

22 November 2021

The Chairman  
Development Consent Authority  
GPO Box 1680  
DARWIN NT 0801

Dear Chairman

**Re: Condition Precedent 7 of Development Permit DP19/0050  
Stage 1A (Wet Season ESCP)**

The Erosion and Sediment Control Plan (ESCP) consisting of the documents listed below (and attached) has been assessed as being satisfactory in relation to construction phase erosion and sediment control:

DC1603-MHN-1A-ES01 Rev F	DC1603-MHN-1A-ES02 Rev F	DC1603-MHN-1A-ES03 Rev F
DC1603-MHN-1A-ES04 Rev F	DC1603-MHN-1A-ES05 Rev F	DC1603-MHN-1A-ES06 Rev F
DC1603-MHN-1A-ES07 Rev F	DC1603-MHN-1A-ES08 Rev E	DC1603-MHN-1A-ES09 Rev F
DC1603-MHN-1A-ES10 Rev F	DC1603-MHN-1A-ES11 Rev F	DC1603-MHN-1A-ES12 Rev F
DC1603-MHN-1A-ES13 Rev F	DC1603-MHN-1A-SW14	DC1603-MHN-1A-SW15
DC1603-MHN-1A-SW16	D17-0020-1A LA02.01 Rev B	D17-0020-1A LA02.02 Rev B
D17-0020-1A LA02.03 Rev B	D17-0020-1A LA03.01 Rev B	
IECA Standard Drawings: CD-01, CD-05, Exit-04, Exit-05, FD-01, FD-02, GFS-01, GFS-02, LS-01, RA-01, RA-02, RFD-01, RFD-02, RCD-01, SF-01, SF-02, OG-01, SA-01, MB-01.		

This assessment is provided on the basis that the developer and / or consultant is not absolved from full responsibility for the correctness and accuracy of the ESCP and implementation of effective management of erosion and sediment control for the duration of the development.

Please note that officers from the Northern Territory Environment Protection Authority may undertake compliance action in accordance with the *Waste Management and Pollution Control Act 1998* in the event that dust or sediment-laden runoff leaves the site. For erosion and sediment control advice, please contact the Land Management Unit on (08) 8999 4454.

Yours sincerely



Bill Cumberland

Principal Land Management Officer

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Important: This letter forms part of the accepted ESCP and should not be removed.

DEPWS = DEPARTMENT OF ENVIRONMENT, PARKS AND WATER SECURITY.  
BPESC = BEST PRACTICE EROSION AND SEDIMENT CONTROL BY IECA AUSTRALIA.

**GENERAL**

- ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MUST BE IMPLEMENTED AND A REVISED EROSION AND SEDIMENT CONTROL PLAN (ESCP) MUST BE SUBMITTED FOR APPROVAL IN THE EVENT THAT SITE CONDITIONS CHANGE SIGNIFICANTLY FROM THOSE CONSIDERED WITHIN THE ESCP.
- WHERE THERE IS A HIGH PROBABILITY THAT SERIOUS OR MATERIAL ENVIRONMENTAL HARM MAY OCCUR AS A RESULT OF SEDIMENT LEAVING THE SITE, APPROPRIATE ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MUST BE IMPLEMENTED SUCH THAT ALL REASONABLE AND PRACTICABLE MEASURES ARE BEING TAKEN TO PREVENT OR MINIMISE SUCH HARM. ONLY THOSE WORKS NECESSARY TO MINIMISE OR PREVENT ENVIRONMENTAL HARM SHALL BE CONDUCTED ON-SITE PRIOR TO APPROVAL OF THE AMENDED EROSION AND SEDIMENT CONTROL PLAN (ESCP).
- IN CIRCUMSTANCES WHERE IT IS CONSIDERED NECESSARY TO PREPARE AN AMENDED EROSION AND SEDIMENT CONTROL PLAN (ESCP), AND WHERE THE DELIVERY OF SUCH AN AMENDED ESCP IS NOT IMMEDIATE, THEN ALL NECESSARY NEW OR MODIFIED EROSION AND SEDIMENT CONTROL WORKS MUST BE IN ACCORDANCE TO BPESC. UPON APPROVAL OF THE AMENDED ESCP, ALL WORKS MUST BE IMPLEMENTED IN ACCORDANCE WITH THE AMENDED PLAN.
- PRE WET SEASON INSPECTION TO BE UNDERTAKEN WITH DEPWS OFFICERS, TO DETERMINE ADEQUATE LEVEL OF EROSION AND SEDIMENT CONTROLS TO BE IMPLEMENTED FOR THE WET SEASON.
- CONTRACTOR TO MAINTAIN SUFFICIENT ESC CONTROL MATERIALS ON SITE SUCH AS SPARE SEDIMENT FENCING AND OTHER MATERIALS FOR SHORT NOTICE REPAIRS.
- THE IMPLEMENTATION OF THE ESCP WILL BE REGULARLY MONITORED BY THE SUPERINTENDENT AND DEPWS.
- SHOULD IT BE DEEMED NECESSARY FROM MONITORING, THE CONTRACTOR SHALL INSTALL ADDITIONAL MEASURES TO ENSURE THE OBJECTIVES OF THIS ELEMENT ARE MET AND TO MINIMISE THE IMPACT OF CONSTRUCTION ACTIVITIES ON THE SURROUNDING ENVIRONMENT. THE SUPERINTENDENT MAY, AT THEIR DISCRETION, DIRECT THE CONTRACTOR TO CARRY OUT ADDITIONAL CONTROLS, AS AND WHEN REQUIRED. THE CONTRACTOR MAY ALSO AT THEIR DISCRETION OPT TO INCLUDE ADDITIONAL DEVICES AS MAY BE REQUIRED TO ENSURE COMPLIANCE WITH THE APPROVALS AS THEY SEE FIT. IT IS IMPORTANT TO NOTE THAT THE DETAILS CONTAINED HEREIN AND ON THE EROSION AND SEDIMENT CONTROL PLANS ARE NOT NECESSARILY ALL THE MEASURES THAT MAY BE NECESSARY TO FULFIL THE DEVELOPMENT APPROVAL REQUIREMENTS AND ARE TO BE USED AS A GUIDE FOR THE CONSTRUCTION CONTRACTOR.

**LAND CLEARING**

- LAND CLEARING MUST BE DELAYED AS LONG AS PRACTICABLE AND MUST BE UNDERTAKEN IN CONJUNCTION WITH DEVELOPMENT OF EACH STAGE OF WORKS, UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.
- ALL REASONABLE AND PRACTICABLE EFFORTS MUST BE TAKEN TO DELAY THE REMOVAL OF, OR DISTURBANCE TO, EXISTING GROUND COVER (ORGANIC OR INORGANIC) PRIOR TO LAND-DISTURBING ACTIVITIES.
- BULK TREE CLEARING MUST OCCUR IN A MANNER THAT MINIMISES DISTURBANCE TO EXISTING GROUND COVER (ORGANIC OR INORGANIC).
- DISTURBANCE TO NATURAL WATERCOURSES (INCLUDING BED AND BANKS) AND THEIR ASSOCIATED RIPARIAN ZONES MUST BE LIMITED TO THE MINIMUM PRACTICABLE.
- NO LAND CLEARING SHALL BE UNDERTAKEN UNLESS PRECEDED BY THE INSTALLATION OF ADEQUATE DRAINAGE AND SEDIMENT CONTROL MEASURES, UNLESS SUCH CLEARING IS REQUIRED FOR THE PURPOSE OF INSTALLING SUCH MEASURES, IN WHICH CASE, ONLY THE MINIMUM CLEARING REQUIRED TO INSTALL SUCH MEASURES SHALL OCCUR.
- LAND CLEARING MUST BE LIMITED TO 5M FROM THE EDGE OF PROPOSED CONSTRUCTED WORKS, 2M OF ESSENTIAL CONSTRUCTION TRAFFIC ROUTES, AND A TOTAL OF 10M WIDTH FOR CONSTRUCTION ACCESS, UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.
- PRIOR TO LAND CLEARING, AREAS OF PROTECTED VEGETATION, AND SIGNIFICANT AREAS OF RETAINED VEGETATION MUST BE CLEARLY IDENTIFIED (E.G. WITH HIGH-VISIBILITY TAPE, OR LIGHT FENCING) FOR THE PURPOSES OF MINIMISING THE RISK OF UNNECESSARY LAND CLEARING.
- ALL REASONABLE AND PRACTICABLE MEASURES MUST BE TAKEN TO MINIMISE THE REMOVAL OF, OR DISTURBANCE TO, THOSE TREES, SHRUBS AND GROUND COVERS (ORGANIC OR INORGANIC) THAT ARE INTENDED TO BE RETAINED.
- ALL LAND CLEARING MUST BE IN ACCORDANCE WITH THE FEDERAL, STATE AND LOCAL GOVERNMENT VEGETATION PROTECTION/PRESERVATION REQUIREMENTS AND/OR POLICIES.
- LAND CLEARING IS LIMITED TO THE MINIMUM PRACTICABLE DURING THOSE PERIODS WHEN SOIL EROSION DUE TO WIND, RAIN OR SURFACE WATER IS POSSIBLE.
- LAND CLEARING MUST NOT EXTEND BEYOND THAT NECESSARY TO PROVIDE UP TO EIGHT (8) WEEKS OF SITE ACTIVITY DURING THOSE MONTHS WHEN THE EXPECTED RAINFALL EROSIIVITY IS LESS THAN 100, SIX (6) IF BETWEEN 100 AND 285, FOUR (4) WEEKS IF BETWEEN 285 AND 1500, AND TWO (2) WEEKS IF GREATER THAN 1500. REFER TABLE BELOW FOR MONTHLY EROSIIVITY VALUES AND EROSION RISK RATINGS FOR SITES IN DARWIN.

**SITE ACCESS**

- PRIOR TO THE COMMENCEMENT OF SITE WORKS, THE LOCATION OF THE SITE ACCESS POINT(S) MUST BE VERIFIED WITH THE SUPERINTENDENT.
- SITE ACCESS MUST BE RESTRICTED TO THE MINIMUM PRACTICAL NUMBER OF LOCATIONS.
- SITE EXIT POINTS MUST BE APPROPRIATELY MANAGED TO MINIMISE THE RISK OF SEDIMENT BEING TRACKED ONTO SEALED, PUBLIC ROADWAYS.
- STORMWATER RUNOFF FROM ACCESS ROADS AND STABILISED ENTRY/EXIT POINTS MUST DRAIN TO AN APPROPRIATE SEDIMENT CONTROL DEVICE.

**SOIL AND STOCKPILE MANAGEMENT**

- ALL REASONABLE AND PRACTICABLE MEASURES MUST BE TAKEN TO OBTAIN THE MAXIMUM BENEFIT FROM EXISTING TOPSOIL, INCLUDING:
  - WHERE THE PROPOSED AREA OF SOIL DISTURBANCE EXCEEDS 2500M<sup>2</sup>, AND THE TOPSOIL DOES NOT CONTAIN UNDESIRABLE WEED SEED, THE TOP 50MM OF SOIL MUST BE STRIPPED AND STOCKPILED SEPARATELY FROM THE REMAINING TOPSOIL, AND SPREAD AS A FINAL SURFACE SOIL.
  - IN AREAS WHERE THE TOPSOIL CONTAINS UNDESIRABLE WEED SEED, THE AFFECTED SOIL MUST BE SUITABLY BURIED OR REMOVED FROM THE SITE.
- STOCKPILES OF ERODIBLE MATERIAL THAT HAS THE POTENTIAL TO CAUSE ENVIRONMENTAL HARM IF DISPLACED, MUST BE:
  - APPROPRIATELY PROTECTED FROM WIND, RAIN, CONCENTRATED SURFACE FLOW AND EXCESSIVE UP-SLOPE STORMWATER SURFACE FLOWS.
  - LOCATED AT LEAST 2M FROM ANY HAZARDOUS AREA, RETAINED VEGETATION, OR CONCENTRATED DRAINAGE LINE.
  - LOCATED UP-SLOPE OF AN APPROPRIATE SEDIMENT CONTROL SYSTEM.
  - PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 28 DAYS.
  - PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 10 DAYS DURING THOSE MONTHS THAT HAVE A HIGH EROSION RISK.
  - PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 5 DAYS DURING THOSE MONTHS THAT HAVE A EXTREME EROSION RISK.
- A SUITABLE FLOW DIVERSION SYSTEM MUST BE ESTABLISHED IMMEDIATELY UP-SLOPE OF A STOCKPILE OF ERODIBLE MATERIAL THAT HAS THE POTENTIAL TO CAUSE ENVIRONMENTAL HARM IF DISPLACED, IF THE UP-SLOPE CATCHMENT AREA DRAINING TO THE STOCKPILE EXCEEDS 1500M<sup>2</sup>.

**SITE MANAGEMENT**

- ALL OFFICE FACILITIES AND OPERATIONAL ACTIVITIES MUST BE LOCATED SUCH THAT ANY LIQUID EFFLUENT (E.G. PROCESS WATER, WASH-DOWN WATER, EFFLUENT FROM EQUIPMENT CLEANING, OR PLANT WATERING), CAN BE TOTALLY CONTAINED AND TREATED WITHIN THE SITE.
- THE CONSTRUCTION SCHEDULE MUST AIM TO MINIMISE THE DURATION THAT ANY AND ALL AREAS OF SOIL ARE EXPOSED TO THE EROSIIVE EFFECTS OF WIND, RAIN AND SURFACE WATER.
- LAND-DISTURBING ACTIVITIES MUST BE UNDERTAKEN IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN (ESCP) AND ASSOCIATED DEVELOPMENT CONDITIONS.
- LAND-DISTURBING ACTIVITIES MUST BE UNDERTAKEN IN SUCH A MANNER THAT ALLOWS ALL REASONABLE AND PRACTICABLE MEASURES TO BE UNDERTAKEN TO:
  - ALLOW STORMWATER TO PASS THROUGH THE SITE IN A CONTROLLED MANNER AND AT NON-EROSIVE FLOW VELOCITIES UP TO THE SPECIFIED DESIGN STORM DISCHARGE;
  - MINIMISE SOIL EROSION RESULTING FROM RAIN, WATER FLOW AND/OR WIND;
  - MINIMISE ADVERSE EFFECTS OF SEDIMENT RUNOFF, INCLUDING SAFETY ISSUES;
  - PREVENT, OR AT LEAST MINIMISE, ENVIRONMENTAL HARM RESULTING FROM WORK-RELATED SOIL EROSION AND SEDIMENT RUNOFF;
  - ENSURE THAT THE VALUE AND USE OF LAND/PROPERTIES ADJACENT TO THE DEVELOPMENT (INCLUDING ROADS) ARE NOT DIMINISHED AS A RESULT OF THE ADOPTED ESC MEASURES.
- ALL EROSION AND SEDIMENT CONTROL MEASURES MUST CONFORM TO THE STANDARDS AND SPECIFICATIONS CONTAINED IN:
  - THE DEVELOPMENT APPROVAL CONDITION ISSUED BY DEVELOPMENT CONSENT AUTHORITY; AND
  - THE APPROVED ESCP AND SUPPORTING DOCUMENTATION; OR
  - THE LATEST VERSION OF BPESC IF THE STANDARDS AND SPECIFICATIONS ARE NOT CONTAINED IN THE APPROVED ESCP.
- ANY WORKS THAT MAY CAUSE SIGNIFICANT SOIL DISTURBANCE AND ARE ANCILLARY TO ANY ACTIVITY FOR WHICH REGULATORY BODY APPROVAL IS REQUIRED, MUST NOT COMMENCE BEFORE THE ISSUE OF THAT APPROVAL.
- ADDITIONAL AND/OR ALTERNATIVE ESC MEASURES MUST BE IMPLEMENTED IN THE EVENT THAT SITE INSPECTIONS, THE SITE'S MONITORING AND MAINTENANCE PROGRAM, OR THE REGULATORY AUTHORITY, IDENTIFIES THAT UNACCEPTABLE OFF-SITE SEDIMENTATION IS OCCURRING AS A RESULT OF THE WORK ACTIVITIES.
- LAND-DISTURBING ACTIVITIES MUST NOT CAUSE UNNECESSARY SOIL DISTURBANCE IF AN ALTERNATIVE CONSTRUCTION PROCESS IS AVAILABLE THAT ACHIEVES THE SAME OR EQUIVALENT OUTCOMES AT AN EQUIVALENT COST.

- SEDIMENT (INCLUDING CLAY, SILT, SAND, GRAVEL, SOIL, MUD, CEMENT AND CERAMIC WASTE) DEPOSITED OFF THE SITE AS A DIRECT RESULT OF AN ON-SITE ACTIVITY, MUST BE COLLECTED AND THE AREA APPROPRIATELY CLEANED/REHABILITATED AS SOON AS REASONABLE AND PRACTICABLE, AND IN A MANNER THAT GIVES APPROPRIATE CONSIDERATION TO THE SAFETY AND ENVIRONMENTAL RISKS ASSOCIATED WITH THE SEDIMENT DEPOSITION.
- WHEREVER REASONABLE AND PRACTICABLE, BRICK, TILE AND MASONRY CUTTING MUST BE CARRIED OUT ON A PERVIOUS SURFACE, SUCH AS GRASS, OR OPEN SOIL, OR IN SUCH A MANNER THAT ALL SEDIMENT-LADEN RUNOFF IS PREVENTED FROM DISCHARGING INTO A GUTTER, DRAIN, OR WATER BODY.
- ADEQUATE WASTE COLLECTION BINS MUST BE PROVIDED ON-SITE AND MAINTAINED SUCH THAT POTENTIAL AND ACTUAL ENVIRONMENTAL HARM RESULTING FROM SUCH MATERIAL WASTE IS MINIMISED.
- CONCRETE WASTE AND CHEMICAL PRODUCTS, INCLUDING PETROLEUM AND OIL-BASED PRODUCTS, MUST BE PREVENTED FROM ENTERING AN INTERNAL WATER BODY, OR AN EXTERNAL DRAIN, STORMWATER SYSTEM, OR WATER BODY.
- ALL FLAMMABLE AND COMBUSTIBLE LIQUIDS, INCLUDING ALL LIQUID CHEMICALS IF SUCH CHEMICALS COULD POTENTIALLY BE WASHED OR DISCHARGED FROM THE SITE, ARE STORED AND HANDLED ON-SITE IN ACCORDANCE WITH RELEVANT STANDARDS SUCH AS AS1940 *THE STORAGE AND HANDLING OF FLAMMABLE AND COMBUSTIBLE LIQUIDS*.
- TRENCHES NOT LOCATED WITHIN ROADWAYS MUST BE BACKFILLED, CAPPED WITH TOPSOIL, AND COMPACTED TO A LEVEL AT LEAST 75MM ABOVE ADJOINING GROUND LEVEL AND APPROPRIATELY STABILISED.
- ALL STORMWATER, SEWER LINE AND OTHER SERVICE TRENCHES, NOT LOCATED WITHIN ROADWAYS, MUST BE MULCHED AND SEEDED, OTHER OTHERWISE APPROPRIATELY STABILISED WITHIN 7 DAYS AFTER BACKFILL.
- NO MORE THAN 150M OF A STORMWATER, SEWER LINE OR OTHER SERVICE TRENCH MUST TO BE OPEN AT ANY ONE TIME.
- SITE SPOIL MUST BE LAWFULLY DISPOSED OF IN A MANNER THAT DOES NOT RESULT IN ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
- ALL FILL MATERIAL PLACED ON SITE MUST COMPRISE ONLY NATURAL EARTH AND ROCK, AND IS TO BE FREE OF CONTAMINANTS, BE FREE DRAINING, AND BE COMPACTED IN LAYERS NOT EXCEEDING 300MM TO 90% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289.

**DRAINAGE CONTROL**

- ALL DRAINAGE CONTROL MEASURES MUST BE APPLIED AND MAINTAINED IN ACCORDANCE WITH APPROVED ESCP DRAWINGS AND BPESC GUIDELINES.
- WHEREVER REASONABLE AND PRACTICABLE, STORMWATER RUNOFF ENTERING THE SITE FROM EXTERNAL AREAS, AND NON-SEDIMENT LADEN (CLEAN) STORMWATER RUNOFF ENTERING A WORK AREA OR AREA OF SOIL DISTURBANCE, MUST BE DIVERTED AROUND OR THROUGH THAT AREA IN A MANNER THAT MINIMISES SOIL EROSION AND THE CONTAMINATION OF THAT WATER FOR ALL DISCHARGES UP TO THE SPECIFIED DESIGN STORM DISCHARGE.
- DURING THE CONSTRUCTION PERIOD, ALL REASONABLE AND PRACTICABLE MEASURES MUST BE IMPLEMENTED TO CONTROL FLOW VELOCITIES IN SUCH A MANNER THAT PREVENTS SOIL EROSION ALONG DRAINAGE PATHS AND AT THE ENTRANCE AND EXIT OF ALL DRAINS AND DRAINAGE PIPES DURING ALL STORMS UP TO THE RELEVANT DESIGN STORM DISCHARGE.
- TO THE MAXIMUM DEGREE REASONABLE AND PRACTICABLE, ALL WATERS DISCHARGED DURING THE CONSTRUCTION PHASE MUST DISCHARGE ONTO STABLE LAND, IN A NON-EROSIVE MANNER, AND AT A LEGAL POINT OF DISCHARGE.
- WHEREVER REASONABLE AND PRACTICABLE, "CLEAN" SURFACE WATERS MUST BE DIVERTED AWAY FROM SEDIMENT CONTROL DEVICES AND ANY UNTREATED, SEDIMENT-LADEN WATERS.
- DURING THE CONSTRUCTION PERIOD, ROOF WATER MUST BE MANAGED IN A MANNER THAT MINIMISES SOIL EROSION THROUGHOUT THE SITE, AND SITE WETNESS WITHIN ACTIVE WORK AREAS.

**EROSION CONTROL**

- ALL EROSION CONTROL MEASURES MUST BE APPLIED AND MAINTAINED IN ACCORDANCE WITH APPROVED ESCP DRAWINGS AND BPESC GUIDELINES.
- THE APPLICATION OF LIQUID-BASED DUST SUPPRESSION MEASURES MUST ENSURE THAT SEDIMENT-LADEN RUNOFF RESULTING FROM SUCH MEASURES DOES NOT CREATE A TRAFFIC OR ENVIRONMENTAL HAZARD.
- THE CONSTRUCTION AND STABILISATION OF EARTH BATTERS STEEPER THAN 6:1 (H:V) MUST BE STAGED SUCH THAT NO MORE THAN 3 VERTICAL-METRES OF ANY BATTER IS EXPOSED TO RAINFALL AT ANY INSTANT.
- SYNTHETIC REINFORCED EROSION CONTROL MATS AND BLANKETS MUST NOT BE PLACED WITHIN, OR ADJACENT TO, RIPARIAN ZONES AND WATERCOURSES IF SUCH MATERIALS ARE LIKELY TO CAUSE ENVIRONMENTAL HARM TO WILDLIFE OR WILDLIFE HABITATS.
- ALL TEMPORARY EARTH BANKS AND EMBANKMENTS MUST BE MACHINE-COMPACTED, SEEDED AND MULCHED FOR THE PURPOSE OF ESTABLISHING A TEMPORARY VEGETATIVE COVER WITHIN 10 DAYS AFTER GRADING. FLOW DIVERSION SYSTEMS TO BE STABILISED USING CONTROL MEASURES SUITABLE FOR CONCENTRATED FLOW AREAS.
- A MINIMUM 70% GROUND COVER MUST BE ACHIEVED ON ALL NON-COMPLETED EARTHWORKS EXPOSED TO ACCELERATED SOIL EROSION IF FURTHER CONSTRUCTION ACTIVITIES OR SOIL DISTURBANCES ARE LIKELY TO BE SUSPENDED FOR MORE THAN 30 DAYS DURING THOSE MONTHS WHEN THE EXPECTED RAINFALL EROSIIVITY IS LESS THAN 60; MINIMUM 70% COVER WITHIN 30 DAYS IF BETWEEN 60 AND 100; MINIMUM 70% COVER WITHIN 20 DAYS IF BETWEEN 100 AND 285; MINIMUM 75% COVER WITHIN 10 DAYS IF BETWEEN 285 AND 1500; AND MINIMUM 80% COVER WITHIN 5 DAYS IF GREATER THAN 1500. REFER TABLE BELOW FOR MONTHLY RAINFALL EROSIIVITY VALUES AND EROSION RISK RATINGS FOR SITES IN DARWIN.
- IF IMMINENT HEAVY RAINFALL IS FORECAST PRIOR TO THE STABILISATION OF ANY CHANNEL WORKS AREAS, THEN THE CONTRACTOR SHOULD CONSIDER TEMPORARY STABILISATION OF THE EXPOSED SOIL AREAS WITH A HYDRAULICALLY APPLIED BLANKET SUITABLE FOR USE IN CONCENTRATED FLOW AREAS. FOR HIGH BANK AREAS ABOVE NORMAL STREAM FLOWS TEMPORARY COVERINGS SUCH AS EROSION CONTROL BLANKETS AND MATS (OR APPROVED EQUIVALENT) APPROPRIATELY ANCHORED TO MANUFACTURER'S SPECIFICATION MAY BE UTILISED.

**DUST CONTROL**

- ALL DUST CONTROL MEASURES MUST BE APPLIED AND MAINTAINED IN ACCORDANCE WITH APPROVED ESCP DRAWINGS AND CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN.
- WIND EROSION IS NORMALLY CONTROLLED USING ONE OR MORE OF THE FOLLOWING TECHNIQUES:
  - REVEGETATION
  - MAINTAINING MOIST SOIL CONDITIONS
  - SURFACE ROUGHENING
  - WIND BREAKS
  - HYDRAULICALLY APPLIED SEALANTS/SOIL BINDERS PLACED OVER SOIL SURFACES
- DUST PROBLEMS CAN ALSO BE REDUCED BY THESE ACTIVITIES:
  - LIMITING THE AREA OF SOIL DISTURBANCES AT ANY GIVEN TIME.
  - PROMPTLY REPLACING TOPSOIL.
  - PROGRAMMING WORKS TO MINIMISE THE LIFE OF SOIL STOCKPILES.
  - TEMPORARY STABILISING (E.G. WITH VEGETATION OR MULCHING) OF LONG TERM STOCKPILES.
  - USING A WELL-GRADED GRAVEL-SAND MIXTURE WITH A SMALL QUANTITY OF CLAY AS A WEAR SURFACE ON UNSEALED CONSTRUCTION ROADS.
  - MINIMISING TRAFFIC MOVEMENTS ON EXPOSED SURFACES.
  - LIMITING VEHICULAR TRAFFIC TO 15KPH.
  - MAINTAINING EXPOSED SOIL SURFACES IN A MOIST CONDITION.
  - PROVIDING OR RETAINING VEGETATION WIND BREAKS.
  - PROMPTLY REVEGETATING EXPOSED SOILS.
  - INSTALLING WINDBREAKS (60% SHADE CLOTHS, 40% POROUS)

**SEDIMENT CONTROL**

- ALL SEDIMENT CONTROL MEASURES MUST BE APPLIED AND MAINTAINED IN ACCORDANCE WITH APPROVED ESCP DRAWINGS AND BPESC GUIDELINES.
- OPTIMUM BENEFIT MUST BE MADE OF EVERY OPPORTUNITY TO TRAP SEDIMENT WITHIN THE WORK SITE, AND AS CLOSE AS PRACTICABLE TO ITS SOURCE.
- SEDIMENT TRAPS MUST BE INSTALLED AND OPERATED TO BOTH COLLECT AND RETAIN SEDIMENT.
- THE POTENTIAL SAFETY RISK OF A PROPOSED SEDIMENT TRAP TO SITE WORKERS AND THE PUBLIC MUST BE GIVEN APPROPRIATE CONSIDERATION, ESPECIALLY THOSE DEVICES LOCATED WITHIN PUBLICLY ACCESSIBLE AREAS.
- ALL REASONABLE AND PRACTICABLE MEASURES MUST BE TAKEN TO PREVENT, OR AT LEAST MINIMISE, THE RELEASE OF SEDIMENT FROM THE SITE.
- SUITABLE ALL-WEATHER MAINTENANCE ACCESS MUST BE PROVIDED TO ALL SEDIMENT CONTROL DEVICES.
- SEDIMENT CONTROL DEVICES MUST BE DE-SILTED AND MADE FULLY OPERATIONAL AS SOON AS REASONABLE AND PRACTICABLE AFTER A SEDIMENT-PRODUCING EVENT, WHETHER NATURAL OR ARTIFICIAL, IF THE DEVICE'S SEDIMENT RETENTION CAPACITY FALLS BELOW 75% OF ITS DESIGN RETENTION CAPACITY.
- MATERIALS, WHETHER LIQUID OR SOLID, REMOVED FROM SEDIMENT CONTROL DEVICES DURING MAINTENANCE OR DECOMMISSIONING, MUST BE DISPOSED OF IN A MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
- CONSTRUCTED SEDIMENT BASINS MUST BE MAINTAINED AND FULLY OPERATIONAL THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL EACH BASIN'S CATCHMENT AREA ACHIEVES 80% GROUND COVER ON ALL SOIL SURFACES.
- SETTLED SEDIMENT MUST BE REMOVED FROM SEDIMENT BASINS WHEN THE VOLUME OF THE SEDIMENT EXCEEDS THE DESIGNATED SEDIMENT STORAGE VOLUME, OR THE DESIGN MAXIMUM SEDIMENT STORAGE ELEVATION.
- WHERE APPROPRIATE THE CONTRACTOR MAY CONSIDER PASSIVE APPLICATION TECHNIQUES OF COAGULANTS AND / OR FLOCCULANTS, SUCH AS PLACING 'FLOC BLOCKS' OR SPREADING LIME OR GYPSUM WITHIN CATCH DRAINS, TO IMPROVE THE EFFICIENCY AND EFFECTIVENESS OF THE FLOCCULATION PROCESS. SHOULD PASSIVE APPLICATION OF FLOCCULANTS BE PROPOSED, THEN THE DETAILED METHODS AND TYPES OF FLOCCULANTS TO BE USED, INCLUDING THEIR ECOTOXICITY INFORMATION, ARE TO BE CONFIRMED BY THE CONTRACTOR. FOR THE CHARACTERISTICS OF VARIOUS FLOCCULATING AGENTS REFER TO TABLE 1 IN 'CHEMICAL COAGULANTS AND FLOCCULANTS' FACT SHEET BY IECA, OBTAINABLE FROM THE IECA WEBSITE UNDER THE BEST PRACTICE EROSION AND SEDIMENT CONTROL 'APPENDIX B - REVISION JUNE 2018' SECTION. FOR DETAILS ON THE SOIL JAR TESTING PROCEDURE, REFER TO SECTION 5 OF THE FACT SHEET MENTIONED ABOVE.

**DEWATERING**

- DEWATERING - GOAL IS TO MITIGATE SEDIMENT RELATED ENVIRONMENTAL HARM AND/OR IMPACT TO STORMWATER INFRASTRUCTURE RESULTING FROM DEWATERING ACTIVITIES.
- FLOW DIVERSION BARRIERS, OR OTHER APPROPRIATE SYSTEMS, WILL BE USED TO MINIMISE THE QUANTITY OF WATER ENTERING EXCAVATIONS AND TRENCHES.
- DEWATERING CONTROL MAY INCLUDE GEOFABRIC FILTERS, NON WOVEN FILTER FENCING.
- SEDIMENT LADEN WATER WILL NOT BE DISCHARGED TO THE STORMWATER SYSTEM WITHOUT FIRST BEING TREATED SATISFACTORILY.

**SITE REHABILITATION**

- ALL DISTURBED AREAS IDENTIFIED AS VERY LOW, LOW, MEDIUM, HIGH, OR EXTREME EROSION RISK MUST BE SUITABLY STABILISED WITHIN 30, 30, 20, 10 OR 5 DAYS RESPECTIVELY. IF SIGNIFICANT RAINFALL IS ANTICIPATED WITHIN THE TIMEFRAMES LISTED ABOVE, THEN CONSIDER TEMPORARY STABILISATION METHODS WHERE PRACTICAL.
- A MINIMUM 60% GROUND COVER MUST BE ACHIEVED ON ALL COMPLETED EARTHWORKS EXPOSED TO ACCELERATED SOIL EROSION WITHIN 30 DAYS DURING THOSE MONTHS WHEN THE EXPECTED RAINFALL IS LESS THAN 30mm; MINIMUM 70% COVER WITHIN 30 DAYS IF BETWEEN 30 AND 45mm; MINIMUM 70% COVER WITHIN 20 DAYS IF BETWEEN 45 AND 100mm; MINIMUM 75% COVER WITHIN 10 DAYS IF BETWEEN 100 AND 225mm; AND MINIMUM 80% COVER WITHIN 5 DAYS IF GREATER THAN 225mm.
- NO COMPLETED EARTHWORKS SURFACE MUST REMAIN DENUEDED FOR LONGER THAN 30 DAYS.
- THE TYPE OF GROUND COVER APPLIED TO COMPLETED EARTHWORKS IS COMPATIBLE WITH THE ANTICIPATED LONG-TERM LAND USE, ENVIRONMENTAL RISK, AND SITE REHABILITATION MEASURES.
- UNLESS OTHERWISE DIRECTED BY THE SUPERINTENDENT OR WHERE DIRECTED BY THE APPROVED REVEGETATION PLAN, TOPSOIL MUST BE PLACED AT A MINIMUM DEPTH OF 100mm ON SLOPES 4:1 (H:V) OR FLATTER, AND 150mm ON SLOPES STEEPER THAN 4:1.
- THE PH LEVEL (SOIL:WATER 1:5) OF TOPSOIL MUST BE ADEQUATE TO ENABLE ESTABLISHMENT AND GROWTH OF THE SPECIFIED VEGETATION.
- SOIL AMELIORANTS MUST BE ADDED TO THE SOIL IN ACCORDANCE WITH THE APPROVED LANDSCAPE/REVEGETATION PLANS AND/OR SOIL ANALYSIS.
- TEMPORARY SITE STABILISATION PROCEDURES MUST COMMENCE AT LEAST 30 DAYS PRIOR TO THE NOMINATED SITE SHUTDOWN DATE. AT LEAST 70% STABLE COVER OF ALL UNSTABLE AND/OR DISTURBED SOIL SURFACES MUST BE ACHIEVED PRIOR TO THE START OF THE SHUTDOWN PERIOD. THE STABILISATION WORKS MUST NOT RELY UPON THE LONGEVITY OF NON-VEGETATED EROSION CONTROL BLANKETS, OR TEMPORARY SOIL BINDERS.
- ALL UNSTABLE OR DISTURBED SOIL SURFACES MUST BE ADEQUATELY STABILISED AGAINST EROSION (MINIMUM 80%) PRIOR TO COMMENCEMENT OF USE, OR SURVEY PLAN ENDORSEMENT.
- SITE MONITORING**
- AT NOMINATED INSTREAM WATER MONITORING SITES, A MINIMUM OF 3 WATER SAMPLES MUST BE TAKEN AND ANALYSED, AND THE AVERAGE RESULT USED TO DETERMINE QUALITY.
- SEDIMENT BASIN WATER QUALITY SAMPLES MUST BE TAKEN AT A DEPTH NO GREATER THAN 200MM ABOVE THE LEVEL OF SETTLED SEDIMENT.
- ALL ENVIRONMENTALLY RELEVANT INCIDENTS AND REGULAR INSPECTION CHECK SHEETS MUST BE RECORDED IN A FIELD LOG THAT MUST REMAIN ACCESSIBLE TO ALL RELEVANT REGULATORY AUTHORITIES.
- IT IS RECOMMENDED THAT PHOTOGRAPHS OF THE IMPLEMENTED CONTROL DEVICES BE TAKEN DURING THE REGULAR INSPECTIONS TO ASSIST WITH DEMONSTRATING THE IMPLEMENTATION OF THE EROSION AND SEDIMENT MEASURES ON SITE.

**SITE MAINTENANCE**

- ALL EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING DRAINAGE CONTROL MEASURES, MUST BE MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES DURING THEIR OPERATIONAL LIVES.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING DRAINAGE CONTROL MEASURES, MUST BE FULLY OPERATIONAL AND MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES DURING THE MAINTENANCE PERIOD AS SPECIFIED BY DEPWS.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING DRAINAGE CONTROL MEASURES, MUST BE REMOVED AFTER ACHIEVING A SATISFACTORY "OFF-MAINTENANCE INSPECTION" BY DEPWS, AND ADEQUATE STABILISATION OF THE CONTRIBUTING CATCHMENT HAS BEEN ACHIEVED.
- ALL DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSPECTED:
  - AT LEAST DAILY (WHEN WORK IS OCCURRING ON-SITE);
  - AT LEAST WEEKLY (WHEN WORK IS NOT OCCURRING ON-SITE);
  - WITHIN 24 HOURS OF EXPECTED RAINFALL; AND
  - WITHIN 18 HOURS OF A RAINFALL EVENT OF SUFFICIENT INTENSITY AND DURATION TO CAUSE RUNOFF ON-SITE.
- WASHING/FLUSHING OF SEALED ROADWAYS MUST ONLY OCCUR WHERE SWEEPING HAS FAILED TO REMOVE SUFFICIENT SEDIMENT AND THERE IS A COMPELLING NEED TO REMOVE THE REMAINING SEDIMENT (E.G. FOR SAFETY REASONS). IN SUCH CIRCUMSTANCES, ALL REASONABLE AND PRACTICABLE SEDIMENT CONTROL MEASURES MUST BE USED TO PREVENT, OR AT LEAST MINIMISE, THE RELEASE OF SEDIMENT INTO RECEIVING WATERS. ONLY THOSE MEASURES THAT WILL NOT CAUSE SAFETY AND PROPERTY FLOODING ISSUES SHALL BE EMPLOYED. SEDIMENT REMOVED FROM ROADWAYS MUST BE DISPOSED OF IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
- SEDIMENT REMOVED FROM SEDIMENT TRAPS AND PLACES OF SEDIMENT DEPOSITION MUST BE DISPOSED OF IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
- MAINTENANCE MOWING OF ALL ROAD SHOULDERS, TABLE DRAINS, BATTERS AND OTHER SURFACES LIKELY TO EXPERIENCE ACCELERATED SOIL EROSION MUST AIM TO LEAVE THE GRASS LENGTH NO SHORTER THAN 50MM WHERE REASONABLE AND PRACTICABLE.
- MAINTENANCE MOWING MUST BE DONE IN A MANNER THAT WILL NOT DAMAGE THE PROFILE OF FORMED, SOFT EDGES, SUCH AS THE CREST OF EARTH EMBANKMENTS.

**WET WEATHER PREPAREDNESS**

- IF IT IS EXPECTED THAT CONSTRUCTION WORKS WILL CONTINUE INTO THE WET SEASON A WET WEATHER ESCP MUST BE SUBMITTED AND APPROVED FOR IMPLEMENTATION PRIOR TO 30 SEPTEMBER.
- THE CONTRACTOR SHOULD ALSO CONSIDER ESTABLISHING A WET WEATHER PREPAREDNESS PLAN THAT OUTLINES WHAT EROSION AND SEDIMENT CONTROL MEASURES / ACTIONS SHOULD BE UNDERTAKEN ON SITE IN THE EVENT OF A PREDICTED RAINFALL EVENT. AS A GUIDE THE CONTRACTOR COULD ADOPT THE EXPECTED 24-HOUR RAINFALL RANGES OUTLINED IN TABLE BELOW AS TRIGGERS FOR TAKING ACTION IN REGARDS TO PREPARING THE CONSTRUCTION SITE AND EXPOSED SURFACES FOR THE PREDICTED RAINFALL.

**ALTERNATIVE EROSION RISK BASED ON EXPECTED DAILY AND AVERAGE MONTHLY RAINFALL**

EROSION RISK RATING	EXPECTED 24-HOUR RAINFALL	AVERAGE MONTHLY RAINFALL
VERY LOW	0 to 2mm	0 to 30mm
LOW	2+ to 10mm	30+ to 45mm
MODERATE	10+ to 25mm	45+ to 100mm
HIGH	25+ to 100mm	100+ to 225mm
EXTREME	> 100mm	> 225mm

- EROSION AND SEDIMENT CONTROL TECHNIQUES AND ACTIONS THAT MAY BE UNDERTAKEN INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING MEASURES:
  - REVIEW THE CONDITION OF ALL EROSION, DRAINAGE AND SEDIMENT CONTROL DEVICES IMPLEMENTED ON SITE AND ENSURE THAT THESE MEASURES ARE IN AN EFFECTIVE OPERATIONAL CONDITION PRIOR TO THE EVENT. WORN, DAMAGED OR OTHERWISE DEFECTIVE MATERIALS AND COMPONENTS ARE TO BE REPAIRED OR REPLACED.
  - SEDIMENT CONTROL DEVICES WITH ACCUMULATED SEDIMENT VOLUMES IN EXCESS OF DESIGN CAPACITY SHOULD BE CLEANED OUT TO REINSTATE THE SETTLING AND STORAGE ZONE VOLUMES. MATERIALS REMOVED MUST BE DISPOSED OF IN A MANNER APPROVED BY THE CONSENT AUTHORITY THAT DOES NOT CAUSE POLLUTION.
  - COVERING EXPOSED SOIL SURFACES STILL SUBJECT TO CONSTRUCTION WITH TEMPORARY EROSION CONTROL TECHNIQUES SUCH AS TEMPORARY EROSION CONTROL BLANKETS OR MATS, OR HYDRAULICALLY APPLIED BLANKETS. THE CONTRACTOR SHOULD CONSIDER RETAINING A STOCKPILE OF EROSION CONTROL MATERIALS ON SITE TO ENSURE MEASURES ARE READILY AVAILABLE AS NEEDED.

DEVELOPMENT PERMIT: DP19/0050  
 CONSTRUCTION PERIOD: OCTOBER 2021 - MARCH 2022 (TBC)  
 SUPERINTENDENT CONTACT: DAVID BRAMLEY (08 8942 8200)  
 ENGINEERING CONTACT: DAVID BRAMLEY (08 8942 8200)

Rev.	Date	Description	Des.	Verif.	Appd.
F	29.10.21	REVISED FOR APPROVAL	C dB	DMB	
E	23.04.21	FOR APPROVAL	C dB	DMB	
D	15.03.21	FOR APPROVAL	C dB	DMB	
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B	13.11.20	FOR APPROVAL	OAR	DMB	
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Drawn	Date	Client
OAR	June 20	DEFENCE HOUSING AUSTRALIA
Checked	Date	Project
DMB	June 20	MUIRHEAD NORTH DEVELOPMENT
Designed	Date	
OAR	June 20	LEE POINT ROAD, MUIRHEAD CITY OF DARWIN
Verified	Date	Title
AGO	June 20	EROSION AND SEDIMENT CONTROL GENERAL NOTES
Approved	Date	
<i>Carlo de Sijl</i>	08/09/2021	

Status	<b>FOR APPROVAL</b>		
NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum	Date	Scale	Size
AHD	July 2020	AS SHOWN	A1
Drawing Number	Revision		
DC1603-MHN-1A-ES01			F

**GENERIC INSTALLATION SEQUENCE:**

THIS INSTALLATION SEQUENCE ONLY SERVES AS A GENERIC GUIDE FOR THE MINIMUM EROSION AND SEDIMENT CONTROL (ESC) MEASURES FOR EVERY STAGE OF WORK. SITE CONDITION SUCH AS DISPERSIVE SOIL MAY WARRANT HIGHER ESC STANDARD (CONTACT SUPERINTENDENT OR THE ENGINEER PRIOR TO WORK).

CODE	ITEM	PLAN	INSTALLED	REMOVED
MARK OUT INITIAL LIMITS OF DISTURBANCE. IDENTIFY LOCATION OF DISPERSIVE SOIL IF ANY. IF DISPERSIVE SOIL IS ENCOUNTERED CONTACT THE SUPERINTENDENT PRIOR TO COMMENCING WORK.				
Entry/Exit	Construction entry/exit – vibration grid	DWG. DC1603-MHN-1A-ES04 & DC1603-MHN-1A-ES10	Day One	When Entry/Exit is no longer required
SF	Sediment Fence with Woven Fabric	DWG. DC1603-MHN-1A-ES04 TO DC1603-MHN-1A-ES08	Prior to clearing of upslope areas	When site office and Stockpile is removed and when upslope site is suitably stabilised
Site Office	Site Office		Day One	End of Work
Stockpile	Stockpile/Waste/Parts Washdown Area		Day One	End of Work
CD	Parabolic Catch Drain without bank – Type A	DWG. DC1603-MHN-1A-ES04 TO DC1603-MHN-1A-ES08	Day One	After site stabilisation
MB	Mulch Filter Berms	DWG. DC1603-MHN-1A-ES04 TO DC1603-MHN-1A-ES08	As soon as construction activities allows. Install as required	After site stabilisation or house construction on each individual lots commenced
OG, SA, FD	On Grade, Sag, and Fabric Drop Inlet Protection	DWG. DC1603-MHN-1A-ES07 & DC1603-MHN-1A-ES08	As soon as inlets and pipes are constructed	After site stabilisation
GFS	1.2m Grass Filter Strip	DWG. DC1603-MHN-1A-ES07 & DC1603-MHN-1A-ES08	As soon as construction activities allows	NA
LS	Level Spreader	DWG. DC1603-MHN-1A-ES04 & DC1603-MHN-1A-ES06	As soon as construction activities allows. Downslope land condition to be determined on site	When next stage begins and LS is no longer required
FR	Fibre Roll	DWG. DC1603-MHN-1A-ES04 TO DC1603-MHN-1A-ES08	As soon as open drains are constructed	After site stabilisation
RCD	Rock Check Dam	DWG. DC1603-MHN-1A-ES04 TO DC1603-MHN-1A-ES08	As soon as construction activities allows. Provide geotextile splash pad and ensure 150mm is provided between centre and outer check dam wing.	After drain stabilisation
RFD	Rock Filter Dam	DWG. DC1603-MHN-1A-ES04, DC1603-MHN-1A-ES05 & DC1603-MHN-1A-ES06	Following installation of boundary sediment controls and prior to land clearing	After adequate stabilisation of contributing upslope catchment
Dust	Dust Suppression		At sufficient interval to suppress dust generation	N/A
Revegetation	Revegetation by native species grassing in any disturbed areas		As soon as practicable	N/A

**MONTHLY AND ANNUAL RAINFALL EROSIIVITY (R-FACTOR) VALUES**

DARWIN	12.42S, 130.87E	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
	MEAN	4496	3512	2826	808	160	15	5	47	80	472	948	2355	15724
	% OF ANNUAL	29	22	18	5	1	0	0	0	1	3	6	15	
	2 yr ARI (MEDIAN)	3572	2781	2124	514	0	0	0	0	0	322	906	1775	11994
	3 yr ARI (66.8th PERCENTILE)	5624	3573	2754	978	120	0	0	0	0	466	1207	2542	
	4 yr ARI (75th PERCENTILE)	5961	4538	3720	1182	151	0	0	0	28	753	1325	3318	
	5 yr ARI (80th PERCENTILE)	6242	4735	4440	1553	202	0	0	0	112	933	1488	3667	
	10 yr ARI (90th PERCENTILE)	8517	6370	5988	1728	417	0	0	237	317	1262	1624	4968	

- EXTREME
- HIGH
- MODERATE
- LOW
- VERY LOW

Rev.	Date	Description	Des.	Verif.	Appd.
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Drawn OAR	Date June '20
Checked DMB	Date June '20
Designed OAR	Date June '20
Verified AGO	Date June '20
Approved <i>Carlo de Sijl</i>	Date <i>CPESC 7619</i>

Client DEFENCE HOUSING AUSTRALIA

Project MUIRHEAD NORTH DEVELOPMENT  
LEE POINT ROAD, MUIRHEAD  
CITY OF DARWIN

Title EROSION AND SEDIMENT CONTROL SEQUENCE TABLE AND R-FACTORS

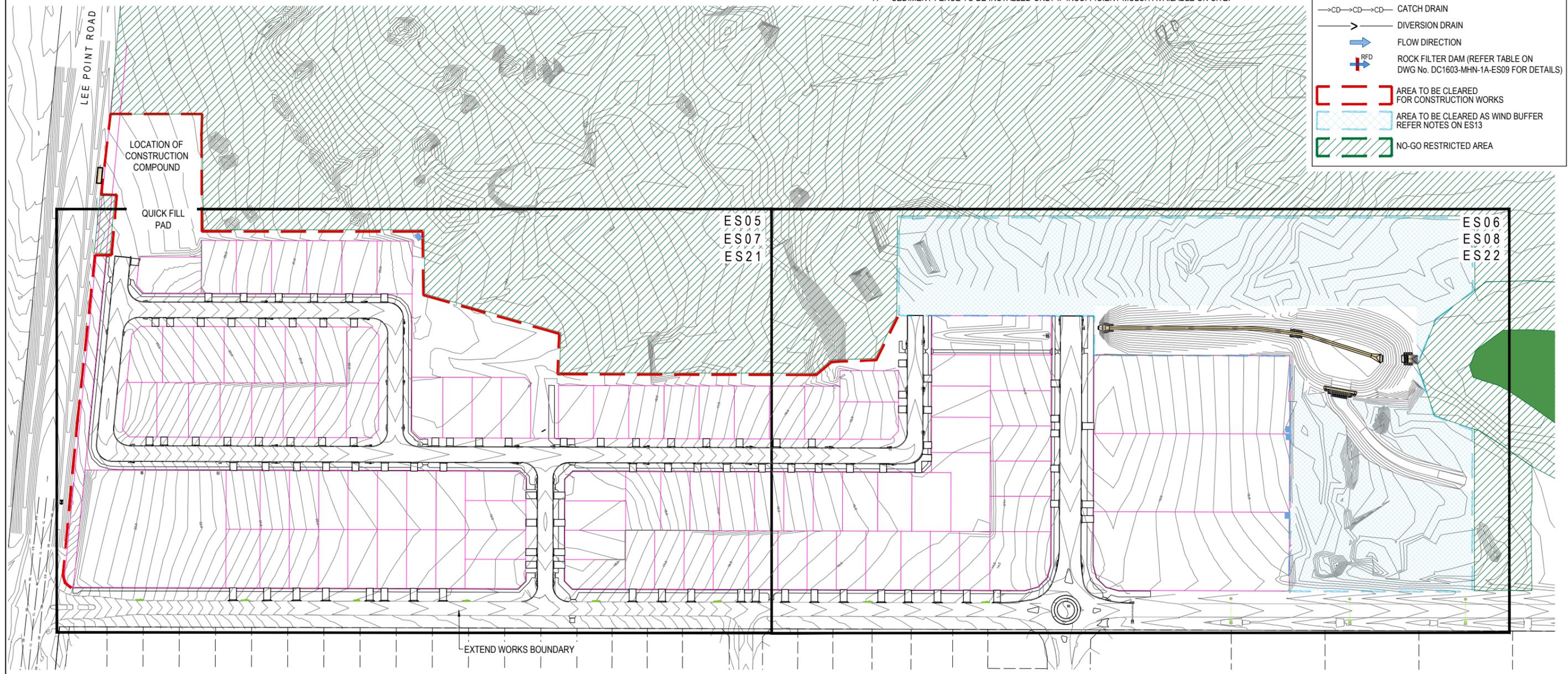
Status <b>FOR APPROVAL</b>			
NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum AHD	Date July 2020	Scale AS SHOWN	Size A1
Drawing Number DC1603-MHN-1A-ES02			Revision F

**NOTES**

- REFER TO DWG No. DC1603-MHN-1A-ES01 TO ES02 FOR GENERAL NOTES.
- REFER TO DWG No. DC1603-MHN-1A-ES03 FOR EROSION AND SEDIMENT CONTROL KEY PLAN.
- REFER TO DWG No. DC1603-MHN-1A-ES04 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 1 (APRIL - OCTOBER).  
REFER TO DWG No. DC1603-MHN-1A-ES05 TO ES06 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 2 (APRIL - OCTOBER).  
REFER TO DWG No. DC1603-MHN-1A-ES07 TO ES08 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR POST CONSTRUCTION PHASE 3.
- REFER TO DWG No. DC1603-MHN-1A-ES20 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 1 (NOVEMBER - MARCH).  
REFER TO DWG No. DC1603-MHN-1A-ES21 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 2 (NOVEMBER - MARCH).
- REFER TO DWG No. DC1603-MHN-1A-ES12 & ES13 FOR EROSION AND SEDIMENT CONTROL DETAILS NOTES.
- DUST CONTROL FENCE TO BE ERECTED ON SITE WHERE DIRECTED BY THE SUPERINTENDENT AND CITY OF DARWIN TO SUIT PREVAILING WIND CONDITIONS.
- SEDIMENT FENCE TO BE INSTALLED ONLY IF INSUFFICIENT MULCH AVAILABLE ON SITE.

**LEGEND**

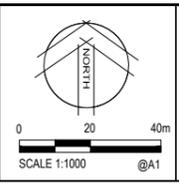
-  SEDIMENT FENCE
-  ON GRADE KERB INLET SEDIMENT TRAP
-  SAG KERB INLET SEDIMENT TRAP
-  FABRIC DROP INLET PROTECTION
-  GULLY BAG INLET PROTECTION
-  ROCK CHECK DAM
-  FIBRE ROLL
-  ROCK WEIR AT END OF BERM
-  FINISHED CONTOURS
-  MULCH FILTER BERM (REFER NOTE 7)
-  CATCH DRAIN
-  DIVERSION DRAIN
-  FLOW DIRECTION
-  ROCK FILTER DAM (REFER TABLE ON DWG No. DC1603-MHN-1A-ES09 FOR DETAILS)
-  AREA TO BE CLEARED FOR CONSTRUCTION WORKS
-  AREA TO BE CLEARED AS WIND BUFFER REFER NOTES ON ES13
-  NO-GO RESTRICTED AREA



Rev.	Date	Description	Des.	Verif.	Appd.
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D	15.03.21	FOR APPROVAL	C.dB	DMB	
C	02.12.20	FOR APPROVAL	OAR	DMB	
B	13.11.20	FOR APPROVAL	OAR	DMB	
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Checked	DMB	Date	June '20
Designed	OAR	Date	June '20
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Approved	<i>Carlo de Sijl</i>	Date	June '20

Client DEFENCE HOUSING AUSTRALIA  
Project MUIRHEAD NORTH DEVELOPMENT  
LEE POINT ROAD, MUIRHEAD  
CITY OF DARWIN  
Title EROSION AND SEDIMENT CONTROL KEY PLAN

Status <b>FOR APPROVAL</b>			
NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Datum	AHD	Date	July 2020
Scale	AS SHOWN	Size	A1
Drawing Number	DC1603-MHN-1A-ES03		Revision
			F

**NOTES**

1. THE CONTRACTOR IS TO IMPLEMENT PRE-CONSTRUCTION CONTROLS PRIOR TO COMMENCEMENT OF ANY EARTHWORKS ON SITE.
2. REFER TO DWG No. DC1603-MHN-1A-ES01 TO ES02 FOR GENERAL NOTES.
3. REFER TO DWG No. DC1603-MHN-1A-ES03 FOR EROSION AND SEDIMENT CONTROL KEY PLAN.
4. REFER TO DWG No. DC1603-MHN-1A-ES05 TO DC1603-MHN-1A-ES06 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 2. REFER TO DWG No. DC1603-MHN-1A-ES07 TO ES08 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 3.
5. REFER TO DWG No. DC1603-MHN-1A-ES09 TO ES11 FOR EROSION AND SEDIMENT CONTROL DETAILS.
6. REFER TO DWG No. DC1603-MHN-1A-ES12 & ES13 FOR EROSION AND SEDIMENT CONTROL DETAILS NOTES.
7. DUST CONTROL FENCE TO BE ERECTED ON SITE WHERE DIRECTED BY THE SUPERINTENDENT AND CITY OF DARWIN TO SUIT PREVAILING WIND CONDITIONS.
8. SEDIMENT FENCE TO BE INSTALLED ONLY IF INSUFFICIENT MULCH AVAILABLE ON SITE. MAXIMUM SPACING OF LATERAL BERMS/DRAINS IS 80m.

**LEGEND**

- SEDIMENT FENCE
- ON GRADE KERB INLET SEDIMENT TRAP
- SAG KERB INLET SEDIMENT TRAP
- FABRIC DROP INLET PROTECTION
- GULLY BAG INLET PROTECTION
- ROCK CHECK DAM
- FIBRE ROLL
- ROCK WEIR AT END OF BERM
- 25.0 FINISHED CONTOURS
- MB MULCH FILTER BERM (REFER NOTE 8)
- CD CATCH DRAIN
- DIVERSION DRAIN
- FLOW DIRECTION
- RFD ROCK FILTER DAM (REFER TABLE ON DWG No. DC1603-MHN-1A-ES09 FOR DETAILS)
- AREA TO BE CLEARED FOR CONSTRUCTION WORKS
- AREA TO BE CLEARED AS WIND BUFFER REFER NOTES ON ES13
- NO-GO RESTRICTED AREA

THE CONTRACTOR IS TO OBTAIN ALL NECESSARY APPROVALS FROM CITY OF DARWIN COUNCIL PRIOR TO CONSTRUCTION OF ANY SITE ACCESS IN THE LEE POINT ROAD ROAD RESERVE.

LOCATION OF CONSTRUCTION ENTRY / EXIT VIBRATION GRID, OR APPROVED EQUIVALENT DEVICE AS PER STD DETAILS. MAINTAIN FOR DURATION OF WORKS. REFER DWG No. DC1603-MHN-1A-ES10 FOR FURTHER INFORMATION.

EROSION AND SEDIMENT CONTROL DEVICES SHOWN FOR THE CONSTRUCTION COMPOUND AREA ARE TO BE MAINTAINED UNTIL COMPLETION OF WORKS.

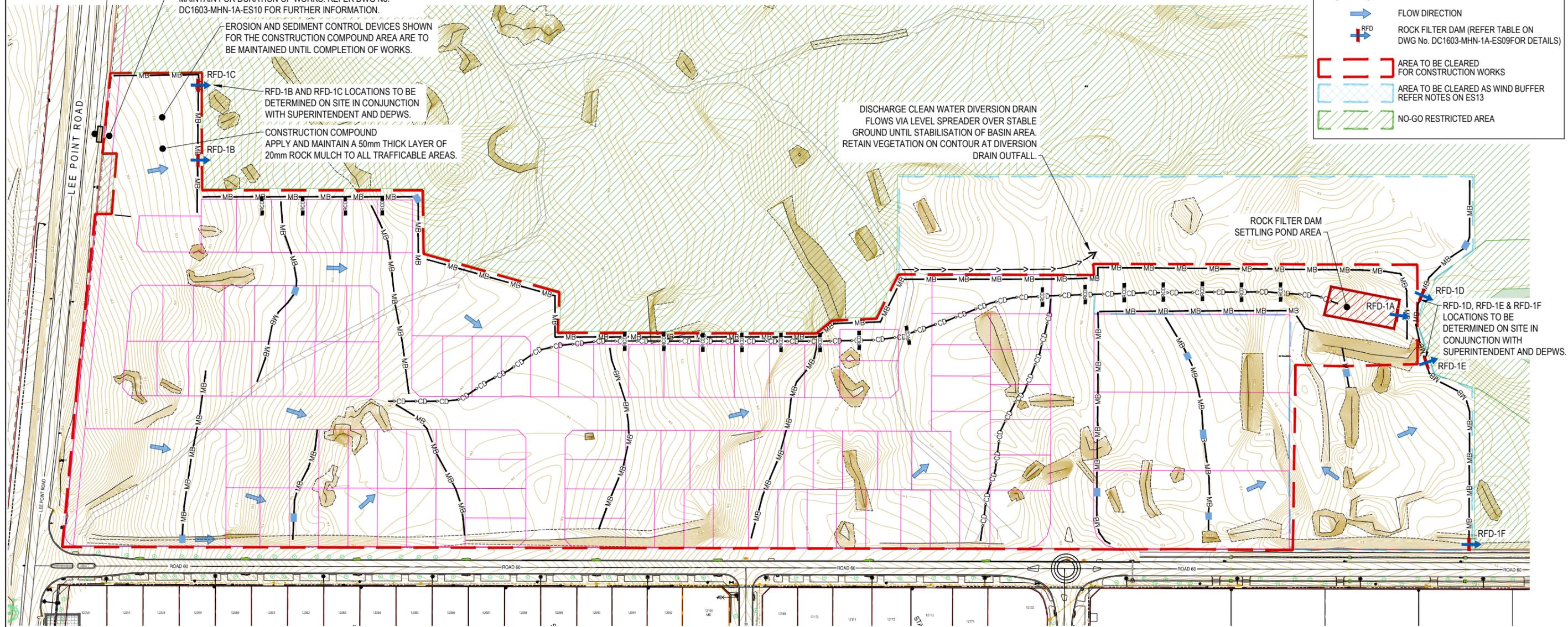
RFD-1B AND RFD-1C LOCATIONS TO BE DETERMINED ON SITE IN CONJUNCTION WITH SUPERINTENDENT AND DEPWS.

CONSTRUCTION COMPOUND APPLY AND MAINTAIN A 50mm THICK LAYER OF 20mm ROCK MULCH TO ALL TRAFFICABLE AREAS.

DISCHARGE CLEAN WATER DIVERSION DRAIN FLOWS VIA LEVEL SPREADER OVER STABLE GROUND UNTIL STABILISATION OF BASIN AREA. RETAIN VEGETATION ON CONTOUR AT DIVERSION DRAIN OUTFALL.

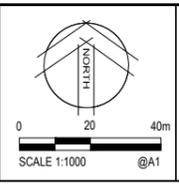
ROCK FILTER DAM SETTLING POND AREA

RFD-1D, RFD-1E & RFD-1F LOCATIONS TO BE DETERMINED ON SITE IN CONJUNCTION WITH SUPERINTENDENT AND DEPWS.



Rev.	Date	Description	Des.	Verif.	Appd.
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Designed	OAR	Date	June 20
Verified	AGO	Date	June 20
Approved	<i>Anto de Syl</i>	Date	CPESC 7619

Client DEFENCE HOUSING AUSTRALIA  
Project MUIRHEAD NORTH DEVELOPMENT  
LEE POINT ROAD, MUIRHEAD  
CITY OF DARWIN  
Title EROSION AND SEDIMENT CONTROL  
PHASE 1 - PRE CONSTRUCTION (APRIL - OCTOBER)  
LAYOUT PLAN

Status	FOR APPROVAL				
NOT TO BE USED FOR CONSTRUCTION PURPOSES					
Datum	AHD	Date	July 2020	Scale	AS SHOWN
Drawing Number	DC1603-MHN-1A-ES04			Size	A1
Revision	F				



**LEGEND**

	SEDIMENT FENCE
	ON GRADE KERB INLET SEDIMENT TRAP
	SAG KERB INLET SEDIMENT TRAP
	FABRIC DROP INLET PROTECTION
	GULLY BAG INLET PROTECTION
	ROCK CHECK DAM
	FIBRE ROLL
	ROCK WEIR AT END OF BERM
	FINISHED CONTOURS
	MULCH FILTER BERM (REFER NOTE 7)
	CATCH DRAIN
	DIVERSION DRAIN
	FLOW DIRECTION
	ROCK FILTER DAM (REFER TABLE ON DWG No. DC1603-MHN-1A-ES09 FOR DETAILS)
	AREA TO BE CLEARED FOR CONSTRUCTION WORKS
	AREA TO BE CLEARED AS WIND BUFFER REFER NOTES ON ES13
	NO-GO RESTRICTED AREA

**MULCH**  
A SUFFICIENT QUANTITY OF WEED-FREE MULCH GENERATED FROM CLEARING SHALL BE RETAINED TO PROVIDE THE SPECIFIED 100mm MULCH COVER TO THE WIND BUFFER AREA. UTILISE IMPORTED WEED-FREE MULCH OR SEDIMENT FENCE ELSEWHERE IF INSUFFICIENT MULCH IS AVAILABLE ON SITE.

NO GO AREA

SOILS EXPOSED DURING THE WIND BUFFER CLEARING WORKS TO BE COVERED WITH MULCH. PROVIDE 100% COVERAGE, SPREAD EVENLY TO A MINIMUM DEPTH OF 100mm.

DISCHARGE CLEAN WATER DIVERSION DRAIN FLOWS VIA A LEVEL SPREADER OVER STABLE GROUND UNTIL STABILISATION OF BASIN AREA. RETAIN VEGETATION ON CONTOUR AT DIVERSION DRAIN OUTFALL

STORMWATER PIT (LETTERBOX PIT) TO UNDERGROUND STORMWATER REFER DWG DC1603-MHN-1A-ES11 FOR INLET PROTECTION DETAILS

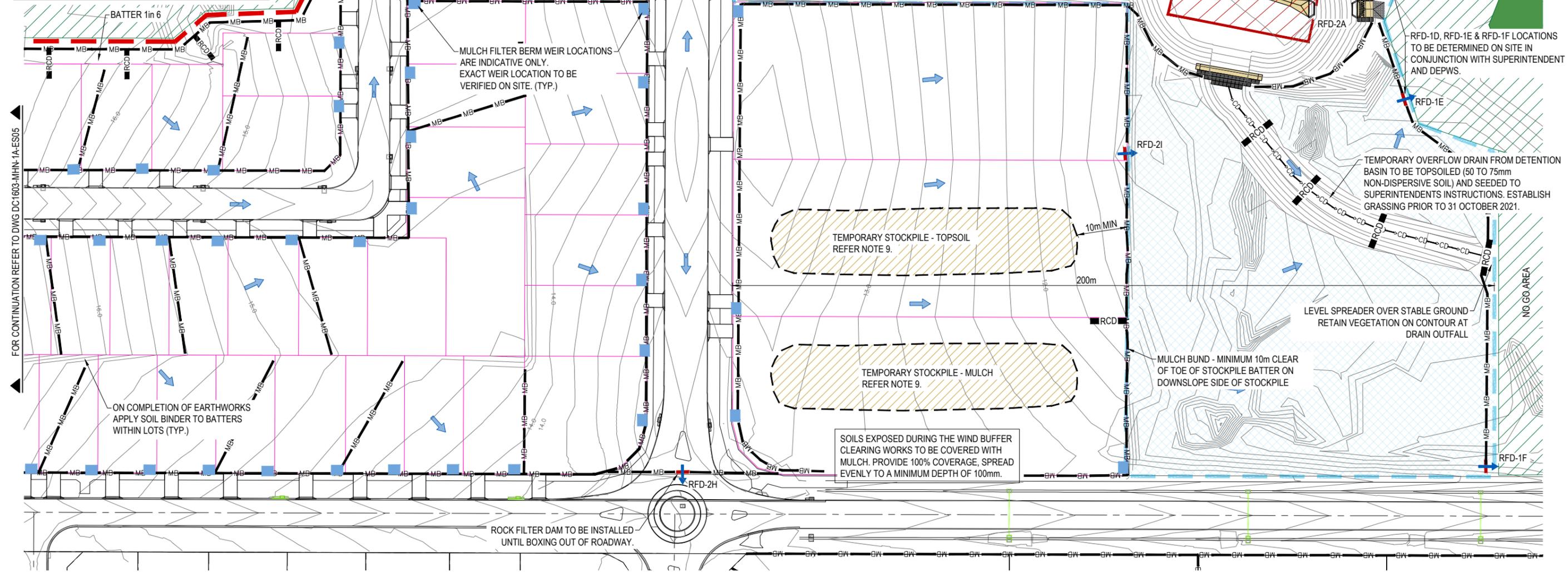
REMOVE CATCH DRAIN UPON CONSTRUCTION OF CONCRETE INVERT

ROCK FILTER DAM SETTLING POND AREA. REFER TO DC1603-MHN-1A-ES09. PROGRAM WORKS TO CONVERT TO DETENTION BASIN AND ENSURE STABLE GRASS COVER IS ESTABLISHED BY 31 OCTOBER 2021. DISCHARGE WATER QUALITY TO BE TESTED AFTER RAIN EVENTS AND MAINTAINED AT LESS THAN 75 NTU. REPORT RESULTS TO SUPERINTENDENT.

**NOTES**

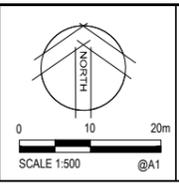
- REFER TO DWG No. DC1603-MHN-1A-ES01 TO ES02 FOR GENERAL NOTES.
- REFER TO DWG No. DC1603-MHN-1A-ES03 FOR EROSION AND SEDIMENT CONTROL KEY PLAN.
- REFER TO DWG No. DC1603-MHN-1A-ES04 FOR CONSTRUCTION PHASE 1. REFER TO DWG No. DC1603-MHN-1A-ES07 TO ES08 FOR CONSTRUCTION PHASE 3.
- REFER TO DWG No. DC1603-MHN-1A-ES09 TO ES11 FOR EROSION AND SEDIMENT CONTROL DETAILS.
- REFER TO DWG No. DC1603-MHN-1A-ES012 TO ES13 FOR EROSION AND SEDIMENT CONTROL DETAILS NOTES.
- DUST CONTROL FENCE TO BE ERECTED ON SITE WHERE DIRECTED BY THE SUPERINTENDENT AND CITY OF DARWIN TO SUIT PREVAILING WIND CONDITIONS.
- SEDIMENT FENCE TO BE INSTALLED ONLY IF INSUFFICIENT MULCH AVAILABLE ON SITE. MAXIMUM SPACING OF LATERAL BERMS/DRAINS IS 80m.
- IF IT IS EXPECTED THAT CONSTRUCTION WORKS WILL CONTINUE INTO THE WET SEASON, A WET WEATHER ESCP MUST BE SUBMITTED AND APPROVED FOR IMPLEMENTATION PRIOR TO 30 SEPTEMBER 2021. REFER TO DWG No. DC1603-MHN-1A-ES01 FOR WET WEATHER PREPAREDNESS NOTES.
- TEMPORARY STOCKPILES - PRIOR TO PLACEMENT OF STOCKPILES, THE CLEARED AREA SHALL BE REGRADED TO ELIMINATE CONCENTRATED FLOW PATHS. ON COMPLETION OF CLEARING AND REGRADING OF THE STOCKPILE AREA, A JOINT INSPECTION WITH THE SUPERINTENDENT AND DEPWS SHALL BE CONDUCTED TO DETERMINE WHETHER ANY ADDITIONAL DRAINAGE AND/OR SEDIMENT CONTROL MEASURES ARE REQUIRED. STOCKPILE HEIGHT - DESIRABLE MAXIMUM 2.0m (ABSOLUTE MAXIMUM 3.0m). ALL STOCKPILES ARE TO BE COMPLETELY REMOVED AND ALL DISTURBED AREAS OF THE WIND BUFFER FULLY MULCHED DURING PHASE 2 WORKS PRIOR TO 31 OCTOBER 2021. REFER TO DC1603-MHN-1A-ES01 FOR ADDITIONAL STOCKPILE MANAGEMENT NOTES.

FOR CONTINUATION REFER TO DWG DC1603-MHN-1A-ES05



F	05.11.21	REVISED FOR APPROVAL	C dB	DMB	
E	23.04.21	FOR APPROVAL	C dB	DMB	
D	15.03.21	FOR APPROVAL	C dB	DMB	
C	02.12.20	FOR APPROVAL	OAR	DMB	
B	13.11.20	FOR APPROVAL	OAR	DMB	
A	23.09.19	FOR REVIEW	OAR	DMB	
Rev.	Date	Description	Des.	Verif.	Appd.

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Drawn	OAR	Date	June 20
Checked	DMB	Date	June 20
Designed	OAR	Date	June 20
Verified	AGO	Date	June 20
Approved	<i>Carlo de Sijl</i>	Date	26/09

Client DEFENCE HOUSING AUSTRALIA  
Project MUIRHEAD NORTH DEVELOPMENT  
LEE POINT ROAD, MUIRHEAD  
CITY OF DARWIN  
Title EROSION AND SEDIMENT CONTROL PLAN  
CONSTRUCTION PHASE 2 (APRIL - OCTOBER)  
SHEET 2 OF 2

Status	FOR APPROVAL				
NOT TO BE USED FOR CONSTRUCTION PURPOSES					
Datum	AHD	Date	July 2020	Scale	AS SHOWN
Drawing Number	DC1603-MHN-1A-ES06			Revision	F

FOLLOWING DECOMMISSIONING OF THE CONSTRUCTION COMPOUND, AREA TO BE TOPSOILED (50 TO 75mm NON-DISPERSIVE SOIL) AND SEEDED OR STABILISED TO SUPERINTENDENTS INSTRUCTIONS.

CONSTRUCTION COMPOUND

NO GO AREA

BATTER 1 in 6

NO GO AREA

OPEN SPACE AREA TO BE VEGETATED / STABILISED TO APPROVED LANDSCAPE ARCHITECTS DRAWINGS.

NO GO AREA

STORMWATER PIT (HEADWALL) TO UNDERGROUND STORMWATER. REFER DWG DC1603-MHN-1A-ES11 FOR INLET PROTECTION DETAILS

INTERFACE AREAS / BATTERS (OUTSIDE OF LOT AREAS) TO BE TOPSOILED (50 TO 75mm NON-DISPERSIVE SOIL) AND SEEDED, MULCHED OR STABILISED TO SUPERINTENDENTS INSTRUCTIONS.

MULCH FILTER BERM WEIR LOCATIONS ARE INDICATIVE ONLY. EXACT WEIR LOCATION TO BE VERIFIED ON SITE. (TYP.)

**NOTES**

1. THE CONTRACTOR IS TO PROGRESSIVELY IMPLEMENT POST-CONSTRUCTION CONTROLS AS WORK ON THE LOTS IS COMPLETED.
2. REFER TO DWG No. DC1603-MHN-1A-ES01 TO ES02 FOR GENERAL NOTES.
3. REFER TO DWG No. DC1603-MHN-1A-ES03 FOR EROSION AND SEDIMENT CONTROL KEY PLAN.
4. REFER TO DWG No. DC1603-MHN-1A-ES04 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 1. REFER TO DWG No. DC1603-MHN-1A-ES05 TO ES06 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 2.
5. REFER TO DWG No. DC1603-MHN-1A-ES12 TO ES13 FOR EROSION AND SEDIMENT CONTROL DETAILS NOTES.
6. DUST CONTROL FENCE TO BE ERECTED ON SITE WHERE DIRECTED BY THE SUPERINTENDENT AND CITY OF DARWIN TO SUIT PREVAILING WIND CONDITIONS.
7. SEDIMENT FENCE TO BE INSTALLED ONLY IF INSUFFICIENT MULCH AVAILABLE ON SITE.
8. DOWNSLOPE BOUNDARY SEDIMENT CONTROLS TO REMAIN IN PLACE AND FUNCTIONAL UNTIL ADEQUATE STABILISATION OF CONTRIBUTING UPSLOPE CATCHMENT.
9. WHERE APPROPRIATE BINDER OR STABILISER IS APPLIED TO ACHIEVE ADEQUATE COVER, THE AREA SHALL BE FLAGGED / FENCED OFF TO PREVENT VEHICULAR TRAFFIC.
10. ALL AREAS DISTURBED DURING THE STAGE 1A WORKS THAT REMAIN EXPOSED BEYOND 30 NOVEMBER ARE TO BE INSPECTED BY DEPWS REPRESENTATIVES TO CONFIRM THE LEVEL OF EROSION AND SEDIMENT CONTROL MEASURES / DEVICES TO BE IMPLEMENTED FOR THE WET SEASON.

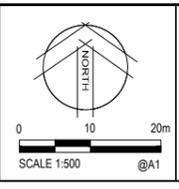
**LEGEND**

-  SEDIMENT FENCE
-  ON GRADE KERB INLET SEDIMENT TRAP
-  SAG KERB INLET SEDIMENT TRAP
-  FABRIC DROP INLET PROTECTION
-  GULLY BAG INLET PROTECTION
-  ROCK CHECK DAM
-  FIBRE ROLL
-  ROCK WEIR AT END OF BERM
-  0.9m WIDE GRASS FILTER STRIP REFER TO LANDSCAPING DRAWINGS FOR VERGE AREAS BEYOND FILTER STRIP
-  FINISHED CONTOURS
-  MULCH FILTER BERM (REFER NOTE 7)
-  CATCH DRAIN
-  DIVERSION DRAIN
-  AREA TO BE CLEARED FOR CONSTRUCTION WORKS
-  AREA TO BE CLEARED AS WIND BUFFER REFER NOTES ON ES13
-  NO-GO RESTRICTED AREA

FOR CONTINUATION REFER TO DWG DC1603-MHN-1A-ES08

Rev.	Date	Description	Des.	Verif.	Appd.
F	05.11.21	REVISED FOR APPROVAL	C dB	DMB	
E	23.04.21	FOR APPROVAL	C dB	DMB	
D	15.03.21	FOR APPROVAL	C dB	DMB	
C	02.12.20	FOR APPROVAL	OAR	DMB	
B	13.11.20	FOR APPROVAL	OAR	DMB	
A	23.09.19	FOR REVIEW	OAR	DMB	

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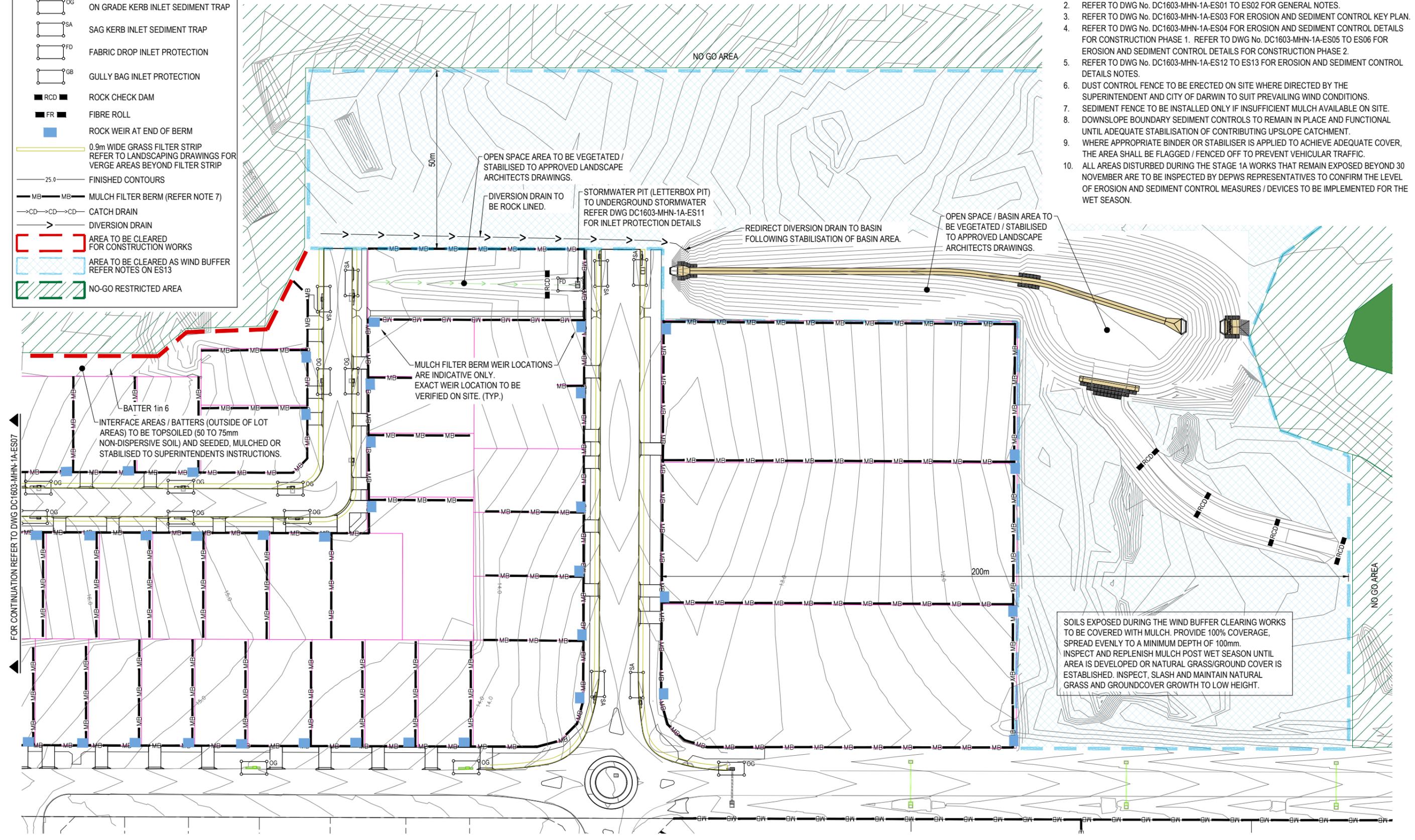
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Drawn	Date	Client
OAR	June 20	DEFENCE HOUSING AUSTRALIA
Checked	Date	Project
DMB	June 20	MUIRHEAD NORTH DEVELOPMENT
Designed	Date	Location
OAR	June 20	LEE POINT ROAD, MUIRHEAD CITY OF DARWIN
Verified	Date	Title
AGO	June 20	EROSION AND SEDIMENT CONTROL PLAN POST CONSTRUCTION PHASE 3
Approved	Date	Sheet
<i>Caro de Sijl</i>		SHEET 1 OF 2

Datum	Date	Scale	Size
AHD	July 2020	AS SHOWN	A1
Drawing Number	Revision		
DC1603-MHN-1A-ES07	F		

Status: **FOR APPROVAL**  
NOT TO BE USED FOR CONSTRUCTION PURPOSES

LEGEND	
	SEDIMENT FENCE
	ON GRADE KERB INLET SEDIMENT TRAP
	SAG KERB INLET SEDIMENT TRAP
	FABRIC DROP INLET PROTECTION
	GULLY BAG INLET PROTECTION
	ROCK CHECK DAM
	FIBRE ROLL
	ROCK WEIR AT END OF BERM
	0.9m WIDE GRASS FILTER STRIP REFER TO LANDSCAPING DRAWINGS FOR VERGE AREAS BEYOND FILTER STRIP
	25.0 FINISHED CONTOURS
	MB MULCH FILTER BERM (REFER NOTE 7)
	CD CATCH DRAIN
	DD DIVERSION DRAIN
	AREA TO BE CLEARED FOR CONSTRUCTION WORKS
	AREA TO BE CLEARED AS WIND BUFFER REFER NOTES ON ES13
	NO-GO RESTRICTED AREA

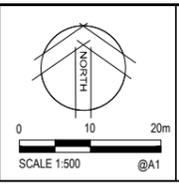


- NOTES**
- THE CONTRACTOR IS TO PROGRESSIVELY IMPLEMENT POST-CONSTRUCTION CONTROLS AS WORK ON THE LOTS IS COMPLETED.
  - REFER TO DWG No. DC1603-MHN-1A-ES01 TO ES02 FOR GENERAL NOTES.
  - REFER TO DWG No. DC1603-MHN-1A-ES03 FOR EROSION AND SEDIMENT CONTROL KEY PLAN.
  - REFER TO DWG No. DC1603-MHN-1A-ES04 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 1. REFER TO DWG No. DC1603-MHN-1A-ES05 TO ES06 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 2.
  - REFER TO DWG No. DC1603-MHN-1A-ES12 TO ES13 FOR EROSION AND SEDIMENT CONTROL DETAILS NOTES.
  - DUST CONTROL FENCE TO BE ERECTED ON SITE WHERE DIRECTED BY THE SUPERINTENDENT AND CITY OF DARWIN TO SUIT PREVAILING WIND CONDITIONS.
  - SEDIMENT FENCE TO BE INSTALLED ONLY IF INSUFFICIENT MULCH AVAILABLE ON SITE.
  - DOWNSLOPE BOUNDARY SEDIMENT CONTROLS TO REMAIN IN PLACE AND FUNCTIONAL UNTIL ADEQUATE STABILISATION OF CONTRIBUTING UPSLOPE CATCHMENT.
  - WHERE APPROPRIATE BINDER OR STABILISER IS APPLIED TO ACHIEVE ADEQUATE COVER, THE AREA SHALL BE FLAGGED / FENCED OFF TO PREVENT VEHICULAR TRAFFIC.
  - ALL AREAS DISTURBED DURING THE STAGE 1A WORKS THAT REMAIN EXPOSED BEYOND 30 NOVEMBER ARE TO BE INSPECTED BY DEPWS REPRESENTATIVES TO CONFIRM THE LEVEL OF EROSION AND SEDIMENT CONTROL MEASURES / DEVICES TO BE IMPLEMENTED FOR THE WET SEASON.

FOR CONTINUATION REFER TO DWG DC1603-MHN-1A-ES07

Rev.	Date	Description	Des.	Verif.	Appd.
F	05.11.21	REVISED FOR APPROVAL	C dB	DMB	
E	23.04.21	FOR APPROVAL	C dB	DMB	
D	15.03.21	FOR APPROVAL	C dB	DMB	
C	02.12.20	FOR APPROVAL	OAR	DMB	
B	13.11.20	FOR APPROVAL	OAR	DMB	
A	23.09.19	FOR REVIEW	OAR	DMB	

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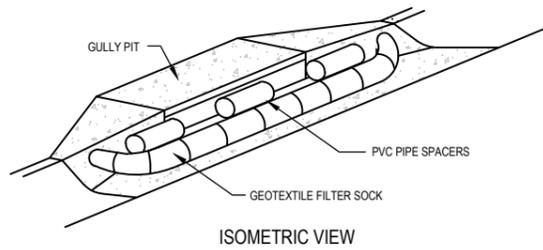
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Drawn	OAR	Date	June '20
Checked	DMB	Date	June '20
Designed	OAR	Date	June '20
Verified	AGO	Date	June '20
Approved		Date	June '20

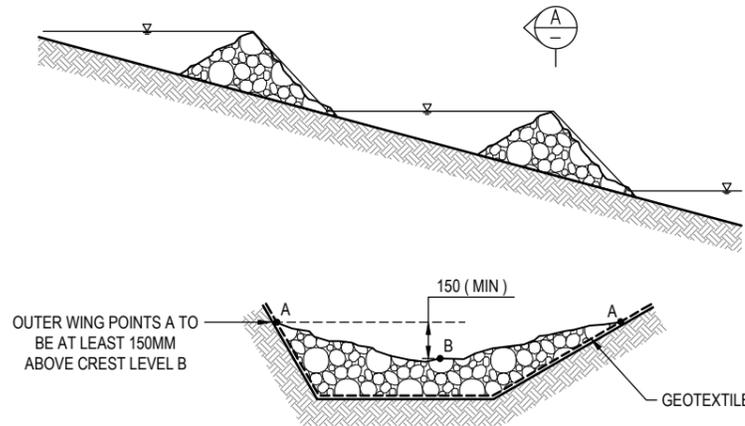
Client **DEFENCE HOUSING AUSTRALIA**  
Project **MUIRHEAD NORTH DEVELOPMENT**  
**LEE POINT ROAD, MUIRHEAD**  
**CITY OF DARWIN**  
Title **EROSION AND SEDIMENT CONTROL PLAN**  
**POST CONSTRUCTION PHASE 3**  
SHEET 2 OF 2

Status	<b>FOR APPROVAL</b>				
NOT TO BE USED FOR CONSTRUCTION PURPOSES					
Datum	AHD	Date	July 2020	Scale	AS SHOWN
Drawing Number	DC1603-MHN-1A-ES08			Size	A1
Revision	F				



REFER DWG. NO. DC1603-MHN-1A-ES13 AND IECA BPESC STD. DWG. SD-SA-01 FOR FURTHER INFORMATION.

**SAG KERB INLET SEDIMENT TRAP**  
N.T.S.



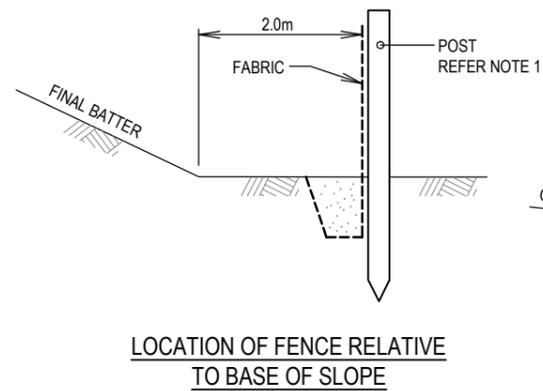
**SECTION A**  
N.T.S.

REFER DWG. NO. DC1603-MHN-1A-ES13 AND IECA BPESC STD. DWG. SD-RCD-01 FOR FURTHER INFORMATION.

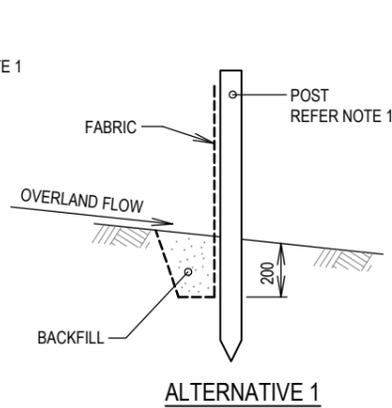
**ROCK CHECK DAM**  
N.T.S.

**DIMENSIONS - ROCK CHECK DAM**

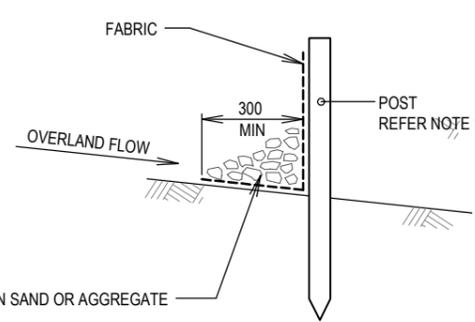
- MAXIMUM HEIGHT OF 0.5m UNLESS FORMALLY DESIGNED.
- MAXIMUM HEIGHT 1m IF FORMALLY DESIGNED.
- WEIR INVERT TO BE AT LEAST 150mm LOWER THAN OUTER EDGES.
- MAXIMUM BANK SLOPE OF 2(H): 1(V).
- ROCK 150mm-300mm NOMINAL DIAMETER, HARD, EROSION RESISTANT ROCK. SMALLER ROCK MAY BE USED IF SUITABLE LARGE ROCK IS NOT AVAILABLE



**LOCATION OF FENCE RELATIVE TO BASE OF SLOPE**



**ALTERNATIVE 1**



**ALTERNATIVE 2**

**ANCHORING BASE OF FABRIC**

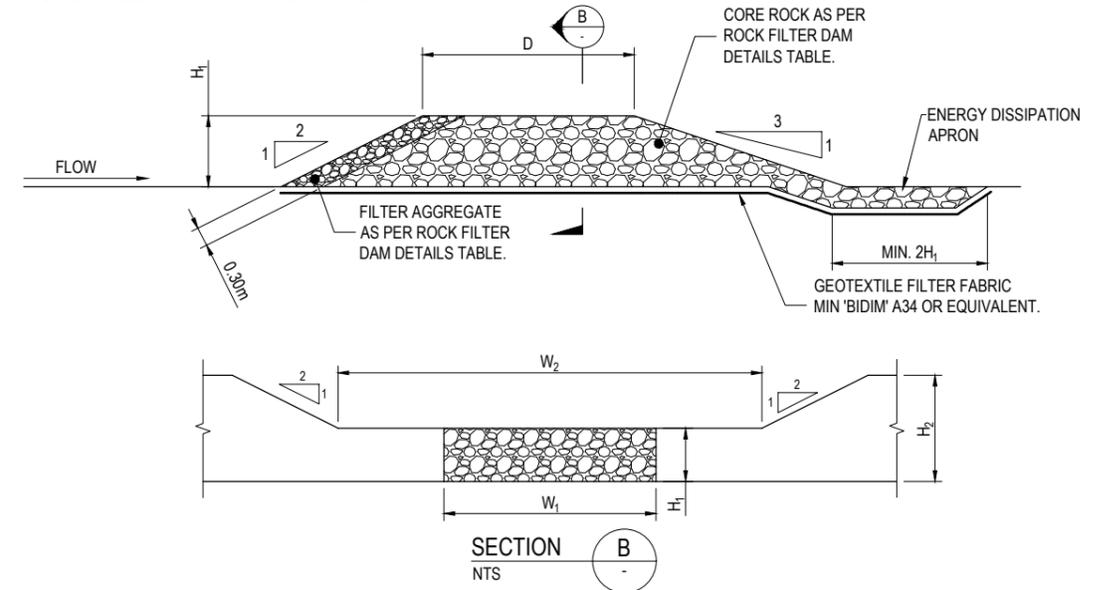
**NOTES**

1. POSTS ARE TO BE STAR PICKETS OR 50x50 MIN. TIMBER STAKES. STEEL DROPPERS ARE NOT TO BE USED.
2. REFER DWG. NO. DC1603-MHN-1A-ES12 AND IECA BPESC STD. DWG. SD-SF-01 AND SD-SF-02 FOR FURTHER INFORMATION.

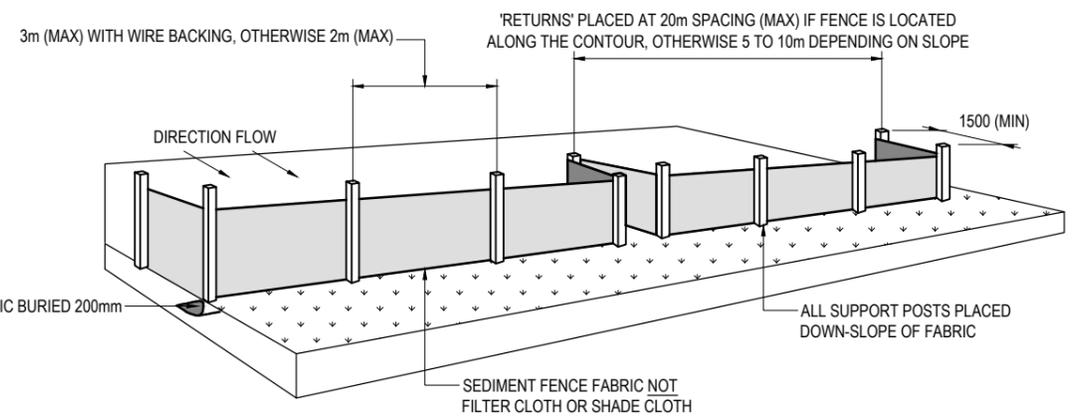
**ROCK FILTER DAM DETAILS TABLE**

DEVICE ID	CATCHMENT ID	MIN. SETTLING POND SURFACE AREA	SUGGESTED SETTLING POND LENGTH	SUGGESTED SETTLING POND WIDTH	DEVICE THICKNESS (IN DIRECTION OF FLOW) (D)	HEIGHT OF ROCK FILTER (WEIR) (H <sub>1</sub> )	FILTER AGGREGATE SIZE	MIN. THICKNESS OF FILTER AGGREGATE	MIN. CORE ROCK SIZE	WIDTH OF FILTER DAM (W <sub>1</sub> )	SPILLWAY LENGTH (W <sub>2</sub> )	SPILLWAY DEPTH	EMBANKMENT HEIGHT (H <sub>2</sub> )
RFD-1A	1A	550m <sup>2</sup>	15.0m	37.0m	MIN. 1.50m	0.50m	25mm	0.30m	225mm	15.0m	15.0m	0.35m	0.85m
RFD-1B	1B	27m <sup>2</sup>	10.0m	3.0m	MIN. 1.50m	0.30m	25mm	0.30m	225mm	3.5m	3.5m	0.20m	0.50m
RFD-1C	1C	18m <sup>2</sup>	10.0m	2.0m	MIN. 1.50m	0.30m	25mm	0.30m	225mm	3.5m	3.5m	0.20m	0.50m
RFD-1D	1D	102m <sup>2</sup>	5.0m	21.0m	MIN. 1.50m	0.50m	25mm	0.30m	225mm	5.0m	5.0m	0.30m	0.80m
RFD-1E	1E	119m <sup>2</sup>	5.0m	24.0m	MIN. 1.50m	0.50m	25mm	0.30m	225mm	5.0m	5.0m	0.30m	0.80m
RFD-1F	1F	34m <sup>2</sup>	5.0m	7.0m	MIN. 1.50m	0.30m	25mm	0.30m	225mm	5.0m	5.0m	0.20m	0.50m
RFD-2A	2A	404m <sup>2</sup>	15.0m	27.0m	MIN. 1.50m	0.50m	25mm	0.30m	225mm	15.0m	15.0m	0.30m	0.80m
RFD-2G	2G	68m <sup>2</sup>	5.0m	14.0m	MIN. 1.50m	0.30m	25mm	0.30m	225mm	5.0m	5.0m	0.25m	0.55m
RFD-2H	2H	90m <sup>2</sup>	5.0m	18.0m	MIN. 1.50m	0.30m	25mm	0.30m	225mm	5.0m	5.0m	0.25m	0.55m
RFD-2I	2I	115m <sup>2</sup>	10.0m	12.0m	MIN. 1.50m	0.30m	25mm	0.30m	225mm	10.0m	10.0m	0.20m	0.50m

- REFER TYPICAL ROCK FILTER DAM OUTLET WEIR DETAILS FOR LOCATION OF VARIABLES 'D' 'H<sub>1</sub>' 'H<sub>2</sub>' 'W<sub>1</sub>' AND 'W<sub>2</sub>' FROM THE ABOVE TABLE.
- OFF-LINE ROCK FILTER DAM DETAILS BASED ON 3 MONTH ARI PEAK FLOWS FILTERING THROUGH FILTER AGGREGATE, WITH SPILLWAY SIZED FOR 2 YEAR ARI PEAK FLOWS.
- SUITABILITY OF DEVICE AND DEVICE DETAILS TO BE CONFIRMED ON SITE.
- REFER IECA STD DWG SD-RFD-01 AND SD-RFD-02 FOR TYPICAL ROCK FILTER DAM DETAILS



**TYPICAL ROCK FILTER DAM OUTLET WEIR**  
N.T.S.



**INSTALLATION OF SEDIMENT FENCE**  
N.T.S.

Rev.	Date	Description	Des.	Verif.	Appd.
F	29.10.21	REVISED FOR APPROVAL	C dB	DMB	
E	23.04.21	FOR APPROVAL	C dB	DMB	
D	15.03.21	FOR APPROVAL	C dB	DMB	
C	02.12.20	FOR APPROVAL	OAR	DMB	
B	13.11.20	FOR APPROVAL	OAR	DMB	
A	23.09.19	FOR REVIEW	OAR	DMB	

Development Permit: DP19/0050

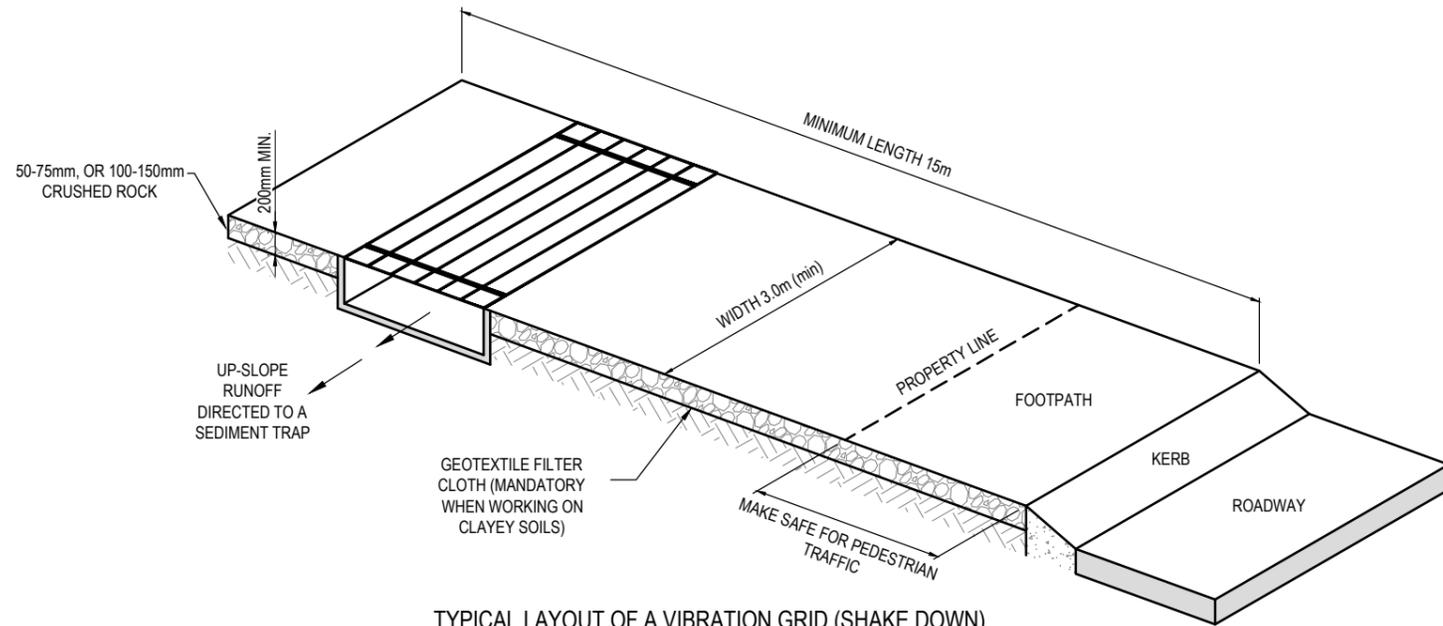
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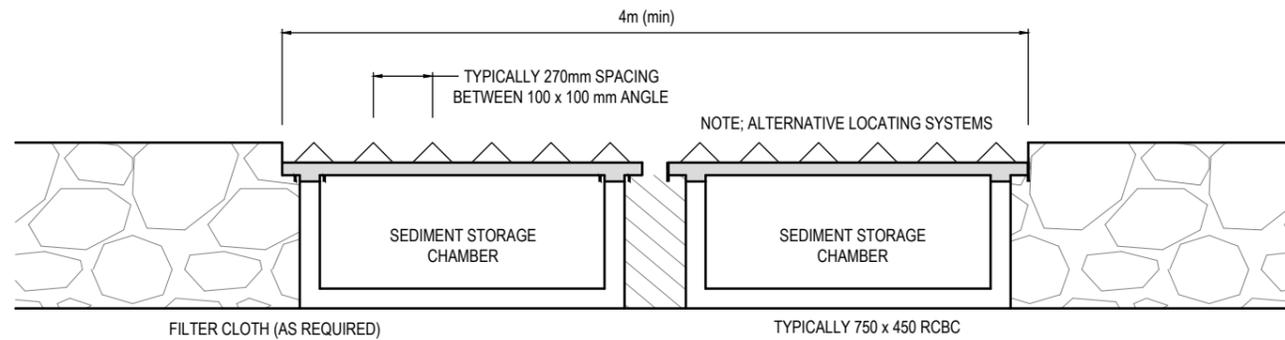
Drawn	Date
OAR	June 20
Checked	Date
DMB	June 20
Designed	Date
OAR	June 20
Verified	Date
AGO	June 20
Approved	Date
<i>Carlo de Sijl</i>	6/20/2021

Client	Project	Title
DEFENCE HOUSING AUSTRALIA	MUIRHEAD NORTH DEVELOPMENT	EROSION AND SEDIMENT CONTROL DETAILS
	LEE POINT ROAD, MUIRHEAD CITY OF DARWIN	SHEET 1 OF 3

Status	Datum	Date	Scale	Size	Revision
FOR APPROVAL	AHD	July 2020	AS SHOWN	A1	F
NOT TO BE USED FOR CONSTRUCTION PURPOSES					
Drawing Number	DC1603-MHN-1A-ES09			Revision	F

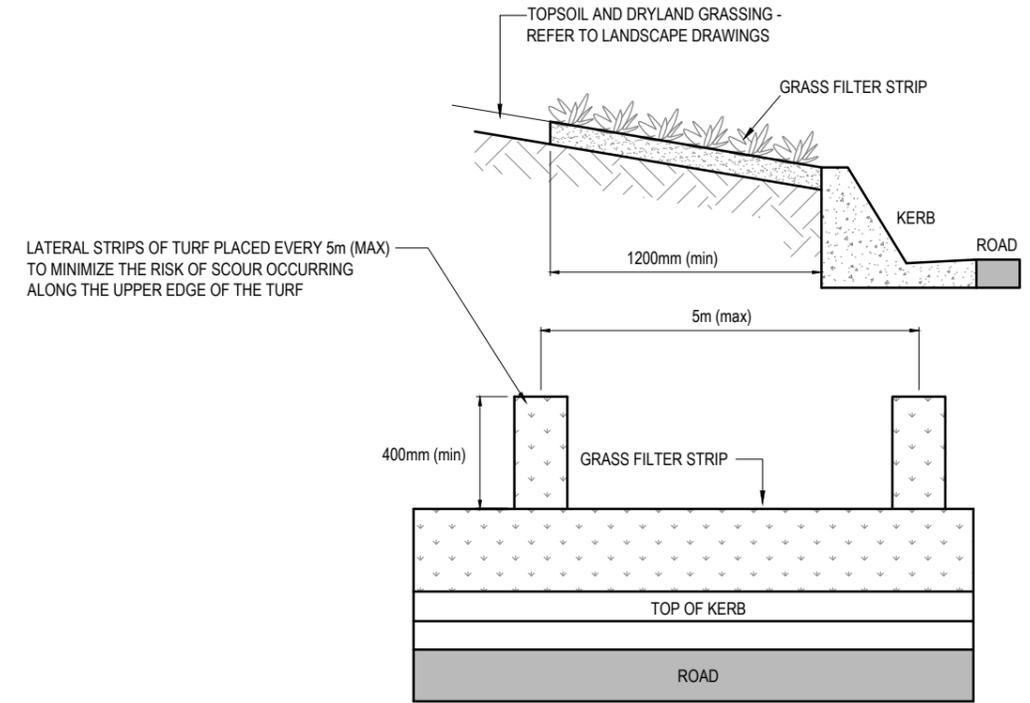


TYPICAL LAYOUT OF A VIBRATION GRID (SHAKE DOWN)  
N.T.S.



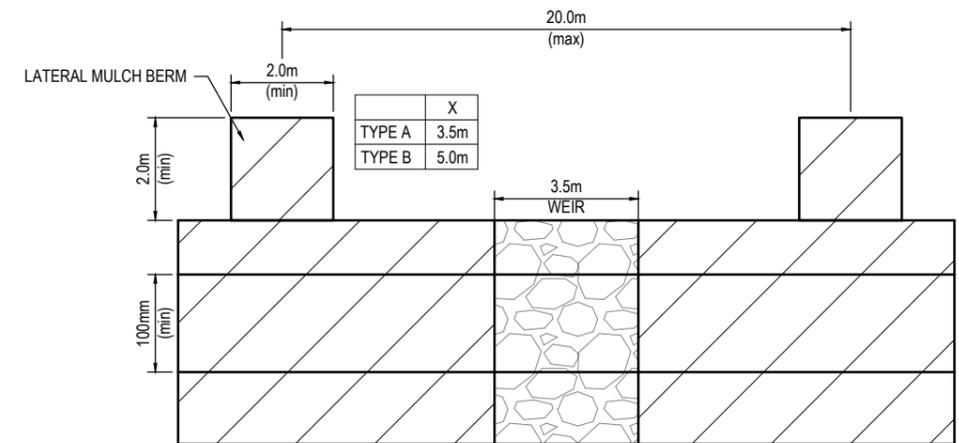
REFER DWG. NO. DC1603-MHN-1A-ES12 AND IECA BPESC STD. DWG. SD-EXIT-04 AND SD-EXIT-05 FOR FURTHER INFORMATION.

TYPICAL PROFILE OF VIBRATION PANELS  
N.T.S.

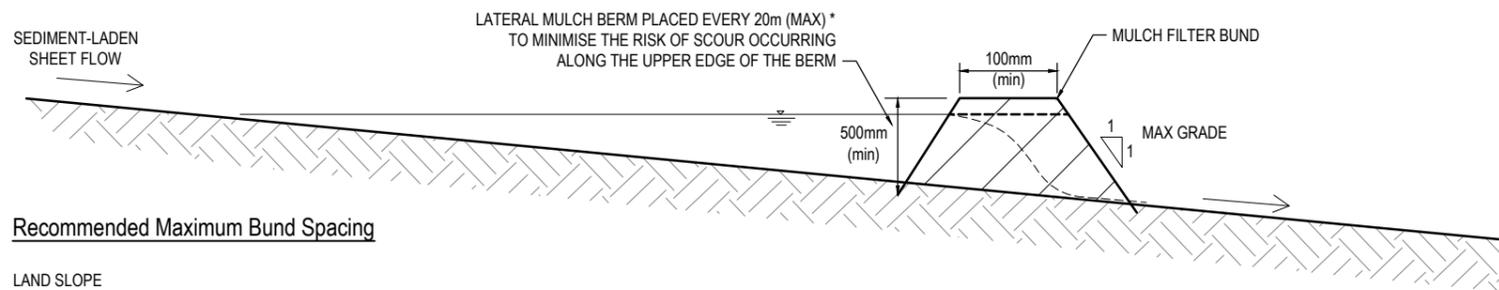


REFER DWG. NO. DC1603-MHN-1A-ES12 AND IECA BPESC STD. DWG. SD-GFS-01 AND SD-GFS-02 FOR FURTHER INFORMATION.

PLACEMENT OF GRASS FILTER STRIPS  
ALONG EDGE OF IMPERVIOUS SURFACE  
N.T.S.

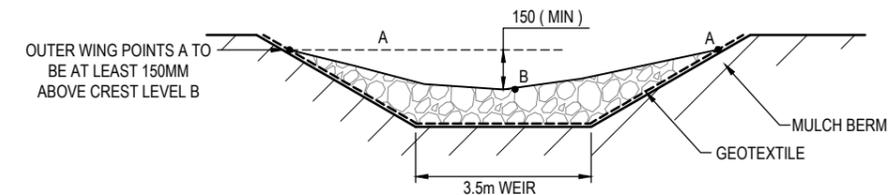


TYPICAL MULCH FILTER BERM PLAN DETAIL  
N.T.S.



REFER DWG. NO. DC1603-MHN-1A-ES12 AND IECA BPESC STD. DWG. SD-MB-01 FOR FURTHER INFORMATION.

TYPICAL MULCH FILTER BERM DETAIL  
N.T.S.



WEIR AT BERM SECTION  
N.T.S.

Recommended Maximum Bund Spacing

LAND SLOPE	Spacing
2%	30m
5%	25m
10%	15m
20%	8m

\* MULCH BUNDS TO BE INSTALLED WITH MINIMUM 20m RETURNS TO AVOID SCOUR BEHIND THE BUNDS. SITE SUPERINTENDENT AND DEPWS REPRESENTATIVE TO INSPECT PRIOR TO ACCEPTANCE.

Rev.	Date	Description	Des.	Verif.	Appd.
F	29.10.21	REVISED FOR APPROVAL	C dB	DMB	
E	23.04.21	FOR APPROVAL	C dB	DMB	
D	15.03.21	FOR APPROVAL	C dB	DMB	
C	02.12.20	FOR APPROVAL	OAR	DMB	
B	13.11.20	FOR APPROVAL	OAR	DMB	
A	23.09.19	FOR REVIEW	OAR	DMB	

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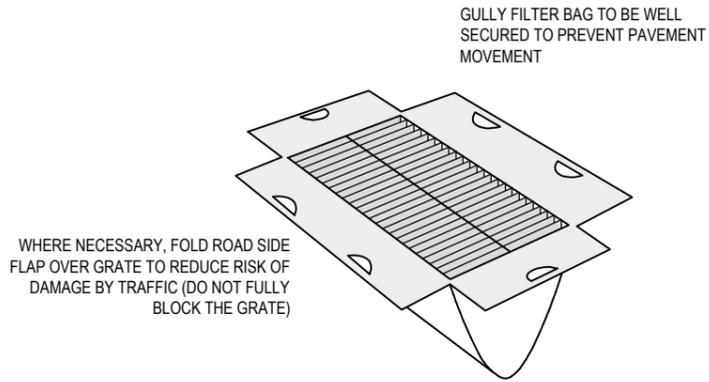
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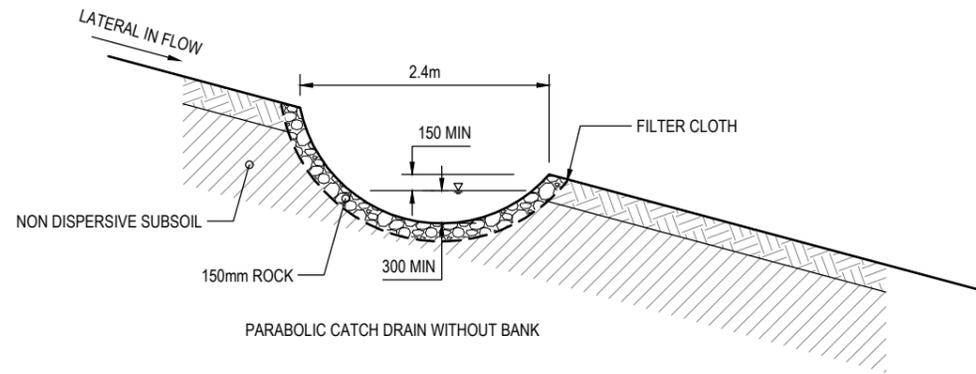
Drawn	Date	Client
OAR	June 20	DEFENCE HOUSING AUSTRALIA
Checked	Date	Project
DMB	June 20	MUIRHEAD NORTH DEVELOPMENT
Designed	Date	Title
OAR	June 20	LEE POINT ROAD, MUIRHEAD CITY OF DARWIN
Verified	Date	Details
AGO	June 20	EROSION AND SEDIMENT CONTROL
Approved	Date	Sheet
<i>Carlo de Sijl</i>	June 20	7619 SHEET 2 OF 3

Datum	Date	Scale	Size
AHD	July 2020	AS SHOWN	A1

Status	Revision
FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSES	F

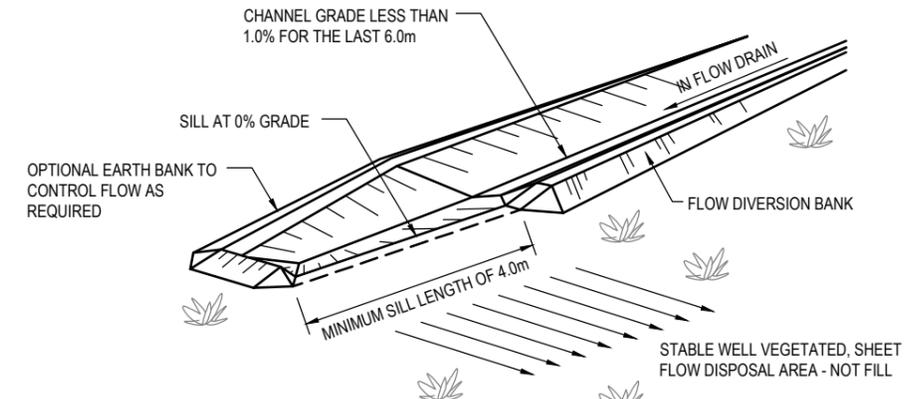


**GULLY FILTER BAG**  
N.T.S.

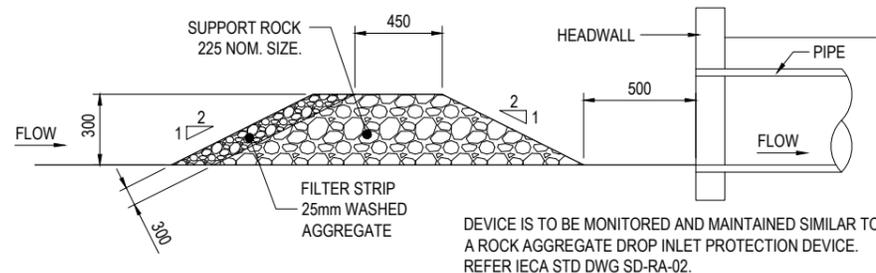


REFER DWG. NO. DC1603-MHN-1A-ES12 AND IECA BPESC STD. DWG. SD-CD-01 AND SD-CD-05 FOR FURTHER INFORMATION.

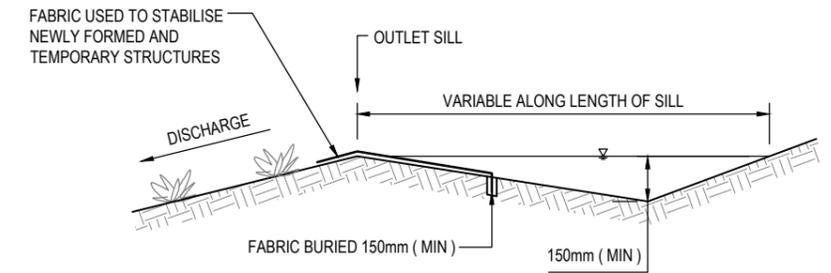
**CATCH DRAINS**  
N.T.S.



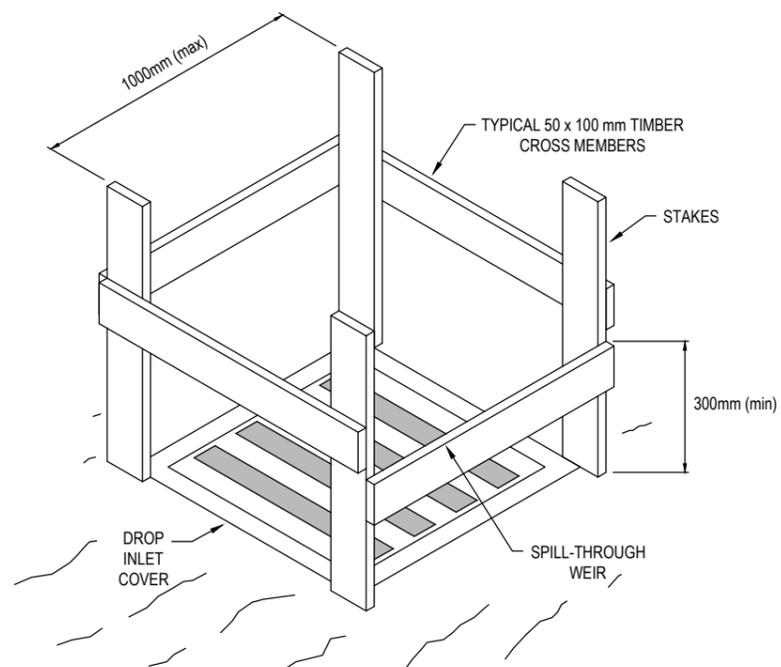
REFER DWG. NO. DC1603-MHN-1A-ES13 AND IECA BPESC STD. DWG. SD-LS-01 FOR FURTHER INFORMATION.  
**TYPICAL LAYOUT OF THE LEVEL SPREADER**  
N.T.S.



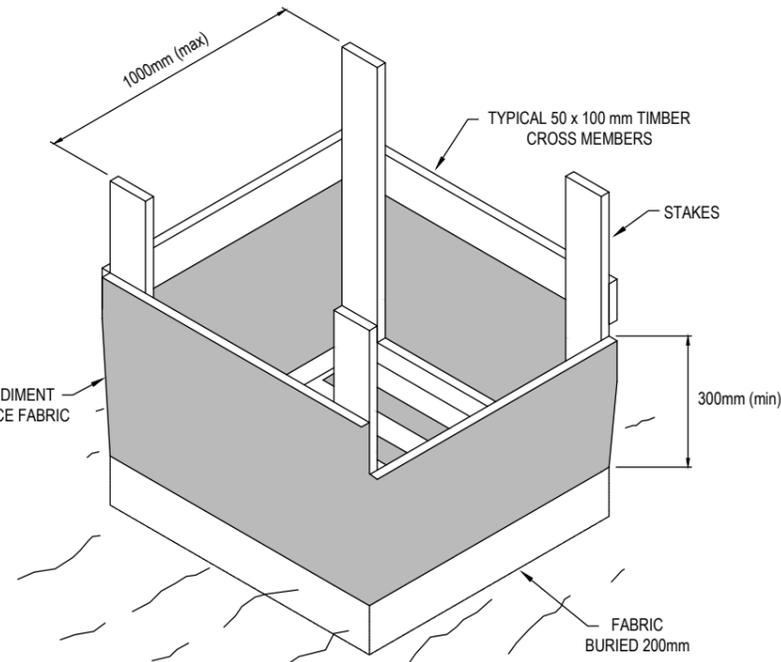
**INLET PROTECTION ROCK & AGGREGATE SYSTEM**  
N.T.S.



**TYPICAL PROFILE OF THE OUTLET WEIR**  
N.T.S.

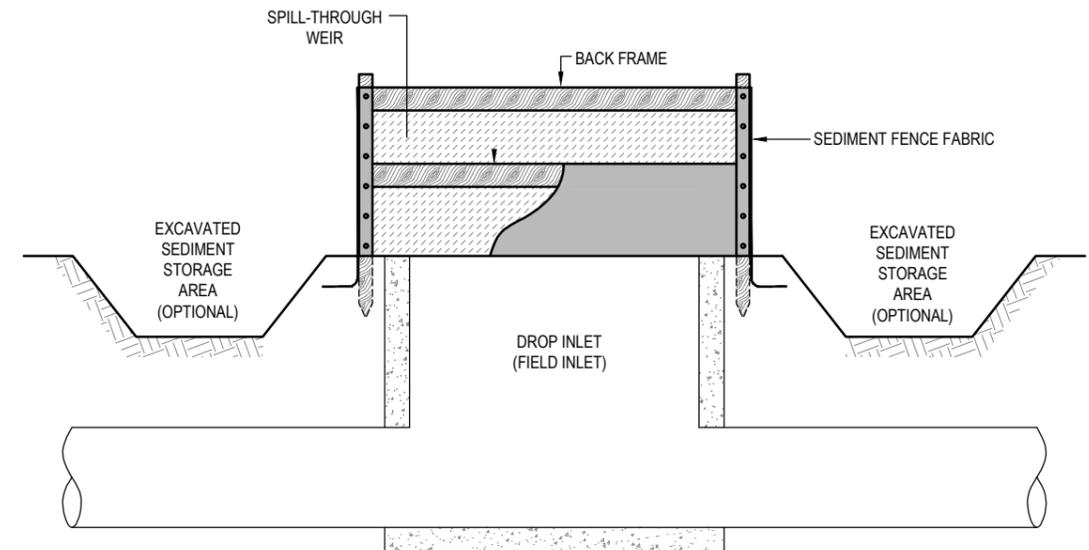


**DETAILS OF SUPPORT FRAME WITH SPILL-THROUGH WEIR**  
N.T.S.



**DETAILS OF SUPPORT FRAME WITH SPILL-THROUGH WEIR**  
N.T.S.

REFER DWG. NO. DC1603-MHN-1A-ES12 AND IECA BPESC STD. DWG. SD-FD-01 AND SD-FD-02 FOR FURTHER INFORMATION.



**FABRIC DROP INLET PROTECTION WITH OPTIONAL EXCAVATED SEDIMENT STORAGE AREA AND SETTLING POND**  
N.T.S.

Rev.	Date	Description	Des.	Verif.	Appd.
F	29.10.21	REVISED FOR APPROVAL	C dB	DMB	
E	23.04.21	FOR APPROVAL	C dB	DMB	
D	15.03.21	FOR APPROVAL	C dB	DMB	
C	02.12.20	FOR APPROVAL	OAR	DMB	
B	13.11.20	FOR APPROVAL	OAR	DMB	
A	23.09.19	FOR REVIEW	OAR	DMB	

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OAR	June 20	DEFENCE HOUSING AUSTRALIA
Checked	Date	Project
DMB	June 20	MUIRHEAD NORTH DEVELOPMENT
Designed	Date	Location
OAR	June 20	LEE POINT ROAD, MUIRHEAD CITY OF DARWIN
Verified	Date	Title
AGO	June 20	EROSION AND SEDIMENT CONTROL DETAILS
Approved	Date	Sheet
<i>Carlo de Sijl</i>	June 20	SHEET 3 OF 3

Status	Datum	Date	Scale	Size
<b>FOR APPROVAL</b>	AHD	July 2020	AS SHOWN	A1
Drawing Number	Revision			
DC1603-MHN-1A-ES11	F			





**NOTES**

1. THE CONTRACTOR IS TO IMPLEMENT PRE-CONSTRUCTION CONTROLS PRIOR TO COMMENCEMENT OF ANY EARTHWORKS ON SITE.
2. REFER TO DWG No. DC1603-MHN-1A-ES01 TO ES02 FOR GENERAL NOTES.
3. REFER TO DWG No. DC1603-MHN-1A-ES03 FOR EROSION AND SEDIMENT CONTROL KEY PLAN.
4. REFER TO DWG No. DC1603-MHN-1A-ES21 TO DC1603-MHN-1A-ES22 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 2 (NOVEMBER - MARCH). REFER TO DWG No. DC1603-MHN-1A-ES07 TO ES08 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 3.
5. REFER TO DWG No. DC1603-MHN-1A-ES09 TO ES11 AND ES23 FOR EROSION AND SEDIMENT CONTROL DETAILS.
6. REFER TO DWG No. DC1603-MHN-1A-ES12 & ES13 FOR EROSION AND SEDIMENT CONTROL DETAILS NOTES.
7. DUST CONTROL FENCE TO BE ERECTED ON SITE WHERE DIRECTED BY THE SUPERINTENDENT AND CITY OF DARWIN TO SUIT PREVAILING WIND CONDITIONS.
8. SEDIMENT FENCE TO BE INSTALLED ONLY IF INSUFFICIENT MULCH AVAILABLE ON SITE. MAXIMUM SPACING OF LATERAL BERMS/DRAINS IS 80m.

**LEGEND**

- OG ON GRADE KERB INLET SEDIMENT TRAP
- SA SAG KERB INLET SEDIMENT TRAP
- FD FABRIC DROP INLET PROTECTION
- GB GULLY BAG INLET PROTECTION
- RCD ROCK CHECK DAM
- FR FIBRE ROLL
- Rock Weir at End of Berm
- Finished Contours
- MB MB MULCH FILTER BERM (REFER NOTE 8)
- CD CD CATCH DRAIN
- > DIVERSION DRAIN
- Flow Direction
- RFD ROCK FILTER DAM (REFER TABLE ON DWG No. DC1603-MHN-1A-ES09 FOR DETAILS)
- Area to be Cleared for Construction Works
- Area to be Cleared as Wind Buffer (REFER NOTES ON ES13)
- No-go Restricted Area
- SB-1A TYPE A SEDIMENT BASIN (REFER TO TABLE ON DWG No. DC1603-MHN-1A-ES23)

THE CONTRACTOR IS TO OBTAIN ALL NECESSARY APPROVALS FROM CITY OF DARWIN COUNCIL PRIOR TO CONSTRUCTION OF ANY SITE ACCESS IN THE LEE POINT ROAD ROAD RESERVE.

LOCATION OF CONSTRUCTION ENTRY / EXIT VIBRATION GRID, OR APPROVED EQUIVALENT DEVICE AS PER STD DETAILS. MAINTAIN FOR DURATION OF WORKS. REFER DWG No. DC1603-MHN-1A-ES10 FOR FURTHER INFORMATION.

EROSION AND SEDIMENT CONTROL DEVICES SHOWN FOR THE CONSTRUCTION COMPOUND AREA ARE TO BE MAINTAINED UNTIL COMPLETION OF WORKS.

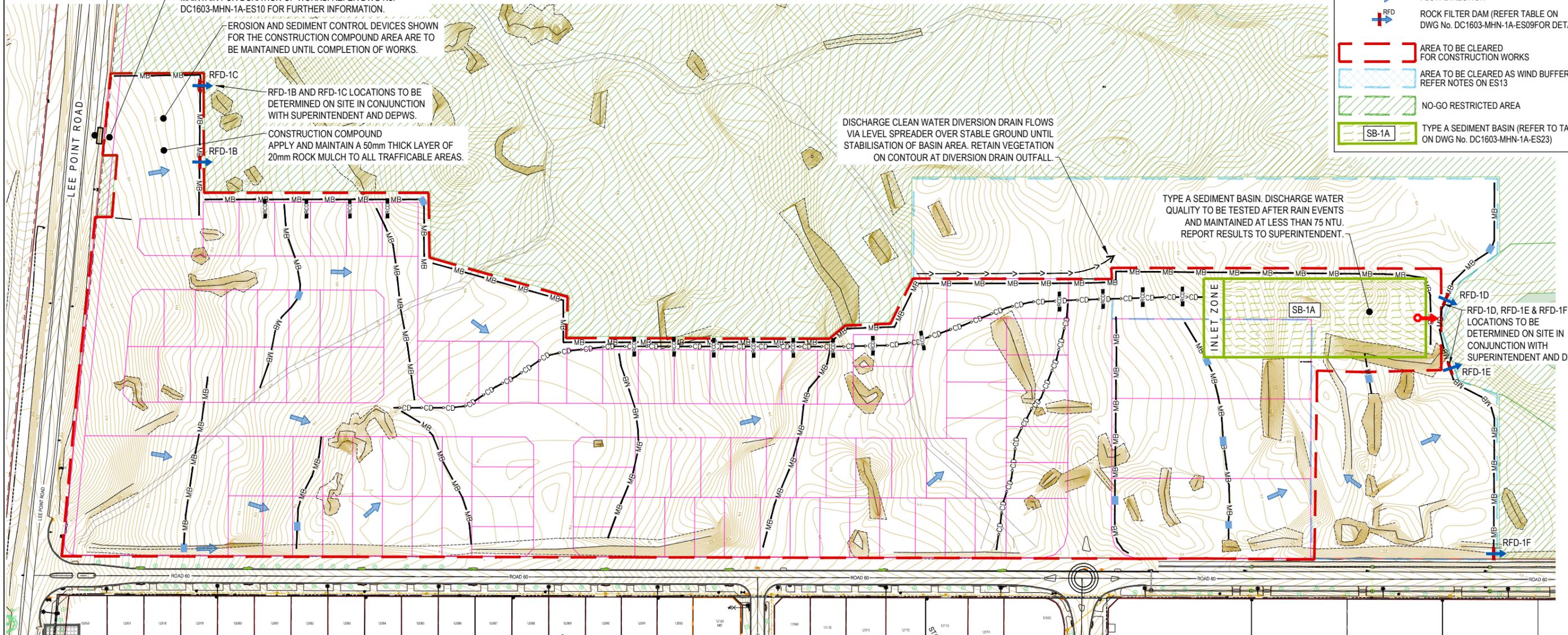
RFD-1B AND RFD-1C LOCATIONS TO BE DETERMINED ON SITE IN CONJUNCTION WITH SUPERINTENDENT AND DEPWS.

CONSTRUCTION COMPOUND APPLY AND MAINTAIN A 50mm THICK LAYER OF 20mm ROCK MULCH TO ALL TRAFFICABLE AREAS.

DISCHARGE CLEAN WATER DIVERSION DRAIN FLOWS VIA LEVEL SPREADER OVER STABLE GROUND UNTIL STABILISATION OF BASIN AREA. RETAIN VEGETATION ON CONTOUR AT DIVERSION DRAIN OUTFALL.

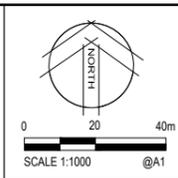
TYPE A SEDIMENT BASIN. DISCHARGE WATER QUALITY TO BE TESTED AFTER RAIN EVENTS AND MAINTAINED AT LESS THAN 75 NTU. REPORT RESULTS TO SUPERINTENDENT.

RFD-1D, RFD-1E & RFD-1F LOCATIONS TO BE DETERMINED ON SITE IN CONJUNCTION WITH SUPERINTENDENT AND DEPWS.



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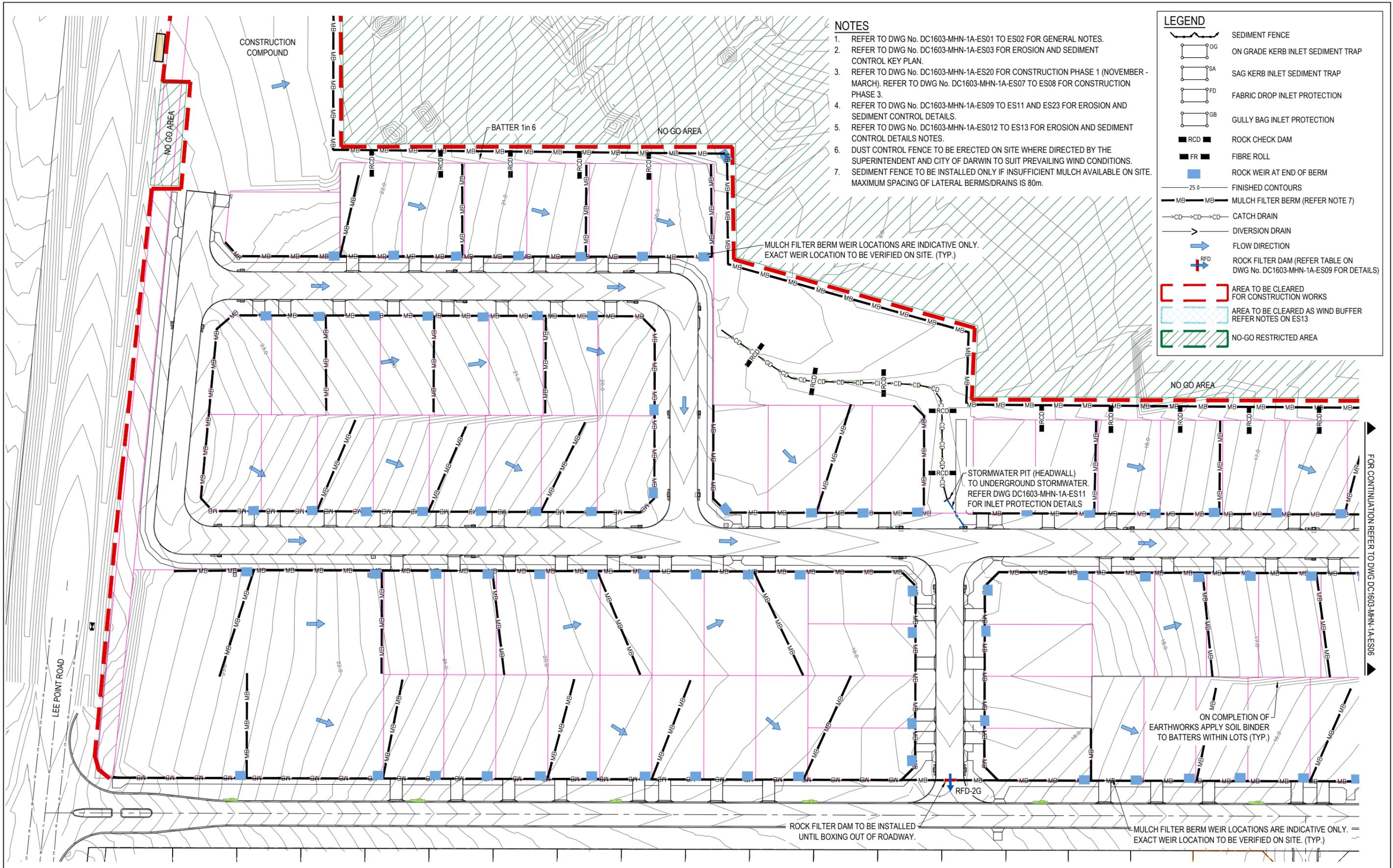
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OAR	June '20	DEFENCE HOUSING AUSTRALIA
Checked	Date	Project
DMB	June '20	MUIRHEAD NORTH DEVELOPMENT
Designed	Date	Location
OAR	June '20	LEE POINT ROAD, MUIRHEAD CITY OF DARWIN
Verified	Date	Title
AGO	June '20	EROSION AND SEDIMENT CONTROL PHASE 1 - PRE CONSTRUCTION (NOVEMBER - MARCH) LAYOUT PLAN
Approved	Date	

*Carlo de Sijl CPESC 7619*

Datum	Date	Scale	Size
AHD	July 2020	AS SHOWN	A1
Drawing Number	Revision		
DC1603-MHN-1A-ES20	A		

Status: **FOR APPROVAL**  
NOT TO BE USED FOR CONSTRUCTION PURPOSES



**NOTES**

1. REFER TO DWG No. DC1603-MHN-1A-ES01 TO ES02 FOR GENERAL NOTES.
2. REFER TO DWG No. DC1603-MHN-1A-ES03 FOR EROSION AND SEDIMENT CONTROL KEY PLAN.
3. REFER TO DWG No. DC1603-MHN-1A-ES20 FOR CONSTRUCTION PHASE 1 (NOVEMBER - MARCH). REFER TO DWG No. DC1603-MHN-1A-ES07 TO ES08 FOR CONSTRUCTION PHASE 3.
4. REFER TO DWG No. DC1603-MHN-1A-ES09 TO ES11 AND ES23 FOR EROSION AND SEDIMENT CONTROL DETAILS.
5. REFER TO DWG No. DC1603-MHN-1A-ES12 TO ES13 FOR EROSION AND SEDIMENT CONTROL DETAILS NOTES.
6. DUST CONTROL FENCE TO BE ERECTED ON SITE WHERE DIRECTED BY THE SUPERINTENDENT AND CITY OF DARWIN TO SUIT PREVAILING WIND CONDITIONS.
7. SEDIMENT FENCE TO BE INSTALLED ONLY IF INSUFFICIENT MULCH AVAILABLE ON SITE. MAXIMUM SPACING OF LATERAL BERMS/DRAINS IS 80m.

**LEGEND**

- SEDIMENT FENCE
- ON GRADE KERB INLET SEDIMENT TRAP
- SAG KERB INLET SEDIMENT TRAP
- FABRIC DROP INLET PROTECTION
- GULLY BAG INLET PROTECTION
- ROCK CHECK DAM
- FIBRE ROLL
- ROCK WEIR AT END OF BERM
- FINISHED CONTOURS
- MULCH FILTER BERM (REFER NOTE 7)
- CATCH DRAIN
- DIVERSION DRAIN
- FLOW DIRECTION
- ROCK FILTER DAM (REFER TABLE ON DWG No. DC1603-MHN-1A-ES09 FOR DETAILS)
- AREA TO BE CLEARED FOR CONSTRUCTION WORKS
- AREA TO BE CLEARED AS WIND BUFFER REFER NOTES ON ES13
- NO-GO RESTRICTED AREA

MULCH FILTER BERM WEIR LOCATIONS ARE INDICATIVE ONLY. EXACT WEIR LOCATION TO BE VERIFIED ON SITE. (TYP.)

STORMWATER PIT (HEADWALL) TO UNDERGROUND STORMWATER. REFER DWG DC1603-MHN-1A-ES11 FOR INLET PROTECTION DETAILS

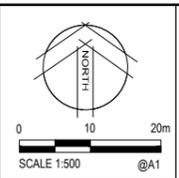
ON COMPLETION OF EARTHWORKS APPLY SOIL BINDER TO BATTERS WITHIN LOTS (TYP.)

ROCK FILTER DAM TO BE INSTALLED UNTIL BOXING OUT OF ROADWAY.

MULCH FILTER BERM WEIR LOCATIONS ARE INDICATIVE ONLY. EXACT WEIR LOCATION TO BE VERIFIED ON SITE. (TYP.)

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Checked	DMB	Date	June 20
Designed	OAR	Date	June 20
Verified	AGO	Date	June 20
Approved		Date	June 20

*Carlo de Sijl* CPESC 7619

Client: DEFENCE HOUSING AUSTRALIA  
 Project: MUIRHEAD NORTH DEVELOPMENT  
 LEE POINT ROAD, MUIRHEAD  
 CITY OF DARWIN  
 Title: EROSION AND SEDIMENT CONTROL PLAN  
 CONSTRUCTION PHASE 2 (NOVEMBER - MARCH)  
 SHEET 1 OF 2

Status	FOR APPROVAL		
Datum	AHD	Date	July 2020
Scale	AS SHOWN	Size	A1
Drawing Number	DC1603-MHN-1A-ES21		
Revision	A		

FOR CONTINUATION REFER TO DWG DC1603-MHN-1A-ES06

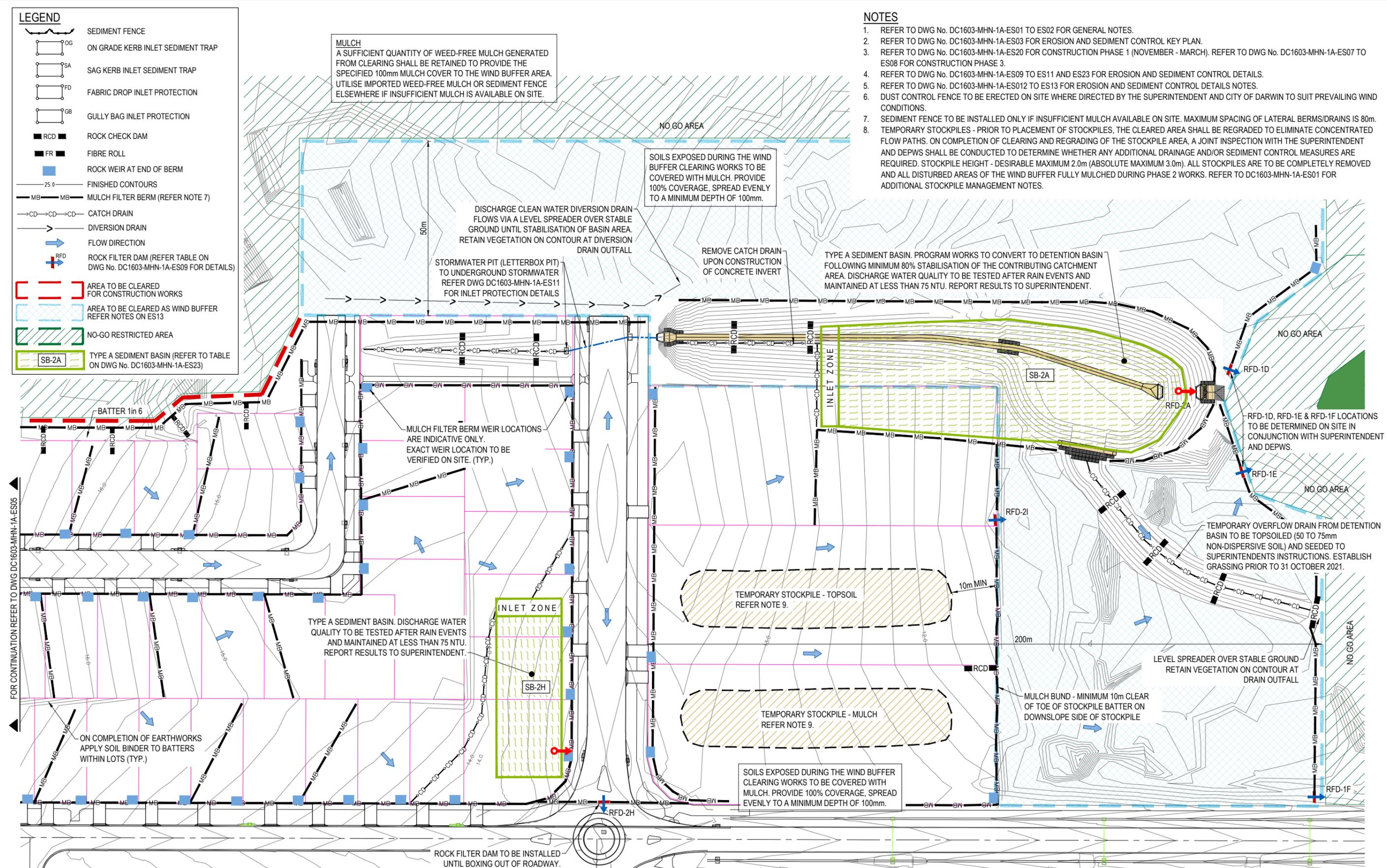
**LEGEND**

-  SEDIMENT FENCE
-  ON GRADE KERB INLET SEDIMENT TRAP
-  SAG KERB INLET SEDIMENT TRAP
-  FABRIC DROP INLET PROTECTION
-  GULLY BAG INLET PROTECTION
-  ROCK CHECK DAM
-  FIBRE ROLL
-  ROCK WEIR AT END OF BERM
-  FINISHED CONTOURS
-  MULCH FILTER BERM (REFER NOTE 7)
-  CATCH DRAIN
-  DIVERSION DRAIN
-  FLOW DIRECTION
-  ROCK FILTER DAM (REFER TABLE ON DWG No. DC1603-MHN-1A-ES09 FOR DETAILS)
-  AREA TO BE CLEARED FOR CONSTRUCTION WORKS
-  AREA TO BE CLEARED AS WIND BUFFER REFER NOTES ON ES13
-  NO-GO RESTRICTED AREA
-  TYPE A SEDIMENT BASIN (REFER TO TABLE ON DWG No. DC1603-MHN-1A-ES23)

**MULCH**  
A SUFFICIENT QUANTITY OF WEED-FREE MULCH GENERATED FROM CLEARING SHALL BE RETAINED TO PROVIDE THE SPECIFIED 100mm MULCH COVER TO THE WIND BUFFER AREA. UTILISE IMPORTED WEED-FREE MULCH OR SEDIMENT FENCE ELSEWHERE IF INSUFFICIENT MULCH IS AVAILABLE ON SITE.

**NOTES**

1. REFER TO DWG No. DC1603-MHN-1A-ES01 TO ES02 FOR GENERAL NOTES.
2. REFER TO DWG No. DC1603-MHN-1A-ES03 FOR EROSION AND SEDIMENT CONTROL KEY PLAN.
3. REFER TO DWG No. DC1603-MHN-1A-ES20 FOR CONSTRUCTION PHASE 1 (NOVEMBER - MARCH). REFER TO DWG No. DC1603-MHN-1A-ES07 TO ES08 FOR CONSTRUCTION PHASE 3.
4. REFER TO DWG No. DC1603-MHN-1A-ES09 TO ES11 AND ES23 FOR EROSION AND SEDIMENT CONTROL DETAILS.
5. REFER TO DWG No. DC1603-MHN-1A-ES12 TO ES13 FOR EROSION AND SEDIMENT CONTROL DETAILS NOTES.
6. DUST CONTROL FENCE TO BE ERECTED ON SITE WHERE DIRECTED BY THE SUPERINTENDENT AND CITY OF DARWIN TO SUIT PREVAILING WIND CONDITIONS.
7. SEDIMENT FENCE TO BE INSTALLED ONLY IF INSUFFICIENT MULCH AVAILABLE ON SITE. MAXIMUM SPACING OF LATERAL BERMS/DRAINS IS 80m.
8. TEMPORARY STOCKPILES - PRIOR TO PLACEMENT OF STOCKPILES, THE CLEARED AREA SHALL BE REGRADED TO ELIMINATE CONCENTRATED FLOW PATHS. ON COMPLETION OF CLEARING AND REGRADING OF THE STOCKPILE AREA, A JOINT INSPECTION WITH THE SUPERINTENDENT AND DEPWS SHALL BE CONDUCTED TO DETERMINE WHETHER ANY ADDITIONAL DRAINAGE AND/OR SEDIMENT CONTROL MEASURES ARE REQUIRED. STOCKPILE HEIGHT - DESIRABLE MAXIMUM 2.0m (ABSOLUTE MAXIMUM 3.0m). ALL STOCKPILES ARE TO BE COMPLETELY REMOVED AND ALL DISTURBED AREAS OF THE WIND BUFFER FULLY MULCHED DURING PHASE 2 WORKS. REFER TO DC1603-MHN-1A-ES01 FOR ADDITIONAL STOCKPILE MANAGEMENT NOTES.



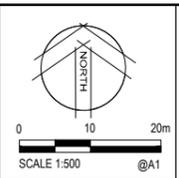
FOR CONTINUATION REFER TO DWG DC1603-MHN-1A-ES05

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OAR	June '20	DEFENCE HOUSING AUSTRALIA
Checked	Date	Project
DMB	June '20	MUIRHEAD NORTH DEVELOPMENT
Designed	Date	Location
OAR	June '20	LEE POINT ROAD, MUIRHEAD
Verified	Date	City
AGO	June '20	CITY OF DARWIN
Approved	Date	Title
<i>Caro de Sijl</i>	June '20	EROSION AND SEDIMENT CONTROL PLAN
		CONSTRUCTION PHASE 2 (NOVEMBER - MARCH)
		SHEET 2 OF 2

Date	Scale	Size
July 2020	AS SHOWN	A1
Drawing Number	Revision	
DC1603-MHN-1A-ES22	A	

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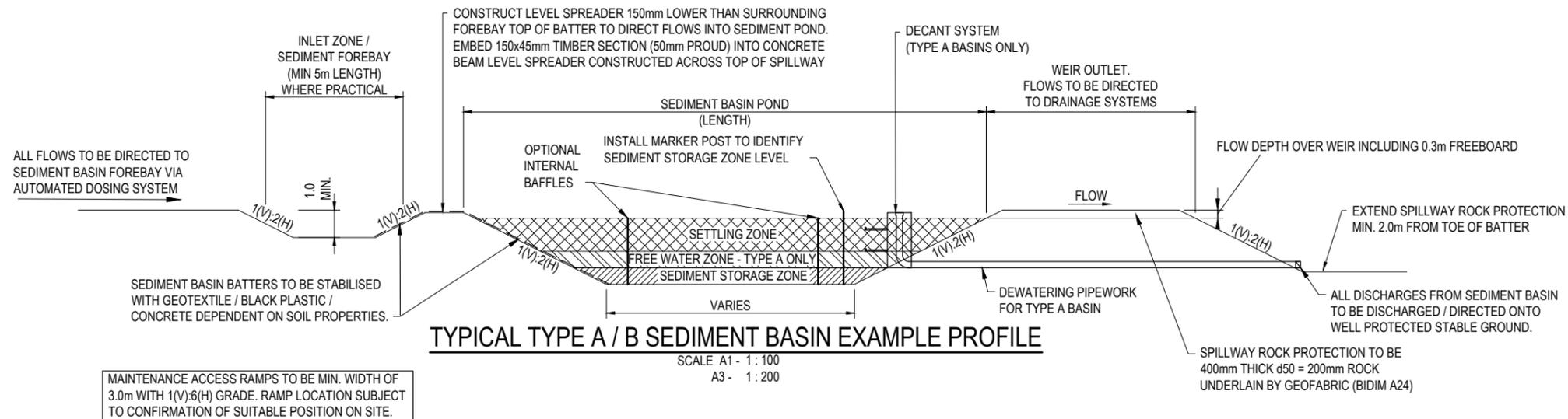


TABLE 1 - 'IDEAL SIZED' TYPE A SEDIMENT BASIN DETAILS

DEVICE ID	CATCHMENT	SIDE BATTERS	BASIN LENGTH @ MID DEPTH OF BASIN SETTLING ZONE (m)	BASIN WIDTH @ MID DEPTH OF BASIN SETTLING ZONE (m)	BASIN AREA @ MID DEPTH OF BASIN SETTLING ZONE (m <sup>2</sup> )	SETTLING ZONE DEPTH (m)	FREE WATER ZONE DEPTH (m)	SEDIMENT STORAGE ZONE DEPTH (m)	TOTAL DEPTH FROM SPILLWAY (m)	SETTLING ZONE VOLUME (m <sup>3</sup> )	FREE WATER ZONE VOLUME (m <sup>3</sup> )	SEDIMENT STORAGE ZONE VOLUME (m <sup>3</sup> )	TOTAL BASIN VOLUME (m <sup>3</sup> )	INLET ZONE LENGTH @ SPILLWAY LEVEL (m)	INLET ZONE WIDTH @ SPILLWAY LEVEL (m)	INLET ZONE DEPTH (m)	EMERGENCY SPILLWAY LENGTH (m)	Q20 SPILLWAY DEPTH (m)	FREEBOARD (m)	NO. OF DECANT ARMS
SB-1A	1A	1 in 3	105	35	3700	0.60	0.20	0.21	1.01	2220	723	666	3610	5.0	37	1.0	30	0.19	0.30	17
SB-2A	2A	1 in 3	91	30	2753	0.60	0.20	0.21	1.01	1652	536	495	2683	5.0	32	1.0	30	0.17	0.30	13
SB-2H	2H	1 in 3	39	13	495	0.60	0.20	0.29	1.09	297	93	89	479	5.0	15	1.0	10	0.12	0.30	3

**SEDIMENT BASIN NOTES**

- FOR IDEAL SIZED SEDIMENT BASIN THE NOTED MINIMUM AVERAGE SETTLING ZONE AREAS, LENGTHS AND WIDTHS ARE AT THE MID-DEPTH OF THE SETTLING ZONE. THE TOTAL BASIN DIMENSIONS NEED TO CONSIDER THE ADOPTED BATTERS SLOPES.
- IDEAL SIZED SEDIMENT BASIN RECOMMENDED 3:1 EFFECTIVE LENGTH TO WIDTH RATIO.
- BASIN DEPTH MINIMUM ADOPTED FOR COMBINED SETTLING, FREE WATER AND STORAGE VOLUME.
- ADDITIONAL 0.5m MINIMUM REQUIRED ABOVE FOR SPILLWAY HEIGHT AND FREEBOARD (0.3m)
- FOR IDEAL SIZED SEDIMENT BASIN:
  - SETTLING ZONE 0.6m MINIMUM DEPTH.
  - FREE WATER ZONE DEPTH 0.2m MINIMUM DEPTH.
  - SEDIMENT STORAGE ZONE 0.2m MINIMUM DEPTH.
- FOR IDEAL SIZED SEDIMENT BASIN, SEDIMENT STORAGE VOLUME BASED ON 30% OF SETTLING ZONE VOLUME. A MARKER SHALL BE PLACED WITHIN THE BASIN TO SHOW THE LEVEL AT WHICH THE SEDIMENT STORAGE ZONE DESIGN CAPACITY OCCURS.
- FOR IDEAL SIZED SEDIMENT BASIN EMERGENCY SPILLWAY WEIR LENGTHS BASED ON CONVEYING THE 20 YEAR ARI PEAK DISCHARGE, FOR THE CONTRIBUTING CATCHMENT AREA, WITH A MAXIMUM DEPTH OVER THE WEIR OF 0.20m.
- SEDIMENT BASIN CUT/FILL BATTERS TO BE CONSTRUCTED TO TIE IN WITH THE EXISTING GROUND.
- DEWATERING AND SPILLWAY OUTLET LOCATIONS ARE TO BE SPECIFIED ON SITE BY THE CONTRACTOR'S ENVIRONMENTAL MANAGER AND CONFIRMED BY THE SUPERINTENDENT.
- WHERE ROCK IS ENCOUNTERED, THE CUT BATTER OF THE SEDIMENT BASIN MAY BE CONSTRUCTED WITH A NOMINAL BATTER SLOPE OF 1(V) : 1(H). FOR OTHER SOILS, THE CUT BATTER SLOPE SHALL BE CONSTRUCTED WITH A NOMINAL BATTER SLOPE OF 1(V) : 2(H) OR FLATTER IF IT IS CONSIDERED THAT THE 1(V) : 2(H) SLOPE IS NOT SUFFICIENTLY STABLE FOR THE SOILS ENCOUNTERED. APPROPRIATE BASIN BATTER SLOPES FOR THE ON SITE CONDITIONS ENCOUNTERED TO BE CONFIRMED BY GEOTECHNICAL ENGINEER.
- EARTH EMBANKMENTS IN EXCESS OF 1m IN HEIGHT SHOULD BE CERTIFIED BY GEOTECHNICAL ENGINEER.
- IF BATTER SLOPES STEEPER THAN 1(V) : 4(H) ARE USED AROUND EDGE OF SEDIMENT BASIN, THEN SAFETY FENCING IS TO BE SUPPLIED TO THE FULL PERIMETER FOR THE DURATION OF THE BASIN'S OPERATION.
- TO INCREASE THE EFFECTIVE TREATMENT OF THE SEDIMENT BASINS, REFER TO SEDIMENT BASIN DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE GUIDELINES FOR DETAILS ON THE INCORPORATION OF ANCILLARY ITEMS SUCH AS INTERNAL BAFFLES.
- REFER IECA 'BEST PRACTICE EROSION AND SEDIMENT CONTROL' GUIDELINES APPENDIX B - SEDIMENT BASIN DESIGN AND OPERATION (REV. JUNE 2018) FOR THE FOLLOWING:
  - EXAMPLE BASIN PERFORMANCE REPORT.
  - SECTION B4 DEFAULT CONSTRUCTION SPECIFICATION.
- REFER ABOVE, TO IECA STD DWGS SD-SB-05 AND SD-SB-06, AND TO APPENDIX A OF THE WATER BY DESIGN SEDIMENT MANAGEMENT ON CONSTRUCTION SITES DOCUMENT FOR TYPICAL SEDIMENT BASIN DETAILS.

**SEDIMENT BASIN MANAGEMENT NOTES**

- TESTING OF pH, TOTAL SUSPENDED SOLIDS (TSS) AND TURBIDITY WITHIN ANY TEMPORARY SEDIMENT BASINS IS TO OCCUR PRIOR TO ANY CONTROLLED DISCHARGES FROM THE SITE AND AT THE FOLLOWING FREQUENCIES FOR THE DURATION OF THE CONSTRUCTION PHASE:
  - IMMEDIATELY FOLLOWING RAIN EVENTS > 25mm IN A 24 HOUR PERIOD.
- IF THE pH OR TSS / TURBIDITY READINGS ARE OUTSIDE THE ALLOWABLE RELEASE CRITERIA, THEN FURTHER DOSING WITH GYPSUM, LIME OR OTHER APPROPRIATE APPROVED COAGULANT AND / OR FLOCCULANT IS REQUIRED UNTIL ACCEPTABLE LEVELS ARE REACHED.
- WATER QUALITY MONITORING RESULTS ARE TO BE RETAINED ON SITE AND BE MADE AVAILABLE FOR VIEWING UPON REQUEST.
- PRIOR TO A RAINFALL EVENT, TO IMPROVE THE EFFICIENCY AND EFFECTIVENESS OF THE FLOCCULATION PROCESS, IT IS RECOMMENDED THAT THE CONTRACTOR UNDERTAKE TRIAL TESTING TO DETERMINE APPROPRIATE FLOCCULANT AND / OR COAGULANT TYPES, AND DOSING RATES FOR THE ON-SITE SOILS. THIS GENERALLY INVOLVES CONDUCTING SOIL JAR TESTS OF THE ON-SITE SOILS. FOR THE CHARACTERISTICS OF VARIOUS FLOCCULATING AGENTS REFER TO TABLE 1 IN THE 'CHEMICAL COAGULANTS AND FLOCCULANTS' FACT SHEET BY IECA, OBTAINABLE FROM THE IECA WEBSITE UNDER THE BEST PRACTICE EROSION AND SEDIMENT CONTROL 'APPENDIX B - REVISION JUNE 2018' SECTION. FOR DETAILS ON THE SOIL JAR TESTING PROCEDURE, REFER TO SECTION 5 OF THE FACT SHEET MENTIONED ABOVE.
- MANAGING THE FLOCCULATION OF THE SEDIMENT BASINS SHOULD BE UNDERTAKEN USING AUTOMATED DOSING SYSTEMS SUCH AS RAINFALL OR FLOW ACTIVATED FLOCKING SYSTEMS. THIS WILL ALLOW MAXIMUM TIME FOR FLOCCULATION TO OCCUR TO ASSIST IN REDUCING THE RUNOFF HOLDING TIMES. THE EFFECTIVENESS OF THE FLOCCULANT WILL DETERMINE THE ACTUAL RUNOFF HOLDING TIMES FOR EACH BASIN. THE DETAILED METHODS FOR FLOCCULATION AND TYPES OF FLOCCULANTS TO BE USED ARE TO BE CONFIRMED BY THE CONTRACTOR.
- WHERE APPROPRIATE THE CONTRACTOR MAY ALSO CONSIDER PASSIVE APPLICATION TECHNIQUES OF COAGULANTS AND / OR FLOCCULANTS, SUCH AS 'FLOC BLOCKS' OR SIMILAR PLACED WITHIN CATCH DRAINS, TO IMPROVE THE EFFICIENCY AND EFFECTIVENESS OF THE FLOCCULATION PROCESS.
- TO ASSIST WITH THE PERFORMANCE OF THE SEDIMENT BASINS, IN-LINE PERMEABLE INTERNAL BAFFLES CAN BE INCORPORATED ACROSS THE BASIN SETTLING ZONE PERPENDICULAR TO THE DIRECTION OF FLOW.
- THE SEDIMENT BASINS MUST OPERATE AS WET BASINS, WITH THE TREATED RUNOFF TO BE DECANTED FROM THE BASINS ONCE COMPLIANT WITH THE 'DISCHARGE PERFORMANCE CRITERIA'. AS SOON AS CONDITIONS ALLOW, THE WATER LEVEL WITHIN THE BASINS SHOULD BE LOWERED BACK DOWN TO AT LEAST THE TOP OF THE FREE WATER ZONE. THIS WILL ALLOW THE SETTLING ZONE VOLUME OF THE BASINS TO BE AVAILABLE FOR THE NEXT RAINFALL EVENT.
- IN THE EVENT THAT THE SEDIMENT BASIN CANNOT BE DE-WATERED TO RE-INSTATE THE SETTLING ZONE VOLUME PRIOR TO BEING SURCHARGED BY THE FOLLOWING RAINFALL EVENT, THE CONTRACTOR MUST RECORD THE OCCURRENCE OF SUCH AN EVENT AND REPORT IT TO THE LOCAL AUTHORITY. SUBJECT TO CONSULTATION WITH AND APPROVAL FROM THE LOCAL AUTHORITY, ALTERNATIVE OPERATING PROCEDURES FOR THE SEDIMENT BASINS MAY NEED TO BE ADOPTED IN ORDER TO ACHIEVE OPTIMUM ENVIRONMENTAL PROTECTION.

Rev.	Date	Description	Des.	Verif.	Appd.
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Drawn	Date	Client
OAR	June 20	DEFENCE HOUSING AUSTRALIA
Checked	Date	Project
DMB	June 20	MUIRHEAD NORTH DEVELOPMENT
Designed	Date	
OAR	June 20	LEE POINT ROAD, MUIRHEAD
Verified	Date	
AGO	June 20	CITY OF DARWIN
Approved	Date	Title
		EROSION AND SEDIMENT CONTROL
		SEDIMENT BASIN DETAILS

Datum	Date	Scale	Size
AHD	July 2020	AS SHOWN	A1
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DC1603-MHN-1A-ES23	A		

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