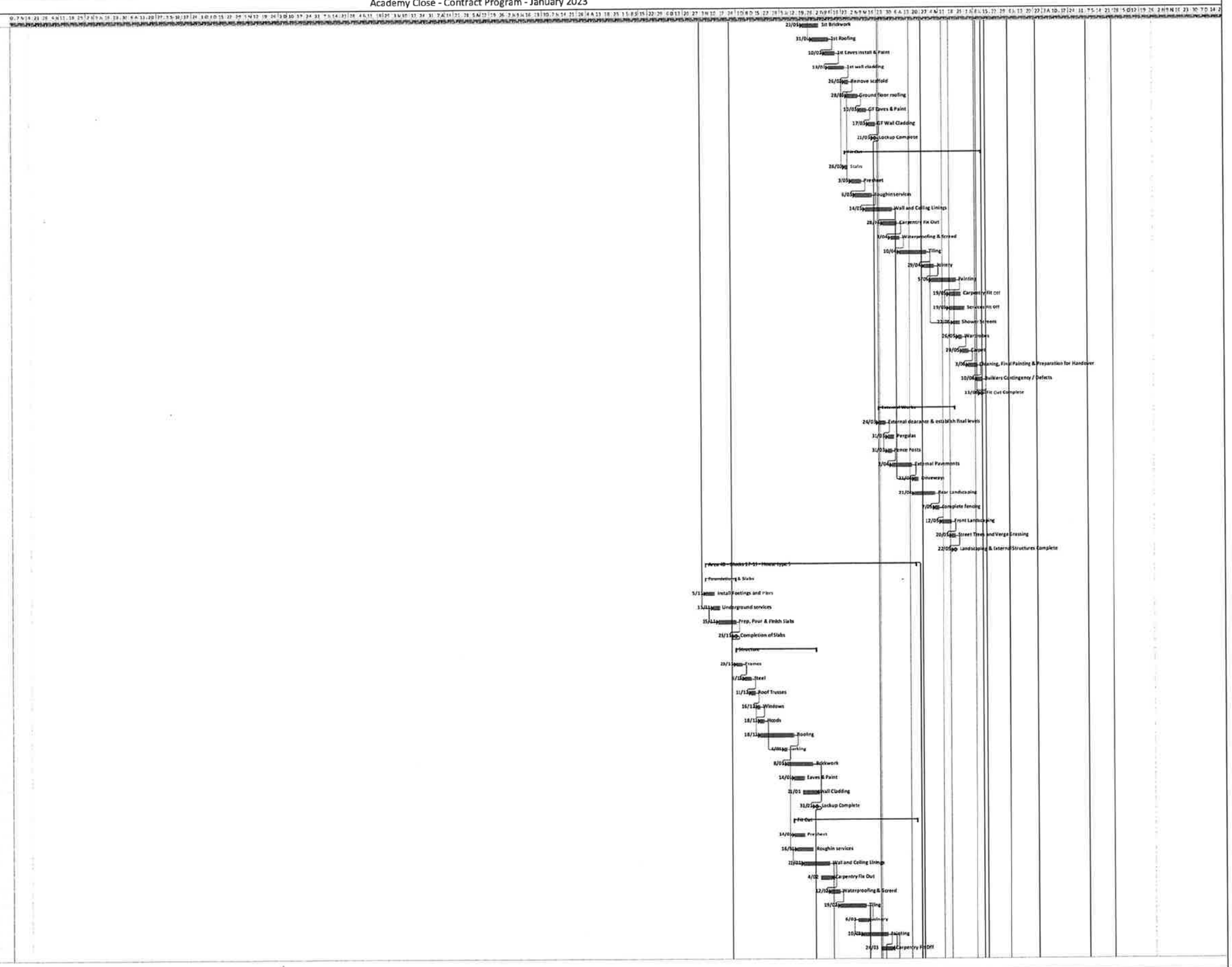
ID	Task Name	Duration	Start	Finish
330	GF Windows	3 days	29 Nov	3 Dec
331	GF Hoods	4 days	4 Dec	9 Dec
332	1st Frames	4 days	4 Dec	9 Dec
333	GF Sarking	1 day	10 Dec	10 Dec
334	1st Windows	3 days	10 Dec	12 Dec
335	GF Brickwork	16 days	11 Dec	15 Jan
336	Scaffolding	6 days	8 Jan	15 Jan
337	1st Hoods	3 days	14 Jan	16 Jan
338	Roof Trusses	4 days	16 Jan	21 Jan
339	1st Brickwork	12 days	16 Jan	31 Jan
340	1st Roofing	12 days	24 Jan	10 Feb
341	1st Eaves Install & Paint	8 days	4 Feb	13 Feb
342	1st wall cladding	12 days	3 Feb	18 Feb
343	Remove scaffold	3 days	18 Feb	20 Feb
344	Ground floor roofing	10 days	20 Feb	5 Mar
345	GF Eaves & Paint	6 days	3 Mar	10 Mar
346	GF Wall Cladding	8 days	4 Mar	13 Mar
347	**Lockup Complete**	**0 days**	**13 Mar**	**13 Mar**
348	**Fit Out**	**80 days**	**19 Feb**	**10 Jun**
349	Stairs	3 days	19 Feb	21 Feb
350	Presheet	8 days	21 Feb	4 Mar
351	Roughin services	10 days	28 Feb	13 Mar
352	Wall and Ceiling Linings	18 days	5 Mar	28 Mar
353	Carpentry Fix Out	7 days	24 Mar	1 Apr
354	Waterproofing & Screed	5 days	28 Mar	3 Apr
355	Tiling	18 days	4 Apr	29 Apr
356	Joinery	8 days	22 Apr	1 May
357	Painting	18 days	24 Apr	19 May
358	Carpentry Fit Off	7 days	13 May	21 May
359	Services Fit Off	10 days	12 May	23 May
360	Shower Screens	3 days	21 May	23 May
361	Wardrobes	3 days	20 May	22 May
362	Carpet	3 days	26 May	28 May
363	Cleaning, Final Painting & Preparation for Handove	5 days	29 May	4 Jun
364	Builders Contingency / Defects	4 days	5 Jun	10 Jun
365	**Fit Out Complete**	**0 days**	**10 Jun**	**10 Jun**
366	**External Works**	**56 days**	**14 Mar**	**30 May**
367	External clearance & establish final levels	5 days	14 Mar	20 Mar
368	Pergolas	5 days	21 Mar	27 Mar
369	Fence Posts	3 days	21 Mar	25 Mar
370	External Pavements	15 days	26 Mar	15 Apr
371	Driveways	4 days	16 Apr	21 Apr
372	Rear Landscaping	18 days	16 Apr	9 May
373	Complete fencing	4 days	12 May	15 May
374	Front Landscaping	8 days	16 May	27 May
375	Street Trees and Verge Grassing	3 days	28 May	30 May
376	Landscaping & External Structures Complete	0 days	30 May	30 May
377	**Area 4A - Blocks 14-16 - House types 2 & 7**	**149 days**	**5 Nov**	**13 Jan**
378	**Foundations & Slabs**	**18 days**	**5 Nov**	**28 Nov**
379	Install Footings and Piers	5 days	5 Nov	11 Nov
380	Underground services	5 days	11 Nov	15 Nov
381	Prep, Pour & Finish Slabs	10 days	15 Nov	28 Nov
382	Completion of Slabs	0 days	28 Nov	28 Nov
383	**Structure**	**71 days**	**29 Nov**	**21 Mar**
384	Ground floor frames	3 days	29 Nov	3 Dec
385	Steel	3 days	6 Dec	10 Dec
386	Floor Trusses	3 days	11 Dec	13 Dec
387	GF Windows	2 days	16 Dec	17 Dec
388	GF Hoods	3 days	18 Dec	20 Dec
389	GF Sarking	1 day	6 Jan	6 Jan
390	1st Frames	3 days	18 Dec	20 Dec
391	1st Windows	2 days	6 Jan	7 Jan
392	GF Brickwork	12 days	7 Jan	22 Jan
393	Scaffolding	6 days	15 Jan	22 Jan
394	1st Hoods	3 days	21 Jan	23 Jan
395	Roof Trusses	4 days	23 Jan	28 Jan

Project: Housing
Date: 11 Jan

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Critical | Critical Split | Progress

Academy Close - Contract Program - January 2023

ID	Task Name	Duration	Start	Finish
396	1st Brickwork	9 days	23 Jan	4 Feb
397	1st Roofing	9 days	31 Jan	12 Feb
398	1st Eaves install & Paint	6 days	10 Feb	17 Feb
399	1st wall cladding	9 days	13 Feb	25 Feb
400	Remove scaffold	3 days	26 Feb	28 Feb
401	Ground floor roofing	6 days	28 Feb	7 Mar
402	GF Eaves & Paint	5 days	10 Mar	14 Mar
403	GF Wall Cladding	5 days	17 Mar	21 Mar
404	Lockup Complete	0 days	21 Mar	21 Mar
405	Fit Out	78 days	26 Feb	13 Jun
406	Stairs	2 days	26 Feb	27 Feb
407	Presheet	6 days	3 Mar	10 Mar
408	Roughin services	9 days	6 Mar	18 Mar
409	Wall and Ceiling Linings	15 days	14 Mar	3 Apr
410	Carpentry Fix Out	7 days	28 Mar	7 Apr
411	Waterproofing & Screed	5 days	3 Apr	9 Apr
412	Tiling	15 days	10 Apr	30 Apr
413	Joinery	6 days	29 Apr	6 May
414	Painting	15 days	5 May	23 May
415	Carpentry Fit Off	7 days	19 May	27 May
416	Services Fit Off	10 days	19 May	30 May
417	Shower Screens	3 days	22 May	26 May
418	Wardrobes	3 days	26 May	28 May
419	Carpet	3 days	29 May	2 Jun
420	Cleaning, Final Painting & Preparation for Handove	5 days	3 Jun	9 Jun
421	Builders Contingency / Defects	4 days	10 Jun	13 Jun
422	Fit Out Complete	0 days	13 Jun	13 Jun
423	External Works	44 days	24 Mar	22 May
424	External clearance & establish final levels	5 days	24 Mar	28 Mar
425	Pergolas	5 days	31 Mar	4 Apr
426	Fence Posts	3 days	31 Mar	2 Apr
427	External Pavements	12 days	3 Apr	18 Apr
428	Driveways	3 days	21 Apr	23 Apr
429	Rear Landscaping	12 days	21 Apr	6 May
430	Complete fencing	3 days	7 May	9 May
431	Front Landscaping	6 days	12 May	19 May
432	Street Trees and Verge Grassing	3 days	20 May	22 May
433	Landscaping & External Structures Complete	0 days	22 May	22 May
434	Area 4B - Blocks 17-19 - House type 5	110 days	5 Nov	21 Apr
435	Foundations & Slabs	18 days	5 Nov	28 Nov
436	Install Footings and Piers	5 days	5 Nov	11 Nov
437	Underground services	5 days	11 Nov	15 Nov
438	Prep, Pour & Finish Slabs	10 days	15 Nov	28 Nov
439	Completion of Slabs	0 days	28 Nov	28 Nov
440	Structure	36 days	29 Nov	31 Jan
441	Frames	3 days	29 Nov	3 Dec
442	Steel	3 days	6 Dec	10 Dec
443	Roof Trusses	3 days	11 Dec	13 Dec
444	Windows	2 days	16 Dec	17 Dec
445	Hoods	3 days	18 Dec	20 Dec
446	Roofing	9 days	18 Dec	13 Jan
447	Serking	2 days	6 Jan	7 Jan
448	Brickwork	15 days	8 Jan	28 Jan
449	Eaves & Paint	6 days	14 Jan	21 Jan
450	Wall Cladding	9 days	21 Jan	31 Jan
451	Lockup Complete	0 days	31 Jan	31 Jan
452	Fit Out	70 days	14 Jan	21 Apr
453	Presheet	6 days	14 Jan	21 Jan
454	Roughin services	9 days	16 Jan	28 Jan
455	Wall and Ceiling Linings	15 days	21 Jan	10 Feb
456	Carpentry Fix Out	7 days	4 Feb	12 Feb
457	Waterproofing & Screed	5 days	12 Feb	18 Feb
458	Tiling	15 days	19 Feb	11 Mar
459	Joinery	6 days	6 Mar	13 Mar
460	Painting	15 days	10 Mar	28 Mar
461	Carpentry Fit Off	7 days	24 Mar	1 Apr



Project: Housing
Date: 11 Jan

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Critical | Critical Split | Progress

Academy Close - Contract Program - January 2023

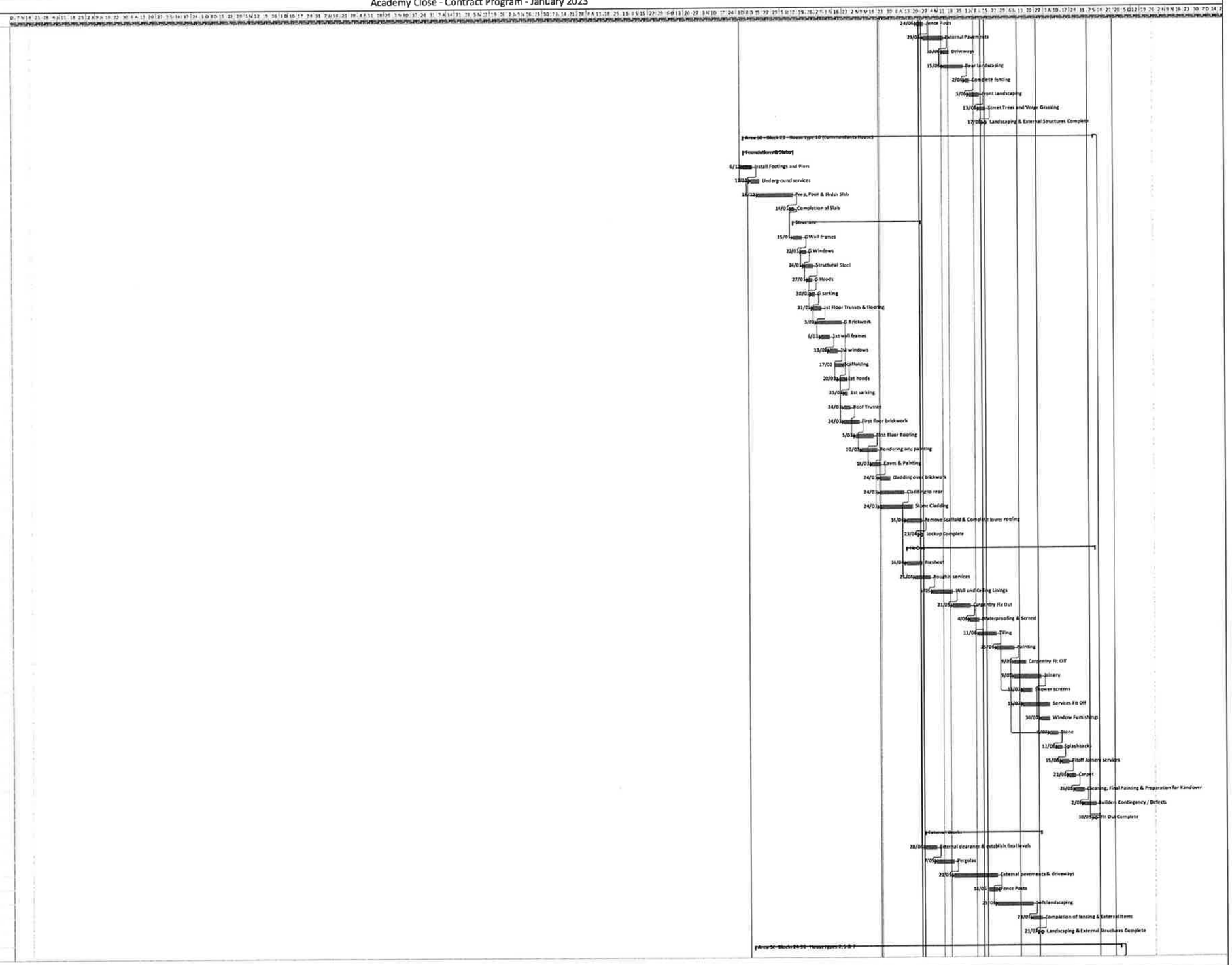
ID	Task Name	Duration	Start	Finish
462	Services Fit Off	10 days	21 Mar	3 Apr
463	Wardrobes	3 days	31 Mar	2 Apr
464	Shower Screens	2 days	2 Apr	3 Apr
465	Carpet	3 days	4 Apr	8 Apr
466	Cleaning, Final Painting & Preparation for Handove	5 days	9 Apr	15 Apr
467	Builders Contingency / Defects	4 days	16 Apr	21 Apr
468	Fit Out Complete	0 days	21 Apr	21 Apr
469	External Works	46 days	3 Feb	3 Apr
470	External clearance & establish final levels	5 days	3 Feb	7 Feb
471	Fence Posts	3 days	10 Feb	12 Feb
472	External Pavements	12 days	13 Feb	28 Feb
473	Driveways	3 days	3 Mar	5 Mar
474	Rear Landscaping	12 days	3 Mar	18 Mar
475	Complete fencing	3 days	19 Mar	21 Mar
476	Front Landscaping	6 days	24 Mar	31 Mar
477	Street Trees and Verge Grassing	3 days	1 Apr	3 Apr
478	Landscaping & External Structures Complete	0 days	3 Apr	3 Apr
479	Area 5A - Blocks 20-22 - House type 3	149 days	29 Nov	9 Jul
480	Foundations & Slabs	18 days	29 Nov	7 Jan
481	Install Footings and Piers	5 days	29 Nov	5 Dec
482	Underground services	5 days	5 Dec	11 Dec
483	Prep, Pour & Finish Slabs	10 days	11 Dec	7 Jan
484	Completion of Slabs	0 days	7 Jan	7 Jan
485	Structure	71 days	8 Jan	16 Apr
486	Ground floor frames	3 days	8 Jan	10 Jan
487	Steel	3 days	15 Jan	17 Jan
488	Floor Trusses	3 days	20 Jan	22 Jan
489	GF Windows	2 days	23 Jan	24 Jan
490	GF Hoods	3 days	27 Jan	29 Jan
491	GF Sarking	1 day	30 Jan	30 Jan
492	1st Frames	3 days	27 Jan	29 Jan
493	1st Windows	2 days	30 Jan	31 Jan
494	GF Brickwork	12 days	31 Jan	17 Feb
495	Scaffolding	6 days	10 Feb	17 Feb
496	1st Hoods	3 days	14 Feb	18 Feb
497	Roof Trusses	4 days	18 Feb	21 Feb
498	1st Brickwork	9 days	18 Feb	28 Feb
499	1st Roofing	9 days	26 Feb	10 Mar
500	1st Eaves Install & Paint	6 days	6 Mar	13 Mar
501	1st wall cladding	9 days	11 Mar	21 Mar
502	Remove scaffold	3 days	24 Mar	26 Mar
503	Ground floor roofing	6 days	26 Mar	2 Apr
504	GF Eaves & Paint	5 days	3 Apr	9 Apr
505	GF Wall Cladding	5 days	10 Apr	16 Apr
506	Lockup Complete	0 days	16 Apr	16 Apr
507	Fit Out	78 days	24 Mar	9 Jul
508	Stairs	2 days	24 Mar	25 Mar
509	Pretheet	6 days	27 Mar	3 Apr
510	Roughin services	9 days	1 Apr	11 Apr
511	Wall and Ceiling Linings	15 days	9 Apr	29 Apr
512	Carpentry Fix Out	7 days	23 Apr	1 May
513	Waterproofing & Screed	5 days	29 Apr	5 May
514	Tiling	15 days	6 May	26 May
515	Joinery	6 days	23 May	30 May
516	Painting	15 days	29 May	18 Jun
517	Carpentry Fit Off	7 days	12 Jun	20 Jun
518	Services Fit Off	10 days	12 Jun	25 Jun
519	Shower Screens	3 days	17 Jun	19 Jun
520	Wardrobes	3 days	19 Jun	23 Jun
521	Carpet	3 days	24 Jun	26 Jun
522	Cleaning, Final Painting & Preparation for Handove	5 days	27 Jun	3 Jul
523	Builders Contingency / Defects	4 days	4 Jul	9 Jul
524	Fit Out Complete	0 days	9 Jul	9 Jul
525	External Works	44 days	17 Apr	17 Jun
526	External clearance & establish final levels	5 days	17 Apr	23 Apr
527	Pergolas	5 days	24 Apr	30 Apr

Project: Housing
Date: 11 Jan

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Critical | Critical Split | Progress

Academy Close - Contract Program - January 2023

ID	Task Name	Duration	Start	Finish
528	Fence Posts	3 days	24 Apr	28 Apr
529	External Pavements	12 days	29 Apr	14 May
530	Driveways	3 days	15 May	19 May
531	Rear Landscaping	12 days	15 May	30 May
532	Complete fencing	3 days	2 Jun	4 Jun
533	Front Landscaping	6 days	5 Jun	12 Jun
534	Street Trees and Verge Grassing	3 days	13 Jun	17 Jun
535	Landscaping & External Structures Complete	0 days	17 Jun	17 Jun
536	Area 5B - Block 23 - House type 10 (Commandants Hou	189 days	6 Dec	10 Sep
537	Foundations & Slabs	18 days	6 Dec	14 Jan
538	Install Footings and Piers	5 days	6 Dec	12 Dec
539	Underground services	5 days	12 Dec	18 Dec
540	Prep, Pour & Finish Slab	10 days	18 Dec	14 Jan
541	Completion of Slab	0 days	14 Jan	14 Jan
542	Structure	73 days	15 Jan	25 Apr
543	G Wall frames	5 days	15 Jan	21 Jan
544	G Windows	3 days	22 Jan	24 Jan
545	Structural Steel	5 days	24 Jan	30 Jan
546	G Hoods	3 days	27 Jan	29 Jan
547	G sarking	2 days	30 Jan	31 Jan
548	1st Floor Trusses & flooring	4 days	31 Jan	5 Feb
549	G Brickwork	15 days	3 Feb	21 Feb
550	1st wall frames	5 days	6 Feb	12 Feb
551	1st windows	4 days	13 Feb	18 Feb
552	Scaffolding	5 days	17 Feb	21 Feb
553	1st hoods	3 days	20 Feb	24 Feb
554	1st sarking	2 days	25 Feb	26 Feb
555	Roof Trusses	5 days	24 Feb	28 Feb
556	First floor brickwork	10 days	24 Feb	7 Mar
557	First Floor Roofing	10 days	5 Mar	18 Mar
558	Rendering and painting	10 days	10 Mar	21 Mar
559	Eaves & Painting	5 days	18 Mar	24 Mar
560	Cladding over brickwork	6 days	24 Mar	31 Mar
561	Cladding to rear	15 days	24 Mar	11 Apr
562	Stone Cladding	20 days	24 Mar	18 Apr
563	Remove Scaffold & Complete lower roofing	10 days	14 Apr	25 Apr
564	Lockup Complete	0 days	25 Apr	25 Apr
565	Fit Out	108 days	14 Apr	10 Sep
566	Presheet	10 days	14 Apr	25 Apr
567	Roughin services	10 days	21 Apr	2 May
568	Wall and Ceiling Linings	12 days	5 May	20 May
569	Carpentry Fix Out	10 days	21 May	3 Jun
570	Waterproofing & Screed	5 days	4 Jun	10 Jun
571	Tiling	10 days	11 Jun	24 Jun
572	Painting	10 days	25 Jun	8 Jul
573	Carpentry Fit Off	7 days	9 Jul	17 Jul
574	Joinery	15 days	9 Jul	29 Jul
575	Shower screens	5 days	16 Jul	22 Jul
576	Services Fit Off	15 days	16 Jul	5 Aug
577	Window Furnishings	5 days	30 Jul	5 Aug
578	Stone	4 days	6 Aug	11 Aug
579	Splashbacks	3 days	12 Aug	14 Aug
580	Fitoff Joinery services	4 days	15 Aug	20 Aug
581	Carpet	3 days	21 Aug	25 Aug
582	Cleaning, Final Painting & Preparation for Handove	5 days	26 Aug	1 Sep
583	Builders Contingency / Defects	7 days	2 Sep	10 Sep
584	Fit Out Complete	0 days	10 Sep	10 Sep
585	External Works	67 days	28 Apr	29 Jul
586	External clearance & establish final levels	7 days	28 Apr	6 May
587	Pergolas	10 days	7 May	20 May
588	External pavements & driveways	25 days	21 May	24 Jun
589	Fence Posts	5 days	18 Jun	24 Jun
590	Soft landscaping	20 days	25 Jun	22 Jul
591	Completion of fencing & External Items	5 days	23 Jul	29 Jul
592	Landscaping & External Structures Complete	0 days	29 Jul	29 Jul
593	Area 5C- Blocks 24-30 - House types 2, 5 & 7	198 days	13 Dec	30 Sep

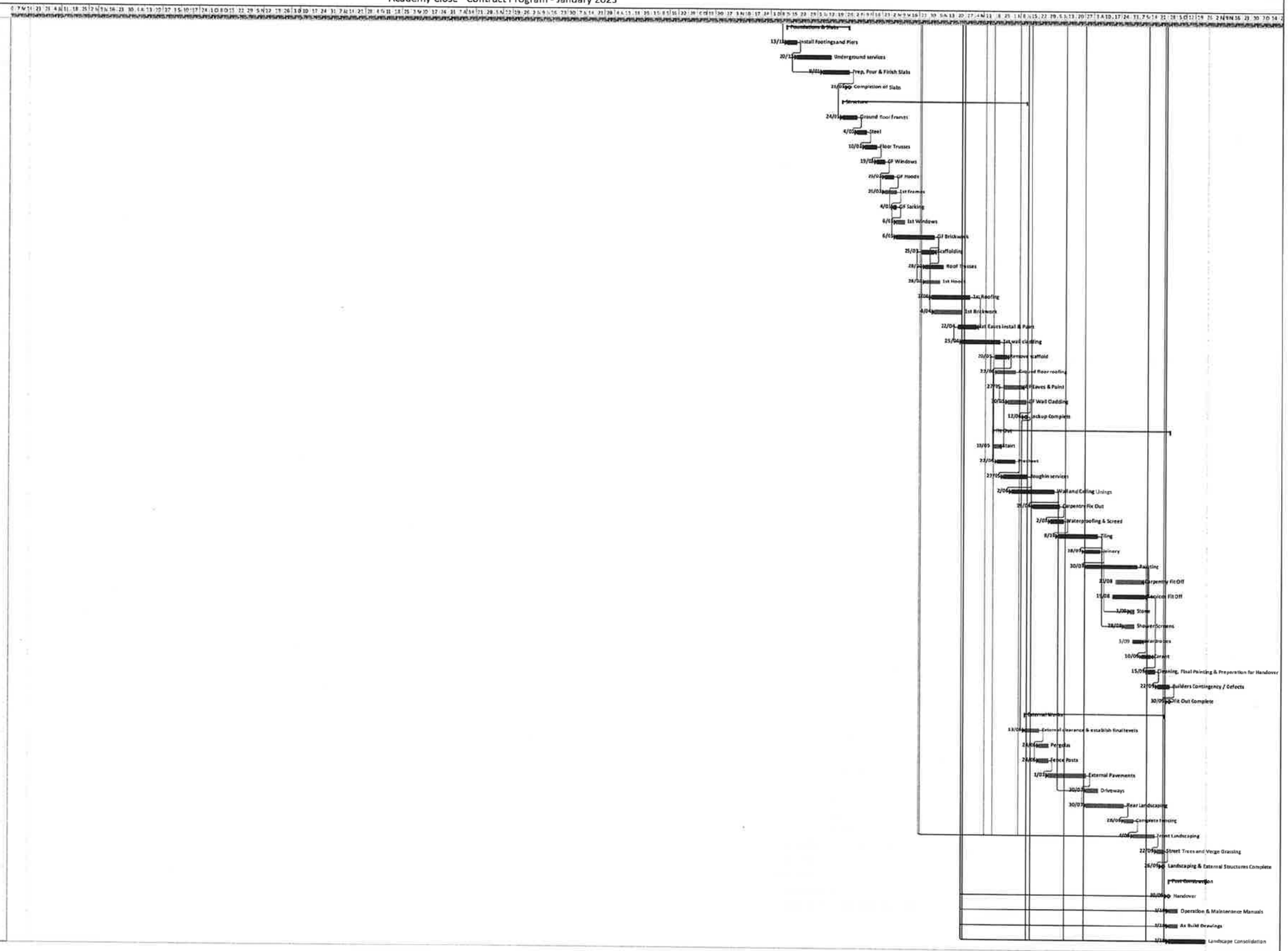


Project: Housing
Date: 11 Jan

Task | Split | Milestone | Summary | Project Summary | External tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Critical | Critical Split | Progress

Academy Close - Contract Program - January 2023

ID	Task Name	Duration	Start	Finish
594	**Foundations & Slabs**	**23 days**	**13 Dec**	**28 Jan**
595	Install Footings and Piers	5 days	13 Dec	19 Dec
596	Underground services	8 days	20 Dec	14 Jan
597	Prep, Pour & Finish Slabs	14 days	9 Jan	28 Jan
598	Completion of Slabs	0 days	28 Jan	28 Jan
599	**Structure**	**100 days**	**24 Jan**	**12 Jun**
600	Ground floor frames	7 days	24 Jan	3 Feb
601	Steel	5 days	4 Feb	10 Feb
602	Floor Trusses	7 days	10 Feb	18 Feb
603	GF Windows	4 days	19 Feb	24 Feb
604	GF Hoods	5 days	25 Feb	3 Mar
605	1st Frames	7 days	25 Feb	5 Mar
606	GF Sarking	2 days	4 Mar	5 Mar
607	1st Windows	4 days	6 Mar	11 Mar
608	GF Brickwork	21 days	6 Mar	3 Apr
609	Scaffolding	8 days	25 Mar	3 Apr
610	Roof Trusses	10 days	28 Mar	10 Apr
611	1st Hoods	7 days	28 Mar	7 Apr
612	1st Roofing	21 days	2 Apr	30 Apr
613	1st Brickwork	15 days	4 Apr	24 Apr
614	1st Eaves Install & Paint	10 days	22 Apr	5 May
615	1st wall cladding	21 days	25 Apr	23 May
616	Remove scaffold	7 days	20 May	28 May
617	Ground floor roofing	10 days	22 May	4 Jun
618	GF Eaves & Paint	10 days	27 May	9 Jun
619	GF Wall Cladding	10 days	30 May	12 Jun
620	**Lockup Complete**	**0 days**	**12 Jun**	**12 Jun**
621	**Fit Out**	**97 days**	**19 May**	**30 Sep**
622	Stairs	5 days	19 May	23 May
623	Prasheet	10 days	22 May	4 Jun
624	Roughin services	14 days	27 May	13 Jun
625	Wall and Ceiling Linings	25 days	2 Jun	4 Jul
626	Carpentry Fix Out	14 days	19 Jun	8 Jul
627	Waterproofing & Screed	8 days	2 Jul	11 Jul
628	Tiling	22 days	8 Jul	6 Aug
629	Joinery	10 days	28 Jul	8 Aug
630	Painting	28 days	30 Jul	5 Sep
631	Carpentry Fit Off	14 days	21 Aug	9 Sep
632	Services Fit Off	18 days	19 Aug	11 Sep
633	Stone	3 days	1 Sep	3 Sep
634	Shower Screens	5 days	28 Aug	3 Sep
635	Wardrobes	5 days	3 Sep	9 Sep
636	Carpet	5 days	10 Sep	16 Sep
637	Cleaning, Final Painting & Preparation for Handove	5 days	15 Sep	19 Sep
638	Builders Contingency / Defects	7 days	22 Sep	30 Sep
639	**Fit Out Complete**	**0 days**	**30 Sep**	**30 Sep**
640	**External Works**	**75 days**	**13 Jun**	**26 Sep**
641	**External clearance & establish final levels**	7 days	13 Jun	23 Jun
642	Pergolas	5 days	24 Jun	30 Jun
643	Fence Posts	5 days	24 Jun	30 Jun
644	External Pavements	21 days	1 Jul	29 Jul
645	Driveways	7 days	30 Jul	7 Aug
646	Rear Landscaping	21 days	30 Jul	27 Aug
647	Complete fencing	5 days	28 Aug	3 Sep
648	Front Landscaping	12 days	4 Sep	19 Sep
649	Street Trees and Verge Grassing	5 days	22 Sep	26 Sep
650	**Landscaping & External Structures Complete**	**0 days**	**26 Sep**	**26 Sep**
651	**Post Construction**	**20 days**	**30 Sep**	**28 Oct**
652	Handover	0 days	30 Sep	30 Sep
653	Operation & Maintenance Manuals	1 wk	1 Oct	7 Oct
654	As Build Drawings	1 wk	1 Oct	7 Oct
655	Landscape Consolidation	4 wks	1 Oct	28 Oct



Project: Housing
Date: 11 Jan

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Critical | Critical Split | Progress

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Specifications

Prepared for
Defence Housing Australia
October 2017, Version 7.0

Tzannes, in collaboration with Arcadia were the authors of the original document, which was issued on 19th September 2017 marked as version 7.0. All changes following this release were administered by DHA without input from Tzannes or Arcadia.

DHA
Defence Housing Australia

0171 General Requirements 4
0184 Termite Management 17
0201 Demolition 19
0221 Site Preparation 22
0222 Earthwork 24
0223 Service Trenching 28
0241 Landscape – walling and edging 30
0242 Landscape – fences and barriers 34
0251 Landscape – soils 38
0252 Landscape – soft surfaces 44
0253 Landscape – planting 47
0256 Landscape – establishment 52
0271 Pavement base and subbase 57
0274 Concrete pavement 65
0275 Paving – mortar and adhesive bed 78
0276 Segmental pavers – sand bed 85
0310 Concrete 91
0331 Masonry Construction 98
0342 Light Steel Framing 106
0344 Steel – Hot-Dip Galvanized Coatings 111
0382 Light Timber Framing 114
0383 Structural Sheet Flooring 119
0411 Waterproofing 121
0421 Roofing 126
0431 Cladding 132
0451 Windows and Glazed Doors 136
0453 Doors 140
0454 Overhead Doors 145
0455 Hardware 147
0461 Glazing 150
0471 Insulation and Pliable Membranes 152

0511 Linings **155**

0531 Ceilings **159**

0551 Joinery **162**

0552 Metalwork **169**

0574 Window Coverings **172**

0611 Rendering **174**

0612 Cementitious Toppings **178**

0631 Tiling **182**

0652 Carpets **186**

0671 Painting **189**

0673 Powder Coatings **195**

Appendix **196**

0171 GENERAL REQUIREMENTS

1 GENERAL

1.1 STANDARDS

Use referenced Australian or other standards (including amendments), and the BCA, including state and territory variations, as in force at the time of the application for the construction certificate, except where other editions or amendments are required by statutory authorities or regulations. Any local authority requirements take precedence.

1.2 RESPONSIBILITIES

This specification is to be read with the Principal's Contract and the documents listed in within the contract.

Design by the Contractor: If the Contractor provides design, use only appropriately qualified persons and conform to all statutory requirements.

If it is believed that a conflict exists between statutory requirements and the documents, notify the Superintendent immediately and provide a recommendation to resolve the conflict.

Certification and compliance: The Contractor is responsible for obtaining all relevant certification where requested in individual worksections or the ITCPs. The Contractor is required to comply with all statutory requirements in the relevant state or territory to deliver the project complete, fit for purpose, and fully compliant.

Items to be designed by the contractor include the following;

- Mechanical services (including air-conditioning) and installation.
- Hydraulic services and installation.
- Electrical services (including lighting) and installation.
- Structural support systems and installation.

1.3 INTERPRETATION

For the purposes of this specification the following abbreviations apply:

- AS: Australian Standard.
- BCA: National Construction Code Series Volume Two: Building Code of Australia Class 1 and Class 10 Buildings.
- NATA: National Association of Testing Authorities.
- NCC: National Construction Code.
- NZS: New Zealand Standard.
- PCA: National Construction Code Series Volume 3: Plumbing Code of Australia.
- SDS: Safety data sheets.
- VOC: Volatile Organic Compound.
- WHS: Work Health and Safety.

For the purposes of this document the definitions given below apply:

- Owner: Has the same meaning as client, principal or proprietor and is the party to whom the Contractor is legally bound to construct the works.

- Contract administrator: Has the same meaning Superintendent and is the person appointed by the Owner or Principal under the contract.
- Contractor: Means the same as builder.
- Contract Documents: Drawings and other documents provided by the Principal, or the contractor provided drawings and other documents issued as part of the tender process.
- Principal: Principal has the same meaning as owner, client and proprietor and is the party to whom the contractor is legally bound to construct the works.
- Professional engineer: As defined by the BCA.
- Proprietary: A product, system or process identifiable by naming manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
- Provide: Provide and similar expressions, mean supply and install and include development of the design beyond that documented.
- Registered testing authority:
  - An organisation registered by the National Association of Testing Authorities (NATA) to test in the relevant field; or
  - An organisation outside of Australia registered by an authority recognised by NATA through a mutual recognition agreement; or
  - An organisation recognised as being a Registered Testing Authority under legislation at the time the test was undertaken.
- Required: Means required by the contract documents, the local council or statutory authorities.
- Sample: A physical example that illustrates workmanship, materials or equipment, and establishes standards by which the work will be judged. It includes samples, prototypes and sample panels.
- Statutory Authority: A public sector entity created by legislation, that is, a specific law of the Commonwealth, State or Territory.
- Supply: Supply, furnish and similar expressions mean supply only.
- Tests – completion: Tests carried out on completed installations or systems and fully resolved before the date for practical completion, to demonstrate that the installation or system, including components, controls and equipment, operates correctly, safely and efficiently, and meets performance and other requirements. The Superintendent may direct that completion tests be carried out after the date for practical completion.

1.4 PRECEDENCE

Requirements for precedence of worksections and referenced documents is in accordance with the Principal/ Contractor Contract.

1.5 INSPECTION

Conduct all testing and inspections as detailed in the relevant Inspection Test and Conformity Plan (ITCP).

If notice of inspection is required in respect of parts of the works that are to be concealed, advise when the inspection can be made before concealment.

Minimum notice for inspections to be made: 48 hours.

Light level requirements: To AS/NZS 1680.2.4.

Provide attendance for documented inspections and tests.

1.6 SUBMISSIONS

Submit to the Superintendent.

Make submissions at least 10 working days before ordering products for, or starting installation of, the respective portion of the works.

Allow in the construction program for at least the following times for response to submissions:

- Shop drawings: 10 working days.
- Samples and prototypes: 10 working days.
- Manufacturers' or suppliers' recommendations: 10 working days.
- Product data: 10 working days.
- Product/design substitution or modification: 10 working days.

If major products are not specified as proprietary items, submit a schedule of those proposed for use within 3 weeks of site possession.

If a submission contains errors, make a new or amended submission as appropriate, indicating changes made since the previous submission.

Submissions - electronic copies:

- File format: pdf.
- Transmission medium: email.

Identify the project, contractor, subcontractor or supplier, manufacturer, applicable product, model number and options, as appropriate and include relevant contract document references. Include service connection requirements and product certification.

Submit documents showing approval by the authorities whose requirements apply to the work.

Submit copies of correspondence and notes of meetings with authorities whose requirements apply to the work.

1.7 MATERIALS AND COMPONENTS

Wherever possible, source products, materials, components and equipment from Australian manufacturers/ suppliers which are locally produced, manufactured and fabricated in Australia.

Where products, materials, components and equipment are sourced from outside Australia, provide datasheets that show details of performance and testing to internationally recognised standards (ISO, BS, EN, ASTM, etc), for acceptance by the Superintendent, prior to use.

For proprietary materials, components and equipment, submit the manufacturer's product data as follows:

- Technical specifications and drawings.
- Type-test reports certified by a registered testing authority.
- Performance and rating tables.
- Recommendations for installation and maintenance.

1.8 SUBSTITUTIONS

Identification of a proprietary item does not necessarily imply exclusive preference for the item so identified, but indicates the necessary properties of the item.

If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives, including the following:

- Evidence that the performance is equal to or greater than that specified.

- Evidence of conformity to a cited standard.
- Samples.
- Essential technical information, in English.
- Reasons for the proposed substitutions.
- Statement of the extent of revisions to the item and/ or location.
- Statement of the extent of revisions to the construction program.
- Statement of cost implications including costs outside the contract.
- Statement of consequent alterations to other parts of the works.

If the documented products or systems are unavailable within the time constraints of the construction program, submit evidence.

If the substitution is for any reason other than unavailability, submit evidence that the substitution:

- Is of net enhanced value to the owner.
- Is consistent with the specification and is as effective as the identified item, detail or method.

Pay the cost of submissions and of evaluations and tests of proposed alternatives, whether subsequently adopted or not. The costs will be calculated at the current charge-out rates of the relevant Principal's representative or consultant(s).

1.9 SAMPLES

A sample is defined herein as a physical example that illustrates products, workmanship, materials and finishes, or equipment, and establish standards by which the work will be judged.

Where samples are required to be submitted in the Specification, provide a minimum of 3 samples of each requested finish or sufficient to show the finish range of the sample.

The Superintendent shall arrange for review of the samples by the required Principal's representative or consultant. When the sample is deemed satisfactory, written acceptance will be provided by the Superintendent before it will be tagged as 'approved'. Where the Superintendent rejects the sample, an alternative must be re-submitted promptly. Until the sample is 'approved' the item or material cannot be used in the work.

One set of approved samples shall be kept on site for comparison with the installed works, until the date of practical completion.

Provide a Samples Schedule in accordance with the schedules in section 4, for agreement with the Superintendent, prior to commencement of work. The Samples Schedule shall be revised and resubmitted as necessary.

The Contractor must allow for sufficient time in the program for samples to be reviewed, acknowledging that the steps outlined above may require more than one iterative process. Delays to the program resulting from this process will be at the risk of the Contractor.

1.10 SHOP DRAWINGS

Include dimensioned drawings showing details of the fabrication, assembly, installation, fixing and waterproofing methods of specific structural elements, building components, services and

equipment, including relationship to building structure and other services, cable type and size and marking details. These shall include necessary explanatory notes and specifications.

Do not stockpile, manufacture, assemble or supply anything depicted in the shop drawings until acceptance has been obtained. The Principal's Representative may examine shop drawings to indicate general or design approval, amendments, corrections and the like, but their comments shall not constitute an instruction under the contract, unless expressly stated.

Acceptance of shop drawings shall in no way relieve the Contractor of their obligation to construct and complete the works correctly and accurately.

Delays caused by late or incomplete submission of shop drawings will not be recognised as a reason for a contract sum adjustment or an extension of time.

Submit all documented shop drawings amended to include changes made during the progress of the work and up to the end of the defects liability period.

Submission medium: pdf via email.

Drawing size: As required to adequately convey all necessary information.

Make sure that the drawings have been checked before submission.

Submit detailed drawings showing clearly all relevant information, and are to include dimensions showing details of the fabrication and installation of structural elements, building components, services and equipment, including relationship to building structure and other services, cable type and size, and marking details. The drawings will also show the assembly of the elements to demonstrate that the design intent and Principals requirements has been achieved.

The Contractor must allow for sufficient time in the program to allow for shop drawings to be reviewed, acknowledging that the steps outlined above may require more than one iterative process. Delays to the program resulting from the review process will be at the risk of the Contractor.

1.11 WARRANTIES

If a warranty is documented or if a manufacturer's standard warranty extends beyond the end of the defects liability period, name the owner as warrantee.

Register with manufacturers as necessary.

Retain copies delivered with components and equipment.

Commence warranty periods at practical completion or at acceptance of installation, if acceptance is not concurrent with practical completion.

If installation is not by manufacturer, and product warranty is conditional on the manufacturer's approval of the installer, submit the manufacturer's written approval of the installing firm.

Refer to the warranty schedule for specific warranty periods.

1.12 OWNER'S MANUAL

Provide an Owner's Manual which shall include, but not be limited to, the following:

- Schedules of all colours, finishes, fixtures, fittings, equipment and appliances, including manufacturer and/ or supplier details.
- Operation and maintenance instructions for all appliances and equipment.

- All applicable warranties.

All documents associated with the Owner's Manual shall be incorporated into a ring binder and suitably organised using durable dividers and clear plastic sleeves, as necessary.

1.13 RECORD DRAWINGS

On completion, provide record drawings showing the work as finally fabricated and installed.

Record drawings shall be issued in the following format:

- Three hard copies.
- Electronic file in pdf format.

Sign and date all record drawings.

If errors in, or omissions from, the record drawings are found, amend the drawings and reissue.

Date for submission: Not later than 2 weeks after the date for practical completion.

1.14 MANUFACTURER'S INSTRUCTIONS

Where proprietary products, systems or items are specified, ensure that the method of installing, handling, storing, protecting, finishing and preparation of substrates, etc, is strictly in accordance with the manufacturer's instructions and recommendations.

1.15 BUSHFIRE PROTECTION

Bushfire Attack Level (BAL) to AS 3959 and the BCA.

1.16 WIND LOADS

To AS 4055 or AS/NZS 1170.2, as required.

1.17 DILAPIDATION REPORT

Submit a dilapidation report for the following:

- All areas, adjacent to or within the Site that may be affected by the work, including but not limited to trees, nature strips, kerbs and channels, traffic/ parking signs and the like.
- Buildings or any built works that are either near, adjacent to or within the Site and which may be affected by work activities including, but not limited to, structures, landscaping, pavements, services, fences and the like.
- Services including but not limited to electricity, phone/ cable systems, water and gas supply, drainage and stormwater lines, services pits and the like.

The report shall include detailed records, comprising drawings, written descriptions, and photographs, of conditions existing within the site and adjoining properties, paying particular attention to structural defects and other damage or defacement.

Arrange for at least 3 copies of each record to be endorsed by the owners, or their representatives, as evidence of conditions existing before commencement of work.

Submit 2 endorsed copies of each record and keep the other endorsed copy on site.

Submit to the owner of each adjacent property a copy of the part of the record relating to that property and obtain their written agreement to the contents of the record, before commencement of work.

On completion of work, inspect the site and adjacent properties with the owners and occupants of the properties, recording any damage that occurred during the work.

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1.18 ENERGY EFFICIENCY

Minimum 6 star Energy Efficiency Rating (HER) as certified by an independent accredited assessor, using AccuRate (NatHERS replacement) or other equivalent method (e.g. state systems such as BERS Pro and BASIX), or where permitted, NCC Performance Requirements.

2 PRODUCTS

2.1 GENERAL

Provide and select, if no selection is given, transport, deliver, store, handle, protect, finish, adjust and prepare the manufactured items for use in accordance with the current written recommendations and instructions of the manufacturer or supplier.

Proprietary items/systems/assemblies: Assemble, install or fix to substrate in accordance with the current written recommendations and instructions of the manufacturer or supplier.

If materials or products are supplied by the manufacturer in closed or sealed containers or packages, bring the material or products to point of use in the original containers or packages.

2.2 TIMBER

All new timber shall be forest certified to either:

- AS 4708 offered by the Australian Forest Certification Scheme.
- The Forest Stewardship Council Scheme.

Provide timber labelled with either of the following:

- AFS/PEFC (Australian Forestry Standard/ Program for the Endorsement of Forest Certification Schemes).
- Woodmark and SmartWood as accredited by the Forest Stewardship Council.

Chain of Custody shall be to either:

- AFS Certification: To AS 4707.
- FSC certification: To FSC requirements.

Make milled products from timbers seasoned:

- To within 3% of the equilibrium moisture content appropriate to the timber and its intended conditions of use.
- With no more than 3% difference between any two pieces in any one group.

Acclimatise timber by stacking them for two weeks in the in-service conditions with air circulation to all surfaces after the following construction operations are complete:

- Air conditioning operational.
- Lighting operational.
- Site drainage and stormwater works are complete.
- Space fully enclosed and secure.
- Wet work complete and dry.

If unseasoned timber is provided, or variation in moisture content is likely, make allowance for shrinkage, swelling and differential movement.

Where recycled timber is used, it shall be grit blasted or re-machined with all nails and screws removed and visually graded to AS 2082 (Hardwood) or AS 2858 (Softwood).

Provide timbers with natural durability appropriate to the conditions of use or preservative-treated timbers of equivalent durability.

- Natural durability class of heartwood: To AS 5604.
- Preservative treatment: To the AS 1604 series.

Where preservative treated timber is used, provide supplementary preservative treatment to all cut and damaged surfaces.

CCA treated timber: If proposed to be used, provide details.

Do not provide timbers containing Lyctus susceptible sapwood.

Hardwood timber: To AS 2796.1. Grade description to AS 2796.2.

Softwood timber: To AS 4785.1. Grade description to AS 4785.2.

Seasoned cypress pine: To AS 1810.

2.3 COMPOSITE WOOD PRODUCTS

Plywood

- Interior use generally: To AS/NZS 2270.
- Interior use, exposed to moisture, and external use: To AS/NZS 2271.
- Marine grade: To AS/NZS 2272.
- Structural plywood: To AS/NZS 2269.0

Non-structural glued laminated timber: AS 5067.

Wet processed fibreboard (including hardboard): To AS/NZS 1859.4.

Particleboard: To AS/NZS 1859.1.

Dry processed fibreboard (including medium density fibreboard): To AS/NZS 1859.2.

Decorative overlaid wood panels: To AS/NZS 1859.3.

Formaldehyde emissions:

- Plywood: Certified formaldehyde emission level tested to AS/NZS 2098.11 method 11: <1.0mg/L.
- Particleboard: Certified formaldehyde emission level tested to AS/NZS 4266.16 method 16: <1.5mg/L.
- MDF: Certified formaldehyde emission level tested to AS/NZS 4266.16 method 16: <1.0mg/L.

2.4 STEEL

Provide steel products protected from corrosion to suit the conditions of use.

The atmospheric corrosivity category for the site shall be determined in accordance with AS/NZS 2312.1.

Built-in products below damp proof course: Stainless steel 316 or engineered polymer.

Corrosion resistance table

Atmospheric corrosivity category to AS/NZS 2312	Heavy steel members including lintels more than 3.2 mm thick	Steel cladding, lining, trims and flashings
C1 and C2 (Low)	Galvanize after fabrication 600g/m²	Metallic-coated sheet AZ150
C3 (Medium)	Galvanize after fabrication 600g/m²	Metallic-coated sheet AZ200
C4 and C5 (High)	Stainless steel 316 or 316L or galvanize after fabrication	Metallic-coated sheet AZ200 plus organic coating

Atmospheric corrosivity category to AS/NZS 2312	Heavy steel members including lintels more than 3.2 mm thick	Steel cladding, lining, trims and flashings
	600g/m² plus organic coating	

Galvanize mild steel components, including fasteners, to AS 1214 or AS/NZS 4680, as appropriate, if:

- Exposed to weather and not otherwise nominated to be painted.
- Embedded in masonry.
- Exposed to or in air spaces behind external leaves of masonry walls.
- In contact with chemically treated timber.

2.5 PROTECTIVE COATINGS

Environment: To AS/NZS 2312 clause 2.3.

Coating designation: To AS/NZS 2312 Table 6.3.

Before placing bolts or other metal components in contact with CCA-treated timber, paint contact surfaces or coat in grease or a bituminous coating.

Do not fix steel framing in contact with unseasoned timber without fully painting the contact surfaces of timber and steel.

2.6 TOUGHENED GLASS

Toughened glass, wherever used, shall be heat soak tested in accordance with EN 14179-1 or to other recognised industry standards or practices.

2.7 FASTENERS

Masonry anchors: To be proprietary expansion or chemical types.

Plain washers: To AS 1237.1.

Provide washers to the heads and nuts of bolts, and the heads of coach screws.

Plugs: To be proprietary purpose-made plastic.

Powder-actuated fasteners: To AS/NZS 1873.4.

Steel nails: To AS 2334. Length shall be at least 2.5 times the thickness of the member being secured, and at least 4 times the thickness if the member is plywood or building board less than 10mm thick.

Unified hexagon bolts, screws and nuts: To AS/NZS 2465.

Coach bolts: To AS/NZS 1390.

Hexagon bolts Grades A and B: To AS 1110.1.

Hexagon bolts Grade C: To AS 1111.1.

Coach screws: To AS/NZS 1393.

Hexagon screws Grades A and B: To AS 1110.2.

Hexagon screws: Grade C To AS 1111.2.

Hexagon socket screws: To AS 1420 and AS/NZS 1421.

Machine screws: To AS/NZS 1427.

Self-drilling screws: To AS 3566.1 and AS 3566.2.

Tapping screws:

- Crossed recessed countersunk (flat - common head style): To AS/NZS 4407.
- Crossed recessed pan: To AS/NZS 4406.
- Crossed recessed raised countersunk (oval): To AS/NZS 4408.
- Hexagon: To AS/NZS 4402.
- Hexagon flange: To AS/NZS 4410.
- Hexagon washer: To AS/NZS 4409.
- Slotted countersunk (flat - common head style): To AS/NZS 4404.
- Slotted pan: To AS/NZS 4403.
- Slotted raised countersunk (oval - common head style): To AS/NZS 4405.

Washers and screw cups shall be of the same material as the screw.

Hexagon chamfered thin nuts Grades A and B: To AS 1112.4.

Hexagon nuts Grade C: To AS 1112.3.

Hexagon nuts Style 1 Grades A and B: To AS 1112.1.

Hexagon nuts Style 2 Grades A and B: To AS 1112.2.

Packings, where used, shall be concealed in the finished work.

Electroplating coatings to threaded fasteners (metric): To AS 1897 (Metric) or AS 4397 (Imperial).

3 EXECUTION

3.1 FIXING

If equipment is not suitable for fixing to non-structural building elements, fix directly to structure and trim around penetrations in non-structural elements.

Use fasteners capable of transmitting the loads imposed, and sufficient for the rigidity of the assembly.

3.2 REPAIRS TO EXISTING

Where there is a requirement for an existing building element, substrate, surface or finish to be repaired, do so to the acceptance of the Superintendent.

Should an existing building element be found to be defective and in need of repair and has not been described as such in the documents, alert the Superintendent and await further instruction.

In all instances of 'repairs to existing', agree the extent and level of quality that is required to be achieved, with the Superintendent, prior to commencement.

3.3 MAKING GOOD

Where existing building elements have been cut away, damaged or received any other detrimental effect as a result of undertaking work, these shall be made good to the acceptance of the Superintendent.

3.4 COMPLETION

Remove temporary work services and construction plant within 10 working days after occupation of the works.

Remove rubbish and surplus material from the site and clean the works throughout including interior and exterior surfaces exposed to view. Vacuum clean carpeted and soft surfaces. Clean debris from the site, roofs, gutters, downpipes and drainage systems.

Remove non-incorporated samples.

Register with manufacturers, as necessary, and provide copies of manufacturers' warranties.

Provide all manufacturers' instruction manuals.

Ensure moving parts operate safely and smoothly.

Provide a certificate which confirms that all structures, including boundary fences, have been correctly located.

Provide a plan which shows the location of underground services.

Provide evidence of approval of the local authority or principal accredited certifier and statutory authorities whose requirements apply to the work.

4 SCHEDULES

4.1 WARRANTY SCHEDULE

The following warranties shall be provided, as a minimum:

Item	Warranty Period
Cladding – AAC panel	7 years
Cladding – Fibre cement sheet	10 years
Cladding – Sheet metal	As offered by the manufacturer
Doors	5 years
Door Hardware	5 years
Joiney	10 years
Overhead doors - curtain	7 years
Overhead doors - operator	2 years
Painting generally	7 years
Powder coatings	15 years
Protective coatings to steel	15 years
Roofing – metal rainwater goods	10 years
Roofing – metal roofing	As offered by the manufacturer

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Roofing – roof tiles	50 years
Roofing – polycarbonate roofing	10 years
Termite protection	10 years
Window coverings	2 years
Tiles	As offered by the manufacturer
Carpet	5 years
Waterproofing - External membrane systems	20 years
Waterproofing - Internal membrane systems	10 years
Window and glazed door systems	10 years
Insulation generally	10 years

4.2 INSPECTION, TEST AND CONFORMITY PLAN SCHEDULE

The following ITCPs, provided in the Appendix, shall be complied with:

ITCP
Brickwork
Concrete
Painting
Tiling
Waterproofing

4.3 SAMPLE AND SUBMISSION SCHEDULE

The following samples and submissions shall be provided, as a minimum and in accordance with the detailed requirements in each individual worksection and the ITCPs.

The following table sets out the key points at which the Contractor is required to present design documentation and samples for review and approval by the Principal. Where logical, these are to be incorporated within the relevant Site Inspection points. The Contractor is to incorporate the hold points below into the Contract Program.

In reviewing drawings, samples or other documents, the Principal does not relieve the Contractor of the Contractor's responsibility for dimensions, quantities, calculations or performance. Nor does a review imply that all relevant information is necessarily shown. The purpose of the reviews is limited to enabling the Principal to assess whether the detailed design meets the design intent and project requirements.

Item	Type

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Landscaping: Turf, mulch and soils	Sample
Paving: All paving types	Sample
Concrete: Off form and worked concrete finishes	Sample
Masonry: All masonry types including mortar, sealants and accessories	Sample
Cladding: All cladding types	Sample
Joinery: Typical panels, finishes, benchtop, skirting, edge details and hardware	Sample
Rendering: All render types	Sample
Tiling: All tiles to be selected including grout and silicone	Sample
Carpets: All carpets to be selected including underlay	Sample
Painting: All typical paint colours and finishes	Sample
Powder coating: All typical powder coating colours and finishes	Sample
Light steel and timber framing	Shop Drawing
Windows and glazed doors	Shop Drawing
All bathroom layouts including plan and elevations	Shop Drawing
All kitchen layouts including plan and elevations	Shop Drawing
Work as executed services drawings	Record Drawing
Operating and maintenance manuals	Manual
Slip resistance type testing for all floor tiling	Test

0184 TERMITE MANAGEMENT

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- The soil classification, for the site, shall be determined through on site soil testing.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0222 Earthwork.*
- *0310 Concrete.*
- *0331 Masonry construction.*
- *0382 Light timber framing.*
- *0383 Structural sheet flooring.*

1.3 STANDARDS

Termite management to new buildings: To AS 3660.1.

Termite management in and around existing buildings and structures: To AS 3660.2.

1.4 WARRANTIES

Prior to Practical Completion a written warranty shall be submitted for the following:

- Termite protection system:
  - Period: 10 years.
  - Type: Renewable.

1.5 SUBMISSIONS

Termite management system: Submit installation certificate to AS 3660.1 Appendix A.

Woven stainless steel management systems: Submit certification that stainless steel type 725 has been used to the manufacturer's recommendation.

Site tests: Submit a Registered testing authority laboratory analysis certificate.

1.6 INSPECTION

Notice

Inspection: Give sufficient notice so that inspection may be made of the completed termite management system.

2 SELECTIONS

2.1 CHEMICALLY IMPREGNATED SHEET BARRIER

To AS 3660.1 Section 4.

Physical and chemical termite protection system installed at perimeters and penetrations of concrete slabs.

Product: Kordon TB or acceptable equivalent.

2.2 WOVEN STAINLESS STEEL MESH

To AS 3660.1 Section 6.

Marine grade stainless steel woven mesh.

Product: Termimesh Stainless Steel Termite Control Barrier or acceptable equivalent.

2.3 GRANULAR MATERIALS

To AS 3660.1 Section 6.

Natural, non-toxic, graded stone material forming a physical termite barrier.

Product: Granitgard Termite Management System or acceptable equivalent.

2.4 TERMITE CAP AND STRIP SHIELDS

To AS 3660.1 Section 5.

3 EXECUTION

3.1 TERMITE MANAGEMENT SYSTEM NOTICE

Provide a durable notice, permanently fixed in a prominent location, to BCA 3.1.3.2(b) and AS 3660.1.

3.2 WASTE MATERIALS

Make sure no waste materials, which could attract termites, remain on the site.

3.3 CERTIFICATE OF INSTALLATION

To AS 3660.1 Appendix A.

3.4 COMPLETION INSPECTION

At the end of the defects liability period, inspect the termite management systems and submit a report on their efficacy and status.

0201 DEMOLITION

1 GENERAL

1.1 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0221 Site preparation.*

1.2 STANDARDS

Demolition of structures: To AS 2601.

1.3 SUBMISSIONS

Hazardous materials

Audit: Prepare and submit a hazardous substances management plan to AS 2601 clause 1.6. Include the following:

- Asbestos or material containing asbestos.
- Flammable or explosive liquids or gases.
- Toxic, infective or contaminated materials.
- Radiation or radioactive materials.
- Noxious or explosive chemicals.
- Tanks or other containers which have been used for storage of explosive, toxic, infective or contaminated substances.

Off-site disposal

Disposal location: Submit the locations and evidence of conformance with the relevant authorities for the disposal of material required to be removed from the site.

Records

Dilapidation record: Submit a copy of the dilapidation record for inspection. Submit to each owner of each adjacent property a copy of the part of the record relating to that property and obtain their written agreement to the contents of the record, before commencement of demolition.

Recycling

Delivery location: Submit the name and address of the proposed recycling facility.

Certification: Provide evidence of delivery to the nominated recycling facility.

Stockpiles

Location: Submit the locations for on-site stockpiles for demolished materials for recycling in the works. Coordinate with the locations of storage for other waste streams and prevent mixing or pollution.

1.4 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Adjacent structures before commencement of demolition.
- Services before disconnection or diversion.
- Trees to be retained, before commencement of demolition.
- Contents of building before commencement of demolition.

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- Structure after stripping and removal of roof coverings and external cladding.
- Underground structures after demolition above them.
- Excavations remaining after removal of underground work.
- Site after removal of demolished materials.
- Services after reconnection or diversion.

2 PRODUCTS

2.1 DEMOLISHED MATERIALS

Except for items nominated to be recovered for re-use in the works, or delivered to the owner and materials to be recycled in the works, take possession of demolished materials and remove them from the site. Do not burn or bury demolished materials on the site. Prevent spillage of demolished materials in transit.

Where possible, dismantle building components for off-site recycling.

3 EXECUTION

3.1 TEMPORARY SUPPORT

Until permanent support is provided, provide temporary support for sections of existing buildings which are to be altered and which rely for support on work to be demolished.

If temporary support is required, certification for its design and installation is required from a professional engineer engaged by the Contractor.

3.2 PROTECTION

Provide protection to all items which are to remain on the site during the works.

Prevent the encroachment of demolished materials onto adjoining properties, including public places.

If walls or roofs are opened for alterations and additions, or the surfaces of adjoining buildings are exposed, provide temporary covers to prevent water penetration. Where necessary, protect and weatherproof the surfaces of adjacent structures exposed by demolition.

Before commencing demolition, locate and mark existing underground services in the areas which will be affected by the demolition operations. Contact DIAL BEFORE YOU DIG to identify location of underground utility services pipes and cables. Do not excavate by machine within 1 m of existing underground services.

3.3 DEMOLITION – BUILDING SERVICES

Decommission, isolate, demolish and remove from the site all existing redundant equipment including associated components that become redundant as a result of the demolition. Disassemble or cut up equipment where necessary to allow removal.

Recover all components associated with the items to be reused. Minimise damage during removal and deliver to the locations agreed.

Clean components to be re-used and test for compliance with current Australian Standards before returning to service. Provide results of compliance tests.

3.4 HAZARDOUS MATERIALS REMOVAL

To AS 2601 clause 1.6.2.

Refer to the NOHSC 2002 Code of Practice for the Safe Removal of Asbestos.

Examine the site and items to be demolished and determine the nature and extent of any hazardous materials required to be removed. Handle and dispose of them in a safe manner.

Where a Hazardous Materials Report has been provided, the Contractor shall satisfy itself that the report is complete and correct.

3.5 NOTICE OF COMPLETION

Give at least 7 working days notice of completion of demolition so that adjacent structures may be inspected following completion of demolition.

Make good any damage arising out of demolition work. Obtain written acceptance from the owner of each adjoining property of completeness and standard of making good.

0221 SITE PREPARATION

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The soil classification, for the site, shall be determined through on site soil testing.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*

1.3 INSPECTION

Give notice so that inspection may be made of the following:

- Enclosures around trees to be retained.
- Trees to be removed.

2 EXECUTION

2.1 CONTROL AND PROTECTION

Plan and carry out the work so as to avoid erosion, contamination, and sedimentation of the site, surrounding areas, and drainage systems.

Ensure that wash out does not enter waterways or stormwater drains and that there are no cross connections between the stormwater and the public sewerage system.

Keep earthworks free of water. Provide and maintain slopes, crowns and drains on excavations and embankments to ensure free drainage. Place construction, including fill, masonry, concrete and services, on ground from which free water has been removed. Prevent water flow over freshly laid work.

2.2 TREE PROTECTION

Retain and protect all trees not marked for removal.

Tree protection zone: To AS 4970 Section 3.

Tree protective measures: To AS 4970 Section 4.

Keep the area within the dripline free of sheds and paths, construction material and debris.

Do not remove topsoil from, or add topsoil to, the area within the dripline of the trees.

Use hand methods to locate, expose and cleanly remove the roots on the line of excavation.

Where necessary, provide fences or safety barriers for tree protection.

2.3 SITE CLEARING

Clear only areas to be occupied by works such as structures, paving, excavation, regrading and landscaping or other areas designated to be cleared.

Remove everything on or above the site surface, including rubbish, scrap, grass, vegetable matter and organic debris, scrub, trees, timber, stumps, boulders and rubble, unless noted to be retained.

Remove turf to a depth just sufficient to include the root zone.

Grub out stumps and roots over 75mm diameter, to a minimum depth of 500mm below subgrade under buildings, embankments or paving, and 300 mm below the finished surface in unpaved areas. Backfill holes, remaining after grubbing, with sand material, to prevent ponding of water. Compact the material to the relative density of the existing adjacent ground material.

Remove cleared and grubbed material from the site and dispose of legally.

Where change in level between crest and toe is more than 1.5 m, protect from erosion with geofabric, a hessian and tar or heavy duty black polythene sheet waterproof cover. Seal joints and securely fix down at crest and toe.

Continually remove unwanted stripped soil and other material from the site as the work proceeds, including any material dropped on footpaths or roadways.

0222 EARTHWORK

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- The soil classification, for the site, shall be determined through on site soil testing.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0221 Site preparation.*
- *0223 Service trenching.*
- *Structural Engineer's documentation.*

1.3 STANDARDS

Earthworks: To the recommendations of AS 3798.

1.4 INTERPRETATION

For the purposes of this worksection the following definitions apply:

- Site classification: To AS 2870 and BCA 3.2.4.
- Bad ground: Ground unsuitable for the purposes of the works, including fill liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances and ground which is, or becomes, soft, wet or unstable.
- Rock: Monolithic material, with volume greater than 0.5m^3, which cannot be removed until broken up by rippers or percussion tools.
- Subgrade: The trimmed or prepared portion of the formation on which the pavement, footing or slab is constructed. Generally taken to relate to the upper line of the formation.
- Zone of influence: A foundation zone bounded by planes extending downward and outward from the bottom edge of a footing, slab or pavement and defining the extent of foundation material having influence on the stability or support of the footings, slab or pavement.

1.5 TOLERANCES

Finish the surface to the required level, grade and shape within the following tolerances:

- Under building slabs and load bearing elements: + 0, - 25 mm.
- Pavement subgrades: + 0, - 40 mm.
- Batters: No steeper than the slope shown on the drawings. Make sure flatter slopes do not impact on boundaries or required clearances to buildings, pavements or landscaping.
- Other ground surfaces: ± 50 mm, provided the area remains free draining and matches adjacent construction where required. Provide smoothness as normally produced by a scraper blade.

1.6 INSPECTION

Give notice so that inspection may be made of the following:

- Items to be measured as listed in **RECORDS OF MEASUREMENT**.
- Areas to be cleared and/or stripped of topsoil.

- Areas stripped of topsoil.
- Excavation completed to contract levels or founding material.
- Proof roll subgrade before placing fill.
- Filling completed to contract levels.
- Stockpiled topsoil before spreading.

2 PRODUCTS

2.1 FILL MATERIALS

To AS 3798 clause 4.4 including inorganic, non-perishable material suitably graded and capable of compaction to the documented density.

Do not use unsuitable material for fill in conformance with AS 3798 clause 4.3.

Do not stockpile excavated material against tree trunks, buildings, fences or obstruct the free flow of water along gutters where stockpiling is permitted along the line of the trench excavation. If stockpiling is not permitted under the contract, dispose of excavated material off-site to AS 3798 clause 6.1.8.

3 EXECUTION

3.1 GEOTECHNICAL

If the following are encountered, give notice immediately and obtain instructions before carrying out any further work in the affected area:

- Bad ground.
- Rock.

3.2 RECORDS OF MEASUREMENT

Excavation and backfilling

Agreed quantities: If a schedule of rates applies, provisional quantities are specified, or there are variations to the contract levels or dimensions of excavations, do not commence backfilling or place permanent works in the excavation until the following have been agreed and recorded:

- Depths of excavations related to the datum including piering depths.
- Final plan dimensions of excavations.
- Quantities of excavations in rock.

Method of measurement: By registered surveyor unless otherwise agreed.

Rock

Level and class: If rock is measured for payment purposes, whether as extra over excavation of material other than rock or for adjustment of provisional measurements, do not remove the rock until the commencing levels and the classes of rock have been determined.

3.3 REMOVAL OF TOPSOIL

Remove topsoil from areas of cut or fill and areas occupied by structures, pavements and embankments.

Stockpile site topsoil intended for re-use and imported topsoil where necessary.

Establish stockpiles to maximum height of 1.5m.

Protect the topsoil stockpiles from contamination by other excavated material, weeds and building debris.

3.4 EXCAVATION

Excavate over the site to give correct levels and profiles required as the basis for structures, paving and landscaping. Allow for compaction, settlement or heaving.

Excavate for footings to the required sizes and depths. Confirm that the foundation conditions meet the design bearing capacity.

Provide a clear space under timber or steel bearers, minimum 400mm.

Do not use explosives.

If excavation is required within the zone of influence of an existing footing, use methods including (temporary) shoring and underpinning which maintain the support of the footing and ensure that the structure and finishes supported by the footing are not damaged.

Contact DIAL BEFORE YOU DIG to identify the location of underground utility services pipes and cables.

Provide even plane bearing surfaces for loadbearing elements including footings. Step to accommodate level changes. Make the steps to the appropriate courses if supporting masonry.

If excavation exceeds the required depth, or deteriorates, reinstate with fill to the correct depth, level and bearing value.

Grade to give falls away from buildings, minimum 1:100.

Consult the Geotechnical Engineer before forming vertical cuts in rock.

Grade the ground surface under suspended floors to drain ground or surface water away from buildings without ponding.

3.5 PREPARATION FOR FILLING

Prepare the ground surface before placing fill (including topsoil fill), ground slabs or load bearing elements to AS 3798 clause 6.1.5. Remove materials which will inhibit or prevent satisfactory placement of fill layers, loose material, debris and organic matter.

3.6 PLACING FILL

Placement: To BCA 3.2.2.

Place fill in near-horizontal layers of uniform thickness no greater than 150 mm after compaction, deposited systematically across the fill area.

Place and compact fill in layers simultaneously on both sides of structures, culverts and pipelines to avoid differential loading.

Adjust the moisture content of fill during compaction within the range of 85% to 115% of the optimum moisture content determined by AS 1289.5.1.1 or AS 1289.5.2.1 as appropriate, in order to achieve the required density.

Compact the subgrade and each layer of fill to the required depth and density, as a systematic construction operation. Shape surfaces to provide drainage and prevent ponding.

Unless nominated otherwise, soil compaction shall comply with the following:

Location	Cohesive soils. Minimum dry density ratio (standard compaction) to AS 1289.5.4.1	Cohesionless soils. Minimum density index to AS 1289.5.6.1
Residential: Lot fill, house sites.	95	70
Pavements: Fill to support pavements Subgrade to 300 mm deep	 95 98	 70 75

3.7 COMPACTION REQUIREMENTS FOR FILL AND SUBGRADE

Density

General: Compact the subgrade and each layer of fill to the required depth and density, as a systematic and construction operation. Shape surface to provide drainage and prevent ponding.

Excavated and stripped ground surface: After excavation and/or stripping, compact these surfaces to a minimum depth of 150 mm.

Maximum rock and lump size in layer after compaction: To AS 3798 clause 6.2.2.

Fill batter faces: Either compact separately, or overfill and cut back. Form roughened surfaces to the faces.

Minimum relative compaction: To AS 3798 Table 5.1.

Compaction control tests

Compaction control tests: To AS 1289.5.4.1 or AS 1289.5.7.1.

Compaction control test frequency

Standard: To AS 3798 Table 8.1.

Confined operations: 1 test per 2 layers per 50 m^2.

0223 SERVICE TRENCHING

1 PRODUCTS

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- The soil classification, for the site, shall be determined through on site soil testing.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0221 Site preparation.*
- *0222 Earthwork.*
- *Structural Engineer's documentation.*

1.3 FILL MATERIALS

Backfill material shall comply with the *0222 Earthwork* worksection and be free from stones larger than 100mm maximum dimension and as follows:

- Next to services: Do not place any particles greater in size than 25mm within 150mm of services.
- Under paved areas and within 4 m of structures: Coarse sand, controlled low strength material or fine crushed rock.
- In reactive clay: In sites classified M, M-D, H1, H1-D, H2, H2-D, E or E-D to AS 2870, re-use excavated site material at a moisture content within ± 1% of that of the adjoining in situ clay.

1.4 SUBMISSIONS

Submit a plan of trench works noting the location and type of service. Advise proposed duration of open excavation. Submit details of proposed equipment and method of excavation.

If shuttering and/or bracing of the sides of a trench is required for safety and stability, provide proposals.

Provide a geotechnical report supporting the procedures proposed for trenching and/or boring.

Identify WHS hazards that may be encountered with deep trenches including toxic gases and liquids.

Submit boring proposals for the following:

- Limits on length.
- Existence of other services and method of protection.
- Pressure grouting to voids.
- The effect of pressure grouting on other services, ground heave and proposals for minimising such effects.
- Access to properties outside the site.
- Council permits.
- Service interruptions including a plan for minimising unintended interruptions.

Submit the locations and evidence of compliance with the relevant authorities for the disposal of material required to be removed from the site.

1.5 INSPECTION

Give notice so that inspection may be made at the following stages:

- Service trenches excavated before laying the service.
- Services laid in trenches and ready for backfilling.

2 EXECUTION

2.1 EXISTING SURFACES

Sawcut trench set out lines in concrete and asphalt pavements for the full depths of the bound pavement layers except where the set out line is located along expansion joints.

Take up segmental paving units, both full and cut by hand, between the trench set out lines, and neatly stack on wooden pallets at locations as directed.

2.2 EXCAVATING

Excavate for underground services in conformance with the following:

- To required lines and levels, with uniform grades.
- Straight between access chambers, inspection points and junctions.
- With stable sides.

Keep trench widths to the minimum consistent with the laying and bedding of the relevant service and construction of access chambers and pits.

2.3 TRENCH BACKFILL

Backfill service trenches as soon as possible after laying and bedding the service, if possible on the same working day.

Place fill in accordance with the *0222 Earthwork* worksection.

Compact all material in layers not exceeding 150 mm compacted thickness. Compact each layer to the relative compaction specified before the next layer is commenced.

2.4 SURFACE RESTORATION

Reinstate existing surfaces removed or disturbed by trench excavation to match existing and adjacent work.

0241 LANDSCAPE – WALLING AND EDGING

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide walling and edging as shown on the drawings.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*

1.3 INSPECTION

Notice

Inspection: Give adequate notice so inspection may be made of the following:

- Setting out before commencement of construction.
- Geotextiles and subsurface drainage in place before backfilling.

2 PRODUCTS

2.1 TIMBER

Hazard class

General: As defined in AS 1604.1.

Hardwood

General: To AS 2796.1 Section 2.

For structural purposes: To AS 2082.

Durability class: To AS 1720.2.

Softwood

General: To AS 4785.1 Section 2.

Seasoned cypress pine: To AS 1810 Section 2.

For structural purposes: To AS 2858.

Preservative treatment

Timber type: Provide only timbers with preservative treatment appropriate to the Hazard class.

Cut surfaces: Provide supplementary preservative treatment to all cut and damaged surfaces.

CCA treated timber: If proposed, provide details.

2.2 STEEL

Steel tubes

Posts, rails, stays: To AS/NZS 1163.

- Grade: C350L0.

Wire

Chainwire, cable wire, tie wire and barbed wire: To AS 2423.

2.3 CONCRETE

General
Standard: To AS 1379.

Exposure classification: To AS 3600 Table 4.3.

Grade: Where there are cast in metal items:

- Exposure classification:
  . A1, A2: N25.
  . B1: N32.
  . B2, C: N40.
  . Otherwise: N20.

2.4 DRY STONE WALLS

Walling stone
Natural stone: Stone of uniform quality, sound and free from defects liable to affect its strength, appearance or durability.

Field stone: Local weathered uncut random sized natural stones.

Quarried stone: Cut or uncut random or regular size stone.

2.5 SLEEPER WALLS

Sleepers
General: To AS 3818.2.

Hardwood: Sound durability class or preservative treated hardwood railway sleepers.

Softwood: Sound preservative treated softwood sleepers.

2.6 GEOTEXTILES

General
Type: Polymeric fabric formed from a plastic yarn composed of at least 85% by weight of propylene, ethylene, amide or vinyledenechloride and containing stabilisers or inhibitors to make the filaments resistant to deterioration due to ultraviolet light.

Identification and marking: To AS 3705.

Protection
General: Provide heavy duty protective covering. Store clear of the ground and out of direct sunlight. During installation do not expose the filter fabric to sunlight for more than 14 days.

2.7 EDGING

Sawn timber
Size: Minimum 20mm thickness

Concrete
Standard: To AS 1379 – Grade N20.

Size: 150-300mm

Steel
Finish: Hot-dip galvanized.

3 EXECUTION

3.1 GENERAL

Set-out

General: Set out the positions of walls and edging and mark the positions of furniture as shown on the drawings.

Clearing

Extent: Except for trees or shrubs to be retained, clear vegetation within 1 m of the landscape walls. Grub out stumps and roots of removed trees or shrubs and trim the grass to ground level, but do not remove the topsoil.

Excavation

Extent: Excavate for footings as shown on the drawings.

Drainage

Extent: All retaining walls are to have suitably placed subsurface drains behind walls, backfilled with blue metal aggregate or similar, to the full height of the wall, with geotextile fabric and waterproofing membrane applied to back of wall.

3.2 DRY STONE WALLS

Construction

Generally: Select the stones for their locations and lay them in the wall with the minimum of stonecutting as follows:

- Each stone is stable, non-rocking, and firmly interlocked with its neighbours without mortar.
- The wall face shows reasonably regular, flat and vertical stone faces.
- Vertical joints or perpends between stones are spanned by the next stone above.
- Stones are laid generally as through stones whenever possible.
- At least 50% of footings, 30% of wall stones, and all coping stones are laid as through stones.

Footings: Select the largest, flattest and most regular stones for footings, and set them one third of their depth into the ground.

Copings: Select stones of reasonably uniform size and finish the top of the wall to a level line.

Retaining walls

Construction: Where dry stone walls act as retaining walls, construct the stonework to be free draining through the wall. Batter back the wall face 50 mm to 70 mm for every 300 mm in height. Secure the top course of the wall with cement mortar bedding. Backfill progressively, with a layer at least 300 mm thick of porous material, such as coarse aggregate or crushed rock in the size range 20 to 40 mm.

Minimum thickness: 300 mm.

Rip-rap retaining walls

Construction: Construct as dry stone retaining walls with large random sized boulders recovered from excavations, to form gravity walls retaining, and supported by, embankments. Place boulders with large face down and stepped back from boulders below.

3.3 SLEEPER WALLS

Construction

Wall: Erect sleeper posts at 2 m centres, buried one third. Brace at half height of wall with sleepers returned into embankment, spiked to posts. Lay sleepers in stretcher bond behind the verticals and

securely spike together at joints and at 2 m centres. Back with geotextile and place a 100 mm draining layer of coarse sand or fine gravel between the fabric and backfill.

Backing: Backfill to ground level with compacted fine crushed rock or gravels.

3.4 EDGING

Sawn timber

Installation: Timber edgings to be minimum 20mm thick. Set edgings flush with adjoining surfaces. Pegs to be nominally 450mm length. Drive pegs into the ground at 1200 mm centres on the planting side of the edging and on both sides of joints between boards, with peg tops 15 mm below top of edging. Fix the pegs with galvanised nails, two per fixing.

Curving: Space the pegs to hold edging to a uniform curve. Reduce edging thickness to 20mm if required to enable it to be bent.

Concrete

Edging strip: Concrete edging strip to be 150mm width. Place in a shallow trench between timber forms. Wood float finish flush with the adjacent finished grass level. Provide control joints, filled with resilient bituminous material, at 3 m maximum centres.

Concrete kerb: Fixed form, extrusion or slip forms to AS 2876.

Steel

Installation: Nominal gauge range 2-5 mm. Set edgings flush with adjoining surfaces. Pegs nominally 10 x 10 x 200 mm. Drive steel pegs into the ground at 1200 mm centres on the planting side of the edging, with peg tops 15 mm below top of edging. Fix the pegs with spot weld fixing to edge.

0242 LANDSCAPE – FENCES AND BARRIERS

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide fences and barrier systems as shown on the drawings.

Performance
Requirements:

- Complete for their function.
- Conforming to the detail and location drawings.
- Firmly fixed in position.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following:

- 0171 General requirements.

1.3 INSPECTION

Notice
Inspection: Give adequate notice so that inspection may be made of the following:

- Boundary survey location if requested.
- Set-out before construction.
- Foundation conditions before placing concrete in footings.

2 PRODUCTS

2.1 TIMBER

Durability
Durability Class to AS 1720.2

Hazard Class to AS 1604.1

Posts and rails
Hardwood: To AS 2082.

Softwood: To AS 2858.

Preservative treatment
Timber type: Provide only timbers with preservative treatment appropriate to the Hazard class.

Cut surfaces: Provide supplementary preservative treatment to all cut and damaged surfaces.

CCA treated timber: If proposed to be used, provide details.

2.2 STEEL

Steel tubes
Posts, rails, stays and pickets: To AS/NZS 1163.

Grade: C350L0.

Post and rail finish: Hot-dip galvanize.

Wire
Cable wire, tie wire: To AS 2423.

Coating: Plastic, black or recessive colour

3 EXECUTION

3.1 CONSTRUCTION GENERALLY

Set-out
General: Set out the fence line and mark the positions of posts, gates and bracing panels as shown on the drawings.

Property boundaries: Confirm by survey.

Clearing
Fence line: Except for trees or shrubs to be retained, clear vegetation within 1 metre of the fence alignment. Grub out the stumps and roots of removed trees or shrubs and trim the grass to ground level, but do not remove the topsoil.

Excavation
Posts: Excavate post holes so that they have vertical sides and a firm base. Spread surplus material on the principal's side of the fence.

Erection
Line and level: Erect posts vertically. Set heights to follow the contours of natural ground.

Earth footings
Base: Place 100 mm of gravel in the footing base under posts.

Compaction: Backfill with earth around posts, compacting firmly by hand or machine in 150 mm deep layers.

Concrete footings
In ground: Size and strength to the Engineer's approval. Place mass concrete around posts to protect posts from waterlogged conditions and finish with a weathered top falling 25 mm from the post to ground level.

On slabs: Provide welded and drilled post base flanges for fixing with masonry anchors to the concrete.

3.2 GATES

Hardware
General: Provide the following:

- Drop bolt and ferrule to each leaf of double gates.
- Latch to one leaf of double gates.

- Provision for locking by padlock.
- Hinges with smooth operation and adjustment for future sagging.

Hand access
Requirement: Depending on gate system installed, provide hand holes to give access from outside to reach locking provision, if required.

3.3 TIMBER FENCING

Radiata pine paling fence
Height (mm): Maximum 1800mm

Maximum post spacing:

- General: 2400 mm.
- For lap and cap: 2700 mm.

Member sizes (sawn):

- Intermediate posts: 140 x 45 mm.
- End, corner and gate posts: 100 x 100 mm.
- Rails: 75 x 50 mm.
- Palings:
  - General: 100 x 15 mm.
  - For lap and cap: 150 x 15 mm.

Footing type: Concrete, size and strength to the Engineer's approval.

Footing size: 250 mm diameter x 600 mm depth.

Hardwood paling fence
Height (mm): Maximum 1800mm

Maximum post spacing: 2700 mm.

Member sizes (sawn):

- Intermediate posts: 125 x 50 mm.
- End, corner and gate posts: 125 x 125 mm.
- Rails: 75 x 50 mm.
- Capping for lap and cap type: 100 x 50 mm dressed with weathered top.
- Palings, general: 100 x 13 mm.
- Palings, for lap and cap: 150 x 13 mm.

Footing type: Earth.

Footing size: 250 mm diameter x 600 mm depth.

Installation
General: Mortice posts, taper splice rails and nail twice in mortices. Set pickets and palings clear of the ground.

Picket fence: Nail twice to each rail.

Plain paling fence: Provide 2 rails for fences up to 1800 mm high, and locate 200 mm from the tops and bottoms of the palings. Close butt palings and nail twice to each rail.

Lap and cap paling fence: Provide 2 rails for fences up to 1800 mm high, and locate 200 mm from the bottoms of the palings and abutting the tops of palings. Close butt larger palings and nail twice to each rail. Fix smaller palings over joints and nail twice to each rail. Nail capping to the top rail.

Gates
Ledges and braces: Match fence rails.

Pickets or palings: Match fence.

3.4 CHAIN LINK FABRIC FENCING

Security fencing and gates
Standard: To AS 1725.1.

Design options:

- Type 1: Rail-less security fencing (with 3 cables).
- Type 2: Pipe rail security fencing (nominate pipe rail positions).

Installation: To AS 1725.1.

0251 LANDSCAPE – SOILS

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide landscape soil to all planted and turfed areas as shown on the drawings.

Performance

Identification of fit for purpose as outlined below.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0222 Earthwork.*

1.3 STANDARDS

Soils

Site and imported topsoil: To AS 4419.

Potting mixes: To AS 3743.

Composts, soil conditioners and mulches: To AS 4454.

1.4 INTERPRETATION

Definitions

General: For the purposes of this worksection the following definitions apply:

- Bad ground: Ground unsuitable for the work, including fill liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances and ground which is, or becomes, soft, wet or unstable.
- Imported topsoil: Similar to naturally occurring local topsoil, suitable for the establishment and ongoing viability of the selected vegetation, free of weed propagules and of contaminants, and classified by texture to AS 4419 Appendix 1, as follows:
  - Fine: Clay loam, fine sandy loam, sandy clay loam, silty loam, loam.
  - Medium: Sandy loam, fine sandy loam.
  - Coarse: Sand, loamy sand.
- Low density soil: Soil for use on an artificial base material, e.g. roof top garden or large landscape containers. Such soils will usually be blends of mineral and organic compounds, and will typically have:
  - Bulk density: 0.3 to 0.6 Kg/L.
  - Organic matter: 10% to 40% by mass.
- Natural soil: A soil that has been dug from the landscape and is presented for use with no more than minor amendment. This soil could be topsoil, subsoil or a mixture of them and have a bulk density greater than 0.6 Kg/L.
- Organic soil: A general purpose soil (normally an amended natural soil or soil blend) that has:
  - Bulk density: > 0.6 Kg/L.
  - Organic matter: 15% to 25% by mass. Naturally occurring organic soil can be 95% organic by mass.
- Site rock: Rocks selected for salvage.

- Site topsoil: Soil excavated from the site which contains organic matter, supports plant life, conforms generally to the fine-to-medium texture classification to AS 4419 (loam, silt, clay loam) and is free from:
  . Stones more than 25 mm diameter.
  . Clay lumps more than 75 mm diameter.
  . Weeds and tree roots.
  . Sticks and rubbish.
  . Material toxic to plants.
- Soil blend: A general purpose soil derived from the blending of two or more of sand, natural soil material or organic materials, and with a bulk density and organic matter content to meet site specific requirements.
- Top dressing: A soil which is suitable for surface application to lawn.

1.5 SITE INVESTIGATION

Notice

Requirement: If the following are encountered, give notice immediately and obtain instructions before carrying out any further work in the affected area:

- Bad ground.
- Discrepancies.
- Rock.
- Springs, seepages.
- Topsoil less than 100 mm deep.

1.6 SUBMISSIONS

Execution

Program: Submit a work program in the form of a bar chart, for the landscape works, to be incorporated into the main program.

Materials

Supplier's data: Submit supplier's data including the following:

- Material source of supply for topsoil, filling, stone and filter fabrics.

Compost: Submit a certificate of proof of compost pH value.

Samples

General: Submit representative samples of each material, packed to prevent contamination and labelled to indicate source and content.

Bulk materials: Submit a 1 kg sample of each type specified. Submit bulk material samples, with required test results, at least 5 working days before bulk deliveries.

Suppliers

Statements: Submit statements from suppliers of soils and other materials, giving the following, where applicable:

- Particulars of the supplier's experience in the required type of work.
- Production capacity for material of the required type, sizes and quantity.
- Lead times for delivery of material to the site.

1.7 INSPECTION

Notice

Inspection: Give adequate notice so that inspection may be made of the following:

- Setting out completed.

- Subgrades cultivated or prepared for placing topsoil.
- Topsoil spread before planting.
- Grassing bed prepared before turfing, seeding, or temporary grassing.

2 PRODUCTS

2.1 TOPSOIL

Source

General: If the topsoil type cannot be provided from material recovered from the site, provide imported topsoil.

General

Deliveries: Documentation to AS 4419, clause 8.

Additives: If using additives to raise topsoil to the required standard, ensure compliance with the relevant test criteria of AS 4419.

Nitrogen drawdown: If the NDI_{150} value is less than 0.5 to AS 4419 Appendix E add a source of soluble nitrogen to bring the value above zero.

Compost: Provide well rotted vegetative material or animal manure, free from harmful chemicals, grass and weed growth to the organic content by mass as documented in the **SELECTIONS**.

Bushland restoration nutrient levels: Provide topsoil with nutrient levels related to the soils of the local natural bushland.

Site topsoil

General: Provide site topsoil, as documented in the **Site topsoil schedule**.

Soil blend: If required, stripped topsoil with ameliorants.

Imported topsoil

General: Provide imported topsoil as documented in the **Imported topsoil schedules**.

Topsoil particle size table (% passing by mass)

Sieve aperture to AS 1152 (mm)	Soil textures		
	Fine	Medium	Coarse
2.36	100	100	100
1.18	90 – 100	95 – 100	95 – 100
0.60	75 – 100	75 – 100	70 – 90
0.30	57 – 90	55 – 85	30 – 46
0.15	45 – 70	38 – 55	10 – 22
0.075	35 – 55	25 – 35	5 – 10
0.002		2 – 15	2 – 8

Topsoil nutrient level table

Nutrient	Unit	Sufficiency range
Nitrate-N (NO_3)	mg/kg	> 25
Phosphate-P (PO_4) – P tolerant	mg/kg	43 - 63
Phosphate-P (PO_4) – P sensitive	mg/kg	< 28
Phosphate-P (PO_4) – P very sensitive	mg/kg	< 6

Nutrient	Unit	Sufficiency range
Potassium (K)	mg/kg	178 - 388
Sulphate-S (SO_4)	mg/kg	39 - 68
Calcium (Ca)	mg/kg	1200 - 2400
Magnesium (Mg)	mg/kg	134 - 289
Iron (Fe)	mg/kg	279 - 552
Manganese (Mn)	mg/kg	18 - 44
Zinc (Zn)	mg/kg	2.6 - 5.1
Copper (Cu)	mg/kg	4.5 - 6.3
Boron (B)	mg/kg	1.4 - 2.7
Method References pH in H_2O (1:5), pH in $CaCl_2$ (1:5) and Electrical Conductivity (EC) by Rayment & Higginson (1992) method 4A2, 4B2, 3A1 Soluble Nitrate-N by APHA 4500 Soluble Chloride by Rayment & Higginson (1992) modified method 5A2 Extractable P by Mehlich 3 – ICP Exchangeable cations – Ca, Mg, K, Na by Mehlich 3 – ICP Extractable S by Mehlich 3 – ICP Extractable trace elements (Fe, Mn, Zn, Cu, B) by Mehlich 3 - ICP		

2.2 STRUCTURAL SOIL

Structural soil type table

Type	Description	Fertiliser	Depth
Structural soil 40 mm	80% 40 mm basalt aggregate 20% filler soil.	Trace element mix: 300 g/m³ Potassium nitrate: 500 g/m³ Ammonium nitrate: 500 g/m³ Superphosphate: 500 g/m³ Ion sulphate: 1.5 kg/m³ 8/9 month Controlled Release: 2 kg/m³ Gypsum: 500 g/m³ Magnesium sulphate: 400 g/m³ Magrilime: 600 g/m³	Varies

2.3 TESTING

Soil tests

General: To AS 4419, Table 1.

Sampling: As recommended in AS 4419 Appendix A.

Laboratory: NATA registered.

Imported topsoil tests: Type tests to AS 4419 Appendix B to I (topsoil), or AS 3743 Appendix D to G (potting mixes), as applicable.

Site topsoil tests: To AS 4419 Appendix C to I.

3 EXECUTION

3.1 PREPARATION

Vegetative spoil

Spoil suitable for mulch or spreading for bushland restoration: Spread freshly harvested native plant biomass, free of weed propagules.

Unsuitable material: Remove vegetative spoil from site. Do not burn.

3.2 TOPSOIL

Site topsoil preparation

Screeding: By a power hydraulic screen capable of handling 100 tonne per hour, with sieves grading from 20 mm to 15 mm.

Waste: Remove from site all clay lumps, balled compacted particles greater than 20 mm, stones and trash foreign to the normal composition of soil.

Contamination: Give notice to the Superintendent of any contamination. If diesel oil, cement or other phytotoxic material has been spilt on the site topsoil, excavate the contaminated soil and dispose of it off the site.

Admixtures: During the screening process add the following:

- 15% by weight coarse sand minimum particle size 0.2 mm.
- Ameliorants if recommended in the soil tests specified in **SUBMISSIONS**.

Additives program: 8 weeks before stolonizing or turfing.

Placing topsoil

Site topsoil: Do not incorporate site topsoil into the works until soil testing certification has been approved. Remove unauthorised material from the site.

General: Spread the topsoil on the prepared subsoil and grade evenly, making the necessary allowances to permit the following:

- Required finished levels and contours may be achieved after light compaction.
- Grassed areas may be finished flush with adjacent hard surfaces such as kerbs, paths and mowing strips.

Spreading: On steep batters, if using a chain drag, make sure there is no danger of batter disturbance.

Finishing: Feather edges into adjoining undisturbed ground.

Consolidation

General: Compact lightly and uniformly in 150 mm layers. Avoid differential subsidence and excess compaction and produce a finished topsoil surface which has the following characteristics:

- Finished to design levels.
- Smooth and free from stones or lumps of soil.
- Graded to drain freely, without ponding, to catchment points.
- Graded evenly into adjoining ground surfaces.
- Ready for planting.

Topsoil depths

General: Spread topsoil to the following typical depths:

- Excavated planting areas:

  - If using organic mulch, 225 mm.
  - If using gravel mulch, 250 mm.
- Irrigated grassed areas generally: 150 mm.
- Irrigated grassed areas, heavy use (e.g. playing fields, playgrounds, public parks): 200 mm.
- Non-irrigated grass areas: 100 mm.
- Earth mounds:
  - Mass planted surfaces: 300 mm.
  - Grassed surfaces: 100 mm.
- Top dressing: 10 mm.

Surplus topsoil

General: Spread surplus topsoil on designated areas on site or dispose off site.

3.3 STRUCTURAL SOIL

Preparation

Existing soil: Remove.

Subsoil: Break up the surface and shape to drains. Remove rock.

Construction

Spreading: Maintain a self-draining surface.

Compaction: To the *0222 Earthwork* worksection **COMPACTION REQUIREMENTS FOR FILL AND SUBGRADE**.

Protection: Limit the size of compaction equipment or compact by hand to prevent damage.

Moisture content: Adjust the moisture content at the time of works to 12.5% of the optimum moisture content to AS 1289.5.4.1.

Contaminated structural soil: Excavate and dispose off-site.

Surplus structural soil: Remove.

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0252 LANDSCAPE – SOFT SURFACES

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide soft surfaces for landscaping as shown on the drawings.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*

1.3 SUBMISSIONS

Execution details

Program: Submit a work program in the form of a bar chart, for the landscape works, to be incorporated into the main program.

Maintenance program: Submit a proposed planting maintenance program.

Material storage on site: Submit proposal showing the location, size, and duration of the storage.

Materials

Supplier's data: Submit supplier's data including the following:

- Material source of supply.

Samples

General: Submit representative samples of turf selected, packed to prevent contamination and labelled to indicate source and content.

Suppliers

Statements: Submit statements from suppliers, giving the following, where applicable:

- Particulars of the supplier's experience in the required type of work.
- Production capacity for material of the required type and quantity.
- Lead times for delivery of material to the site.

1.4 INSPECTION

Notice

Inspection: Give adequate notice so that inspection may be made of the following:

- Clearing completed.
- Setting out completed.
- Grassing bed prepared before turfing, seeding, or temporary grassing.
- Grassing or turfing completed.

2 PRODUCTS

2.1 GRASS

Turf

Supplier: Obtain turf from a specialist grower of cultivated turf.

Quality: Provide turf of even thickness, free from weeds and other foreign matter.

Stolons
Characteristics: Well established fibrous runners 50 to 100 mm in length, with minimum green leaf material, obtained from a specialist grower of cultivated turf.

2.2 FERTILISER

General
Requirement: Provide proprietary fertilisers, delivered to the site in sealed bags marked to show manufacturer or vendor, weight, fertiliser type, N:P:K ratio, recommended uses and application rates.

3 EXECUTION

3.1 PREPARATION

Weed eradication
Herbicide: Eradicate weeds using environmentally acceptable methods, such as a non-residual glyphosate herbicide in any of its registered formulae, at the recommended maximum rate.

Manual weeding: Remove rubbish and weed growth throughout grassed, planted and mulched areas. Remove weed growth from an area of 750 mm diameter around the base of the trees in grassed areas. Continue eradication throughout the course of the works and during the planting establishment period.

Vegetative spoil
Disposal: Remove vegetative spoil from site. Do not burn.

3.2 TURFING

Supply
Elapsed time: Deliver the turf within 24 hours of cutting, and lay it within 36 hours of cutting. Prevent it from drying out between cutting and laying. If it is not laid within 36 hours of cutting, roll it out on a flat surface with the grass up, and water as necessary to maintain a good condition.

Laying
General: Lay the turf in the following manner:

- In stretcher pattern with the joints staggered and close butted.
- Parallel with the long sides of level areas, and with contours on slopes.
- To finish flush, after tamping, with adjacent finished surfaces of ground, paving edging, or grass seeded areas.

Strip turf: Close butt the end joints and space the strips 300 mm apart. Apply a layer of top dressing between the strips of turf. Finish with an even surface.

Tamping
General: Lightly tamp to an even surface immediately after laying. Do not use a roller.

Pegging
Stabilising: Peg the turf (on steep slopes) to prevent downslope movement. Remove the pegs when the turf is established.

Fertilising
General: Mix the fertiliser thoroughly into the topsoil before placing the turf. Apply lawn fertiliser at the completion of the first and last mowings, and at other times as required to maintain healthy grass cover.

Watering
General: Water immediately after laying until the topsoil is moistened to its full depth. Continue watering to maintain moisture to this depth.

Mowing
Height: Mow to maintain the grass height within the required range. Do not remove more than one third of the grass height at any one time. Carry out the last mowing within 7 days before the end of the planting establishment period. Remove grass clippings from the site after each mowing.

Maintenance
General: Maintain and mow turfed areas until the attainment of a dense continuous sward of healthy grass over the whole turfed area, evenly green and of a consistent height. Maintain the turf for the duration of the agreed establishment period (minimum 4 weeks after Practical Completion).

Failed turf: Lift failed turf and relay with new turf.

Levels: If levels have deviated from the design levels after placing and watering, lift turf and regrade topsoil to achieve design levels.

Top dressing
General: When the turf is established, mow. Remove cuttings and lightly top dress to a depth of 10 mm. Rub the dressing well into the joints and correct any unevenness in the turf surface.

0253 LANDSCAPE – PLANTING

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide planting as shown on the landscape drawings.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following:

- *0171 General requirements.*

1.3 SUBMISSIONS

Certification
Species: Submit evidence of conformance to EXECUTION, **COMPLETION, Product Certification.**

Execution details
Program: Submit a work program in the form of a bar chart, for the landscape works, to be incorporated into the main program.

Maintenance program: Submit a proposed planting maintenance program.

Planting machine: If a planting machine is to be used as an alternative to hand planting, submit proposal.

Spraying: Submit proposal.

Plants – open rooted stock: If open rooted stock is to be used, submit proposal.

Material site storage: Submit proposal.

Maintenance manuals
General: Submit recommendations for maintenance of plants.

Materials
Supplier's data: Submit supplier's data including the following:

- Material source of supply.

Compost: Submit a certificate of proof of compost pH value.

Samples
General: Submit representative samples of mulch, packed to prevent contamination and labelled to indicate source and content.

Bulk materials: Submit a 1 kg sample of each mulch type specified. Submit bulk material samples, with required test results, at least 5 working days before bulk deliveries.

1.4 INSPECTION

Notice
Inspection: Give adequate notice so that inspection may be made of the following:

- Setting out completed.
- Plant holes excavated and prepared for planting.

- Plant material set out before planting.
- Planting, staking and tying completed.
- Completion of planting establishment work.

2 PRODUCTS

2.1 GENERAL

Marking

Identification: Marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern.

2.2 SOIL CONDITIONING COMPOST

Compost

General: Provide mature soil conditioning compost free from harmful chemicals, grass and weed growth. Apply at an application rate that accounts for the immediate fertilizer equivalence of the compost as part of the overall fertilizer management schedule.

Particle size as a soil conditioner, pH, physical and chemical contaminants: To AS 4454 Table 3.1(A).

Mature compost: To AS 4454 Appendix N Table N3.2.

Soil conditioning properties

Wettability: ≤ 2 to AS 3743 Table 2.1 as tested to Appendix C.

Total water holding capacity: ≥ 40 to AS 3743 Table 2.1 tested to Appendix B.

Nitrogen draw down index: ≥ 0.7 to AS 3743 Table 2.1 tested to Appendix E.

Chlorine content: < 1000 mg/kg to Raymond and Lyons 2010 test method.

Compost Fertiliser equivalence properties values

Standard: To the test methods in Raymond and Lyons 2010, *Soil chemical methods – Australasia* for nitrate N, total N or total Kjeldahl N, total P and Cowell P, and extractable K.

Requirement: Establish the following values for each type of soil conditioning compost:

- Nitrogen content (kg/ton):
  - Total N.
  - Nitrate.
- Phosphorus content (kg/ton):
  - Total P.
  - Colwell P.
- Plant available Potassium (kg/ton).

2.3 FERTILISER

General

Delivery: Provide proprietary fertilisers, delivered to the site in sealed bags marked to show manufacturer or vendor, weight, fertiliser type, N:P:K ratio, recommended uses and application rates.

Application rate: Vary the application rate to allow for the plant available immediate fertilizer equivalence value of the soil conditioning compost.

2.4 MULCH

Requirement: Provide mulch which is free of deleterious and extraneous matter such as soil, weeds and sticks. Do not include fine mulch.

Standard:

- Particle size, physical and chemical contaminants: To AS 4454 Table 3.1(A).
- pH, electrical conductivity, ammonium, chlorine and other nutrients: To AS 3743 Table 2.1 for regular mix.

Organic mulches: Free of stones.

Mulch material: Brush chippings and leaf litter recovered from site clearing, if available; otherwise, pine bark.

Organic mulch types

Brush chippings and leaf litter: Vegetative material processed through a chipper to pieces not larger than 75 x 50 x 15 mm as follows:

- Material permitted: Leaf matter and tree loppings from *Eucalyptus, Tristania and Pinus species.*
- Material not permitted: Leaf matter and tree loppings from privet, camphor laurel, coral tree, poplar, willow, and noxious weeds.

Pine bark: From mature trees, graded in size from 50 x 50 x 25 mm to 25 x 15 x 15 mm, free from wood slivers.

Pine flake: Pinus species sapwood slivers of size range 250 x 25 mm to 30 x 3 mm, including fragments of pine bark.

Straw: Cereal straw, wood fibre, or other suitable vegetative material (but not meadow hay) free from weeds and seeds, applied in conjunction with a bitumen emulsion or polymer binder.

Inorganic mulch types

Washed river pebble: Uniform size or graded material, minimum size 20mm.

Decomposed granite gravel: Uniform size or graded material minimum size 20mm, of uniform colour and low plasticity. Keep clear of plant stems.

Crushed quartz: Uniform size or graded material minimum size 20mm, of uniform colour.

Marble chip gravel: Uniform size or graded material minimum size 20mm, of uniform colour.

Slate: Plum slate slivers minimum size 20mm.

Scoria: Uniform size or graded material.

3 EXECUTION

3.1 PREPARATION

Weed eradication

Herbicide: Eradicate weeds using environmentally acceptable methods, such as a non-residual glyphosate herbicide in any of its registered formulae, at the recommended maximum rate.

Removal: Regularly remove, by hand, rubbish and weed growth throughout grassed, planted and mulched areas. Remove weed growth from an area 750 mm diameter around the base of the trees in grassed areas. Continue eradication throughout the course of the works and during the planting establishment period.

Vegetative spoil

Disposal: Remove vegetative spoil from site. Do not burn.

3.2 PLANTING

Locations

General: If it appears necessary to vary plant locations and spacings to avoid service lines, or to cover the area uniformly, or for other reasons, give notice and provide revised landscape drawings showing the proposed changes.

Watering

Timing: Thoroughly water the plants before planting, immediately after planting, and as required to maintain growth rates free of stress for the duration of the agreed establishment period (minimum 4 weeks after Practical Completion).

Placing

Method: Remove the plant from the container with minimum disturbance to the root ball. Root prune to ensure all circling roots have been either severed or aligned radially into the surrounding soil. Make sure that the root ball is moist, place it in its final position, in the centre of the hole and plumb, and with the top soil level of the plant, level with the finished surface of the surrounding soil. Compact lightly so as to minimise subsidence without compacting the backfill. Avoid mixing mulch with topsoil.

Fertilising

Pellets: In planting beds and individual plantings, place fertiliser pellets around the plants at the time of planting.

Backfilling

General: Backfill with topsoil mixture. Lightly tamp and water to eliminate air pockets. Make sure that topsoil is not placed over the top of the root ball, so the plant stem remains the same height above ground as it was in the container.

3.3 MULCHING

Placing mulch

General: Place mulch to the required depth, clear of plant stems, and rake to an even surface flush with the surrounding finished levels. Spread and roll mulch so that after settling, or after rolling, it is smooth and evenly graded between design surface levels sloped towards the base of plant stems in plantation beds, and not closer to the stem than 50 mm in the case of gravel mulches.

In mass planted areas: Place after the preparation of the planting bed but before planting and other work.

In smaller areas (e.g. planter boxes): Place after the preparation of the planting bed, planting and other work.

Extent: Provide mulch to 750 mm diameter, to surrounds of plants planted in riplines and grass areas.

Depths: Spread organic mulch to a depth of 75 mm, and gravel mulch to a depth of 50 mm.

3.4 COMPLETION

Product certification

Certification: Submit the supplier's written statement certifying that plants are true to the required species and type and free from diseases, pests and weeds.

Cleaning

Stakes and ties: Remove those no longer required at the end of the planting establishment period.

Temporary fences: Remove temporary protective fences at the end of the planting establishment period.

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0256 LANDSCAPE – ESTABLISHMENT

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide plant establishment to all landscape areas as shown on the drawings.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*

1.3 INTERPRETATION

Definitions

General: For the purpose of this worksection the following definitions apply:

- Plant establishment period: The period between the date of practical completion and the end of the defects liability period.

1.4 SUBMISSIONS

Execution details

Notice: Provide two days notice of the following operations:

- Application of herbicide.
- Application of fertiliser.
- Watering.
- Each site maintenance visit.

Log book

Records: Log the following on a weekly basis:

- Description, time and method of application of toxic material.
- Maintenance work details.
- Inclement weather to verify inability to carry out work within the specified time frame.

Availability: Upon request.

Monitoring program

General: Provide a monitoring program developed by a specialist monitoring consultant and incorporating the following:

- Photographic record including:
  - Colour photographs.
  - Documented monitoring locations and photograph angles.
- Reporting periods including photographic records at the following:
  - Before commencement of the works.
  - Date of practical completion.
  - Three monthly intervals during the plant establishment period.
  - Date of final completion.
  - Benchmark definition based on remnant communities.
  - Replicated measurements over time and comparative analysis with regard to the benchmark.

Specialist consultant: Submit the name, qualifications including research papers and scientific publication details, and contact details of the specialist monitoring consultant.

Replacement plants
Species: Provide written certification that all plant material is true to the required species and type.

1.5 INSPECTION

Notice
Inspection: Give adequate notice so that inspection of the contract area may be made at the following:

- Date of practical completion.
- Regular intervals during the plant establishment period (minimum 4 weeks after Practical Completion).
- Date of final completion.

2 EXECUTION

2.1 GENERAL

Special instructions
Priority: If instructed by the Superintendent, attend to certain areas and procedures as a priority. Obtain approval for additional costs before commencement of works.

Reporting
Monthly report: Submit regular reports by the last Friday of each month:

- Of the general status of works.
- Include soil test results as required for the fertilising programs.
- Plant replacement requirements.

Incident reports: Report immediately verbally and confirm in writing any disturbance or incidence affecting or likely to affect the day to day scheduling of works.

Disruption of works by others
Other contractors: Make arrangements to work around the disturbance.

2.2 PLANTING WORKS

Planting
Planting: Ensure the general appearance and presentation of the landscape and the quality of plant material at date of practical completion is maintained for the full planting establishment period.

Existing plant material: Maintain existing planting and grass within the landscape contract area as specified for the corresponding classifications of new grassland or planting.

Replacements: Replace failed, dead and/or damaged plants at maximum 3 week intervals as necessary throughout the full plant establishment period.

Pruning
Prune: To AS 4373 and as documented in the **Pruning schedule**.

Fertilising
Soil tests: Take samples from both planting beds and lawn areas and conduct tests.

Fertilising: Base the fertilisation program on the soil testing results. Fertilise trees once every two years. Generally apply an all purpose fertiliser of N:P:K (Nitrogen:Phosphorus:Potassium) 10:4:6 at recommended rates. Alternatively apply 12 month slow release fertiliser at the manufacturer's

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recommended rate. Apply all purpose fertiliser to shrubs annually in two bands and cultivated into the soil 100 mm deep.

Season: Fertilise shrubs and trees in September and March according to their seasonal growth requirement.

Insect and disease control
Period for treatment: Until the problem has been eliminated.

Chemical spray: Apply outside of normal working hours.

2.3 GRASS

Mowing and trimming
Litter: Remove litter and fallen branches before mowing.

Height: Consistent with the growth habit of the grass variety and maintained at 25 mm to 40 mm throughout the year.

Program: Weekly during the mowing season, November to March, and at bi-weekly intervals during April to October. Do not mow under wet conditions.

Raking: Once every month before mowing, during the mowing season, with a flexible rake. On alternate mowings, adopt a north-south and east-west pattern.

Edges: At the same time as mowing, trim lawn edges to plant beds, pathways, base of trees and other obstacles. Ensure trees and shrubs are not damaged.

Topdressing
Topdressing material for established lawns: Weed free imported sandy topsoil to a depth of 5 mm.

Program: The spring following establishment.

Topdressing material for remediation of depressions or irregularities: Apply coarse or medium soil to AS 4419 suitable for application to turf or grass seeded areas.

Fertilising
Fertilising: Apply lawn fertiliser at the completion of the first and last mowings of the plant establishment period, and at other times as required to maintain healthy grass cover.

2.4 GARDEN BEDS

Weeding
Weeds: Unwanted plants and grasses considered invasive to the locality.

Program:

- Lawns: Quarterly, and as determined by the relationship of the general lawn condition and weed growth.
- Trees and shrubs: As required for planted, paved and mulched areas to be weed free when observed at bi-weekly intervals.

Method: Clear and keep clear vigorous ground covers 200 mm from the base of any shrub or tree:

- Small areas: By hand.
- Large areas: Proprietary herbicides.

Herbicide application: Avoid windy days or if rain is likely to follow within 12 hours. Apply:

- To the manufacturer's instructions and Safety Data Sheets.
- When the weather is humid with moderate temperatures and maximum sunlight.

- When the ground has recommended soil moisture.

Mulched surfaces

Inspection: Bi-weekly to determine mulch requirements.

Depth: Maintain a minimum depth of:

- 75 mm for organic mulch.
- 50 mm for gravel mulch.

Remulching: Maintain the original ground levels around the base of plants.

2.5 CONTROL MEASURES

Weed mats

Generally: Maintain mats in a weed free condition and reinstate missing or damaged mats to the standard previously specified until completion of the plant establishment period.

Rabbit control

Generally: Implement rabbit control if deemed necessary until the completion of the plant establishment period as described below.

Rabbit guards: Maintain rabbit guards in a working upright and taut order with three stakes. Replace missing or damaged guards with the same materials as previously specified.

Removal: At the completion of the plant establishment period.

2.6 WATERING

Establishment

Water quality:

- pH between 5.5 and 7.5.
- Total soluble salts less than 1000 mg/litre.
- No substances that would be toxic to plant growth.

Watering program: Minimum three complete waterings, soaking to a depth of 150 mm at fortnightly intervals for the first 6 weeks of plant establishment irrespective of natural rainfall. Confirm soaked depth and record in the log book.

Water restrictions: Coordinate the water supply and confirm the watering regime against state and territory government legislation and restrictions at the time.

Hand watering

General: Manually water all lawn and planting areas, soaking to a depth of 150 mm for lawn and 300 mm for planting. Avoid frequent dampening of the surface. Allow the surface of the soil to partially dry out between waterings.

2.7 PAVING AND STRUCTURES

Drains

General: Inspect and clean all drainage structures and pit covers and ensure that they are in proper working order.

Frequency: As required, so that all overflow drains are cleared when observed at fortnightly intervals.

2.8 COMPLIANCE

Criteria

Generally: Plant establishment shall be deemed complete, subject to the following:

- Repairs to planting media completed.

- Ground surfaces are covered with the specified treatment to the specified depths.
- Pests, disease, or nutrient deficiencies or toxicities are not evident.
- Organic and rock mulched surfaces have been maintained in a weed free and tidy condition and to the specified depth.
- Vegetation is established and well formed.
- Vegetation cover to cell, seeded and/or hydromulched areas.
- Plants have healthy root systems that have penetrated into the surrounding, undisturbed ground and not able to be lifted out of its planting hole.
- Vegetation is not restricting essential sight lines and signage.
- Only frangible species are growing within road side clear zones.
- All hard landscape works have been installed and are operating as specified.
- Collection and removal of litter.
- Removal of mulch from drainage and access areas.
- All non-conformance reports and defects notifications have been closed out.

Plant establishment compliance table

Plant material	Acceptable failure per area	Acceptable concentration of failure
Tube stock	< 5%	< 10% in any given location
140 mm	< 5%	< 10% in any given location
300 mm or larger	< Nil%	Nil %
Turf	< 5%	Nil %
Cells	< 5%	< 15% in any given location
Direct seeded native species and cover crop – including hydromulch, drilled and broadcasted areas	No less than 3 [Nominate as appropriate] specified species per 1 m^2 grid (determined on a testing frequency of 20 grid areas per 500 m^2)	Nil grids with < three (3) [Nominate as appropriate] specified plant species
Direct seeded grass species and cover crop	< 15% (determined by a 1 m^2 grid on a testing frequency of 1 grid area per 500 m^2)	< 10%
Cover crop	< 5%	Nil %

0271 PAVEMENT BASE AND SUBBASE

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide base and subbase courses to all paved areas shown on the drawings.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0222 Earthwork.*

1.3 INTERPRETATION

Abbreviations

General: For the purposes of this worksection the following abbreviations apply:

- CRB: Crushed rock base.
- CRS: Crushed rock subbase.
- NGB: Natural gravel base.
- NGS: Natural gravel subbase.
- RCCB: Recycled crushed concrete base.
- RCCS: Recycled crushed concrete subbase.

Definitions

General: For the purposes of this worksection the definitions given in AS 1348 and the following apply:

- Base: Layer(s) of material, forming the uppermost structural element of a pavement and on which the surfacing may be placed.
- Flexible pavement: A pavement which obtains its load-spreading properties from intergranular pressure, mechanical interlock and cohesion between the particles of the pavement material.
- Subbase: Material laid on the subgrade (or selected material), below the base, either for the purpose of making up additional pavement thickness, to prevent intrusion of the subgrade into the base, or to provide a working platform.

1.4 SUBMISSIONS

Execution details

General: Submit details of the proposed work methods and equipment for each pathway and roadworks operation, including the following:

- Staging of the work, access and traffic control methods.
- Disposal of surface water, control of erosion, contamination and sedimentation of the site, surrounding areas and drainage systems.

Compaction: If a layer is proposed to exceed 200 mm in thickness, submit evidence that the proposed compaction equipment can achieve the required density throughout the layer.

Products and materials

Source of material: Submit the supplier name, material type (crushed rock, natural gravel, recycled concrete aggregate) and source quarry or recycling site.

Conformance: Submit type test results for each material listed in the **Base material properties table** and **Subbase material properties table** from a Registered Testing Authority as evidence of material conformance to documented requirements.

1.5 INSPECTION

Notice

Inspection: Give adequate notice so that inspection may be made of the following:

- Prepared subgrade.
- Proof rolling of subbase before spreading of base.
- Proof rolling of base before sealing.

2 PRODUCTS

2.1 BASE AND SUBBASE MATERIAL

Granular material

Requirement: Provide unbound granular materials, including blends of two or more different materials, which when compacted develop structural stability and are uniform in grading and physical characteristics.

Crushed rock and recycled material class

Requirement: Provide crushed rock and recycled material as documented, from the following classes:

- Class 1: Pavement base material (with a minimum plasticity index) for unbound pavements requiring a very high standard of surface preparation for a sprayed sealed or thin asphalt surfacing.
- Class 2: Pavement base material (with no minimum plasticity index) for unbound pavements which may not require a very high standard of surface preparation.
- Class 3: Not applicable.
- Class 4: Subbase material for unbound flexible pavements.

Crushed rock

Designation: Unbound crushed rock materials are designated as follows:

- CRB20-1: 20 mm nominal sized class 1 crushed rock base.
- CRB20-2: 20 mm nominal sized class 2 crushed rock base.
- CRS20: 20 mm nominal sized crushed rock subbase.
- CRS40: 40 mm nominal sized crushed rock subbase.

Recycled crushed concrete

Designation: Recycled crushed concrete materials are designated as follows:

- RCCB20-1: 20 mm nominal sized class 1 recycled crushed concrete base.
- RCCB20-2: 20 mm nominal sized class 2 recycled crushed concrete base.
- RCCS20: 20 mm nominal sized recycled crushed concrete subbase.

Natural gravel

Designation: Unbound natural gravel materials are designated as follows:

- NGB20: 20 mm nominal sized natural gravel base.
- NGS20: 20 mm nominal sized natural gravel subbase.
- NGS40: 40 mm nominal sized natural gravel subbase.

Base material properties table

Test method	Description	CRB20-1	CRB20-2	RCCB20-1	RCCB20-2	NGB20
AS 1289.3.6.1	Particle size distribution (sieve % passing)					
	26.5 mm	100	100	100	100	100
	19.0 mm	95-100	95-100	95-100	95-100	93-100

Test method	Description	CRB20-1	CRB20-2	RCCB20-1	RCCB20-2	NGB20
	13.2 mm	77-93	77-93	78-92	78-92	-
	9.5 mm	63-83	63-83	63-83	63-83	71-87
	4.75 mm	44-64	44-64	44-64	44-64	47-70
	2.36 mm	29-49	29-49	30-48	30-48	35-56
	0.425 mm	13-23	13-23	13-21	13-21	14-32
	0.075 mm	5-11	5-11	5-9	5-9	6-20
AS 1289.3.1.1	Liquid limit	max 25%	max 25%	max 30%	max 30%	max 25%
AS 1289.3.3.1	Plasticity index:					
	All areas	min 2%	-	min 2%	-	-
	Areas with annual rainfall > 500 mm	max 6%	max 6%	max 6%	max 6%	max 6%
	Areas with annual rainfall < 500 mm	max 10%	max 10%	max 10%	max 10%	max 10%
AS 1289.3.4.1	Linear shrinkage:					
	All areas:	min 0.7%	-	min 0.7%	-	-
	Areas with annual rainfall > 500 mm	max 2.0%	max 2.0%	max 2.0%	max 2.0%	max 2.0%
	Areas with annual rainfall < 500 mm	max 4.0%	max 4.0%	max 4.0%	max 4.0%	max 4.0%
RMS T276	Undesirable constituent material type: (% retained on the 4.75 mm sieve)					
	Type I - Metal, unprocessed glass and ceramics	-	-	max 2.0	max 2.0	-
	Type II - Plaster, clay lumps and other friable material	-	-	max 5.0	max 5.0	-
	Type III - Rubber, plastic, paper, cloth, paint, wood and other vegetable mater	-	-	max 1.0	max 1.0	-
AS 1141.52	Maximum dry compressive strength on fraction passing 19 mm sieve (only applies if plasticity index is less than 1)	min 1.7 MPa	min 1.7 MPa	min 1.7 MPa	min 1.7 MPa	min 1.7 MPa

Test method	Description	CRB20-1	CRB20-2	RCCB20-1	RCCB20-2	NGB20
AS 1141.14	Particle shape by proportional calliper - % misshapen (2:1)	max 35%	max 35%	max 35%	max 35%	-
AS 1141.22	Aggregate wet strength*	min 100 kN	min 80 kN	min 100 kN	min 80 kN	-
	Wet/dry strength variation* (dry - wet)/dry	max 35%	max 35%	max 35%	max 35%	-
AS 1141.23	Los Angeles value	max 35%	max 35%	max 40%	max 40%	-
AS 1289.6.1.1	4 day soaked CBR (98% modified compaction)	min 80%	min 80%	min 80%	min 80%	min 80%
NOTES: * All fractions of the proposed mix must satisfy this requirement. Use the fraction with the highest wet/dry strength variation as the value for determining conformance. Test the fraction 19.0 mm to 9.5 mm. In the case of blended materials, also test the fraction 9.5 mm to 4.75 mm. Test any other fraction which is at risk of failing in the opinion of the Engineer.						

Subbase material properties table

Test method	Description	CRS20	CRS40	RCCS20	NGS20	NGS40
AS 1289.3.6.1	Particle size distribution (sieve % passing)					
	53.0 mm	-	100	-	-	100
	37.5 mm	-	90-100	-	-	95-100
	26.5 mm	100	74-97	100	100	80-97
	19.0 mm	90-100	62-86	95-100	96-100	-
	13.2 mm	74-96	-	74-95	-	-
	9.5 mm	61-85	42-66	60-90	65-90	48-85
	4.75 mm	42-66	28-50	42-76	47-80	35-73
	2.36 mm	28-50	20-39	28-60	32-67	25-58
	0.425 mm	11-27	8-21	10-28	14-42	10-33
	0.075 mm	4-14	3-11	2-10	6-26	3-21
AS 1289.3.1.1	Liquid limit	max 25%	max 25%	max 30%	max 25%	max 35%
AS 1289.3.3.1	Plasticity index:					
	Areas with annual rainfall > 500 mm	max 12%	max 12%	max 12%	max 12%	max 12%
	Areas with annual rainfall < 500 mm	max 12%	max 12%	max 12%	max 12%	max 12%
AS 1289.3.4.1	Linear shrinkage:					
	Areas with annual rainfall > 500 mm	max 4.5	max 4.5	max 4.5	max 4.5	max 4.5
	Areas with	max 6.0	max 6.0	max 6.0	max 6.0	max 6.0

Test method	Description	CRS20	CRS40	RCCS20	NGS20	NGS40
	annual rainfall < 500 mm					
RMS T276	Undesirable constituent material type: (% retained on the 4.75 mm sieve)					
	Type I - Metal, unprocessed glass and ceramics	-	-	max 3.0	-	-
	Type II - Plaster, clay lumps and other friable material	-	-	max 1.0	-	-
	Type III - Rubber, plastic, paper, cloth, paint, wood and other vegetable mater	-	-	max 2.0	-	-
AS 1141.52	Maximum dry compressive strength on fraction passing 19 mm sieve (only applies if plasticity index is less than 1)	min 1.0 MPa	min 1.0 MPa	min 1.0 MPa	min 1.0 MPa	min 1.0 MPa
AS 1141.14	Particle shape by proportional calliper - % misshapen (2:1)	max 35%	max 35%	max 35%	-	-
AS 1141.22	Aggregate wet strength*	min 50 kN	min 50 kN	min 50 kN	-	-
	Wet/dry strength variation* (dry - wet)/dry	max 40%	max 40%	max 40%	-	-
AS 1141.23	Los Angeles value	max 40%	max 40%	max 40%	-	-
AS 1289.6.1.1	4 day soaked CBR (95% modified compaction)	min 30%	min 30%	min 30%	min 30%	min 30%
NOTES: * All fractions of the proposed mix must satisfy this requirement. Use the fraction with the highest wet/dry strength variation as the value for determining conformance. Test the fraction 19.0 mm to 9.5 mm. In the case of blended materials, also test the fraction 9.5 mm to 4.75 mm. Test any other fraction which is at risk of failing in the opinion of the Engineer.						

Tests

Material property testing: Conform to the **Base material properties table** and the **Subbase material properties table** test methods.

Frequency of material property tests: Not less than the following:

- Particle size distribution: 1 per 1000 t (or part of).
- Liquid limit: 1 per 1000 t (or part of).
- Plasticity index: 1 per 1000 t (or part of).
- Linear shrinkage: 1 per 1000 t (or part of).
- Foreign materials content: 1 per 1000 t (or part of).
- Maximum dry compressive strength: 1 per 5000 t (or part of).
- Particle shape: 1 per 1000 t (or part of).
- Los Angeles value: 1 per 1000 t (or part of).
- Aggregate wet strength: 1 per 5000 t (or part of).
- Wet/dry strength variation: 1 per 5000 t (or part of).

3 EXECUTION

3.1 SUBGRADE PREPARATION

General

Requirement: Prepare the subgrade in conformance with the *0222 Earthwork* worksection.

3.2 PLACING BASE AND SUBBASE

General

Weak surfaces: Do not place material on a surface that is weakened by moisture and is unable to support, without damage, the construction plant required to perform the works.

Spreading: Spread material in uniform layers without segregation.

Moisture content: Maintain wet mixed materials at the required moisture content before and during spreading. Add water to dry mixed materials through fine sprays to the entire surface of the layer after spreading, to bring the material to the required moisture content.

Compacted layer thickness: 200 mm maximum and 100 mm minimum. Provide layers of equal thickness in multilayer courses.

Joints

General: Plan spreading and delivery to minimise the number of joints. Offset joints in successive layers by a minimum of 300 mm.

Start of shift: Remix last 2 m of previous days' work for continuity of compaction.

Final trimming

General: Trim and grade the base course to produce a tight even surface with no loose stones or slurry of fines.

3.3 TOLERANCES

Surface level

General: Provide a finished surface level which is free draining and evenly graded between level points.

Subbase: + 10 mm, - 25 mm.

Base: + 10 mm, - 5 mm.

Base abutting gutters: ± 5 mm from the level of the lip of the gutter, minus the design thickness of the wearing course.

Surface deviation
Base: ≤ 5 mm from a 3 m straightedge laid on the surface.

3.4 BASE AND SUBBASE COMPACTION

General
Construction operation: Compact each layer of fill to the required depth and density, as a systematic construction operation.

Unstable areas: If unstable areas develop during rolling or are identified by proof rolling, open up, dry back and recompact, to the requirements of this worksection. If dry back is not possible, remove for the full depth of layer, dispose of and replace with fresh material.

Minimum relative compaction table

Item description	Minimum dry density ratio (modified compaction) to AS 1289.5.2.1
Subbase	95%
Base	98%

Compaction requirements
General: Apply uniform compactive effort, over the whole area to be compacted, until the required density is achieved or until failure is acknowledged. If failure is acknowledged, conform to **Rectification**.

Equipment: Use rollers appropriate to the materials and compaction requirements documented.

Moisture content
General: During spreading and compaction, maintain material moisture content within the range of -2% to +1% from the optimum moisture content (modified compaction).

Spraying: Use water spraying equipment to distribute water uniformly in controlled quantities over uniform lane widths.

Dry back: Allow material to dry back to 60% to 80% of the optimum moisture content before applying the seal or wearing course.

Rectification
General: If a section of pavement material fails to meet the required density or moisture content after compaction, remove the non-conforming material, dispose of off-site or rectify for re-use, replace with fresh material, and recompact.

Level corrections
General: Rectify incorrect levels as follows:

- High areas: If the area can be rectified by further trimming to produce a uniform, hard surface by cutting without filling, trim so that the rectified area conforms to **TOLERANCES**.
- Low areas and high areas not rectifiable by further trimming: Remove layers to a minimum depth of 75 mm, lightly tyne and replace with new material and recompact.

3.5 TESTING

Site tests

Compaction control tests: To AS 1289.5.4.1 and AS 1289.5.4.2.

Frequency of compaction control tests: Not less than the following (whichever requires the most tests):

- 1 test per layer per 100 lineal metres for two-lane roads.
- 1 test per layer per 2000 m^2 for carparks.
- 3 tests per layer.
- 3 tests per visit.

0274 CONCRETE PAVEMENT

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide concrete pavement to the locations shown on the drawings.

Design
Coordination: Determine the local authority requirements initially as they may affect grades, transition, zones for the works. Considerations include:

- Drainage.
- Tree's (due to settlement).
- Adjacent structures.

Performance
Requirement: Provide finished surfaces conforming to the following:

- Free draining and evenly graded between level points.
- Even and smooth riding.

Conformance: Conform to the local authority requirements for levels, grades and the minimum details of thickness, reinforcement and concrete strength for pavements within the kerb-and-gutter property boundaries.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following:

- *0171 General requirements.*
- *0222 Earthwork.*
- *0310 Concrete.*
- *Structural Engineers documentation (if applicable).*

1.3 STANDARDS

Concrete
Specification and supply: To AS 1379.

Materials and construction: To AS 3600.

Slip resistance
Classification: To AS 4586.

1.4 INTERPRETATION

Definitions
General: For the purposes of this worksection the definitions given in AS 1348 and the following apply.

- Absolute level tolerance: Maximum deviation from design levels.
- Ambient temperature: The air temperature at the time of mixing and placing of concrete.
- Average ambient temperature: Average value of the daily maximum and minimum ambient temperatures over the relevant period at a site.
- Concrete class – normal: Concrete which is specified primarily by a standard compressive strength grade and otherwise in conformance with AS 1379 clause 1.5.3.

- Concrete class – special: Concrete which is specified to have certain properties or characteristics different from, or additional to, those of normal-class concrete and otherwise in conformance with AS 1379 clause 1.5.4.
- Green concrete: Concrete which has set but not appreciably hardened.
- Relative level tolerance: Maximum deviation from a 3 m straight edge laid on the surface.
- Weather – cold: Ambient shade temperature less than 10 °C.
- Weather – hot: Ambient shade temperature greater than 30 °C.

1.5 TOLERANCES

General

Edges abutting gutters: Within ± 5 mm of the level of the actual gutter edge.

Rigid pavement surface:

- Absolute tolerance: + 10 mm, - 0 mm.
- Relative tolerance: ± 5 mm.

Joint locations in plan (rigid pavement): ± 15 mm.

1.6 SUBMISSIONS

Certification

Compliance certificate: As an alternative to testing a product, submit the manufacturer's certificate together with the results of recent tests undertaken by the manufacturer, showing compliance with test criteria.

Test certificates and records: Submit test certificates, and also retain results on site.

Execution details

Work method statements: Submit proposals for the methods and equipment to be used for the pavement works, including the following:

- Staging of the work, access and traffic control methods.
- Disposal of surface water, control of erosion, contamination and sedimentation of the site, surrounding areas and drainage systems.
- Methods and equipment for each operation.
- Sources of materials.
- Material stockpiles.
- Methods of concrete manufacture.
- Temperature control, curing and protection methods for concrete.

Mix design variation: If a variation is proposed, submit a further mix design report.

Concrete: Submit proposals for mixing, placing, finishing and curing concrete including the following:

- Addition of water at the site.
- Changes to the plastic concrete mix.
- Curing and protection methods.
- Cutting or displacing reinforcement, or cutting hardened concrete.
- Handling, placing, compaction and finishing methods and equipment, including pumping.
- Sequence and times for concrete pours, and construction joint locations and relocations.

Cores, fixings and embedded items: If required, submit shop drawings showing the proposed locations, clearances and cover, and indicate any proposed repositioning of reinforcement.

Cutting or coring: If cutting or coring of hardened concrete is proposed, provide details.

Sawn joints: Submit proposed methods, timing and sequence of sawing joints.

Damaged galvanizing: If repair is required, submit proposals to AS/NZS 4680 Section 8.

Splicing: If splicing not documented is proposed, submit details.

Welding: If welding of reinforcement is proposed, provide details and give notice before welding reinforcement.

Joint sealants: Submit proposals for installation methods and sealant performance.

Concrete placing: Submit proposals for size of the area to be placed and the spacing of planned construction joints before placement commences.

Crack assessment: If unplanned cracks occur in the finished pavement, submit proposals for investigation.

Surface repair method: If required, submit details of the proposed method before commencing repairs.

Trial section: Submit trial pavement.

Products
Aggregates: Nominate the source for all aggregates proposed.

Reinforcement: Submit the manufacturer's certificate of compliance with AS/NZS 4671, or submit test certificates from an independent testing authority.

Liquid curing compounds: Submit certified test results, including the application rate and the efficiency index to AS 3799 Appendix B.

Curing by covering: Submit details of the proposed covering material.

Repair materials: Submit proposals for epoxy resin/grout and elastomeric sealant.

Concrete: Submit the concrete supply delivery dockets.

Subcontractors: Submit names and contact details of proposed pre-mixed concrete suppliers, and alternative source of supply in the event of breakdown of pre-mixed or site mixed supply.

Trial mix design report: Six weeks before commencing production, submit a report for each mix design containing the information required in AS 1012.2, the individual and combined aggregate particle size distribution, and the records and reports for the tests.

Tests
Site tests: Submit results, as follows:

- Slip resistance test of completed installations.

1.7 INSPECTION

Notice
Conduct all testing and inspections as detailed in the relevant ITCP.

2 PRODUCTS

2.1 REINFORCEMENT

Steel reinforcement
Standard: To AS/NZS 4671.

To Structural Engineers specification.

2.2 AGGREGATE

Characteristics
Standards: AS 2758.1.

Quality: Provide at least 40% by mass of the total aggregates in the concrete mix of quartz sand aggregate having a nominal size of less than 5 mm and containing at least 70% quartz by mass.

Durability: All constituent, fraction of constituent or aggregates to conform to AS 1141.22 and the following:

- Wet strength not less than 80 kN.
- 10% Fines Wet/Dry Variation not to exceed 35%.

Recycled concrete aggregate (RCA): Use coarse aggregates from demolition concrete or RCA.

Blending: If blending coarse RCA with natural aggregates, make sure substitution rates are below 30%.

2.3 CEMENT

General
Standard: To AS 3972.

Transport: Cement in watertight packaging and protect from moisture until used. Do not use caked or lumpy cement.

- Age: Less than 6 months old.
- Storage: Store cement bags under cover and above ground.

2.4 WATER

General
Standard: Chloride ion to AS 3583.13 and sulphate ion to AS 1289.4.2.1.

Quality: Water used in the production of concrete to be potable, free from materials harmful to concrete or reinforcement, and be neither salty nor brackish.

Limits: Not containing more than:

- 600 parts per million of chloride ion, determined to AS 3583.13.
- 400 parts per million of sulphate ion, determined to AS 1289.4.2.1.

2.5 ADMIXTURES

General
Standard: Chemical admixtures to AS 1478.1.

Quality: Provide admixtures free from calcium chloride, calcium formate, or triethanolamine or any other accelerator. Do not use admixtures or combinations of admixtures without prior written approval.

Dosage: Vary the dosage of chemical admixture to account for air temperature and setting time in conformance with the manufacturer's recommendations.

Types of admixtures
Air entraining agent: Adjust mix for workability allowing up to 5% air entrainment.

Warm season retarder: During the warm season, (October to March inclusive), use a lignin or lignin-based (ligpol) set-retarding admixture (Type Re or Type WRRe) as approved to control slump within the limits stated in Concrete mix, properties.

Cool season retarder: During the cool season, (April to September inclusive), use only a lignin or lignin based set-retarding admixture containing not more than 6% reducing sugars (Type WRRe complying with AS 1478.1).

2.6 CURING COMPOUNDS

General

Curing compounds: To AS 3799 and AS 1160, Type 2, white pigmented or containing aluminium reflective pigments.

Sheet material covering: To ASTM C171, white opaque or clear polyethylene film, or white burlap-polyethylene sheet, or equivalent material.

3 EXECUTION

3.1 GENERAL

Traffic control

Traffic restriction: Do not allow traffic or construction equipment other than those associated with testing, sawcutting, cleaning or joint sealing on pavement for minimum 10 days after placing, or when the concrete has reached compressive strength of at least 20 Mpa, and joints have been completely sealed.

3.2 SUBGRADE

Preparation

Conformance: Prepare subgrade in conformance with the *0222 Earthwork* worksection.

Extent: Prepare a uniform subgrade for the full pavement formation, extending at least to the back of kerbs.

Reinstatement: Make sure of uniformity for backfilling of any utility trenches.

3.3 SUBBASE

Thickness

To Structural Engineers specification.

Width

Subbase width: Extend the subbase at its full depth to at least the back of kerbs or other edge stops before their installation.

No integral kerbs: Extend granular unbound subbase at least 300 mm beyond each side of the carriageway.

Unbound subbase materials and installation: Conform to the *0271 Pavement base and subbase* worksection.

Bound subbase materials and installation: Conform to the *0271 Pavement base and subbase* worksection.

Tolerance and friction reduction

Tolerance: Subbase finished surface level, + 0 mm to - 10 mm.

Friction reduction: Provide 200 µm thick polyethylene sheeting with 200 mm taped minimum laps and/or a 20 mm thick layer of sand (silt and clay material less than 5%) directly beneath the concrete pavement.

3.4 CONCRETE MIX

Standard

Concrete mix and supply: To AS 3600 Section 17 and AS 1379.

Properties

Concrete pavement thickness: Minimum 75mm

Workability: Slump values to conform to the following:

- Fixed form paving with manual operated vibration: 50 to 60 mm.
- Drying shrinkage: Maximum 450 µε after 21 days of air drying.

Elapsed time delivery

General: Make sure that the elapsed time between the wetting of the mix and the discharge of the mix at the site is in conformance with the **Elapsed delivery time table**. Do not discharge at ambient temperature below 10°C or above 32°C.

Elapsed delivery time table

Concrete temperature at time of discharge (°C)	Maximum elapsed time (hours)
10 – 24	2.00
24 – 27	1.50
27 – 30	1.00
30 – 32	0.75

Site mixed supply

Emergencies: If mixing by hand is carried out, provide details.

Plant: Mix concrete in a plant located on the construction site.

Pre-mixed supply

Addition of water: Do not add water.

Transport: Make sure the mode of transport prevents segregation, loss of material and contamination of the environment, and does not adversely affect placing or compaction.

Concrete delivery docket: For each batch, submit a docket listing the information required by AS 1379 clause 1.7.3, and the following information:

- Any binders or additives.
- Method of placement and climate conditions during pour.
- Name of concrete delivery supervisor.
- The concrete element or part of the works for which the concrete was ordered, and where it was placed.

3.5 TESTING

Standards

Sampling, identification, testing and recording: To the AS 1012 series.

Specimens: Sample the concrete on-site, at the point of discharge from the agitator.

Type and frequency: To AS 1379.

Testing authority: Concrete supplier or NATA registered laboratory.

Concrete testing methods
Slump: Test at least one sample from each batch before placing concrete from that batch in the work.

- Standard: To AS 1012.3.1.
- Maximum slump variation: ± 10 mm.

Compressive strength: Test to AS 1012.8.1.

Drying shrinkage: Test to AS 1012.8.4 and AS 1012.13.

Flexural strength: To AS 1012.8.2 and AS 1012.11.

Acceptance criterion: The average strength of any set of 3 consecutive project samples must be equal to or greater than the specified minimum value.

Project assessment sampling frequency table

Number of batches for each type and grade of concrete per day	Minimum number of samples
1	1
2-5	2
6-10	3
11-20	4
each additional 10	1 additional

3.6 INSTALLATION

Junctions with existing pavements
Trimming: Where the pavement is to be joined to an existing pavement, remove a strip of the existing pavement at least 300 mm wide for its full depth and trim the edge vertically before placing new pavement material.

Existing sealed pavement: Trim the seal to a neat edge.

Fixed formwork
Description:

- Steel forms.
- Seasoned, dressed timber planks, free of warps, bends or kinks, with the full width of their top edges covered with steel angle sections finishing flush with the form face.

Depth: Equal to the edge thickness of the slab and in one piece.

Tolerances on position:

- Absolute level tolerance: ± 5 mm.
- Relative level tolerance: ± 5 mm.
- Horizontal tolerance: ± 10 mm (maximum departure of face from a plane surface).
- Verticality: 3 mm departure from vertical.

Staking: Stake forms in position using at least 3 steel stakes per form, not more than 1.5 m apart. Lock joints between form sections to prevent movement.

Release agent: Before placing reinforcement, apply a release agent compatible with the contact surfaces, to the interior of the formwork, except where the concrete is to receive an applied finish

for which there is no compatible release agent. Clean the reinforcement to remove all traces of release agent.

Re-use: Clean and recoat the forms each time before placing concrete.

Keyways: Form the keyways of keyed construction joints using steel form strips accurately located at the mid-depth of the slab and securely fastened flush against the formwork face.

Reinforcement

Tolerances in fabrication and fixing: To AS 3600.

Locate reinforcement: Place reinforcement in the top half of the pavement.

Minimum cover to reinforcement: 30 mm.

Splicing mesh: Overlap a minimum of 2 crosswires.

Supports: Provide proprietary concrete, metal or plastic supports to AS/NZS 2425 and as follows:

- To withstand construction and traffic loads and maintain the concrete cover, as documented.
- With a protective coating if they are ferrous metal extending to the surface of the concrete, or are used with galvanized or zinc-coated reinforcement.
- Minimum spacing:
  - Bars: ≤ 60 diameters.
  - Fabric: ≤ 800 mm.
- Supports over membranes: Prevent damage to waterproofing membranes or vapour barriers. If appropriate, place a metal or plastic plate under each support.
- Projecting reinforcement: If starter or other bars project beyond reinforcement mats or cages, through formwork or from cast concrete, provide a plastic protective cap to each bar until it is incorporated into subsequent work.
- Tying: Secure the reinforcement against displacement by tying at intersections with either wire ties, or clips. Bend the ends of wire ties away from nearby faces of forms so that the ties do not project into the concrete cover.
- Mats: For bar reinforcement in the form of a mat, secure each bar at alternate intersections.

Cores, fixings and embedded items

Position: Fix cores and embedded items to prevent movement during concrete placing. In locating cores, fixings and embedded items, reposition but do not cut reinforcement, and maintain cover to reinforcement.

Isolation: Isolate embedded items so that water cannot track to concrete providing minimum cover to reinforcement.

3.7 CONCRETE PLACING AND COMPACTION

Concrete placing

General: Place concrete uniformly over the width of the slab or lane and so that the face is generally vertical and normal to the direction of placing. Hand spread concrete using shovels, not rakes.

Remove: Any water ponding on the ground.

Placing sequence: Commence from one corner (usually the lowest point) and proceed continuously out from that point.

Weather: Do not place concrete in temperatures above 30°C or below 10°C without adequate precautions.

Compaction
Thickness 100 mm or less: Compact by placing screeding and finishing processes. If required use a hand-held vibrating screed at the surface. Do not use immersion vibrators.

Thickness more than 100 mm and downturns: Use an immersion vibrator.

Placing records
General: Keep on site and make available for inspection a log book recording each placement of concrete, including the following:

- Date of concrete placement.
- Delivery dockets noting the specified grade and source of concrete.
- Slump measurements to AS 1012.3.1.
- The portion of work.
- Volume placed.

Rain
General: During placement and before setting, do not expose concrete to rain.

Protection: Protect surface from damage by covering until hardened.

Concrete placing in cold weather
Cement: Do not use high alumina cement.

Placing concrete: Maintain the temperature of the freshly mixed concrete at 5°C.

Formwork and reinforcement: Before and during placing maintain temperature at 5°C.

Severe weather: If severe weather conditions are predicted, use high early strength cement.

Temperature control: Heat the concrete materials, other than cement, to the minimum temperature necessary to ensure that the temperature of the placed concrete is within the limits specified.

Admixtures: Do not use calcium chloride, salts, chemicals or other material in the mix to lower the freezing point of the concrete.

Frozen materials: Do not allow frozen materials or materials containing ice to enter the mixer, and keep free of frost and ice any forms, materials, and equipment coming in contact with the concrete.

Maximum temperature of water: 60°C when it is placed in the mixer.

Plastic concrete: Prevent plastic concrete from freezing, without using salts or chemicals.

Concrete placing in hot weather
Handling: Prevent premature stiffening of the fresh mix and reduce water absorption and evaporation losses.

Hot weather placing: Maintain freshly mixed concrete at the following temperature limits:

- Normal concrete in footings, beams, columns, wall and slabs: ≤ 35°C.
- Concrete section: ≥ 1 m in all dimensions: ≤ 27°C, except where concrete strength is 40 Mpa or greater.
- Section thickness > 600 mm: ≤ 27°C.

Formwork and reinforcement: Before and during placing maintain temperature at 35°C.

Severe weather: If ambient shade temperature more than 38°C, do not mix concrete.

Temperature control: Select one or more of the following methods of maintaining the specified temperature of the placed concrete:

- Cool the concrete using liquid nitrogen injection before placing.
- Cover the container in which the concrete is transported to the forms.
- Spray the coarse aggregate using cold water before mixing.
- Use chilled mixing water.

Evaporation control barriers: Erect barriers to protect freshly placed concrete from drying winds.

3.8 CONCRETE PRIMARY FINISH

General

Finishing: Do not commence finishing until all bleed water has evaporated from the surface.

Commence: Immediately after placement and spreading and compaction of the plastic concrete, start finishing operations to achieve the documented finish.

Unformed surfaces

General: Strike off, screed and level slab surfaces to finished levels, to the tolerance class and finish required. Finishes may be selected from exposed aggregate finish, cove finish, or broom finish.

Formed surfaces

Damage: Do not damage concrete works through premature removal of formwork.

Curing: If forms are stripped when concrete is at an age less than the minimum curing period, commence curing exposed faces as soon as the stripping is completed.

Surface repairs

Method: If surface repairs are required, submit proposals.

3.9 CONCRETE CURING

General

Curing: Commence curing as soon as possible after finishing and extend for a minimum period of 3 days.

End of curing period: Prevent rapid drying out at the end of the curing period.

Protection: Maintain at a reasonably constant temperature with minimum moisture loss, during the curing period.

Cold weather curing

General: Maintain concrete temperature between 10°C and 20°C for curing period.

Hot weather curing

Curing compounds: If it is proposed to use curing compounds, provide details.

Protection: Select a protection method as applicable.

- If the concrete temperature exceeds 25°C or if not protected against drying winds, protect the concrete using a fog spray application of aliphatic alcohol evaporation retardant.
- If ambient shade temperature is more than 35°C, protect from wind and sun using an evaporative retarder until curing is commenced.
- Immediately after finishing, either cover exposed surfaces using an impervious membrane or hessian kept wet until curing begins, or apply a curing compound.

Curing methods

Covering sheet method: Immediately after finishing operations, cover concrete using damp hessian or cotton mats overlapped at least 150 mm and anchored against displacement by wind or other

interference. Keep the mats continuously damp until covered by the covering sheet material. Repair tears immediately.

Moist curing method: Immediately after finishing operations and when the concrete has set sufficiently not to be damaged by the curing process, keep the concrete surface continuously damp by ponding or spraying constantly with water, fog, or mist, using suitable spraying equipment. Continue wetting for the curing period.

Self-levelling toppings: To AS 3799, if also used for curing.

Coloured concrete: Do not cure with plastic sheeting, damp sand or wet hessian. Use only chemical curing compounds compatible with the sealer or a sealer to the manufacturer's recommendations.

Curing compound
Application: Provide a uniform continuous flexible coating to AS 3799, without visible breaks or pinholes. Make sure coating remains unbroken at least for the required curing period after application. Respray defective areas within 30 minutes. Respray within 3 hours after heavy rain.

3.10 JOINTS

General
Requirement Construct expansion, contraction and construction joints straight and plumb. Make transverse joints normal to longitudinal joints. Extend transverse expansion and contraction joints continuously from edge to edge of the pavement through interconnected slabs.

Joint layout: Install joints to the Engineer's specification and drawings.

Contraction joints
Installation: Construct transverse and longitudinal contraction joints by early power sawing or by placing an insert in the fresh concrete.

Dowelled joints
Dowelled contraction joint: Dowel dimensions to the Engineer's specification. Place dowels at 300 mm centres orthogonal to the joint direction and parallel to the pavement surface, accurate alignment is critical, ensure proper field supervision.

Dowel assembly: Use a dowel-assembly support frame firmly secured to the subbase during concrete placement. Prevent the dowel assembly support frame from passing through the joint. Do not insert dowels during the placement of concrete.

Debond dowel: Coat with a debonding coating to 0.5 length + 25 mm. Embed the unpainted half of the dowels in the slab placed first.

Movement: Do not distort or displace beyond the alignment tolerances under testing or during construction. Do not remove and replace dowels in pre-formed holes.

Tie bar joints
Longitudinal contraction joints: Tie bar dimensions to Engineers specification. Place tie bars at 800 mm centres. Alignment accuracy of tie bars is not critical.

Construction joints
Installation: Place header board on the subbase or subgrade at right angles to the pavement centre line.

- Planned location: Terminate each day's placing operation at a transverse construction joint located to coincide with a planned contraction or expansion joint.

- Unplanned joints: If placement is interrupted for 30 minutes or longer, form a tied transverse construction joint within the middle third of the distance between planned joints but no closer than 1.5 m to the nearest planned joint. If necessary remove placed concrete back to the required location.

Expansion joints

Requirement: Provide formed full depth joints around structures and features which project through, into or against the pavement, and elsewhere as required.

Dowelled expansion joints: Cap dowels at one end with a compressible material.

Formed joints

Full depth joints: Form the edge of the concrete placed first to provide a smooth, vertical face. After stripping and cleaning fix the joint filler with a suitable waterproof adhesive to the face of the slab, and place the adjoining concrete after the adhesive has set.

Weakened plane joint: Cut a crack-inducing groove by using a suitable tool into the plastic concrete during finishing of the concrete surface. Compact and refinish the plastic concrete around the groove after forming the joint.

Rebated groove joints: Form the rebate by securely fixing removable steel or timber form strips to the form or forms on the slab which is placed first, so that the top of the steel strip is flush with the top of the form. After stripping and cleaning, fix the joint filler in the rebate after placing the adjoining concrete.

Sawn joints

Weakened plane joint: Saw the hardened concrete to depth at least ¼ to ⅓ of the pavement thickness and to a uniform width in the range of 3 to 5 mm as follows:

- Timing: Commence sawing, regardless of time or weather conditions, as soon as the concrete has hardened sufficiently to permit cutting with only minor ravelling of the edges of the saw cut. Complete sawing no later than 24 hours after concrete placement.
- Sequence: If possible, saw every third transverse joint initially, then saw the intermediate joints. Start where concrete placement has commenced.
- Cracking: If the concrete has already cracked near the location chosen for a joint, do not saw a joint in that location. If a crack develops ahead of the saw cut, discontinue sawing and submit proposals for extra sawn joints. If uncontrolled cracking occurs, suspend concrete placing.
- Stand-by machines: Provide one stand-by sawing machine for each machine planned to be used.
- Cleaning and protection: Immediately after each joint is sawn, flush the saw cut and adjacent concrete surface using water, until the waste from sawing is removed from the joint. Temporarily caulk the joint using plastic or rubber tubing, or a suitable Tee shaped extrusion. Leave the caulking in place until grooving and sealing.

Rebated groove joints: Saw straight, parallel sided grooves for joint seals on top of and centred on the sawn weakened plane joints.

- Timing: Commence sawing after the curing period has ended, immediately before joint sealing. Saw during daylight hours.

Protection: Where there is a time elapse after sawing and before joint sealing, install a thin-splined rubber strip with a free width slightly larger than the saw cut at the bottom of the saw cut after washing slurry from sawn groove to temporarily prevent ingress of solid material.

Preparing joints

Stripping time: At least 12 hours.

Clean: Immediately before installation of the sealer, make sure the joint space is dry, clean and free from loose material. Remove laitance, curing compound and protrusions of hardened concrete from the sides and upper edges of the joint.

Joint sealing
Sealant type: Provide silicone sealant in conformance with the manufacturer's recommendations.

Backing rod: Compressible closed cell polyethylene foam with a bond breaking surface.

Curing sealer compound: If using the sealer as a curing compound, apply directly after finishing.

3.11 COMPLETION

Completion tests
Slip resistance of completed installation: To AS 4663.

Protection
General: Keep traffic, including construction plant, off the pavement entirely during curing. Permit access only to necessary construction plant vehicles which conform to the predetermined load limits appropriate to the use of the concrete.

Rectification
Reinstating adjacent surfaces: Reinstate surfaces next to new pavements and associated elements. If an existing road pavement has been disturbed, trim back to a straight and undisturbed edge, 250 to 300 mm from and parallel to the new concrete for the full depth of the slab.

Concrete pavement: If pavement does not conform to the tolerances, submit rectification proposal.

Unplanned cracking:

- 0.3 mm wide crack is acceptable.
- > 1 mm must be assessed, submit a proposal for possible cause and rectification processes.

Cleaning
Excavated material: Remove from site.

0275 PAVING – MORTAR AND ADHESIVE BED

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide paving as shown on the drawings.

Performance

Requirements:

- Consistent in colour and finish.
- Firmly bonded to substrates for the expected life of the installation.
- Resistant to expected impacts in use.
- Set out with joints accurately aligned in both directions.
- To direct all water flowing from supply points to drainage outlets without leakage to the substrate or adjacent areas.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*

1.3 STANDARDS

Slip resistance

Classification: To AS 4586.

1.4 INTERPRETATION

Definitions

General: For the purposes of this worksection the following definitions apply.

- Absolute level tolerance: Maximum deviation from design levels.
- Adhesives - cementitious (C): Adhesive in which the binders are hydraulic, e.g. Portland cement, with aggregates and organic additives.
- Bedding: Mixtures of materials which are applied to substrates in a plastic state and which dry, cure and adhere tiles to substrates:
  - Adhesive bedding: Paving/tiling adhered by adhesives.
  - Mortar bedding: Paving/tiling adhered in a cementitious mortar bed.
- Lippage: Height deviation between adjacent units.
- Pavers: Units made from clay, stone, precast concrete, ceramic, terrazzo and/or other inorganic raw materials, generally over 20 mm thick, used as coverings for horizontal surfaces. Larger pavers are often referred to as flags.
- Relative level tolerance: Maximum deviation from a 3 m straight edge laid on the surface.
- Substrate: The surface to which a material or product is applied.

1.5 TOLERANCES

Completed paving

Lippage:

- Unpolished pavers: Less than 2 mm.
- Polished pavers 300 x 300 mm or less: 1 mm, with 5% not exceeding 1.5 mm.
- Polished pavers over 300 x 300 mm: 1.5 mm, with 5% not exceeding 2 mm.

Paving surface level tolerances table

Item	Level tolerance	
	Absolute	Relative
Vehicular pavements	± 5 mm	5 mm
Pedestrian pavements	± 10 mm	10 mm

1.6 SUBMISSIONS

Execution details

Grouting: Submit proposals for grouting methods and materials.

Margins: If it appears that minor variations in joint widths or overall dimensions will avoid cut pavers, submit a proposal.

Operation and maintenance manuals

General: Submit a manual describing care and maintenance of the paving, including procedures for maintaining the slip-resistance grading stating the expected life of the slip-resistance grade.

Products and materials

Product conformity: Submit current assessments of conformity as follows:

- Marking and classification of adhesive to AS ISO 13007.1.

Type tests: Submit results, as follows:

- Slip resistance of pavers.
- Accelerated wear test of pavers.
- Stone paver properties.

Samples

General: Submit labelled samples of pavers, grout and sealants, illustrating the range of variation in colour and finish.

Sample panel: Prepare a sample panel of each type of finish as follows:

- Size: ≥ 2 m².
- Include samples of junction details and trim.
- Preserve each panel until related work is complete.

Tests

Site tests: Submit results, as follows:

- Slip resistance of completed installation.
- Stone paver properties tests.
- Salt efflorescence of paver prototype testing.

1.7 INSPECTION

Notice

Inspection: Give adequate notice so that inspection may be made of the following:

- Substrate immediately before paving.
- Trial set-outs before execution.
- Control joints before sealing and grouting.

2 PRODUCTS

2.1 GENERAL

Marking

Identification: Marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern.

2.2 ADHESIVES

General

Standard: To AS ISO 13007.1.

Type

General: Provide adhesives compatible with the materials and surfaces to be adhered.

Prohibited uses: Do not provide the following combinations:

- Organic PVC-based adhesives and organic natural rubber latex adhesives in damp or wet conditions.
- PVA (polyvinyl acetate) based adhesives in wet areas or externally.

2.3 MORTAR

Materials

Cement: To AS 3972.

- Type: GP.
- Iron salt content:
  - White cement: ≤ 1%.
  - Off-white cement: ≤ 2.5%.

Lime: To AS 1672.1.

Sand: Fine aggregate with a low clay content selected for grading, sharp and free from efflorescing salts.

Water: Clean and free from any deleterious matter.

Measurement of volume: Measure binders and sand by volume using buckets or boxes. Do not allow sand to bulk by absorption of water.

Bedding mortar

Mix proportion (cement:sand): Select from the range 1:3 to 1:4 to obtain satisfactory adhesion. Provide minimum water.

Mixing: To AS 3958.1 clause 2.15.

Gauging: Site gauged by volume.

2.4 GROUT

Type
Portland cement based grout: Mix with fine sand. Provide minimum water to achieve workability.

- Mix proportion (cement:sand): 1:3.

Pigments
Pigments for coloured grout: Provide colourfast pigments compatible with the grout material. For cement-based grouts, provide inorganic mineral pigments or lime-proof synthetic metallic oxides compatible with cement.

Water
General: Clean and free from any deleterious matter.

2.5 PAVERS

Concrete and clay pavers
Standard: To AS/NZS 4455.2.

Properties: To AS/NZS 4455.2 Table 2.8.

Stone pavers
Description: Provide sound stone pavers of uniform quality. Reject stone pavers with any of the following defects liable to affect strength and durability:

- Vents.
- Cracks.
- Fissures.
- Seams.
- Porous inclusions.
- Foreign material.
- Loose surface material.
- Discolouration.

Matching: Select for optimum matching of colour and pattern.

Split flagging thickness: Minimum 50 mm, maximum 75 mm.

Face size: Use smaller sizes for pathways and larger sizes for open areas and maintain traditional stone flagging appearance.

Stone setts
Description: Igneous stone, cubed, cobble-style setts.

2.6 OTHER MATERIALS

Tactile ground surface indicators
Standard: To AS/NZS 1428.4.1.

Control joint types
General: As documented in the **Control joints schedule**.

Divider strip: A proprietary expansion joint consisting of a neoprene filler sandwiched between plates with lugs or ribs for mechanical keying. Set flush with the finished surface.

Proprietary slide plate divider strip: An arrangement of interlocking metal plates grouted into pockets formed in the concrete joint edges.

Sealant: Two-pack self-levelling flexible mould resistant, one-part silicone or polyurethane sealant applied over a backing rod. Finish flush with the paver surface.

- Floors: Trafficable, shore hardness more than 35.

Backing rod: Compressible closed cell polyethylene foam with a bond-breaking surface.

3 EXECUTION

3.1 PREPARATION

Trial set-out

General: Prepare a trial paving set-out to each area as follows to:

- Maximise the size of equal margins of cut pavers.
- Locate control joints.
- Note minor variations in joint widths to eliminate cut pavers at margins.

Ambient temperature

General: If the ambient temperature is less than 5°C or more than 35°C, do not lay pavers.

Substrates

General: Make sure substrates are as follows:

- Clean and free of any deposit or finish which may impair adhesion or location of pavers.
- Projections are hacked off and voids and hollows are filled with a cement:sand mix not stronger than the substrate nor weaker than the bedding.

Drying and shrinkage: Before paving, allow at least the following times to elapse (for curing and initial shrinkage) for these substrates:

- Concrete slabs: 28 days.
- Toppings on slabs: A further 21 days.

Absorbent substrates: If suction is excessive, control it by dampening but avoid over-wetting and do not apply mortar bedding to substrates showing surface moisture.

Dense concrete: If not sufficiently rough to provide a mechanical key, roughen by scabbling or the like to remove 3 mm of the surface and expose the aggregate then apply a bonding treatment.

Fixtures

General: Before paving make sure that fixtures interrupting the surface are accurately positioned in their designed or optimum locations relative to the paving layout.

3.2 PAVING GENERALLY

Variations

General: If necessary, distribute variations in hue, colour, or pattern uniformly, by mixing pavers or paving batches before laying.

Paving joints

Joint widths: Set out pavers to give uniform joint widths of 6 to 12 mm.

Margins

General: Provide whole or purpose-made pavers at margins where practicable, otherwise set out to give equal margins of cut pavers. If margins less than half paver width are unavoidable, locate the cut pavers where they are least conspicuous.

Protection
Traffic: Keep pedestrian and vehicular traffic off paving until the bedding has set and attained its working strength.

Cleaning: Keep the work clean as it proceeds and protect finished work from damage.

3.3 MORTAR BEDDING

Preparation of pavers
Suction: Soak porous pavers in water for half an hour and then drain until the surface water has disappeared.

Bedding
General: Use bedding methods and materials which are appropriate to the paver, the substrate, the conditions of service, and which leave the paver firmly and solidly bedded in the bedding material and adhered to the substrate. Form falls integral with the substrate.

Mortar beds
Substrate preparation: Either lightly dust the screeded bed surface with dry cement and trowel level until the cement is damp, or spread a thin slurry of neat cement, on to the paver back. Do not provide mortar after initial set has occurred.

Sandstone flagging
Mortar bed thickness: Minimum 50 mm to maximum 60 mm.

Laying pattern: Random, with smaller stones filling the gaps to produce roughly uniform joint widths. Lay flags and fill joints in one operation.

Stone setts dry bed
Description: Lay and tamp setts on to a dry sand and cement mix, compact and moisten as follows:

- Mortar bed mix proportion (cement:sand): 1:3 screeded to the level required to allow setts to be firmly tamped.
- Select the top side of the sett for surface uniformity and tap into the mix to the pre-compaction position.
- Compact with a hand ram or mechanical compactor.
- Water spray the surface and allow the bedding to harden.
- Grout joints.

3.4 ADHESIVE BEDDING

Preparation of pavers
Adhesive bedding: Fix pavers dry.

Bedding
General: Use bedding methods and materials which are appropriate to the paver, the substrate, the conditions of service, and which leave the paver firmly and solidly bedded in the bedding material and adhered to the substrate. Form falls integral with the substrate.

Thick adhesive beds
General: Provide on substrates with deviations up to 6 mm when tested with a 2 m straight edge, and with pavers having deep keys or frogs.

Nominal thickness: 6 mm.

Adhesive bedding application
General: Apply adhesive by notched trowel to substrates and direct to pavers if required, to provide evenly distributed coverage of more than 90% after laying.

Pattern of distribution of adhesive: Conform to AS 3958.1. Verify by examining one paver in ten as work proceeds.

Grouting: Allow the adhesive to cure for the period recommended by the manufacturer before grouting.

3.5 MOVEMENT JOINTS

General

Requirement: Provide control joints as follows:

- Location:
  - Over structural control joints.
  - At internal corners.
  - Close to external corners in large paved areas.
  - Around the perimeter at abutments.
  - At junctions between different substrates.
  - To divide large paved areas into bays, maximum 5 m wide, maximum area 16 m^2.
  - At abutments with the building structural frame and over supporting walls or beams where flexing of the substrate is anticipated.
- Depth of joint: Right through to the substrate.
- Sealant width: 6 to 25 mm.
- Depth of elastomeric sealant: One half the joint width, or 6 mm, whichever is the greater.

3.6 GROUTED JOINTS

Grouting

General: Commence grouting as soon as practicable after bedding has set and hardened sufficiently. Clean out joints as necessary before grouting.

Face grouting: Fill the joints solid and tool flush. Clean off surplus grout and wash down as the grouting proceeds.

3.7 TESTING

Completion tests

Slip resistance of completed installation: To AS 4663.

3.8 COMPLETION

Spares

General: Supply spare matching pavers of each type for future replacement purposes. Store the spare materials on site.

Quantity: At least 1% of the quantity installed.

Cleaning

Completion: Clean progressively and leave pavements clean on completion.

0276 SEGMENTAL PAVERS – SAND BED

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide segmental paving.

Design

Performance

General: Coordinate with drainage, adjacent structures and trees.

Conformance: Conform to local authority requirements for levels, grades and paving details (including shape, colour and laying pattern) for paving to footpaths and driveways.

Requirements: Provide segmental paving conforming to the following:

- The documented level tolerances.
- Consistent in colour and finish.
- To direct all water flowing from supply points to drainage outlets without leakage to the substrate or adjacent areas.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *0171 General requirements.*
- *0222 Earthwork.*
- *0271 Pavement base and subbase.*

1.3 STANDARDS

General

Concrete and clay segmental pavers: To AS/NZS 4455.2.

Slip resistance

Classification: To AS 4586.

Slip resistance measurement of completed installations: To AS 4663.

1.4 INTERPRETATION

Abbreviations

General: For the purposes of this worksection, the following abbreviations apply:

- AGPT: Austroads Guide to Pavement Technology.
- CBR: California Bearing Ratio.
- CCAA: Cement Concrete and Aggregates Australia.
- CMAA: Concrete Masonry Association of Australia.

Definitions

General: For the purposes of this worksection, the following definitions apply:

- Absolute level tolerance: Maximum deviation from design levels.
- Base: One or more layers of material usually constituting the uppermost structural element of a pavement on which the surfacing may be placed.

- Clay segmental pavers: Manufactured from clay, shale or argillaceous materials and which may be mixed with additives. Clay pavers may have square, bevelled (chamfered), rounded or rumbled edges. The pavers are generally rectangular in shape, with the length twice the width, plus 2 mm.
- Concrete segmental pavers: Units of not more than 0.10 m^2 in gross plan area, manufactured from concrete, with top and bottom faces parallel, with or without chamfered edges and identified by the following shape types:
  - Shape Type A: Dentated chamfered units which key into each other on four sides, are capable of being laid in herringbone bond, and by plan geometry, when interlocked, resist the spread of joints parallel to both the longitudinal and transverse axes of the units.
  - Shape Type B: Dentated units which key into each other on two sides, are not (usually) laid in herringbone bond, and by plan geometry, when keyed together, resist the spread of joints parallel to the longitudinal axes of the units and rely on dimensional accuracy and accuracy of laying to interlock on the other faces.
  - Shape Type C: Units which do not key together and rely on dimensional accuracy and accuracy of laying to develop interlock.
- Density ratio: Percentage of the maximum density at optimum moisture content as determined by AS 1289.5.2.1.
- Lippage: Height deviation between adjacent pavers or other surface features.
- Relative level tolerance: Maximum deviation from a 3 m straightedge laid on the surface.
- Soldier course: A course of whole or trimmed rectangular pavers at the pavement restraint edge.

1.5 TOLERANCES

Finished surface level

General: Conform to the following:

- Absolute level tolerance: ± 8 mm.
- Relative level tolerance: 8 mm.
- Lippage: Less than 2 mm.

1.6 SUBMISSIONS

Execution details

Base material: Submit test results on quality, grading and compaction.

Segmental pattern: If it appears that minor variations to joint widths will minimise cutting, submit proposals.

Products

Compliance certificate: Submit compliance certificates for the pavers, as documented.

Samples

General: Submit labelled samples of pavers, illustrating the range of variation in colours and finish.

Tests

Type tests: Submit results, as follows:

- Type test slip resistance of tiles to AS 4586.

Other tests: Submit results, as follows:

- Site slip resistance test of completed installations to AS 4663.
- Accelerated wear test.

1.7 INSPECTION

Notice

Inspection: Give adequate notice so that inspection may be made of the following:

- Completed base preparation.
- Completed trial set-out for segmental paving.

- Completed paving.

2 PRODUCTS

2.1 MARKING

Identification

General: Deliver materials to the site in the manufacturer's original sealed packaging, legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern. Provide technical data sheets if not shown on labels.
- Handling and installation instructions.
- Safety data sheets.

2.2 SAND

Bedding sand

Quality: Free of deleterious material, such as soluble salts which may cause efflorescence.

Grading: To the **Bedding sand grading table** when tested to AS 1141.11.1.

Fines: Do not use single-sized, gap-graded or excessive fine material.

Cement: Do not use cement bound material.

Moisture content: Make sure moisture content is uniform and between 4 to 8%.

Bedding sand grading table

Sieve aperture	Percentage passing (by mass) %
9.52 mm	100
4.75 mm	95 – 100
2.36 mm	80 – 100
1.18 mm	50 – 85
600 µm	25 – 60
300 µm	10 – 30
150 µm	5 – 15
75 µm	0 – 10

Joint filling sand

General: Well-graded sand, free of deleterious material such as soluble salts which may cause efflorescence.

Moisture content: Use dry sand.

Cement: Do not use cement.

Grading: To the **Joint filling sand grading table** when tested to AS 1141.11.1.

JH

Joint filling sand grading table

Sieve aperture	Percentage passing %
2.36 mm	100
1.18 mm	90 – 100
600 µm	60 – 90
300 µm	30 – 60
150 µm	15 – 30
75 µm	5 – 10

2.3 CONCRETE SEGMENTAL PAVERS

Properties

Requirements: To AS/NZS 4455.2 Table 2.8.

Permeable interlocking concrete pavers: To CMAA PE01.

Proprietary product: As documented.

2.4 CLAY SEGMENTAL PAVERS

Properties

Requirements: To AS/NZS 4455.2 Table 2.8.

Proprietary product: As documented.

3 EXECUTION

3.1 SUBGRADE

Preparation

Extent: Prepare the subgrade to the required profile and extend to the rear face of the proposed edge restraints or to the face of existing abutting structures.

Subgrade preparation: To the *0222 Earthwork* worksection.

Drainage of subgrade

Subgrade drainage: Prepare piped or channelled stormwater and subsoil as required.

Service trenches: Backfill all drainage trenches to perform similar to the undisturbed ground.

3.2 BASE COURSE

Preparation

Base course extent: Extend base course below the edge restraint for its full width except at walls or pits.

Base course: Conform to the *0271 Pavement base and subbase* worksection.

3.3 BEDDING COURSE

General

Preparation: Remove all loose material from the prepared base.

Geotextile

Position: Place fabric between the base course and the bedding sand and lap 150 mm at joints.

Bedding sand
Spreading: Screed uncompacted sand over prepared base uniformly to achieve a 30 mm thick layer. Maintain sand at a uniform loose density and moisture content.

Bedding course drainage: If water ponding occurs at edge restraint, drain bedding course to existing subsurface drain or drainage pit using geotextile and 20 mm diameter PVC pipe.

Trial section
Moisture content: Prepare a trial section to establish the moisture content limits which will allow paver system compaction to be achieved.

3.4 LAYING PAVING

General
Segmental paving pattern: Prepare a trial set-out for each area.

Laying: Lay paving units on the screeded sand bedding to the documented pattern.

Joints: 2 to 5 mm gap.

Cut courses: 50 mm minimum plan dimension. On footpaths and other linear elements, use at least two cut courses and maintain symmetry.

Control: Control alignment and laying pattern by stringlines or chalked stringlines every 5 m intervals.

Variable width areas: Include in situ concrete infill strips to make a straight area for paving and take up the variable width. If there is a concrete base, provide paving control joints as follows:

- Located over base control joints.
- 10 mm wide and filled with bitumen impregnated fibreboard.

Laying around obstacles
Public utility access pits and penetrations: Adjust access covers as required before commencing paving. Make sure water drains away from pits with lids and into surface inlet drainage structures.

Concrete surrounds:

- Plan shape: Square or rectangular with a smooth connection with the laying pattern of the pavers.
- Pit position: Centring not required.
- Minimum thickness between the pit and paving: 100 mm.
- Strength grade: N32.
- Colour: Natural.

Precast access chamber: Lay pavers to suit specific dimensions of authority access chambers.

Patterns around obstacles: Lay up both sides of the feature from the main or original laying face.

Compaction of bedding
Compaction: Compact the sand bedding after laying paving units with a vibrating plate compactor and appropriate hand methods.

Sequence: Compact paving as follows:

- Progressively behind the laying face.
- Complete compaction of laid paving at end of each day.
- Do not compact within 1 m of the laying face except where adjacent to an edge restraint.

Joint filling: Compact all paving units to design levels before starting of joint filling.

Joint filling

Filling: Spread dry sand over the paving units and fill the joints by brooming. Carry out one or more passes with the vibrating plate compactor and refill the joints with sand. Repeat the process until the joints are completely filled.

Timing: Start joint filling immediately after compaction.

3.5 COMPLETION

Protection of the work

Protection: Prevent all vehicular and pedestrian traffic from using the pavement until all compaction and joint filling is completed and all edge restraints are in place.

Cleaning

General: Leave pavements clean on completion.

Final inspection

General: Before the date for practical completion carry out the following inspections:

- Cracking in bound pavements: Width 1.5 mm.
- Subsidence: Offset less than 1.5 m length of the design profile, not more than 5 mm.
- Stepping: Between adjacent elements within the pavement area, not more than 5 mm.
- Chipping and spalling to pavement units: Maximum 10/100 units with chipped or spalled arrises.
- Ponding: Maximum 10 mm deep 15 minutes after rain ceases.
- Paving joints: Refill joints as required.

0310 CONCRETE

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- The soil classification, for the site, shall be determined through on site soil testing.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

Conform to the following:

- *0171 General requirements.*
- *0184 Termite management.*
- *Inspection Test and Conformity Plan (ITCP).*
- *Structural Engineer's documentation.*

1.3 STANDARDS

Formwork design and construction, formed surfaces: To AS 3610 and AS 3610.1.

Plywood formwork: To AS 6669.

Profiled steel sheeting including shear connectors: To AS 2327.1.

Specification and supply of concrete: To AS 1379.

Reinforced concrete construction: To AS 3600.

Residential ground slabs and footings: To AS 2870.

Cement: To AS 3972 Type GP unless otherwise noted in the Structural Engineer's documentation.

Curing compounds: To AS 3799.

Slip resistance classification: To AS 4586.

Slip resistance measurement of completed installations: To AS 4663.

1.4 INTERPRETATION

For the purposes of this worksection the following definitions apply:

- Ambient temperature: The air temperature at the time of mixing and placing of concrete.
- Average ambient temperature: Average value of the daily maximum and minimum ambient temperatures over the relevant period at a site.
- Weather – Cold: Ambient shade temperature less than 10°C.
- Weather – Hot: Ambient shade temperature greater than 30°C.

1.5 TOLERANCES

Quality of formed surface finish: To AS 3610.1 Table 3.3.2 for the appropriate class of finish.

Unformed surfaces: Flatness of horizontal concrete shall not exceed the following:

- Floors to receive carpet: The maximum deviation under a 3m straight edge shall be 5mm and under a 150mm straight edge shall be 1mm, when laid in any direction.
- Floors specified or scheduled to receive resilient finishes: The maximum deviation under a 2 metre straight edge shall be 4mm and under a 150mm straight edge shall be 1mm, when laid in any direction.
- Floors to be exposed in the finished work: The maximum deviation under a 3m straight edge laid in any direction shall be 6mm.
- All other as-laid floors: The maximum deviation under a 3m straight edge laid in any direction shall be 12mm.
- Rectify non-conforming 'as laid' concrete by suitable procedures, such as levelling compounds or grinding.

1.6 SUBMISSIONS

Prior to submitting the following samples for acceptance, provide details of the concrete mix from the concrete supplier for all concrete types.

In accordance with Section 0171, provide samples of the following:

- Sample discs from the concrete supplier of the range of concrete mixes/ colours available from which the desired mix/ colour for the project can be selected.

- 300mm x 300mm sample of each type of off-form and worked concrete finish using proposed formwork, concrete mix, oxide admix and surface treatments as specified and as applicable.

1.7 SAMPLE PANELS

Prior to commencement, construct sample panels of the following, where applicable:

- Class 2 off form concrete finish, nominally 1200mm x 1200mm, with regularly spaced form ties, and demonstrating the quality of finish and colour consistency to be achieved in the finished work.

- Polished concrete slab finish, nominally 1200mm x 1200mm, including applied finish, showing variations in the level of grit used in the grinding process.

- Washed concrete slab finish, nominally 1200mm x 1200mm, including applied finish.

Obtain acceptance prior to commencing any subsequent work. If a panel is rejected, construct further sample panels, as necessary, until acceptance is obtained.

1.8 OTHER SUBMISSIONS

Submit names and contact details of proposed suppliers and subcontractors including details of experience with similar projects.

For other than profiled steel sheeting composite formwork, submit certification by a professional engineer experienced in formwork design verifying conformance of the design.

Submit certification by a professional engineer experienced in formwork design and construction verifying conformance of the completed formwork, including the suitability of the formwork for the documented surface finish class.

The design of the formwork, other than profiled steel sheeting composite formwork, is the Contractor's responsibility. This applies to all formwork types, including conventional, proprietary (non-composite profiled steel sheeting) or purpose made formwork.

Submit formwork layout drawings prior to commencement of off-form concrete works on Site.

1.9 SLIP RESISTANCE AND SLIP RESISTANCE TESTING

Pedestrian areas shall be stable, safe and minimise the risk of slipping or tripping due to slippery surfaces or misaligned joints. Slip resistances shall comply with the requirements of HB 197 and HB 198.

Provide slip resistance test certificates to confirm that slip resistance values are in accordance with AS 4663.

Arrange and pay for on-Site slip resistance testing of all types of concrete floor surfaces that are left exposed in the finished work and in sufficient number to cater for all areas and conditions including ramps, steps, entrances etc. Testing shall be undertaken by a registered testing laboratory. Tests shall include wet pendulum and dry floor friction testing in accordance with AS 4663.

1.10 INSPECTION

Conduct all testing and inspections as detailed in the relevant ITCP.

2 PRODUCTS

2.1 GENERAL

Concrete mix shall contain no fly ash.

2.2 CLASS 2 OFF FORM CONCRETE

Class 2 concrete: Concrete with finish of uniform quality and texture, in accordance with AS 3610.1.

Making good to off form concrete shall be minimal and consistent to an accepted sample. As far as possible, the finished surface shall be achieved without making good. The improvement of the surface finish by the Contractor (eg filling noticeable surface blemishes) shall be agreed prior to any work being carried out.

Formwork tie-rod holes shall be at uniform centres and in-line, horizontally and vertically, with dimpled finish.

All off-form concrete that is visible in the finished work shall achieve this level of finish.

2.3 OFF FORM CONCRETE FINISH - CLASS 3

Class 3 concrete shall be in accordance with AS 3610.1.

Off-form concrete that is concealed in the finished work shall achieve a class 3 level of finish, unless otherwise accepted by the Superintendent.

2.4 PRE-MIXED CONCRETE

To AS 1379 by the batch production process.

Maximum slump of concrete shall be 100mm, unless agreed otherwise.

2.5 LOST FORMWORK

Lost formwork, where required, shall be free of timber or chlorides and shall not impair the structural performance of the concrete members.

2.6 PROFILED STEEL SHEET COMPOSITE FORMWORK

Profiled steel sheet composite formwork shall be hot-dipped zinc-coated sheet steel to AS 1397. Minimum steel grade: G550. Corrosion protection: Zinc coating weight: Z350 for non-aggressive areas and Z450 for severe and aggressive environments where a build up of airborne corrosive contaminants can affect the coating.

Accessories: Adopt material and corrosion protection to match the profiled steel sheeting.

2.7 PLYWOOD FORMWORK

Plywood sheeting shall be to AS 6669.

Use the appropriate grade for the documented design dimensions, loading and surface quality.

Seal the joints consistent with the documented surface finish class.

Use unused full sized boards for all Class 2 off-form concrete.

Confirm board layouts for all Class 2 off-form concrete. Provide layout drawings for approval. Minimise jointing wherever possible.

2.8 VAPOUR BARRIERS

Vapour barriers to slabs: To AS 2870 clause 5.3.3.

Vapour barrier shall comprise medium impact resistant polyethylene film.

Minimum thickness: 0.2mm.

3 EXECUTION

3.1 POLYMERIC FILM UNDERLAY

Under slabs on ground, including integral ground beams and footings, provide a vapour barrier or, in areas prone to rising damp or salt attack, a damp-proofing membrane.

Install in accordance with AS 2870.

3.2 FORMWORK

Before placing concrete, remove free water, dust, debris and stains from the formwork and the formed space.

Chamfer at re-entrant angles, and fillet at corners. Face of bevel: 25mm.

Keep void formers dry until time of use. Place them on a firm level surface and place reinforcement and concrete with minimum delay.

3.3 REINFORCEMENT

Provide chairs, spacers, stools, hangers and ties, as follows:

- Able to withstand construction and traffic loads.
- Constructed from plastic or concrete.

Spacing of supports to reinforcement:

- Bars: ≤ 60 diameters.
- Mesh: ≤ 800 mm.

Prevent damage to waterproofing membranes or vapour barriers. If appropriate, place a metal or plastic plate under each support. In special conditions, pieces of stainless steel reinforcement, welded to standard reinforcement, may be used in place of standard supports.

If starter or other bars extend beyond reinforcement mats or cages, through formwork or from cast concrete, provide a plastic protective cap to each bar until it is cast into later work.

Secure the reinforcement against displacement at intersections with either wire ties or clips. Bend the ends of wire ties away from nearby faces of formwork or unformed faces so that the ties do not project into the concrete cover.

Splice as follows:

- Mesh sheets: 225mm.
- Trench mesh: 500mm.
- Bars: Greater of either 500mm or 25 x bar diameter.
- Strip footing intersections and corners: Full width of intersecting reinforcement.

Cover to reinforcement shall comply with AS 2870 or as otherwise nominated by the Structural Engineer.

3.4 CONCRETE

Placing

Avoid segregation and loss of concrete, and minimise plastic settlement. Maintain a nominally vertical and plastic concrete edge during placement.

Place concrete in layers not more than 300 mm thick. Compact the following layer into previous layer before previous layer has taken initial set.

Compaction

Use immersion and screed vibrators accompanied by hand methods as appropriate to remove entrapped air and to fully compact the mix.

Do not allow vibrators to contact set concrete, reinforcement or items including pipes and conduits embedded in concrete. Do not use vibrators to move concrete along the formwork. Avoid causing segregation by over-vibration.

Rain

During placement and before setting, protect the surface from damage.

Placing in hot and cold weather

Maintain temperature of freshly mixed concrete, formwork and reinforcement between 5°C and 35°C.

Select one or more of the following methods of maintaining the temperature of the placed concrete:

- Heat the concrete materials, other than cement, to the minimum temperature necessary so that the temperature of the placed concrete is within the documented limits.
- Cover the horizontal transport containers.
- Spray the coarse aggregate using cold water prior to mixing.
- Use chilled mixing water.

Erect barriers to protect freshly placed concrete from drying winds.

3.5 CURING

General

Taking into account the average ambient temperature at site over the relevant period affecting the curing and adopt procedures to ensure the following:

- Cure continuously from completion of finishing until the total cumulative number of days or fractions of days, during which the air temperature in contact with the concrete is above 10°C, conforms to the following:
  - Fully enclosed internal surfaces: 3 days.
  - Other concrete surfaces: 7 days.
- Prevent rapid drying out at the end of the curing period.
- Maintain at a reasonably constant temperature with minimum moisture loss, during the curing period.

Curing compounds

Provide a uniform continuous flexible coating without visible breaks or pinholes, which remains unbroken at least for the required curing period after application.

Do not use wax-based or chlorinated rubber-based curing compounds on surfaces forming substrates to applied finishes, concrete toppings and cement-based render.

Cold weather curing

Maintain concrete surface temperature above 5°C for the duration of the curing period.

Hot weather curing

Immediately after finishing, either cover exposed surfaces using an impervious membrane or hessian kept wet until curing begins, or apply a curing compound.

Water curing

Select a method of ponding or continuously sprinkling water to prevent damage to the concrete surface during the required curing period.

3.6 JOINTS

Do not relocate or eliminate construction joints, or form undocumented construction joints. If emergency construction joints are made necessary by unforeseen interruptions to the concrete pour, submit a report on the action taken.

Roughen and clean the hardened concrete joint surface. Remove loose or soft material, free water, foreign matter and laitance. Dampen the surface just before placing the fresh concrete and coat with a neat cement slurry.

Where concrete slabs are supported on masonry, provide proprietary slip joints.

3.7 FORMED SURFACES

Do not damage concrete works through premature removal of formwork.

If formwork is stripped before the minimum curing period for the concrete has elapsed, continue curing the exposed faces as soon as the stripping is completed.

If surface repairs are required, submit proposals.

3.8 UNFORMED SURFACES

Float the concrete to an even surface with no ridges or steps. When the concrete is suitably stiff, trowel, by hand trowel or power float, to give a uniform, smooth surface, free from trowel marks and other blemishes and suitable to receive the nominated flooring material.

Generally, hand trowelling shall be used for areas to receive tiled finishes and power float shall be used for areas to receive sheet flooring, such as carpet, vinyl, or sealers.

3.9 HONED/POLISHED FINISH

Honed/ polished concrete floors shall be in accordance with the requirements of the CCAA publication 'The Specification of Honed or Polished Concrete Finishes'.

When cured, the concrete shall be ground to expose the aggregate and honed/ polished as necessary.

3.10 WASHED FINISH

Washed concrete finish shall be in accordance with the requirements of the CCAA Publication 'Exposed Aggregate Finishes for Flatwork'.

Washed finish shall be achieved by blast cleaning the concrete surface to expose the aggregates. The blast process shall be agreed prior to commencement. 3mm maximum aggregate exposure.

Slip resistance: Wet pendulum test value: Minimum P4.

3.11 COMPLETION

Remove formwork, other than profiled steel sheeting composite formwork and lost formwork, including formwork in concealed locations.

Do not disturb formwork until concrete is hardened enough to withstand formwork movements and removal without damage.

Leave formwork for suspended structures in place after pouring concrete for the following periods:

- Vertical surfaces: 2 days.
- Bottom surfaces: 7 days with shoring and backprops left in position for 21 days.

Protect the concrete from damage due to construction loads, physical and thermal shocks and excessive vibrations, particularly during the curing period.

Protect finished concrete surfaces and applied finishes from damage.

0331 MASONRY CONSTRUCTION

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

Conform to the following:

- *0171 General requirements.*
- *0184 Termite management.*
- *0342 Light steel framing.*
- *0382 Light timber framing.*
- *0471 Insulation and pliable membranes.*
- *0611 Rendering.*
- *Inspection Test and Conformity Plan (ITCP).*
- *Structural Engineer's documentation.*

1.3 STANDARDS

Materials and construction: To AS 4773.1 and AS 4773.2.

1.4 TOLERANCES

To AS 3700 Table 12.1.

1.5 SUBMISSIONS

In accordance with Section 0171, provide samples of the following:

- Two samples of each masonry unit type, including bricks, blocks and stone in a 1m x 1m assembled prototype.
- Samples of mortar.
- Samples of joint sealants.
- Two of each type of accessory.

1.6 INSPECTION

Conduct all testing and inspections as detailed in the relevant ITCP.

2 PRODUCTS

2.1 DURABILITY

Exposure environment: Mild (Inland), Moderate (Most parts of Melbourne, Adelaide and Hobart), Marine (100m to 1km from sheltered bay and 1km to 10km from surf beach) or Severe marine (up to 100m from sheltered bay and up to 1km from surf beach), to suit the location of the Site and to AS 4773.1 clause 4.3.

Exposure locations: Interior/ Exterior to AS 4773.1 clause 4.4.

2.2 CLAY MASONRY UNITS

To AS/NZS 4455.1 and AS/NZS 4455.3.

Minimum age of clay bricks: 7 days.

Salt attack resistance grade: To AS 4773.2 Table 2.1.

2.3 CONCRETE BLOCKWORK UNITS

Smooth faced, monolithic, concrete blocks.

- Hollow block units core filled and reinforced as necessary.
- Nominal face size: 390mm x 190mm.
- Finish: Smooth.
- Colour: Grey.

Bond: Stretcher.

Joints: Ironed (where exposed), flush (where concealed), raked (where rendered).

2.4 STONE TYPES AND SELECTION

Sandstone defects: Minor shale laminae or interbeds and minor concentrations of carbonaceous material (tea leaves) are acceptable in visible faces at ground level. Neither defect is acceptable in carved or moulded work.

Granite: Igneous stone (e.g. granite) obtained from quarry stone extracted in blocks sufficiently large to suit the project requirements and containing no more than a small degree of microcracking.

Grading: Select stone of the designated quality grade.

Matching: Within each grade, select stone for the optimum matching of visual properties such as colour and pattern.

2.5 MORTAR MATERIALS

Cement: To AS 3972 Type GP, unless nominated otherwise.

Masonry cement: To AS 1316.

Sand: Fine aggregate with a low clay content and free from efflorescing salts, selected for colour and grading.

Proportions: To AS 4773.1 Table 3.1.

2.6 BUILT-IN COMPONENTS

Durability class: To AS 4773.1 Table 4.1.

2.7 STEEL LINTELS

Angles and flats: Sizes to AS 4773.1 Table 12.1.

Cold-formed lintels: Designed to AS/NZS 4600.

Corrosion protection: To AS/NZS 2699.3.

Galvanizing: Do not cut after galvanizing.

2.8 WALL TIES

To AS/NZS 2699.1. Type: A.

Corrosion protection: To AS/NZS 2699.1.

2.9 CONNECTORS AND ACCESSORIES

To AS/NZS 2699.2.

Corrosion protection: To AS/NZS 2699.2.

2.10 FLASHINGS AND DAMP-PROOF COURSES

To AS/NZS 2904.

Suitable flashings and DPCs: To AS 4773.2 Table 5.2.

3 EXECUTION

3.1 GENERAL

Protect masonry materials and components from ground moisture and contamination.

Masonry units shall be laid in a stretcher bond, unless nominated otherwise.

Provide special shapes where required for bond beams, lintels, corners, jambs, control joints, pilasters, headers and other special conditions.

Build in wall ties and accessories as the construction proceeds. If it is not practicable to obtain the required embedment wholly in the mortar joint in hollow masonry units, fill appropriate cores with grout or mortar.

In timber/ steel frame brick veneer construction, leave clearances between window frames and brick sill and between roof frames and the brick veneer as follows:

- Additional clearance: Accommodate additional shrinkage of unseasoned floor timbers.
- Single storey frames and ground floor windows (not for slab on ground): 10mm.
- Two storey frames and upper floor windows: 20mm.

3.2 STONE MASONRY

Perform the necessary cutting and shaping of stone to designated profiles including weathering, jointing, chasing, forming grooves and drilling for handling and fixing. Work the bed, face and back joints of the stone square and true. Achieve a clean sharp finish.

Regulate the rate of construction to eliminate joint deformation, slumping or instability.

3.3 CONSTRUCTION AT DIFFERENT RATES OR TIMES

Monolithic structural action: If two or more adjoining sections of masonry, including intersecting walls, are constructed at different rates or times, rake back or tie the intersections between those sections so that monolithic structural action is obtained in the completed work.

3.4 MORTAR JOINTS

To AS 4773.1 clause 14.2.

Measure volumes, for mortar mixes, accurately to the documented proportions. Machine mix for at least six minutes.

Lay masonry units on a full bed of mortar, fill perpends solid and cut mortar flush.

Finish:

- Externally: Tool to give a dense water-shedding finish, either upstruck, flush or concave.
- Internally: If wall is to be plastered/ rendered, do not rake more than 10mm to give a key.

Thickness: 10mm.

Set out masonry with joints of uniform width and the minimum of cutting of masonry units.

When mortar is thumbprint hard, tool to the required finish.

Regulate the rate of construction to eliminate joint deformation, slumping or instability.

3.5 SET OUT

Construct masonry to the following modules:

- 75mm high units: 7 courses to 600mm.
- 90mm high units: 6 courses to 600mm.
- 190mm high units: 3 courses to 600mm.

3.6 FACEWORK

Clean progressively, as the work proceeds, to remove mortar smears, stains and discolouration. Do not erode joints if using pressure spraying. Diluted acid solutions may be used for cleaning, where required.

Where masonry of ranging colour is used in facework, distribute the colour ranges evenly to prevent colour concentrations and banding.

3.7 SILLS AND THRESHOLDS

Solidly bed sills and thresholds and lay them with the top surfaces drain away from the building.

Minimum size of units shall be three quarters full width.

3.8 SUBFLOOR WORK

Provide engaged or free standing unreinforced masonry piers to support bearers at 1800mm maximum centres.

Pier sizes shall be as follows:

Type	Minimum size (mm)
Engaged	230 x 110 bonded or tied to walls

Type	Minimum size (mm)
Freestanding up to 1500 mm high	230 x 230
Freestanding 1500 to 2700 mm high	350 x 350

In internal walls, below floor level, leave door-width openings beneath doorways to give access to underfloor areas.

Provide air vents, below damp proof course to internal and external walls, to give adequate cross ventilation to the space under suspended ground floors.

For subfloor ventilation, refer to BCA 3.4.1 and AS 4773.2 clause 6.2.

In cavity walls, provide matching vents in the internal leaves located as near as practicable to the air vents in the external leaves.

3.9 CAVITY WORK

Keep cavities clear at all times.

Fill the cavity with mortar to 1 course above adjacent finished (ground) level. Fall the top surface towards the outer leaf.

Provide minimum cavity widths in conformance with the following:

- Double masonry walls:
  - Generally: Minimum 50mm.
  - Where cavity insulation is used: Minimum 65mm or as otherwise recommended by the cavity insulation manufacturer.
- Masonry veneer walls: 40 mm between the masonry leaf and the loadbearing frame and 25 mm minimum between the masonry leaf and sheet bracing.

Do not close the cavity at the jambs of external openings.

Provide clean out bricks/ blocks at a minimum of 1.2m centres.

Install wall ties, connectors and accessories to prevent water passing across the cavity.

3.10 DAMP-PROOF COURSES

Provide damp-proof courses as follows:

- Timber floors: In the first course below the level of the underside of ground floor timbers in internal walls and inner leaves of cavity walls.
- Cavity walls built off slabs on ground: In the bottom course of the outer leaf, continuous horizontally across the cavity and up the inner face bedded in mortar, turned 30 mm into the inner leaf 1 course above.
- Masonry veneer construction: In the bottom course of the outer leaf, continuous horizontally across the cavity. Fastened to the inner frame 75mm above floor level.
- Walls adjoining infill floor slabs on membranes: In the course above the underside of the slab in internal walls and inner leaves of cavity walls. Project 40mm and dress down over the membrane turned up against the wall.

Height: Not less than:

- 150mm above adjacent finished ground level.
- 75mm above finished paved or concrete area.
- 50mm above finished paved or concreted area and protected from the direct effect of the weather.

Lay in long lengths. Lap the full width of angles and intersections and 150mm at joints. Step as necessary, but not more than 2 courses per step for brickwork and 1 course per step for blockwork. Sandwich damp-proof courses between mortar.

Preserve continuity of damp-proofing at junctions of damp-proof courses and waterproof membranes.

3.11 FLASHINGS

Provide flashings as follows:

- Floors: Full width of outer leaf immediately above slab, continuous across cavity and up the inner face bedded in mortar, turned 30mm into the inner leaf 2 courses above for brick and 1 course for block. If the slab supports the outer skin and is not rebated, bed the flashing in a suitable sealant.
- Under sills: 30mm into the outer leaf bed joint 1 course below the sill, extending up across the cavity and under the sill in the inner leaf or the frame. Extend at least 150mm beyond the reveals on each side of the opening.
- Over lintels to openings: Full width of outer leaf immediately above the lintel, continuous across cavity, turned 30mm into the inner leaf 2 courses above for brick and 1 course for block or turned up against the frame and fastened to it. Extend at least 150mm beyond the ends of the lintels.
- At abutments with structural frames or supports: Vertical flash in the cavity from 150 mm wide material, wedged and grouted into a groove in the frame opposite the cavity.
- At jambs: Vertically flash jamb extending 75mm into the cavity, interleaved with the sill and head flashing at each end. Fix to jambs.
- At roof abutments with cavity walls: Cavity flash immediately above the roof and over-flash the roof apron flashing.

Any significant interruption of the cavity, including at conduits, should be flashed. Head and sill flashings shall not be taut across the cavity and threshold flashings shall be bedded in mortar to run vertically and horizontally, not diagonally.

Sandwich flashings between mortar except where on lintels.

Point up joints around flashings to fill voids.

3.12 WEEPHOLES

To AS 4773.2 clause 10.5.

Bushfire prone areas: To AS 3959. All vents and weepholes shall incorporate corrosion resistant wire mesh to prevent ingress of embers.

Provide weepholes, comprising plastic inserts with corrosion-resistant insect screens to match adjacent wall in colour, to external leaves of cavity walls in the course immediately above flashings, and cavity fill, and at the bottoms of unfilled cavities.

Maximum spacing: 1200mm.

3.13 WALL TIES

Spacing: To AS 4773.2 clause 9.7 and clause 10.6.

Wall ties shall be embedded at least 50mm into mortar ensuring that mortar cover is 15mm minimum to the outside face of the mortar.

3.14 CONTROL JOINTS

Provide contraction joints, expansion joints and articulation joints to AS 4773.2 Section 7.

Generally align joints with adjacent windows and doors, where possible, and in accordance with the Structural Engineer's documentation.

Clean the joints thoroughly and insert an easily compressible backing material before sealing.

Fill all joints with a gun-applied, flexible, UV resistant, sealant for a depth of at least two-thirds the joint width.

Provide stabilising ties at control joints and abutting structural elements, including columns, beams and slab soffits.

3.15 REINFORCED AND GROUTED BLOCKWORK

Reinforcement and core filling to blockwork shall be in accordance with the Structural Engineer's documentation.

Provide purpose-made cleanout blocks or machine cut a cleaning hole at the base of each grouted core. Locate on the side of the wall which is to be rendered or otherwise concealed.

Clean cores to dislodge mortar protruding from the inside of blocks and mortar droppings from reinforcement. Remove through the clean-out blocks.

Do not commence grouting until grout spaces have been cleaned out and the mortar joints have attained sufficient strength to resist blow-outs.

Limit the height of individual lifts of grout, in any pour, to ensure that the grout can be thoroughly compacted to fill all voids.

Compact grout by vibration or by rodding.

On the completion of the last lift, top up the grout after 10 min to 30 min, and vibrate or rod to mix with the previous pour.

3.16 STEEL LINTELS

Do not cut on site. Keep lintels 10mm clear of heads of frames.

Pack mortar between any vertical component and supported masonry units. For angles install with the long leg vertical.

Provide temporary props to lintels to prevent deflection or rotation.

3.17 BAGGING

Cut joints flush before bagging.

Apply laying mortar to the surface using a hessian bag or similar. Flush up irregularities, but leave a minimum amount of mortar on the surface.

3.18 WALL CHASING

Make holes and chases required in masonry walls so that the structural integrity of the wall is maintained. Do not chase walls nominated as fire or acoustic rated.

Parallel chases or recesses on opposite faces of a wall shall not be closer than 600mm to each other.

Chase only core-filled hollow blocks or solid blocks not designated as structural and to the following maximum depths:

Block thickness (mm)	Maximum depth of chase (mm)

Block thickness (mm)	Maximum depth of chase (mm)
190	35
140	25
90	20

3.19 COMPLETION

All masonry surfaces, that are to be exposed, shall be thoroughly cleaned of all loose mortar and stains, to the satisfaction of the Superintendent.

Clean as the work proceeds to remove mortar smears, stains and discolouration. Do not erode joints if using pressure spraying.

Use a stiff wire brush and a diluted acid solution.

Surfaces shall be cleaned from the top of the wall to the bottom to avoid staining from runoff.

0342 LIGHT STEEL FRAMING

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The soil classification, for the site, shall be determined through on site soil testing.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0342 Light steel framing.*
- *0382 Light timber framing.*
- *0383 Structural sheet flooring.*
- *Structural Engineer's documentation.*

1.3 STANDARDS

Design, materials and protection: To AS/NZS 4600.

Preparation and metal treatment of metal surfaces: To AS 1627 series.

Residential and low-rise steel framing: To NASH.1.

1.4 CONTRACTOR DESIGN

Conform to the following requirements:

- Suitable for having flooring, linings, cladding and roofing fixed to it.
- In conformance with the documented performance criteria.
- Independently designed and documented.
- Independently certified by a professional engineer for the design and the erected framing.

The Contractor shall determine the gauge thickness, stud size and spacing, bracing requirements and nogging requirements, including additional noggings/ supports for items fixed to walls.

1.5 TOLERANCES

Manufacturing, assembly and installation tolerances: To NASH-1 Appendix D.

1.6 SUBMISSIONS

Submit independent design, documentation and certification from a professional engineer, including for the erected work.

Provide location and magnitude of reactions to be accommodated by the support structure.

Submit the name and contact details of the proposed manufacturer.

1.7 SHOP DRAWINGS

Submit shop drawings or product design guides, certified by a professional engineer, stating that the design has been carried out in accordance with the documented project and AS/NZS 4600 requirements for the configurations and loadings.

Roof trusses: Prepare drawings to show:

- On a plan, the truss layout.
- On elevations, the arrangement of members allowing for the accommodation of in-roof services and the size and section type of each member.
- Details demonstrating capability to resist lateral and uplift forces.
- The method of assembly, connection, holding down and bracing.

Wall frames: If wall framing is to be pre-fabricated, prepare drawings to show:

- On plan, the wall layout.
- On elevations, the arrangement of members, and the size and section type of each member.
- The method of assembly, connection, holding down and bracing.

1.8 INSPECTION

Give notice so that inspection may be made of the following:

- Steel framing erected on site before lining or cladding.

2 PRODUCTS

2.1 GENERAL

Transport all components to site and store if required in a manner so as not to damage or distort the components.

2.2 COMPONENTS

Cold-form sections from metallic-coated steel: To AS 1397.

Corrosion protection: To BCA 3.4.2.2.

Cold-formed steel framing: For a proprietary system, comply with NASH.1.

3 EXECUTION

3.1 GENERAL

Cut members accurately to length so that they fit firmly against abutting members.

Form service holes by drilling or punching.

Provide plastic bushes or grommets to site cut holes.

Do not fabricate on site where welded connections are required.

Avoid welding procedures that result in greater than localised burning of the sheets or framing members.

Protect frames from damage or distortion during storage, transport and erection. Provide temporary protection for members until permanent covering is in place.

Install lagging to separate non-ferrous service pipes and accessories from the framing. Timber noggings or supports can be used to isolate the service pipes and accessories from the steel framing.

Do not fix unseasoned or CCA treated timber in contact with framing without fully painting the timber and/or the steel.

3.2 FLOOR FRAMING

Floor framing, for ground floor construction, shall be protected from moisture.

If construction loading exceeds design loading, provide additional support so as to avoid overstressing of members.

3.3 WALL FRAMING

Provide studs in single lengths without splices. Place a stud under, or within 40 mm from, each structural load point from roof or ceiling, except for openings. Provide multiple studs at points of concentrated load.

Maximum stud spacing: 600 mm.

Provide lintels, over openings, appropriate to the load and span.

Provide additional support in the form of noggings, trimmers and studs for support and fixing of lining, cladding, hardware, accessories, fixtures and fittings.

For brick veneer construction, provide vermin barriers comprising 10mm steel wire mesh fixed to the underside of the bottom plate of external stud walls, extending across the cavity for building into brickwork.

3.4 DAMP-PROOF COURSE

Provide damp-proof courses under the bottom plate of stud walls built off slabs or masonry dwarf walls, as follows:

- External walls (not masonry veneer): Turn up at least 75mm on the inside and tack. Project 10mm beyond the external slab edge or dwarf wall and turn down at 45°.
- Walls of bathrooms, shower rooms and laundries: Turn up at least 150mm on the wet side and tack to studs.

Lay in long lengths. Lap full width at angles and intersections and at least 150mm at joints.

Preserve continuity of damp-proofing at junctions of damp-proof courses, sarking and waterproof membranes.

3.5 FLASHINGS

Provide flashings to external openings sufficient to prevent the entry of moisture. Form trays at the ends of sill flashings.

For masonry veneer construction, extend across cavities and build into brickwork.

3.6 PREFABRICATED WALLING

Factory assemble wall frames.

Provide details of bracing.

Obtain certification from a professional engineer for the erected frames.

3.7 ROOF FRAMING

Construct framing for flat or pitched roofs where the ceiling follows the roof line, consisting of rafters or purlins supporting both ceiling and roof covering.

For low pitched roofs, fix appropriate members to the tops of framing at the rear of fascias, to prevent sagging of and ponding on the sarking.

Provide a frame member behind every joint in fibre cement or plasterboard sheeting or lining.

Supply and fix battens suitable for span, spacing and roofing.

3.8 TRUSSES

Factory assemble trusses.

Where a water container or heater is located in the roof space, provide a support platform to AS/NZS 3500.4 clause 5.5.

Permanently mark each truss to show:

- Project identification.
- Manufacturer.
- Tag or number.
- Location.
- Support points.

Fix to support structures, plumb to within H/200, where H is the height at the apex.

Support trusses on the bottom chord at two points only, unless designed for additional support.

Over internal walls provide at least 10 mm vertical clearance and use bracing methods which allow for vertical movements.

Provide details demonstrating capability to resist lateral and uplift forces.

3.9 FASTENINGS

Select from the following:

- Bolts.
- Self-drilling, self-tapping screws.
- Blind rivets.
- Proprietary clinching system.
- Structural adhesives.
- Welding.

3.10 EARTHING

Ensure permanent earthing is provided.

Provide temporary earthing during erection until the permanent earthing is installed.

3.11 PROTECTION

Restore coatings which have been damaged by welding or other causes. Thoroughly clean affected areas to base metal and coat with zinc rich organic primer.

Provide grommets to isolate piping and wiring from cold-formed steel framing.

Remove swarf and other debris from cold-formed steel framing immediately.

3.12 CERTIFICATION

For components, for which independent design certification has been required, provide independent certification for the erected components confirming compliance with the performance criteria.

3.13 COMPLETION

On completion of framing remove debris from any gaps between members and make sure void between bottom chord of roof trusses and top of any non-supporting internal wall is clear.

0344 STEEL – HOT-DIP GALVANIZED COATINGS

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *Structural Engineer's documentation.*

1.3 STANDARDS

Coating: To AS/NZS 4680.

Coating on fasteners: To AS 1214.

Durability: To AS 2309 and AS/NZS 2312.

Steel preparation methods: To AS 1627 series.

Coating mass/thickness minimum: To AS/NZS 4680.

Threaded fasteners coating mass/thickness minimum: To AS 1214 Table 2.

2 PRODUCTS

2.1 CONCEALED STEELWORK

Hot dipped galvanised to 600g/m2.

3 EXECUTION

3.1 GENERAL

If design and fabrication features of items to be galvanized are likely to lead to dimensional change or distortion, identify these and submit proposals for its minimisation.

Take due care to avoid embrittlement of susceptible steels.

Avoid mechanical damage. Ensure that mechanical properties of the base metal do not change.

3.2 SURFACE PREPARATION

Surface contaminants and coatings generally: Chemical clean, then acid pickle.

Chemical cleaning: To AS 1627.1.

Acid pickling: To AS 1627.5.

- Inhibitor: Required.

3.3 POST TREATMENT

General: Passivate.

3.4 DRILLING AFTER COMPLETION OF HOT-DIP GALVANIZING

Repair: Prime drill hole surfaces to AS/NZS 4680 clause 8 before the surfaces begin to corrode.

3.5 COATING

Threaded fasteners: To AS 1214.

3.6 STRUCTURAL SECTIONS

Cold worked items: Except for hollow sections, anneal to 650°C before galvanizing.

Hollow sections: Provide seal plates with breather holes.

3.7 SURFACE FINISH

To AS/NZS 4680 clause 7.

Coating quality: Continuous, adherent, smooth or evenly textured and uniform, free from defects detrimental to the end use of the finished article, such as lumps, blisters, gritty areas, uncoated spots, acids and black spots, dross and flux.

- Silicon killed steels: Dull grey is acceptable.

Friction-type bolted connections: Treat coated contact surfaces to achieve the required design slip factor, without removing excessive coating thickness.

- Contact surface preparation: To GAA After-fabrication hot dip galvanizing Chapter 4.

Slip factor test: To AS 4100 Appendix J.

Surplus zinc on fastener threads: Remove.

3.8 COATING REPAIR

If uncoated surfaces or areas damaged by handling at the galvanizing plant exceed the limits specified for repair in AS/NZS 4680 clause 8, reject the galvanizing.

3.9 PREPARATION FOR PAINT FINISHES

Coarse preparation: Remove spikes, and make sure edges are free from lumps and runs.

Light sweep blasting before painting: Required.

- Maximum zinc removal: 10 microns.
- Abrasive grade (range): 150 to 180 microns.
- Abrasive type - clean ilmenite or garnet.
- Blasting angle to surface: 45° maximum.
- Blast pressure (maximum): 275 kPa.
- Distance of nozzle from surface (range): 350mm to 400mm.
- Nozzle type: 10mm to 13mm minimum diameter venturi type.

3.10 SITE WELDING

Grinding of edges: Permitted.

Weld areas: Reinstate coating to AS/NZS 4680 clause 8.

3.11 SITE COATING REINSTATEMENT

To AS/NZS 4680 clause 8.

0382 LIGHT TIMBER FRAMING

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The soil classification, for the site, shall be determined through on site soil testing.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0184 Termite management.*
- *0342 Light steel framing.*
- *0383 Structural sheet flooring.*
- *Structural Engineer's documentation.*

1.3 STANDARDS

Framing: To AS 1684.1, AS 1684.2 and AS 1684.3, as applicable.

Design: To AS 1720.1. Design of timber framing shall be performed by a professional engineer.

1.4 CONTRACTOR DESIGN

The Contractor shall determine the stud size and spacing, bracing requirements and nogging details, including additional noggings/ supports for items fixed to walls as detailed on the Drawings.

1.5 SUBMISSIONS

Where the structural drawings define performance criteria, submit independent design, documentation and certification from a professional engineer, including for the erected work.

Provide location and magnitude of reactions to be accommodated by the support structure.

Submit a schedule of proposed member sizes, certified as meeting, AS 1684 series and AS 1720.1 requirements for span, spacings, loadings and deflections.

If CCA treated timber is proposed to be used, provide details.

Submit the name and contact details of the proposed manufacturer.

1.6 SHOP DRAWINGS

Submit shop drawings or product design guide certified by a professional engineer stating that the design has been carried out in accordance with the documented project, AS 1684 series and AS 1720.1 requirements for the configurations and loadings.

Roof trusses: Prepare drawings to show the following:

- On a plan, the truss layout.
- On elevations, the arrangement of members allowing for the accommodation of in-roof services and the size and section type of each member.
- Camber of bottom chord.
- The method of assembly, connection, lifting, holding down and bracing.

Wall frames: If wall framing is to be pre-fabricated, prepare drawings to show the following:

- On plan, the wall layout.
- On elevations, the arrangement of members, and the size and section type of each member.
- The method of assembly, connection, lifting, holding down and bracing.

1.7 INSPECTION

Give notice so that inspection may be made of the following:

- Prefabricated units before installation.
- Fabricated items before priming or water-repellent treatment.
- Bolts after final tightening.
- Timber work after erection but before it is covered.

2 PRODUCTS

2.1 GENERAL

Do not distort or damage timber or timber products.

Maintain the equilibrium moisture content of seasoned timber.

Provide temporary protection from weather for members until permanent covering is in place.

2.2 BRACING

Bracing shall be to AS 1684.2 Section 8 and AS 1684.3 Section 8, as applicable.

Structural plywood bracing:

- To AS/NZS 2269.0.
- Bond: Type A to AS/NZS 2754.1 (Int).

2.3 STEEL BASES

Provide steel bases to timber posts supported off concrete slabs or footings.

Minimum dimensions:

- Stirrup: 75mm wide x 6mm thick.
- Dowel: 20mm diameter heavy tube.

Finish: Galvanized, after fabrication.

2.4 FASTENERS

Fasteners shall not split or otherwise damage the timber.

Before placing bolts in contact with CCA treated timber, coat the shank of the bolt in a grease or bituminous coating.

2.5 DAMP-PROOF COURSE

To AS/NZS 2904.

Type: 0.55mm thick bitumen coated aluminium.

2.6 FLASHINGS

To AS/NZS 2904.

Type: 0.5mm thick bitumen coated aluminium.

3 EXECUTION

3.1 TRANSPORT AND DELIVERY

Do not distort or damage timber or timber products.

Maintain the equilibrium moisture content of seasoned timber.

Provide temporary protection for members until permanent covering is in place.

3.2 FLOOR FRAMING

Level bearers and joists by checking or by packing for the full width of the member with dense corrosion resistant material which is secured in place:

- Maximum thickness of packing: 3mm.

Lay bearers and joists to allow for straightening under loading.

Locate joints only over supports:

- Minimum bearing of bearers: 50mm.
- Minimum bearing of joists: 30mm.

Secure bearers and joists to supports to provide restraint against lateral movement.

Joist restraint:

- Unseasoned timber: If joist timber is unseasoned, the span ≥ 3000mm, and there is no ceiling lining, provide solid blocking between each joist in rows at 1800mm centres.
- Deep joists: If the joist depth:width ratio is ≥ 4, restrain joists at the ends of the joists over supports and at ≤ 1800mm centres using either of following as appropriate:
  - Continuous trimming joists.
  - Solid blocking or herringbone strutting.
- Trimmers or blocking dimensions:
  - Depth: Joist depth less 25mm.
  - Width: ≥ 25mm.
- Herringbone strutting dimensions: ≥ 38mm x 38mm.

3.3 WALL FRAMING

Bracing material: Timber, galvanised steel, structural plywood or hardwood to suit the application.

Provide additional support in the form of noggings, trimmers and studs for fixing lining, cladding, hardware, accessories, fixtures and fittings as required.

Maximum spacing of noggings: 1350mm centres.

For brick veneer construction, provide vermin barriers comprising 10mm galvanised steel wire mesh close nailed to the underside of the bottom plate of external stud walls, extending across the cavity for building into brickwork.

3.4 DAMP-PROOF COURSE

Provide damp-proof courses under the bottom plate of stud walls built off slabs or masonry dwarf walls, as follows to AS/NZS 4200.1:

- External walls (not masonry veneer): Turn up at least 75mm on the inside and tack. Project 10mm beyond the external slab edge or dwarf wall and turn down at 45°.
- Walls of bathrooms, shower rooms and laundries: Turn up at least 150mm on the wet side and tack to studs.

Lay in long lengths. Lap full width at angles and intersections and at least 150mm at joints.

Preserve continuity of damp-proofing at junctions of damp-proof courses, sarking and waterproof membranes.

3.5 FLASHINGS

Provide flashings to external openings sufficient to prevent the entry of moisture. Form trays at the ends of sill flashings.

For masonry veneer construction, extend across cavities and build into brickwork.

3.6 ROOF AND CEILING FRAMING

Fix timber wall plates to masonry, with either straps, bolts or both.

Where timber joists, rafters or purlins bear on or into steel members, provide nailing plates to transfer the design loads, bolted to the steel member at 500mm maximum centres and 100mm maximum from the end of the nailing plate.

Butt ends of rafters together at ridge, and strap each pair together with 900mm long steel strap passing over the ridge, triple nailed to each rafter.

If a water container or heater is located in the roof space, provide a support platform to AS/NZS 3500.4 clause 5.5.

Provide a frame member behind every joint in fibre cement sheeting or lining.

Anti-ponding boards: To AS/NZS 4200.2.

3.7 TRUSSES

Design: To AS 1720.1.

Camber bottom chord upward.

Overhangs shall be free from spring or splits.

Permanently mark each truss to show:

- Project identification.
- Manufacturer.
- Tag or number.
- Location.
- Support points

Nail plated prefabricated roof trusses: Installed to AS 4440.

Support trusses on bottom chord at two points only, unless designed for additional support.

Plumb shall be within the lessor of H/50 or 50mm, where H is the height of the truss at the point where plumb is being measured.

Over internal walls, provide at least 10mm vertical clearance and use bracing methods which allow for vertical movements.

3.8 ROOF TRIM

Supply and fix fascia, valley gutter and barge boards.

3.9 COMPLETION

Tighten bolts, screws and other fixings so that joints and anchorages are secure at practical completion.

0383 STRUCTURAL SHEET FLOORING

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The soil classification, for the site, shall be determined through on site soil testing.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0184 Termite management.*
- *0342 Light steel framing.*
- *0382 Light timber framing.*
- *Structural Engineer's documentation.*

1.3 STANDARDS

Flooring design: To AS 1684.1, AS 1684.2 and AS 1684.3 Section 5, as applicable.

1.4 TOLERANCES

Flatness of sheet flooring shall not exceed the following:

- Floors to receive carpet: The maximum deviation under a 3m straight edge shall be 5mm and under a 150mm straightedge shall be 1mm, when laid in any direction.
- Floors to receive resilient finishes: The maximum deviation under a 2 metre straight edge shall be 4mm and under a 150mm straightedge shall be 1mm, when laid in any direction.
- Floors to receive timber flooring: The maximum deviation under a 3m straight edge shall be 3mm and under a 250mm straight edge shall be 1mm, when laid in any direction.
- Rectify non-conforming flooring by suitable procedures, such as laying underlays.

1.5 INSPECTION

Give notice so that inspection may be made of the following:

- Sheet flooring work after installation but before it is covered.

2 PRODUCTS

2.1 PLYWOOD FLOORING

To AS/NZS 2269.0.

Grading:

- Veneer: CD.
- Grade: Bond Type A.

2.2 PARTICLEBOARD FLOORING

To AS 1860.1, Class 1.

2.3 COMPRESSED FIBRE CEMENT FLOOR SHEETING

To AS/NZS 2908.2.

Externally: Type A Category 3.

Internally: Type B Category 2.

3 EXECUTION

3.1 SHEET FLOORING GENERALLY

Lay the lengths of sheets at right angles to the supports. Stagger end joints and locate them centrally over joists. If sheets are not tongued and grooved, provide noggings or trimmer joists to support edges.

Apply adhesive to edges of sheets and firmly butt join together.

Minimum number of spans across support: 2.

Pre-drill screw holes with 1mm clearance over screw diameter and countersink. Fix with corrosion resistant countersunk screws.

Where sheets are nailed, punch nail head 3mm below the finished surface and, where exposed in the finished work, fill with a material tinted to match and compatible with the floor finish.

Spacing of fasteners:

- Sheet edge and intermediate: < 450mm.
- Corners and sheet edges: At least 12mm from sheet edges and 50mm from corners.

For wet area flooring, stop screw heads with sealant.

3.2 PLYWOOD FLOORING

To AS 1684.2, AS 1684.3 or AS 1684.4, as appropriate.

3.3 PARTICLEBOARD FLOORING

To AS 1860.2.

0411 WATERPROOFING

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.

1.2 CROSS REFERENCES

Conform to the following:

- *0171 General requirements.*
- *0184 Termite management.*
- *0342 Light steel framing.*
- *0382 Light timber framing.*
- *0471 Insulation and pliable membranes.*
- *0611 Rendering.*
- *Inspection Test and Conformity Plan (ITCP).*
- *Structural Engineer's documentation.*

1.3 STANDARDS

Membrane materials for above ground external use: To AS 4654.1.

Membrane design and installation for above ground external use: To AS 4654.2.

Waterproofing to wet areas: To AS 3740 and AS/NZS 4858.

1.4 SUBMISSIONS

In accordance with Section 0171, provide samples of the following:

- Each type of membrane, on a representative substrate where necessary.
- Drainage cell and geotextile fabric.
- Miscellaneous accessories such as reinforcing fabric, sealant, fixings, primers, adhesives, caulking and protective sheeting.

1.5 INSPECTION

Conduct all testing and inspections as detailed in the relevant ITCP.

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2 PRODUCTS

2.1 GENERAL

Provide proprietary membrane systems as suitable for their intended purpose and certified in accordance with the ITCP.

Liquid applied membranes:

- Cold-applied, one component, water based, polyurethane or polymer modified acrylic membrane.
- Reinforcement: Membrane shall be reinforced at joints with an embedded reinforcing fleece or jointing tape compatible with and as recommended by the membrane manufacturer.

Sheet membranes:

- To concrete substrates, where pre-installed prior to pouring concrete: Waterproofing system consisting of an embossed, flexible polyolefin membrane, with non-woven fleece or HDPE film with pressure sensitive adhesive and weather resistant protective coating, suitable for bonding to wet concrete.
- Where post-applied to installed substrates: Fully adhered, thermoplastic membrane or a rubber bitumen sheet membrane with HDPE carrier film.

Performance requirements:

- Generally resistant to permanent wetness.
- Capable of withstanding all loads anticipated in service.
- Resistant to root attack where laid against subterranean surfaces or planting mediums.
- UV resistant where exposed externally.
- Trafficable where exposed to foot or vehicular traffic.

2.2 BALCONY MEMBRANE

Substrate: Concrete slab/ graded screed/ plywood/ FC sheet flooring.

Overlay: Tiling/ paving or as otherwise documented.

Membrane type: Liquid applied or sheet membrane suitable for external above ground use.

2.3 PLANTERBOX MEMBRANE

Substrate: Concrete slab and masonry walls.

Overlay: Protection board, drainage cell, geotextile fabric and garden.

Membrane type: Liquid applied or sheet membrane suitable for subterranean use.

2.4 RETAINING WALL MEMBRANE

Substrate: Behind concrete or masonry retaining walls.

Overlay: Protection board, drainage cell, geotextile fabric and back fill.

Membrane type: Liquid applied or sheet membrane suitable for subterranean use.

2.5 IN GROUND MEMBRANE

Substrate: Below slabs on ground where hydrostatic water pressure is present.

Membrane type: Sheet membrane, pre-installed prior to pouring concrete.

2.6 INTERNAL WET AREA MEMBRANE

Substrate: Concrete slab, particleboard or fibre cement sheet flooring and plasterboard/ fibre cement sheet wall linings.

Overlay: Tiling or as otherwise documented.

Membrane: Liquid applied membrane suitable for internal wet areas. Provide sealants that are waterproof, flexible, mould-resistant and compatible with host materials in accordance with AS 3740 clause 2.6.

2.7 PROTECTION BOARD

Fibre cement sheet, Corflute or extruded polystyrene foam sheet.

2.8 SLIP SHEETS

If recommended by the membrane manufacturer, provide 0.2mm thick polythene sheet to isolate movement of overlaying finish, such as screeds, from the membrane.

2.9 DRAINAGE CELL PANELS

Provide drainage cell panels which allow free drainage and capable of withstanding the loads anticipated in service.

Product: Elmich VersiDrain 8 Geo or acceptable equivalent.

2.10 GEOTEXTILE FABRIC

Polymeric fabric woven from plastic yarn composed of at least 85% by weight of propylene, ethylene, amide or vinylidenechloride, and containing stabilisers or inhibitors which provide resistance to deterioration caused by ultraviolet light.

3 EXECUTION

3.1 PREPARATION

Substrates shall be clean and free of any deposit or finish which may impair adhesion of membranes.

Prepare substrates as follows:

- Fill all cracks in substrates wider than 1mm with a filler compatible with the membrane system.
- Fill depressions, voids and hollows in substrates with a suitable compound compatible with and not stronger than the substrate.
- Remove projections.
- Remove deleterious and loose material.
- Remove all traces of curing compounds, if used, unless compatible with membrane.

Leave the surface free of contaminants, clean and dust free.

3.2 MOISTURE CONTENT OF CONCRETE SUBSTRATES

Cure concrete substrates for at least 21 days.

Verify that the moisture content of the substrate is compatible with the water vapour transmission rate of the membrane system by testing to AS 1884 Appendix A.

3.3 FALLS

Verify that falls in substrates are greater than 1:100 or in accordance with AS 3958.1.

3.4 JOINTS AND FILLETS

Round or arris edges of external corners.

Prepare all substrate joints to suit the membrane system, in accordance with the manufacturer's recommendations.

3.5 PRIMING

If required, prime the substrates with compatible primers for adhesion of membrane systems, in accordance with the manufacturer's recommendations.

3.6 APPLICATION

Application of membranes shall be in strict accordance with the manufacturer's recommendations.

Protect membrane from damage during installation and for the period after installation until the membrane achieves its service characteristics that resist damage.

Prevent moisture from tracking under the membranes at drainage locations.

Protect edges of the membrane.

External membranes: To AS 4654.2.

Internal wet area membranes: To AS 3740.

After application of liquid applied membranes, record the dry film thickness of the membrane and confirm it is in accordance with the manufacturer's recommendations.

3.7 CONTROL OF MOVEMENT

Provide joints in membranes to coincide with control joints in the substrate, maintaining the watertightness of the membrane across the joint.

Fillets and bond breakers shall be sized to allow the membrane to accommodate movement.

For bonded membranes, carry control joints in the substrate through to and into the surface finish.

3.8 MEMBRANE TERMINATIONS

Provide upturns above the maximum water level expected from the exposure conditions of rainfall intensity and wind.

- Height: Minimum 150mm or to AS 4654.2 Appendix A.
- Secure sheet membranes along the top edge.
- Protect edges of the membrane.
- Waterproofing above terminations: Waterproof the structure above the termination to prevent moisture entry behind the membrane using cavity flashings, capping, waterproof membranes or waterproof coatings.

3.9 MEMBRANE VERTICAL PENETRATIONS

Provide separate sleeves for all pipes, ducts, and vents and have them fixed to the substrate.

3.10 MEMBRANES AT DOORS AND WINDOWS

To AS 4654.2 clause 2.8.3.

3.11 OVERLAYING FINISHES ON MEMBRANES

If a membrane is to be overlayed with a finish such as tiles, pavers, ballast, insulation or soil, provide an overlaying system that is compatible with and will not cause damage to the membrane.

If the topping or bedding mortar requires to be bonded to the membrane, provide sufficient control joints in the topping or bedding mortar to reduce the movement over the membrane.

If the topping or bedding mortar is structurally sufficient not to require bonding to the substrate, lay a slip sheet over the membrane to separate it from the topping or bedding mortar.

3.12 FLOOD TEST

Perform a flood test on completion of the installation and before the installation of surface finishes, in accordance with the ITCP.

Moisture measurement method: AS 1884 Appendix A.

Set-up:

- Measure the wall/floor junction of adjacent spaces, where applicable, and the floor soffit below for dryness.
- Record the result for each area.
- Seal floor wastes and drainage outlets to allow 50 mm water level.
- Fill space with clean water and leave for 24 hours.

Evaluation:

- Make a visual inspection for obvious water or moisture.
- Test the same areas for dryness and compare the results to the measurements taken before flooding.

Compliance:

- Evidence of water from the visual test: Failure.
- No visual evidence of water: Proceed with moisture measurements.
- Test results indicating an increase in moisture before and after flooding: Failure.

Records:

- Submit records of all flood tests.

3.13 COMPLETION

Keep traffic off membrane surfaces until bonding has set or for 24 hours after laying, whichever period is the longer.

Repair or replace faulty or damaged work. If the work cannot be repaired satisfactorily, replace the whole area affected.

3.14 WARRANTIES

Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the supplier and the installer, equal to or exceeding the periods nominated in the Warranty Schedule included in Section 0171.

Form: Against failure of materials and execution under the normal environment and use conditions anticipated for the site.

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0421 ROOFING

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.
- Rainfall intensity to AS/NZS 3500.3.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0342 Light steel framing.*
- *0382 Light timber framing.*
- *0471 Insulation and pliable membranes.*

1.3 STANDARDS

Sheet metal roofing design and installation: AS 1562.1.

Prepainted and organic film/metal laminate products: To AS/NZS 2728.

Polycarbonate sheet roofing:

- Materials: To AS 4256.5.
- Installation: To AS 1562.3.

Roof tiling:

- Materials: To AS 2049.
- Installation: To AS 2050.

Skylights: To AS 4285.

Skylights in bushfire prone areas: To AS 3959 clause 5.6.5, AS 3959 clause 6.6.5, AS 3959 clause 7.6.5, AS 3959 clause 8.6.5, or AS 3959 clause 9.6.3, as applicable to the site's Bushfire Attack Level (BAL).

Roof mounted heat exhaust vents: To AS 2427.

Proprietary roof mounted ventilators or smoke/heat ventilating systems: To AS 2665.

Roof plumbing: To AS/NZS 3500.3.

Metal rainwater goods: To AS/NZS 2179.1.

Flashings and cappings: To AS/NZS 2904.

1.4 TOLERANCES

Rainwater goods: Deviations in straightness shall not exceed ±6.5mm per 1830mm length.

Deviations in thickness of flat rolled steel sheet: To AS/NZS 1365.

Sheet roofing: Deviations from planes shall be limited to long wave formations with maximum amplitude of 3mm.

1.5 INSPECTION

Give notice so that inspection may be made of the following:

- Roof supports.
- The parts of the roofing, sarking, vapour barrier, insulation and roof plumbing installation before covering up or concealing.

2 PRODUCTS

2.1 GENERAL

Store metal roofing materials away from uncured concrete and masonry, on a level base. Do not store materials in contact with other materials which may cause staining, denting or other surface damage.

Handle roofing materials as follows:

- Use gloves when handling precoated metal roofing material.
- Use soft soled shoes when fixing or working on roofs.
- Protect edges and surfaces from damage. Do not drag sheets across each other or over other materials.

2.2 METAL SHEET ROOF CLADDING

Roofing shall be to accepted samples.

Provide all accessories, compatible with the roof sheeting, as necessary to complete the system.

2.3 POLYCARBONATE SHEET ROOF CLADDING

Roofing shall be to accepted samples.

Provide all accessories, compatible with the roof sheeting, as necessary to complete the system.

2.4 ROOF TILING

Roof tiles shall be to accepted samples.

Provide all accessories, compatible with the tiles, as necessary to complete the system.

2.5 GLAZED ROOFING

Provide sloped overhead glazing fixed to glazing bars or directly to the roof framing. Provide all necessary trim, flashings and sealants.

Glass selection and installation: To AS 1288.

Provide certification from an organisation accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

2.6 SKYLIGHTS

Provide a proprietary skylight system including framing, fixing, trim, seals, accessories and flashings.

2.7 FIXINGS

Fix roofing with prefinish exposed fasteners with an oven baked polymer coating, generally to match the roofing material.

2.8 ROOF PLUMBING

Provide all flashings, cappings, gutters, rainwater heads, outlets and downpipes, as necessary and as detailed on the Drawings, to complete the roof system.

Roof plumbing shall be formed from material to match associated roofing.

2.9 FLASHINGS AND CAPPINGS

To AS/NZS 2904.

Provide proprietary flashings and cappings to match roof cladding or with finish as otherwise scheduled.

2.10 ROOF VENTILATORS

A proprietary roof ventilator system, including framing, fixing, trim, seals, accessories and flashings.

Finish to match adjacent roofing.

2.11 LEAF GUARDS

Provide a proprietary leaf guard system, to all gutters, consisting of corrosion resistant protective mesh that allows water to pass through but stops leaves and other debris from entering the gutter.

2.12 RAINWATER TANKS

Design and installation: To the recommendations of SAA HB 230.

Polyethylene tanks: To AS/NZS 4766.

Size: As appropriate to suit the roof size.

Provide all accessories necessary to complete the installation and constructed from corrosion resistant material compatible with the tank material, including, but not limited to, the following:

- Inlet and outlet connections.
- Floating outlet to draw water from the upper part of the tank.
- Tight fitting lids or insect proof screens at all openings.
- Flap valves at every opening to the tank.
- Calmed inlet to the tank to prevent stirring sediment.
- Flywire screened overflow siphon to skim surface contaminants.
- Vermin proof, child proof access opening.
- Easily cleanable filter prior to the entry to the tank with maximum 1mm mesh size.

Provide a first flush diverter, as follows, arranged to drain completely:

- Size: Select for at least 20L/100m^2 rainwater catchment area.
- Corrosion resistant and compatible with the rainwater plumbing and tank.
- Discharge waste water from the first flush diverter either:
  - If permitted by the local authority, onto grassed areas away from tank and building footings.
  - To the stormwater installation.

Provide structural support to withstand the mass of the tank when full without deformation or excessive settling. Support connecting piping independently of the tank. Provide a 300mm long section of reinforced flexible hose to prevent piping exerting a load on the tank. Pipe overflow to discharge away from the tank. Prevent the entry of sunlight to the interior of the tank.

Above ground tanks: Restrain the tank to prevent movement, when empty, caused by wind and other loads. Provide a level base with gaps not exceeding 10mm, free of sharp projections and projecting beyond the edge of the tank at all points.

Polyethylene tanks: Trim and compact the ground and place a level bed of sand at least 50mm thick.

Wash and flush tanks to remove manufacturing and other contaminants.

3 EXECUTION

3.1 INSTALLATION

Keep the roofing and rainwater system free of debris and loose material during construction, and leave them clean and unobstructed on completion. Repair damage to the roofing and rainwater system.

Provide for thermal movement in the roof installation and the structure, including movement in joints and fastenings.

Prevent direct contact between incompatible metals, and between green hardwood or chemically treated timber and aluminium or coated steel, by either of the following methods:

- Applying an anti-corrosion, low moisture transmission coating to contact surfaces.
- Inserting a separation layer.

3.2 SHEET METAL ROOFING

Runs shall be in single sheets along the full length of falls.

Treat free ends of sheets by closing off ribs at tops and bottoms of sheets by mechanical means or with purpose-made fillers or end caps.

Project sheets 50mm into gutters.

Turn pans of sheets up at tops and down into gutters by mechanical means.

Provide pre-cut notched eaves flashing and bird proofing if required.
Close off ridges with purpose-made ridge fillers of closed cell polyethylene foam.

Remove swarf and other debris as soon as it is deposited.

Provide flashing and capping material with the same finish as the associated roofing.

3.3 TILING

Set out the roof to give an even tile gauge in each course, with full or saw cut tiles at verges.

Bed and point accessories including ridges, hips and verges, in coloured mortar to match the tiles and accessories.

At pointed verges, bed and point tiles on 100mm x 5mm fibre cement pointing strips.

3.4 ROOF PLUMBING GENERALLY

Seal fasteners and mechanically fastened joints. Fill the holes of blind rivets with silicone sealant.

Flash projections above or through the roof with two part flashings consisting of an apron flashing and an over-flashing, with at least 100 mm vertical overlap. Provide for independent movement between the roof and the projection.

Provide overflashings where roofs abut walls, stepped to the roof slope in masonry and planked cladding, otherwise raking.

In masonry, build into the full width of the outer leaf. Turn up within cavity, sloping inward across the cavity and fixed to or built in to the inner leaf at least 75mm above.

3.5 BOX GUTTERS

Box gutters shall be fixed with support framing comprising galvanised steel angles at maximum 700mm centres with Spandek, or acceptable equivalent, support. Suspend from roof framing by means of threaded rods.

3.6 GUTTERS

Minimum slope of gutters: 1:100.

Minimum width overall of valley gutters: 400mm.

Provide overflows to high fronted gutters to prevent back flow into roof or building structure.

3.7 DOWNPIPES

Prefabricate downpipes to the required section and shape where possible. Connect heads to gutter outlets and, if applicable, connect feet to rainwater drains.

Provide supports and fixings for downpipes.

3.8 METAL ROOF TRIM

Supply and fix fascia, valley gutter and barge boards in conformance with the manufacturer's requirements.

3.9 TIMBER FASCIAS AND BARGE BOARDS

Provide hardwood timber fascias and bargeboards, as necessary, to complete the roofing system.

Finish: Painted.

Fixing: Nailed.

3.10 COMPLETION

Remove excess debris, metal swarf, solder, sealants and unused materials.

Clean exposed metal surfaces of substances that interfere with uniform weathering or oxidisation.

Replace materials that have been damaged or deteriorated.

Clean out spoutings, gutters and rainwater pipes after completion of roof installation.

3.11 WARRANTY

Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the supplier and installer.

- Form: Against failure of materials and execution under the normal environment and use conditions anticipated for the site.

- Period:
  - Roof tiles: 50 years.
  - Metal roofing: As offered by the manufacturer, to suit the location, based on proximity to salt water.
  - Polycarbonate roofing: 10 years.
  - Metal rainwater goods: 10 years.

0431 CLADDING

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0342 Light steel framing.*
- *0382 Light timber framing.*
- *0471 Insulation and pliable membranes.*

1.3 STANDARDS

Sheet metal cladding design and installation: AS 1562.1.

Aerated autoclaved cement (AAC) panels: To AS 5146.1.

Prepainted and organic film/metal laminate products: To AS/NZS 2728.

Polycarbonate sheet cladding:

- Materials: To AS 4256.5.
- Installation: To AS 1562.3.

Fibre cement cladding: To AS/NZS 2908.2.

1.4 SAMPLES

In accordance with Section 0171, provide samples of the following:

- 300mm x 300mm sample of each type of cladding.
- 300mm length of each type of extrusion/ flashing.
- All fixing types.

1.5 TOLERANCES

Deviations in thickness of flat rolled steel sheet: To AS/NZS 1365.

Sheet cladding: Deviations from planes shall be limited to long wave formations with maximum amplitude of 3mm.

Fibre cement sheet:

- Deviations in panel/plank length, width and diagonal dimensions snall not exceed ±1mm.
- Maximum deviation from a flat plane shall be no greater than 4mm in 3000mm.
- The width of any joint shall not deviate from the nominal width by more than 1mm and the misalignment between joints shall not exceed 1mm.

1.6 INSPECTION

Give notice so that inspection may be made of the following:

- Framing, sarking, vapour barrier, and insulation before covering up or concealing.

2 PRODUCTS

2.1 GENERAL

Store and handle materials to the manufacturer's recommendations and the following:

- Protect materials including edges and surfaces from damage.
- Keep dry and unexposed to weather.
- Do not drag sheets or panels across each other or over other materials.
- AAC panels: Stack on edge, support off the ground and level to avoid sagging and damage to ends, edges and surfaces.
- Composite panels: Store unpacked panels by size in racks and protect from scratching, warping or bending.
- Sheeting: Stack flat and off the ground on at least 3 evenly placed bearers.
- Store metal materials away from uncured concrete and masonry on a level base.
- Do not store metal materials in contact with other materials which may cause staining, denting or other surface damage.
- Use gloves when handling precoated metal cladding material.

2.2 METAL SHEET WALL CLADDING

Metal sheet wall cladding shall be to selected samples.

Provide all accessories, compatible with the wall cladding, as necessary to complete the system.

2.3 AAC PANEL CLADDING

A proprietary system of aerated autoclaved cement (AAC) panels.

Joints: Proprietary adhesive to the manufacturer's recommendations.

Sealant: Flexible sealant to the manufacturer's recommendations.

Provide control joints at all external and internal corners, adjacent to all openings and at maximum 6m centres, or as required by the manufacturer.

2.4 FIBRE CEMENT CLADDING

Provide a proprietary system of single faced fibre cement sheets.

Compressed FC cladding: Type A Category 3.

Blue board (to be rendered): Type A Category 2.

Set out in even panels with joints coinciding with framing.

Joints, corners and edges: PVC-U extrusion

JH

Sealant and bond breaking tape: To the manufacturer's recommendations.

2.5 FIBRE CEMENT EAVES/ SOFFIT LININGS

Flush jointed fibre cement sheet lining:

- Product: James Hardie Villaboard or acceptable equivalent.
- Flush the joints, with a suitable external grade proprietary compound, to achieve a level 4 finish in accordance with AS/NZS 2589.

Express jointed fibre cement sheet lining:

- Product: James Hardie Versilux or acceptable equivalent.
- Joints: PVC jointers.

2.6 FLASHINGS

To AS/NZS 2904.

3 EXECUTION

3.1 GENERAL

Before fixing cladding check the alignment of substrates or framing and adjust if necessary.

Fixing methods to manufacturer's recommendations.

Provide all accessories and trim necessary to complete the installation.

Do not install component parts which are defective, including warped, bowed, dented, abraded or broken members.

Remove damaged parts and replace damaged members during installation.

Prevent direct contact between incompatible metals, and between green hardwood or chemically treated timber and aluminium or coated steel, by either:

- Applying an anti-corrosion, low moisture transmission coating to contact surfaces.
- Inserting a separation layer.

3.2 SHEET METAL CLADDING

Remove swarf and other debris as soon as it is deposited.

Provide flashing and capping material with the same finish as the associated cladding.

Finish off at corners with purpose-made folded flashing strips.

3.3 AAC PANEL CLADDING

Make sure the panel is clean and free of dust and loose particles.

Apply joint adhesive to vertical and horizontal joints. Remove excess adhesive from the face after panels are butted together.

Caulk control joints with sealant, gaps between panels and infill or penetration framing with flexible sealant.

Finish flush all vertical joints.

For render finishes, minimise cracking at joints to the manufacturer's recommendations.

3.4 FIBRE CEMENT CLADDING

Cut sheets shall give clean, true lines with no distortion. Remove burrs.

Remove all drilling dust and any other foreign matter before finally fixing sheets into position.

Corrosion resistant fibre cement nails or screws to the manufacturer's recommendations.

3.5 COMPLETION

Remove excess debris, metal swarf, solder, sealants and unused materials.

Clean exposed metal surfaces of substances that interfere with uniform weathering or oxidisation.

Remove protective coatings using methods required by the manufacturer after completion.

Clean surfaces of composite panels with soft, clean cloths and clean water to the manufacturer's recommendations.

3.6 WARRANTY

Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the supplier and the installer.

- Form: Against failure of materials and execution under the normal environment and use conditions anticipated for the site.
- Period:
  - Fibre cement sheet: 10 years.
  - Sheet metal cladding: As offered by the manufacturer, to suit the location, based on proximity to salt water.
  - AAC panel cladding: 7 years.

0451 WINDOWS AND GLAZED DOORS

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0455 Hardware.*
- *0461 Glazing.*
- *0574 Window coverings.*
- *0673 Powder coatings.*

1.3 STANDARDS

Window and glazed door selection and installation: To AS 2047.

Glass type and thickness: To AS 1288, if no glass type or thickness is nominated.

Safety glass: To AS/NZS 2208.

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667.

Double glazed units: To AS/NZS 4666.

Flashings: To AS/NZS 2904.

Aluminium extrusions: To AS/NZS 1866.

Window labelling and certification: To AS 2047 clause 8.1.

1.4 SUBMISSIONS

Submit evidence that window and door assemblies conform to AS 2047.

Submit statements from all parties to the installation certifying the compatibility of sealants and glazing systems to all substrates.

Submit a report, from the manufacturer, certifying that the proposed method of opacifying the glass will not be detrimental to the glass or affect the glass product warranty.

Submit evidence, certifying that the proposed bushfire screens and seals conform to AS 3959 and to suit the Bushfire Attack Level (BAL) of the site.

1.5 SHOP DRAWINGS

Submit Shop Drawings showing the following:

- Full-sized sections of members.
- Hardware, fittings and accessories.
- Junctions and trim to adjoining surfaces.
- Layout (sectional plan and elevation) of assemblies.
- Lubrication requirements.
- Methods of assembly.
- Methods of installation, including fixing, caulking and flashing.
- Provision for vertical and horizontal expansion.
- Method of glazing.

1.6 WARRANTIES

Prior to Practical Completion, a written warranty shall be submitted for the following:

- External window and glazed door systems: 10 years.

1.7 TOLERANCES

Show the provisions intended to accommodate the construction tolerances of the surrounding elements. Obtain any further information necessary when completing the Shop Drawings.

Specific tolerances shall be adhered to. The accuracy required shall be:

- Level of horizontal members: ±2mm from datum in any 1500mm, non-cumulative.
- Plumb of vertical members: ±2mm in the height.

1.8 INSPECTION

Give notice so that inspection may be made of the following:

- Openings prepared to receive windows (where windows are to be installed in prepared openings).
- Fabricated window assemblies at the factory ready for delivery to the site.
- Fabricated window assemblies delivered to the site, before installation.
- Commencement of window installation.

2 PRODUCTS

2.1 ALUMINIUM FRAMED WINDOWS

Windows comprising extruded aluminium frames and glazing to accepted samples.

Glazing performance shall be determined based on the requirements of the BCA, to suit the climate zone applicable to the site.

Provide aluminium framed glazed sliding and swinging doors as part of the external window systems.

2.2 LOUVRE WINDOW ASSEMBLIES

Glazed louvre windows shall comprise louvre blades clipped into blade holders, pivoted to stiles or coupling mullions, linked together in banks, with each bank operated by a handle incorporating a latching device, or by a locking bar. The system shall be able to withstand the permissible-stress-design wind pressure for that location without failure or permanent distortion of members and without blade flutter.

2.3 FIXED ALUMINIUM FRAMED INSECT SCREENS

Provide aluminium extruded or folded box frame sections with mesh fixing channel, mitred, staked and screwed at corners. Provide an extended frame section where necessary to adapt to window opening gear.

Bead the mesh into the frame channel with a continuous resilient gasket, so that the mesh is taut and without distortion.

Screens shall be incorporated into window frames with a clipping device that permits removal for cleaning.

2.4 BUSHFIRE SCREENS AND SEALS

To AS 3959.

Provide protection to glazed windows and doors from the ingress of embers where required to suit the Bushfire Attack Level (BAL) of the site.

2.5 SECURITY SCREENS

Provide proprietary aluminium framed security screens with expanded aluminium mesh insert at doors and windows, where required, fixed to the building structure with tamper resistant fastenings. Where a security screen is required, mesh is to be suitable as an insect screen.

Product: Crimsafe or acceptable equivalent.

Security grilles and screen doors: To AS 5039.

Installation: To AS 5040.

2.6 SECURITY BARS

Provide aluminium rod security bars, where permitted and required, at louvre windows.

2.7 WINDOW FRAME AND SECURITY/ INSECT FRAME FINISHES

Powder coating: To AS 3715.

Anodising: To AS 1231:

- Thickness: ≥ 15 microns to 20 microns.

2.8 TRIM

Provide timber/ MDF mouldings, architraves, reveal linings, and other internal trim to complete the window/door installation. Install to make neat and clean junctions between frames and the adjoining building surfaces.

2.9 HARDWARE

Provide hardware of sufficient strength and quality to perform its function, appropriate to the intended conditions of use, compatible with associated hardware, and fabricated with fixed parts firmly joined and in accordance with *0455 Hardware*.

2.10 VISUAL INDICATORS ON GLAZING

Any glazing capable of being mistaken for a doorway or opening, where there is no chair rail, handrail or transom, shall be clearly marked with a contrasting line that complies with BCA Volume 2 Clause 3.6.4.6.

3 EXECUTION

3.1 INSTALLATION

Supply windows and glazed doors inclusive of glazing, shop preglazed.

Install as follows:

- Plumb, level, straight and true within acceptable building tolerances.
- Fixed or anchored to the building structure in conformance with the wind action loading requirements.
- Isolated from any building loads, including loads caused by structural deflection or shortening.
- Allow for thermal movement.

3.2 SEALS

All operable window sashes and glazed doors shall be fitted with rubber weatherproofing seals.

3.3 WEATHERPROOFING

Install flashings, weather bars, drips, storm moulds, caulking and pointing so that water is prevented from penetrating the building between frames and the building structure under prevailing service conditions, including normal structural movement of the building.

Pack behind fixing points with durable full width packing.

3.4 COMPLETION

Leave the hardware with working parts in working order, and clean, undamaged, properly adjusted, and lubricated where appropriate.

Clean all frames and glass surfaces inside and out with soft clean cloths and clean water, finishing with a clean squeegee. Do not use abrasive or alkaline materials.

0453 DOORS

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0455 Hardware.*
- *0461 Glazing.*
- *0671 Painting.*

1.3 STANDARDS

Security grilles and screen doors: To AS 5039.

Security grilles and screen doors installation: To AS 5040.

1.4 INTERPRETATION

For the purposes of this worksection the following definition applies:

- Doorset: An assembly comprising a door or doors, including supporting frame, guides and tracks and all hardware and accessories necessary for satisfactory operation.

1.5 SUBMISSIONS

Submit evidence, certifying that the proposed bushfire screens and seals conform to AS 3959 and to suit the Bushfire Attack Level (BAL) of the site.

1.6 WARRANTIES

Prior to Practical Completion a written warranty shall be submitted for the following:

- Timber doors: 5 years.

1.7 TOLERANCES

Squareness: The difference between the lengths of diagonals of a door: ≤ 3 mm.

Twist: The difference between perpendicular measurements taken from diagonal corners: ≤ 3 mm.

Nominal size:

- Height: ±2mm.
- Width: +2mm/ -0mm.

1.8 INSPECTION

Give notice so that inspection may be made of the following:

- Door frames in place before building in to masonry.
- Door frames installed before fixing trim

2 PRODUCTS

2.1 GENERAL

Doors shall be proprietary products, manufactured for interior or exterior applications and for the finish required.

Door thickness: 40mm, generally.

All timber doors shall have hardwood edge strips, minimum 10mm thick. Increase overall thickness to greater than 15mm to accommodate the full depth of the rebate in rebated doors. Apply to the external edges of door after the facings are bonded to the door framing/core and finish flush with outside surface of the facings.

2.2 SOLID CORE TIMBER DOORS

Plywood/MDF faced solid core timber doors with flush panels or decorative mouldings.

Provide internal and external grade facings as necessary to suit the installation.

Provide rebated meeting stiles to double doors, unless detailed otherwise.

2.3 SEMI SOLID CORE TIMBER DOORS

Plywood/MDF faced door with internal frame comprising top and bottom rails, stiles, lock blocks and stiffening members, constructed with either a cellular core or skeleton core and with flush panels or decorative mouldings.

Top/bottom rails and stiles of frame shall be of sufficient width to provide a strong and robust door, fit for the intended purpose. Provide blocks to accommodate all door hardware as scheduled.

Provide rebated meeting stiles to double doors, unless detailed otherwise.

2.4 FACE MOUNTED SLIDING INTERNAL DOORS

Provide overhead track supports and head and jamb linings appropriate to the arrangement of the door, and removable pelmets at the head to allow access to the wheel carriages for adjustment.

Wheel carriages shall be fully adjustable precision ball race type providing smooth, quiet operation.

2.5 CAVITY SLIDING DOORS

Cavity sliding doors shall comprise steel and timber frame construction with rigid steel top, base and rear supporting members and incorporating the overhead door track, ball race type wheel carriages guides, stops, split jamb linings and removable pelmet.

2.6 INSECT SCREEN DOOR

Provide insect screen doors comprising insect screen mesh beaded into a frame to match the doorset material.

Sliding or side hung as appropriate to the doorset.

Sized and detailed to fully screen the door opening.

Include all necessary hardware and accessories to complete the installation.

2.7 TIMBER DOOR FRAMES

Timber frames shall be manufactured from hardwood, unless nominated otherwise.

Grade: Select.

Joints:

- Morticed head and through tenons.
- Trenched head:
  - Bare faced tenons on jambs.
  - Full let-in jambs.

2.8 STEEL DOOR FRAMES

Product: Ezy-Jamb Door Jambs or acceptable equivalent.

System shall include all necessary accessories such as buffers, strike plates, spreaders, mortar guards, fixing ties or brackets and with provision for fixing documented hardware.

Form from coated steel sheet: To AS 1397. Coating class: ZF100.

Thickness: 1.2mm.

Fully weld and grind smooth all joints and cold galvanise.

2.9 BUSHFIRE SCREENS AND SEALS

To AS 3959.

Provide protection to doors from the ingress of embers where required to suit the Bushfire Attack Level (BAL) of the site.

2.10 SECURITY SCREENS DOORS

Provide proprietary aluminium framed security screens with expanded aluminium mesh insert at doors and windows where required, fixed to the building structure with tamper resistant fastenings. Where a security screen is required, mesh is to be suitable as an insect screen.

Product: Crimsafe or acceptable equivalent.

Security grilles and screen doors: To AS 5039.

Installation: To AS 5040.

2.11 TRIM

Provide timber/ MDF mouldings, architraves, reveal linings, and other internal trim to complete the door installation. Install to make neat and clean junctions between frames and the adjoining building surfaces. Profiles shall be as detailed on the Drawings.

2.12 FLASHINGS

To AS/NZS 2904.

3 EXECUTION

3.1 PRIMING

Prime timber door leaves on top and bottom edges before installation.

3.2 FRAMES GENERALLY

Install frames as follows:

- Plumb, level, straight and true.
- Fixed or anchored to the building structure.
- Isolated from any building loads, including loads caused by structural deflection or shortening.

3.3 TIMBER FRAMES

When fixing timber frames to masonry openings, build in seasoned timber plugs to masonry joints or use proprietary expansion anchors and screw twice through jambs at each fixing.

When fixing to stud frame openings, back screw twice to jambs at each fixing.

Conceal heads of fasteners, where possible, otherwise sink the head below the surface and fill the sinking flush with a material compatible with the surface finish.

3.4 STEEL FRAMES

Building in to masonry: Screw galvanized steel brackets twice to jambs and build in.

Fixing to masonry openings: Build in seasoned timber plugs to masonry joints or use proprietary expansion anchors and screw twice through jambs at each fixing.

Fixing to stud frame openings: Attach galvanised steel brackets to jambs and screw twice to studs at each fixing.

3.5 SLIDING INTERNAL DOORS

Face mounted

Provide overhead track supports and head and jamb linings appropriate to the arrangement of the door, and removable pelmets at the head to allow access to the wheel carriages for adjustment.

Provide wheel carriages that are fully adjustable precision ball race type providing smooth, quiet operation.

Cavity sliding

Proprietary door assemblies comprising steel and timber frame construction with rigid steel top, base and rear supporting members and incorporating the overhead door track, ball race type wheel carriages, guides, stops, split jamb linings and removable pelmet.

3.6 SEALS

All external doors shall be fitted with rubber weatherproofing seals. Product: Raven RP5 or acceptable equivalent.

Provide bottom seals comprising nylon brush strips, threshold plate seals or cam activated, automatic seals. Product: Raven RP59 or acceptable equivalent.

3.7 LIFT OFF HINGES

Provide lift off hinges to fully enclosed toilets where clear space at the door is not provided, in accordance with BCA Volume 2 Clause 3.8.3.3.

3.8 FINISHING

Provide mouldings, architraves, reveal linings, and other internal trim using materials and finishes matching the door frames. Install to make neat and clean junctions between the frame and the adjoining building surfaces.

3.9 WEATHERPROOFING

Install flashings, weather bars, drips, storm moulds, caulking and pointing to prevent water from penetrating the building between the door frame and the building structure under the prevailing service conditions, including normal structural movement of the building.

3.10 COMPLETION

Make sure moving parts operate freely and smoothly, without binding or sticking, at correct tensions or operating forces and that they are lubricated where appropriate.

On or before the date for practical completion, or before joining up to other surfaces, remove all traces of temporary coatings used as a means of protection.

0454 OVERHEAD DOORS

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0455 Hardware.*
- *0671 Painting.*
- *0673 Powder coatings.*

1.3 STANDARD

Garage doors: To AS/NZS 4505.

1.4 WARRANTIES

Prior to Practical Completion a written warranty shall be submitted for the following:

- Garage doors:
  - Curtain: 7 years.
  - Operator: 2 years.

1.5 INSPECTION

Give notice so that inspection may be made of the following:

- Framing or structure to receive tracks and motor.
- Tracks and guides installed before doors or shutters are hung.

2 PRODUCTS

2.1 GARAGE DOORS

Garage doors shall be tilt up, sectional or roller type.

Finish: Powder coated to accepted samples.

Operation: Motorised. Provide a minimum of two remote control door activators.

3 EXECUTION

3.1 GENERAL

Install overhead doors in conformance with the manufacturer's recommendations.

Before start of installation, check the alignment of substrates or framing and adjust if required.

Roller doors and sectional doors shall be fitted with nylon end clips to prevent lateral movement of the curtain.

Provide weather seals to bottom rail of doors.

3.2 FRAMES

Install the frames as follows:

- Plumb, level, straight, true and within tolerances and clearances recommended by the manufacturer.
- Fixed or anchored to the building structure using mechanical fixings suitable for the substrate and the imposed loads.
- Isolated from any building loads, including loads caused by structural deflection or shortening.

3.3 COMPLETION

Make sure moving parts operate freely and smoothly, without binding or sticking, at correct tensions or operating forces and that they are lubricated where appropriate.

Make sure all safety features are operating.

Make sure remote control devices are programmed and operating.

On or before the date for practical completion of the works, or before joining up to other surfaces, remove all traces of temporary coatings used for protection.

0455 HARDWARE

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0451 Windows and glazed doors.*
- *0453 Doors.*
- *0454 Overhead doors.*

1.3 STANDARDS

Locksets for doors and windows: AS 4145.1, AS 4145.2 and AS 4145.3.

1.4 WARRANTIES

Prior to Practical Completion a written warranty shall be submitted for the following:

- All hardware: 5 years.

1.5 INSPECTION

Give notice so inspection may be made of the following;

- Completed and working hardware to all doors and windows.

2 PRODUCTS

2.1 GENERAL

Hardware selections shall be to accepted samples.

Provide hardware of sufficient strength and quality to perform its function, appropriate to the intended conditions of use, compatible with associated hardware, and fabricated with fixed parts firmly joined.

2.2 HINGES

Conform to the following table for hinges to external doors:

Size of door (mm x mm)	Number of hinges (per door leaf)	Size of hinges (steel)
2040 x 920	3	100 x 75 x 2.5mm
2040 to 2400 x 1020	4	100 x 100 x 2.5mm

Internal doors, not exceeding 2040mm high x 820mm wide and 30kg mass may be installed with two hinges.

If necessary, provide wide throw hinges to achieve the required door swings to avoid obstacles such as deep reveals or architraves.

2.3 LIFT OFF HINGES

Provide lift off hinges to fully enclosed toilets where clear space at the door is not provided, in accordance with BCA Volume 2 Clause 3.8.3.3.

2.4 LOCKSETS

Provide push-button key and knob set and a double-cylinder dead bolt to each external door, unless noted otherwise.

Provide stops with hold open devices/ catches to all doors.

Internal doors:

- Generally: Passage sets.
- Bathrooms, toilets and master bathrooms: Privacy sets.
- Sliding doors and windows: Key-lockable surface mounted bolts.
- Internal garage door: Double cylinder deadlock, entrance set and keyed.
- Security screen doors: Door closer.

External doors:

- Glass sliding doors: Latch and double cylinder deadlock.
- Front entry doors: Trilock '3 in 1' locking system.

2.5 KEYING

Key doors and windows alike.

Provide two keys for each set of locks, keyed alike, and two keys for each lock keyed to differ.

2.6 CONSTRUCTION KEYING

During construction, locks shall be pinned up in a manner that allows a construction key to be issued to the Contractor and Subcontractors. The temporary construction key permits entry into the premises during construction, but will subsequently lock out all construction keys as soon as the occupant's key is inserted after the handover.

2.7 LOCK BOX

Provide an external proprietary lock box, with combination code, for storage of keys.

2.8 WINDOW HARDWARE

Openable windows to bedrooms, greater than 2m above ground, shall be fitted with a device to restrict the opening to a maximum width of 125mm and capable of withstanding an outward horizontal force of 250N in accordance with the BCA volume 2 clause 3.9.2.5.

2.9 COAT HOOKS

Proprietary stainless steel coat hook mounted on a painted timber of MDF board.

2.10 DOOR BELLS

Provide door bells to front entry doors.

Door bells are to be hardwired.

3 EXECUTION

3.1 INSTALLATION

Deliver door hardware items, in individual complete sets for each door, as follows:

- Clearly labelled to show the intended location.
- In a separate dust and moisture proof package.
- Including the necessary templates, fixings and fixing instructions.

Door lockset mounting height shall generally be 1000mm above finished floor to centreline of spindle.

Fix lock cylinders vertically and with consistent key alignment.

Fix door stops on the floor, skirting or wall, as appropriate, to prevent the door or door furniture striking the wall surface.

Provide fixings compatible with the item being fixed, and of sufficient strength, size and quality to perform their function.

Provide a corrosion resistant finish to concealed fixings.

Match exposed fixings to the material being fixed.

Locate exposed fixings to lock furniture on the inside faces of external doors.

Provide appropriate back support (for example lock stiles, blocking, wall noggings and backing plates) for hardware fixings.

Fix hinges using metal thread screws.

Install butt hinges in housings equal in depth to the thickness of the hinge leaf, except for hinges designed for mounting without housing, and fix with countersunk screws.

0461 GLAZING

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0451 Windows and glazed doors.*
- *0453 Doors.*

1.3 STANDARDS

Materials and installation: To AS 1288.

Safety glass: To AS/NZS 2208.

Balustrades: To BCA Volume 2 Part 3.9.2.

1.4 SUBMISSIONS

Submit a professional engineers' certificate confirming conformance of balustrade design with AS/NZS 1170.1 clause 3.6.

Submit statements from all parties to the installation certifying the compatibility of sealants and glazing systems to all substrates.

Submit a report, from the manufacturer certifying that the proposed method of opacifying the glass will not be detrimental to the glass or affect the glass product warranty.

2 PRODUCTS

2.1 MIRRORS

Mirrors shall comprise glass with silver layer and electrolytic copper coating, at least 5 microns thick, with two coats of mirror backing and edge sealing paint having a total dry film thickness of at least 50 microns.

Safety mirrors shall comprise vinyl backed Grade A safety glass.

Where mirrors are required, by AS 1288, to be grade A safety glass, ordinary annealed glass may be substituted when the panel is fully backed by and completely adhered to a solid material.

2.2 SOLID BACKED ANNEALED GLASS MIRRORS

Backing shall be 9mm thick waterproof plywood.

Adhesive for fixing shall be a non-acidic silicone adhesive applied at the rate recommended by the manufacturer.

Clean the back of the glass panel and apply walnuts of adhesive together with double sided adhesive tape for temporary support and affix directly to the backing.

2.3 GLAZED SHOWER SCREENS

Proprietary framed or frameless glazed shower screen system comprising fixed panel glazing and glazed pivoted/ swinging/ sliding doors.

2.4 GLASS BALUSTRADES

Glazing to balustrades shall be grade A safety glass.

Where handrails are supported by glass balustrades, they shall be fixed in such a manner that, should a glass pane fracture, the handrail will remain in position.

2.5 VISUAL INDICATORS ON GLAZING

Any glazing capable of being mistaken for a doorway or opening, where there is no chair rail, handrail or transom, shall be clearly marked with a contrasting line that complies with BCA Volume 2 Clause 3.6.4.6.

3 EXECUTION

3.1 FIXING MIRRORS

To AS 1288.

3.2 GLAZED SHOWER SCREENS

Provide an assembly which sheds water to the inside without retaining it on the frame surfaces. Seal the edge of the frame to adjoining surfaces with a resilient strip.

For sliding assemblies, hang the sliding sash on stainless steel or nylon sheaves on overhead channel track formed in the frame head, and fit nylon or equivalent bottom guides.

Provide pull handles on both sides of sash, or of leading sash in multiple sash arrangements.

3.3 GLASS BALUSTRADES

To AS 1288 Section 7.

3.4 COMPLETION

Clean all frames and glass surfaces inside and out with soft clean cloths and clean water, finishing with a clean squeegee. Do not use abrasive or alkaline materials.

0471 INSULATION AND PLIABLE MEMBRANES

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.
- The energy efficiency commitment required by the nominated Nathers Star Rating.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0383 Structural sheet flooring.*
- *0421 Roofing.*
- *0431 Cladding.*
- *0511 Linings.*
- *0531 Ceilings.*

1.3 STANDARDS

Mineral wool blankets and cut pieces: To AS/NZS 4859.1, Section 8.

Polyester: To AS/NZS 4859.1 Section 7.

Reflective thermal insulation: To AS/NZS 4859.1, Section 9.

Bulk insulation: To AS 3999.

Pliable membrane materials: To AS/NZS 4200.1.

Pliable membrane installation: To AS/NZS 4200.2 and BCA 3.12.1.1.

1.4 WARRANTIES

Prior to Practical Completion a written warranty shall be submitted for the following:

- Insulation generally: 10 years.

1.5 INSPECTION

Give notice so that inspection may be made of the pliable membrane and insulation before they are covered up or concealed.

2 PRODUCTS

2.1 GENERAL

Insulation shall have a zero ozone depletion potential (ODP) in its manufacture and composition, be CFC and HFC free in its manufacture and composition and have a global warming potential (GWP) of less than five.

Insulation thicknesses/ R-values shall be determined based on the requirements of the BCA, to suit the climate zone applicable to the site.

2.2 INSULATION TO SUSPENDED FRAMED FLOORS

Product type: Fibre batts.

Install and fit tightly between framing members. If other support is not provided, staple nylon twine to the framing and stretch tight.

2.3 INSULATION BELOW CONCRETE SLABS

Product type: Rigid cellular extruded sheets.

Install in a stretcher bond laying pattern, with edges tightly butted.

Lay damp proof membrane over insulation.

2.4 METAL ROOF INSULATION

Product type: Fibre blankets or batts.

Install wire mesh across the roof purlins. The wire shall be pulled taught. Dishing will not be acceptable.

Provide proprietary spacers along the roof purlins to ensure that the insulation recovers to its nominal thickness. Depth: To suit insulation thickness.

2.5 TILED ROOF INSULATION

Product type: Proprietary thermo reflective anti-glare insulation.

2.6 FRAMED WALL THERMAL BREAK STRIPS

Product type: Proprietary thermal break item.

Fix to steel or timber framing with lightweight external cladding.

Thickness: 6mm.

Fix with button head screws or adhesive daubs at 1m centres.

2.7 CAVITY MASONRY WALL INSULATION

Product type: Rigid cellular insulation board.

Install to the inner brick skin, with proprietary plastic fixing clips on pre-installed wall ties.

Install horizontally with the tongue to the top edge and firmly against the inner brick skin. Keep boards clean and dry and free from mortar and grout. Do not bridge the cavity.

Install flashings before installing insulation panels. Prevent entry of water behind the insulation boards.

2.8 CEILING INSULATION

Product type: Fibre batts.

Install and fit tightly between framing members.

2.9 EXTERNAL FRAMED WALL INSULATION

Product type: Fibre batts.

Install friction fit between framing members. If other support is not provided, staple nylon twine to the framing and stretch tight.

2.10 INTERNAL FRAMED WALL INSULATION

Product type: Fibre batts.

2.11 VAPOUR PERMEABLE (BREATHABLE) MEMBRANES

Provide a vapour permeable membrane behind external facing materials which do not provide permanent weatherproofing or may be subject to condensation forming on the internal face.

Run the vapour permeable membrane horizontally on the outer face of external wall framing, over the flashing, from the bottom plate up. Pull taught over the framing and fix to framing members. Seal across the wall cavity at the top.

Laps in sheets shall be at least 150mm wide, and shall ensure water is shed to the outer face of the membrane.

2.12 SARKING MEMBRANE

Provide sarking under roofing.

Lay over roof framing with sufficient sag to allow the bulk insulation to achieve its full thickness. Overlap all edges 150mm and seal all joints with pressure sensitive adhesive tape.

Bulk insulation shall be placed on the cold side of the vapour barrier.

Provide a vapour barrier, below blanket insulation installed over roof battens or purlins, under metal roofing in accordance with AS 3999 clause 4.3.

3 EXECUTION

3.1 GENERAL

Fit insulation tightly between framing members. If other support is not provided, staple nylon twine to the framing and stretch tight.

Ensure fibre batts or blankets are firmly butted with no gaps except as follows:

- Access openings and vents: Do not obstruct.
- Light fittings: To AS/NZS 3000 clause 4.5.
- Electrical cables: To AS 3999 clause 2.6.

Insulation below metal roof sheeting shall be installed so that the blanket is in continuous contact with the underside of the roofing.

0511 LININGS

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0331 Masonry construction.*
- *0342 Light steel framing.*
- *0382 Light timber framing.*
- *0411 Waterproofing.*
- *0531 Ceilings.*
- *0551 Joinery.*
- *0631 Tiling.*
- *0671 Painting.*

1.3 STANDARDS

Plasterboard: To AS/NZS 2588.

Fibre cement: To AS/NZS 2908.2.

Fire hazard properties Group number: To BCA and AS 5637.1.

1.4 TOLERANCES

Tolerances for gypsum linings and fibre cement sheet linings shall comply with AS/NZS 2589 and the following additional requirements:

- The maximum variation in height from a given datum shall be 2mm.
- The maximum offset in plane, level or section between any two adjacent sections shall be 2mm.
- The maximum variation in plan over a distance of 1800mm shall not exceed 2mm.

1.5 INSPECTION

Give notice so that inspection may be made of the following:

- Substrate or framing before installation of linings.
- Finished surface of installation before applying:
  - Sealer.
  - Finish coatings.

2 PRODUCTS

2.1 GENERAL

Provide lining system with a surface that is:

- Resistant to impacts expected in use.
- Resistant to moisture encountered under expected environmental conditions.
- Free of irregularities.
- A suitable substrate for the nominated final finish.

Store and handle products so they are dry and undamaged, stacked in pallets horizontally on a smooth, level surface. Prevent distortion or moisture ingress.

Do not drag sheets across each other or across other materials. Protect edges, corners and surface from damage.

2.2 PLASTERBOARD

Gypsum core plasterboard, of standard grade classification, with exposed surface suitable for decoration and tapered edges for smooth seamless jointing.

Product: CSR Gyprock Standard or acceptable equivalent.

Size: Minimum 10mm thick, or to suit fire or acoustic requirements.

2.3 MOISTURE RESISTANT PLASTERBOARD

Gypsum core plasterboard of water resistant grade classification with additives to the core and/ or paper liners to reduce the water absorption rate.

Product: CSR Gyprock Aquachek or acceptable equivalent.

Size: Minimum 10mm thick, or to suit fire or acoustic requirements.

2.4 FIBRE CEMENT SHEET

Fibre cement sheet wall linings.

Product: James Hardie Villaboard or acceptable equivalent.

Size: Minimum 9mm thick, or to suit fire or acoustic requirements.

2.5 CORNICE

Decorative coved plaster cornice to accepted samples.

Size: 90mm.

3 EXECUTION

3.1 GENERAL

Do not commence lining work until the building or installation area is enclosed and weathertight, and all wet trades have been completed.

Before fixing linings check and, if necessary, adjust the alignment of substrates or framing. Substrates are to be plumb, level, in true alignment and to the lining manufacturer's recommendations.

Do not install ceiling linings until at least 14 days after the roof structure is fully loaded.

Provide all accessories and trim necessary to complete the installation and to make neat junctions between lining components, finishes and adjacent surfaces.

Where sealing is required for fire-resisting or acoustic installations, apply sealant to the manufacturer's recommendations and as follows:

- Around services pipes and penetrations.
- Electrical outlets and recessed lights: Line back and sides of fixture with plasterboard and seal around fixture junction with sealant.
- Around perimeter of lining panels: Provide continuous runs of sealant.

3.2 PLASTERBOARD/FIBRE CEMENT SHEET LINING

To AS/NZS 2589.

Install timber battens or proprietary cold-formed galvanized steel furring channels as follows:

- Where framing member spacing exceeds the recommended spacing.
- Where direct fixing of the plasterboard is not possible due to the arrangement or alignment of the framing or substrate.

Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

Form external corner joints over metallic-coated steel corner beads.

Provide purpose-made metallic-coated control joint beads at not more than 12m centres in plasterboard linings or 7.2m centres in fibre cement lining in walls and ceilings and to coincide with structural control joints.

In tiled areas, provide control joints not more than 4.2 m centres and space to suit joints required in tiling.

Install additional supports, flashings, trim and sealants to wet areas as required.

In tiled areas, provide an extra row of noggings immediately above wall-to-floor flashings. Fix sheet at 150mm centres to each stud and around the perimeter of the sheet. Do not apply a topping coat after bedding perforated paper tape in bedding compound.

Reinforce internal corners with metallic-coated steel angles. In corners subject to continuous moisture, flash over the angle and under the sheeting with continuous bitumen coated aluminium flashing.

Run sheets across the framing members. In flush jointed applications, stagger end joints in a brick pattern and locate them on framing members, away from the corners of large openings. Provide supports at edges and joints.

When fixing to wall framing, do not fix to top and bottom plates or noggings.

In wet areas, do not use adhesive fixing alone.

Cut edges of boards shall be lightly sanded to remove paper burrs. Apply a PVA sealer to exposed cut edges and any other plaster surface to which tape is applied.

Fill joints and gaps, cover with continuous lengths of tape and fully bed. Where joints are to be covered with finish, feather out to provide a smooth seamless surface.

All external angles shall be protected by the use of drywall angle beads with plasterboard edge beads at all visible jointed abutments. Joint finish shall be applied to all external angles. When jointing is complete and dry, apply drywall primer to the complete surface ready to receive decoration.

All beads shall be flush with the board.

Nail and screw depressions shall be filled with joint filler to provide a flush and smooth surface.

Where multiple sheet layers are required for fire-resistance rated or acoustic walls, fill and flush up all joints and fasteners in each layer and caulk up perimeters and penetrations before installing subsequent layers. Stagger all sheet joints by minimum 200 mm.

Flush plasterboard/ fibre cement sheet walls shall generally achieve a level 4 finish, in accordance with AS/NZS 2589. Where dark and/ or glossy paint finishes are used or where surfaces are subjected to glancing light, a level 5 finish shall be achieved.

3.3 WALL/CEILING JUNCTIONS

Where plasterboard ceilings abut walls, provide a square set finish or a decorative plaster cornice fixed with cornice cement.

3.4 COMPLETION

Replace damaged or marked lining and components

Clean completed surfaces to remove irregularities and leave panels smooth and clean, to the manufacturer's recommendations. If required, sand with fine paper to remove irregularities and refinish panel surface.

Remove debris and unused material from the site.

0531 CEILINGS

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0342 Light steel framing.*
- *0382 Light timber framing.*
- *0511 Linings.*
- *0671 Painting.*

1.3 STANDARDS

Luminaire and air diffuser interface: To AS 2946.

Plasterboard: To AS/NZS 2588.

Fibre cement: To AS/NZS 2908.2.

1.4 TOLERANCES

Flatness, twist, winding and bow: 1.5 mm deviation from a 1.5 m straightedge placed in any position.

Bearing surface for flush lined ceiling: To AS/NZS 2589 Table 4.2.2.

1.5 INSPECTION

Give notice so that inspection may be made of the following:

- The ceiling assembly before the installation of fittings and site painting, if applicable.
- The completed ceiling.

2 PRODUCTS

2.1 PLASTERBOARD

Gypsum core plasterboard, of standard grade classification, with exposed surface suitable for decoration and tapered edges for smooth seamless jointing.

Product: CSR Gyprock Standard or acceptable equivalent.

Size: Minimum 10mm thick, or to suit fire or acoustic requirements.

2.2 MOISTURE RESISTANT PLASTERBOARD

Gypsum core plasterboard of water resistant grade classification with additives to the core and/ or paper liners to reduce the water absorption rate.

Product: CSR Gyprock Aqauchek or acceptable equivalent.

Size: Minimum 10mm thick, or to suit fire or acoustic requirements.

2.3 FIBRE CEMENT SHEET

Fibre cement sheet ceiling linings.

Product: James Hardie Villaboard or acceptable equivalent.

Size: Minimum 9mm thick, or to suit fire or acoustic requirements.

3 EXECUTION

3.1 CONSTRUCTION GENERALLY

Do not start work before the building is enclosed, wet work is complete and dry, and all work above the ceiling, including services, is complete.

Protect existing work from damage during the installation.

Install the ceiling to allow for differential movement at abutting surfaces.

Align ceiling control joints with structural control joints. Do not bridge structural control joints.

Provide trim at junctions with other building elements and surfaces, including walls, beams and penetrations, consistent with the materials and finishes of the ceiling system.

3.2 BULKHEADS

Integrate bulkheads with the ceiling structure and brace to prevent lateral movement.

3.3 PLASTERBOARD/FIBRE CEMENT SHEET LINING

Gypsum plasterboard, fibre reinforced gypsum plaster and fibre cement sheet: To AS/NZS 2589.

Fix using screw or screw and adhesive to ceiling furring members. Do not fix sheets to the bottom chords of trusses.

Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

External corner joints: Make joints over metallic-coated steel corner beads.

Cut edges of boards shall be lightly sanded to remove paper burrs. Apply a PVA sealer to exposed cut edges and any other plaster surface to which tape is applied.

Fill joints and gaps, cover with continuous lengths of tape and fully bed. Where joints are to be covered with finish, feather out to provide a smooth seamless surface.

All external angles shall be protected by the use of drywall angle beads with plasterboard edge beads at all visible jointed abutments. Joint finish shall be applied to all external angles. When jointing is complete and dry, apply drywall primer to the complete surface ready to receive decoration.

All beads shall be flush with the board.

Nail and screw depressions shall be filled with joint filler to provide a flush and smooth surface.

Flush plasterboard/ fibre cement sheet ceilings shall generally achieve a level 4 finish, in accordance with AS/NZS 2589. Where dark and/ or glossy paint finishes are used or where surfaces are subjected to glancing light, a level 5 finish shall be achieved.

Provide expansion joints to prevent cracking through cornices.

3.4 ACCESS PANELS/ MANHOLES

Provide ceiling access panels and manholes, as necessary, to access ceiling spaces.

Match the associated ceiling in appearance and performance.

Reinforce the back of the access panels and manholes to prevent warping and facilitate handling.

Confirm locations of access panels prior to installation.

3.5 COMPLETION

Replace damaged or marked lining and components

Clean completed surfaces to remove irregularities and leave panels smooth and clean, to the manufacturer's recommendations. If required, sand with fine paper to remove irregularities and refinish panel surface.

Remove debris and unused material from the site.

0551 JOINERY

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0342 Light steel framing.*
- *0382 Light timber framing.*
- *0511 Linings.*
- *0552 Metalwork.*
- *0671 Painting.*
- *0673 Powder coatings.*

1.3 STANDARDS

Domestic kitchen assemblies:

- Kitchen units: To AS/NZS 4386.1.
- Installation: To AS/NZS 4386.2.

Joinery timber:

- Hardwood: To AS 2796.1 and AS 2796.3.
- Softwood: To AS 2796.1 and AS 4785.3.

Finished sizes for milled timber: Not less than the documented dimension unless qualified by a term such as "nominal", "out of" or "ex" to which industry standards for finished sizes apply.

Plywood: To AS/NZS 2270.

Plywood, exposed to moisture: To AS/NZS 2271.

High pressure decorative laminate sheets: To AS/NZS 2924.1.

Safety glass: To AS/NZS 2208.

Timber veneers: To AS/NZS 2097 and AS/NZS 2098.

Stairs: To AS 1657.

Handrails and balustrades: To BCA Volume 2 Part 3.9.2.

1.4 SAMPLES

In accordance with Section 0171, provide samples of the following:

- Door front.

- Drawer front.
- 500mm length of benchtop including front edge profile and wall junction.
- 300mm length of skirting in the nominated finish.
- 300mm length of each type of handrail including fixings and brackets.
- One sample of each type of hardware.

1.5 SHOP DRAWINGS

Submit Shop Drawings showing the following information:

- Overall dimensions.
- Materials, thicknesses and finishes of elements including doors, divisions, shelves and benches.
- Type of construction including mitre joints and junctions of members.
- Hardware type and location.
- Temporary bracing, if required.
- Procedures for factory and Site assembly and fixing.
- Benchtop layout including joint arrangement and penetrations.
- Locations of sanitary fixtures, sinks, whitegoods and other items to be installed in the units, including elevations and dimensions to show suitable for proposed FFE items.
- Relationship of fixtures to adjacent building elements.
- Details of fabrication involving other trades or components.
- Where items of joinery are required to reticulate services or ventilate appliances, the Shop Drawings shall demonstrate that all services have been adequately coordinated.

1.6 WARRANTIES

Prior to practical completion a written warranty shall be submitted for the following:

- All fixed joinery items: 10 years.

1.7 INSPECTION

Give notice so that inspection may be made of the following:

- Shop fabricated or assembled items once delivered to the site.
- Openings prepared to receive assemblies.
- Site erected assemblies on completion of erection, before covering up by cladding and encasing.
- Surfaces prepared for, and immediately before, site applied finishes.
- Completion of installation.

2 PRODUCTS

2.1 GENERAL

Deliver joinery units to site in unbroken wrapping or containers and store so that its moisture content is not adversely affected. Do not store in areas of wet plaster. Keep storage time to a minimum by delivering items only when required for installation.

2.2 JOINERY AND JOINERY FINISHES

Joinery, joinery finishes and hardware shall be to accepted samples.

2.3 MDF SKIRTINGS

HMR MDF skirtings shall be to selected samples.

Size: Minimum 150mm x 15mm.

Finish: Painted.

Skirtings shall be concealed fixed to walls.

Form straight runs in single lengths wherever possible.

Location and method of forming running joints, where required, shall be agreed prior to commencement of work.

Joints at angles shall be mitred.

2.4 HIGH-PRESSURE DECORATIVE LAMINATES

Laminate sheet thickness (minimum):

- For horizontal surfaces fixed to a continuous substrate: 1.2mm.
- For vertical surfaces fixed to a continuous substrate: 0.8mm.
- For post formed laminate fixed to a continuous substrate: 0.8mm.
- For vertical surfaces fixed intermittently (e.g. to studs): 3.0mm.
- For edge strips: 0.4 mm.

2.5 TIMBER VENEERS

Condition core material and veneers before bonding.

Apply veneers with edges tight butted, with no gaps or other open defects. Set out veneers so that veneers are aligned in regular uniform symmetry, unless otherwise specified.

Finished components shall be free from bow, twist, scratches, chipping, pimpling, depressions, glue spill, staining and other defects. Sand to a fine, smooth finish, free from sanding marks.

2.6 GLASS SPLASHBACKS

Glass splashbacks shall comprise 6mm toughened colourback glass with a factory applied opaque coating to the back.

Glass shall be heat resistant, as required, to suit proximity to appliances.

2.7 HANDRAILS

Provide timber handrails to accepted samples.

Finish: Painted.

2.8 STAINLESS STEEL

Stainless steel shall be grade 316 with fine linished finish, unless nominated otherwise.

2.9 WARDROBE, CUPBOARD AND DRAWER UNITS

Plinths, carcasses, drawer fronts, shelves and doors shall be either:

- Overlaid high moisture resistant particleboard.

- Overlaid high moisture resistant medium density fibreboard.

Thickness (minimum): 18mm for spans less than or equal to 900mm and 25mm for spans greater than 900mm.

Bench and cupboard units:

- Carcass sides, intermediate divisions, back and floor to be constructed from 18mm thick MDF/ particleboard. Cut back sides and intermediate divisions to allow for a 50mm deep clear toe recess.
- Provide Furnco or similar adjustable levellers for true level and alignment. Secure to floor.
- Provide an 18mm thick MDF/ particleboard kickplate to toe recess with finish to accepted samples. Scribe accurately to the floor and provide a silicone seal at the floor junction.
- Internal surfaces of cupboard and drawer units, including fixed/ adjustable shelves to be white melamine finish with laminate edge strips.
- All edges to doors and drawers shall receive ABS edge strips in colour matching the laminate door/ drawer face.
- All external faces of cupboard, drawer and shelf units, including toe recess/ plinth and infill fillets/panels shall have finish as nominated on the Drawings and/ or as scheduled.
- Fixed shelves shall be 18mm thick MDF/ particleboard recessed into sides and/ or intermediate divisions of carcass. Glued and secured with concealed noncorrosive mechanical fasteners. Laminate edging to front edge.
- Adjustable shelves shall be 18mm thick MDF/ particleboard and supported on four stainless steel shelf support lugs. All edges shall have laminate edge strips.
- Provide cutlery inserts to drawers.
- Include a 20mm wide scribed fillet to either side of joinery units where the joinery is 'wall to wall'.
- Overhead units and tall cupboard units shall include a fixed solid front panel over plus side returns where applicable forming a bulkhead that extends to the underside of the ceiling. The bulkhead shall finish flush with cupboard doors and be 18mm proud of shelf units. Finish shall match adjacent walls.

Adjustable shelves shall be supported on proprietary pins in holes bored at equal centres vertically. Spacing: 32mm.

All fixings shall be concealed.

Rout drawer fronts to provide a recess for drawer bottoms.

Drawer backs and sides:

- PVC film wrapped particleboard.
- Thickness: 16mm.
- Mitre corners leaving outer skin of foil intact, finish with butt joints, glue to form carcass and screw to drawer front. Rout for drawer bottoms.

Drawer bottoms:

- PVC film laminated hardboard.
- Thickness: 6mm.

Sliding doors to wardrobes:

- Provide edge frame to joinery units at sliding door jambs.

2.10 DRAWER AND DOOR HARDWARE

Provide concealed, 135 degree opening, Blum type or similar metal hinges with the following features:

- Adjustable for height, side and depth location of door.
- Self-closing and soft-close action, equivalent to Blum heavy duty.
- Hold-open function.

- Nickel plated.

Drawers shall be fitted with metal runners and plastic rollers with the following features:

- 30kg loading capacity.
- Adjustable stop to prevent accidental full withdrawal of drawer from carcass.
- White thermoset powder coating or nickel plated.
- Soft-close action, equivalent to Blum heavy duty.

Silicone dots shall be installed to doors and drawers to prevent knocking against the carcass.

2.11 LAMINATE BENCHTOPS

Substrate shall be either high moisture-resistant particleboard or medium density fibreboard.

Finish: High pressure decorative laminate sheet.

Extend laminate over shaped nosing, finishing more than 50mm back on underside. Splay outside corners at 45 degrees.

Thickness (minimum): 32mm.

Extend laminate to the undersides of benchtops if subject to excessive moisture from equipment such as dishwashers.

2.12 STONE BENCHTOPS

Stone for joinery units shall be free from vents, cracks, fissures, discoloration or other defects that may adversely affect strength, durability or appearance.

Stone shall be dressed and worked before delivery to Site.

Provide samples of all stone products, which represent the anticipated range of variations in appearance.

In natural stone, repair mud veins or lines of separation that are integral to the selected pattern with resin fillers and back lining.

All edges of stone shall be pencil round with minimum 3mm radius.

3 EXECUTION

3.1 JOINERY

Provide materials in single lengths whenever possible. If joints are necessary, make them over supports and locate away area where water may be present.

Prime surfaces concealed by substrates.

Damp clean and vacuum substrate surfaces that will be permanently concealed.

Examine joinery units for completeness and remedy deficiencies.

Frame and trim where necessary for openings, including those required by other trades.

Provide all accessories and trim necessary to complete the installation.

Secure plinths and carcasses to floors, walls, or both at not more than 600 mm centres.

Do not provide visible fixings except in the following locations:

- Inside cupboards and drawer units.

- Inside open units, in which case provide proprietary caps to conceal fixings.

Fix joinery units to substrate as follows:

- Floor mounted units: 600 mm centres maximum.
- Wall mounted units: To each nogging and/or stud stiffener.

Fixings shall comprise screws with washers into timber or steel framing, or masonry anchors.

Provide adhesives to transmit the loads imposed and to ensure the rigidity of the assembly, without causing discolouration of finished surfaces.

Scribe plinths, benchtops, splashbacks, ends of cupboards, kickboards and returns to follow the line of the structure.

Finish exposed edges of sheets with edge strips which match sheet faces.

Fix benchtops to carcass at least twice per 600mm length of benchtop and fill joints with sealant matching the finish colour and clamp with proprietary mechanical connectors.

Seal benchtops to walls and carcasses with a sealant that matches the finish colour.

Joinery shall incorporate all services and FF&E installations as necessary.

3.2 GLASS SPLASH BACKS

Fix with non-acidic silicone adhesive. Apply at the rate recommended by the manufacturer.

Clean the back of the glass panel and apply walnuts of adhesive together with double sided adhesive tape for temporary support, and affix directly to the substrate.

3.3 TIMBER STAIRS

Set out stairs to give uniform risers and uniform treads respectively in each flight.

Closed strings shall be trenched for treads and risers.

Cut stringers shall be profiled to suit treads and risers. Mitre riser ends.

Treads shall have pencil-round nosings. Return nosings at cut stringers. Groove for riser tongue in closed riser stair. Set riser 19mm back from nosing.

Top tread shall be flush with finished floor. Provide similar tread section as nosing to floor edges around stairwell.

Risers shall be tongued to tread. Mitre to string in cut-string stairs.

Glue joints in internal work. In closed riser stairs, wedge treads and risers to strings. Plant two glue-blocks behind each tread to riser junction. Trim floors to carry ends of stairs and around stairwell.

Stair bolts (to open rise close string stairs) shall be 8mm diameter mild steel, one at each end and one at centre of flight, transversely between strings. Draw strings tight against ends of treads.

Provide beads and mouldings as necessary, including a scotia or similar planted under the tread nosing against the risers and cut strings, a bead between wall strings and wall, and a bead behind the fascia over the ceiling finish.

Where soffit linings are installed below stairs, fix linings to 38mm x 38mm nailing battens notched and nailed to the underside of treads and risers at the centre of flights and at each side.

3.4 TIMBER BALUSTRADES

Provide a timber balustrade to the stairs and landings, consisting of newels, handrail, balusters, and associated mouldings.

3.5 COMPLETION

Protect timber treads and provide full timber or plywood casing.

On or before completion of the works, or before joining up to other surfaces, remove all traces of temporary protective coatings.

Remove all dust, marks and rubbish from all surfaces and internal spaces. Clean and polish all self-finished surfaces such as anodised and powder coated metals, sanitary ware, glass, tiles and laminates.

0552 METALWORK

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0342 Light steel framing.*
- *0382 Light timber framing.*
- *0511 Linings.*
- *0551 Joinery.*
- *0671 Painting.*
- *0673 Powder coatings.*
- *Structural Engineer's documentation.*

1.3 STANDARDS

Handrails and balustrades: BCA Volume 2 Part 3.9.2.

Aluminium structures: To AS/NZS 1664.1 or AS/NZS 1664.2.

1.4 INSPECTION

Give notice so that inspection may be made of the following:

- Shop fabricated or assembled items once delivered to the site.
- Commencement of shop or site welding.
- Site erected assemblies on completion of erection, before covering up by cladding and encasing.
- Steel surfaces prepared for, and immediately before, site applied finishes.

2 PRODUCTS

2.1 STAINLESS STEEL HANDRAILS

Stainless steel handrails shall be fit for purpose.

Finish: Polished.

Stainless steel shall be generally grade 304, unless the corrosivity category of the site requires marine grade 316.

2.2 EXTERNAL METAL SCREENS

External metal screen systems shall be to accepted samples.

Provide supporting structure, as necessary, to suit the anticipated loads in operation. Where exposed, supporting members shall have finish to match the screen.

2.3 MATERIALS AND COMPONENTS

Provide metals in sections of strength and stiffness suited to their required function, finish and method of fabrication.

3 EXECUTION

3.1 GENERALLY

Provide metals so that they transmit the loads imposed and ensure the rigidity of the assembly without causing deflection or distortion of finished surfaces.

Separate incompatible metals using concealed layers of suitable materials in appropriate thicknesses.

3.2 FASTENERS

Provide non-galvanic corrosion fasteners.

Provide fasteners in materials of mechanical strength and corrosion resistance at least equal to that of the lowest resistant metal joined.

3.3 FABRICATION

Fabricate and pre-assemble items in the workshop wherever practicable.

Keep edges and surfaces clean, neat and free from burrs and indentations. Remove sharp edges without excessive radiusing.

Form bends in metal tubes without visibly deforming the cross section.

Accommodate thermal movement in joints and fastenings.

Tolerances: ± 2 mm from design dimensions.

3.4 JOINTS

Fit joints to an accuracy appropriate to the class of work. Finish visible joints made by welding, brazing or soldering using grinding, buffing or other methods appropriate to the class of work, before further treatment.

3.5 WELDING AND BRAZING

Provide finished welds which are free of surface and internal cracks, slag inclusion, and porosity.

Avoid site welding wherever possible. If required locate site welds in positions for down hand welding.

3.6 PIPE RAIL BALUSTRADES

Produce smooth unbroken surfaces at joints. Scribe the joints between posts and rails. Make end-to-end joints over an internal sleeve.

Make changes of direction in rails by evenly curved pipe bends.

Seal the free ends of pipes with fabricated or purpose-made end caps.

Provide fabricated predrilled or purpose-made brackets or post bases and attach the piping to the building structure with fixings, including bolts into masonry anchors, and coach screws or bolts into timber, of metal compatible with the piping.

3.7 COMPLETION

On or before completion of the works, or before joining up to other surfaces, remove all traces of temporary coatings used as a means of protection.

Remove all dust, marks and rubbish from all surfaces and internal spaces. Clean and polish all self-finished metals.

0574 WINDOW COVERINGS

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0451 Windows and glazed doors.*

1.3 STANDARDS

Uncoated woven and knitted fabrics: To AS 2663.1.

Coated woven and knitted fabrics: To AS 2663.2.

- Performance classification (minimum): 2.

1.4 WARRANTY

Prior to practical completion a written warranty shall be submitted for a period equal to or exceeding that nominated in the Warranty Schedule included in Section 0171.

1.5 INSPECTION

Give notice so that inspection may be made of the following:

- Building locations or substrates prepared to receive window coverings before installation.

2 PRODUCTS

2.1 WINDOW COVERINGS

Fix securely using the manufacturer's fixing components and without causing distortions.

2.2 ROLLER FABRIC BLINDS

Blind material: Block out fabric.

Drum: Powder coated aluminium.

Base rail: Powder coated aluminium.

Brackets: Powder coated steel.

Provide a stainless steel beaded chain for operation.

Width and height to suit window opening.

2.3 VERTICAL BLINDS

Blind material: Polyester suitable for privacy and light control (blockout),

Track material: Extruded aluminium alloy 6063-T6 or as per manufacturers requirements.

Width and height to suit window opening.

Fix slats and panels in single straight lengths finishing 10 mm above floor or sill level, without twists, warp, bows, edge ripples or fraying.

Fix a weight into a pocket formed in the bottom of each slat or a rail to the top and bottom of each panel.

Slat bottoms to be chainless.

Install slats evenly using plastic spacers which lock into the carrier rail to provide a continuous linkage, and fix with sealed plastic slat holders carried by plastic rotation pivots.

3 EXECUTION

3.1 INSTALLATION

General

Install tracks in documented locations using manufacturer's purpose fabricated mounting brackets, clips, track splicing and other hardware. Install window coverings to hang plumb and level, and true to line.

Provide concealed mechanical fixings suitable for mounting tracks to substrate. Match exposed mounting hardware to the finish and colour of adjacent track.

Adjust all operating hardware for smooth operation free from binding, and to provide even, accurate alignment of window covering in open and closed positions.

Install child safety devices on all control cords and chains. Install all control cords and chains in conformance with *Competition and Consumer (Corded Internal Window Coverings) Safety Standard*.

3.2 COMPLETION

Submit the manufacturers' data as follows:

- Recommendations for service use, care and maintenance.
- List of manufacturers and suppliers of replacement parts.

On or before completion of the works, remove all traces of temporary coatings used as a means of protection.

0611 RENDERING

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- Wind loads for the site shall be determined in accordance with AS 4055 or AS/NZS 1170.2.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.
- The Bushfire Attack Level (BAL) Rating, for the site, shall be determined in accordance with AS 3959 and the BCA.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0331 Masonry construction.*
- *0671 Painting.*

1.3 STANDARDS

Cement: To AS 3972 Type GP.

Lime: To AS 1672.1.

1.4 SAMPLE PANELS

Prior to commencement, a sample panel of external render, in panel sizes of nominally 1200mm x 1200mm, shall be built on Site, but away from other work. The sample panels shall include all associated beads, angles and accessories. Obtain acceptance prior to commencement of construction for each type. If a panel is rejected, construct other sample panels of each type until acceptance is obtained.

1.5 INSPECTION

Give notice so that inspection may be made of the following:

- Prototypes ready for inspection.
- Substrates immediately before applying base coats.
- Finish treatments before decoration.

2 PRODUCTS

2.1 PROPRIETARY RENDER TO FIBRE CEMENT SHEET

Product: Rockcote Polymer Render Grey or acceptable equivalent.

System shall comprise the following:

- Rockcote Patch and Prep with Mesh Tape.

- Rockcote Polymer Render Grey in two coats.
- Rockcote Armour in two coats.

Provide a wood float finish ready to receive decoration.

2.2 PROPRIETARY RENDER TO MASONRY

Product: Rockcote QRender PM100 or acceptable equivalent.

Thickness (minimum): 12mm.

Provide a wood float finish ready to receive decoration.

2.3 SAND CEMENT RENDER TO INTERNAL WALLS

Render shall comprise cement, lime and sand with mix proportion as follows:

- Regular clay or concrete masonry: 1:0.5:4.5 (cement:lime:sand).
- Lightweight concrete masonry: 1:1:6 (cement:lime:sand).

Thickness (minimum): 12mm.

Provide a wood float finish ready to receive adhesive bedded tiles or hard plaster finish.

2.4 INTERNAL HARD PLASTER

Product: CSR Gyprock Hardwall or acceptable equivalent.

Thickness (minimum): 3mm.

Plaster shall be mixed with hydrated lime in accordance with the manufacturer's recommendations.

2.5 BEADS

Provide a PVC-U or stainless steel proprietary bead sections manufactured for fixing to substrates and/or embedding in the plaster to form and protect plaster edges and junctions.

2.6 CONTROL JOINTS

Provide movement joints to render to coincide with structural movement joints in the substrate or at changes in the substrate.

Confirm the location of joints, with the Superintendent, prior to application of render.

Movement joints shall be formed using proprietary PVC or stainless steel joint beads to suit the render thickness.

Galvanised steel beads may be used for internal applications in lieu of stainless steel.

3 EXECUTION

3.1 SUBSTRATE

Provide substrates as follows:

- Clean and free from any deposit or finish which may impair adhesion of render.
- If framed or discontinuous, support members in full lengths without splicing.
- If solid or continuous, remove excessive projections and fill voids and hollows with render stronger than the first coat and not weaker than the substrate.

If suction is excessive, control it by dampening but avoid over-wetting and do not render substrates showing surface moisture.

If the substrate is not sufficiently true to ensure conformity with the thickness limits for the render system, or has excessively uneven suction resulting from variations in the composition of the substrate, apply additional coats without exceeding the thickness limits for the substrate or system.

3.2 BEADS

Fix beads as follows:

- Angle beads: At all external corners.
- Drip beads: At all lower terminations of external render.
- Beads for control of movement: At all control joints.
- Stop beads: At all terminations of render and junctions with other materials or render systems.

Provide dowels in joints to maintain alignment.

Mechanically fix beads to substrate at maximum 300mm centres.

3.3 BONDING TREATMENT

If bonding treatment is required, apply a wet mix onto the background as follows:

- Cement render: 1 part cement to 2 parts sand.
- Gypsum plaster: 1 part gypsum to 2 parts sand.

Keep continuously moist for 5 days or more and allow to dry before applying plaster coats.

Thickness: 3mm to 6mm.

3.4 EMBEDDED ITEMS

Water pipes and other embedded items shall be sheathed to permit thermal movement.

3.5 APPLICATION

Return render into reveals, beads, sills, recesses and niches. Render faces, ends, and soffits of projections in the substrate, such as string courses, sills, pilasters and corbels. Run neatly finished throating on soffits of external projections. Trim around openings.

3.6 JOINING UP

If joining up of render is required, ensure joints are imperceptible in the finished work after decoration.

3.7 WEEP HOLES

Keep opening free of plaster. Maintain consistent opening size.

3.8 CONTROL JOINTS

Provide joints in the finish to coincide with control joints in the substrate. Ensure that the joint in the substrate is not bridged during rendering.

Size:

- Depth: Extend the joint through the render, to the substrate.
- Width: 3mm, or the same width as the substrate joint, whichever is greater.

Do not continue render across damp-proof courses.

Provide V-joints, cut through the render to the substrate, at the following locations:

- Abutments with metal door frames.
- Abutments with other finishes.

- Junctions between different substrates.

3.9 TEMPERATURE

If the ambient temperature is 10ºC or less or 30ºC or more, ensure that the temperature of mixes, substrates and reinforcement at the time of application are between 5ºC and 35ºC.

3.10 TOLERANCES

Finish plane surfaces within a tolerance of 6mm in 2400mm, determined using a 2400mm straightedge placed anywhere in any direction. Finish corners, angles, edges and curved surfaces within equivalent tolerances.

3.11 COMPLETION

Prevent premature or uneven drying out and protect from the sun and wind.

Keeping moist: If a proprietary curing agent is not used, keep the render moist as follows:

- Base coats and single coat systems: Keep continuously moist for 2 days and allow to dry for 5 days before applying further render coats.
- Finish coats: Keep continuously moist for 2 days.

0612 CEMENTITIOUS TOPPINGS

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0310 Concrete.*
- *0383 Structural sheet flooring.*
- *0411 Waterproofing.*
- *0631 Tiling.*
- *0652 Carpets.*
- *Structural Engineer's documentation.*

1.3 STANDARDS

Admixtures: To AS 1478.1.

Cement: To AS 3972 Type GP.

Slip resistance classification: To AS 4586.

1.4 TOLERANCES

General

Thickness: Deviation from the documented thickness:

- Thickness < 15 mm: ± 2 mm.
- Thickness ≥ 15 < 30 mm: ± 5 mm.
- Thickness ≥ 30 mm: ± 10 mm.

Flatness: Maximum deviations from a straightedge laid in any direction on a plane surface:

- Floors to receive carpet: The maximum deviation under a 3m straight edge shall be 5mm and under a 150mm straight edge shall be 1mm, when laid in any direction.
- Floors specified or scheduled to receive resilient finishes: The maximum deviation under a 2 metre straight edge shall be 4mm and under a 150mm straight edge shall be 1mm, when laid in any direction.
- Floors to be exposed in the finished work: The maximum deviation under a 3m straight edge laid in any direction shall be 6mm.
- All other as-laid floors: The maximum deviation under a 3m straight edge laid in any direction shall be 12mm.
- Rectify non-conforming 'as laid' concrete by suitable procedures, such as levelling compounds or grinding.

2 PRODUCTS

2.1 GENERAL

Coarse aggregate shall be nominal single size less than or equal to 1/3 topping thickness.

Fine aggregate shall be fine, sharp, well-graded sand with a low clay content and free from efflorescing salts.

Provide proprietary products manufactured for bonding cement-based toppings to the substrate.

Water, for mixing, shall be clean and free from any deleterious matter.

2.2 BONDED SCREED

Bonded screed to set downs as necessary.

Product: Ardex A38 Rapid Set Screed Cement or acceptable equivalent.

Substrate shall be primed with a bonding slurry comprising Ardex A51 Primer and Bonding Agent, in accordance with the manufacturer's recommendations, prior to laying screed.

Trowel the surface to a level of finish suitable for the nominated floor finish.

2.3 BONDED SCREEDS (OVER FC SHEET/ PARTICLEBOARD FLOORING)

Bonded screed to set downs formed with fibre cement sheet/ particleboard flooring.

Product: Ardex Arditex NA or acceptable equivalent.

Substrate shall be primed in accordance with the manufacturer's recommendations, prior to laying screed.

Contractor to confirm thickness and falls.

Trowel the surface to a level of finish suitable for the nominated floor finish.

2.4 SELF-LEVELLING SCREEDS

Where the structural slab does not achieve the specified tolerances for flatness and level for the nominated floor finish, the surface shall be rectified using a self-levelling polymer screed.

Product: Ardex A55 Rapid Drying Levelling and Smoothing Compound or acceptable equivalent.

Bonded construction to receive floor finishes.

3 EXECUTION

3.1 PREPARATION

Substrates shall be clean and free from any deposit which may impair adhesion of monolithic or bonded toppings.

Remove excessive projections and fill voids and hollows with a mix not stronger than the substrate or weaker than the topping.

3.2 BONDED TOPPINGS

Prior to laying bonded toppings, roughen hardened concrete substrates by scabbling or the like to remove 2mm of the laitance and expose the aggregate.

Wash the substrate with water and provide a bonding product or treat as follows:

- Keep wet for a minimum of 2 hours.
- Remove surplus water and brush on neat cement or a clean slurry of cement and water.
- Place the topping while the slurry is wet.

3.3 APPLICATION

Spread the mix and compact. Strike off, consolidate and level surfaces to finished levels.

Toppings over 50mm thick:

- Lay in two layers of equal thickness.
- Place a layer of reinforcement between the layers of toppings. Lap reinforcement 200mm and tie. Do not create four way laps.

3.4 TEMPERATURE

Ensure that the temperature of mixes, substrates and reinforcement are not less than 5ºC or greater than 35ºC, at the time of application.

If the ambient shade temperature is greater than 38°C, do not mix topping.

3.5 CONTROL OF MOVEMENT

Provide control joints as follows:

- Over structural control joints.
- To divide complex room plans into rectangles.
- Around the perimeter of the floor.
- At junctions between different substrates.
- To divide large topping finished areas into bays. Spacings shall be 6m x 6m internally and 4m x 4m externally.

Joints shall extend the full depth of the screed to the substrate.

Sealant width: 6mm.

Depth of sealant shall be one half the joint width, or 6mm, whichever is the greater.

3.6 JOINT ACCESSORIES

Provide a corrosion resistant metal weather bar under hinged external doors. Locate under the centres of closed doors.

Finish cementitious toppings at junctions with differing floor finishes with a corrosion resistant metal dividing strip suitably fixed to the substrate, with top edge flush to the finished floor. If changes of floor finish occur at doorways, make the junction directly below the centre of the closed door.

3.7 SLIP-RESISTANT TREATMENT

Where a surface treatment is proposed as the final finish, apply silicon carbide granules after floating and before the topping surface has set and trowel into the surface so that the granules remain exposed.

Application rate: 1 kg/m^2 evenly distributed.

3.8 COMPLETION

Prevent premature or uneven drying out and protect from the sun and wind.

Use a curing product or, as soon as it has set sufficiently, keep the toppings moist by covering with polyethylene film for at least seven days.

0631 TILING

1 GENERAL

1.1 CROSS REFERENCES

Conform to the following:

- *0171 General requirements.*
- *0310 Concrete.*
- *0411 Waterproofing.*
- *0612 Cementitious toppings.*
- *Inspection Test and Conformity Plan (ITCP).*

1.2 STANDARDS

Ceramic tiling: To AS ISO 13006.

Ceramic tiling installation: To AS 3958.1.

Ceramic tile grout and adhesives: To AS ISO 13007.1.

Slip resistance classification: To AS 4586.

Slip resistance measurement of completed installations: To AS 4663.

1.3 SUBMISSIONS

In accordance with Section 0171, provide samples of the following:

- Two tiles of each type.
- Grout tag sample.
- Trial set-out: On horizontal surfaces make a trial set-out for each area.
- Silicone sample.

1.4 TOLERANCES

Tiles shall be manufactured within ±0.5mm of the nominated size.

Installation tolerances: To AS 3958.1.

1.5 WARRANTIES

Prior to practical completion a written warranty shall be submitted for a period equal to or exceeding that nominated in the Warranty Schedule included in Section 0171.

1.6 SLIP RESISTANCE AND SLIP RESISTANCE TESTING

Pedestrian areas shall be stable, safe and minimise the risk of slipping or tripping due to slippery surfaces or misaligned joints. Slip resistances shall comply with the requirements of HB 197 and HB 198.

Provide slip resistance test certificates to confirm that slip resistance values are in accordance with AS 4586 and/ or AS 4663.

Arrange and pay for on-Site slip resistance testing of all types of tiled surfaces that are left exposed in the finished work and in sufficient number to cater for all areas and conditions including ramps, steps, entrances etc. Testing shall be undertaken by a registered testing laboratory. Tests shall include wet pendulum and dry floor friction testing in accordance with AS 4586 and/ or AS 4663.

1.7 INSPECTION

Conduct all testing and inspections as detailed in the relevant ITCP.

2 PRODUCTS

2.1 TILES

Tiles, including grouts, shall be to accepted samples.

2.2 ACCESSORIES

Mitre tiles or use preformed corner angles on external corners.

If available, provide tile accessories such as round edge tiles, step treads and nosings to stairs, landings, and thresholds, skirtings, sills and copings, which match the surrounding tiles, composition, colour and finish.

2.3 ADHESIVES

Do not use PVA based adhesives in wet areas or externally.

2.4 MORTAR BEDDING

Mortar bedding, where used for laying floor tiles, shall be a proprietary epoxy resin based compound.

2.5 GROUT

Cement-based proprietary grout shall be mixed in accordance with the manufacturer's recommendations.

Grout colour shall be selected to match the associated tile colour.

Pigments for coloured grout shall be colourfast fillers compatible with the grout material. For cement-based grouts, provide lime-proof natural or synthetic metallic oxides compatible with cement.

2.6 SEALANT JOINTS

Sealant shall extended through tiles and bedding to base/background. Centre over joints in base/background.

Width: 6mm.

Colour: To match grout joints.

2.7 PREFORMED STRIP/ SECTION MOVEMENT JOINTS

Where required, install preformed expansion joints.

Product: Latham Neoprene X-Pansion Tile Strip or acceptable equivalent.

2.8 STONE SEALER

Thin uniform film of proprietary seal shall be applied to unfinished stone tiles.

3 EXECUTION

3.1 SUBSTRATES

Before tiling, allow at least the following times to elapse (for initial drying out and shrinkage) for these substrates:

- Concrete slabs: 42 days.
- Concrete blockwork: 28 days.
- Toppings on slabs and rendering on masonry: A further 21 days.

3.2 PREPARATION

Substrates shall be clean and free of any deposit or finish which may impair adhesion or location of tiles.

If substrates are framed or discontinuous, support members shall be in full lengths without splicing.

If substrates are solid or continuous:

- Excessive projections shall be removed.
- Voids and hollows with abrupt edges shall be filled with a cement:sand mix not stronger than the substrate or weaker than the bedding.
- Depressions shall be filled with a latex modified cementitious product with feathering eliminated by scabbling the edges.

If suction is excessive, control it by dampening but avoid over-wetting and do not apply mortar bedding to substrates showing surface moisture.

If concrete substrates are not sufficiently rough to provide a mechanical key, roughen by scabbling or the like to remove 3mm of the surface and expose the aggregate, then apply a bonding treatment.

3.3 TILING GENERALLY

Do not use tiles that are chipped, scratched, damaged or have any other physical imperfection.

Fix wall tiles before floor tiles.

Cut tiles neatly to fit around fixtures and fitting and at margins where necessary. Drill holes without damaging tile faces. Cut recesses for fittings such as soap holders. Rub edges smooth without chipping.

Return tiles into sills, reveals and openings. Butt up to returns, frames, fittings, and other finishes. Strike and point up beds where exposed. Remove tile spaces before grouting.

Distribute variations in hue, colour, or pattern uniformly, by mixing tiles or tile batches before laying.

Keep traffic off floors until the bedding has set and attained its working strength.

Finish tiled floors at junctions with differing floor finishes with a corrosion-resistant metal dividing strip fixed to the substrate. If changes of floor finish occur at doorways, make the junction directly below the closed door.

Ventilate the space below fully enclosed baths with at least 2 vermin proofed ventilating tiles.

3.4 SETTING OUT

Set out tiles to give uniform joint widths within the following limits:

- Tile to tile grout joints shall be 2mm ±0.5mm.

- Tile to tile sealant joints shall be 6mm ±1mm.

Set out tiling with joints accurately aligned in both directions and wall tiling joints level and plumb.

Set out tiles from the centre of the floor or wall to be tiled and ensure cut tiles are a half tile or larger.

Position tiles so that holes for fixtures and other penetrations occur at the intersection of horizontal and vertical joints or in the centre of tiles.

Grout joint widths shall be controlled using spacer pegs.

3.5 FALLS AND LEVELS

Grade floor tiling to even and correct falls generally and to floor wastes and elsewhere as required. Make level junctions with walls. If falls are not required, lay level.

Fall, general: 1:100 minimum.

Fall, in bathrooms: 1:80 minimum.

Fall, in shower areas: 1:60 minimum.

3.6 JUNCTIONS WITH OTHER FINISHES

Maintain finished floor level at junctions with other floor finishes. Provide an aluminium L-shaped trim, maximum 3mm thick, at the junction ensuring that floor finishes, on each side, and the top of the trim are finished at the same height.

3.7 BEDDING

Use bedding methods and materials which are appropriate to the tile, the substrate, the conditions of service, and which leave the tile firmly and solidly bedded in the bedding material and adhered to the substrate.

3.8 GROUTED JOINTS

Commence grouting as soon as practicable after bedding has set. Clean out joints as necessary before grouting.

Fill the joints solid and tool flush. Clean off surplus grout. Wash down when the grout has set. When grout is dry, polish the surface with a clean cloth.

3.9 SEALANT JOINTS

Provide sealant joints finished flush with the tile surface, as follows:

- Where tiling is cut around sanitary fixtures.
- At corners of walls in showers.
- Around fixtures interrupting the tile surface, for example pipes, brackets, bolts and nibs.
- At junctions with elements such as window and door frames and built-in cupboards.

Sealant shall be anti-fungal modified, polyurethane silicone.

Width: 5mm.

Depth shall be equal to the tile thickness.

0652 CARPETS

1 GENERAL

1.1 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*
- *0310 Concrete.*
- *0383 Structural sheet flooring.*
- *0411 Waterproofing.*
- *0612 Cementitious toppings.*

1.2 STANDARDS

Carpet installation: To AS/NZS 2455.1.

Soft underlays: To AS 4288.

Tolerances: To AS/NZS 1385.

1.3 SAMPLES

In accordance with Section 0171, provide samples of the following:

- 300mm x 300mm sample of each type of carpet.
- 300mm sample of each type of linear accessory.

1.4 WARRANTY

Prior to practical completion a written warranty shall be submitted for a period equal to or exceeding that nominated in the Warranty Schedule included in Section 0171.

1.5 INSPECTION

Give notice so that inspection may be made of the following:

- Each batch of material upon delivery on site.
- Substrate immediately before fixing underlay.
- Fixings, edge strips, and underlay installed ready to lay carpet.
- Completed carpet after cleaning and before covering for protection.

2 PRODUCTS

2.1 CARPET

Carpet shall be to accepted samples.

Minimum five star rating (residential) as set out the Australian Carpet Classification System (ACCS).

2.2 UNDERLAY

Minimum 7.5mm thick for rubber, 9mm thick for foam.

2.3 HOT-MELT ADHESIVE TAPE

Glass fibre and cotton thermoplastic adhesive coated tape 60mm wide on a 90mm wide metal foil base and backed with silicon-coated release paper.

2.4 PREFORMED GRIPPER STRIPS

Domestic grade plywood carpet gripper strip with 3 rows of rust-resistant angled pins of length appropriate to the carpet type.

3 EXECUTION

3.1 SUBSTRATE PREPARATION GENERALLY

Remove oil, grease, loose material, dust and other contaminants.

Remove all projections as necessary and rectify floors not meeting the nominated flatness criteria for the appropriate substrate.

Remove door stops and other fixtures, and refix in position undamaged on completion of the installation.

3.2 CONCRETE SUBSTRATE PREPARATION

Do not commence installation unless the moisture content of the concrete has been tested tested to AS/NZS 2455.1 Appendix B and values in AS/NZS 2455.1 clause 2.4.2(c) have been obtained.

Mechanically remove the following surface treatments:

- Sealers and hardeners.
- Curing compounds.

Solvent based spray paint and markers shall not be used on substrates during construction.

3.3 TIMBER SUBSTRATE PREPARATION

Do not commence installation unless the moisture content of battens/joists or plywood substrates have been tested to AS/NZS 1080.1 for timber and AS/NZS 2098.1 for plywood and values obtained as follows:

- Air conditioned buildings: 8% to 10%.
- Intermittently heated buildings: 10% to 12.5%.
- Unheated buildings: 12% to 15%.

3.4 LAYING CARPET

Lay the carpet in continuous lengths without cross joins in the body of the area. If unavoidable, cross joins at doorways and make joins directly below the closed doors.

Ensure joints in underlay do not coincide with carpet joints. Do not carry underlay over carpet grippers or edge strips.

Seaming methods:

- Woven carpet: Machine or hand sew.
- Tufted carpet: Provide hot-melt adhesive tapes.

Carpet shall be fixed at perimeters with gripper strips to AS/NZS 2455.1 clause 3.5.

3.5 LAYING CARPET ON STAIRS

Carpet shall be laid to stairs using the direct stick method to AS/NZS 2455.1 clause 3.10.

3.6 JUNCTIONS WITH OTHER FINISHES

Unless detailed otherwise, junctions with other floor finishes shall occur at doorways and be centred on the door when in the closed position.

Maintain the finished floor level at junctions with other floor finishes. Diminishing strips at changes in floor finishes will not be accepted. Provide an aluminium L-shaped trim, maximum 3mm thick, at the junction ensuring that floor finishes, on each side, and the top of the trim are finished at the same height.

3.7 COMPLETION

Progressively clean the work. Remove waste, excess materials and adhesive.

When the installation is complete, clean the carpet as necessary to remove extraneous matter, marks and soiling and to lift the pile where appropriate.

Provide fabric drop sheets. Do not use plastic sheeting. If wheeled traffic is to follow carpet installation, protect with hardboard sheets butted and fixed with adhesive tape.

0671 PAINTING

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The atmospheric corrosivity category for the site shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

Conform to the following:

- *0171 General requirements.*
- *Inspection Test and Conformity Plan (ITCP).*

1.3 STANDARDS

Painting generally: To the recommendations of those parts of AS/NZS 2311 which are referenced in this worksection.

1.4 SUBMISSIONS

In accordance with Section 0171, provide samples of the following:

- 300mm x 300mm sample of each paint type and colour on a representative substrate.
- Provide two samples for each paint colour for final selection.

1.5 WARRANTIES

Prior to practical completion a written warranty shall be submitted for a period equal to or exceeding that nominated in the Warranty Schedule included in Section 0171.

1.6 INSPECTION

Conduct all testing and inspections as detailed in the relevant ITCP.

2 PRODUCTS

2.1 PAINTS GENERALLY

Do not combine paints from different manufacturers in a paint system.

Where putties, fillers and sealants are used on substrates, only use those recommended by the paint manufacturer as suitable for the substrate and compatible with the primer.

Deliver paints to the site in the manufacturer's labelled and unopened containers, do not mix on site.

Provide only products which are colour tinted by the manufacturer or supplier, from a recognised colour palette and as per the colour schedule approved for the contract.

2.2 PROTECTIVE COATING TO EXPOSED STEELWORK

Product: Dulux Protective Coatings or acceptable equivalent.

Surfaces:

- Exposed structural steel.

Preparation: Abrasive blast finish to AS 1627.4 Class 2.5

Coatings:

- Initial coat: Zincanode 402.
- Intermediate coat: Duremax GPE.
- Finishing coat: Weathermax HBR polyurethane.

System DFT: In accordance with AS/NZS 2312.1 and the paint manufacturer's recommendations, to suit the corrosivity category of the Site.

2.3 INTERIOR ACRYLIC PAINT - FLAT

Product: Dulux Wash & Wear Flat or acceptable equivalent.

Surfaces:

- Plasterboard/ fibre cement sheet lined ceilings.

Coatings:

- Primer: Dulux Prepcoat Acrylic Sealer Undercoat.
- Finishing coats: Two coats of Dulux Wash & Wear Flat.

System DFT: 80 microns.

To wet areas, apply Dulux Wash & Wear Kitchen & Bathroom Low Sheen Acrylic in lieu of the Wash & Wear Flat top coats.

2.4 INTERIOR ACRYLIC PAINT - LOW SHEEN

Product: Dulux Wash & Wear Low Sheen or acceptable equivalent.

Surfaces:

- Plasterboard/ fibre cement sheet lined walls.
- Internal hard plasterboard walls.

Coatings:

- Primer: Dulux Prepcoat Acrylic Sealer Undercoat.
- Finishing coats: Two coats of Dulux Wash & Wear Low Sheen.

System DFT: 80 microns.

To wet areas, apply Dulux Wash & Wear Kitchen & Bathroom Low Sheen Acrylic in lieu of the Wash & Wear Low Sheen top coats.

2.5 TIMBER SEALER

Product: Dulux Intergrain UltraClear Interior Gloss or acceptable equivalent.

Surfaces:

- Internal timber handrails.

Coatings: Two coats of UltraClear.

System DFT: 40 microns.

2.6 INTERIOR ACRYLIC ENAMEL PAINT – SEMI GLOSS/ GLOSS

Product: Dulux Aquanamel Gloss or acceptable equivalent.

Surfaces:

- Internal timber doors.
- Internal timber door frames.
- Internal timber trims.

Coatings:

- Primer: Dulux 1 Step Oil Based Primer Sealer Undercoat applied off-site to bare natural timber to prevent tannin leaching.
- Finishing coats: Two coats Dulux Aquanamel Gloss.

System DFT: 90 microns.

2.7 EXTERIOR ACRYLIC PAINT – LOW SHEEN

Product: Dulux Weathershield or acceptable equivalent.

Surfaces:

- External fibre cement sheet cladding, if not prefinished.
- External weatherboard cladding.
- External rendered walls.

Coatings:

- Primer: Dulux Professional Total Prep acrylic primer sealer undercoat.
- Finishing coats: Two coats of Dulux Weathershield Low Sheen.

System DFT: 80 microns.

2.8 EXTERIOR ACRYLIC PAINT – SEMI GLOSS/ GLOSS

Product: Dulux Weathershield Semi Gloss/ Gloss or acceptable equivalent.

Surfaces:

- External timber doors.
- External timber door frames.

Coatings:

- Primer: Dulux 1 Step Oil Based Primer Sealer Undercoat applied off-site to bare natural timber to prevent tannin leaching.
- Finishing coats: Two coats of Dulux Weathershield Semi Gloss/ Gloss.

System DFT: 90 microns.

2.9 ACRYLIC ENAMEL PAINT TO INTERNAL METALWORK – SEMI GLOSS/ GLOSS

Product Dulux Aquanamel Gloss or acceptable equivalent.

Surfaces:

- Internal galvanised steel handrails and balustrades.
- Internal galvanised steel door frames.
- Internal galvanised steel faced doors.

Coatings:

- Primer: One coat of Dulux Professional Galvanised Iron Primer.
- Finishing coats: Two coats of Dulux Aquanamel Semi Gloss/ Gloss.

System DFT: 70 microns.

2.10 ACRYLIC ENAMEL PAINT TO EXTERNAL METALWORK – SEMI GLOSS/ GLOSS

Product: Dulux Weathershield or acceptable equivalent.

Surfaces:

- External galvanised steel handrails and balustrades.
- External galvanised steel door frames.
- External galvanised steel faced doors.

Coatings:

- Primer: One coat of Dulux Professional Galvanised Iron Primer.
- Finishing coat: Two coats of Dulux Weathershield Semi Gloss/ Gloss.

System DFT: 80 microns.

2.11 CONCRETE/ PAVING/ STONE FLOOR SEALER

Product: Dry-Treat Stain-Proof or acceptable equivalent.

Surfaces:

- Exposed concrete floors.
- Concrete pavements.
- Unfinished stone tiling.
- Paving.

Coatings: Two coats.

Sealer shall not alter the natural appearance of the substrate.

3 EXECUTION

3.1 PREPARATION

Before painting, complete the work of other trades as far as practicable within the area to be painted, except for installation of fittings and laying flooring materials.

Complete application of clear finishes before commencing opaque paint finishes in the same area.

Before painting, clean the area and protect it against dust entry. Use drop sheets and masking to protect finished surfaces or other surfaces at risk of damage during painting.

Remove door furniture, switch plates, light fittings and other fixtures before starting to paint, and refix in position on completion of painting.

Protect adjacent finished surfaces liable to damage from painting operations.

Place notices conspicuously and do not remove them until the paint is dry.

Clean off marks, paint spots and stains progressively and restore damaged surfaces to their original condition. Touch up new damaged decorative paintwork or misses with the paint batch used in the original application.

3.2 SUBSTRATES

Prepare substrates to receive the painting systems.

Clean down the substrate surface. Do not cause undue damage to the substrate or damage to, or contamination of, the surroundings.

Fill cracks and holes with fillers, sealants, putties or grouting cements as appropriate for the finishing system and substrate, and sand smooth.

Where fillers are used to surfaces to receive clear finishes, provide filler tinted to match the substrate.

Prepare timber surfaces to receive clear finishes so that its attributes will show through the clear finish without blemishes, by methods which may involve the following:

- Removal of discolourations, including staining by oil, grease and nailheads.
- Bleaching where necessary to match the timber colour sample.
- Puttying.
- Fine sanding (last abrasive no coarser than 220 grit) to show no scratches across the grain.

Rendered surfaces need to be sanded down and prepared in accordance to AS/NZS 2311.

Previously painted surfaces shall be prepared in accordance with AS/NZS 2311 clause 7.4, AS/NZS 2311 clause 7.5, AS/NZS 2312 Section 10 and AS 1627.1.

3.3 PAINTING

Paint systems are to be a minimum of primer/ undercoat and two coats.

Painting to be applied in accordance with the manufacturers recommendations and to achieve the nominated dry film thickness.

Painting shall be performed under light levels ≥ 400 lux.

Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Apply subsequent coats after the manufacturer's recommended drying period has elapsed.

3.4 PRIMING TIMBER BEFORE FIXING

Apply one coat of wood primer (two coats to end grain) to the back of the following before fixing in position:

- External fascia boards.
- Timber door and window frames.
- Tops and bottoms of external doors.
- Associated trims and glazing beads.
- Timber board cladding.

3.5 SPRAYING

If the paint application is by spraying, use conventional or airless equipment which does the following:

- Satisfactorily atomises the paint being applied.
- Does not require the paint to be thinned beyond the maximum amount recommended by the manufacturer.
- Does not introduce oil, water or other contaminants into the applied paint.

Paint with known health hazards will not be permitted on site.

Where paint is applied by spraying, the top coat shall be 'back-rolled'.

3.6 REPAIR OF GALVANIZING

For galvanized surfaces which have been subsequently welded, prime the affected area with an organic zinc rich coating for the protection of steel to AS/NZS 3750.9 Type 2.

3.7 TINTING

Tint each coat of an opaque coating system so that each has a noticeably different tint from the preceding coat, except for top coats in systems with more than one top coat.

3.8 SERVICES

If not embedded, paint new services and equipment, except chromium, anodised aluminium, GRP, UPVC, stainless steel, non-metallic flexible materials and normally lubricated machined surfaces. Repaint proprietary items only if damaged.

3.9 TOUCHING UP

Where paint finishes are required to be touched up, the touched up area shall not be visible under natural reflective light.

0673 POWDER COATINGS

1 GENERAL

1.1 SELECTION CRITERIA

The Contractor shall determine the following, to select the correct materials and components appropriate for use on the site:

- The climate zone, for the site, shall be determined in accordance with the BCA.
- The atmospheric corrosivity category, for the site, shall be determined in accordance with AS/NZS 2312.1.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements.*

1.3 STANDARDS

Application to aluminium and aluminium alloy substrates for architectural applications: To AS 3715.

Application to metal substrates other than aluminium for architectural applications: To AS 4506.

1.4 SAMPLES

In accordance with Section 0171, provide samples of the following:

- 300mm x 300mm sample of each powder coat type and colour on a representative substrate.

2 PRODUCTS

2.1 POWDER COATING GENERALLY

Powder coating systems shall be to accepted samples.

3 EXECUTION

3.1 PREPARATION

Power coating to aluminium: To AS 3715 Appendix G.

Power coating to metals, other than aluminium: To AS 4506 Appendix I.

3.2 CLEANING

Completed assembly: Clean to AS 3715 Appendix C.

3.3 WARRANTY

Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the supplier and the installer.

Form: Against failure of materials and execution under the normal environment and use conditions anticipated for the site.

- Period: Minimum 15 years or to suit the corrosivity category for the site.

APPENDIX

Inspection Test and Conformity Plans

DHA
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Inspection Test & Conformity Plan

Concrete

ITP Title	**Concrete** **Specification Reference: Section 0310**			**Date**	
UPRN Code		**Project Name**		**Project Location**	
Lot Number					
Contractor				**Subcontractor**	
Principle Authority	**Defence Housing Australia**				
CONCRETOR	**Strength of Concrete and slump to inserted (include any additives)**			**Areas Being Warranted:**	

All work is to be carried out in accordance with the Specification and the requirements set out below.

Item	Inspection & Test Activity	Verification Method	Inspection / Test Completed By	Acceptance Criteria	Date	Signature
	PRIOR TO ANY WORK COMMENCING					
1.	The Concretor has accepted the work areas. The work area is clean, steel reinforcement is in place, formwork is secure, and all required service penetrations are located and have been installed. All termite collars (where appropriate) are installed.	Visual	Engineer, Contractor and Subcontractor	Engineers Certificates and Contractors agreement for pouring the concrete.		
2.	The correct concrete strength and slump has been used.	Concrete Docket for Concrete used.	Contractor and Subcontractor	AS3600 Section 17.1.6		
	DURING THE CONCRETE POUR					
3.	Confirmation is given that during the concrete pour: • No concrete segregated; • Concrete was laid in layers no greater than 300mm; • Concrete was appropriately vibrated; • Reinforcement, sleeves and other items were not disturbed pour; • The vibrator did not touch any formwork; • The concrete was not over vibrated.	Visual	Engineer, Contractor and Subcontractor	Confirmation by the Contractor; AS3600 – Section 17.1.3 and 17.1.4		
4.	The appropriate surface finish to the concrete was applied.	Visual	Contractor and Subcontractor	Refer to the Specification requirements.		
	AFTER THE CONCRETE POUR					
5.	The correct method of curing has been applied.	Visual	Contractor and Subcontractor	AS3600 – Section 17.1.5.1		
6.	The concrete slab and or area meets the contract requirements for dimensions, grade and or size/location.	**Attach Survey demonstrating slab is level and meets dimensional requirements.**	Contractor and Subcontractor	AS3600 – Section 17.5, in particular 17.5.2.3 and 17.5.2.4		
7.	The concrete test results after 28 days have been provided.	**Test Results Certification**	Contractor and Subcontractor	AS3600 Section 17.1.6		

The Contractor warrants that the matters listed above have been carried out and checked for conformity with the specification and the relevant Australian Standards.

Warranted By	*Name*	*Position*	*Date*

The Survey and Certificates are attached to this Inspection Test & Conformity Plan.

DHA
Defence Housing Australia

Inspection Test & Conformity Plan

Masonry Construction

ITP Title	**Masonry Construction** **Specification Reference: Section 0331**			**Date**	
UPRN Code		**Project Name**		**Project Location**	
Lot Number					
Contractor				**Subcontractor**	
Principle Authority	**Defence Housing Australia**				
BRICKLAYER	**Types of bricks to be used**			**Areas Being Warranted:**	

All work is to be carried out in accordance with the Specification set out below.

Item	Inspection & Test Activity	Verification Method	Inspection / Test Completed By	Acceptance Criteria	Date	Signage
	PRIOR TO ANY WORK COMMENCING					
1.	The sample panels for brickwork have been constructed and approved.	Visual	Contractor, Subcontractor and DHA	AS3700 – Section 12.5 Tolerances in Masonry		
2.	The Bricklayer has accepted the work areas.	Visual	Contractor and Subcontractor	AS3700 – Section 12.4.1		
	DURING THE BRICKLAYING PROCESS					
3.	The brickwork has been set out correctly.	Visual/ Measurement	Contractor and Subcontractor	Contract Plan dimensions; and AS3700 – Section 12.5 Tolerances in Masonry.		
4.	The appropriate flashings/DPC has been inserted and installed.	Visual	Contractor and Subcontractor	AS3700 – Section 12.4.16 BCA – Volume 2 - Part 3.3		
5.	The appropriate wall ties have been installed.	Visual	Contractor and Subcontractor	AS3700 – Section 12.4.7 BCA – Volume 2 - Part 3.3		
6.	The correct metal lintels have been installed.	Visual	Contractor and Subcontractor	AS3700 – Section 12.4.7 and 12.4.17 BCA – Volume 2 - Part 3.3		
7.	All weep holes have been installed as required and are clean.	Visual	Contractor and Subcontractor	AS3700 – Section 12.4.14 BCA – Volume 2 - Part 3.3		
8.	All vertical masonry control joints have been installed as required.	Visual	Contractor and Subcontractor	AS3700 – Section 12.4.3 Contract Plans BCA – Volume 2 - Part 3.3		
9.	Clean out bricks have been accommodated to allow daily cleaning of the masonry cavity.	Visual	Contractor and Subcontractor	AS3700 – Section 12.4.13		
10.	The mortar has been tested to determine the mortar composition	Testing Certificate	Contractor and Subcontractor	AS3700 – Section 12.6.4		
11.	The brickwork has been installed within tolerances and in accordance with the sample panels erected.	Visual/ Measurement	Contractor and Subcontractor	AS3700 – Section 12.5 BCA – Volume 2 - Part 3.3		
	AFTER THE BRICKLAYING PROCESS					
12.	All Face bricks have been cleaned appropriately ensuring that no mortar joints are "blown".	Visual	Contractor and Subcontractor	Specification 0331, Section X.XX AS3700 – Section 12.10 BCA – Volume 2 – Part 3.3		

The Contractor warrants that the matters listed above have been carried out and checked for conformity with the specification, the relevant Australian Standards and the Building Code of Australia.

Warranted By	*Name*	*Position*	*Date*

The required Certificate is attached to this Inspection Test & Conformity Plan.

DHA
Defence Housing Australia

Inspection Test & Conformity Plan

Waterproofing

ITP Title	**Waterproofing** **Specification Reference: Section 0411**			**Date**	
UPRN Code		**Project Name**		**Project Location**	
Lot Number					
Contractor				**Subcontractor**	
Principle Authority	**Defence Housing Australia**				
MEMBRANE	**Insert Membrane System Selected/Manufacturer**			**Area Being Warranted:**	

All work is to be carried out in accordance with the Specification and the requirements set out below.

Item	Inspection & Test Activity	Verification Method	Inspection / Test Completed By	Acceptance Criteria	Date	Signature
	PRIOR TO ANY WORK COMMENCING					
1.	The waterproofer has accepted the work area substrate and surfaces and ensured it is clean and free of deposit.	Visual	Contractor and Subcontractor	Clean surface free from deposit as per Manufacturer's requirements		
	PRIOR TO APPLICATION OF THE MEMBRANE					
2.	The appropriate waterproofing flanges have been used for all services penetrations.	Visual	Contractor and Subcontractor	BCA Volume 2; Part 3.8.1.2 and AS3740, Section 3.10, 3.14		
3.	The surface has been primed in accordance with the manufacturers recommendation.	Visual	Contractor and Subcontractor	As per Manufactures recommendation and requirements		
4.	The surfaces have been primed, bond breakers provided at all wall and floor, hob and wall junctions and at control joints where the membrane is bonded to the substrate.	Visual	Contractor and Subcontractor	As per the manufacturers recommendation. AS3740, Sections 3.12, 3.13, 3.15 BCA Volume 2 Part 3.8.1.2		
5	All metal water stop angles have been installed at doorways and shower recesses and properly secured.	Visual	Contractor and Subcontractor	AS3740, Sections 3.12, 3.13, 3.17, 3.18 BCA Volume 2 Part 3.8.1.2		
6	All wall and floor junctions have been waterproofed as required.	Visual	Contractor and Subcontractor	As per the manufacturers recommendation. AS3740, Section 3.9 BCA 3.8.1.2		
7	The floor has been fully membraned as required.	Visual	Contractor and Subcontractor	As per the manufacturers recommendation. AS3740, Section 3 BCA 3.8.1.2		
	AFTER LAYING OF THE MEMBRANE					
8.	Recorded DFT thickness of membrane after application.	**INSERT DFT in mm**	Contractor and Subcontractor	As per Manufactures recommendation and requirements		
9.	The waterproofing membrane has been fully cured as per the manufacturers installation requirements.	Visual	Contractor and Subcontractor	As per Manufacturers recommendation and requirements		
10.	The waterproofing membrane has been turned down into the floor waste drainage flanges and adhered to form a waterproofing connection.	Visual	Contractor and Subcontractor	As per Manufacturers recommendation and requirements BCA Volume 2; Part 3.8.1.2 and AS3740, Section 3.10, 3.14		
11.	All metal angles at the doorways and at the shower recesses have been appropriately waterproofed.	Visual	Contractor	AS3740, Sections 3.12, 3.13, 3.17, 3.18 BCA Volume 2 Part 3.8.1.2		
12.	A water test for the wet areas has been conducted.	Visual **HOLD POINT**	Contractor and Subcontractor (DHA may attend the test at their discretion)	Retain water for 24hrs and then conduct a visual inspection of the wet area and adjoining areas to identify any leaks/failures in the membrane.		

The Contractor warrants that the matters listed above have been carried out and checked for conformity with the specification, manufacturers installation requirements, the relevant Australian Standards and the Building Code of Australia.

The Manufacturers brochures are attached to this Inspection Test & Conformity Plan.

Warranted By	*Name*	*Position*	*Date*

DHA
Defence Housing Australia

Inspection Test & Conformity Plan
Tiling

ITP Title	**Tiling** **Specification Reference: Section 0631**			**Date**	
UPRN Code		**Project Name**		**Project Location**	
Lot Number					
Contractor				**Subcontractor**	
Principle Authority	**Defence Housing Australia**				
TILES & ADHESIVES	**Insert tiles selected and adhesive system. Include manufacturers material on adhesives.**			**Area Being Warranted:**	

All work is to be carried out in accordance with the specification and the requirements set out below.

Item	Inspection & Test Activity	Verification Method	Inspection / Test Completed By	Acceptance Criteria	Date	Signed
	PRIOR TO ANY WORK COMMENCING					
1.	The tiler has accepted that the work area substrate and its surfaces. It was clean and free of any deposit.	Visual	Contractor and Subcontractor	Clean surface free from deposit as per Manufacturer requirements		
	PRIOR TO APPLICATION OF THE LAYING OF TILES					
2.	The substrate was checked as to its cleanliness, evenness and being level.	Visual/measurement	Contractor and Subcontractor	AS3958.1, Section 5.4.1		
3.	The set out of the tiles was established to locate and determine the correct falls, joint locations and the minimisation of any cut tiles.	Visual/measurement	Contractor and Subcontractor	AS3958.1 Section 5.4.2, 5.4.3 and 5.4.5		
4.	The mortar screed has been laid to correct levels.	Visual/measurement	Contractor and Subcontractor	AS3958.1 Appendix A – Non-Proprietary Screeds		
5	The tiles are to be installed have been checked for dimensional acceptance.	Visual/measurement	Contractor and Subcontractor	AS3958.1 Section 2.2; AS4662;		
6	The appropriate metal angles have been installed	Visual	Contractor and Subcontractor	AS3958.1 Section 5		
	AFTER LAYING OF THE TILES					
7	A manufacturer approved tile adhesive, compatible with the waterproof membrane laid, has been used to secure the tiles. The adhesive manufacturers procedures have been adopted and implemented.	Visual	Contractor and Subcontractor	As per Manufacturers recommendations and requirements.		
8.	The tiles have been laid to the appropriate falls.	Measurement	Contractor and Subcontractor	Refer to the Specification section on Tiling.		
9.	The tiles have been laid to the tolerances specified for lipping, out of level and joint thickness.	Measurement	Contractor and Subcontractor	AS3985.1 Section 5.4.6		
10.	The tiles have been laid with sufficient bonding to eliminate any drumminess.	Tap testing	Contractor and Subcontractor	AS3985.1 Section 5.4.7 (Generally) AS3958.1 Section 5.6.4 for Adhesive Coverage and Distribution		
11.	A water test has been conducted for all wet area tiling, including balconies on completion.	Visual **HOLD POINT**	Contractor and Subcontractor (DHA may attend the test at their discretion)	Pour sufficient water on the tiled surface to demonstrate that water grades to the floor waste as required and to ensure that no water remains causing unacceptable ponding (refer AS3985.1 Appendix D – Fall in Floor Finishes, item D1).		

The Contractor warrants that the matters listed above have been carried out and checked for conformity with the specification, manufacturers installation requirements, the relevant Australian Standards.

Warranted By	*Name*	*Position*	*Date*

The Manufacturers brochure is to this Inspection Test & Conformity Plan.

DHA
Defence Housing Australia

Inspection Test & Conformity Plan

Painting

ITP Title	**Painting** **Specification Reference: Section 0671**			**Date**	
UPRN Code		**Project Name**		**Project Location**	
Lot Number					
Contractor				**Subcontractor**	
Principle Authority	**Defence Housing Australia**				
PAINTING	**Insert Paint used and the Manufacturers brochures relating to the painting system.**			**Areas Being Warranted:**	

All work is to be carried out in accordance with the Specification and the requirements set out below.

Item	Inspection & Test Activity	Verification Method	Inspection / Test Completed By	Acceptance Criteria	Date	Signature
	PRIOR TO ANY WORK COMMENCING					
1.	The Painter has accepted the work areas substrate and surface. It is clean and free of any deposit.	Visual	Contractor and Subcontractor	AS2311 – Section 3 – Preparation of Unpainted Surface; and As per Manufacturer requirements.		
	PRIOR TO APPLICATION OF THE PAINT					
2.	The substrate has been checked as to its cleanliness, evenness and being level.	Visual	Contractor and Subcontractor	AS2311, Section 3 - Preparation of Unpainted Surface and Section 7 for Painted Surfaces; and As per Manufacturers requirements.		
3.	The substrate has been prepared in the appropriate manner.	Visual	Contractor and Subcontractor	AS2311, Section 3 - Preparation of Unpainted Surface and Section 7 for Painted Surfaces; and As per Manufacturers requirements.		
	AFTER THE APPLICATION OF THE PAINT					
4.	The correct paint system has been applied.	Visual	Contractor and Subcontractor	AS2311 – Section 5		
5.	The appropriate number of coats and finish has been applied.	Visual and **insert DFT in mm.**	Contractor and Subcontractor	As per the specifications requirements Painting and the Manufacturers recommendations and requirements.		
6	The painting been carried out with straight and clean lines, even coverage and without blemishes.	Visual	Contractor and Subcontractor	AS2311 – Sections, 6.6, 6.8; and As per the manufacturers requirements.		

The Contractor warrants that the matters listed above have been carried out and checked for conformity with the specification, manufacturers installation requirements, the relevant Australian Standards.

Warranted By	*Name*	*Position*	*Date*

The Manufacturers brochure is attached to this Inspection Test & Conformity Plan.

Property Inclusions

June 2022

Version 4

DHA
Defence Housing Australia

Table of contents

General — 3

Kitchen — 3

Bathroom and ensuite — 4

Water closet — 4

Laundry — 5

Lounge/dining room — 5

Family room — 5

Bedrooms — 5

Interior — 6

Windows and window furnishings — 6

Exterior — 6

Security — 7

Garage — 7

Front yard — 7

Rear yard — 8

Climate control — 9

DHA

This document provides the minimum standards that Defence Housing Australia (DHA) is seeking for design and construction requirements, with the aim to deliver quality housing that is region and climate appropriate.

DHA strives for design functionality, durability, sustainability and whole of life costs for its housing and as such considers the whole of asset life in the tender. Whilst these property inclusions set DHA's minimum standard, this may be exceeded to achieve a higher amenity appropriate to the region.

This is not an exhaustive list of design specifications and any inclusions or features not indicated will be reviewed through the tender.

General

- All approvals and fees associated with construction are to be covered by the builder
- The builder shall be responsible for obtaining all approvals and permits, fees, applications, notices, inspections, approvals in respect to all public and other authorities
  DHA will not be responsible for any fees in relation to the execution of the building works.
- All fixtures and fittings (e.g. taps, towel rails, toilets) to have:
  > Minimum 1-year manufacturer warranty with local service agents and on-site repairs
- Provision for NBN connection, builder to arrange initial connection and pay all associated fees including New Development Charge
- Property design and features are subject to local building covenants
- Keys—all external door and security door locks including internal garage door to be keyed alike

Kitchen

- Functional built-in kitchen with minimum 7 year manufacturer warranty
- Fully lined interior and exterior laminated cabinetry, doors and drawers with 2mm PVC edging
- 20mm thick reconstituted stone benchtop
- Overhead cupboards complete with painted bulkheads and cornice to ceiling
- 1 bank of 4 utensil drawers with cutlery tray to top drawer
- Dedicated microwave cavity, if fitted under bench include a pot drawer below
- Dishwasher cavity to be provided with GPO and hose connection point, minimum 100x100mm cut out to kickboards and base board. No appliance to be provided
- Overmount stainless steel 1 ¾ bowl kitchen sink with drainer and basket wastes

DHA

- Chrome sink mixer
- Choice of stainless steel handles to drawers and doors
- Tiled splashback to kitchen 600mm height minimum
- Pantry with minimum 4 shelves

Appliances

- Rangehood vented externally in accordance with manufacturer requirements
- Under bench minimum 600mm oven
- Minimum 600mm 4-burner/element cook top
- All appliances to have:
  - 2-year installation warranty
  - 2-year manufacturer warranty with local preferred service agents and on-site repairs

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Bathroom and ensuite

- 20mm thick reconstituted stone benchtop with wall hung vanity with choice of stainless-steel handles
- Overmount vitreous china basin with plug and waste
- Chrome basin mixer
- Wall mount bath mixer and spout
- Chrome double towel rail and hand towel ring secured to timber nogging
- Minimum tile height to 2000mm to shower, 500mm over bath and 1 skirting row to the remainder, 1 tile row (200mm) above vanity unit
- Polished edge mirrors to full width of vanities
- Adequate mechanical ventilation to be vented externally
- Standard acrylic bath to main bathroom
- Shower recesses bathroom and ensuite:
  - Chrome shower fixtures with fixed multidirectional shower rose
  - Minimum 900x900mm shower recess
  - Shower screen aluminium framed or semi framed with fixed panel and pivot door in clear laminated glass preferred (subject to floor plan)

Water closet

- Separate toilet to main bathroom:
  - 200mm high skirting tile
  - Adequate mechanical ventilation to be vented externally
  - Chrome toilet roll holders secured to timber nogging
  - Close coupled back to wall toilet pan and cistern, dual-flush

Laundry

- Chrome laundry mixer tap
- Laminated laundry cabinet with stainless-steel tub or stainless-steel laundry cabinet with drop-in tub and basket wastes
- 600mm high ceramic tiling to laundry cabinet/tub splashback
- 200mm high skirting tile
- Adequate mechanical ventilation to be vented externally
- Integrated storage cupboard
- Separate space for washer and dryer

Lounge/dining room

- Required for all properties
- Hard flooring to dining space
- Minimum floor space to fit:
  - Lounge suite appropriate to number of bedrooms
  - Dining suite appropriate to number of bedrooms
  - TV cabinet
  - Coffee table

Family room

- Separate family room required for 4 bedrooms and above
- Minimum floor space to fit:
  - Lounge suite appropriate to number of bedrooms
  - TV cabinet

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DHA

Bedrooms

- Wardrobes with floor to ceiling aluminium framed sliding doors with vinyl wrap, and fully accessible top shelf
- Primary bedroom with minimum floor space to fit:
  - Minimum queen bed
  - 2 bedside tables
  - Tall boy
- Secondary bedrooms with minimum floor space to fit:
  - Minimum single bed with a desk

Interior

- Aluminum framed sliding doors with vinyl wrap to all internal sliding door cupboards
- Wardrobes with floor to ceiling doors and fully accessible top shelf
- Linen cupboard appropriate to the size of the property
- Broom/vacuum cupboard
- 3-coat paint system to all internal finishes (no feature walls)
- Cornice throughout
- Data points located throughout property

Windows and window furnishings

- Powder coated aluminium windows
- Window furnishings to all windows and sliding doors
- Wet area windows to be obscure glass with a venetian blind
- Tropical and sub-tropical climates (i.e. Northern Territory and Queensland) to have permanent window vents to wet areas
- Style to meet regional/community standard

Exterior

- Anti-con roof blanket or sarking to roof (subject to covenants)
- Facade—low maintenance, durable cladding
- Powder coated steel fascia and gutters
- Lockable letterbox to be installed on concrete slab incorporated into driveway
- Painted round PVC downpipes

- 2 external brass taps
- All landscaping to drain away from property to storm-water infrastructure
- Clothesline:
  - Freestanding or attached to main dwelling
  - Adequate to the size of the property
  - Designed to community/regional standard
- Driveway:
  - Sealed, solid concrete all weather driveway
  - Comply with council/estate covenant
- Outdoor entertaining area:
  - Sealed solid concrete all weather flooring
  - Covered roof
  - To accommodate outdoor dining suite appropriate to number of bedrooms
- Hot water system adequate to the size of the property. Instantaneous preferred, or alternatively electric storage

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Security

- Security screen doors to all external doors excluding garage doors
- Security screens to all ground floor and additional storey windows if externally accessible and openable
- Marine-grade stainless steel mesh or perforated aluminum mesh to all street-facing forward of the fence line doors and windows of the property
- Deadlocks to all external doors, including internal access to garage
- Window locks and insect screens to all openable windows not fitted with security screens
- Key patio bolt or dead lock to external sliding glass doors
- Solid core doors to all external doors including internal garage door

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Garage

- Lock up garage (subject to floor plan):
  - Double preferred subject to lot conditions and community standards, or
  - Single with additional storage
- Sectional overhead garage door with remote control unit. Wall mounted remote and 2 handsets to be supplied

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Front yard

- Landscaping:
  - Established turf—regionally appropriate variety
  - Garden bed—regionally appropriate plants
  - Compliant with council/estate covenant

Rear yard

- Enclosed rear yard:
  - Greater Sydney area 25 square meters
  - All other locations 35 square meters
- Fencing:
  - Designed to community/regional standard
  - Gates for access to rear yard where possible
- Landscaping:
  - Established turf—regionally appropriate variety

Climate control

- All heating and cooling appliances to have:
  - 2-year installation warranty
  - 2-year manufacturer warranty with local preferred service agents and on-site repairs

	Adelaide Canberra Riverina Victoria	Adelaide Hills Hunter Newcastle Nowra Southern QLD Sydney	Darwin Tindal Katherine Townsville Cairns	Alice Springs	Perth	Tasmania
Ducted evaporative cooling – whole house	X				X	
Ducted heating	X				X	
Split systems – master bedroom and living room		X		X		
Ceiling fans, all rooms		X	X	X		
Reverse cooling split system air conditioning – whole house				X		X
Refrigerated air conditioning central or split systems – whole house			X			
Other suitable heating				X	X	
Circulation fans under pergola			X	X		

DHA

SCHEDULE C3 TO ANNEXURE PART C
Drawing and Reports - Document Register
Project: 30 Houses @ Academy Close, Campbell, ACT
Date Issued: 11/01/2024

Document Number	Document Description	Author	Revision Number	Date of Revision
1.0 Architectural				
190621_AMC19-012_Academy Close_LOW (004)	Rendering Imagery	AMC / DC3 Creative Imagery	-	
NCA-000	Title page	AMC	4.00	18/05/2020
NCA-001	Location Plan	AMC	4.00	18/05/2020
NCA-002	Site + Context Plan	AMC	6.00	15/05/2020
NCA-002 - Stamped	Site + Context Plan	AMC	8.00	13/07/2020
NCA-003	Shadow diagrams - Winter Solstice	AMC	4.00	18/05/2020
NCA-004	Block Information - Housing Types - Outdoor Areas	AMC	5.00	15/05/2020
NCA-004 - Stamped	Block Information - Housing Types - Outdoor Areas	AMC	5.00	15/05/2020
NCA-005	3D Housing type + Rent Band	AMC	3.00	15/05/2020
NCA-006	Site Plan - Part 1	AMC	4.00	18/05/2020
NCA-006 - Stamped	Site Plan - Part 1	AMC	6.00	13/07/2020
NCA-007	Site Plan - Part 2	AMC	4.00	18/05/2020
NCA-007 - Stamped	Site Plan - Part 2	AMC	5.00	13/07/2020
NCA-008	Site Plan - Part 3	AMC	4.00	18/05/2020
NCA-008 - Stamped	Site Plan - Part 3	AMC	5.00	13/07/2020
NCA-101	House Type 1 - Typical	AMC	8.00	15/05/2020
NCA-102	House Type 2 - Typical	AMC	7.00	14/05/2020
NCA-102 - Stamped	House Type 2 - Typical	AMC	7.00	15/05/2020
NCA-103	House Type 3 - Typical	AMC	7.00	15/05/2020
NCA-103 - Stamped	House Type 3 - Typical	AMC	7.00	15/05/2020
NCA-105	House Type 5 - Typical	AMC	7.00	15/05/2020
NCA-105 - Stamped	House Type 5 - Typical	AMC	7.00	15/05/2020
NCA-107	House Type 7 - Typical	AMC	7.00	15/05/2020
NCA-107 - Stamped	House Type 7	AMC	8.00	13/07/2020
NCA-110	House Type 10 - Block 31	AMC	7.00	15/05/2020
NCA-110 - Stamped	House Type 10 - Block 31	AMC	7.00	15/05/2020
NCA-111	House Type 10 - Block 31	AMC	7.00	15/05/2020
NCA-111 - Stamped	House Type 10 - Block 31	AMC	7.00	15/05/2020
NCA-112	House Type 10 - Perspective	AMC	2.00	4/03/2020
NCA-201	Street Elevations - Block 1-3 + 4-8	AMC	3.00	15/05/2020
NCA-201 - Stamped	Street Elevations - Block 1-3 + 4-8	AMC	3.00	15/05/2020
NCA-202	Street Elevations - Block 8-14 + 18-19	AMC	3.00	15/05/2020
NCA-202 - Stamped	Street Elevations - Block 8-14 + 18-19	AMC	3.00	15/05/2020
NCA-203	Street Elevations - Block 20-23 + 23-29	AMC	3.00	15/05/2020
NCA-203 - Stamped	Street Elevations - Block 20-23 + 23-29	AMC	3.00	15/05/2020
NCA-204	Street Elevations - Block 15-18 + 39-30	AMC	3.00	15/05/2020
NCA-204 - Stamped	Street Elevations - Block 15-18 + 39-30	AMC	3.00	15/05/2020
NCA-205	Street Elevations - House Types	AMC	3.00	15/05/2020
NCA-205 - Stamped	Street Elevations - House Types	AMC	3.00	15/05/2020
NCA-220	Site Section	AMC	2.00	15/05/2020
NCA-300	House Type Perspectives	AMC	3.00	15/05/2020
NCA-900	Materials + Colour Samples	AMC	4.00	15/05/2020
NCA-900 - Stamped	Materials + Colour Samples	AMC	4.00	15/05/2020
NCA-950	3D View From Truscott St Looking South	AMC	1.00	18/05/2020
NCA-951	3D View From Academy Close Looking East	AMC	1.00	18/05/2020
2.0 Landscape		AMC		
(Civil Tender Set)				
3715-D101	Cover & Key Plan	DSB	B	19/11/2020
3715-D102	Legends	DSB	B	9/11/2020
3715-D201	Surface Finishes Plan Area 1	DSB	B	19/11/2020
3715-D202	Surface Finishes Plan Area 2	DSB	A	10/06/2020
3715-D301	Planting Plan Area 1	DSB	C	9/11/2020
3715-D302	Planting Plan Area 2	DSB	B	9/11/2020
3715-D401	Setout Plan Area 1	DSB	B	9/11/2020
3715-D402	Setout Plan Area 2	DSB	A	10/06/2020
3715-D403	Detailed Setout Plan Pocket Parks 1 & 2	DSB	A	10/06/2020
3715-D501	Finish Levels Plan Area 1	DSB	B	19/11/2020
3715-D502	Finish Levels Plan Area 2	DSB	A	10/06/2020
3715-D601	Fence Staging Plan	DSB	A	10/06/2020
3715-D701	Landscape Details	DSB	B	2/07/2020
3715-D702	Landscape Details	DSB	A	2/07/2020
3715-D703	Landscape Details	DSB	A	2/07/2020
(Works Approval Set)		DSB		
3715-F101	Cover & Key Plan	DSB	E	24/07/2020
3715-F101 Stamped	Cover & Key Plan	DSB	E	8/09/2020
3715-F102	Planting List	DSB	C	24/07/2020
3715-F102 Stamped	Planting List	DSB	C	8/09/2020
3715-F201	Overall Landscape Plan Area 0	DSB	J	24/07/2020
3715-F201 Stamped	Overall Landscape Plan Area 1	DSB	D	8/09/2020
3715-F202	Overall Landscape Plan Area 1	DSB	H	24/07/2020

3715-F202 Stamped	Overall Landscape Plan Area 2	DSB	E	8/09/2020
3715-F203	Wall & Fence Layout Plan	DSB	E	24/07/2020
3715-F203 Stamped	Wall & Fence Layout Plan	DSB	E	8/09/2020
3715-F204	House Typology Plan	DSB	B	24/07/2020
3715-F204 Stamped	House Typology Plan	DSB	B	8/09/2020
3715-F301	Typical House Landscape Treatment Type 0	DSB	C	24/07/2020
3715-F301 Stamped	Typical House Landscape Treatment Type 1	DSB	C	8/09/2020
3715-F302	Typical House Landscape Treatment Type 1	DSB	C	24/07/2020
3715-F302 Stamped	Typical House Landscape Treatment Type 2	DSB	C	8/09/2020
3715-F303	Typical House Landscape Treatment Type 2	DSB	C	24/07/2020
3715-F303 Stamped	Typical House Landscape Treatment Type 3	DSB	C	8/09/2020
3715-F304	Typical House Landscape Treatment Type 4	DSB	C	24/07/2020
3715-F304 Stamped	Typical House Landscape Treatment Type 5	DSB	C	8/09/2020
3715-F305	Typical House Landscape Treatment Type 6	DSB	D	24/07/2020
3715-F305 Stamped	Typical House Landscape Treatment Type 7	DSB	D	8/09/2020
3715-F306	Typical House Landscape Treatment Type 9	DSB	C	24/07/2020
3715-F306 Stamped	Typical House Landscape Treatment Type 10	DSB	C	8/09/2020
3715-F401	Landscape Details Softscape	DSB	A	24/07/2020
3715-F401 Stamped	Landscape Details Softscape	DSB	A	8/09/2020
3715-F402	Landscape Details Hardscape	DSB	D	24/07/2020
3715-F402 Stamped	Landscape Details Hardscape	DSB	D	8/09/2020
3715-F403	Landscape Details Hardscape	DSB	A	24/07/2020
3715-F403 Stamped	Landscape Details Hardscape	DSB	A	8/09/2020
3.0 DHA Sketch Plans				
Sketch	Proposed Reduction in Landscaping Works	DHA	-	31/05/2020
DHA_SK_DWEL.01	Single Car Garage Compliant Design Layouts	DHA	A	2/09/2020
DHA_SK_DWEL.02	Bedroom Robe Design	DHA	A	10/09/2020
DHA_SK_DWEL.05	Miscellaneous Details 2	DHA	A	2/09/2020
DHA_SK_DWEL.06	Waterproofing Details	DHA	A	2/09/2020
DHA_SK_Drawing - Addendum 02	Concrete Path Scope of Works Typical Block	DHA	-	3/12/2020
DHA_SK_Drawing - 03 - Addendum 02	Fencing Layout	DHA	-	3/12/2020
DHA_SK_DWEL.XX	House Type 10 - Outdoor Entertaining Area & Formal Dinning	DHA	A	7/06/2021
DHA_SK-01	External Stone walls 1	DHA	A	-
DHA_SK-02	External Stone walls 2	DHA	-	-
DHA_SK-03	Floor Finish Markup 1	DHA	-	-
DHA_SK-04	Floor Finish Markup 2	DHA	-	-
DHA_SK-05	Fire Place Dividing Wall	DHA	-	-
DHA_SK_ACAD.10	Retaining walls scope Civil vs Builder	DHA	B	10/06/2021
4.0 Civil				
(Civil Works)				
CR172699 Transmittal	Drawing Transmittal	Northrop		13/02/2023
C000	Civil Works Cover Sheet, Drawing Index	Northrop	G	10/02/2023
C001	Standard Notes	Northrop	D	10/02/2023
C002	Standard Notes	Northrop	A	10/02/2023
C003	Standard Notes	Northrop	A	10/02/2023
C004	Standard Notes	Northrop	A	10/02/2023
C005	Standard Details	Northrop	D	10/02/2023
C006	Civil Works Retaining Wall Details Sheet 1 of 4	Northrop	H	10/02/2023
C007	Civil Works Retaining Wall Details Sheet 2 of 4	Northrop	F	10/02/2023
C008	Civil Works Retaining Wall Details Sheet 3 of 4	Northrop	G	10/02/2023
C008a	Civil Works Retaining Wall Details Sheet 4 of 4	Northrop	C	10/02/2023
C009	Service Penetration Retaining Wall	Northrop	D	10/02/2023
C010	Concept Erlosion, Sediment and Pollution Control Plan		12.00	10/02/2023
C010A	Concept Erlosion, Sediment and Pollution Control Plan, Details		11.00	10/02/2023
C011	Landscape Management And Protection Plan	Northrop	14.00	10/02/2023
C050	General Arrangement Plan	Northrop	G	10/02/2023
C051	Retaining Wall Plan Sheet 1 of 3	Northrop	I	10/02/2023
C052	Retaining Wall Plan Sheet 2 of 3	Northrop	H	10/02/2023
C053	Retaining Wall Plan Sheet 3 of 3	Northrop	H	10/02/2023
C054	Retaining Wall Section Sheet 1 of 4	Northrop	G	10/02/2023
C055	Retaining Wall Section Sheet 2 of 4	Northrop	F	10/02/2023
C056	Retaining Wall Section Sheet 3 of 4	Northrop	G	10/02/2023
C057	Retaining Wall Section Sheet 4 of 4	Northrop	F	10/02/2023
C070	Existing Services Plan	Northrop	D	10/02/2023
C073	Combined New Services Plan Key Plan Sheet 2 of 4	Northrop	H	10/02/2023
C074	Combined New Services Plan Key Plan Sheet 3 of 4	Northrop	H	10/02/2023
C075	Combined New Services Plan Key Plan Sheet 4 of 4	Northrop	G	10/02/2023
C121	Site Works and Pavement Plan Key Plan Sheet 2 of 4	Northrop	E	10/02/2023
C122	Site Works and Pavement Plan Key Plan Sheet 3 of 4	Northrop	E	10/02/2023
C123	Site Works and Pavement Plan Key Plan Sheet 4 of 4	Northrop	E	10/02/2023
C125	Off Site Works Plan Sheet 1 of 5	Northrop	E	10/02/2023
C126	Off Site WorksPlan Sheet 2 of 5	Northrop	E	10/02/2023
C127	Off Site Works Plan Sheet 3 of 5	Northrop	D	10/02/2023
C128	Off Site WorksPlan Sheet 4 of 5	Northrop	D	10/02/2023
C129	Off Site Works plan sheet 5 of 5	Northrop	E	10/02/2023
C130	Typical Cross Sections Sheet 1 of 2	Northrop	E	10/02/2023
C131	Typical Cross Sections Sheet 2 of 2	Northrop	A	10/02/2023
C140	Long Sections CH:0.00 - CH:280.00	Northrop	E	10/02/2023
C141	Long Sections CH:280.00 - CH:450.993	Northrop	E	10/02/2023
C150	Cross Section CH:00.00 - CH:100.00	Northrop	D	10/02/2023
C151	Cross Section CH:120.00 - CH:220.00	Northrop	D	10/02/2023
C152	Cross Section CH:240.00 - CH:340.00	Northrop	D	10/02/2023
C153	Cross Section CH:360.00 - CH:450.993	Northrop	D	10/02/2023

C161	Stormwater Management Plan Key Plan Sheet 1 of 3	Northrop	K	10/02/2023
C162	Stormwater Management Plan Key Plan Sheet 2 of 3	Northrop	K	10/02/2023
C163	Stormwater Management Plan Key Plan Sheet 3 of 3	Northrop	I	10/02/2023
C165	Stormwater Details Sheet 1 of 2	Northrop	E	10/02/2023
C166	Stormwater Details Sheet 2 of 2	Northrop	E	10/02/2023
C171	Water Plan Key Plan Sheet 1 of 3	Northrop	J	10/02/2023
C172	Water Plan Key Plan Sheet 2 of 3	Northrop	H	10/02/2023
C173	Water Plan Key Plan Sheet 3 of 3	Northrop	G	10/02/2023
C179	New Water Tie and Sewer Tie Long Sections	Northrop	D	10/02/2023
C181	Sewer Plan Key Plan Sheet 2 of 4	Northrop	G	10/02/2023
C182	Sewer Plan Key Plan Sheet 3 of 4	Northrop	L	10/02/2023
C183	Sewer Plan Key Plan Sheet 4 of 4	Northrop	G	10/02/2023
C190	TCD Plan offsite works	Northrop	C	10/02/2023
C241	Permanent Water Main Protection	Northrop	D	10/02/2023
ES01	External Services Plan	Northrop	C	10/02/2023
ES03	External Service Plan water meter detail	Northrop	D	10/02/2023
AYCA-1YRFQF_NBN01	NBN Plan (Approved)	Northrop	2.00	26/06/2020
X-Civil	Civil Xref	Northrop	X	10/02/2023
x-New_Services	x-New_Services	Northrop	X	10/02/2023
Revised Contract BOQ (V5) As tendered	Bill of Quantities including remaining civil works		V5	11/01/2024
CR172699-E001(A).pdf	Approved Electrical Drawings			25/05/2021
CR172699-E002(A).pdf	Approved Electrical Drawings			25/05/2021
CR172699-E003(A).pdf	Approved Electrical Drawings			25/05/2021
(Icon Water)				
Campbell s65 B3 Certificate IW Des ACC	Certificate of Design Acceptance	Icon Water	2.00	23/01/2023
Campbell s65 Plans IWDesACC	Approved Drawings	Icon Water	1.00	23/01/2023
Campbell s65 B3 Temp Works Certificate IWDesACC	Certificate of Design acceptance	Icon Water	1.00	16/09/2021
Campbell s65 B3 Temp Works Plans IWDesACC SK02 and SK04	Aproved Designs Temp Works	Icon Water	Rev 8 & 5	24/08/2021
CR172699-C000 Coversheet	Stamped Plan	Icon Water	C	-
CR172699-C008A	Stamped Plan	Icon Water	B	-
CR172699-C177A	Stamped Plan	Icon Water	1.00	-
CR172699-C177B	Stamped Plan	Icon Water	1.00	-
CR172699-C300	Stamped Plan	Icon Water	1.00	-
CR172699-C301	Stamped Plan	Icon Water	1.00	-
CR172699-C302	Stamped Plan	Icon Water	1.00	-
Icon Water_Construction Managent Plan	Management Plan	Icon Water	3.00	-
Memo Style	Settlement Email from Icon Water	Icon Water	-	-
SLAB-OVER-WM-29-6-22 Layout 1	Temp Slab RL Surveys	Icon Water	-	-
5.0 Authority Approved Drawings				
ICON Water Internal Services Approved Drawings				
Campbell S65 B3 Plans IWDesAcc - pages 1-7		ICON	-	7/09/2022
Campbell S65 B3 Plans IWDesAcc - pages 8-14		ICON	-	7/09/2022
BCA and NCA Civil Works Approved Drawings and Docs				
Certified Plan Set Amdt-B3S65 Cambpell	BCA Internal Services Approved Drawings	BCA	-	
Campbell 3-65 Approved Plan Block info and Housing Types		BCA		15/05/2020
Campbell 3-65 Civil Engineering DrawingsPart-1		BCA	-	8/11/2022
Campbell 3-65 Civil Engineering DrawingsPart-2		BCA	-	8/11/2022
Campbell 3-65 NCA Stamped Plans Landscape		NCA	-	8/09/2020
Campbell 3-65 NCA Stamped PlansPart-1		NCA	-	8/09/2020
Campbell 3-65 NCA Stamped PlansPart-2		NCA	-	8/09/2020
Campbell 3-65 NCA Stamped PlansPart-3		NCA	-	8/09/2020
Campbell 3-65 Site Work Notice		NCA	-	8/11/2022
Campbell 3-65 EPA reference plan		NCA	-	10/02/2023
APZ- Approved Fire Track		NCA		8/09/2020
6.0 Approvals				
B20225006_Building_Approval	Bulk Excavation Civil Works and retaining walls Approval	ACT Gov	-	8/11/2022
Commercial Plumbing and Drainage Registration Form (BCA Internal Services Approval)	Drainage Registration Form	BCA	-	8/11/2022
Campbell 3-65 Approval Letter (Residential)	Bulk Excavation Civil Works and retaining walls Approval	BCA	-	8/11/2022
Landscape Works Approval	Landscape Works Approval (Amendment) Decision-Notice	NCA	-	27/10/2022
Campbell 3-65-Decision Notice	Decision-Notice-NCA Residential Dwellings, Landscaping and Civil Works Approval	NCA		8/09/2020
Campbell 3-65 Letter of Design Review_	LODR	ACT Gov	-	10/12/2020
CR172699_MC100 - Civil Certification	Civil Certification	Northrop	-	25/10/2022
Campbell 3-CLR Electrical	Evo Energy Compliance	NCA	-	1/08/2022
Campbell 3-65 CLR Water	Icon Water Compliance	NCA	-	26/07/2022
Campbell 3-65 Sediment Control EPA	Sediment Erosion Control Email Approval	NCA	-	8/11/2022
Campbell 3-65 Site Work Notice	Notice for site access	Act Gov		8/11/2022
10358 Group One (A32578772)_Renewed	Authorisation of Temporary Traffic Management	Expires 15 January 2023	(To be renewed by contractor)	17/01/2022
7.0 Reports				
Bushfire Report DHA-21.07 (002)	Updated Bushfire Risk Assessment Report	Australian Bushfire Protection Planners	Final	21/07/2020
CLS_3_65_Campbell_DHA_CONTAMINATED LAND SEARCH	Contaminated Land Search	ACT Government	-	7/12/2017
CR172699-EC01-3 Engineering Report Traffic and Par	Traffic and Parking Assessment	Northrop	3.00	14/05/2020
CR172699-EC03 W1 WMP	Waste & Recycling Management Plan Form for Applicants	TCCS	3.00	22/05/2020

CR172699-EC04-1 Civil Engineering Report WSUD - A	Civil Engineering Report - Water Sensitive Urban Design	Northrop	1.00	14/05/2020
DHA Academy Cl WA Planning Report 18052020	Planning Report NCA Works Approval	Purdon Planning	4.00	6/05/2020
Acoustic Report 0272 R01 2	Acoustic Report	Paradigm 42	-	8/03/2019
C9336 - Proposed Residential Development - Block 3 Section 65 Campbell - Geo Investigation	Geotechnical Investigation Report Academy Close	ACT Geotechnical Engineers	1/06/2018	25/06/2018
C11912 Proposed Units Development, Block2, 9 and 10 Section 75, Denman- Feotechnical Investigation &VENM Clearance-2910 Clearance (Email)	Geotech Investigation of imported fill and varification email from VENM	ACT Geotechnical & VENM	9/07/2021 & 27/05/2021	Ref:BO/C11912
Campbell 3-65 Geotech 2 water easement	Icon Water Easement Geo Tech Report	NCA	-	21/11/2018
2785-DHA-AcademyCloseCampbell-EIA-Fin01-20190418	Environmental Impact Assessment	Capital Ecology	V1	19/04/2022
1120_Campbell 3 of 64_Tree Analysis 17-04-2019	Tree Analysis Plan	Enviro Links Design	V1	17/04/2019
2785-DHA-AcademyCloseCampbell-TreeAssessment-Fin01	Tree Habitat Assessment	Capital Ecology	V1	24/05/2018
CR172699_EC05E Dilapidation Report	Dilapidation Report	Northrop	2.00	15/10/2020
Campbell 3-65 Evo Energy Contract – 20008381_signed	Evo Energy Signed Contract	Evo Energy	-	8/11/2022
8.0 DHA Design Guidelines/Specification/Requirements				
Annexure Part A	Contract Requirements			
Attachment 7 - Proprty Attribute Loader-DHA PROC-67082				
Attachment 10- Risk Allocation Outline- DHA –PROC-67082				
Schedule 4b - (dha-specification-itcps_v7-0)	DHA Construction Specification			
Schedule 4c - DHA ITCPs_Extract- V7.0	DHA Construction Specification			
Schedule 4d - builders checklist	DHA Property Checklist			
Schedule 4e - handover proforma				
Property Inclusions Final Version 4	Property Inclusions Register	Latest Provided by DHA Team		1/06/2022
9. Survey				
11586_BP05	Block Plan Proposed House Sites	DWG and PDF Versions		24/02/2023
11586_DC03	Contour Survey	DWG and PDF Versions		24/02/2023
11586_Vol03	Volume Survey	DWG and PDF Versions		
11586_Vol03_HEATMAP	Heat Map volume estimates	DWG and PDF Versions		2/03/2023
10. Inspection & RFI Documents				
Inspection Documents	Sub Base Inspections and RFI Documents			Various
11. Scope of Works				
Scope Of Works PROC-67082	Scope of Works			As per contract
12. Geotechnical				
C11483-Academy Close Subdivision-Subgrade Inspection	Geotechnical Investigations	ACT Geotechnical Engineers	8.7.22	28/02/2023
C11483-Academy Close Subdivision-Fill Material Assessment	Geotechnical Investigations	ACT Geotechnical Engineers	10.5.21	1/03/2023
C11483-Academy Close Subdivision-Material Assessment	Geotechnical Investigations	ACT Geotechnical Engineers	19.1.21	2/03/2023
C11483-Academy Close Subdivision-Material Assessment	Geotechnical Investigations	ACT Geotechnical Engineers	29.1.21	3/03/2023
C11483-Academy Close Subdivision-Material Assessment	Geotechnical Investigations	ACT Geotechnical Engineers	26.2.21	4/03/2023
C11483-Academy Close Subdivision-North Fill Foundation Material Assesment	Geotechnical Investigations	ACT Geotechnical Engineers	21.4.21	5/03/2023
C11483-Academy Close Subdivision-Foundation Inspection	Geotechnical Investigations	ACT Geotechnical Engineers	20.1.22	6/03/2023
C11483-Spec and Test Results	Geotechnical Investigations	ACT Geotechnical Engineers		7/03/2023
C11483-Academy Close Subdivision-Material Assessment of Stripping	Geotechnical Investigations	ACT Geotechnical Engineers	17.3.21	8/03/2023
C11483-Academy Close Subdivision-Current Site Assessment	Geotechnical Investigations	ACT Geotechnical Engineers	6.2.23	9/03/2023

DHA

Schedule C4 to Annexures Part C - Schedule of Inclusions

Note: Additional Items for which supply & installation are to be **allowed for** are listed in the Provisional Sum Items Schedule

<< Blue colour Highlighted rows are relevant to House Type 10 (Block 23) Only

<< Cells unlocked for Builder to input

Item	Requirement	Provisional Sum Item	Supplier/ Manufacturer	Model	Remarks	DHA Comments	Tenderers Comments
Item	Requirement	Provisional Sum Item	Supplier/ Manufacturer	Model	Remarks	DHA Comments	Builder Comments
FOOTPATHS	Type and class						M-Class
	Gates				Gates to match		Standard Timber Paling or Colorbond
Block 23 >>	FEATURE HWD FENCING TO PRIVATE OUTDOOR ENTERTAINING				Merbau hardwood		Included
MASONRY	Exterior bricks details.						PGH: Urban Blue (FB.01)
							PGH: Lightning (FB.02)
	Privacy door set details						Gainsborough Satin Chrome G4 Series Amelia Privacy
ROLLER AND PANEL LIFT DOORS	Nominate either roller or panel lift doors. If automated, provide details.					Allow for 12 doors to have a timber grain look finish. All roller doors must be automated	Standard colorbond finish to x 17 garages and 12 x timber grain doors allowed.
Block 23 >>	SMARTECH FOLDING FAÇADE GARAGE DOOR OR EQUIVALENT					Folding garage door with hardwood timber cladding	Included
WINDOWS/GLAZING SUFFICIENT TO MEET S	Powder coated aluminium frames and insect						Standard Powdercoated double glazed aluminium
	Indicate where obscure glazing used and details.					Obscure glazing to be used in bathrooms & toilets	Indicated
WINDOW HOODS	louvered or equivalent						3mm Aluminium hoods allowed at Max 3 meters height
WINDOW	Blinds (Bedrooms, Living Areas)					Vertical window blinds	Included
	Blinds (Bathrooms, Ensuites, Laundries)					Allow metal blinds only (no plastic)	Included
Block 23 >>	PLANTATION SHUTTERS TO ALL GLAZED					- Please specify if PVC or Timber	Timber
WINDOW & DOOR SECURITY	Crimsafe (or equivalent) security screens to all		Crimsafe or			<< Please specify product you will use	Crimsafe
	All other doors & window					<< Please specify 'diamond grill' style	Diamond Grill
FLOOR & WALL TILES (CERAMIC)	Kitchen/Living floor				300 x 600 mid grey		Supply allowance of $35 Per Square Metre
	Bathroom, ensuite, powder room floors				300 x 300 mid grey		Supply allowance of $35 Per Square Metre
	Bathroom, ensuite, powder room walls				300 x 600 white		Supply allowance of $35 Per Square Metre
	Hall floor				300 x 600 mid grey		Supply allowance of $35 Per Square Metre
	Laundry wall				100 x 300 gloss		Supply allowance of $35 Per Square Metre
	Toilet floor				300 x 300 mid grey		Supply allowance of $35 Per Square Metre
	Laundry floor				300 x 300 mid grey		Supply allowance of $35 Per Square Metre
	Kitchen splashback, nominate ceramic tiles or				100 x 300 gloss		Supply allowance of $35 Per Square Metre
FLOOR & WALL TILES (PORCELAIN) Block 23	FLOOR TILES TO DOWNSTAIRS		Rivoland	Stockwood, Colour:		601 x 600 Porcelain Tiles to main floor -	Supply allowance of $55 Per Square Metre
	BATHROOM, ENSUITES, POWDER ROOM FLOORS					Allow $55.00 incl. GST/m2 (supply) for	Supply allowance of $55 Per Square Metre
	Bathroom & Ensuite Feature Tile					Allow $110.00 incl. GST/m2 (supply)	Supply allowance of $110 Per Square Metre
	HALL FLOOR PORCELAIN FLOOR TILES					600 x 600 Porcelain Tiles to main floor -	Supply allowance of $55 Per Square Metre
	CERAMIC GLAZED WALL TILES FLOOR TO CEILING TO ALL BATHROOMS, ENSUITES, POWDER ROOM AND					300 x 600 Porcelain wall tiles, Allow $55.00/m2 for floor & wall tiles	Supply allowance of $55 Per Square Metre
	CERAMIC GLAZED LAUNDRY WALL FLOOR TO					300 x 600 Porcelain wall tiles, Allow	Supply allowance of $55 Per Square Metre
	TOILET FLOOR					300 x 600 Porcelain wall tiles, Allow	Supply allowance of $55 Per Square Metre
	LAUNDRY FLOOR					300 x 600 Porcelain wall tiles, Allow	Supply allowance of $55 Per Square Metre
	[illegible] KITCHEN, LAUNDRY AND BUTLER'S SPLASHBACK NOMINATE PORCELAIN TILES OR GLASS					* Allow $310/m2 incl GST (Chateau Gris Palito Mur Mosaico' (Beige) by Di Lorenzo Tiles. Approx. say 3 each x 2m x 1m = 6m2 * Price for glass splashback to Kitchen only	Included
	ALL FLOOR WASTES TO BE TILE INSERT OR SMART				Included		Included as part of the PC sum noted in tender letter
TIMBER STAIR	HARDWOOD EXPOSEBED CLOSED RISER				Blackbutt hardwood		Included
INTERNAL PAINTING	Paint Manufacturer		Dulux	N/A		Please specify system to be used.	3 Coat System - Zero VOC, Low-sheen
EXTERNAL PAINTING	Paint Manufacturer		Dulux	N/A		Please specify system to be used.	Inc
CARPET AND UNDERLAY	Provide details including weight, pile height, and Carpets Australian Carpet Classification						Colour TBC, 100% SDN, 40oz Pile Weight, Twist pile carpet
	Indicate if rubber or foam underlay used and						8mm Foam Underlay
Block 23 >>	Indicate if rubber or foam underlay used and						8mm Foam Underlay
KITCHEN EQUIPMENT	Cooktop					Electric Cooktop 90cm	Model: Fisher & Paykel - Code: CE604LBX2
	Overhead range hood with light and exhaust fan					60/mm Undermount Rangehood	Model: Fisher & Paykel - Code: HP60CSX3
	multi function programmable electric oven					Oven, 60cm, 8 Function/	Model: Fisher & Paykel - Code: OB60SC8LEB1
KITCHEN EQUIPMENT - BLOCK 23							
	Cooktop					Change to 900mm cooktop higher end	Model: Miele - Code: KM7684
	Rangehood					Change to 900mm rangehood - slimline	Model: Miele - Code: DAS4920
	Oven					Change to 900mm pyrolitic oven - Heigher	Model: Westinghouse - Code: WVEP9163C
	Fridge					Fisher & Paykel 605L Quad Door Fridge	Model: F&P - Code: RF605QOVB2
	BBQ		BEEF EATER	BS13840 Burnoed*	Signature 3000E 4	Refer quote from Lifestyle BBQ's. Quote	Included
	BBQ Bench top		Lifestyle BBQ's			Included	Included
	BBQ Rangehood		Sirius	SI500BQ1200M		1200mm Alfresco BBQ Marine Grade	Included
	INTEGRATED 60 L BAR FREDGE FOR BBQ						Model: Haier - Code: HRF60UW
WC	Toilet suite/ concealed trap and waste		STYLUS	PRI4003C--A	Prima II Close	All rooms	Included
Block 23 >>	Toilet suite/ concealed trap and waste					- All rooms	Included
SHOWER SCREENS	Nominate Screen frame & pivot door.						Included
Block 23 >>	FRAMELESS GLASS						Included
TAPWARE/ FITTINGS	Kitchen sink					To meet the minimum requirements	Model: CLARK - Code: 25031L
	Kitchen tapware					To meet the minimum requirements	Model: Dorf - Code: 3497044A
	Bathroom hand basin					To meet the minimum requirements	Model: Dunsilex - Code: PVC750WH1L
	Bathroom hand basin tapware					To meet the minimum requirements	Model: Caroma - Code: CL10001C5A
	Bath tub					To meet the minimum requirements	Model: Sitius - Code: BB7W
	Bathroom Shower tapware					To meet the minimum requirements	Model: Clark - Code: CL10007C (with mixer)
	Ensuite hand basin					To meet the minimum requirements	Model: Dunsilex - Code: PVC750WH1L
	Ensuite tapware					To meet the minimum requirements	Model: Caroma - Code: CL10001C5A
	600mm Long Towel Rails (all bathrooms &					Builder to specify	Model: Clark - Code: CL600731C
	Toilet Roll Holders (all bathrooms & ensuites)					Builder to specify	Model: Clark - Code: CL600116C
	Hand Towel Ring (all bathrooms & ensuites)					Builder to specify	Model: Clark - Code: CL600119C
	Powder Room hand basin					To meet the minimum requirements	Model: Clark - Code: CL40206W1
	Powder Room tapware					To meet the minimum requirements	Model: Caroma - Code: CL10001C5A
	Laundry wash tub & cabinet					To meet the minimum requirements	Model: Clark - Code: 85501L
	Laundry tapware					To meet the minimum requirements	Model: Caroma - Code: 3497044A
	Nominate other tapware not detailed above.					Incorrect code. Shaving Cabinets not to be	No Shaving Cabinet Provided
TAPWARE / FITTINGS - BLOCK 23							
	KITCHEN SINK					Allow for Double Bowl Inset/Flushmount	Model: Caroma - Code: PIPL208U
	KITCHEN TAPWARE					Allow for Gessi Officina V Pull Out Kitchen	Model: Phoenix - Code: VS710540
	BUTLER PANTRY - SINK					Allow for: Franke Mythos MYX210-34	Model: Franke - Code: MYX21934B
	BUTLER PANTRY - MIXER TAP					Allow for: Blanco CARENA-S Goosenack	Model: Blanco - Code: Carenas
	HAND BASINS (all rooms except Ground Floor					Allow for Arlis 430mm Round Vessel Basin	Model: Parisi - Code: ACL001
	HAND BASIN TAPWARE					Allow for Dorf Epic Tower Basin Mixer or	Model: Dorf - Code: 02012U190
	BATH TUB					Allow for: Caroma Aura/Urbane II 1600mm	Model: Sitius - Code: BB7W
	BATHTUB TAPWARE					Allow for: Dorf Epic 180mm Wall Mounted	Model: Parisi - Code: 02012U190
	SHOWER HEAD (all shower recesses)					Allow for Grohe Power & Soul	Model: Parisi - Code: P205D2W-A
	SHOWER MIXER TAP					Allow for Grohe Lineare New Shower Mixer	Model: Parisi - Code: 0204
	LAUNDRY TUB					Allow for Clark Square 45 Litre Flushline	Model: Clark - Code: CDCL100
	LAUNDRY TAPWARE					Vivid Slimline Pullout Sink Mixer - Chrome	Model: Phoenix - Code: VS710500
	GROUND FLOOR WC - BASIN					Allow for Parisi Pod 600mm Bench Basin -	Model: Parisi - Code: VA15
	GROUND FLOOR WC - BASIN MIXER TAP					Allow for Dorf Epic 180mm Wall Mounted	Model: Parisi - Code: 02012U190
	NOMINATE OTHER TAPWARE NOT						
	TOILET ROLL HOLDERS					Gloss Toilet Roll Holder - Chrome	Model: Phoenix - Code: GS802CHR
	SOAP DISH					Allow for Vivid Slimline Soap Dish -	Included
	Hand Towel Ring					Allow for Gloss Hand Towel Rail - Chrome	Model: Phoenix - Code: GS800CHR-A
CLOTHESLINE	Nominate type of line (rotary hoist preferred					allow for Austral 28.5m compact single fold	Included
Block 23 >>						Allow for Austral/Westland Grey FoldAway	Included
HOT WATER	System chosen, star rating and capacity					30/L Hot water heat pump	Included Stiebel Eltron 302L HWU
Block 23 >>						2x 30/L Hot water heat pump	Included Stiebel Eltron 302L HWU x2
HEATING	System chosen, star rating, zones controlled					14/16.5KW Reverce Cycle ducted air	Included
Block 23 >>						3x 14/16.5KW Reverce Cycle ducted air	Included
	Bathrooms and ensuites					6 x 3 Tastic Light	Included
COOLING	System chosen, star rating, zones controlled					14/16KW Reverce Cycle ducted air -	3.0 Star Rating Toshiba RAV-GM1401CTP-A
						3x 14/16.5KW Reverce Cycle ducted air	As Above
WATER TANKS	If nominated in the house configuration, details of tanks, pumps, associated piping and controls					3000L Slimline colorbond, Colour to match house.	3000L Included To All Units. Standard Colorbond Finish
ADDITIONAL FEATURE ITEMS TO BLOCK 23							
EXTERNAL FACADE	FEATURE STONE TO WALLS ("ST.01" on					Random Stack Stone	Included
LIGHTING (INTERNAL)	KITCHEN PENDANT LIGHTS					Allow for 1 of MFL By Masson Fleming	Included
	WALL LIGHTS (Ground Floor)					Allow for 6 of LEDlux Radia 20W LED	Included
	CEILING LIGHTS (INTERNAL - Formal					Allow for 8 of MFL By Masson Accent	Included
	Step Lights to Stairs					Allow for 6 of LEDlux Elfa LED Square	Included
LIGHTING (EXTERNAL)	Ceiling lighting - Covered Outdoor Entertaining					Allow for 7 of Triangle 12V Downlight in	Included
	Wall Lights					Allow for 6 of Marvel1 from Lignan	Included
FIRE PLACE	Gas Fire Place to Formal Dining & Lounge		Real Flame	Element DS1200 +		- Element Double Sided 1200mm (Medium	Included
	↳ Supply 45L Gas bottle					- Allow for 1 of Supply & install	Included
	↳ Privacy Screen Full height to concrete					Powder-coated slat screen (Colour to	Included
	Dividing Wall with built in Fire Place to Formal					Allow as per drawing ACAD_DHA_SK-05	Included
	↳ Feature Tiles					Builder to nominate - to match image per	Included

COVERED OUTDOOR AREA	FULLY LINED SOFFIT ~~AND INSULATED~~					Allow for Moisture resistant plasterboard.	Included
ENSUITE (MASTER BED)	Heated Towel Rail					Allow for 1 ea Linea Allegra 19 Bar White	Included: Multi Heated Towel Ladder
ENSUITES	ACOUSTIC UNDERLAY TO ENSUITE					R2.5 Acoustic Under Floor Insulation	Included
LANDSCAPE	INTEGRATED IRRIGATION SYSTEM TO					Allow for Weathermatic or equivalent	Included
	PAVED EDGE TO GARDEN BED WITH HAUNCH						Included

Builders checklist

DHA
Defence Housing Australia

PLANNING YOUR HOUSE	REQUIREMENT	YES	NO	N/A
Building area	Maximum 45% of site for lots less than 550m² (55% single storey) Maximum 40% of site for lots greater than 550m² (50% single storey)			
Landscaped area	Minimum 40% of sites less than 550m² Minimum 45% of sites greater than 550m²			
Paved area	Maximum 15% of site area			
Private open space	Minimum 35m² for low density housing and 25m² for medium density dwellings			
Principal open space	Minimum 4m x 6m directly assessable from living areas excluding covered outdoor area			
Garages – double	Double garage to have minimum internal dimensions of 6m x 6m (36m²)			
Single	Single garage to have minimum dimensions of 6m x 3.5m (21m²) plus 9m² of storage space			
Garage door width	Maximum 50% of front facade with a max dimension of 2.4m x 5m			

SOLAR ORIENTATION, SHADING AND PRIVACY	REQUIREMENT	YES	NO	N/A
Solar orientation	Main living area windows to receive a minimum of three hours of winter sun Private open space – a minimum of three hours winter sun to 50% of area			
Shading	Protection of west facing windows			
Overshadowing	Minimise overshadowing to neighbouring properties			
Privacy	Design to minimise viewing neighbours bedrooms and living areas			
Energy	All houses must achieve six star NatHERS certification			

JR

Builders checklist

DHA
Defence Housing Australia

STREETSCAPE	REQUIREMENT	YES	NO	N/A
Building articulation	Elevational interest – stepped walls, varied finishes, materials and a max of three colours			
	Simple contemporary design			
	Pitched roofs to be between 22.5° and 26°			
	Flat/skillion roofs are also permissible			
	Minimum eave width of 450mm (900mm in tropics)			
Street address	A minimum of two habitable rooms addressing street			
	No obvious bathroom/laundry windows facing the street			
	Legible entry facing street			
	Sheltered porch to be a minimum of $4m^2$			
	Corner lots – ensure dwelling addresses both streets			
	Garage setback a minimum of one metre from building line			
	Garage door to be simple design and plain coloured			
	Ensure all utilities (aerials, hot water system, metres rain water tank) are inconspicuous and located on western elevation wherever practicable			
Landscaping	Landscape plan to address whole site including verge to kerb			
	Use drought resistant/native plants			
	Minimum two small trees in front yards and one large tree in rear yard setback away from house			
	Letterbox to constructed from materials complementary to dwelling			
	Plant beds in front yard and alongside driveway			
Driveway	Maximum 4 metres at front boundary. Minimum 1.2 metres from side boundary			
	Plain uncoloured concrete at crossing unless otherwise stated in developers covenant/ encumbrances			
Fencing	Maximum 1.8m high starting 1.5m from building line			
	Preferably timber or otherwise stated in developers covenant/encumbrances			
	All non-structural retaining walls to be masonry			

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SCHEDULE D1 TO ANNEXURE PART D - MILESTONE PAYMENTS SCHEDULE

Stage 1:	5%	Design & pre construction and obtaining BA
Stage 2:	18%	Completion of all foundations, footings, floor slabs and/or floor structure
Stage 3:	20%	Completion of wall and roof framing and installation of windows
Stage 4:	20%	Completion of weatherproofing and securing Works, including completion of glazing, doors, external cladding and/or brickwork, roofing, roughing in of services, straightening of frames and installation of baths
Stage 5:	10%	Sheeting - Pre sheet, rough in, insulation , sheeting set and sand
Stage 6:	10%	Completion of all internal tiling and painting, waterproofing, fixout, alfresco, patio
Stage 7:	9%	Completion of Joinery, fitoff and all remaining internal works including external works other than landscaping
Stage 8:	8%	Completion of landscaping works; Issuance of the Certificate for Practical Completion for each dwellings
Stage 9:	Provisional Sum	Provisional sum amount as per Schedule D2

Lot	Original Tender Amount	Additional Amount Negotiated Excluding Provisional Sum	Contract Amount Excluding PS	Stage 1 - 5% Amount	Stage 2 - 18% Amount	Stage 3 - 20% Amount	Stage 4 - 20% Amount	Stage 5 - 10% Amount	Stage 6 - 10% Amount	Stage 7 - 9% Amount	Stage 8 - 8% Amount	Stage 9 - PS Amount	Revised Contract Sum of Lot amounts Including PS
1	s22 [redacted]												
2													
3													
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28													
29													
30													
Sub Total													

SCHEDULE D2 of ANNXURE PART D				
Item	Provisional Sum Items	Package	Cost Excluding GST ($)	Cost Including GST ($)
1	Allowance for additional works as directed by the superintendent	Civil	s22 [redacted]	
2	Works by Sewer Authority on existing services	Civil		
3	Works by Water Authority on existing services	Civil		
4	Allowance for POE, MSB and mains electrical cabling supply and installation of main cabling	Civil		
5	Works by Electrical Authority	Civil		
6	NBN cabling and connection works	Civil		
7	Allowance for structural piers within the zone of influence of retaining walls or services infrastructure	House Build		
8	House type 10 supply and installation of Joinery, stone and the interna stairs/balustrade	House Build		
9	Stage 2 Civil Landscaping works i.e. street trees and back of kerb landscape	Civil		
10	Saw cutting to alfresco and driveway as noted in tender negotitation sheet.	House Build		
	TOTAL PROVISIONAL SUM			

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SCHEDULE D3 TO ANNEXURE PART D - TENDER NEGOTIATION REGISTER

ACADEMY CLOSE TENDER NEGOTIATION REGISTER

Project: 30 Houses at Academy Close Campbell
Contractor: Projex Building Group Pty Ltd
Date: 11th January 2024

	CLARIFICATION ITEMS	Comments	Negotiation Meeting Comments 27/11/2023	Trade Package	Adjusted Costing (Excluding GST)	Projex Comments 07/11/23
1.00	Program					
1.01	Please confirm that the program provided (Both Civil and new build components) is a realistic program taken into account the Industry current market conditions. Confirm if Saturday is a working day on the program or is Saturday a catch up day.	Projex confirm that the program provided for civil and house works are realistic programs, with current market conditions accounted for. Allowance has been made for standard work week of Monday to Friday, 7am to 5pm. Works will only be undertaken on Saturday's at catch up, if the project is experiencing delays. OK	OK			
1.02	Confirm if there any float in the program for wet weather, hold points etc?	In alignment with the contract conditions, no allowance has been made for inclement weather within the program. Hold Points are included. OK	OK			
2.00	General Condition of contract					
2.01	Please confirm that you have reviewed and accepted in principal DHA general condition of contract. Are there any amendments or issues to the existing General conditions.	Projex have reviewed the DHA general contract conditions, and have the following comments in alignment with our tender submission: 2.1 Definitions - "Inclement Weather Event" - defines an Inclement Weather Event as that which continue for 2 consecutive full working days. Projex request that an Inclement Weather Event be defined as 1 full working day 12 Site and Latent Conditions - 12.1 Definition - Paragraph (d) - states that rock is excluded as a latent condition. In line with Projex tender submission & the tender addendum's, we request that rock which cannot be ripped by a 20 Tonne excavator, or the appropriate sized machinery for the specific task, is defined as a latent condition. Annexure Part A Item 9 - Program to align with Projex proposed tender program. Annexure Part A Item 15 - Design guidelines doesn't align with the tender inclusions. Tender inclusions 4.2g to take precedence over DHA design guidelines Annexure Part A Item 30 - states Public Liability Insurance to be not less than $50 million. Projex Building holds Public Liability to $20 million Annexure Part A Item 27 - Does not align with tender. Rock is to be identified as a latent condition Annexure Part A - Schedule to A1 to Annexure Part A - Separable Portions - Item 39 Liquidated Damages. Separable portions as per Projex Proposed Area Plan. LD's to be per property at a rate of $200/day/house. LD's capped at a maximum of 1% of the contract value. Annexure Part A Item 40 Delay costs are not reasonable for the scale of work. Projex proposed demonstrated costs.	2.1 Definitions - "Inclement Weather Event" - defines an Inclement Weather Event as that which continue for 2 consecutive full working days. Projex request that an Inclement Weather Event be defined as 1 full working day - Ok with 1 day as there is civil works included in the contract 12 Site and Latent Conditions - 12.1 Definition - Paragraph (d) - states that rock is excluded as a latent condition. In line with Projex tender submission & the tender addendum's, we request that rock which cannot be ripped by a 20 Tonne excavator, or the appropriate sized machinery for the specific task, is defined as a latent condition. Shall change to "any other physical conditions on the Site, including artificial things but excluding weather conditions and rock which is defined as rippertable with a 20Tonne excavator" where a 20Tonne excavator is not practical to be used on site an Independent engineer shall determined the classification of the rock to be equivalent to the intended definition. Projex to engage the Geotech engineer where required Annexure Part A Item 9 - Program to align with Projex proposed tender program. OK Annexure Part A Item 15 - Design guidelines doesn't align with the tender inclusions. Tender inclusions 4.2g to take precedence over DHA design guidelines - No, DHA Property inclusions version 4 shall take precedence. As it is a general guide to what is desired by DHA, but the tender inclusion is a detailed documents which should compliment the DHA Property inclusion. Any discrepancy will need to be raised to the superior advise. Price to be inclusive of this. Annexure Part A Item 30 - states Public Liability Insurance to be not less than $50 million. Projex Building holds Public Liability to $20 million. Ok with $20Million Annexure Part A Item 27 - Does not align with tender. Rock is to be identified as a latent condition. Agreed, however rock is defined as being unable to be ripped with a 20Tonne excavator as per item 12 above. Annexure Part A - Schedule to A1 to Annexure Part A - Separable Portions - Item 39 Liquidated Damages. Separable portions as per Projex Proposed Area Plan. LD's to be per property at a rate of $200/day/house. LD's capped at a maximum of 1% of the contract value. LD at $200 Per house per day is acceptable but without limits Annexure Part A Item 40 Delay costs are not reasonable for the scale of work. Projex proposed demonstrated costs. Agree with $280 per day similar to			
2.02	Please confirm that you have understood and accept and are familiar with Canberra Airport current Obstacle Limitation Surface (OLS) requirements regarding the use of cranes (e.g. mobile cranes), the Contractor will be responsible for completing any required "Obstacle Application Form" (available from: https://www.canberraairport.com.au/corporate/about/development/) & submitting to Canberra Airport (or the proper authority) including the payment of any associated fees	Projex have read and understood Canberra Airport's Obstacle Limitation requirements, and confirm that we have allowed for submission of the Obstacle Application forms as required.	OK			
3.00	Civil Works					
	Please confirm what has been included within the dilapidation survey report? Please explain the scope allowed.	Dilapidation report an survey includes a representative from Cord Civil & Projex Building conducting a detailed site inspection (preferably with a representative from the Client) of the area immediately surrounding the site, detailing the current conditions of site area and making note of any specific defects prior to the commencement of construction activities. A report will then be provided with documented photos of the surrounding area. It should be noted that this doesn't include inspection of adjacent existing residences.	This is a risk Projex has to be responsible for as it is recommended for Projex to also take into consideration minimum the exterior of the houses adjacent to the site			
3.01	Tree T61 has been confirmed as not being able to be removed. Please advise the credit for the deletion of this scope.	With tree T61 not required to be removed we can provide a saving of $1,000.	OK	Civil	-$1,000.00	
3.02	Please provide a breakdown of the site establishment cost within the civil BOQ to indicate what has been allowed for and taken into consideration.	Site establishment allowance includes the following: Float machines on and off site Supply of site offices Supply of shipping containers Supply of Toilets including regular pump outs Maintenance and cleaning of facilities Connection and disconnection of site office services - water and power Site and office project team personnel during the civil works period Projex OHSQE Management & Ongoing Items during civil works Other Site Establishment Costs	OK			
3.03	Please confirm that the contractor has allowed for all retaining wall noted in drawing DHA_SK_ACAD.10 and all retaining walls noted in the civil drawings set (C006-008+). The contractor is to ignore the wall types noted within the landscaping plans (drawing P203).	Allowance was made for all retaining walls in accordance with drawing DHA_SK_ACAD.10. Within the BOQ returnable item 22 Retaining Walls and Fencing, allowance was made for the walls identified as "by the Civil Works Contractor" in drawing DHA_SK_ACAD.10 (Walls - A, B, B1, C, D, E, F, G) & for the walls identified as by the DHA house builder in drawing DHA_SK_ACAD.10. Allowance was then also made for additional 2m long small return section of retaining wall at the front yards of the blocks as per Addendum 5. We have identified a double up in our tender allowances, and based on the clarification we can offer a saving of $600,000. We have also identified areas that could be value managed under the D&C contract using our engineer & alternate methods. Projex can offer a lump sum saving of $350,000 for retaining wall engineering, certification & value management.	DHA has accepted the $600,000 reduction due to Projex double up in the tender allowances Projex proposed for the 3m high retaining wall for it to be replace with a Doncell wall system and also replacing the 3m high walls with A grade sandstone blocks. This forms the $350,000 saving proposal	Civil	-$950,000.00	
3.04	Please clarify the amount in msq for each retaining wall type that are extra over that Projex believes is the quantum difference between the design documents and the BOQ.	Please see table of the difference between current allowance and the original boq - sheet 2 of this document.	OK			
3.05	Please confirm if NBN fees have been allowed for within the price.	Allowance has been made for conduits and pits as a lump sum. We have included NBN fees as a provisional sum of $30,000 as per the civil BOQ & tender clarifications.	OK			
3.06	Why was item 012.2 in the BOQ a PS amount, can Projex please allow for a fixed lump sum on the mains & electrical cabling works.	Item 012.2 is the NBN provisional sum as described above. Item 702.2 is the POE, MSB, and mains and electrical cabling works provisional sum. Item 702.4 is the electrical service authority provisional sum for connection and authority works Allowance has been made for electrical cabling for the streetlighting only. Item 702.2 is a provisional sum as the mains cabling requirements need demand calculations and design input for cable sizing, number of cables, type of cables, and max length. As per our tender clarifications we have assumed all design works for stage 1 are by DHA and as such this needs development to accurately price. We have made an assumption for the electrical conduit and include a lump sum for one 125mm electrical main conduit, and a $50,000 provisional sum for the cabling supply & install.	OK			

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	Please provide detail of testing of the spoil (Item 206) and what has been allowed for? Is this a one off test or will be tested through out the disposal process.	In accordance with EPA regulations, allowance has been made for sampling and testing by a qualified environmental scientist at 1 test per 25m3, with a report to then be provided by the environmental scientist to confirm the material classification, prior to its removal from site. **Allowance has been made to pre-test spoil material prior to** excavation activities.	OK			
3.07	Please provide DHA with the price breakdown for the supply of the poles and fittings.	Breakdown for the streetlights is as follows: Supply and install Streetlight fittings - $3986.52 per fitting Supply and install Streetlight columns - $3318.82 per column	OK			
3.08	Please confirm how Projex will manage the authority handover of the civil infrastructure and where this fits within the program.	Projex assume TCCS & ICON have been involved in the DA / NCA approval stage & are aware that the infrastructure within the block will be handed over at completion, & all design complies with their requirements. Handover to TCCS will include the following: - Projex to provide a construction report with all hold point registers, testing registers and CCTV inspection footage. - Projex to provide Works as Executed Drawings. - Projex to provide consolidation maintenance plans for the landscaping. - Consultant/Superintendent/Client to submit Works as Executed Drawings, construction report and CCTV footage to TCCS for approval. - Consultant/Superintendent/Client to arrange inspections of all completed stormwater structures by TCCS. Projex to attend inspections - Consultant/Superintendent/Client to arrange site inspection by TCCS delegates for Operational Acceptance, Practical Completion and at the end of the Defect Liability Period prior to handover. Projex to attend inspections - Consultant/Superintendent/Client to arrange site inspections by TCCS delegates prior to the landscaping being placed onto consolidation, and upon completion of the consolidation period prior to handover. Projex to attend inspections	OK			
4.00	**Building Works**					
4.01	Please confirm should DHA produce a set of Design documents to 80% BA approvals including structural design, how much of the design cost will reduce by.	Projex can offer a cost saving of $315,000, should the 80% architectural **& structural design be provided, subject to the resolution of** contract PROC-48610.	OK	House Build	-$315,000.00	Current BA documentation is in alignment with the 2019 building code. This will need updating. Design fees for this have been included in the Green Star P/Sum for architect fees.
4.02	Please confirm for Lot 29 the house type that has been allowed for as there is a discrepancy within the documents as to what house type it should be. Type 7 or Type 5, it should be a type 7 (RB3)	**Projex confirm** Lot 29 has been allowed for as House Type 7	OK			
4.03	Please confirm if multiple handover of the houses can be achieved? And if the contractor has allowed for all required stage building approval should this be required to achieve stage hand over.	**Projex confirm a staged handover can be achieved. An individual** COU/ completion certification for each dwelling has been allowed **for with the certifier**	OK, Projex will need to review this with the civil works programming.			
4.04	Please confirm if all BA fees including all fees payable to Access Canberra have been allowed for?	**Projex confirm all Building Approval related charges have been allowed within our proposal**	OK			
4.05	Please confirm if projex have priced the landscaping works as per the landscape plans (With no departures from the landscape plans). If not, please advise what the extra over cost is to meet this requirements.	All landscape works included as per design except the PT1 paving. Standard grey concrete instead of Charcoal Pavers allowed for areas noted as PT1 in alignment with the DHA design guidelines. If Pavers are required to this area, Projex can supply & install "Adbri-Masonry-Euro-Stone-Prague-Paver-400x600" on a compacted gravel base for an additional $80/sqm, with the lumpsum amount of $149,250.00 ex GST for the change.	Noted, however Projex is to propose for the cutting of the concrete in a brick pattern 300 x 600 for the alfresco and driveway 12/12/2023 - Saw cutting size to the driveway to be reduced in size to save cost. The cost will form part of the Provisional Sum amount.	House Build	$100,000.00	To be added to Provisional Sum amount under the contract. A 300x600 pattern is $m cutting per m2. Cost for saw cutting with new wire requirements is $20/m, or $180/m2 for this pattern Total cost for this pattern for alfresco and driveways (to block boundary) is 1690x$100 = $169,000.00 ** Footpaths remain as cove finish concrete **House 10 is as per landscape Plan Cost could be reduced with larger pattern or stencil
4.06	For House Type 3 landscape plan drawing no. 3715-F303 (Rev. C) "Typical House Landscape Treatment Type 3" delete paving across driveway and ensure driveway is continuous concrete leading up to garage door	**Projex have allowed for concrete** in this area in our proposal	OK			
4.07	Please confirm the cost of the HOWI as this may be not taken on by Defence.	**Allowance of $90,000 has been** included for HOWI.	OK, pre formed HOWI will be required for this project		$0.00	
4.08	Please confirm within the tender, what has been allowed for with the kitchen bench, vanity, and laundry tops? DHA prefers stone tops however this needs clarification.	Kitchen/ Pantry & Laundry benchtops allowed as 20mm builder's **stange stone. Vanity specification includes bench top - Duraplex** PVC750WHLITH.	OK			
4.09	Please confirm that Projex has priced for the landscaping works as noted to both the Civil set and Works approval set as they are to be read in conjunction. The works approval set will have details of requirements for the street trees and back of kerb.	Projex have included all landscaping works up to kerbs	OK			
4.10	Please confirm what physical barrier (no chemical barriers) termite treatment system is being proposed.	**If timber frames are procured, Projex would use termite treated timber. Additionally, we** would engage Flick to install collars to all **under slab** pipework prior to concrete pour and a slab edge protection prior to installation of frames on ground floor. Term-seal **penetration collars and Flickguard** penetration wraps & perimeter are the products we would utilise. If steel frames are used collars **would** still be utilised however no perimeter / slab edge protection required.	OK, Timber stairs will be treated for termite			
4.11	In splitting the hoods, has Projex allowed to include any changes required to the NCA approval if required by the certifier.	Projex do not see any issues with this design revision and have included any coordination required	OK			
4.12	Please provide a rate per meter for Piering should the house slab changes from M to H and requiring further Piering	$160/Lm for 450mm wide mass concrete filled piers. **As per the tender** clarifications, **extra over costs of $4000 per 2 storey house and $6000 per single storey house would be required if the soil classification is deemed ash class. These costs include the revised slab design, updated levels, earthworks and concrete** slab. No allowance for piers is included in this price, and it is to be treated as a extra over pending final Geotech and slab design.	OK, Piering allowance has been allowed for within the tender submission as a provisional sum amount			
4.13	Please confirm if the carpet to house 10 is part of the lump sum or is it included in the PS	Carpet has been included as part of the lumpsum proposal	OK			
4.14	Please provide a Miele oven to house 10 to match the cooktop and rangehood	There is only one Pyolytic Miele Oven currently available (H7890 BP pureline Clean steel oven). Projex can include this specification for an additional cost of $15,500 ex GST	OK	House Build	$15,500.00	
4.15	Please list the PS items totalling $125K + GST as the inclusion list also noted the floor waste is part of the PS.	**The provisional sum allowance** includes the following: **Internal stair case & balustrade, Kitchen joinery, Outdoor kitchen** joinery, Pantry joinery, **Study joinery, Store cupboards / doors, Cloak cupboards/doors, All** Robe joinery, Shower screens, Bathroom floor waste supply, & all **stone benchtops.**	OK			
4.16	Please nominate a towel rail for house 10 main bathroom. This was missing off the inclusion schedule. Allow for a heated towel rail similar to that of the ensuite.	**1x** Radii Heated Towel Ladder RAB750CHR - This is included in our proposal	OK			

4.17	**Please nominate how many zones have been allowed** for with the ducted AC. Also please nominate the number of Zones allowed for in house 10 separately.	We have included 4 x zones to each dwelling. This is a damper system with switching for air supply, **not individual** temperature zones. For House type 10, we have included 2x units, each with 3 switched zones.	Ex			
5.00	**Other Items**					
	Extra for H Class	**As per rates in the tender submission. $4,000/double storey, and $6,000 per single storey.** This includes costs for site cut changes and to suit thicker slab, and concreting upgrades for thicker slab. **If piers are required** they are to be charged as part of the pier provisional sum.	Ex		**$0.00**	
	Change roof & cladding colour to a standard colour			House Build	-$57,500.00	
	Change CM1 roof profile from Kliplok to Trimdeck			House Build	-$37,500.00	
	Change CM1 wall cladding from Kliplok to trimdeck (Assuming CM1 will remain as overcladding to Hebel if Hebel is introduced for green star)			House Build	-$62,500.00	
	We assume the CM2 Dominion cladding will be removed for rendered and painted Hebel. This is to be managed in the Green Star provisional sum					
	Design review comments provided by DHA via email on the 28th November	Projex suggest a provisional sum addition to manage items that have not been included or proposed changes including Relocation of water tanks Changing awning windows to sash or sliding Changing the alfresco roof designs Adding built in desks for the study areas **Management of landscape levels and access for Type 1** Type 3 toilet re-arrangement Review of fridge spaces Additional windows (noting green star ESD consultant to review) **NB type 10 items are generally included in the inclusions list or joinery P/sum Projex will seek to convert this to lump sum following initial design review, incorporation, and approval by DHA sheet walls to under stairs and leave out study desk other than house 10	It was agreed on the 12/12/2023 negotiation meeting that Projex will be managing these changes as part of their D&C component. It was agreed that Projex will only sheet the walls to the underside of the storage area under the stairs and also will not allow for the joinery desk to the study area other than to house 10 which is included in the house 10 provisional sum amount		$0.00	
	Projex tender letter 18 May 2023 for inclusions, clarifications & cost options has been considered as part of these tender clarifications					
	Discount for change in retention amount from 2x 2.5% retentions with one released at PC, to 1x 3% retention held until the end of the DLP			House Build	-$80,000.00	
6.00	**Total Cost**					
	Tendered Sum (Excluding GST)				**$31,063,142.75**	
	Changes as per posttender items above **noting DHA to confirm this formula based on confirmed items.				**-$1,408,000.00**	
	Updated tender sum (Ex GST)				**$29,675,142.75**	
	GST				**$2,967,514.28**	
	Final Contract Sum Including GST				**$32,642,657.03**	

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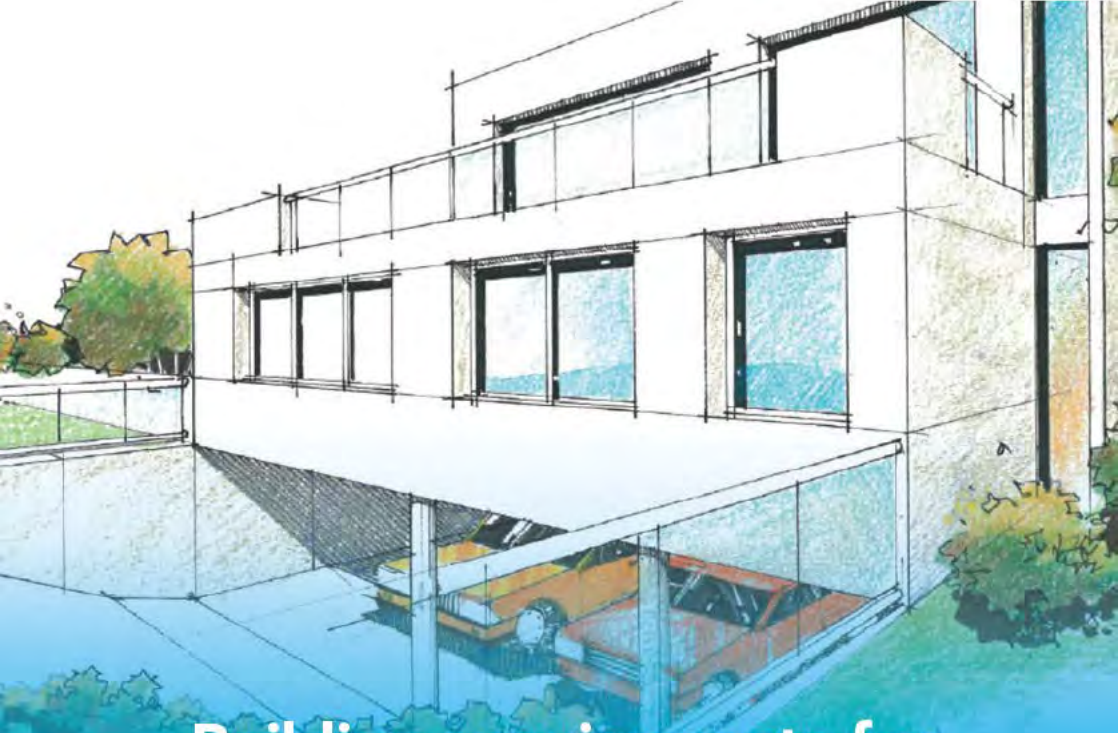

Building requirements for Icon Water approval

A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks

icon WATER

Disclaimer

This Guide was prepared for Icon Water. It is provided for general reference only and is not intended as a legal guide or substitute for legal or other professional advice. Each set of factual circumstances will vary and must be considered individually. The Guide content is correct as at 1 October 2014. Referenced source documents and industry practices will be amended or otherwise vary from time to time so care must be taken to confirm currency at the relevant time.

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Contents

General Requirements V

Introduction 1

General requirements 5

How to submit drawings to Icon Water 20

LANDSCAPING AND FENCING 23

Protection of water and sewer fittings – garden areas 24

Maintenance access through retaining walls 24

Lightweight fences 25

Masonry fences 26

Retaining wall 27

Paving 28

Ponding over surface fittings 29

Trip hazards 29

Protection of surface fittings in driveways 30

Trees and shrubs near water and sewer pipes 31

Sewage surcharges – overland flow 32

POOLS AND SPAS 33

Pool equipment 34

Structural integrity and providing a safe work environment 35

Pool fences 36

DEMOLITION 37

Compliance with utility requirements 38

Pre-demolition asset inspection 38

Disconnection policy 38

Water supply 38

Water valves and fire hydrants 40

Maintenance structures 40

Sewer connection 40

Damage to Icon Water assets 40

DUAL OCCUPANCY AND SECONDARY RESIDENCES 41

Water supply and sewer connection 42

Access passages 44

MULTI UNIT DEVELOPMENT **47**
Water supply and sewer connection 48
Emergency access passages 49
Maintenance access passages 50

ROCK ANCHORS AND SOIL NAILS **53**
Rock anchors 54
Soil nails 55

Drawings

Figure 1 Icon Water BA/DA Compliance Process 2
Figure 2 Pipe protection envelope 5
Figure 3 Structure built across pipe protection envelope 6
Figure 4 Tie protection envelope 7
Figure 5 Private service zone setback 8
Figure 6 Examples of emergency access passages 9
Figure 7 Access passage along the pipe protection envelope 10
Figure 8 Maintenance access passage 11
Figure 9 Access passage slopes 12
Figure 10 Excavation no go zone 13
Figure 11 Cut and fill diagrams 14
Figure 12 Footings within the zone of influence 16
Figure 13 Incorrect footing design 17
Figure 14 Ramped access 24
Figure 15 Lightweight fence requirements 25
Figure 16 Masonry fence footings design 26
Figure 17 Masonry fence footings outside PPE 26
Figure 18 Retaining wall footing design 27
Figure 19 Prevention of ponding over sewer maintenanace hole? 29
Figure 20 Potential trip hazards involving sewer and water assets 29
Figure 21 Sewer maintenance hole (manhole) in driveway 30
Figure 22 Tree canopy clear of pipe protection envelope 31
Figure 23 Discharge points for sewer surcharges 32
Figure 24 Pool equipment clear of pipe protection envelope 34

Figure 25 Unsafe setback and foundations for a pool 35
Figure 26 Safe setback and foundations for a pool 35
Figure 27 Access around pools 36
Figure 28 Protection of assets during construction 39
Figure 29 Water and sewer servicing of dual occupancies and secondary (residences only) 42
Figure 30 Water and sewer servicing of subdivided leases (dual occupancy only) 43
Figure 31 Emergency access passages 44
Figure 32 Planned access passages 45
Figure 33 Water supply to single lease multi unit sites 48
Figure 34 Emergency access to single lease multi unit sites 49
Figure 35 Maintenance access to single lease multi unit sites 50
Figure 36 Alternative maintenance access to single lease multi unit sites 51
Figure 37 Rock anchors near utility assets 54

General Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks

Introduction

About this guide – General requirements

Icon Water maintain and operate the essential services of water and sewerage in accordance with the regulatory framework which sets out that these services are to be provided to the ACT community in a safe, reliable and efficient manner. To do this, adequate access as well as protection of the assets needs to be maintained.

This guide outlines the key principles to be applied when assessing proposals to build, alter or extend structures on a block, even if these structures are exempt from Development or Building Approval.

The landholder is to first determine if there are any Icon Water networks located on or in close proximity to the relevant land. Under the Planning and Development Regulation 2008, developments must not be located in an easement, proposed easement, utility access passage or protection space unless approved by the utility in writing.

For further broader planning issues not relating to water and sewer, refer to The *ACT Territory Plan*.

Locating water and sewerage networks

Customers can access utility network plans showing the approximate location of all utility assets from DIAL BEFORE YOU DIG (phone 1100). Approximate locations of water and sewer connections can also be found free of charge on the website for the ACT Government Environment and Planning Directorate. However these may not be sufficiently accurate for building design and construction purposes. If the proposed development is in close proximity to Icon Water assets, accurate survey plans of water and sewer network assets locations on or near the development are to be provided. To help you avoid any unnecessary and potentially substantial costs, Icon Water recommend you:

Contact us for information and advice.

Phone:	02 6248 3111
Address:	12 Hoskins Street, Mitchell ACT 2911
Website:	iconwater.com.au/buildingandrenovation
Email:	talktous@iconwater.com.au

* This guide consists of one master booklet called 'General requirements: A guide to building properties containing (or in close proximity to) Canberra's water and sewerage networks', and several subsequent booklets which relate to specific development types, The development specific booklets are designed to be read in conjunction with the 'General Requirements' booklet.

Compliance process

Figure 1 shows the process that is followed for all new building applications and development applications

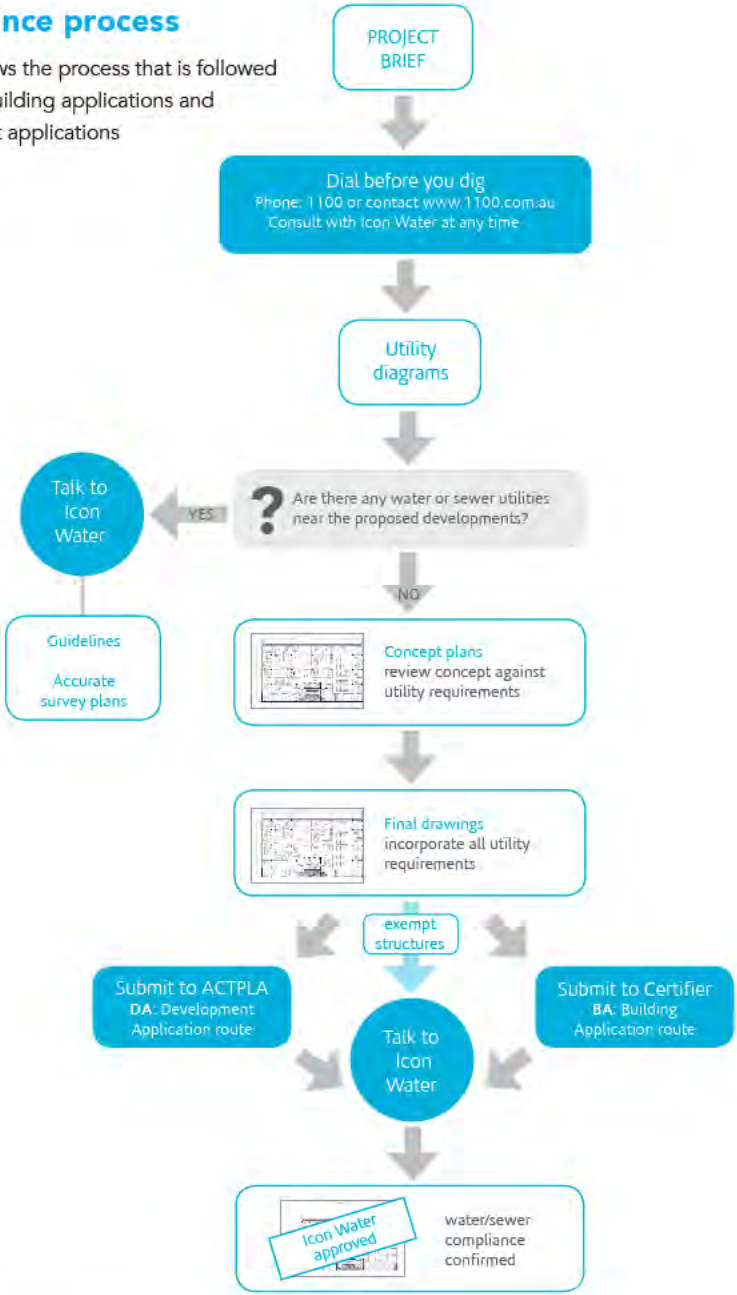


Figure 1 Icon Water BA/DA Compliance Process

Alternative solutions

Icon recognises that circumstances may arise where the standard guidelines contained in this booklet may not be practical or economically viable for the landholder.

If requested Icon Water will consider alternative solutions where:

- Icon Water's water and sewerage assets are adequately protected from potential damage
- public and workplace occupational health and safety hazards are eliminated or adequately controlled
- Icon Water's ability to access to operate, maintain or replace network infrastructure is not obstructed or hindered
- Icon Water's operating, maintenance and replacement costs are not increased
- adjacent structures and neighbouring properties are not put at risk or impacted unacceptably in any other way
- proposals comply with all relevant laws, regulations, codes and standards
- Engineering, landscaping, architectural or specialist consultant advice may be required to certify that any special proposals comply with Icon Water pipe protection principles.

Variations to the standard guidelines must be approved in writing by Icon Water.

Things to be aware of

The conditions illustrated in this document apply to all water and sewer networks located inside and outside the perimeter boundaries of a property. The landholder may be liable to pay for the removal of obstructions, damage to property or the repair of Icon Water infrastructure if they or their agents obstruct access or interfere with the safe and efficient operation of those networks.

Icon Water recommend that only appropriately qualified or licensed persons be engaged to undertake planning, design, construction or demolition work on private blocks.

Safe work

All works approved under these guidelines must permit Icon Water and its contractors to work safely when operating and maintaining the water and sewerage networks.

Network protection

It is the responsibility of the landholder to protect Icon Water infrastructure from damage during a building project. Please refer to the booklet titled "Demolition" for a description of essentials.

It is illegal to build structures or change ground levels contrary to the regulations which protect Icon Water's water and sewerage networks.

Compliance with utility requirements

Building or landscape works should not proceed without an Icon Water compliance statement or contrary to any condition of approval.

Icon Water is neither liable nor responsible for the inconvenience or costs associated with the rejection of non-compliant applications or the removal of non-compliant obstructions. Failure to obtain timely advice and approvals is the responsibility of the applicant.

Other utilities

This booklet deals only with water and sewerage network requirements in the Canberra region. Separate conditions apply to other utilities, including electricity, gas, stormwater and communications.

Easements are not a reliable guide

The presence of a service reservation or easement on the property title (or deposited plan) is not a reliable indicator of the presence of water mains or sewers. Utility assets traverse blocks without easements. Water and sewerage networks may exist outside the easement boundary. In all cases the 'pipe protection envelope' is the controlling requirement.

General requirements

Pipe protection envelopes (PPE)

A pipe protection envelope is the unhindered space required to ensure Icon Water's water and sewer networks can be safely accessed, operated, repaired and replaced.

A mandatory pipe protection envelope runs above, to both sides and the full length of all water and sewerage networks.

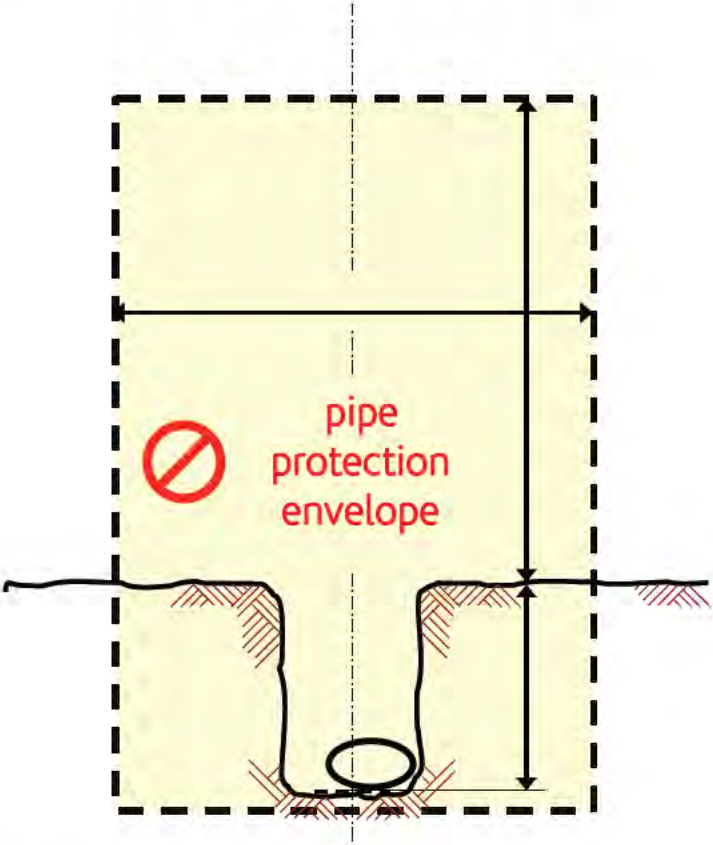


Figure 2 Pipe protection envelope

The width and height of a pipe protection envelope is typically determined according to the diameter, depth and category of asset. See Table 2 on pages 16-17.

Additional building set-backs or footing design may be required where proposed structures impede the movement of equipment, obstruct the placement of spoil, increase the likelihood of harm to Icon Water employees or the risk of damage to adjacent structures cannot be adequately controlled.

No permanent or temporary structure is permitted in the pipe protection envelope or the access passage without Icon Water's written approval.

Structures permitted inside a pipe protection envelope

No structure is permitted over or to encroach into the pipe protection envelope of a water or pressure sewer network.

At the discretion of Icon Water, carports and some open, unlockable, floorless structures may be permitted to be built adjacent to and above the pipe protection envelope of a network sewer. These will be assessed on a case by case basis and will require written approval from Icon Water to proceed. Figure 3 shows an example of a structure that would need written approval.

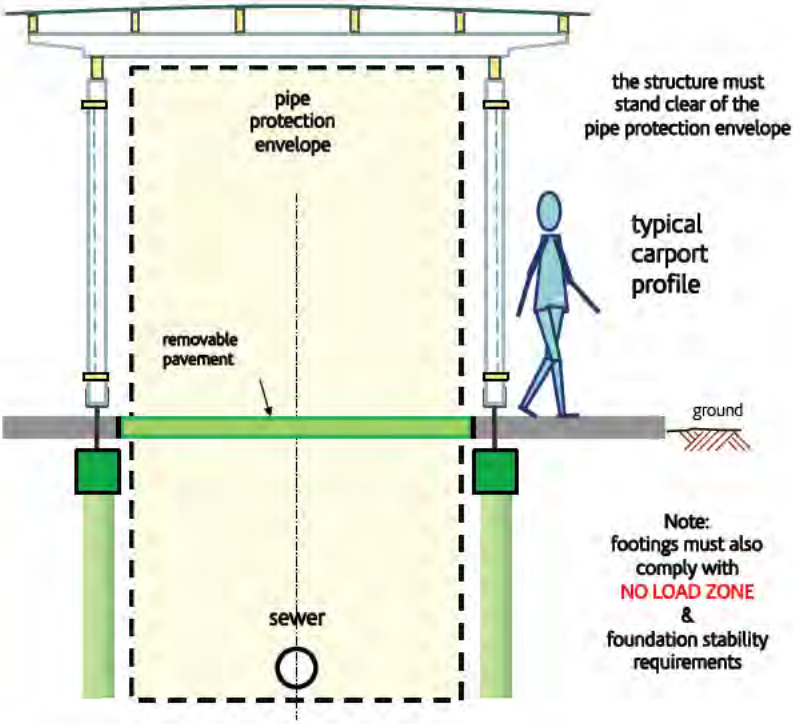


Figure 3 Structure built across pipe protection envelope

Sewer connection access

To prevent damage to property in the case of excavation, the landholder is to maintain a space (a tie protection envelope) as shown in Figure 4, free of obstruction where the property's sanitary drain connects to the network sewer. The ability to excavate the connection ('tie') or access the sewer 'inspection-shaft' (boundary riser) is essential for the rapid identification of faults and maintenance of the connection.

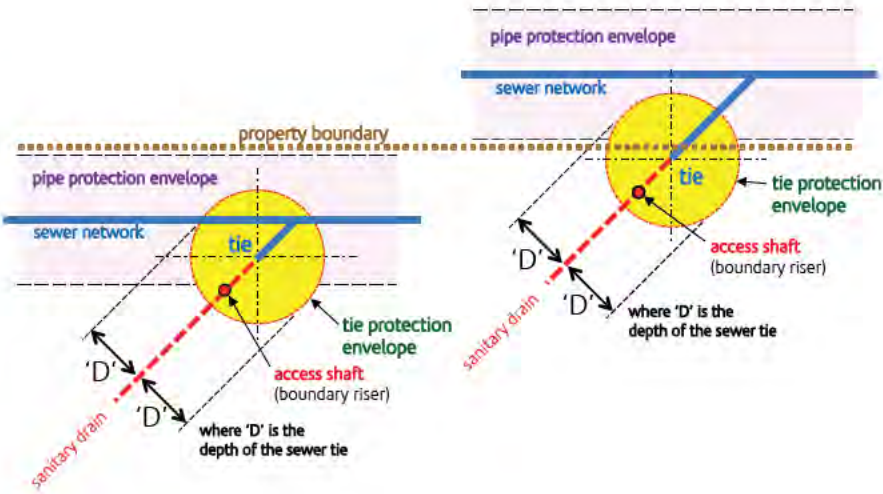


Figure 4 Tie protection envelope

In most instances, customers can access the sewer 'tie' location and depth from the ACT Government Environment and Planning Directorate website.

Private services

For safety reasons, privately owned underground pipes, cables and conduits or above ground aerials are not permitted inside the pipe protection envelope of water or sewerage networks.

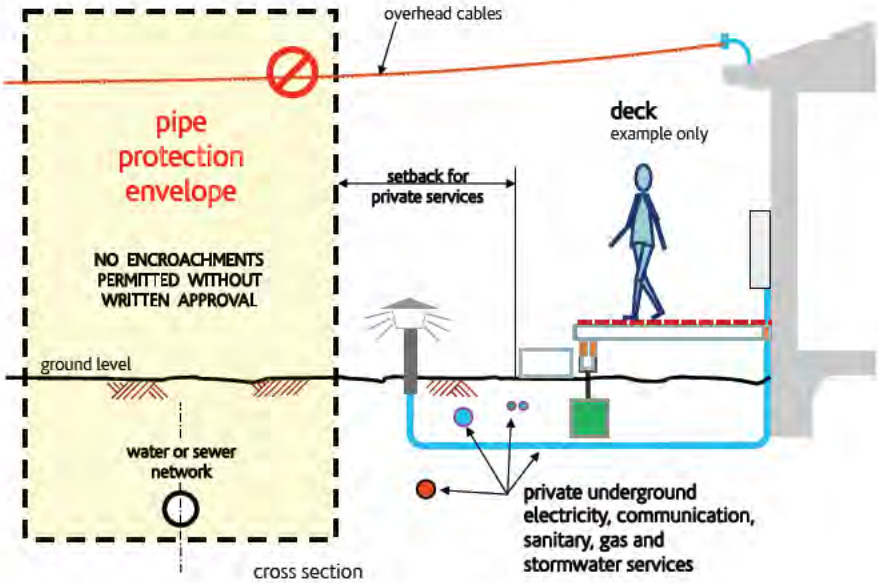


Figure 5 Private service zone setback

Adequate provision must be made outside the pipe protection envelope for the installation and maintenance of private electricity, gas, sanitary, stormwater, water, irrigation and communication services.

Additional setbacks as shown in Figure 5 may be required where private services impede access to the pipe protection envelope or safety hazards increase the likelihood of harm to maintenance personnel.

Emergency access passage

To facilitate rapid fault rectification, an unhindered emergency access passage as shown in Figure 6, is required from the roadway through all properties containing sewer maintenance structures (manholes) to provide Icon Water with 24 hour x 7 day access to clear sewage blockages. See Table 2 (on page 18-19) for access passage requirements.

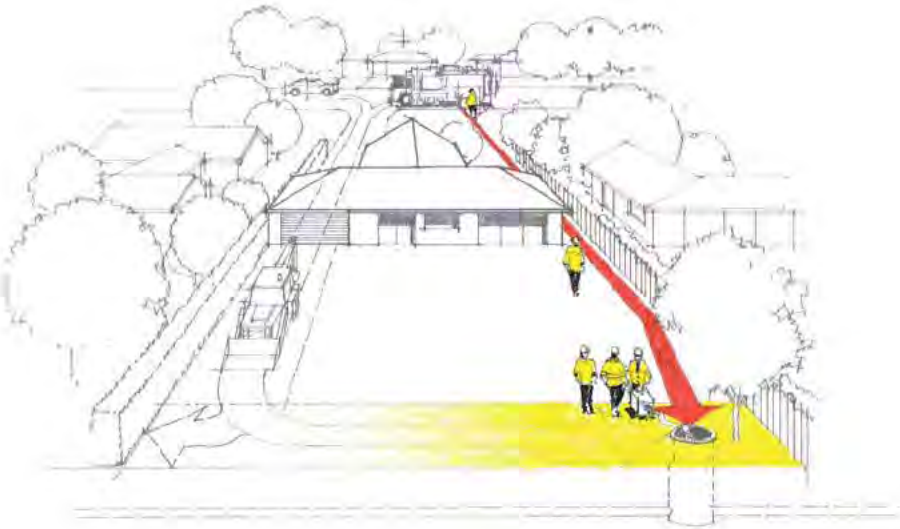


Figure 6 Examples of emergency access passages

Neighbouring properties must not be disadvantaged when access to the water and sewer networks is required. To do this access must be through the property or unit on which those assets are located.

Emergency and planned access can be combined along the same passage if the route is unobstructed and accessible at all times from a roadway and meets the maintenance access width and height requirements.

Note: emergency access through an enclosed or habitable structure is not permitted.

Maintenance access passage

Development of any type is not permitted in a maintenance access passage unless approved in writing by Icon Water. The width and height of a maintenance access passage is determined by the terrain, the depth of the pipeline and the size of excavation machinery employed by Icon Water. Deeper and larger pipes require larger machinery for maintenance or replacement.

Figure 7 shows where the pipe protection envelope of a sewer or water network pipeline is directly accessible from a roadway, the pipe protection envelope can also be used as a maintenance access passage to bring excavation machinery through the property to repair or replace the network.

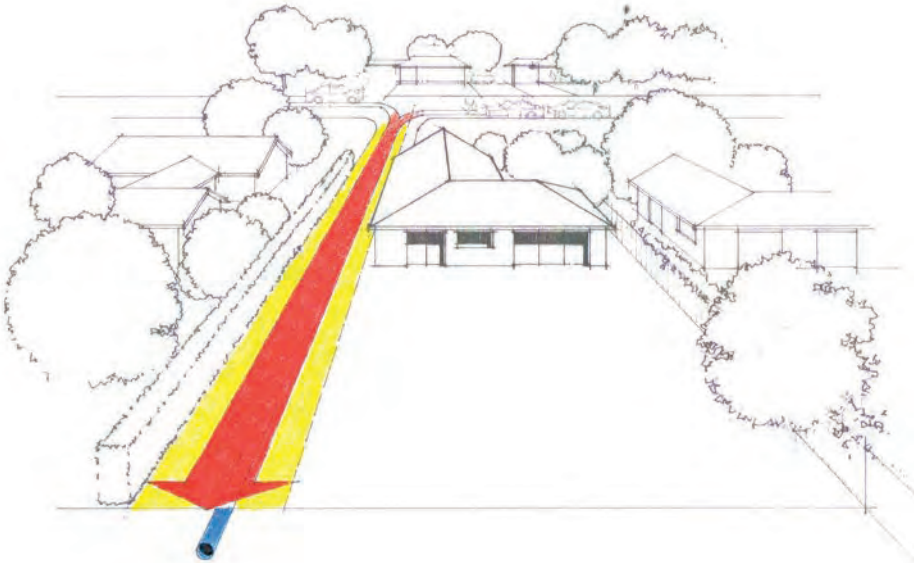


Figure 7 Access passage along the pipe protection envelope

Where a pipe protection envelope is not directly accessible from a roadway an unobstructed maintenance access passage is required to permit Icon Water to bring excavation machinery through the property to repair or replace water and sewer assets. Figure 8 shows an example of this.

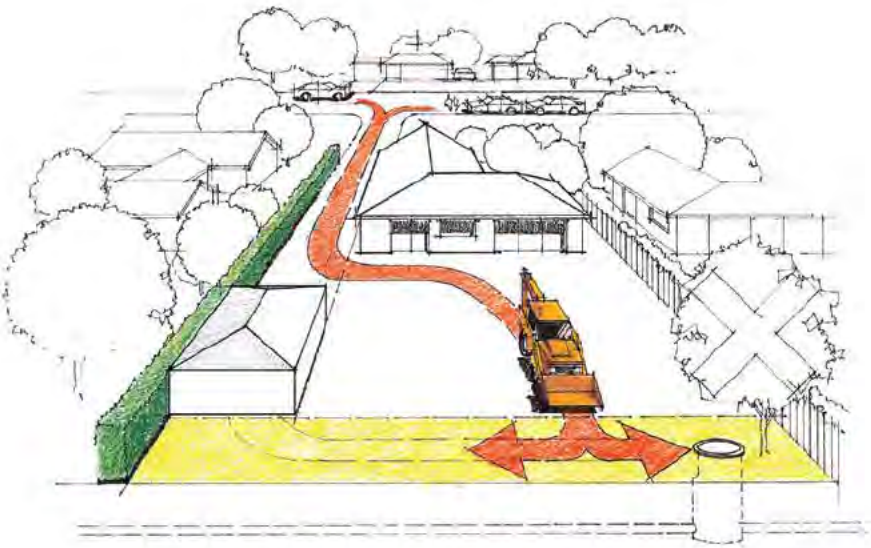


Figure 8 Maintenance access passage

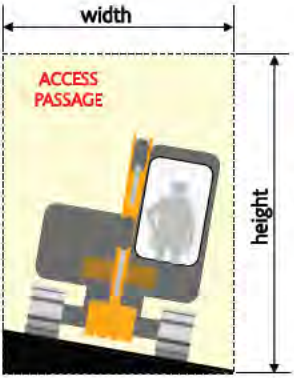
Icon Water will consider alternative arrangements for maintenance access passages if the height and width clearances specified in Table 2 (on page 18-19) are maintained. This is to be approved in writing by Icon Water.

This will not be permitted for emergency access passages.

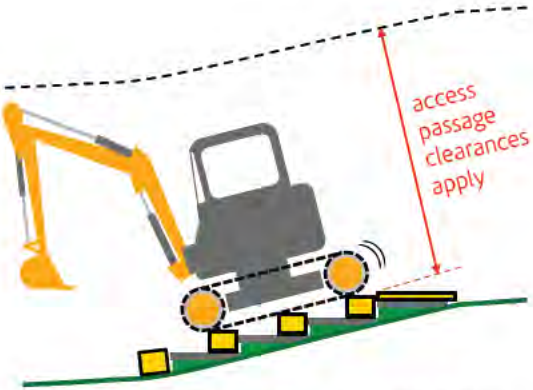
Neighbouring properties must not be disadvantaged when access to the water and sewer networks is required. To do this access must be through the property or unit title on which the network is located.

Slope of the access passage

Pavement, stairs and ramps along the maintenance assess passage must be approved in writing by Icon Water. If approved, these are to be constructed of materials capable of bearing the weight of excavation machinery and built in a manner to provide safe and unobstructed access to the network. For safety reasons, the longitudinal slope of ramps or stairs should not be greater than 1:4 with a maximum side slope of 1:6. This is shown in Figure 9.



max **1 in 6** side-slope



a ramp or protected stair with a maximum **1 in 4** slope

Figure 9 Access passage slopes

Excavation – 'no go zone'

Figure 10 shows the excavation 'no go zone'. This is the space below a pipe protection envelope which must not be excavated without measures being taken to ensure the alignment of water or sewerage network assets will not move or compromise the integrity of the asset. The stability of the asset must be verified and confirmed in writing (with computations) by a licensed structural engineer and approved by Icon Water in writing.

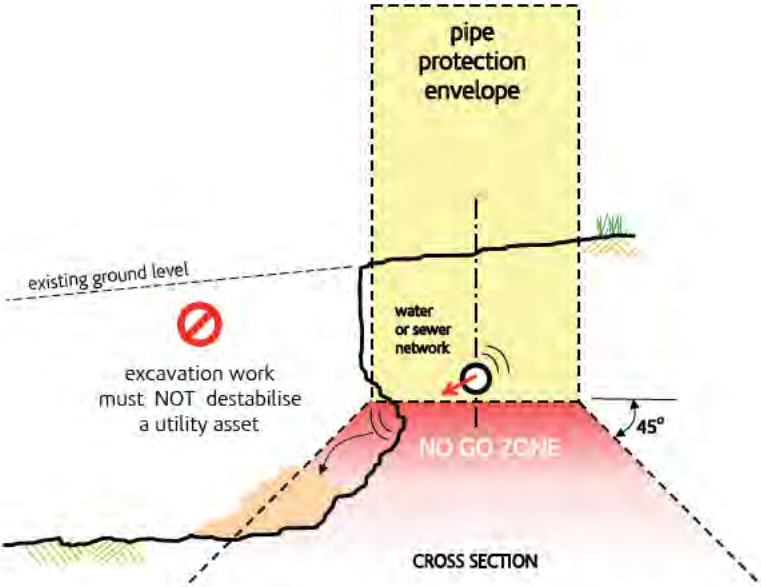


Figure 10 Excavation 'no go zone'

Retaining structures must be designed to ensure Icon Water's water and sewer mains can continue to be safely accessed, operated, repaired and replaced. Emergency and maintenance access passages must not be obstructed by any cut or fill earthworks or retaining walls.

If sewer or water network assets are damaged during construction, Icon Water repair costs are to be charged to the landholder in accordance with the conditions in the *Utilities Act 2000*.

No permanent or temporary structure is permitted in the 'no go zone' or pipe protection envelope without Icon Water's written approval.

Cut and fill

Cut and fill is not permitted inside the pipe protection envelope of a water or sewerage network without Icon Water's written approval.
If approved, adjustment to the level of affected surface fittings (e.g. sewer maintenance structures, valve boxes, fire hydrants, meter pits) may be required. These works are only to be undertaken by Icon Water and charged back to the developer.

Emergency and maintenance access passages must not be compromised by changes to ground levels. Extra depth added over the network may require a larger access passage to be provided on the block.

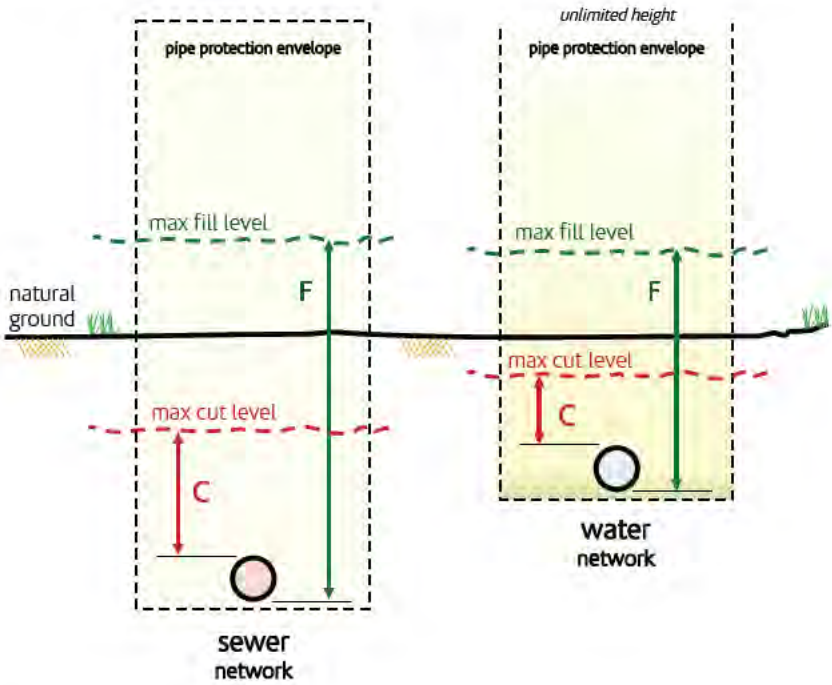


Figure 11 Cut and fill diagrams

Cut and fill in a pipe protection envelope is subject to a safety and operational assessment by Icon Water. The maximum cut and fill permitted inside the pipe protection envelope of water or sewer network is defined in Figure 11 and Table 1.

Gravity sewer network		Water mains & pressurised sewers	
C (cut)	F (fill)	C (cut)	F (fill)
Minimum cover from the top of the pipe: • non trafficable areas - 600mm • Road verges – 750mm • Minor Sealed roads – 900mm • Unsealed, future and arterial roads – 1200mm	Available maintenance access passage width determines permissible fill in accordance with Table 2. Sewer depth must not exceed 5000mm	Water mains: Minimum cover from the top of the pipe: • Non trafficable areas and verges – 600mm • Trafficable areas - 750mm	Maximum depth of 1500m from ground level to the bottom of trench
Sewer connection		**Water connection (water main to meter)**	
C (cut)	F (fill)	C (cut)	F (fill)
Not less than 600mm cover	Tie depth must not exceed 2500mm	Minimum cover from the top of the pipe: • Non trafficable areas 375mm • Trafficable areas and roadways – 450mm	Maximum depth of 1500m from ground level to the bottom of trench

Zone of influence

The zone of influence is the space around the asset where a structure can impact on it. A 45° angle of repose is the default angle used by Icon Water for soils common to the Canberra region.

Building structures and heavy construction equipment loads must NOT be applied to the Zone of influence of a water or sewerage network (irrespective of whether those assets are located inside or outside the lease or property boundary). Figure 12 shows an example of this.

Icon Water recognises it is not always practical to locate footings outside the zone of influence. Alternative engineering solutions will be considered if prepared and submitted in writing (with computations) by a licensed structural engineer. They will need to be approved in writing by Icon Water.

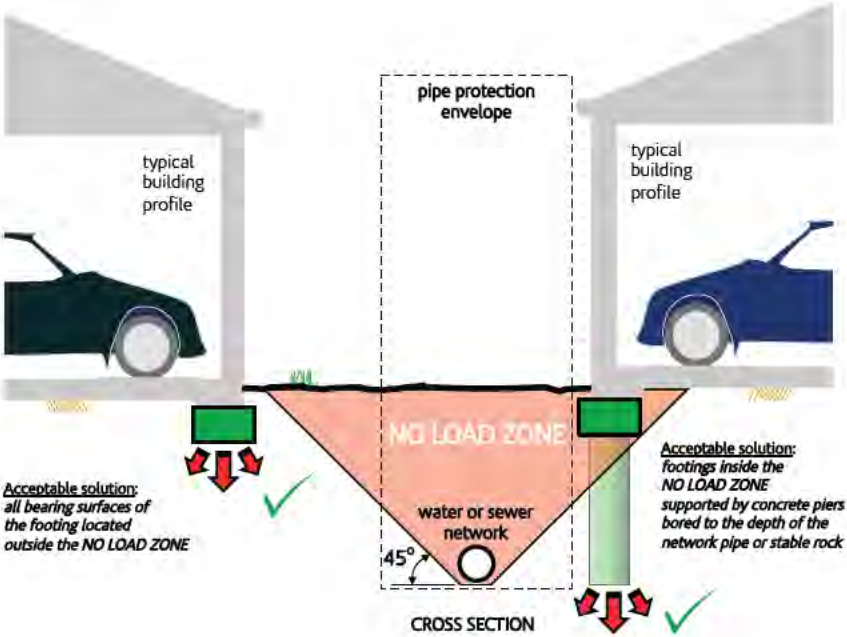


Figure 12 Footings within the zone of influence

Under heavy load, shallow assets under pressure are particularly vulnerable to damage and bursting. Bridging or special protection measures may be required to prevent damage and serious flooding to surrounding areas and structures.

Foundation stability

Foundation design must ensure the whole structure remains stable, damage free and protected from subsidence if a network pressure main fails (bursts or leaks) or a trench is excavated to the full width of the pipe protection envelope. Figure 13 shows the impact incorrect footings can have during maintenance.

When required by Icon Water, confirmation of the structural adequacy of the structure and stability of the foundations must be verified and confirmed in writing (with computations) by a licensed structural engineer.

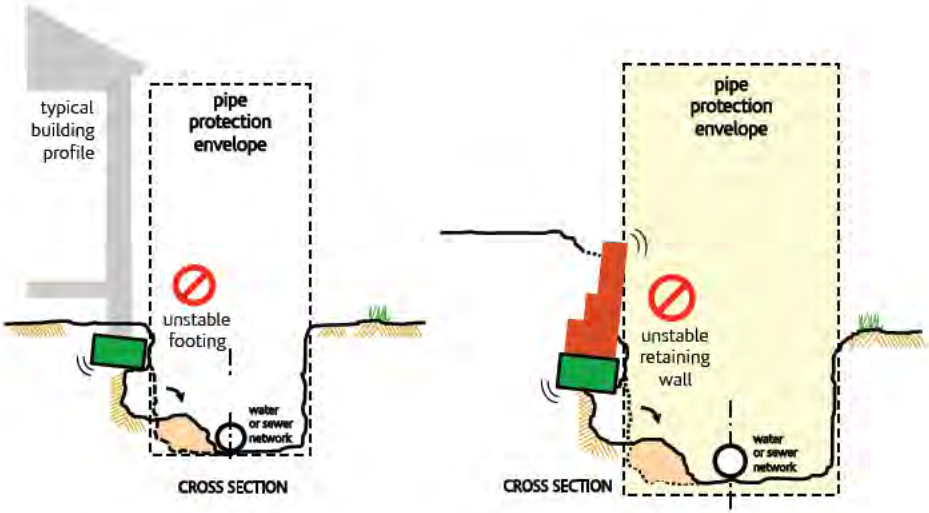


Figure 13 Incorrect footing design

Table 2: Pipe protection envelope, access passage and setback requirements Icon Water reserve the right to change these conditions where abnormal conditions or terrain obstruct reasonable access.

Access to sewerage and water network infrastructure	Minimum width of a 'pipe protection envelope' where a network main traverses a leased block	Minimum height of a 'pipe protection envelope' (or service reservation) above ground	Spoil setback and turning chamfer at 90° change of direction between side access passage and rear 'pipe protection envelope'
DN150 to DN225 gravity sewer pipe where the pipe invert is no deeper than 2.2 metres below finished ground level	2.5 metres	3.0 metres	2.0 metres
DN300 to DN375 gravity sewer pipe where the pipe invert is no deeper than 2.2 metres below finished ground level	3.5 metres	3.0 metres	3.0 metres
DN150 to DN225 gravity sewer pipe where the pipe invert is between 2.2 and 3.0 metres below finished ground level	2.5 metres	3.0 metres	3.0 metres
DN300 to DN375 gravity sewer pipe where the pipe invert is between 2.2 and 3.0 metres below finished ground level	3.5 metres	3.0 metres	3.0 metres
Combined sewerage and stormwater service reservation	Subject to Icon Water discretion (generally add 1.0 metre to categories above).	3.0 metres	As above, according to size and depth of network pipe.
Any trunk sewer or sewerage main larger than DN375 or deeper than 3.0 metres	Subject to Icon Water engineering review of site conditions and risk to property.		
DN100 to DN225 pressure pipe	4.0 metres	Infinite unless adequate damage control is approved.	
DN250 to DN450 pressure pipe	6.0 metres	Infinite unless adequate damage control is approved.	
> DN450 or any water bulk water supply main	Subject to Icon Water engineering review of site conditions and risk to property.		

Private service zone to lay private sanitary drains, stormwater drains, electrical cables/conduits (may be included in the spoil zone)	Maintenance access passage from a roadway through a property to a pipe protection envelope	Emergency access passage (24hr unobstructed access to a sewer manhole inside the property boundary)
1.0 metre recommended	"1.8 x 2.65 metres (width x height) Alternative access may be negotiated (e.g. through garage openings not less than 1.80 x 2.2 metres (width x height))"	1.5 x 2.2 metres (width x height)
1.0 metre recommended	"1.8 x 2.65 metres (width x height) Alternative access may be negotiated (e.g. through garage openings not less than 1.80 x 2.2 metres (width x height))"	1.5 x 2.2 (width x height)
1.0 metre recommended	"2.5 x 2.85 metres (width x height) Alternative access may be negotiated (e.g. through garage openings not less than 2.5 x 2.85 metres (width x height))"	1.5 x 2 2 (width x height)
2.0 metres recommended	"2.5 x 2.85 metres (width x height) Alternative access may be negotiated (e.g. through garage openings not less than 2.5 x 2.85 metres (width x height))"	2.5 x 2 2 (width x height)
As above, according to size and depth of network pipe	Subject to Icon Water discretion (generally add 1.0 metre to width of categories above)	As above, according to size and depth of network pipe
	2.5 x 2.85 metres (width x height)	2.5 x 2.85 metres (width x height)
	Subject to Icon Water engineering review of site conditions and risk to property	

How to submit drawings to Icon Water

Confirm compliance with water and sewerage network requirements:

Lodge your application electronically through the Icon Water website: www.iconwater.com.au (search for 'building and renovation').
Email your application to devapp@iconwater.com.au
All drawings submitted electronically MUST be A3 size and in PDF format

OR

Bring your drawings to Icon Water at: 12 Hoskins Street, Mitchell ACT 2911
Contact hours are from 9.00am to 4.00pm Monday to Friday
Where possible, hard copy application drawings should be A3 size

All drawings must include:

A designated scale (when drawings are submitted electronically at a scale different from the original, a 'bar-scale' must be included)

Site plans must include:

- the footprint of all proposed structures with dimensions from boundaries
- the footprint of all existing approved and unapproved structures (including minor structures such as sheds, rainwater tanks, fences and retaining walls) showing distances from boundaries
- all water mains and sewers (which traverse or are in close proximity to the property) with dimensioned off-sets from boundaries
- the extent of any cut or fill (change of natural ground levels)
- all proposed retaining walls
- the location and depth of the sewerage 'tie'
- the location of all sewer and stormwater maintenance holes (manholes), water meter pits, fire hydrants and water valves (if located inside the property boundaries, in driveways or the nature strip)
- all 'proposed easements' or 'service reservations' sourced from the current Land Title or 'Deposited Plan'
- the over-land flow path for water main burst or surcharge of wastewater from sewage overflow protection devices and maintenance holes (manholes).

General drawings must include:

- dimensioned floor plans of proposed structures (all levels including basements)
- general elevations indicating natural and proposed ground levels

- cross sections showing the location and depth of water mains and sewer pipes relative to proposed structures (i.e. footings, retaining walls, basements, landscape features, cut or fill) where those structures are within or in close proximity to a pipe protection envelope or zone of influence of the asset
- engineering instructions for the stabilisation and protection of water and sewerage network infrastructure where exposed to traffic loads or excavation works
- instructions for the protection of the water service, water meter assembly and sewer tie during construction activities;
- instructions for the temporary connection to sewerage or water networks to support construction activities;
- instructions for the provision of sullage pumps where sanitary fixtures cannot be protected from sewage surcharge by an approved overflow-relief gully or an adequate overland discharge flow-path cannot be provided (draining away from occupied areas)
- setbacks for private services (between the building and a pipe protection envelope to ensure private sanitary drains, stormwater drains, electricity cables and conduits do not obstruct the pipe protection envelope of a water or sewer asset. See Table 2 (on page 16-17).

Additional multi-residential and commercial requirements:

- a preliminary external services plan must be submitted (for the sizing and locating of water and sewerage network connections) complying with Icon Water Supply and Sewerage Standards and the Icon Water's water and Sewerage Service Installation Rules
- an 'off-site' works plan and sections for the installation of structures on adjacent public land (e.g. landscaping, temporary site offices, ramps, rock anchors, soil nails, etc.).

Landscape drawings to include

Where landscape works require development or building approval, the drawings must include:

- dimensioned plans of all existing and proposed buildings
- dimensioned plans of all existing and proposed landscape features
- elevations of existing and new structures indicating existing and proposed ground levels
- cross sections showing the location and depth of water mains and sewer pipes relative to proposed new works (i.e. footings, retaining walls, sheds, cut or fill) where those structures are within or in close proximity to a pipe protection envelope or zone of influence of the asset
- engineering instructions for the stabilisation and protection of water and sewerage network infrastructure where exposed to traffic loads or excavation works

- instructions for the protection of the water service, water meter assembly and sewer tie during construction activities
- setbacks for private service (between the building and a pipe protection envelope to ensure private sanitary drains, stormwater drains, electricity cables and conduits do not obstruct the pipe protection envelope of a water or sewer asset). See Table 2 (on page 16-17).

Under the Planning and Development Regulation 2008 – Criterion 1 landscape works proposed to be located on or over a Utility easement, pipe protection envelope or access passage, require Icon Water approval. The landholder may be liable to pay for the removal of obstructions, damage to property or the repair of Icon Water's infrastructure if they or their agents obstruct access or interfere with the safe and efficient operation of those networks.

Landscaping and Fencing

Fences, driveways, paving, retaining walls, landscaping & other garden features

To be read in conjunction with General Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks

About this guide

This guide is designed to be used in conjunction with the information contained in the guide *General Building Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks.*

Contact us for information and advice.

Phone: 02 6248 3111

Address: 12 Hoskins Street, Mitchell ACT 2911

Web: iconwater.com.au/buildingandrenovation

Protection of water and sewer fittings – garden areas

Icon Water require access to operate and maintain essential water and sewerage equipment located on the verge and inside the boundaries of most Canberra properties. Fire hydrants, meter boxes, water valves, maintenance holes (manholes) and sanitary drainage (boundary) access shafts need to be accessible (day and night). A one metre radius safe work area must be kept free of obstruction (fences, retaining walls, trees, shrubs and debris).

Maintenance access through retaining walls

Retaining structures must be designed to ensure Icon Water's water and sewer networks can continue to be safely accessed, operated, repaired and replaced. Emergency and maintenance access passages must not be obstructed.

Where a retaining wall obstructs maintenance or emergency access to the pipe protection envelope of a sewer or water network, a ramp or stair constructed of materials capable of bearing the weight of excavation machinery is required over or through the wall. Figure 14 shows an example of this.

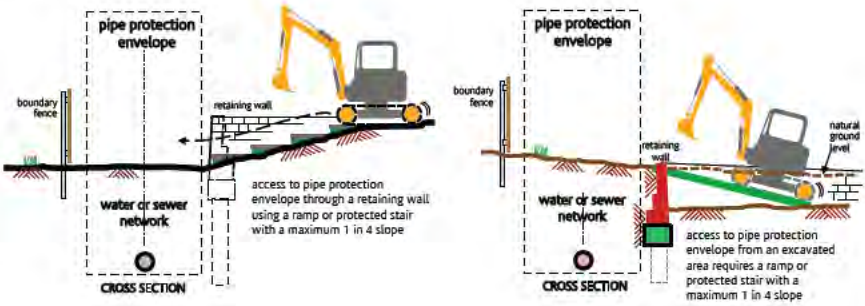


Figure 14 Ramped access

Lightweight fences

Lightweight timber paling or sheet metal boundary fences are generally permitted to cross the zone of influence of a sewer or water network where maintenance access to the pipe protection envelope is guaranteed from both sides of the fence. Posts are not to be located directly over a network asset. Figure 15 shows an example of this.

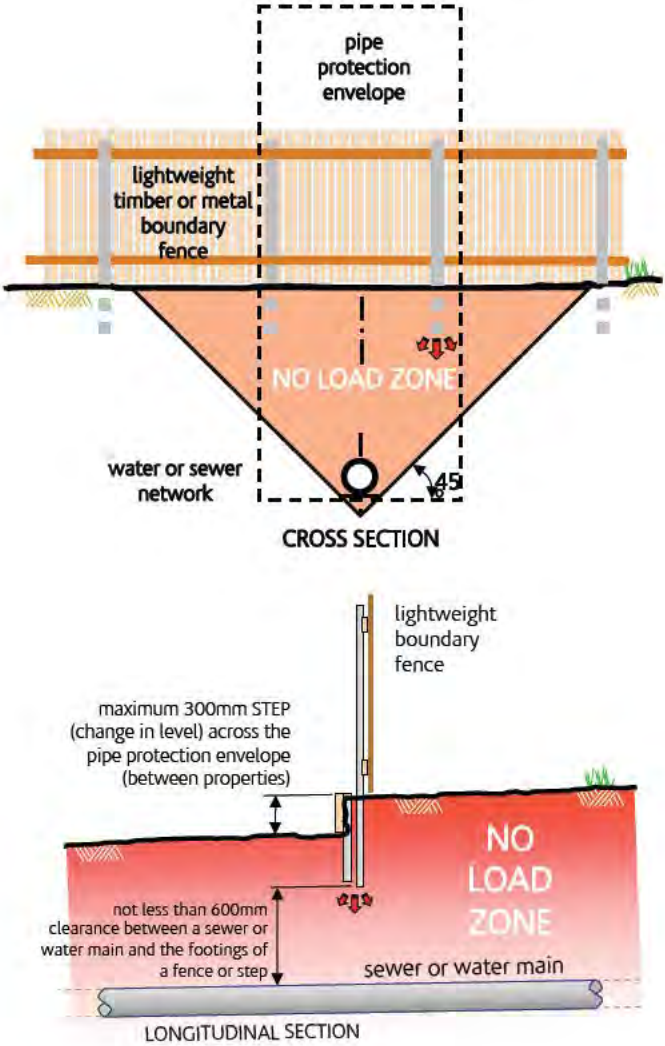


Figure 15 Lightweight fence requirements

Masonry fences

Heavyweight (masonry) fences or barriers may be approved to cross a pipe protection envelope of a sewer or water network when, in the opinion of Icon Water, the structure complies with pipe protection envelope, zone of influence, maintenance access, foundation stability and spoil setback requirements. Gates, bridging beams or special footing designs may be required. Figures 16 and 17 show examples of this.

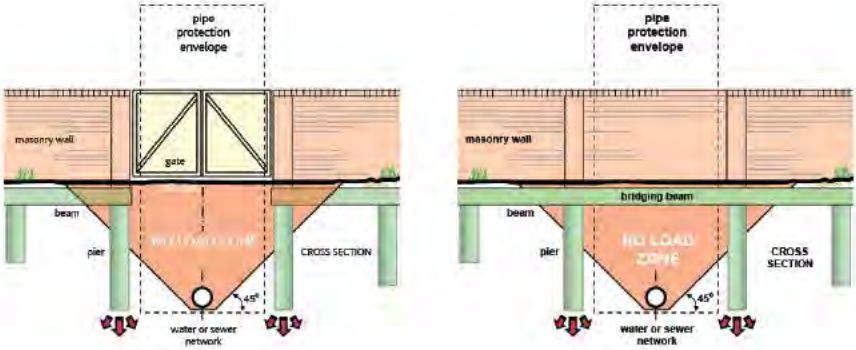


Figure 16 Masonry fence footings design

Bridging is usually only acceptable where maintenance access to the pipe protection envelope is guaranteed from both sides of the fence.

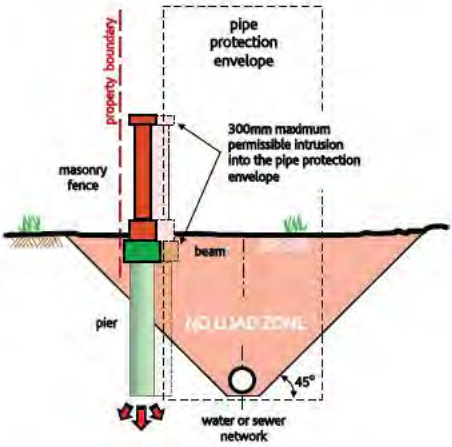


Figure 17 Masonry fence footings outside PPE

Some minor intrusion into the pipe protection envelope may be permitted where the pipe protection envelope abuts the property boundary. This is to be approved in writing, by, and at the discretion of Icon Water.

Retaining wall

Retaining structures may be approved in writing by Icon Water to run in close proximity or bridge across a pipe protection envelope of a sewer or water network where in the opinion of Icon Water, the structure complies with pipe protection envelope, zone of Influence, maintenance access, foundation stability and spoil setback requirements. Figure 18 shows an example of this.

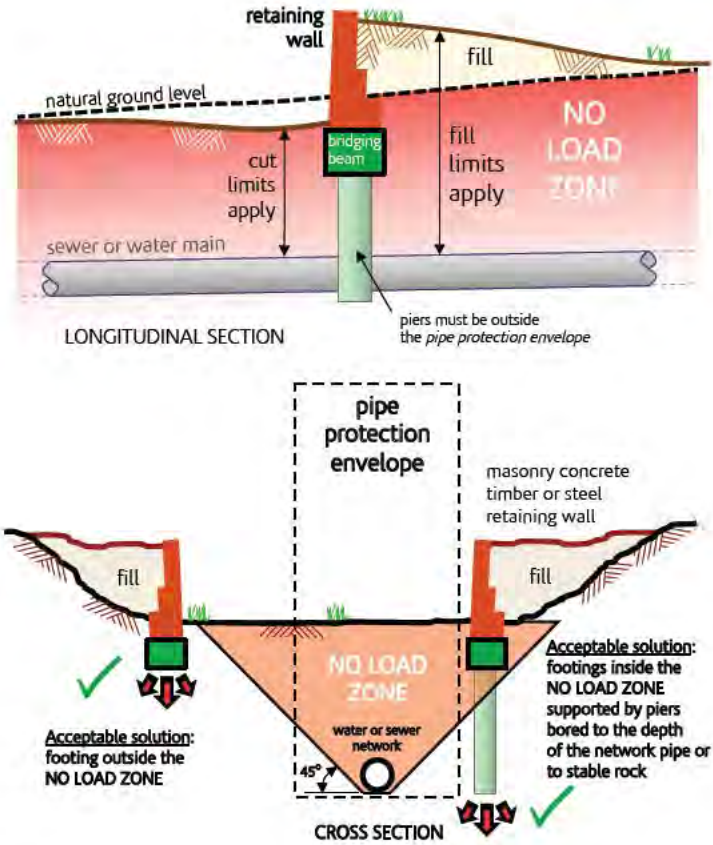


Figure 18 Retaining wall footing design

Paving

Icon Water will generally approve pedestrian and trafficable pavements such as cobble stone, brick or concrete pavers (laid on sand or scalpings) and bituminous pavement (laid on compacted road base) inside the pipe protection envelope of a water or sewer network, subject to the following conditions:

- Reinforced concrete slabs no thicker than 100mm must be laid with grooved joints along the longitudinal edge of the pipe protection envelope and a maximum spacing of 3m along the envelope to facilitate ease of replacement
- Reinforced concrete slabs greater than 100mm in thickness must be designed (in consultation with Icon Water) in panels which bridge across the pipe protection envelope and are fitted with lugs to facilitate the lifting of these panels when access is required. Weight limits will apply
- Concrete slabs and permanent structures must be separated by joints to permit the removal of slabs without damage to adjacent structures.

Icon Water will generally replace pavements, removed for the purpose of repairing or replacing water or sewer infrastructure, where:

- Pavements are made from concrete cobble-stones, brick, bituminous cement, reinforced concrete or other similarly priced materials readily available from local suppliers
- Concrete slabs are no more than 100mm thick
- Damaged pavement panels are reinstated up to but not beyond the construction joint of the adjoining undamaged panel or 3 metres beyond a damaged edge, whichever is the lesser dimension
- Ornamental finishes are mandated by planning authorities (e.g. stamped, stencilled, exposed aggregate or acid-etched, driveways, etc.) however material, colour or pattern matching is not guaranteed for superseded products
- The landholder may be required to contribute to replacement costs which exceed these conditions. When given reasonable notice, the landholder is responsible to remove, or pay Icon Water to remove, pavement which fails to comply with the conditions listed above.

Ponding over surface fittings

Alterations to surface levels is to be undertaken in a manner to prevent stormwater run-off ponding around sewer maintenance holes (manholes), water valves, hydrants and meters. The ingress of stormwater into the sewer network is not permitted as it significantly increases Icon Water operational costs which in turn are passed onto consumers. Figure 19 gives an example of how to prevent this.

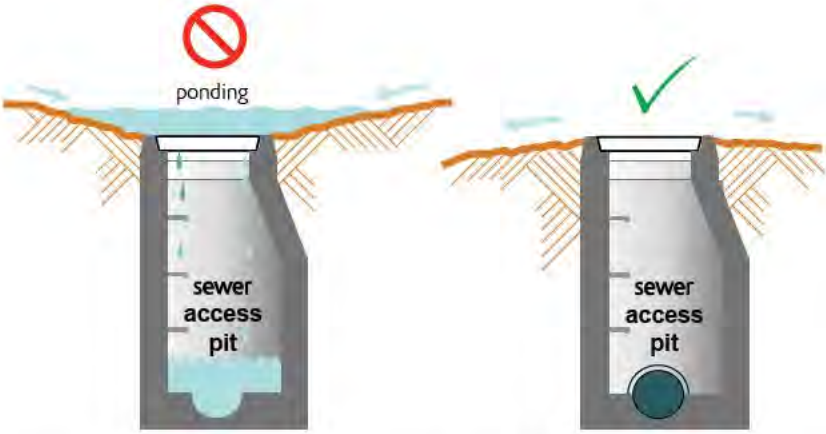


Figure 19 Prevention of ponding over sewer maintenance hole (manhole)

Trip hazards

Care must be taken to prevent the creation of trip hazards when removing topsoil around surface fittings. Figure 20 shows an example of a trip hazard.

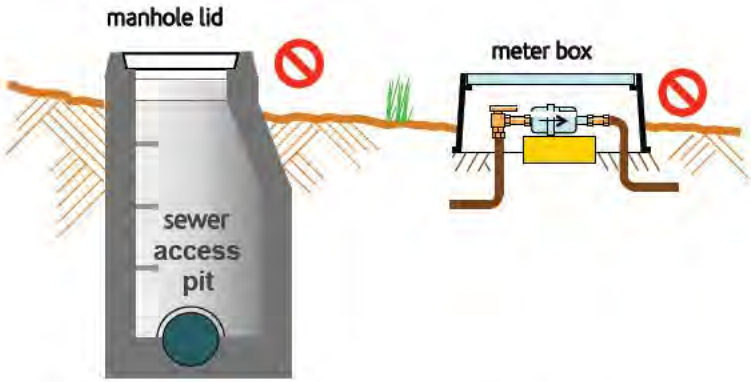


Figure 20 Potential trip hazards involving sewer and water assets

Protection of surface fittings in driveways

Sewer manholes and water meter pits are not permitted to be located in driveways, unless authorised in writing by Icon Water, when permitted, they must be fitted with trafficable lids fitted by Icon Water at the landholders cost. The rim and lid must be flush with the surface (trip-free) as shown in Figure 21.

Water valves and fire hydrants are not permitted in driveways or trafficable areas where vehicles may park.

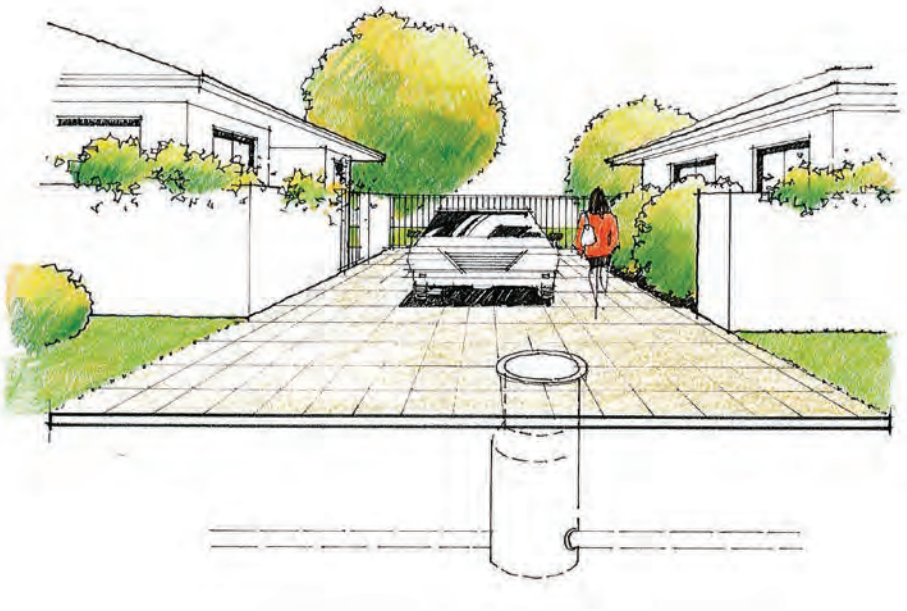


Figure 21 Sewer maintenance hole (manhole) in driveway

Trees and shrubs near water and sewer pipes

Trees and large shrubs should be planted so that the mature canopy does not encroach into or over the pipe protection envelope of a sewer or water network as shown in Figure 22.

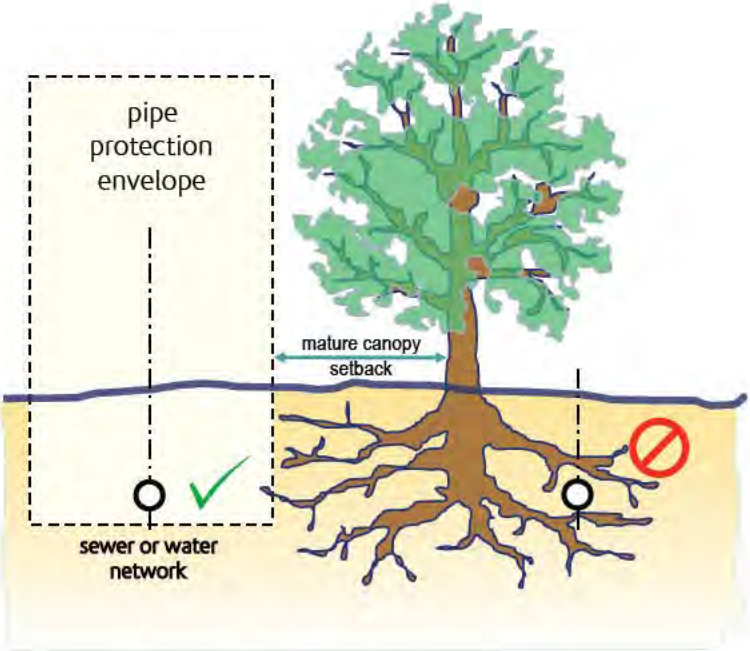


Figure 22 Tree canopy clear of pipe protection envelope

Consultation with a plant nursery may be necessary when choosing trees and shrubs. Some plant species have very invasive and wide spreading root systems. These varieties should not be planted in close proximity to water or sewer networks. The land holder may be required to remove trees and plants which obstruct access to Icon Water's assets.

Sewage surcharges – overland flow

As shown in Figure 23, utility sewer networks and private sanitary drainage systems are designed to relieve the buildup of sewage surcharge via utility maintenance holes (manholes) or discharging from private overflow relief gullies (ORG). These relief mechanisms decrease the likelihood of sewage flooding the interior of buildings if properly built and maintained.

The fall of land and placement of landscape features within a property must also be designed to ensure the overland flow path of sewage discharged from a sewer manhole or ORG does not pond in confined spaces, spill into habitable rooms, pools/ponds or flow into below ground carparks or basements. The overland flow path of a sewage discharge should be directed towards open spaces or roadways.

It is the landholder's responsibility to ensure sewer manhole covers and ORG are not obstructed or made inaccessible.

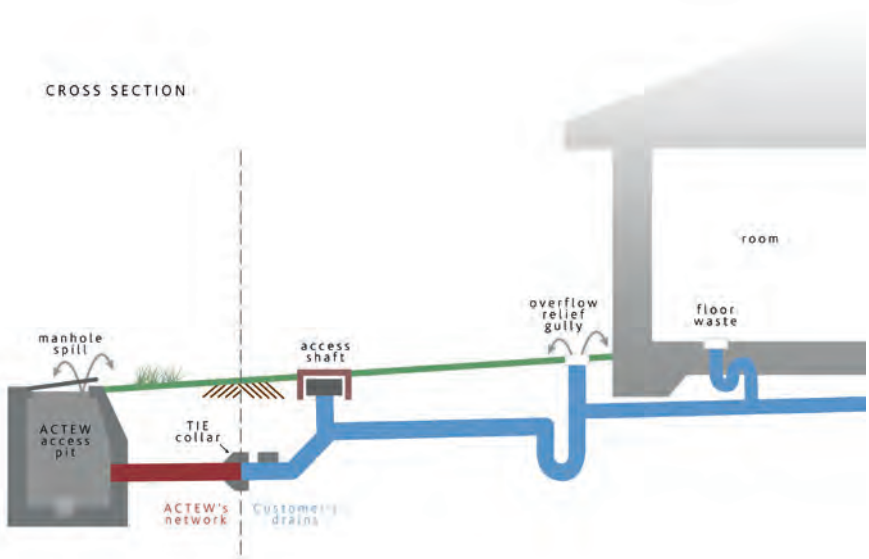
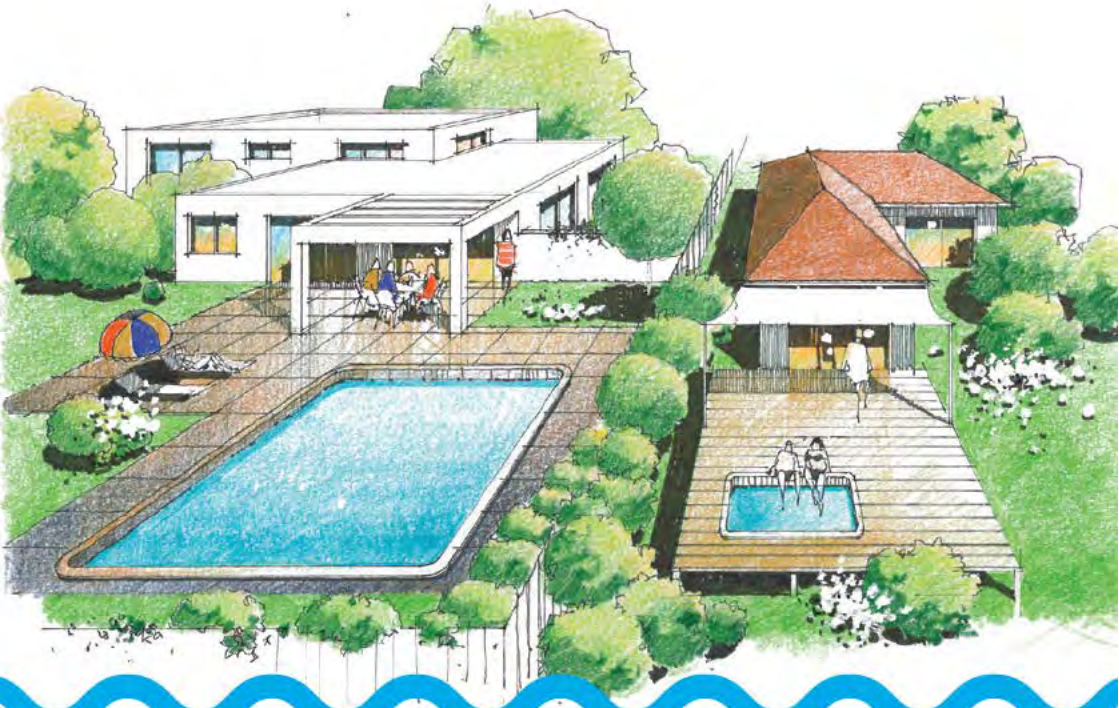


Figure 23 Discharge points for sewer surcharges



Pools and spas

To be read in conjunction with General Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks

About this guide

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Pool equipment

Private underground pipes, cables and conduits or above ground aerials are not permitted inside the pipe protection envelope of water or sewerage networks. Figure 24 shows how adequate provision must be made for the installation and maintenance of pool equipment, outside the pipe protection envelope and access passage.

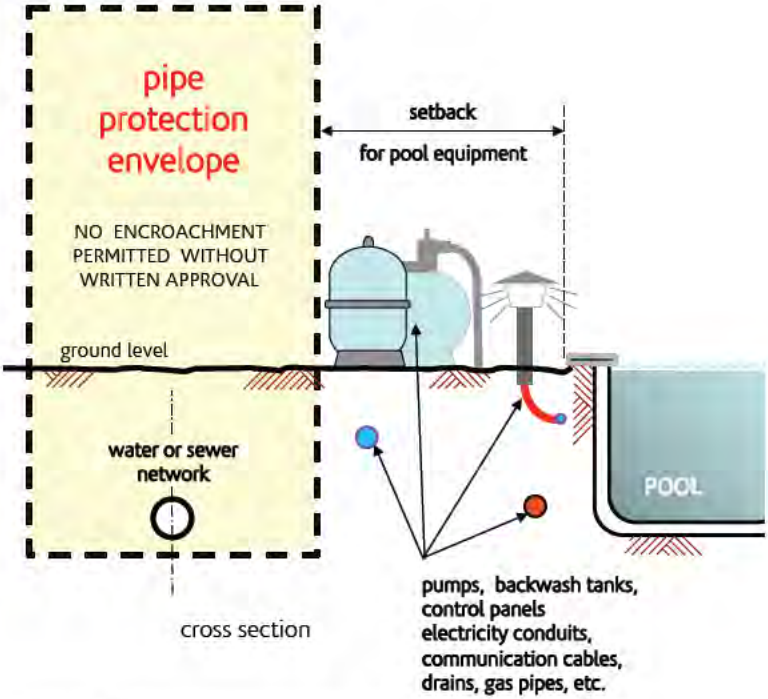


Figure 24 Pool equipment clear of pipe protection envelope

Additional setbacks may be required where private services impede access to the pipe protection envelope or increase the likelihood of harm to Icon Water employees.

Structural integrity and providing a safe work environment

To provide a safe work environment and protect the pool's structural integrity during maintenance, pool walls must be either structurally adequate or at least beyond the zone of influence of the pipe protection envelope to avoid distortion or failure when excavation work extends to the full width of the pipe protection envelope.

Figure 25 and 26 show an example of unsafe setback for a pool and a safe setback and foundations for a pool.

When required by Icon Water, confirmation of the structural adequacy of the pool in relation to a fully excavated pipe protection envelope must be verified and confirmed in writing (with computations) by a licensed structural engineer.

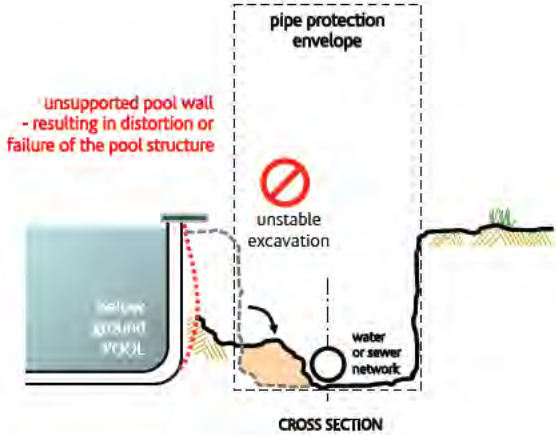


Figure 25 Unsafe setback and foundations for a pool

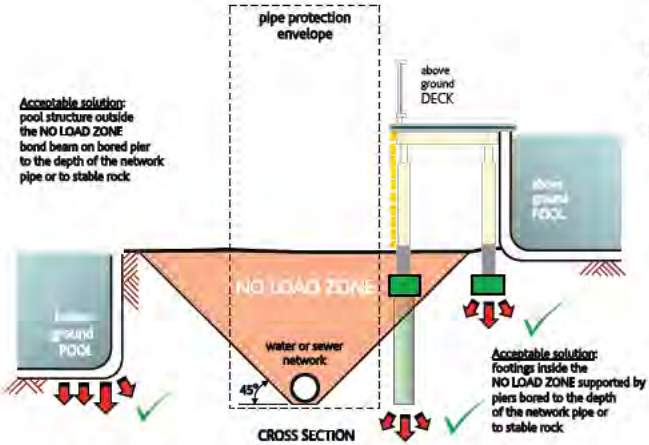


Figure 26 Safe setback and foundations for a pool

Pool fences

As shown in Figure 27, pool fences must not obstruct access to water or sewer networks, however if required, pool safety fences are permitted to cross a pipe protection envelope, emergency access passage or maintenance access passage subject to compliance with the following requirements:

- Unlocked gates are installed to permit emergency access to sewer maintenance holes (manholes) at all times. These gates must provide a clear opening equal to the emergency access passage dimensions specified in Table 2 (on page 16-17)
- Gates or removable panels are installed to permit maintenance access to sewer and water assets when requested by Icon Water. Openings must provide unobstructed access equal to the passage widths specified in Table 2 (on page 16-17)
- Removable panels should be in segments less than 40kg in weight. Panels and posts must be removable without the use of specialist tools or lifting equipment.

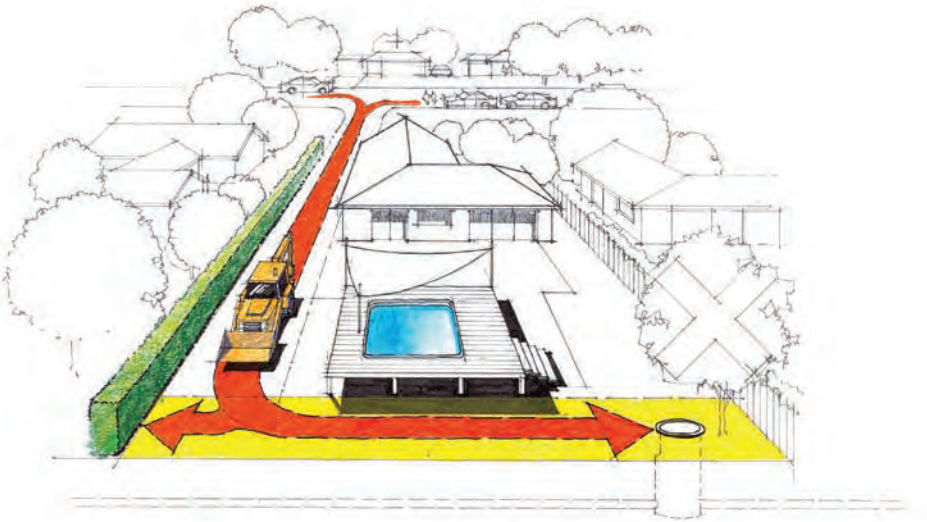
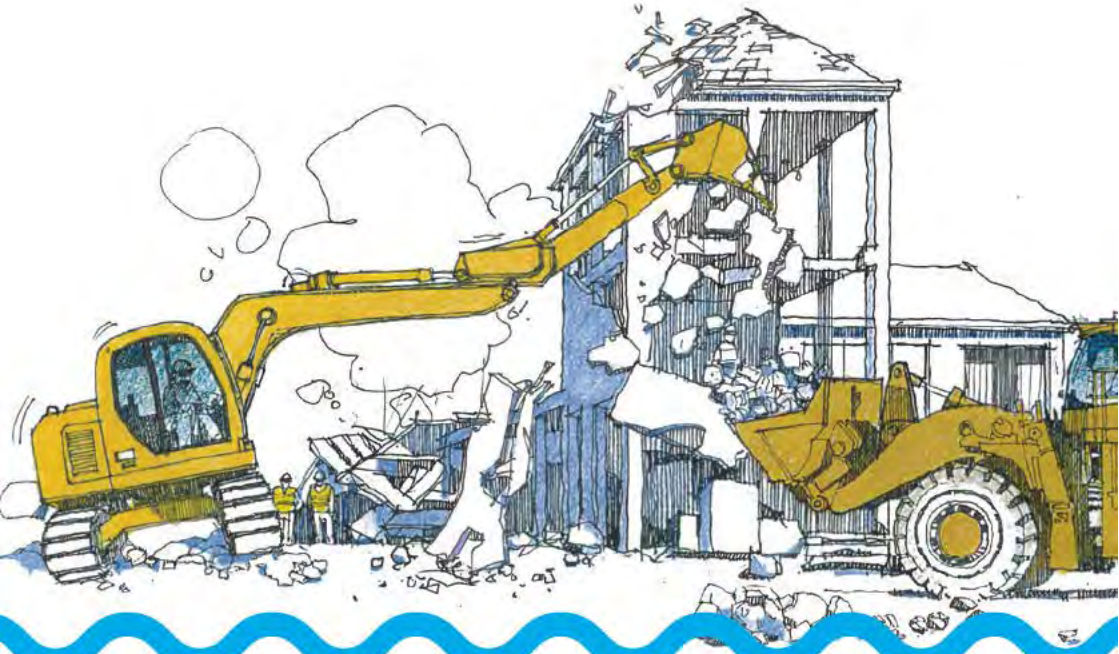


Figure 27 Access around pools



Demolition

To be read in conjunction with General Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks

About this guide

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Compliance with utility requirements

Demolition works are not to damage water or sewer network assets and are not to proceed without Icon Water approval or contrary to any conditions of approval. Figure 28 shows minimum requirements to protect assets during construction.

Pre-demolition asset inspection

It is the responsibility of the landholder or their agents to undertake an inspection, recording the condition of Icon Water assets (maintenance hole [manhole] lid(s), meter assembly, hydrants and valve covers) before demolition works commence. A failure to identify faults prior to the commencement of demolition works may result in Icon Water attributing the cost of repairs to the landholder. Any faults found should be reported to Icon Water on 02 6248 3111 prior to works commencing.

Icon Water may inspect the site upon completion of the demolition, or prior to redevelopment to ensure all conditions of the demolition approval are adhered to. Any costs associated with damage to assets may be borne by the responsible persons as outlined in the *Utilities Act 2000*.

Disconnection policy

If a property remains undeveloped or unoccupied for more than 12 months after a demolition, the landholder may be required to permanently disconnect the sewer and water services from the network in accordance with Icon Water Service and Installation Rules. This work is to be undertaken by Icon Water at the landholder's expense.

Water supply

Unauthorised removal of a water meter is an offence under the *Utilities Act 2000*.

Before demolition works commence, a licensed plumber must disconnect the internal plumbing from the downstream side of the meter. If a water supply is required for subsequent building works, a temporary hose cock (affixed to a sturdy post) must be installed downstream of the meter. The Icon Water service and meter assembly must be staked and para-webbed to protect the assembly from damage.

Instructions detailing the method of protection of the service and meter assembly (complying with Icon Water requirements) must be included on demolition plans.

To avoid water wastage, Icon Water recommend the meter isolation valve be turned off when the site is unoccupied.

The water meter must be accessible for maintenance and reading at all times.

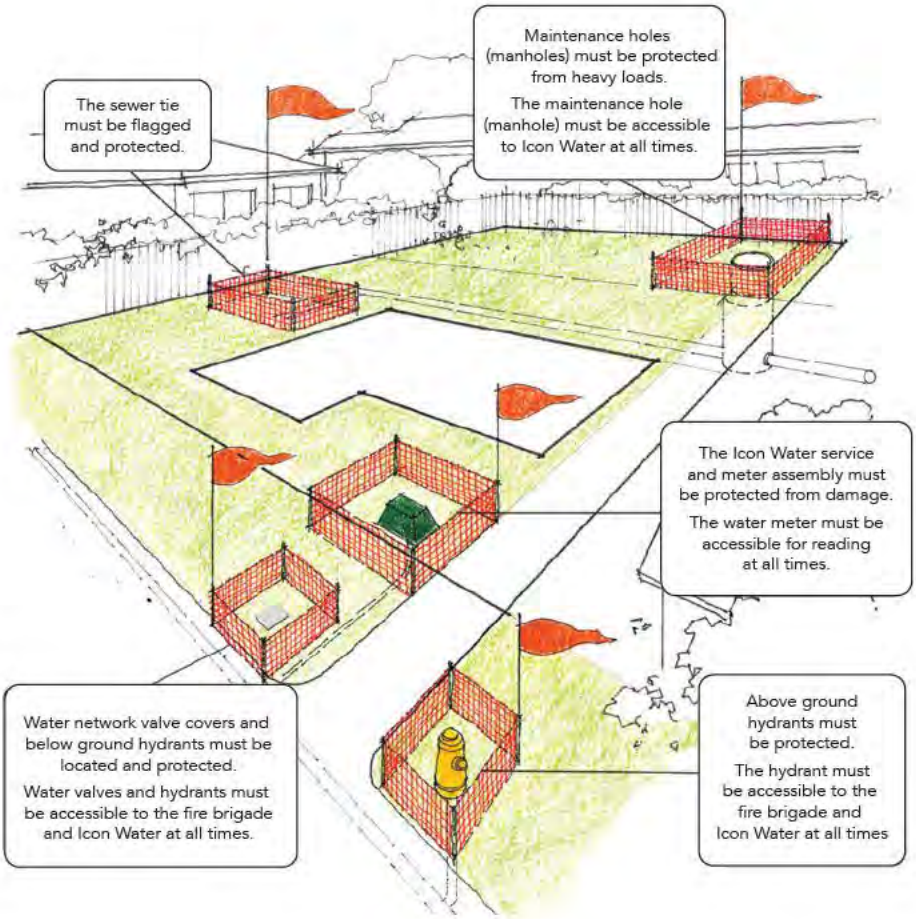


Figure 28 Protection of assets during construction

Water valves and fire hydrants

Water network valve covers, above ground hydrants and below ground hydrants must be located and staked and para-webbed to protect these assemblies from damage.

Water valves and hydrants must be accessible to the fire brigade and Icon Water at all times.

Maintenance Structures

Sewer maintenance structures must be located, made visible, staked and para-webbed to protect them from damage. These are to be protected from heavy loads and be accessible to Icon Water at all times.

Sewer connection

Before demolition works commence, a licensed drainer must cap the internal sanitary drain (approximately 3 metres from the sewer tie) to ACT Government Environment and Planning Directorate requirements, at the landholder's expense.

Specification clauses detailing the method of disconnection of sanitary drainage (in accordance with Icon Water requirements) must be included on demolition plans.

Icon Water may inspect the disconnection before the demolition works commence.

The sewer tie must be flagged and protected from damage.

Future reconnection must be at the tie and comply with ACT Government Environment and Planning Directorate requirements.

Damage to Icon Water assets

If sewer or water network assets are damaged by demolition related activities, Icon Water repair costs will be charged to the person(s) responsible for that damage in accordance with the conditions in the *Utilities Act 2000*. Damage occurring inside the property boundaries will be attributed to the landholder. Costs to repair damage occurring outside the property boundary are commonly assigned to the responsible party causing the damage.

Dual occupancy and secondary residences

To be read in conjunction with General Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks

About this guide

This guide is designed to be used in conjunction with the information contained in the guide *General Building Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks.*

Water supply and sewer connection

Each leased premises (residence and land) must be separately serviced with dedicated connections to the Icon Water networks in accordance with the principles shown in Figure 29.

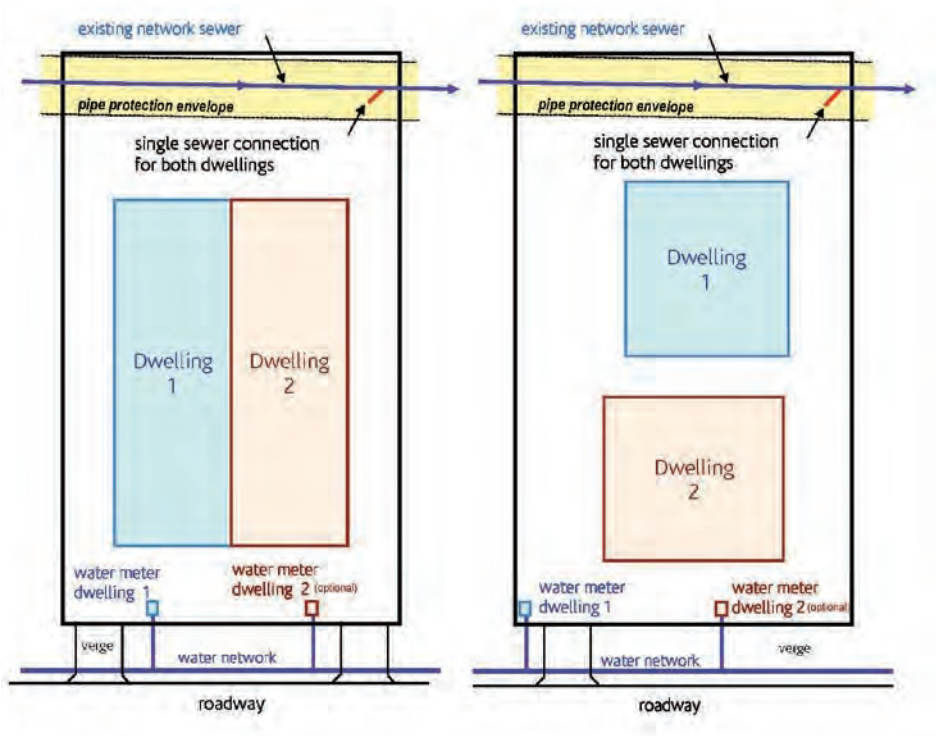


Figure 29 Water and sewer servicing of dual occupancies and secondary residences only

Single lease, dual occupancy properties must be serviced with:

- For dual occupancy (if subdivided), there must be
  - two independent connections to the water network (one for each dwelling). Each connection must be fitted with an Icon Water meter; and
  - one shared connection to the sewer network.

Figure 30 shows an example of this.

- Secondary residences are deemed to be on a single lease, therefore separate servicing is not required. A separate water meter can be provided at the owner's expense, on request.

Subdivided properties must be serviced with:

- Independent connections to the water network (one for each lease). Connections to the Icon Water network must be made to each lease, directly from Territory Land. Connection pipes will not be approved to traverse common property or another leased property. Connections made through private easements or utility service reservations (utility easements) will not be approved.

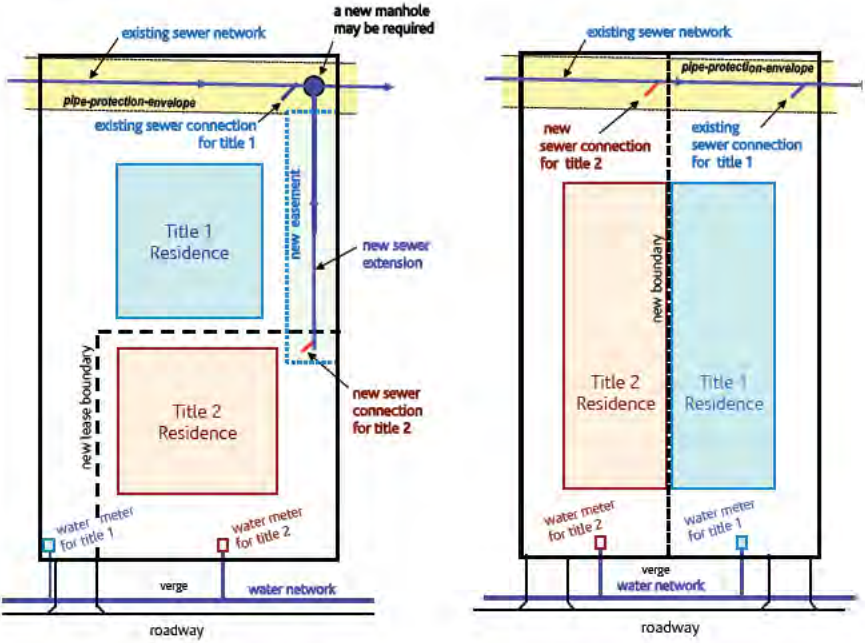


Figure 30 Water and sewer servicing of subdivided leases (dual occupancy only)

- Independent connections to the sewer network (one for each lease). Connections to the Icon Water sewer network must be made to each lease, directly from Territory Land or from an Icon Water sewer located in a service reservation (easement) in close proximity. Augmentation of the sewer network may be required and additional sewerage reservations (sewer easements) created on adjoining leases. Sanitary drains traversing common property or another leased property will not be approved.

Access passages

An unobstructed emergency access passage is required from the roadway through all properties containing sewer maintenance structures (manholes) to provide Icon Water with 24 hour x 7 day access to clear sewage blockages. Figure 31 shows examples of this.

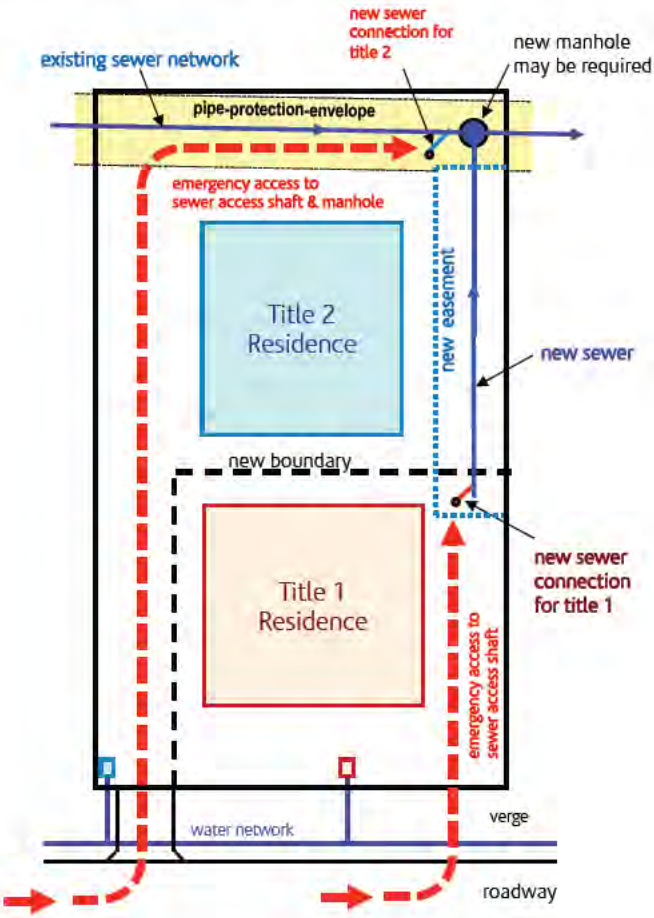


Figure 31 Emergency access passages

Where Icon Water sewer or water networks are located inside the boundaries of a property, an unobstructed maintenance access passage is required from the roadway and along the full length of the pipe protection envelope of those assets.

Figure 32 shows an example of this.

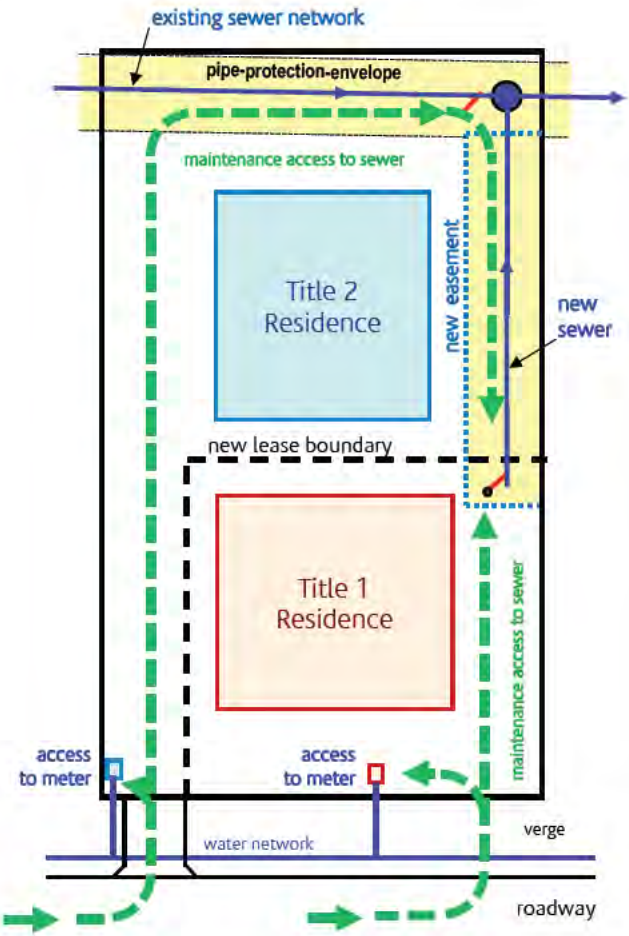


Figure 32 Planned access passages

Multi unit development

To be read in conjunction with General Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks

About this guide

This guide is designed to be used in conjunction with the information contained in the guide *General Building Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks.*

Water supply and sewer connection

Single lease, multi unit developments must be serviced with:

One connection to the water network fitted with an Icon Water meter in accordance with Icon Water's unit metering guidelines, and one shared connection to the sewer network. Figure 33 shows an example of this.

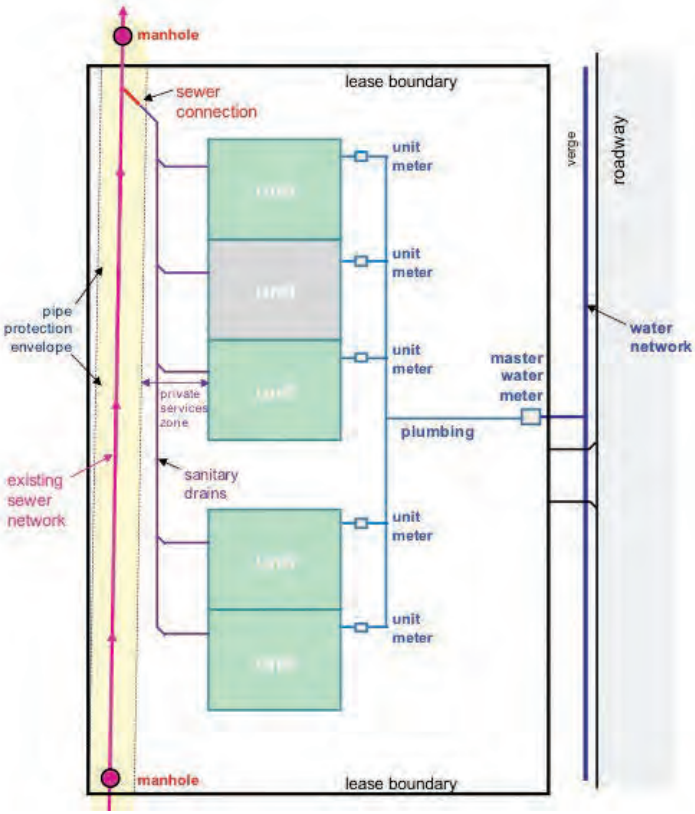


Figure 33 Water supply to single lease multi unit sites

Emergency access passages

An unobstructed emergency access passage is required from the roadway through all properties containing sewer maintenance holes (manholes) to provide Icon Water with 24 hour x 7 day access to clear sewage blockages.

Figure 34 shows an example of this.

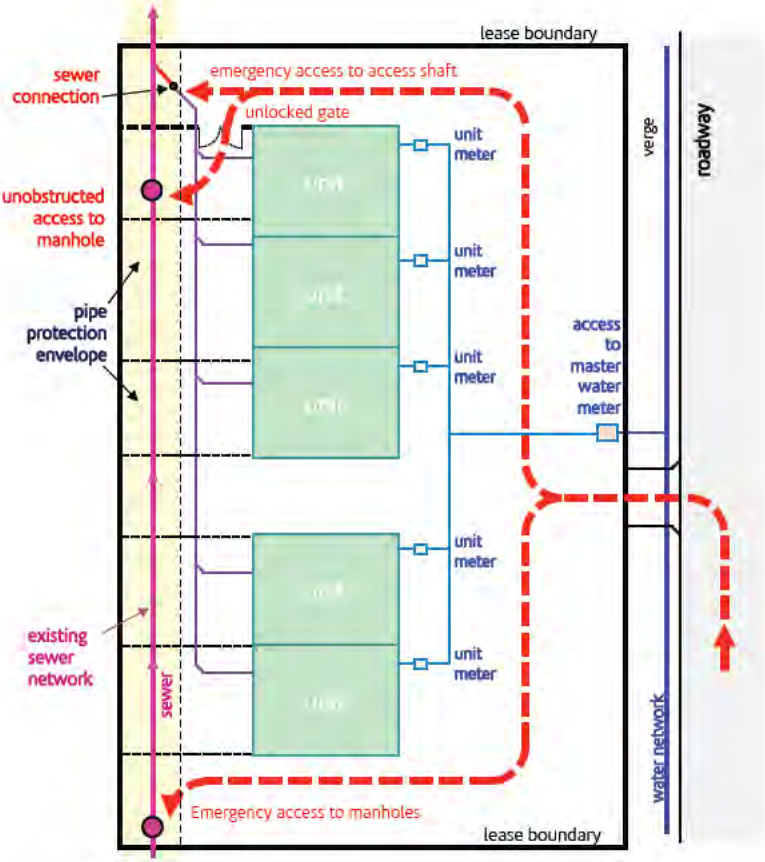


Figure 34 Emergency access to single lease multi unit sites

Maintenance access passages

Where Icon Water sewer or water network pipelines are located inside the boundaries of a property, an unobstructed maintenance access passage is required from the roadway and along the full length of the pipe protection envelope of those assets. Figure 35 shows an example of this.

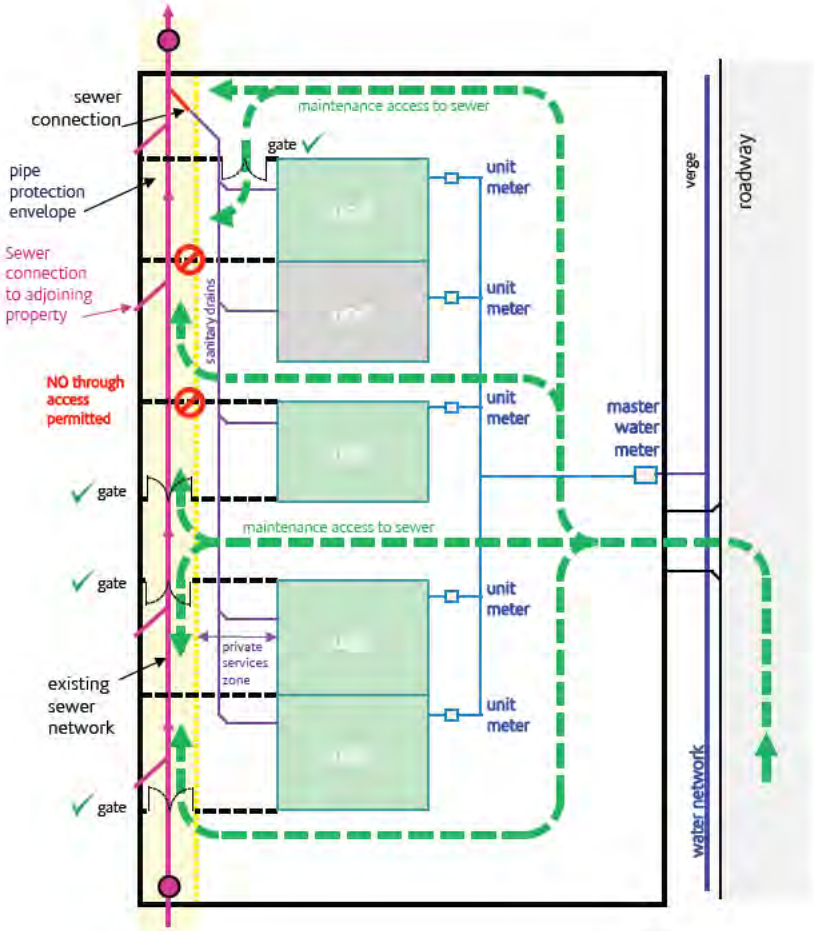


Figure 35 Maintenance access to single lease multi unit sites

Access to water and sewer mains must be through the unit on which these assets are located. Neighbouring units must not be disadvantaged.

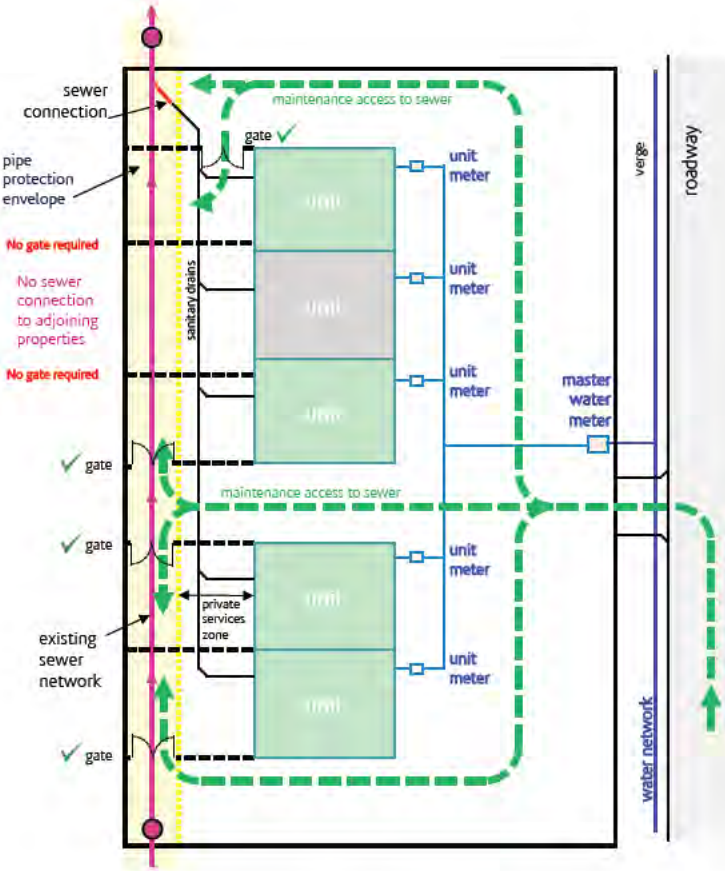


Figure 36 Alternative maintenance access to single lease multi unit sites

Rock anchors and soil nails

To be read in conjunction with General Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks

About this guide

This guide is designed to be used in conjunction with the information contained in the guide *General Building Requirements: A guide to building on properties containing (or in close proximity to) Canberra's water and sewerage networks.*

Rock anchors

Post tensioned rock anchors are commonly used to provide temporary support for basement perimeter walls. The anchors may become redundant when the internal building structure is installed. All rock anchors must be installed below the pipe protection envelope of a network water or sewer asset. A minimum of one metre clearance must be provided between the confirmed location of the utility network and the shaft of the rock anchor to ensure the utility assets are not damaged or disturbed.

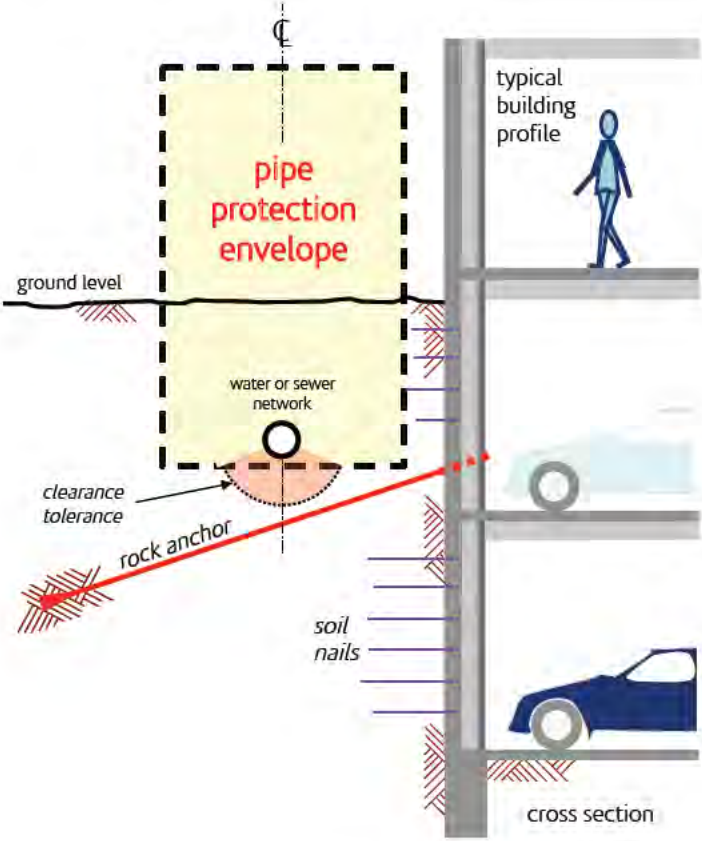


Figure 37 Rock anchors near utility assets

Soil nails

Steel soil nails (reinforcement bars) are commonly driven into the exposed perimeter face of a basement excavation to provide temporary support for the reinforcement mesh in shot-crete walls. Soil nails must not enter the pipe protection envelope of a water or sewer network or within 1m of a sewer maintenance hole (manhole).

Contact details:

iconwater.com.au

Phone

Icon Water: (02) 6248 3111

Option 1 – Faults and emergencies (24 hour)

Option 2 – Account enquiries (8.00am – 6.00pm Monday to Friday)

Option 3 – General enquiries and complaints (8.30am – 5.00pm Monday to Friday)

Postal address

Icon Water
GPO Box 366
Canberra City ACT 2601

Email

talktous@iconwater.com.au

Dial-Before-You-Dig

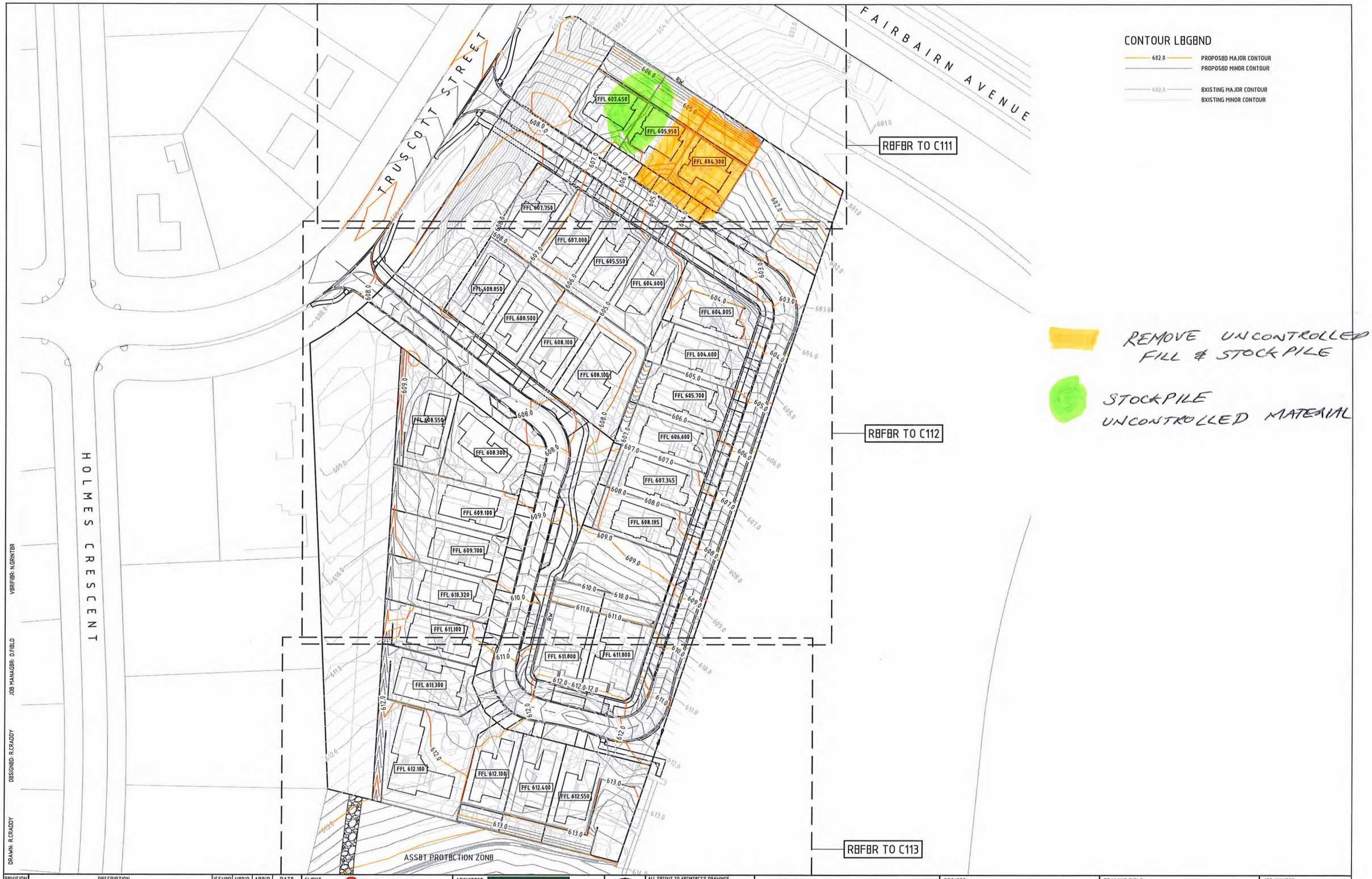
Phone: 1100

Web address: www.1100.com.au

Language assistance

13 14 50

24 hours



REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
6	PROGRESS	RC		JW	26.11.19
7	DRAFT WORKS APPROVAL	RC		DF	30.04.20
8	WORKS APPROVAL	RC		DF	14.05.20
9	WORKS APPROVAL	JC		DF	26.05.20
10	FOR COMMENT	RC		DF	02.02.21
A	CONSTRUCTION	RC	NG	DF	05.02.21

CLIENT

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Email canberra@northrop.com.au ABN 81 094 433 100

PROJECT

DEFENCE HOUSING AUSTRALIA
ACADEMY CLOSE
BLOCK 3 SECTION 65
CAMPBELL ACT

DRAWING TITLE

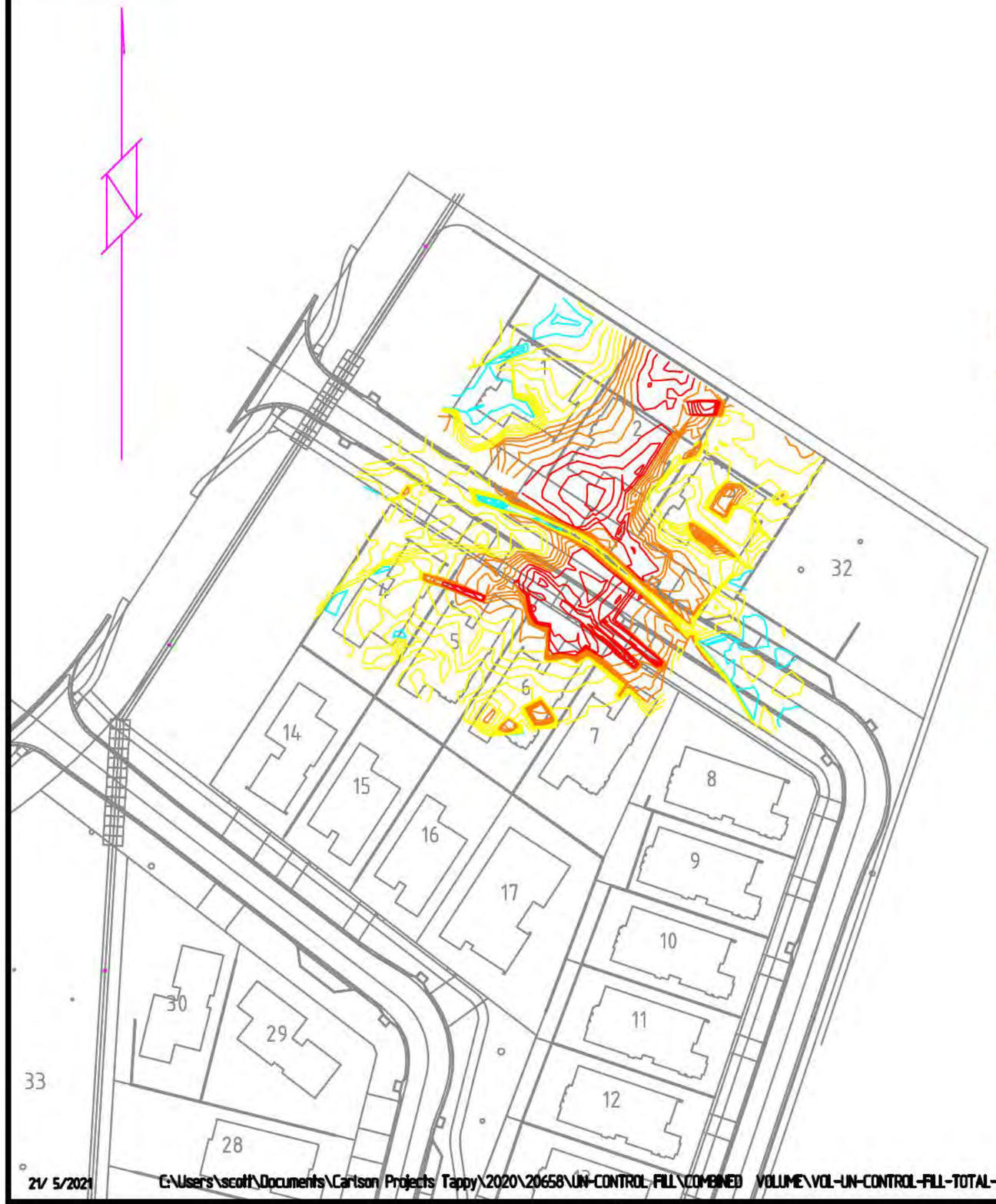
GRADING
KEY PLAN
SHEET 1 OF 4

JOB NUMBER CR172699

DRAWING NUMBER C110

REVISION A

DRAWING SHEET SIZE = A1



COMBINED VOLUME OF PICKUPS 1 TO 3
VOLUME UN CONTROLL FILL
= 1,775·50 cum

- < -1
- -1 to -0·5
- -0·5 to 0
- > 0

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SCOTT D McNIVEN & ASSOCIATES
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SCALE	NTS @A3	JOB No	20658
DATE	21/5/21	DRAWN	TAP

PROJECT	DHA CAMPBELL
TITLE	COMBINED VOLUME
DRAWING No	.