DEPWS = DEPARTMENT OF ENVIRONMENT, PARKS AND WATER SECURITY

- 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
- 2. 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 (FSCP).
- IN CIRCUMSTANCES WHERE IT IS CONSIDERED NECESSARY TO PREPARE AN AMENDED EROSION AND SEDIMENT CONTROL PLAN (ESCP), AND WHERE THE DELIVIERY OF SUCH AN AMENDED ESCP IS NOT IMMINENT, 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.
- 4. 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.
- 5. CONTRACTOR TO MAINTAIN SUFFICIENT ESC CONTROL MATERIALS ON SITE SUCH AS SPARE SEDIMENT FENCING AND OTHER MATERIALS FOR
- 6. THE IMPLEMENTATION OF THE ESCP WILL BE REGULARLY MONITORED BY THE SUPERINTENDENT AND DEPWS.
- . THE IMPLEMENTATION OF THE ESCP WILL BE REGULARLY MONITORED BY THE SUPERINTENDENT AND DEPWIN.

  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

- 8. 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.
- 9. 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.
- 10. BULK TREE CLEARING MUST OCCUR IN A MANNER THAT MINIMISES DISTURBANCE TO EXISTING GROUND COVER (ORGANIC OR INORGANIC).
- 11. DISTURBANCE TO NATURAL WATERCOURSES (INCLUDING BED AND BANKS) AND THEIR ASSOCIATED RIPARIAN ZONES MUST BE LIMITED TO
- THE MINIMUM PRACTICABLE. 12. 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.
- 13. 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.
- 14. 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.
- 15. 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.
- 16. ALL LAND CLEARING MUST BE IN ACCORDANCE WITH THE FEDERAL, STATE AND LOCAL GOVERNMENT VEGETATION PROTECTION/PRESERVATION REQUIREMENTS AND/OR POLICIES.
- 17. LAND CLEARING IS LIMITED TO THE MINIMUM PRACTICABLE DURING THOSE PERIODS WHEN SOIL EROSION DUE TO WIND, RAIN OR SURFACE
- 8. 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 EROSIVITY 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 EROSIVITY VALUES AND EROSION RISK RATINGS FOR SITES IN DARWING.

#### SITE ACCESS

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

#### SOIL AND STOCKPILE MANAGEMENT

- 23. ALL REASONABLE AND PRACTICABLE MEASURES MUST BE TAKEN TO OBTAIN THE MAXIMUM BENEFIT FROM FXISTING TOPSOIL. INCLUDING: 3. ALL REASONABLE AND PRACTICABLE MESONES MUST BE TAKEN TO US TAIN THE MAXIMUM BENEFIT PROPRIETI FOR MEASTING TO POSIL, INCLUDING: 
  ()WHERE THE PROPOSED AREA OF SOIL DISTURBANCE EXCEEDS 2500M2, 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.
- 24. STOCKPILES OF ERODIBLE MATERIAL THAT HAS THE POTENTIAL TO CAUSE ENVIRONMENTAL HARM IF DISPLACED, MUST BE
- (i) LESS THAN 1.5m HIGH (WHERE PRACTICAL) AND SHOULD NOT BE COMPACTED IN ORDER TO PROTECT SOIL QUALITY AND SEED VIABILITY.

  (ii) APPROPRIATELY PROTECTED FROM WIND, RAIN, CONCENTRATED SURFACE FLOW AND EXCESSIVE UP-SLOPE STORMWATER SURFACE FLOWS.
- (iii) LOCATED AT LEAST 2M FROM ANY HAZARDOUS AREA, RETAINED VEGETATION, OR CONCENTRATED DRAINAGE LINE. (iv) LOCATED UP-SLOPE OF AN APPROPRIATE SEDIMENT CONTROL SYSTEM.
- (v) PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE
- STOCKPILED FOR MORE THAN 28 DAYS
- STOCKPILED FOR MORE THAN 28 DAYS.

  (IV) 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.

  (VII) 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.

- 25. 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 1500M2.

## SITE MANAGEMENT

- 26. 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
- 27. THE CONSTRUCTION SCHEDULE MUST AIM TO MINIMISE THE DURATION THAT ANY AND ALL AREAS OF SOIL ARE EXPOSED TO THE EROSIVE EFFECTS OF WIND. RAIN AND SURFACE WATER
- 28. LAND-DISTURBING ACTIVITIES MUST BE UNDERTAKEN IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN (ESCP) AND ASSOCIATED DEVELOPMENT CONDITIONS.
- 29. LAND-DISTURBING ACTIVITIES MUST BE UNDERTAKEN IN SUCH A MANNER THAT ALLOWS ALL REASONABLE AND PRACTICABLE MEASURES TO
- (ii) ALLOW STORMWATER TO PASS THROUGH THE SITE IN A CONTROLLED MANNER AND AT NON-EROSIVE FLOW VELOCITIES UP TO THE
- SPECIFIED DESIGN STORM DISCHARGE

- SPECIFIED DESIGN STORM DISCHARGE;
  (ii) MINIMISE SOIL EROSION RESULTING FROM RAIN, WATER FLOW AND/OR WIND;
  (iii) MINIMISE ADVERSE EFFECTS OF SEDIMENT RUNOFF, INCLUDING SAFETY ISSUES;
  (iv) PREVENT, OR AT LEAST MINIMISE, ENVIRONMENTAL HARM RESULTING FROM WORK-RELATED SOIL EROSION AND SEDIMENT RUNOFF;
- (V) 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.
- 30. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST CONFORM TO THE STANDARDS AND SPECIFICATIONS CONTAINED I (1)THE DEVELOPMENT APPROVAL CONDITION ISSUED BY DEVELOPMENT CONSENT AUTHORITY; AND
- (ii) THE APPROVED ESCP AND SUPPORTING DOCUMENTATION: OR
- (iii) THE LATEST VERSION OF REESC IF THE STANDARDS AND SPECIFICATIONS ARE NOT CONTAINED IN THE APPROVED ESCP
- 31. 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.
- 32. 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.

- 33. 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.
- 34. 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.
- 35. 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
- 36. 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.
- 37. 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.
- 38. ALL FLAMMABLE AND COMBUSTIBLE LIQUIDS, INCLUDING ALL LIQUID CHEMICALS IF SUCH CHEMICALS COULD POTENTIALLY BE WASHE DISCHARGED FROM THE SITE, ARE STORED AND HANDLED ON-SITE IN ACCORDANCE WITH RELEVANT STANDARDS SUCH AS AS1940 STORAGE AND HANDLING OF FLAMMABLE AND COMBUSTIBLE LIQUIDS.
- 39. 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.
- 40. ALL STORMWATER, SEWER LINE AND OTHER SERVICE TRENCHES, NOT LOCATED WITHIN ROADWAYS, MUST BE MULCHED AND SEEDED, OR OTHERWISE APPROPRIATELY STABILISED WITHIN 7 DAYS AFTER BACKFILL.
- 41. NO MORE THAN 150M OF A STORMWATER, SEWER LINE OR OTHER SERVICE TRENCH MUST TO BE OPEN AT ANY ONE TIME
- 42. SITE SPOIL MUST BE LAWFULLY DISPOSED OF IN A MANNER THAT DOES NOT RESULT IN ONGOING SOIL EROSION OR ENVIRONMENTAL HARM
- 43. 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

- 44. ALL DRAINAGE CONTROL MEASURES MUST BE APPLIED AND MAINTAINED IN ACCORDANCE WITH APPROVED ESCP DRAWINGS AND BPESC
- 45. 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 DISTANCE, MUST BE DIVERTED AROUND O SPECIFIED DESIGN STORM DISCHARGE
- 46. DURING THE CONSTRUCTION PERIOD, ALL REASONABLE AND PRACTICABLE MEASURES MUST BE IMPLEMENTED TO CONTROL FLOW VELOCITIES IN SUCH A MANNER THAN 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.
- 47. 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.
- 48. WHEREVER REASONABLE AND PRACTICABLE, "CLEAN" SURFACE WATERS MUST BE DIVERTED AWAY FROM SEDIMENT CONTROL DEVICES AND ANY UNTREATED. SEDIMENT-LADEN WATERS.
- 49. 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

- 50. ALL EROSION CONTROL MEASURES MUST BE APPLIED AND MAINTAINED IN ACCORDANCE WITH APPROVED ESCP DRAWINGS AND BPESC GUIDELINES.
- 51. 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
- 52. 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.
- 53. 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.
- 55. 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 EROSIVITY IS LESS THAN 60; MINIMUM 70% COVER WITHIN 30 DAYS IF BETWEEN 60 AND 100; MINIMUM 70% COVER WITHIN 20 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 50 DAYS IF GREATER THAN 1500, REFER TABLE ON DRAWING ES02 FOR MONTHLY RAINFALL EROSIVITY VALUES AND EROSION RISK RATINGS FOR SITES IN DARWIN.
- 56 IE IMMINENT HEAVY RAINEAU IS FORCAST PRIOR TO THE STARIJI ISATION OF ANY CHANNEL WORKS AREAS. THEN THE CONTRACTOR SHOULD IF IMMINENT HEAVY RAINFALL IS FORCAST PRIOR TO THE STABLISTATION OF ANY CHANNEL WORKS AREAS, THEN THE CONTRACTOR SHOULD CONSIDER TEMPORARY STABLISATION 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

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

# SEDIMENT CONTROL

- 60. ALL SEDIMENT CONTROL MEASURES MUST BE APPLIED AND MAINTAINED IN ACCORDANCE WITH APPROVED ESCP DRAWINGS AND BPESC GUIDELINES.
- 61. OPTIMUM BENEFIT MUST BE MADE OF EVERY OPPORTUNITY TO TRAP SEDIMENT WITHIN THE WORK SITE, AND AS CLOSE AS PRACTICABLE TO
- 62. SEDIMENT TRAPS MUST BE INSTALLED AND OPERATED TO BOTH COLLECT AND RETAIN SEDIMENT

65. SUITABLE ALL-WEATHER MAINTENANCE ACCESS MUST BE PROVIDED TO ALL SEDIMENT CONTROL DEVICES.

- 63. 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.
- 64. ALL REASONABLE AND PRACTICABLE MEASURES MUST BE TAKEN TO PREVENT, OR AT LEAST MINIMISE, THE RELEASE OF SEDIMENT FROM THE SITE.
- 66. 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.
- 67. 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.
- 68. 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.
- 69. 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.

70. 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

Date June '22 Date June '22 Date AGO J. chal

EXCAVATIONS AND TRENCHES 73. DEWATERING CONTROL MAY INCLUDE GEOFABRIC FILTERS, NON WOVEN FILTER FENCING 74. SEDIMENT LADEN WATER WILL NOT BE DISCHARGED TO THE STORMWATER SYSTEM WITHOUT FIRST BEING TREATED SATISFACTORILY 75. 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 DETH IS LESTHAN 30mm (FROSIVITY < 60); MINIMUM 70% COVER WITHIN 30 DAYS IP BETWEEN 30 AND 45mm (FROSIVITY 100) TO 100); MINIMUM 70% COVER WITHIN 20 DAYS IF BETWEEN 45 AND 100mm (FROSIVITY 100).

TO 285); MINIMUM 75% COVER WITHIN 10 DAYS IF BETWEEN 100 AND 225mm (EROSIVITY 285 TO 1500); AND MINIMUM 80% COVER WITHIN 5 DAYS IF GREATER THAN 225mm (EROSIVITY > 1500). 77. NO COMPLETED EARTHWORKS SURFACE MUST REMAIN DENUDED FOR LONGER THAN 30 DAYS

78. THE TYPE OF GROUND COVER APPLIED TO COMPLETED EARTHWORKS IS COMPATIBLE WITH THE ANTICIPATED LONG-TERM LAND USE, ENVIRONMENTAL RISK, AND SITE REHABILITATION MEASURES.

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

71. DEWATERING - GOAL IS TO MITIGATE SEDIMENT RELATED ENVIRONMENTAL HARM AND/OR IMPACT TO STORMWATER INFRASTRUCTURE RESULTING FROM DEWATERING ACTIVITIES.

72. FLOW DIVERSION BARRIERS, OR OTHER APPROPRIATE SYSTEMS, WILL BE USED TO MINIMISE THE QUANTITY OF WATER ENTERING

79. 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.

80. THE PHILEVEL (SOIL: WATER 1:5) OF TOPSOIL MUST BE ADEQUATE TO ENABLE ESTABLISHMENT AND GROWTH OF THE SPECIFIED VEGETATION

82. 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 STATT OF THE SHUTDOWN PERIOD. THE STABLISATION WORKS MUST NOT RELY UPON THE LONGEVITY OF NON-VEGETATED EROSION CONTROL BLANKETS, OR TEMPORARY SOIL BINDERS.

3. ALL UNSTABLE OR DISTURBED SOIL SURFACES MUST BE ADEQUATELY STABILISED AGAINST EROSION (MINIMUM 80% COVER) PRIOR TO COMMENCEMENT OF USE, OR SURVEY PLAN ENDORSEMENT. SITE MONITORING

84. AT INSTREAM WATER MONITORING SITES, A MINIMUM OF 3 WATER SAMPLES MUST BE TAKEN AND ANALYSED, AND THE AVERAGE RESULT USED TO DETERMINE QUALITY.

85. SEDIMENT BASIN WATER QUALITY SAMPLES MUST BE TAKEN AT A DEPTH NO GREATER THAN 200MM ABOVE THE LEVEL OF SETTLED 86. 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. 87. 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

DEWATERING

- ALL EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING DRAINAGE CONTROL MEASURES, MUST BE MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES DURING THEIR OPERATIONAL LIVES
- 89. 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.
- 90. 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.
- 91. ALL DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSPECTED:
- (v) AT LEAST DAILY (WHEN WORK IS OCCURRING ON-SITE);
- (vi) AT LEAST WEEKLY (WHEN WORK IS NOT OCCURRING ON-SITE:
- (vii) WITHIN 24 HOURS OF EXPECTED RAINEAU. AND (viii)WITHIN 18 HOURS OF A RAINFALL EVENT OF SUFFICIENT INTENSITY AND DURATION TO CAUSE RUNOFF ON-SITE.
- 92. 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 HALL BE EMPLOYED. SEDIMENT REMOVED FROM ROADWAYS MUST BE DISPOSED OF IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL
- 93. SEDIMENT REMOVED FROM SEDIMENT TRAPS AND PLACES OF SEDIMENT DEPOSITION MUST BE DISPOSED OF IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL FROSION OR ENVIRONMENTAL HARM
- 94. 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.
- 95. MAINTENANCE MOWING MUST BE DONE IN A MANNER THAT WILL NOT DAMAGE THE PROFILE OF FORMED, SOFT EDGES, SUCH AS THE CREST OF FARTH EMBANKMENTS.

# WET WEATHER PREPAREDNESS

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 COLLD ADOPT THE EXPECTED 24-HOUR TAINFALL RANGES OUTLINED IN TABLE BELIOW AS TRIGGERS FOR TAKING ACTION IN REGARDS TO PREPARING THE CONSTRUCTION SITE AND EXPOSED SUBFACES 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
EVEDENTE	. 100	. 225

- 97. 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 REVIEW.
- 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 CONSTLICTION WITH TEMPORARY EROSION CONTROL TECHNIQUES SLICH 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: DP18/0409 CONSTRUCTION PERIOD: SEPTEMBER 2024 - APRIL 2025 (TBC) SUPERINTENDENT CONTACT: DAVID BRAMLEY (08 8942 8200)

ENGINEERING CONTACT: DAVID BRAMLEY (08 8942 8200)

**CPESC Details** Name: TERRY CLARK CPESC ID: 6089 Signature:

A 10/09/2024 FOR APPROVAL



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**DEFENCE HOUSING AUSTRALIA** LEE POINT STAGE 2 (2CRU STAGE 1) LEE POINT ROAD, MUIRHEAD NOT TO BE USED FOR CONSTRUCTION PURPOSES CITY OF DARWIN ΔHD Aug' 2024 As Shown Δ1 EROSION AND SEDIMENT CONTROL GENERAL NOTES DC1603-2CRU-01-ES01

## 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
		NCE. IDENTIFY LOCATION OF DETERMENT PRIOR TO COMMENCE		SPERSIVE SOIL IS
Entry/Exit	Construction entry/exit – vibration grid	DWG. DC1603-MHN-1B-ES04, DC1603-MHN-1B-ES20 & DC1603-MHN-1B-ES10	Day One	When Entry/Exit is no longer required
SF	Sediment Fence with Woven Fabric	DWG. DC1603-MHN-1B-ES04 TO DC1603-MHN-1B-ES08 & DC1603-MHN-1B-ES20 TO DC1603-MHN-1B-ES22	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-1B-ES04 TO DC1603-MHN-1B-ES08 & DC1603-MHN-1B-ES20 TO DC1603-MHN-1B-ES22	Day One	After site stabilisation
МВ	Mulch Filter Berms	DWG. DC1603-MHN-1B-ES04 TO DC1603-MHN-1B-ES08 & DC1603-MHN-1B-ES20 TO DC1603-MHN-1B-ES22	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-1B-ES07 & DC1603-MHN-1B-ES08	As soon as inlets and pipes are constructed	After site stabilisation
GFS	1.2m Grass Filter Strip	DWG. DC1603-MHN-1B-ES07 & DC1603-MHN-1B-ES08		NA
LS	Level Spreader	DWG. DC1603-MHN-1B-ES04 & DC1603-MHN-1B-ES06 & DC1603-MHN-1B-ES20 TO DC1603-MHN-1B-ES22	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-1B-ES04 TO DC1603-MHN-1B-ES08 & DC1603-MHN-1B-ES20 TO DC1603-MHN-1B-ES22	As soon as open drains are constructed	After site stabilisation
RCD	Rock Check Dam	DWG. DC1603-MHN-1B-ES04 TO DC1603-MHN-1B-ES08 & DC1603-MHN-1B-ES20 TO DC1603-MHN-1B-ES22	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-1B-ES04 TO DC1603-MHN-1B-ES08 & DC1603-MHN-1B-ES20 TO DC1603-MHN-1B-ES22	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
SB	Sediment Basin	DWG. DC1603-MHN-1B-ES20 TO DC1603-MHN-1B-ES22	Following installation of boundary sediment controls and prior to land clearing	After adequate stabilisation of contributing upslope catchment

EROSION RISK ASSESSMENT - DECEMBER												
CATCHMENT ID	AREA (ha)	R	К	LS	Р	С	A (t/ha/month)	A (t/month)	CONTROL			
WHOLE SITE (ANNUAL)	10.36	15724	0.053	0.58	1.3	1	628	6510	TYPE 1			
1A	7.6	2355	0.053	1.00	1.3	1	162	1249	TYPE 1			
1B	2.66	2355	0.053	0.58	1.3	1	94	250	TYPE 1			
1C	0.25	2355	0.053	0.58	1.3	1	94	24	TYPE 1			

CPESC Details
Name: TERRY CLARK
CPESC ID: 6089
Signature:

Α	10/09/2024	FOR APPROVAL			
Rev.	Date	Description	Des.	Verif.	Appd.

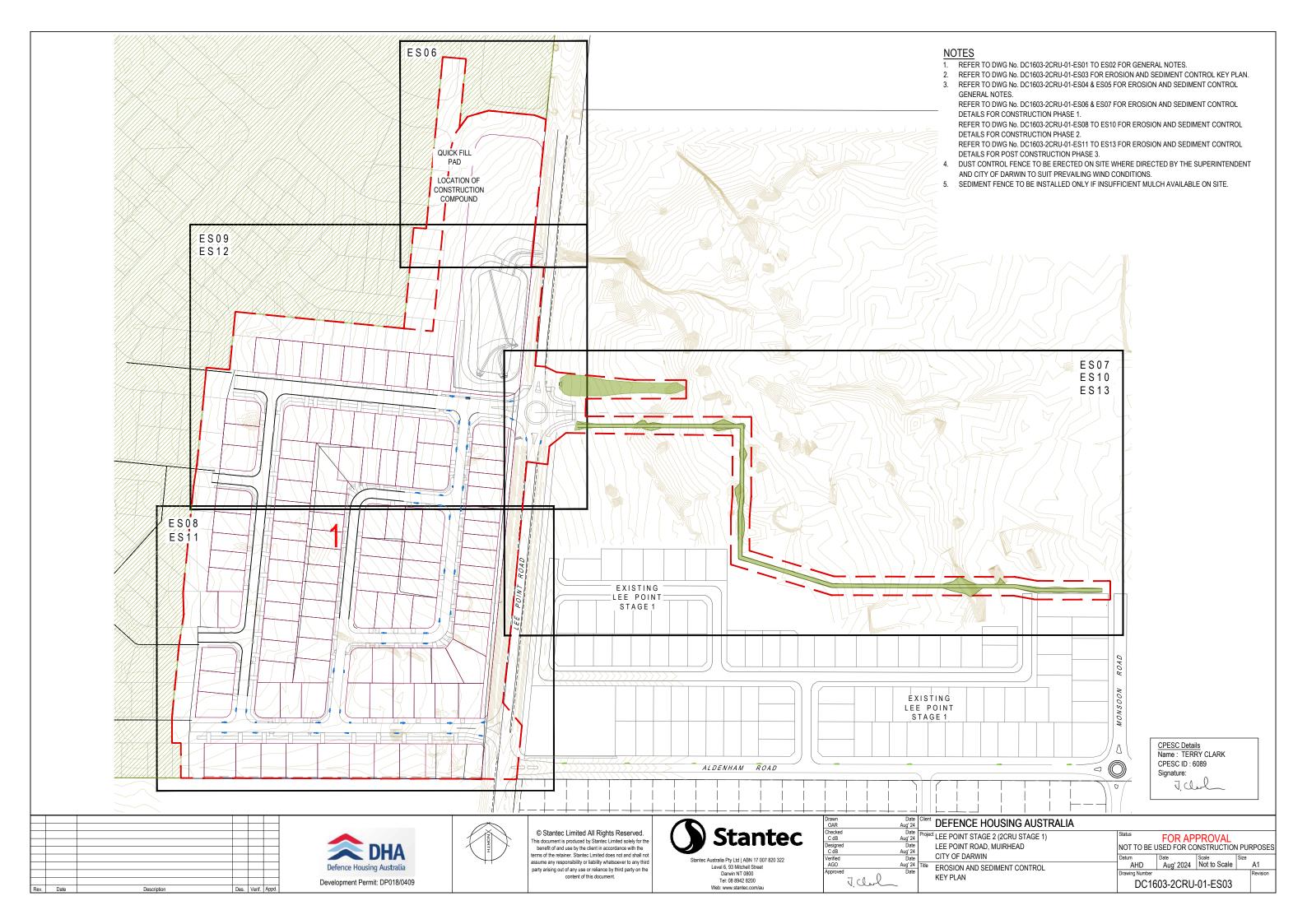


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Stantec Australia Pty Ltd   ABN 17 007 820 3
Level 6, 93 Mitchell Street
Darwin NT 0800
Tel: 08 8942 8200
Web: www.etantoc.com/au

Drawn OAR	Date June '22	DEFENCE HOUSING AUSTRALIA				
Checked C dB	Date June '22	Project LEE POINT STAGE 2 (2CRU STAGE 1)	Status	FOR AP	PROVAL	
Designed C dB	Date June '22	LEE POINT ROAD, MUIRHEAD	NOT TO BE U	JSED FOR CC	NSTRUCTIO	N PURPOSI
Verified AGO	Date June '22	CITY OF DARWIN  Title EROSION AND SEDIMENT CONTROL	Datum AHD	Aug' 2024	As Shown	Size A1
Approved 7, Clar	Date	SEQUENCE TABLE AND R-FACTORS	Drawing Number DC16	603-2CRU-	-01-ES02	Revision



## **CONSTRUCTION EXIT - VIBRATION GRID**

## MATERIALS

\*\*ROCK: WELL GRADED, HARD, ANGULAR, EROSION RESISTANT ROCK, NOMINAL DIAMETER OF 50MM TO 75MM (SMALL DISTURBANCES) OR 100 TO 150MM (LARGE DISTURBANCES). ALL REASONABLE MEASURES MUST BE TAKEN TO OBTAIN ROCK OF NEAR UNIFORM SIZE.

\*\*FOOTPATH STABILISING AGGREGATE: 25 TO 50MM GRAVEL OR AGGREGATE.

\*\*GEOTEXTILE FABRIC: HEAVY-DUTY, NEEDLE-PUNCHED, NON-WOVEN FILTER CLOTH (BIDIM' A24 OR EQUIVALENT).

1. REFER TO APPROVED PLANS FOR LOCATION AND DIMENSIONAL DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR

METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. CLEAR THE LOCATION OF THE VIBRATION GRID, REMOVING STUMPS, ROOTS AND OTHER VEGETATION TO PROVIDE A FIRM FOUNDATION SO THAT THE ROCK IS 2. CLEAR THE LOCATION OF THE VIBRATION GRID, REMOVING STUMPS, ROOTS AND OTHER VEGETATION TO PROVIDE A FIRM FOUNDATION SO THAT THE ROCK IS NOT PRESSED INTO SOFT GROUND. CLEAR SUFFICIENT WIDTH TO ALLOW PASSAGE OF LARGE VEHICLES, BUT CLEAR ONLY THAT NECESSARY FOR THE EXIT. DO NOT CLEAR ADJACENT AREAS UNTIL THE REQUIRED EROSION AND SEDIMENT CONTROL DEVICES ARE IN PLACE.

3. GRADE THE LOCATION OF THE VIBRATION GRID SO THAT RUNOFF FROM THE UNIT WILL NOT FLOW INTO THE STREET, BUT WILL FLOW TOWARDS AN APPROPRIATE SEDIMENT-TRAPPING DEVICE.

4. ENSURE THAT THE INSTALLATION OF THE VIBRATION GRID INCLUDES ADEQUATE SEDIMENT STORAGE VOLUME UNDER THE GRID. WHERE NECESSARY, NOTED ALLOWED PROPROFECT OF MEMBERS.

INSTALL SUITABLE PRECAST SEDIMENT COLLECTION CHAMBERS.
5. PLACE A ROCK PADIRAMP FORMING A MINIMUM 200MM THICK LAYER OF CLEAN, OPEN-VOID ROCK OVER THE ROADWAY BETWEEN THE VIBRATION GRID AND

THE SEALED STREET TO PREVENT TYRES FROM PICKING UP MORE SOIL AFTER THEY HAVE BEEN CLEANED.

6. THE TOTAL LENGTH OF THE VIBRATION GRIP AND ROCK RAMPS SHOULD BE AT LEAST 15M WHERE PRACTICABLE, AND AS WIDE AS THE FULL WIDTH OF THE ENTRY OR EXIT AND AT LEAST 3M. THE ROCK RAMP SHOULD COMMENCE AT THE EDGE OF THE OFF-SITE SEALED ROAD OR PAVEMENT.

7. FLARE THE END OF THE ROCK PAD WHERE IT MEETS THE PAVEMENT SO THAT THE WHEELS OF TURNING VEHICLES DO NOT TRAVEL OVER UNPROTECTED.

SOIL.

8. IF THE FOOTPATH IS OPEN TO PEDESTRIAN MOVEMENT, THEN COVER THE COARSE ROCK WITH FINE AGGREGATE OR GRAVEL, OR OTHERWISE TAKE WHATEVER MEASURES ARE NEEDED TO MAKE THE AREA SAFE.

#### MAINTENANCE

1. INSPECT VIBRATION GRID PRIOR TO FORECAST RAIN, DAILY DURING EXTENDED PERIODS OF RAINFALL, AFTER SIGNIFICANT RUNOFF-PRODUCING RAINFALL. OR OTHERWISE AT FORTNIGHTLY INTERVALS.

OF OTHERWISE AT TOTALISMENT OR MILD IS TRACKED OR WASHED ONTO THE ADJACENT SEALED ROADWAY. THEN SLICH MATERIAL MILST BE PHYSICALLY REMOVED.

2. IF SAND, SOIL, SEDIMENT OR MUD IS TRACKED OR WASHED ONTO THE ADJACENT SEALED ROADWAY, THEN SUCH MATERIAL MUST BE PHYSICALLY REMOVED, FIRST USING A SQUARE-BOGED SHOVEL, AND THEN A STIFF-BRISTLED BROOM, AND THEN BY A MECHANICAL VACUUM UNIT, IF AVAILABLE.

3. IF NECESSARY FOR SAFETY REASONS, THE ROADWAY SHALL ONLY BE WASHED CLEAN AFTER ALL REASONABLE EFFORTS HAVE BEEN TAKEN TO SHOVEL AND SWEEP THE MATERIAL FROM THE ROADWAY.

4. WHEN THE VOIDS BETWEEN THE ROCK BECOMES FILLED WITH MATERIAL AND THE EFFECTIVENESS OF THE ROCK RAMPS ARE REDUCED TO A POINT WHERE SEDIMENT IS BEING TRACKED OFF THE SITE, A NEW 100MM LAYER OF ROCK MUST BE ADDED AND/OR THE ROCK PAD MUST BE EXTENDED.

5. ENSURE ANY ASSOCIATED DRAINAGE CONTROL MEASURES ARE MAINTAINED IN ACCORDANCE WITH THEIR DESIRED OPERATIONAL CONDITION.

6. DISPOSE OF SEDIMENT AND DEBRIS IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

1. THE VIBRATION GRID SHOULD BE REMOVED ONLY AFTER IT IS NO LONGER NEEDED AS A SEDIMENT CONTROL DEVICE.

2 REMOVE MATERIALS AND COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
3. RE-GRADE AND STABILISE THE DISTURBED GROUND AS NECESSARY TO MINIMISE THE EROSION HAZARD.

## SEDIMENT FENCE

#### MATERIALS

MIATERIALS

\*FABRIC: POLYPROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN FABRIC, AT LEAST 700MM IN WIDTH AND A MINIMUM UNIT WEIGHT OF 140GSM. ALL FABRICS TO CONTAIN ULTRAVIOLET INHIBITORS AND STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).

\*FABRIC REINFORCEMENT: WIRE OR STEEL MESH MINIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200MM.

\*SUPPORT POSTS/STAKES: 1500MM2 (MIN) HARDWOOD, 2500MM2 (MIN) SOFTWOOD, OR 1.5KG/M (MIN) STEEL STAR PICKETS SUITABLE FOR ATTACHING FABRIC.

1. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, AND REQUIRED TYPE OF FABRIC (IF SPECIFIED). IF THERE ARE QUESTIONS OR PROBLEMS WITH THE

LOCATION, EXTENT, FABRIC TYPE, OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE. 2. TO THE MAXIMUM DEGREE PRACTICAL, AND WHERE THE PLANS ALLOW, ENSURE THE FENCE IS LOCATED:

2. TO THE MAXIMUM DEGREE PRACTICAL, AND WHERE THE PLANS ALLOW, ENSURE THE FENCE IS LOCATED:
(1) TOTALLY WITHIN THE PROPERTY BOUNDARIES;
(1) ALONG A LINE OF CONSTANT ELEVATION WHEREVER PRACTICAL;
(11) AT LEAST 2M FROM THE TOE OF ANY FILLING OPERATIONS THAT MAY RESULT IN SHIFTING SOIL/FILL DAMAGING THE FENCE.
3. INSTALL RETURNS WITHIN THE FENCE AT MAXIMUM 2DM INTERVALS IF THE FENCE IS INSTALLED ALONG THE CONTOUR, OR 5 TO 10M MAXIMUM SPACING (DEPENDING ON SLOPE) IF THE FENCE IS INSTALLED ALONG THE CONTOUR, THE "RETURNS" SHALL CONSIST OF EITHER:
(1) V. SHAPED SECTION EXTENDING AT LEAST 1.5M UP THE SLOPE; OR
(1) SANDBAG OR ROCK/AGGREGATE CHECK DAM A MINIMUM 1/3 AND MAXIMUM 1/2 FENCE HEIGHT, AND EXTENDING AT LEAST 1.5M UP THE SLOPE.

4 ENSURE THE EXTREME ENDS OF THE FENCE ARE TURNED UP THE SLOPE AT LEAST 1.5M, OR AS NECESSARY, TO MINIMISE WATER BYPASSING AROUND THE

ENSURE THE SEDIMENT FENCE IS INSTALLED IN A MANNER THAT AVOIDS THE CONCENTRATION OF FLOW ALONG THE FENCE, AND THE UNDESIRABLE

5. ENDIRE THE SEDIMENT FENCE IS INSTALLED IN A MANNER THAT AVOIDS THE CONCENTRATION OF FLOW ALONG THE FENCE, AND THE UNDESHABLE DISCHARGE OF WATER AROUND THE ENDS OF THE FENCE.

6. IF THE SEDIMENT FENCE IS TO BE INSTALLED ALONG THE EDGE OF EXISTING TREES, ENSURE CARE IS TAKEN TO PROTECT THE TREES AND THEIR ROOT SYSTEMS DURING INSTALLATION OF THE FENCE OD NOT ATTACH THE FABRIC TO THE TREES.

7. UNLESS DIRECTED BY THE SITE SUPERVISOR OR THE APPROVED PLANS, EXCAVATE A 200MM WIDE BY 200MM DEEP TRENCH ALONG THE PROPOSED FENCE.

LINE, PLACING THE EXCAVATED MATERIAL ON THE UP-SLOPE SIDE OF THE TRENCH.

LINE, PLACING THE EXCAVATED MATERIAL ON THE UP-SLOPE SIDE OF THE TRENCH.

8. ALONG THE LOWER SIDE OF THE TRENCH, APPROPRIATELY SECURE THE STAKES INTO THE GROUND SPACED NO GREATER THAN 3M IF SUPPORTED BY A TOP SUPPORT WIRE OR WEIR MESH BACKING, OTHERWISE NO GREATER THAN 2M.

9. IF SPECIFIED, SECURELY ATTACH THE SUPPORT WIRE OR MESH TO THE UP-SLOPE SIDE OF THE STAKES WITH THE MESH EXTENDING AT LEAST 200MM INTO THE EXCAVATED TRENCH. ENSURE THE MESH AND FABRIC IS ATTACHED TO THE UP-SLOPE SIDE OF THE STAKES EVEN WHEN DIRECTING A FENCE AROUND A CONNER OR SHARP CHANGE-OF-DIRECTION.

10. WHEREVER POSSIBLE, CONSTRUCT THE SEDIMENT FENCE FROM A CONTINUOUS ROLL OF FABRIC. TO JOIN FABRIC EITHER:

(IN ATTACH EACH END TO JOIN OVER JARDING STAKES WITH THE EARPIC CED DING ADDINING THE ASSOCIATED STAKES ONE TIMEN AND WITH THE TWO STAKES TIED.

(I) ATTACH EACH END TO TWO OVERLAPPING STAKES WITH THE FABRIC FOLDING AROUND THE ASSOCIATED STAKE ONE TURN, AND WITH THE TWO STAKES TIED

TOGETHER WITH WIRE (METHOD 1): OR (II) OVERLAP THE FARRIC TO THE NEXT ADJACENT SUPPORT POST (METHOD 2).

(II) OVERLAP THE FABRIC TO I HE NEXT ADJACENT SUPPORT POST (ME HOUZ).

11. SECURELY ATTACH THE FABRIC TO THE SUPPORT POST SURING 25 X 12 SMM STAPLES, OR TIE WIRE AT MAXIMUM 150MM SPACING.

12. SECURELY ATTACH THE FABRIC TO THE SUPPORT WIRE/MESH (IF ANY) AT A MAXIMUM SPACING OF 1M.

13. ENSURE THE COMPLETED SEDIMENT FENCE IS AT LEAST 450MM, BUT NOT MORE THAN 700MM HIGH. IF A SPILL-THOUGH WEIR IS INSTALLED, ENSURE THE CREST OF THE WEIR IS AT LEAST 300MM ABOVE GROUND LEVEL.

14. BACKFILL THE TRENCH AND TAMP THE FILL TO FIRMLY ANCHOR THE BOTTOM OF THE FABRIC AND MESH TO PREVENT WATER FROM FLOWING UNDER THE

FERVEL:

15. IF IT IS NOT POSSIBLE TO ANCHOR THE FABRIC IN AN EXCAVATED TRENCH, THEN USE A CONTINUOUS LAYER OF SAND OR AGGREGATE TO HOLD THE FABRIC

#### MAINTENANCE

1. DURING THE MAINTENANCE PERIOD, INSPECT THE SEDIMENT FENCE AT LEAST WEEKLY AND AFTER ANY SIGNIFICANT RAIN. MAKE NECESSARY REPAIRS IMMEDIATELY

2. REPAIR ANY TORN SECTIONS WITH A CONTINUOUS PIECE OF FARRIC FROM POST TO POST.

2. REPAIR ANT TORN SECTIONS WITH A CONTINUOUS PIECE OF PASHIG FROM POST TO POST.

3. WHEN MAKING REPAIRS, ALWAYS RESTORE THE SYSTEM TO ITS ORIGINAL CONFIGURATION UNLESS AN AMENDED LAYOUT IS REQUIRED OR SPECIFIED.

4. IF THE FENCE IS SAGGING BETWEEN STAKES, INSTALL ADDITIONAL SUPPORT POSTS.

5. REMOVE ACCUMULATED SEDIMENT IF THE SEDIMENT DEPOSIT EXCEEDS A DEPTH OF 1/3 THE HEIGHT OF THE FENCE.

6. DISPOSE OF SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

7. REPLACE THE FABRIC IF THE SERVICE LIFE OF THE EXISTING FABRIC EXCEEDS 6-MONTHS.

## REMOVAL

1. WHEN DISTURBED AREAS UP-SLOPE OF THE SEDIMENT FENCE ARE SUFFICIENTLY STABILISED TO RESTRAIN EROSION, THE FENCE MUST BE REMOVED.

2. REMOVE MATERIALS AND COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
3. REHABILITATE/REVEGETATE THE DISTURBED GROUND AS NECESSARY TO MINIMISE THE EROSION HAZARD.

#### **CPESC Details** Name: TERRY CLARK **CPESC ID: 6089** Signature: J. Clar

# CATCH DRAINS - ROCK LINED

ROCK:
\* ALL ROCK MUST BE HARD, WEATHER RESISTANT, AND DURABLE AGAINST DISINTEGRATION UNDER CONDITIONS TO BE MET IN HANDLING, PLACEMENT AND

OF ENATION.

\* ALL ROCK MUST HAVE ITS GREATEST DIMENSION NOT GREATER THAN 3 TIMES ITS LEAST DIMENSIONS.

\*ALL ROCK MUST HAVE ITS GREATEST DIMENSION NOT GREATER THAN 3 TIMES ITS LEAST DIMENSIONS.
\*THE ROCK USED IN FORMATION OF THE DRAIN MUST BE EVENLY GRADED WITH 50% BY WEIGHT LARGER THAN THE SPECIFIED NOMINAL ROCK SIZE AND HAVE SUFFICIENT SMALL ROCK TO FILL THE VOIDS BETWEEN THE LARGER ROCK DIRT, FINES, AND SMALLER ROCK MUST NOT EXCEED 5% BY WEIGHT.
\*THE DIAMETER OF THE LARGEST ROCK SIZE SHOULD BE NO LARGER THAN 1.5 TIMES THE NOMINAL ROCK SIZE. SPECIFIC GRAVITY TO BE AT LEAST 2.5.
\*THE COLOUR OF THE RIPRAP SHALL BE [INSERT] AND MUST BE APPROVED BY THE ENGINEER. ONCE APPROVED, THE COLOUR SHALL BE KEPT CONSISTENT THROUGH THE PROJECT.

\* GEOTEXTILE FABRIC: HEAVY-DUTY, NEEDLE-PUNCHED, NON-WOVEN FILTER CLOTH, MINIMUM 'BIDIM' A24 OR EQUIVALENT.

1. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, AND CONSTRUCTION DETAILS, IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT,

1. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, AND CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. PRIOR TO PLACEMENT, ALL ROCKS MUST BE VISUALLY CHECKED FOR SIZE, ELONGATION, CRACKS, DETERIORATION AND OTHER VISIBLE. THE DEGREE AND THOROUGHNESS OF SUCH CHECKING MUST BE APPROPRIATE FOR THE POTENTIAL CONSEQUENCES ASSOCIATED WITH FAILURE OF THE STRUCTURE OR PURPOSE FOR WHICH THE MATERIAL WILL BE USED.

3. CLEAR THE LOCATION FOR THE CATCH DRAIN, CLEARING ONLY WHAT IS NEEDED TO PROVIDE ACCESS FOR PERSONNEL AND EQUIPMENT FOR INSTALLATION.

4. REMOVE ROOTS, STUMPS, AND OTHER DEBRIS AND DISPOSE OF THEM PROPERLY. DO NOT USE DEBRIS TO BUILD THE BANK.

5. REMOVE ALL SOFT, YIELDING MATERIAL, PEPLACE WITH SUITABLE ON-SITE MATERIAL; COMPACT TO SMOOTH FIRM SURFACE.

6. EXCAVATE THE DRAIN TO THE LINES AND GRADES SHOWN ON THE APPROVED PLANS. OVER-CUT THE DRAIN TO A DEPTH EQUAL TO THE SPECIFIED DEPTH OF ROCK PLACEMENT SUCH THAT THE FINISHED TOP SURFACE WILL BE AT THE ELEVATION OF THE SURROUNDING LAND, PLACEMENT OF THE ROCK LINING MUST NOT REPLICE THE DRAINS TOP WIDTH AND DEPTH AS SPECIFIED WITHIN THE APPROVED I ANS.

ROCK PLACEMENT SUCH THAT THE FINISHED TOP SUFFACE WILL BE AT THE ELEVATION OF THE SURROUNDING LAND, PLACEMENT OF THE ROCK LINING MUST NOT REDUCE THE DRAIN'S TOP WIDTH AND DEPTH AS SPECIFIED WITHIN THE APPROVED PLANS.

7. GRADE THE DRAIN TO THE SPECIFIED SLOPE AND FORM THE ASSOCIATED EMBANKMENT WITH COMPACTED FILL. NOTE THAT THE DRAIN INVERT MUST FALL 100M EVERY 10M FOR EACH 1% OF CHANNEL GRADIENT.

8. ENSURE THE SIDES OF THE CUT DRAIN ARE NO STEEPER THAN A 1.5-1 (H:V) SLOPE AND THE EMBANKMENT FILL SLOPES NO STEEPER THAN 2:1.

9. IF THE DRAIN IS CUT INTO A DISPERSIVE (SODIC) SOIL, THEN PRIOR TO PLACING FILTER CLOTH, THE EXPOSED DISPERSIVE SOIL MUST BE COVERED WITH A MINIMUM 200M THICK LAYER OF NON-DISPERSIVE SIDE INDICT TO PLACEMENT OF FILTER CLOTH OR ROCK OF NON-DISPERSIVE SIDE INDICT TO PLACEMENT OF FILTER CLOTH OR ROCK OF NON-DISPERSIVE SIDE INDICT TO PLACEMENT OF FILTER CLOTH OR ROCK.

10. IF A FILTER CLOTH UNDERLAY IS SPECIFIED, PLACE THE FILTER FABRIC DIRECTLY ON THE PREPARED FOUNDATION. IF MORE THAN ONE SHEET OF FILTER CLOTH OR DOCK OF THE DREAD OF THE AREA COVERED WITH A MINIMUM 200H DATE OF THE REPORT OF THE RE

CLOTH IS REQUIRED TO OVER THE AREA, OVERLAP THE EDGE OF EACH SHEET AT LEAST 300MM, AND SECURE ANCHOR PINS AT MINIMUM 1M SPACING ALONG

THE OVERLAP.

IT ENSURE THE FILTER CLOTH IS PROTECTED FROM PUNCHING OR TEARING DURING INSTALLATION OF THE FABRIC AND THE ROCK. REPAIR ANY DAMAGE BY REMOVING THE ROCK AND PLACING WITH ANOTHER PIECE OF FILTER CLOTH OVER THE DAMAGED AREA OVERLAPPING THE EXISTING FABRIC A MINIMUM OF

300MM.

12. PLACEMENT OF ROCK SHOULD FOLLOW IMMEDIATELY AFTER PLACEMENT OF THE FILTER LAYER. PLACE ROCK SO THAT IT FORMS A DENSE, WELL-GRADED.

MASS OF ROCK WITH A MINIMUM OF VOIDS.

13. PLACE ROCK LINING TO THE EXTENT AND DEPTH INDICATED WITHIN THE APPROVED PLANS.

14. ENSURE THE ROCK IS PLACED IN AN APPROPRIATE MANNER TO AVOID DISPLACING UNDERLYING MATERIALS OR PLACING UNDUE IMPACT FORCE ON THE

BEDDING MATERIALS.

16. ENSURE THE ROCK IS PLACED WITH A MINIMUM THICKNESS OF 1.5 TIMES THE NOMINAL ROCK SIZE (D50).

16. ENSURE MATERIALS THAT ARE D50 AND LARGER ARE POSITIONED FLUSH WITH THE TOP SURFACE WITH FACES AND SHAPES MATCHED TO MINIMISE VOIDS.

17. ENSURE PROJECTIONS ABOVE OR DEPRESSIONS UNDER THE SPECIFIED TOP SURFACE ARE LESS THAN 20% OF THE ROCK LAYER THICKNESS. THE AVERAGE SURFACE PLANE OF THE FINISHED ROCK IS DEFINED AS THE PLANE WHERE 50% OF THE TOPS OF ROCKS MOLD CONTACT.

18. ENSURE THE COMPLETED DRAIN HAS SUFFICIENT DEEP (AS SPECIFIED FOR THE TYPE OF DRAIN) MEASURED FROM THE DRAIN INVERT (AVERAGE SURFACE

PLANE ALONG CHANNEL INVERT) TO THE TOP OF THE EMBANKMENT. THE AVERAGE SURFACE PLANE OF THE FINISHED ROCK IS DEFINED AS THE PLANE WHERE 50% OF THE TOPS OF ROCKS WOULD CONTACT.

39/3 OF THE TUPS OF NOORS WOULD UDNIAGL.

19. TO THE MAXIMUM DEGREE PRACTICABLE. THE MATERIAL BETWEEN LARGER ROCK MUST NOT BE LOOSE OR EASILY DISPLACED BY THE EXPECTED FLOW.

20. AFTER PLACEMENT OF THE ROCK LINING, ENSURE THE DRAIN HAS A CONSTANT FALL IN THE DESIRED DIRECTION FREE OF DESTRUCTIONS.

21. ENSURE THE DRAIN DISCHARGES TO A STABLE OUTLET SUCH THAT SOIL EROSION WILL BE PREVENTED FROM OCCURRING. ENSURE THE DRAIN DOES NOT DISCHARGE TO AN UNSTABLE FILL SLOPE.

## MAINTENANCE

1. INSPECT ALL CATCH DRAINS AT LEAST WEEKLY AND AFTER RUNOFF-PRODUCING STORM EVENTS AND REPAIR ANY SLUMPS, BANK DAMAGE, OR LOSS OF

TREEDWARD.
2. CLOSELY INSPECT THE OUTER EDGES OF THE ROCK PROTECTION. ENSURE WATER ENTRY INTO THE ROCK-LINED AREA IS NOT CAUSING EROSION ALONG THE EDGE OF THE ROCK PROTECTION. EDGE OF THE ROCK PROTECTION. 3. CAREFULLY CHECK THE STABILITY OF THE ROCK LOOKING FOR INDICATIONS OF PIPING, SCOUR HOLES, OR BANK FAILURES.

REPLACE OR REPOSITION THE SURFACE ROCK SUCH THAT THE DRAIN FUNCTIONS AS REQUIRED AND THE DRAIN'S REQUIRED HYDRAULIC CAPACITY IS NOT

4. REDUCED.

5. REPLACE ANY DISPLACED ROCK WITH ROCK OF A SIGNIFICANTLY (MINIMUM 110%) LARGER SIZE THAN THE DISPLACED ROCK.

6. ENSURE SEDIMENT IS NOT PARTIALLY BLOCKING THE DRAIN. WHERE NECESSARY, REMOVE ANY DEPOSITED MATERIAL TO ALLOW FREE DRAINAGE.

7. DISPOSE OF ANY SEDIMENT OR FILL IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

#### REMOVAL

1. WHEN THE SOIL DISTURBANCE ABOVE THE CATCH DRAIN IS FINISHED AND THE AREA IS STABILISED, THE DRAIN AND ANY ASSOCIATED BANKS SHOULD BE REMOVED, UNLESS IT IS TO REMAIN AS A PERMANENT DRAINAGE FEATURE.

2. DISPOSE OF ANY SEDIMENT OR EARTH IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

3. GRADE THE AREA AND SMOOTH IT OUT IN PREPARATION FOR STABILISATION 4. STABILISE THE AREA BY GRASSING OR AS SPECIFIED WITHIN THE APPROVED PLAN

## MULCH FILTER BERMS

\* MULCH MUST COMPLY WITH THE REQUIREMENTS OF AS4454

MAXIMUM SOLUBLE SALT CONCENTRATION OF 5DS/M.
MOISTURE CONTENT OF 30 TO 50% PRIOR TO APPLICATION.

## INSTALLATION

INSTALLATION

1. REFER TO APPROVED PLANS FOR LOCATION AND EXTENT. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, MATERIAL TYPE, OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. WHEN SELECTING THE LOCATION OF A MULCH FILTER BERM, TO THE MAXIMUM DEGREE PRACTICAL, ENSURE THE BERM IS LOCATED:

TOTALLY WITHIN THE PROPERTY BOUNDARIES;

\* ALONG A LINE OF CONSTANT ELEVATION (PREFERRED, BUT NOT ALWAYS PRACTICAL):

\* AT LEAST 1M, IDEALLY 3M, FROM THE TOE OF A FILL EMBANKMENT

\*AWAY FROM AREAS OF CONCENTRATED FLOW.

3. ENSURE THE BERM IS INSTALLED IN A MANNER THAT AVOIDS THE CONCENTRATION OF FLOW ALONG THE BERM, OR THE UNDESIRABLE DISCHARGE OF WATER. 3. ENSURE THE BERM IS INSTALLED IN A MANIVER THAT AVOIDS THE CONCENTRATION OF FLOW ALONG THE BERM, OR THE UNDESIRABLE DISCHARGE OF WA AROUND THE BERM HAS BEEN PLACED SUCH THAT PONDING UP-SLOPE OF THE BERM IS MAXIMISED.

5. ENSURE BOTH ENDS OF THE BERM ARE ADEQUATELY TURNED UP THE SLOPE TO PREVENT FLOW BYPASSING PRIOR TO WATER PASSING OVER THE BERM.

6. ENSURE 100 PER CENT CONTACT WITH THE SOIL SURFACE. WHERE SPECIFIED, TAKE APPROPRIATE STEPS TO VEGETATE THE BERM.

1. DURING THE MAINTENANCE PERIOD, INSPECT ALL BERMS AT LEAST WEEKLY AND AFTER ANY SIGNIFICANT RAIN. MAKE NECESSARY REPAIRS IMMEDIATELY.

1. DUTING THE WAINT ENHANCE FROND, INSPECT ALL BERMOS AT LEAST WEEKET, AND AFFER ANY SIGNIFICANT AGAIN, WARRANCE VESSARIA TREFAIRS IMMEDIATE 2. REPAIR OR REPLACE ANY DAMAGED SECTIONS.

3. WHEN MAKING REPAIRS, ALWAYS RESTORE THE SYSTEM TO ITS ORIGINAL CONFIGURATION UNLESS AN AMENDED LAYOUT IS REQUIRED OR SPECIFIED.

4. REMOVE ACCUMULATED SEDIMENT IF THE SEDIMENT DEPOSIT EXCEEDS A DEPTH OF 100MM OR ONE-THIRD THE HEIGHT OF THE BERM.

5. DISPOSE OF SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

## REMOVAL (IF REQUIRED)

1. WHEN DISTURBED AREAS UP-SLOPE OF THE BERM ARE SUFFICIENTLY STABILISED TO RESTRAIN EROSION, THE BERM MAY BE REMOVED.

2. REMOVE ANY COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

3. REHABILITATE/REVEGETATE THE DISTURBED GROUND AS NECESSARY TO MINIMISE THE EROSION HAZARD.

## FABRIC DROP INLET PROTECTION

#### MATERIALS

INFA I EXPLAND.

FABRIC: POLYPROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN REINFORCED FABRIC. THE FABRIC WIDTH SHOULD BE AT LEAST 700MM, WITH A MINIMUM UNIT WEIGHT OF 140GSM. FABRICS SHOULD CONTAIN ULTRAVIOLET INHIBITORS AND STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).

FABRIC REINFORCEMENT: WIRE OR STEEL MESH MINIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200MM

\* STAKES: MINIMUM 1500MM2 (MIN) HARDWOOD, 2500MM2 (MIN) SOFTWOOD, OR 1 5KG/M (MIN) STEEL STAR PICKETS TIMBER CROSS MEMBERS: 50 X 100MM TIMBER OR EQUIVALENT

\* AGGREGATE: 15 TO 25MM CRUSHED ROCK

1 REFER TO APPROVED PLANS FOR LOCATION AND DIMENSIONAL DETAILS IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION DIMENSIONS OR 1. REFER TO APPROVED PLANS FOR LOCATION AND DIMENSIONAL DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS OR METHOD OF INSTILLATION CONTACT THE REMINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. ENSURE THAT THE INSTALLATION OF THE SEDIMENT TRAP WILL NOT CAUSE UNDESIRABLE SAFETY OR FLOODING ISSUES.

3. WHERE POSSIBLE, EXCAVATE A 200X200MM TRENCH AROUND THE INLET STRUCTURE.

4. SPACE STAKES EVENLY AROUND THE PERIMETER OF THE STORMWATER INLET AT A MAXIMUM 1M SPACING, AND SECURELY DRIVE THEM INTO THE GROUND.

5. WHERE NECESSARY, INSTALL A HORIZONTAL SPILL-THROUGH WEIR TO LIMIT THE MAXIMUM HEIGHT WATER PONDING AROUND THE STRUCTURE.

6. ENSURE THE MAXIMUM POND HEIGHT WILL NOT CAUSE A SAFETY HAZARD, INCLUDING UNDESIRABLE FLOODING OF AN ADJACENT PROPERTY OR ROADWAY.

MARGINEER PORTOR COLUMN LEVEL STRUCTURE.

WHEREVER PRACTICAL, THE SPILL-THROUGH WEIR SHOULD BE AT LEAST 300MM ABOVE GROUND LEVEL

7. IF A SPILL-THROUGH WEIR IS NOT INSTALLED, THEN FRAME THE TOP OF THE STAKES WITH HORIZONTAL CROSS MEMBERS

7. IF A SPILL-THROUGH WEIR IS NOT INSTALLED, THEN FRAME THE TOP OF THE STAKES WITH HORIZONTAL CROSS MEMBERS.
8. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS.
9. PLACE THE BOTTOM 300MM OF FABRIC IN THE EXCAVATED TRENCH.
10. SECURELY FASTEN THE FABRIC TO THE STAKES AND CROSS MEMBERS. AT THE FABRIC JOINT, OVERLAP THE FABRIC TO THE NEXT STAKE.
11. BACKFILL THE TRENCH WITH AT LEAST 200MM OF AGGREGATE OR COMPACTED SOIL. IF A TRENCH CANNOT BE EXCAVATED, LAY THE BOTTOM 300MM OF FABRIC EVENLY ON THE GROUND SURFACE AND COVER WITH A 300MM LAYER OF AGGREGATE, NOT EARTH OR SOIL.
12. WHERE REQUIRED, INSTALL A FLOW CONTROL BUND TO MAINTAIN THE SPECIFIED POOL DEPTH AND CONTOL THE MOVEMENT OF WATER.
13. TAKE ALL NECESSARY MEASURE TO MINIMISE THE SAFETY RISK CAUSED BY THE STRUCTURE AND TO PREVENT UNSAFE ENTRY INTO THE STORMWATER IN IL.

#### MAINTENANCE

1. INSPECT THE SEDIMENT TRAP AFTER EACH RUNGE-PRODUCING RAINFALL EVENT AND MAKE REPAIRS AS NEEDED TO THE SEDIMENT TRAP AND ASSOCIATED

FLOW CONTROL BUNDS. 2. REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

3. SEDIMENT DEPOSITS SHOULD BE REMOVED IMMEDIATELY IF THEY REPRESENT A SAFETY RIS

1. WHEN THE UP-SLOPE DRAINAGE AREA HAS BEEN STABILISED, REMOVE ALL MATERIALS INCLUDED DEPOSITED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

2. BRING THE DISTURBED AREA TO A PROPER GRADE, THEN SMOOTH, COMPACT AND STABILISE AND/OR REVEGETATE AS REQUIED.

## **GRASS FILTER STRIPS**

INSTALLATION

INSTALLATION

1. REFER TO APPROVED PLANS FOR LOCATION, EXTENT AND CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. ENSURE ALL NECESSARY SOIL TESTING (E.G. SOIL PH, NUTRIENT LEVELS) HAS BEEN COMPLETED, AND REQUIRED SOIL ADJUSTMENTS PERFORMED, PRIOR TO PLANTING.

3 REMOVE ALL ORJECTIONABLE MATERIAL FROM THE AREA TO BE TUREED. 4. ALL TURE SHOULD BE USED WITHIN 12-HOURS OF DELIVERY, OTHERWISE ENSURE THE TURE IS STORED IN CONDITIONS APPROPRIATE FOR THE WEATHER

CONDITIONS.
5. MOISTENING THE TURF AFTER IT IS UNROLLED WILL HELP MAINTAIN ITS VIABILITY.
6. TURF SHOULD BE LAID ON A MINIMUM 75MM BED OF ADEQUATELY FERTILISED TOPSOIL. RAKE THE SOIL SURFACE TO BREAK THE CRUST JUST BEFORE LAYING.

7. ENSURE THE TURF IS NOT LAID ON GRAVEL, HEAVILY COMPACTED SOILS, OR SOILS THAT HAVE BEEN RECENTLY TREATED WITH HERBICIDES 8. ENSURE THAT INTIMATE CONTACT IS ACHIEVED AND MAINTAINED BETWEEN THE TURF AND THE SOIL SUCH THAT SEEPAGE FLOW BENEATH THE TURF IS 9. IF THE FILTER STRIPS ARE REQUIRED TO BE PLACED ALONG THE CONTOUR, THEN ENSURE EACH ROW OF TURF IS PLACED ALONG A LINE OF CONSTANT LAND

19. IF THE LECTION OF ALL ELECTION OF A MAGE TO THE LAND SLOPE (I.E. SUCH THAT UP-SLOPE RUNOFF WILL BE DEFLECTED ALONG THE UPPER EDGE OF THE FILTER STRIPS ARE PLACED AT AN ANGLE TO THE LAND SLOPE (I.E. SUCH THAT UP-SLOPE RUNOFF WILL BE DEFLECTED ALONG THE UPPER EDGE OF THE FILTER STRIP. THE TURP, THE LATERAL STRIPS OF TURF MUST BE PLACED AT MAXIMUM 5M INTERVALS AND EXTENDING AT LEAST 400MM UP-SLOPE OF THE FILTER STRIP. 11. WATER UNTIL THE SOIL IS WET 100MM BELOW THE TURF. THEREAFTER, WATERING SHOULD BE SUFFICIENT TO MAINTAIN AND PROMOTE HEALTHY GROWTH.

## MAINTENANCE

1. INSPECT THE GRASS FILTER STRIPS AFTER EACH RUNOFF EVENT. CHECK FOR EVIDENCE OF CONCENTRATED RILL-FORMING FLOW ALONG THE UPPER EDGE OF THE TOWN.

2. IF EXCESSIVE EXCESSIVE TO SOCIONAL SUCREMINIS ALLOW THE OFFSCHE EDGE OF THE TORP, THEN PERCE ADDITIONAL DIAGNOSTIC TORP STAPS. ALL ENWINDERT, OSE SANDBAGS TO APPROPRIATELY DIVERT RUNOFE THROUGH THE GRASS.
3. MAINTAIN A HEALTHY AND VIGOROUS GRASS CONDITION WHENEVER AND WHEREVER POSSIBLE, INCLUDING WATERING AND FERTILISING AS NEEDED.
4. WHERE PRACTICABLE, MAINTAIN A MINIMUM LEAF LENGTH OF 50MM. MOWING SHOULD NOT BE ATTEMPTED UNTIL THE TURF IS FIRMLY ROOTED, USUALLY 2 TO

# FIBRE ROLLS

# MATERIALS

\* FIBRE ROLLS: TYPICALLY 200 TO 250MM JUTE, COIR OR STRAW ROLL TIED WITH SYNTHETIC OR BIODEGRADABLE MESH.
\* STAKES: MINIMUM 20 BY 20MM TIMBER STAKES.

INSTALLATION

1. REFER TO APPROVED PLANS FOR LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
2. WHEN PLACED ACROSS NON-VECETATED OR NEWLY SECEDOS ALOPES, THE ROLLS WIDST BE PLACED ALONG THE CONTOUR.
3. IF PLACED ON OPEN OR LOOSE SOIL, ENSURE THE FIBRE ROLLS ARE TRENCHED 75 TO 125MM IN SANDY SOILS AND 50 TO 75MM IN CLAYEY SOILS.

4. ENSURE THE OUTER MOST ENDS OF THE FIBRE ROLL ARE TURNED UP THE SLOPE TO ALLOW WATER TO ADEQUATELY POND UP-SLOPE OF THE ROLL, AND TO

MINIMISE ELOW RYPASSING

MINIMISE FLOW BYPASSING.
5. WHEN PLACED ACROSS THE INVERT OF MINOR DRAINS, ENSURE THE SOCKS ARE PLACED SUCH THAT:
(1) THE CREST OF THE DOWNSTREAM ROLL IS LEVEL WITH THE CHANNEL INVERT AT THE IMMEDIATE UPSTREAM SOCK (IF ANY);
(II) EACH ROLL EXTENDS UP THE CHANNEL BANKS SUCH THAT THE CREST OF THE FIBRE ROLL AT ITS LOWEST POINT IS LOWER THAN THE GROUND LEVEL AT EITHER END OF THE ROLL.
6. ENSURE THE ANCHORING STAKES ARE DRIVEN INTO THE END OF EACH ROLL AND ALONG THE LENGTH OF EACH ROLL AT A SPACING NOT EXCEEDING 1.2M OR

SIX TIMES THE ROLL DIAMETER, WHICHEVER IS THE LESSER, A MAXIMUM STAKE SPACING OF 0.3M APPLIES WHEN USED TO FORM CHECK DAMS 7. ADJOINING ROLL MUST BE OVERLAP AT LEAST 450MM, NOT ABUTTED.

NOTE:

MAINTENANCE I. INSPECT ALL FIBRE ROLLS PRIOR TO FORECAST RAIN, DAILY DURING EXTENDED PERIODS OF RAINFALL, AFTER SIGNIFICANT RUNOFF PRODUCING STORMS OR OTHERWISE AT WEEKLY INTERVALS.

2. REPAIR OR REPLACE DAMAGED FIBRE ROLLS.

3. REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

1. ALL EXCESSIVE SEDIMENT TRAPPED BY THE ROLLS MUST BE REMOVED FROM THE DRAIN OR SLOPE IF SUCH SEDIMENT IS LIKELY TO BE WASHED AWAY BY EXPECTED FLOWS.

2. DISPOSE OF COLLECTED SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

INFORMATION ON DEVICES SHOWN ON THIS DRAWING SOURCED

3. THE BIODEGRADABLE CONTENT OF THE STRAW ROLLS MAY NOT NECESSARILY NEED TO BE REMOVED FROM THE SITE

4. ALL SYNTHETIC (PLASTIC) MESH OR OTHER NON READILY BIODEGRADABLE MATERIAL MUST BE REMOVED FROM THE SITE ONCE THE SLOPE OR DRAIN IS STABILISED, OR THE ROLLS HAVE DETERIORATED TO A POINT WHERE THEY ARE NO LONGER PROVIDING THEIR INTENDED DRAINAGE OR SEDIMENT CONTROL

# A 10/09/2024 FOR APPROVAL

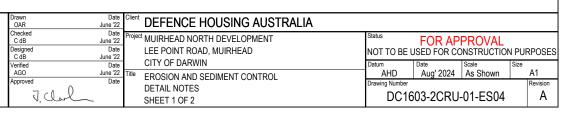
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Tel: 08 8942 8200



FROM IECA(2008) BOOK 6 - STANDARD DRAWINGS.

## CHECK DAM SEDIMENT TRAP

#### MATERIALS

\* ROCK: 150 TO 300MM EQUIVALENT DIAMETER, HARD, EROSION RESISTANT ROCK.

\* SANDBAGS: GEOTEXTILE BAGS (WOVEN SYNTHETIC, OR NON-WOVEN BIODEGRADABLE) FILLED WITH CLEAN COARSE SAND, CLEAN AGGREGATE, OR COMPOST

#### INSTALLATION (ROCK CHECK DAM)

INSTALLATION (NOOR OTLOW DAW)

1. REFER TO APPROVED PLANS FOR LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. PRIOR TO PLACEMENT OF THE SEDIMENT TRAP, ENSURE THE DRAINAGE CHANNEL IS DEEP ENOUGH TO PREVENT WATER BEING UNSAFELY DIVERTED OUT OF

THE DRAIN ONCE THE CHECK DAMS ARE INSTALLED.

3. LOCATE EACH CHECK DAM SEDIMENT TRAP AS DIRECTED WITHIN THE APPROVED PLANS, OR OTHERWISE AT SUCH A SPACING TO ACHIEVE THE REQUIRED

3. LOCATE EACH CHECK DAM SEDIMENT TRAP AS DIRECTED WITHIN THE APPROVED PLANS, OR OTHERWISE AT SUCH A SPACING TO ACHIEVE THE REQUIRED SEDIMENT TRAPPING OUTCOMES.

4. IF THE CHECK DAMS ARE ALSO BEING USED TO CONTROL EROSION WITHIN THE DRAINAGE CHANNEL, THEN LOCATE EACH SUCCESSIVE CHECK DAM SUCH THAT THE CREST OF THE IMMEDIATE DOWNSTREAM DAM IS LEVEL WITH THE CHANNEL INVERT AT THE IMMEDIATE UPSTREAM CHECK DAM.

5. CONSTRUCT EACH CHECK DAM TO THE DIMENSIONS AND PROFILE SHOWN WITHIN THE APPROVED PLAN.

6. WHERE SPECIFIED, THE CHECK DAMS MUST BE CONSTRUCTED ON A SHEET OF GEOTEXTILE FABRIC USED AS A DOWNSTREAM SPLASH PAD.

7. EACH CHECK DAM MUST BE EXTENDED UP THE CHANNEL BANK (WHERE PRACTICABLE) TO AN ELEVATION AT LEAST 150MM ABOVE THE CREST LEVEL OF THE

1. INSPECT EACH CHECK DAM AND THE DRAINAGE CHANNEL AT LEAST WEEKLY AND AFTER RUNOFF-PRODUCING RAINFALL

1. INSPECT EACH CHECK DAM AND THE DRAINAGE CHANNEL AT LEAST WEEKLY AND AFTER RUNOFF-PRODUCING RAINFALL.
2. CORRECT ALL DAMAGE IMMEDIATELY. IF GIGNIFICANT EROSION OCCURS BETWEEN ANY OF THE CHECK DAMS, THEN CHECK THE SPACING OF THE DAMS AND WHERE NECESSARY INSTALL INTERMEDIATE CHECK DAMS OR A SUITABLE CHANNEL LINER.
3. CHECK FOR DISPLACEMENT OF THE CHECK DAMS.
4. CHECK FOR SOIL SCOUR AROUND THE ENDS OF EACH CHECK DAM. IF SUCH EROSION IS OCCURRING, CONSIDER EXTENDING THE WIDTH OF THE CHECK DAM TO AVOID SUCH PROBLEMS.
5. IF SEVERE SOIL EROSION OCCURS EITHER UNDER OR AROUND THE CHECK DAMS, THEN SEEK EXPERT ADVICE ON AN ALTERNATIVE TREATMENT MEASURE.
5. PE SEVERE SOIL EROSION OCCURS EITHER UNDER OR AROUND THE CHECK DAMS, THEN SEEK EXPERT ADVICE ON AN ALTERNATIVE TREATMENT MEASURE.
5. PE SEVERE SOIL EROSION OCCURS EITHER UNDER OR AROUND THE CHECK DAMS, THEN SEEK EXPERT ADVICE ON AN ALTERNATIVE TREATMENT MEASURE.
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5. PE SEVERE SOIL EROSION OCCURS EITHER UNDER OR AROUND THE CHECK DAMS, THEN SECK EXPERT ADVICE ON AN ALTERNATIVE TREATMENT MEASURE.
5. PE SEVERE SOIL EROSION OCCURS EITHER UNDER OR AROUND THE CHE

DE-SILT SEDIMENT TRAP IF THE SEDIMENT LEVEL EXCEEDS 1/3 THE CREST HEIGHT.
 DISPOSE OF COLLECTED SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

1. WHEN CONSTRUCTION WORK WITHIN THE DRAINAGE AREA ABOVE THE CHECK DAMS HAS BEEN COMPLETED AND DISTURBED AREAS SUFFICIENTLY

TABILISED TO RESTRAIN EROSION, THE DAMS MUST BE REMOVED, UNLESS THE SEDIMENT TRAPS ARE TO REMAIN AS A PERMANENT FEATURE.

2. REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

3. REMOVE AND APPROPRIATELY DISPOSE OF ALL MATERIALS INCLUDING ANY GEOTEXTILE FABRIC.

4. STABILISE THE DISTURBED CHANNEL WITH A LINING OF FABRIC AND ROCK, OR ESTABLISH VEGETATION AS APPROPRIATE.

## KERB INLET TRAP - SAG INLETS

#### INSTALLATION

IND JALLA I IOU.

REFER TO APPROVED PLANS FOR LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. ENSURE THAT THE INSTALLATION OF THE SEDIMENT TRAP WILL NOT CAUSE UNDESIRABLE SAFETY OR FLOODING ISSUES.

3. INSTALL SEDIMENT TRAP IN ACCORDANCE WITH STANDARD DRAWINGS UPPLIED WITH THE APPROVED PLAN, OR AS DIRECTED BY THE SITE SUPERVISOR.

4. ENSURE THE SEDIMENT TRAP IS CONSTRUCTED UP-SLOPE OF AN ON-GRADE KERB INLET. THE SEDIMENT TRAP MUST NOT SURROUND THE KERB INLET.

LINEESS SPECIFICALLY DIRECTED BY THE SITE SUPERVISOR 5. IF NECESSARY, INSTALL ADDITIONAL SEDIMENT TRAPS UP-SLOPE OF THE KERB INLET TO ADEQUATELY RETAIN THE EXPECTED QUANTITY OF SEDIMENT

6. TAKE ALL NECESSARY MEASURE TO MINIMISE THE SAFETY RISK CAUSED BY THE STRUCTURE.

#### MAINTENANCE

INATIVE EXPANDE:

1. INSPECT ALL SEDIMENT TRAPS DAILY AND IMMEDIATELY AFTER RUNOFF-PRODUCING RAINFALL. MAKE REPAIRS AS NEEDED.

2. REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

3. ENSURE SEDIMENT DOES NOT ENTER THE STORMWATER DRAIN DURING DE-SILTING OPERATIONS AND MAINTENANCE OF THE TRAP.

4. SEDIMENT ON THE ROAD MUST BE REMOVED IMMEDIATELY IF IT REPRESENTS A SAFETY HAZARD.

1. WHEN THE UP-SLOPE DRAINAGE AREA HAS BEEN STABILISED, REMOVE ALL MATERIALS INCLUDED DEPOSITED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

## KERB INLET TRAP - ON-GRADE

1. REFER TO APPROVED PLANS FOR LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE

METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. ENSURE THAT THE INSTALLATION OF THE SEDIMENT TRAP WILL NOT CAUSE UNDESINABLE SAFETY OR FLOODING ISSUES.

3. INSTALL SEDIMENT TRAP IN ACCORDANCE WITH STANDARD DRAWING SUPPLIED WITH THE APPROVED PLAN, OR AS DIRECTED BY THE SITE SUPERVISOR.

4. ENSURE THE SEDIMENT TRAP IS CONSTRUCTED UP-SLOPE OF AN ON-GRADE KERB INLET. THE SEDIMENT TRAP MUST NOT SURROUND THE KERB INLET UNLESS SPECIFICALLY DIRECTED BY THE SITE SUPPERVISOR.

5. IF NECESSARY, INSTALL ADDITIONAL SEDIMENT TRAPS UP-SLOPE OF THE KERB INLET TO ADEQUATELY RETAIN THE EXPECTED QUANTITY OF SEDIMENT

6. TAKE ALL NECESSARY MEASURE TO MINIMISE THE SAFETY RISK CAUSED BY THE STRUCTURE.

1. INSPECT ALL SEDIMENT TRAPS DAILY AND IMMEDIATELY AFTER RUNOFF-PRODUCING RAINFALL. MAKE REPAIRS AS NEEDED.

2. REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
3. ENSURE SEDIMENT DOES NOT ENTER THE STORMWATER DRAIN DURING DE-SILTING OPERATIONS AND MAINTENANCE OF THE TRAP.

4. SEDIMENT ON THE ROAD MUST BE REMOVED IMMEDIATELY IF IT REPRESENTS A SAFETY HAZARD

#### REMOVAL

1. WHEN THE UP-SLOPE DRAINAGE AREA HAS BEEN STABILISED, REMOVE ALL MATERIALS INCLUDED DEPOSITED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

## **ROCK FILTER DAM**

FOR INSTALLATION, MAINTENANCE AND REMOVAL NOTES REFER TO STANDARD DRAWING SD-RED-02

**CPESC Details** Name : TERRY CLARK **CPESC ID: 6089** Signature: J. Clarl

A 10/09/2024 FOR APPROVAL



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Title	CITY OF DARWIN  EROSION AND SEDIMENT CONTROL	Datum AHD	Date Aug' 2024	Scale As Shown	Size	A1
	DETAIL NOTES SHEET 2 OF 2	Drawing Number DC16	03-2CRU	-01-ES05		Revision

LEVEL SPREADERS INSTALLATION

IN STALLS THOM PROVED PLANS FOR LOCATION, DIMENSIONS AND CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. WHEREVER PRACTICAL, LOCATE THE LEVEL SPREADER ON UNDISTURBED, STABLE SOIL.

3. ENSURE FLOW DISCHARGING FROM THE LEVEL SPREADER WILL DISPERSE ACROSS A PROPERLY STABILISED SLOPE NOT EXCEEDING 10:1 (H:V) AND

SUFFICIENTLY EVEN IN GRADE ACROSS THE SLOPE TO AVOID CONCENTRATING THE OUTFLOW.
4. THE OUTLET SILL OF THE SPREADER SHOULD BE PROTECTED WITH EROSION CONTROL MATTING TO PREVENT EROSION DURING THE ESTABLISHMENT OF

4. THE OUTLET SIZE OF THE SPREADER SHOULD BE PROTECTED WITH EROSION CONTROL MAY INIGH TO PREVENT BEROSION DURING THE ESTABLISHMENT OF VEGETATION. THE MATTING SHOULD BE A MINIMUM OF IZONOM WIDE EXTENDING AT LEAST 300MM UPSTREAM OF THE EDGE OF THE OUTLET CREST AND BURIED AT LEAST 150MM IN A VERTICAL TRENCH. THE DOWNSTREAM EDGE SHOULD BE SECURELY HELD IN PLACE WITH CLOSELY SPACED HEAVY-DUTY WIRE STAPLES AT LEAST 150MM LONG.

5. ENSURE THAT THE OUTLET SILL (CREST) IS LEVEL FOR THE SPECIFIED LENGTH.

6. IMMEDIATELY AFTER CONSTRUCTION, TURF, OR SEED AND MULCH WHERE APPROPRIATE, THE LEVEL SPREADER.

IN INSPECT THE LEVEL SPREADER AFTER EVERY RAINFALL EVENT UNTIL VEGETATION IS ESTABLISHED.

2. AFTER ESTABLISHMENT OF VEGETATION OVER THE LEVEL SPREADER, INSPECTIONS SHOULD BE MADE ON A REGULAR BASIS AND AFTER RUNOFF-PRODUCING.

RAINFALL.

3. ENSURE THAT THERE IS NO SOIL EROSION AND THAT SEDIMENT DEPOSITION IS NOT CAUSING THE CONCENTRATION OF FLOW.

4. ENSURE THAT THERE IS NO SOIL EROSION OR CHANNEL DAMAGE UPSTREAM OF THE LEVEL SPREADER, OR SOIL EROSION OR VEGETATION DAMAGE DOWNSTREAM OF THE LEVEL SPREADER.

5. INVESTIGATE THE SOURCE OF ANY EXCESSIVE SEDIMENTATION.

6. MAINTAIN GRASS IN A HEALTH CONDITION WITH NO LESS THAN 90% COVER UNLESS CURRENT WEATHER CONDITIONS REQUIRE OTHERWISE.

7. GRASS HEIGHT SHOULD BE MAINTAINED AT A MINIMUM 50MM BLADE LENGTH WITHIN THE LEVEL SPREADER AND DOWNSTREAM DISCHARGE AREA, AND A MAXIMUM BLADE LENGTH NO GREATER THAN ADJACENT GRASSES.

1. TEMPORARY LEVEL SPREADERS SHOULD BE DECOMMISSIONED ONLY AFTER AN ALTERNATIVE STABLE OUTLET IS OPERATIONAL, OR WHEN THE INFLOW

CHANNEL IS DECOMMISSIONED. 2. REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

2. REMOVE AND PEROPRIATELY DISPOSE OF IN A SUITABLE WANNER I PIAL
3. REMOVE AND PPROPRIATELY DISPOSE OF ANY EXPOSE GEOTEXTILE.
4. GRADE THE AREA AND SMOOTH IT OUT IN PREPARATION FOR STABILISATION.
5. STABILISE THE AREA AS SPECIFIED ON THE APPROVED PLAN.

#### WIND BUFFER CLEARING

METHODOLOGY

1. REFER TO APPROVED PLANS FOR EXTENT OF CLEARING.

2. ALL SMALL TREES, SHRUBS AND LONG GRASS TO BE REMOVED.

3. TALL TREES ARE TO BE REMOVED, WITH THE EXCEPTION OF UP TO 10% TREE COVERAGE AS SHOWN IN NOMINAL LOCATIONS ON DWG No.
DC1603-2CRU-01-ES06 & ES12 OR AS DIRECTED BY SUPERINTENDENT AFTER CONSULTATION WITH DEPWS.

4 EXISTING GROUND TO BE GRADED TO AVOID PONDING OF STORMWATER AND TOP SOIL ED WITH NATURAL MATERIAL CONTAINING NATURAL GRASSES.

5. UNDISTURBED GRASSED AREAS ARE TO BE SLASHED.

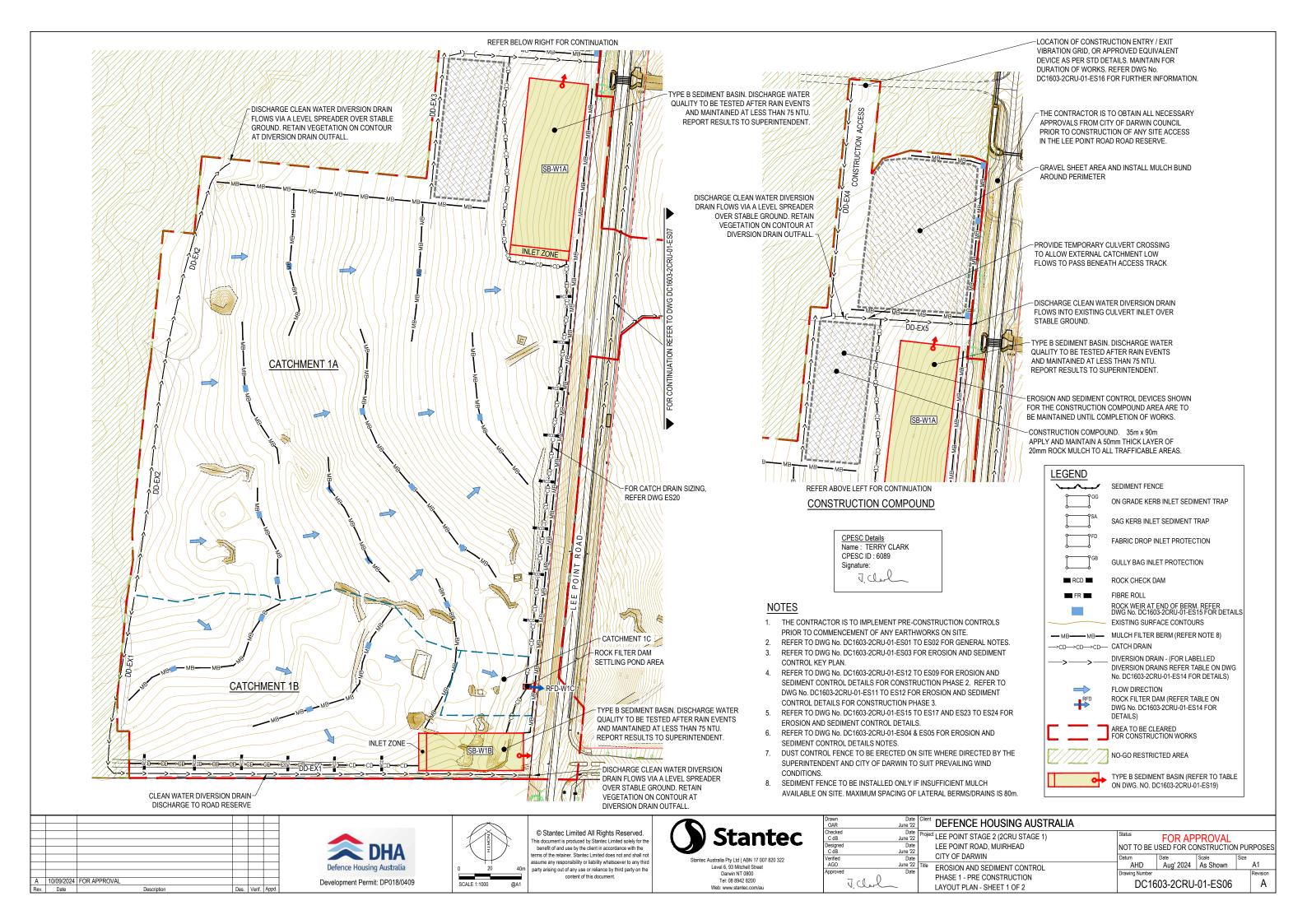
#### MAINTENANCE

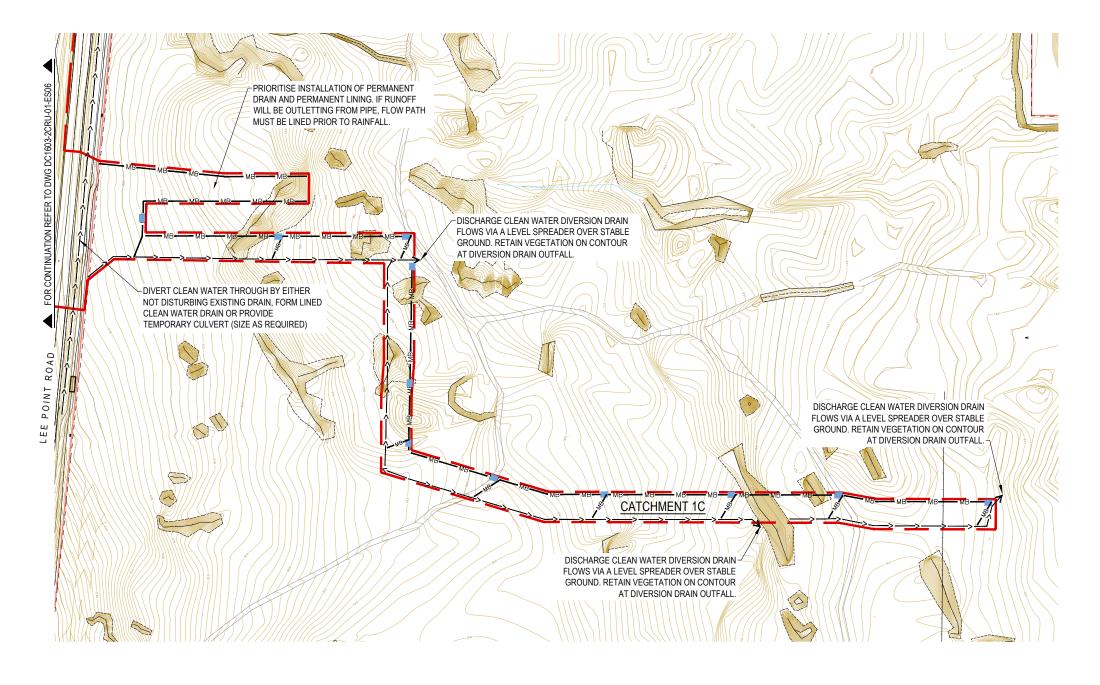
1. INSPECT AND REPLENISH MULCH POST WET SEASON UNTIL AREA IS DEVELOPED OR NATURAL GRASS/GROUNDCOVER IS ESTABLISHED.

2 NATURAL GRASS AND GROUNDCOVER RE-GROWTH IS ENCOURAGED TO AID IN EROSION CONTROL SLASH / MAINTAIN TO LOW HEIGHT

WIND BUFFER AREA WILL BE REPLACED WITH RURAL RESIDENTIAL LOTS AND A STABILISED DETENTION BASIN DURING FUTURE STAGE WORKS.

INFORMATION ON DEVICES SHOWN ON THIS DRAWING SOURCED FROM IECA(2008) BOOK 6 - STANDARD DRAWINGS





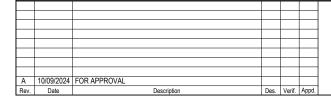
## NOTES

- THE CONTRACTOR IS TO IMPLEMENT PRE-CONSTRUCTION CONTROLS PRIOR TO COMMENCEMENT OF ANY EARTHWORKS ON SITE.
- 2. REFER TO DWG No. DC1603-2CRU-01-ES01 TO ES02 FOR GENERAL NOTES.
- 3. REFER TO DWG No. DC1603-2CRU-01-ES03 FOR EROSION AND SEDIMENT CONTROL KEY PLAN.
- 4. REFER TO DWG No. DC1603-2CRU-01-ES12 TO ES09 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 2. REFER TO DWG No. DC1603-2CRU-01-ES11 TO ES12 FOR EROSION AND SEDIMENT CONTROL DETAILS FOR CONSTRUCTION PHASE 3.
- REFER TO DWG No. DC1603-2CRU-01-ES15 TO ES17 AND ES23 TO ES24 FOR EROSION AND SEDIMENT CONTROL DETAILS.
- 6. REFER TO DWG No. DC1603-2CRU-01-ES04 & ES05 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.
- 8. SEDIMENT FENCE TO BE INSTALLED ONLY IF INSUFFICIENT MULCH AVAILABLE ON SITE. MAXIMUM SPACING OF LATERAL BERMS/DRAINS IS 80m.

# WET SEASON NOTES

- WORKS MUST BE STAGED TO THE MAXIMUM EXTENT PRACTICAL, GIVEN INCREASED EROSION
  RISK DURING WET SEASON
- 2. WORKS SHALL BE LIMITED TO THAT WHICH CAN BE COMPLETED (CLEARED, TRENCH, PIPE INSTALLATION, BACKFILL AND STABILISATION) WITHIN A MAXIMUM 5 DAYS.
- 3. STABILISATION CAN BE ACHIEVED BY TOPSOIL AND HYDROMULCH. AS AN INTERIM MEASURE TOPSOIL CAN BE APPLIED WITH A HEAVY APPLICATION OF SOIL BINDER UNTIL SUFFICIENT AREA IS COMPLETED FOR HYDROMULCH APPLICATION.

CPESC Details
Name: TERRY CLARK
CPESC ID: 6089
Signature:







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te 22 te 22	Project LEE POINT STAGE 2 (2CRU STAGE 1)  LEE POINT ROAD, MUIRHEAD	FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PUR	RPO!
te 22	CITY OF DARWIN  Title EROSION AND SEDIMENT CONTROL	Datum	A1
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LEGEND

SEDIMENT FENCE

ROCK CHECK DAM FIBRE ROLL

→ MB → MB → MULCH FILTER BERM (REFER NOTE 8)

FLOW DIRECTION

DETAILS)

->CD-->CD-->CD-- CATCH DRAIN

ON GRADE KERB INLET SEDIMENT TRAP

ROCK WEIR AT END OF BERM. REFER DWG No. DC1603-2CRU-01-ES15 FOR DETAILS

SAG KERB INLET SEDIMENT TRAP

FABRIC DROP INLET PROTECTION
GULLY BAG INLET PROTECTION

EXISTING SURFACE CONTOURS

DIVERSION DRAIN - (FOR LABELLED DIVERSION DRAINS REFER TABLE ON DWG

ROCK FILTER DAM (REFER TABLE ON

DWG No. DC1603-2CRU-01-ES14 FOR

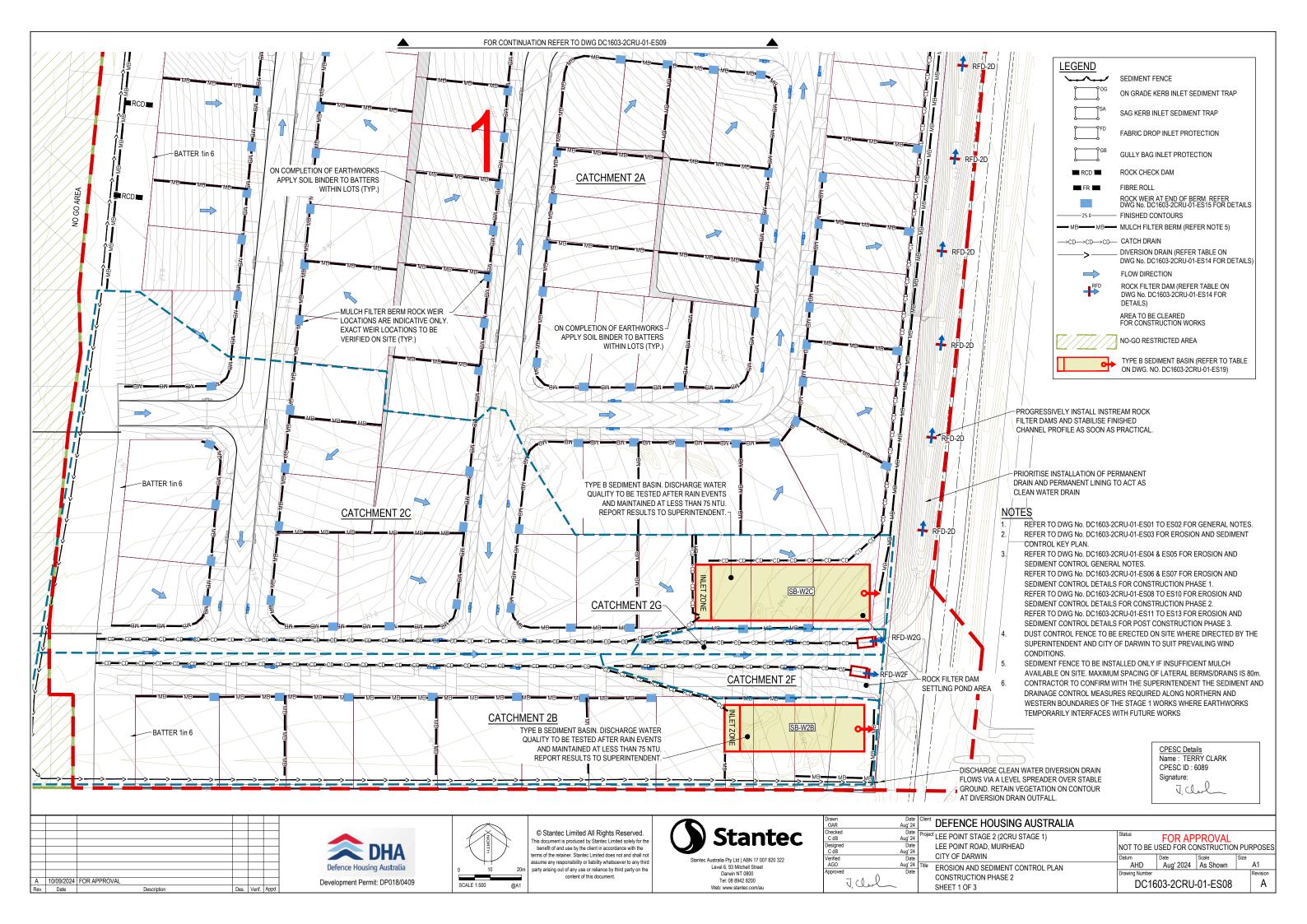
AREA TO BE CLEARED FOR CONSTRUCTION WORKS

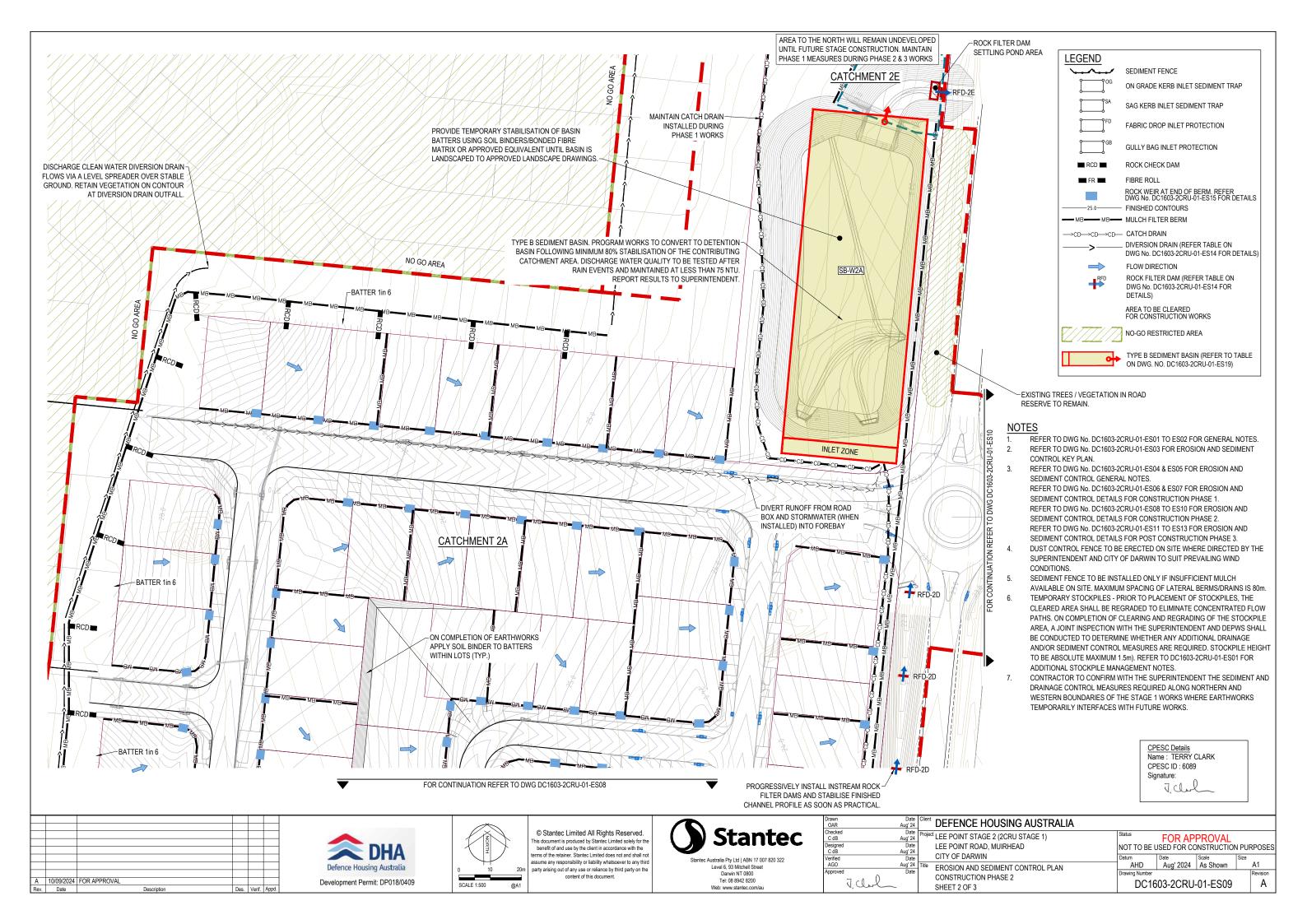
NO-GO RESTRICTED AREA

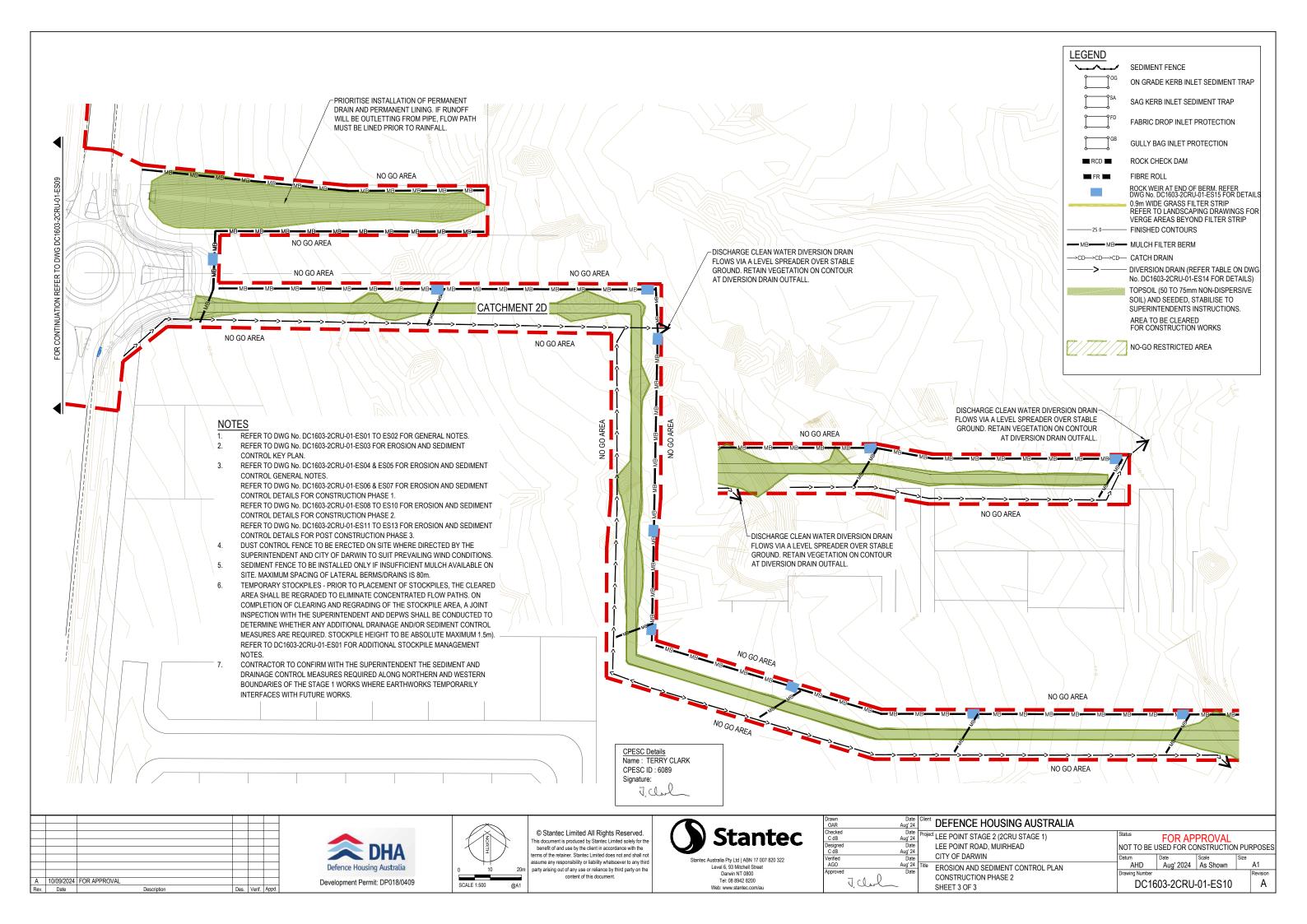
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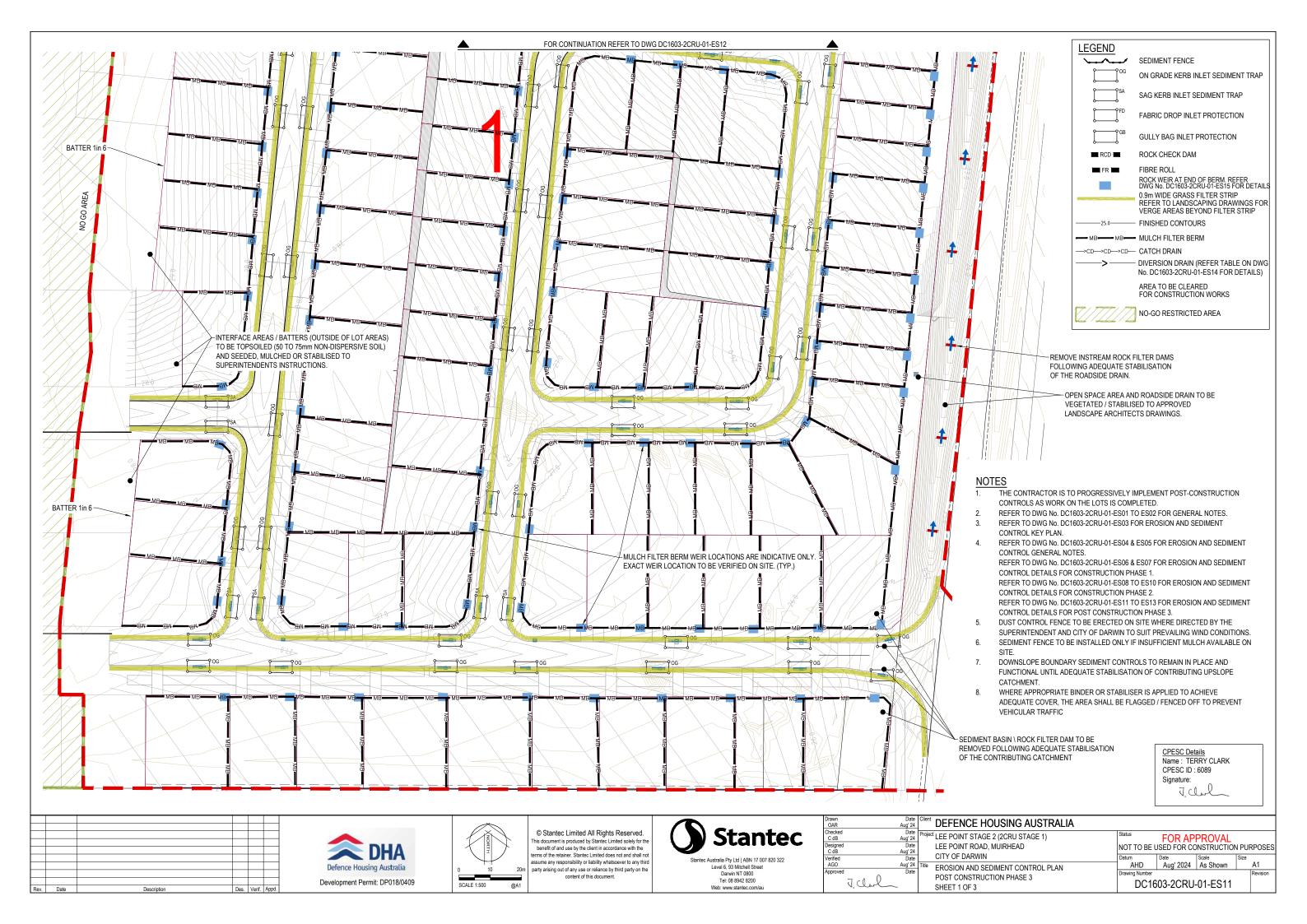
TYPE B SEDIMENT BASIN (REFER TO TABLE

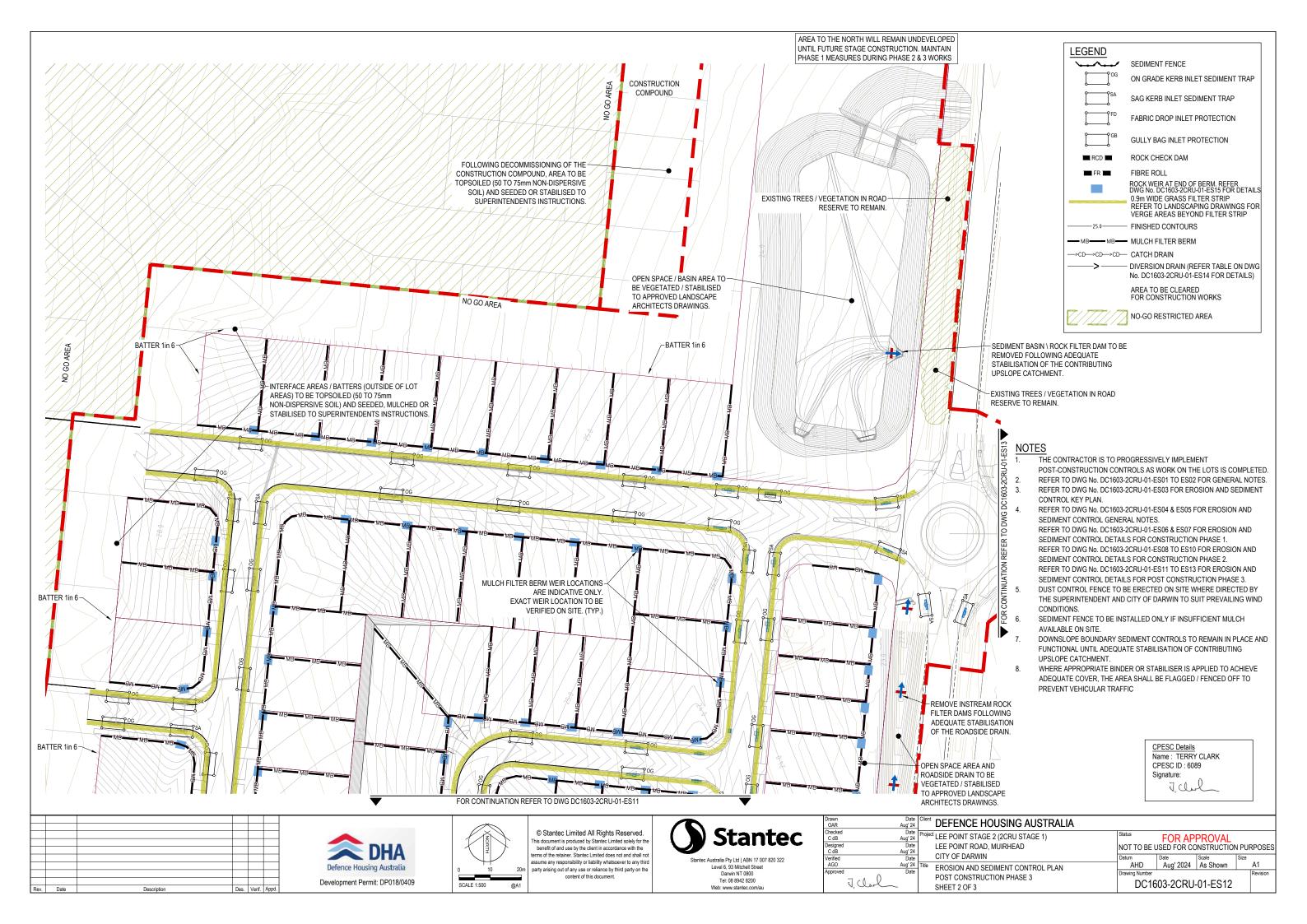
ON DWG. NO. DC1603-2CRU-01-ES19)

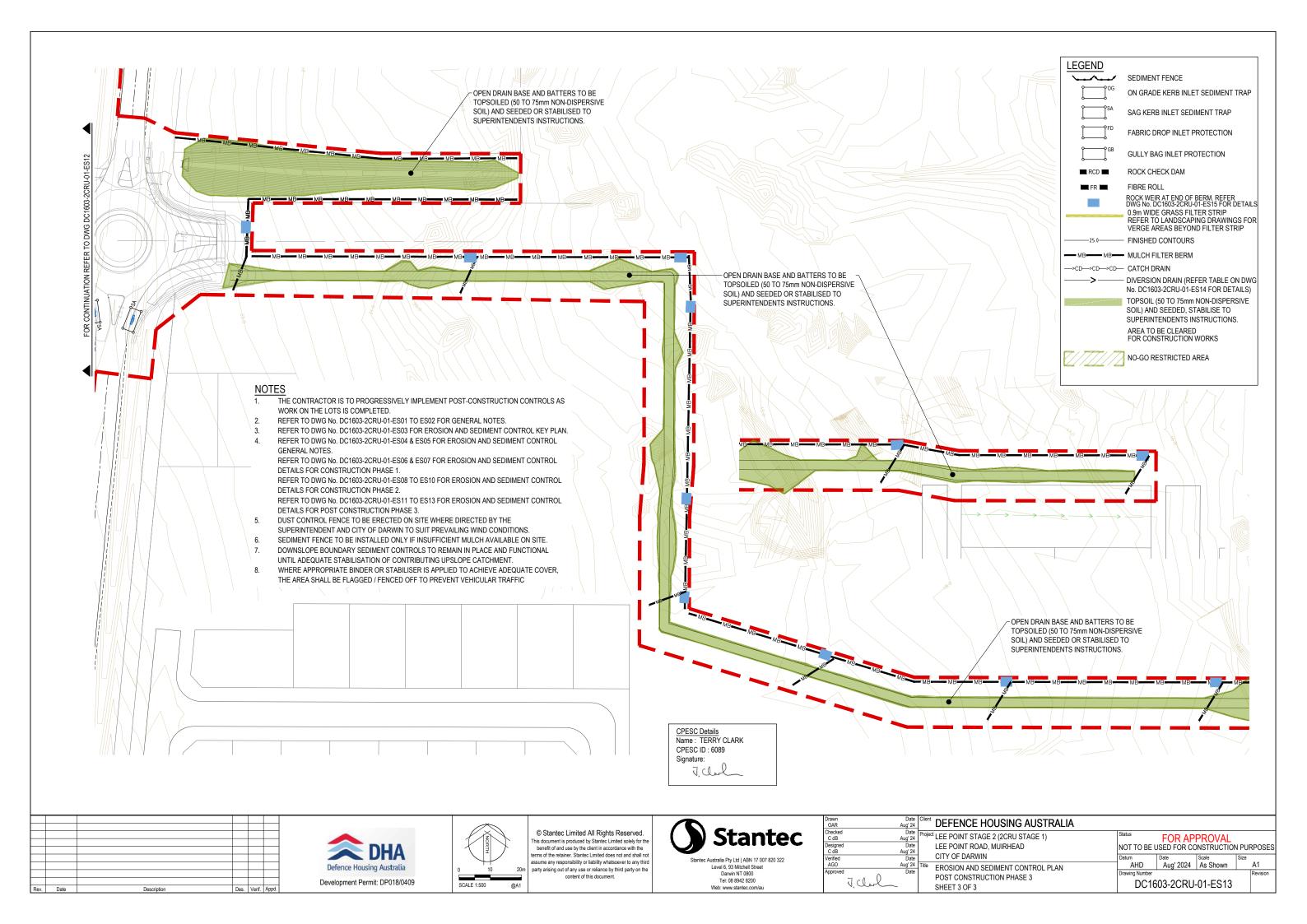


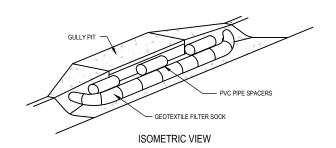






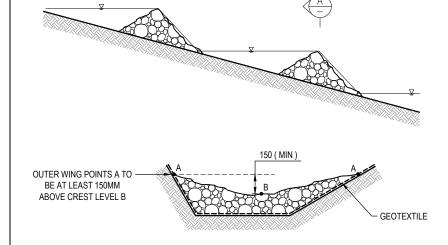






REFER DWG. NO. DC1603-2CRU-01-ES05 AND IECA BPESC STD. DWG. SD-SA-01 FOR FURTHER INFORMATION.

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



# SECTION

REFER DWG. NO. DC1603-2CRU-01-ES05 AND IECA BPESC STD. DWG. SD-RCD-01 FOR FURTHER INFORMATION.

# **ROCK CHECK DAM**

N.T.S.

## **ROCK FILTER DAM DETAILS TABLE**

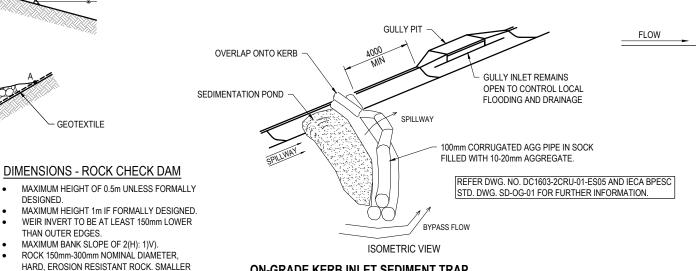
DEVICE ID	CATCHMENT ID	MIN. SETTLING POND SURFACE AREA	SUGGESTED SETTLING POND LENGTH	SUGGESTED SETTLING POND WIDTH	DEVICE THICKNESS (IN DIRECTION OF FLOW) (D)	HEIGHT OF ROCK FILTER (WEIR) (H <sub>1</sub> )	FILTER AGGREGATE SIZE	MIN. THICKNESS OF FILTER AGGREGATE	MIN. CORE ROCK SIZE	WIDTH OF FILTER DAM (W <sub>1</sub> )	SPILLWAY LENGTH (W <sub>2</sub> )	SPILLWAY DEPTH	EMBANKMENT HEIGHT (H <sub>2</sub> )
RFD-W1C	1C	154m²	5.0m	3.0m	MIN. 1.50m	0.30m	25mm	0.30m	250mm	2.0m	2.0m	0.45m	0.60m
RFD-W2F	2F	11m²	2.0m	6.0m	MIN. 1.50m	0.3m	25mm	0.30m	250mm	1.5m	1.5m	0.45m	0.60m
RFD-W2G	2G	7m²	2.0m	4.0m	MIN. 1.50m	0.30m	25mm	0.30m	250mm	1.0m	1.0m	0.45m	0.60m
RFD-2D	ROADSIDE DRAIN	VARIES	VARIES	VARIES	MIN. 1.50m	0.30m	25mm	0.30m	250mm	1.5m	5.0m	VARIES	0.65m

- REFER TYPICAL ROCK FILTER DAM OUTLET WEIR DETAILS FOR LOCATION OF VARIABLES 'D' 'H1' 'H2' 'W1' AND 'W2' 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
- REFER IECA STD DWG SD-RFD-03 AND SD-RFD-04 FOR TYPICAL INSTREAM ROCK FILTER DAM DETAILS (RFD-2D ONLY)

#### CLEAN WATER DIVERSION DRAINS DETAILS TABLE

DEVICE ID	CATCHMENT ID	LINING MATERIAL	MINIMUM LONGITUDINAL GRADE	LEFT HAND BATTER SLOPE	CHANNEL BASE WIDTH	RIGHT HAND BATTER SLOPE	DEPTH OF FLOW	MINIMUM FREEBOARD	ADOPTED DEPTH
DD-EX1	EX1	GEOTEXTILE LINING	1.0%	1 IN 2	0.5m	1 IN 2	0.25m	0.15m	0.4m
DD-EX2	EX2	GEOTEXTILE LINING	1.0%	1 IN 2	0.5m	1 IN 2	0.35m	0.15m	0.5m
DD-EX3	EX2 + EX3	GEOTEXTILE LINING	1.0%	1 IN 2	0.9m	1 IN 2	0.35m	0.15m	0.5m
DD-EX4	EX4	GEOTEXTILE LINING	1.0%	1 IN 2	0.5m	1 IN 2	0.25m	0.15m	0.4m
DD-EX5	EX2 + EX3 + EX4	GEOTEXTILE LINING	1.0%	1 IN 2	1.2m	1 IN 2	0.35m	0.15m	0.5m

- LEFT AND RIGHT HAND SIDE ARE BASED ON THE ASSUMPTION OF FACING DOWNSTREAM
- REFER TO IECA STD DWG SD-DC-01, SD-CD-01, SD-CD-02, SD-CD-03, SD-CD-04 AND SD-CD-05 FOR TYPICAL CLEAN WATER DIVERSION DRAIN DETAILS.
- d50 ROCK SIZE DENOTES THE DIAMETER OF WHICH 50% OF THE ROCKS ARE SMALLER, d90 OF WHICH 90% OF THE ROCKS ARE SMALLER.
- ROCK SIZE DISTRIBUTION (d50/d90) ASSUMED TO BE 0.67
- FOR IDENTIFIED DISPERSIVE SOILS AREAS, FLOW DIVERSION BUNDS/BANKS SHOULD BE ADOPTED OVER CUT IN CATCH DRAINS. WHERE CUT IN DRAINS ARE NECESSARY WITHIN DISPERSIVE SOIL AREAS, THESE CATCH DRAINS SHOULD BE ADEQUATELY LINED WITH A MINIMUM OF 150mm OF NON-DISPERSIVE MATERIAL PRIOR TO THE INSTALLATION OF OTHER TEMPORARY CHANNEL LININGS OR CHECK DAMS.



TYPICAL ROCK FILTER DAM OUTLET WEIR

SECTION

B

GEOTEXTILE FABRIC TO EXTEND OVER AGGREGATE

FILTER AGGREGATE AS PER ROCK FILTER

DAM DETAILS TABLE.

FILTER LAYER FOR INSTREAM DEVICES OR FOR DEVICES

WITH SENSITIVE DOWNSTREAM RECEIVING ENVIRONMENT.

CORE ROCK AS PER

ENERGY DISSIPATION

**APRON** 

MIN. 2H<sub>1</sub>

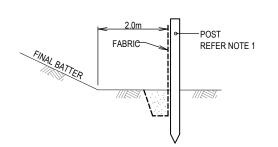
GEOTEXTILE FILTER FABRIC

MIN 'BIDIM' A34 OR EQUIVALENT.

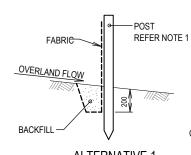
ROCK FILTER DAM DETAILS TABLE.

'RETURNS' PLACED AT 20m SPACING (MAX) IF FENCE IS LOCATED 3m (MAX) WITH WIRE BACKING, OTHERWISE 2m (MAX) -ALONG THE CONTOUR, OTHERWISE 5 TO 10m DEPENDING ON SLOPE 1500 (MIN) DIRECTION FLOW FABRIC BURIED 200mm ALL SUPPORT POSTS PLACED DOWN-SLOPE OF FABRIC - SEDIMENT FENCE FABRIC <u>NOT</u> FILTER CLOTH OR SHADE CLOTH POSTS ARE TO BE STAR PICKETS OR 50x50 MIN. TIMBER STAKES. STEEL DROPPERS ARE NOT TO BE USED. INSTALLATION OF SEDIMENT FENCE

# **ON-GRADE KERB INLET SEDIMENT TRAP**



LOCATION OF FENCE RELATIVE TO BASE OF SLOPE



ROCK MAY BE USED IF SUITABLE LARGE ROCK

DESIGNED

THAN OUTER EDGES

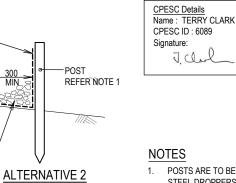
IS NOT AVAILABLE

CLEAN SAND OR AGGREGATE **ALTERNATIVE 1** 

ANCHORING BASE OF FABRIC

FABRIC-

OVERLAND FLOW



# REFER DWG. NO. DC1603-2CRU-01-ES04 AND IECA BPESC STD. DWG. SD-SF-01 AND SD-SF-02 FOR FURTHER INFORMATION.

Level 6, 93 Mitchell Street Darwin NT 0800 Tel: 08 8942 8200

# J. Clarl

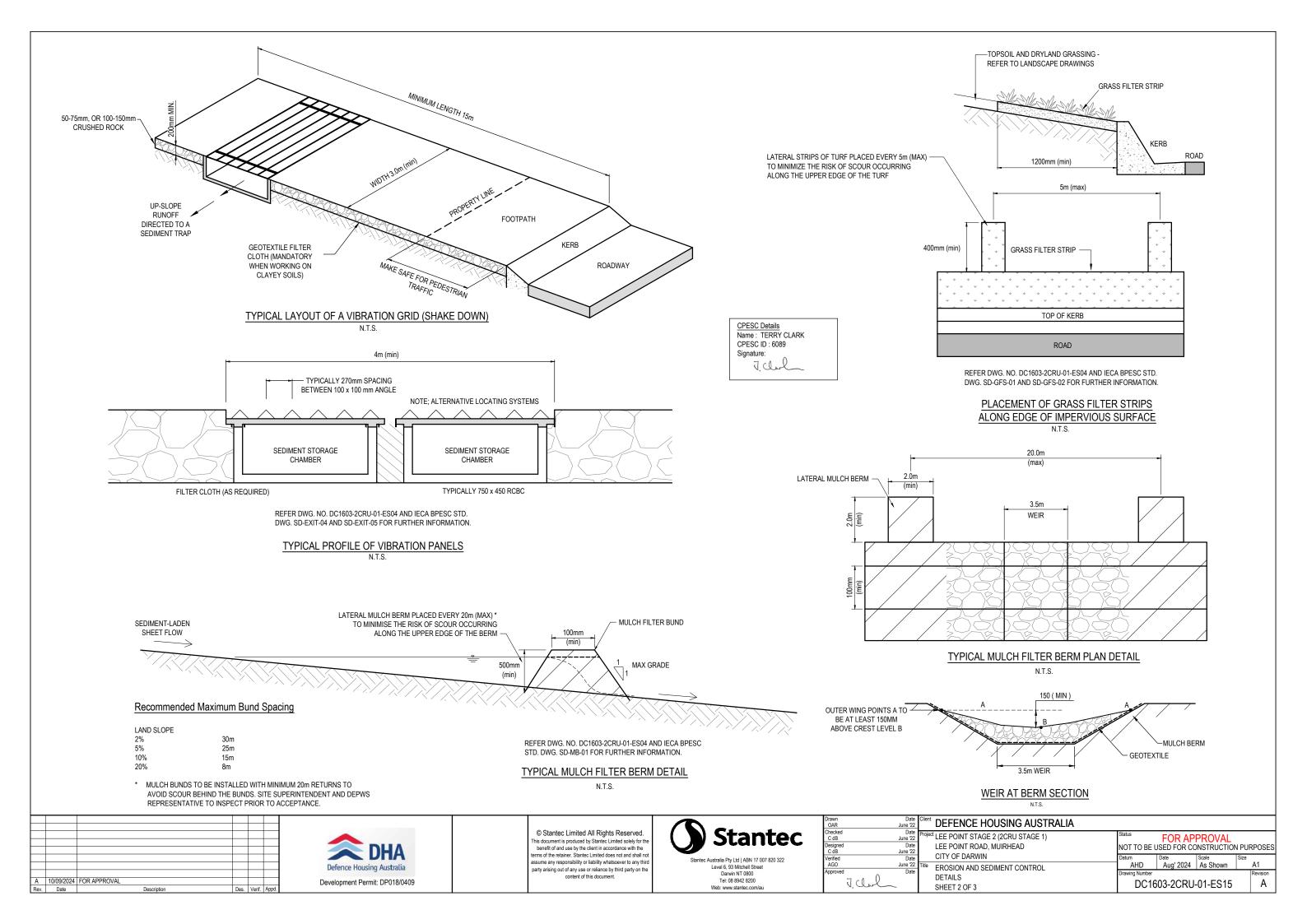
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Title	EROSION AND SEDIMENT CONTROL	AHD	Aug' 2024	As Shown		A1
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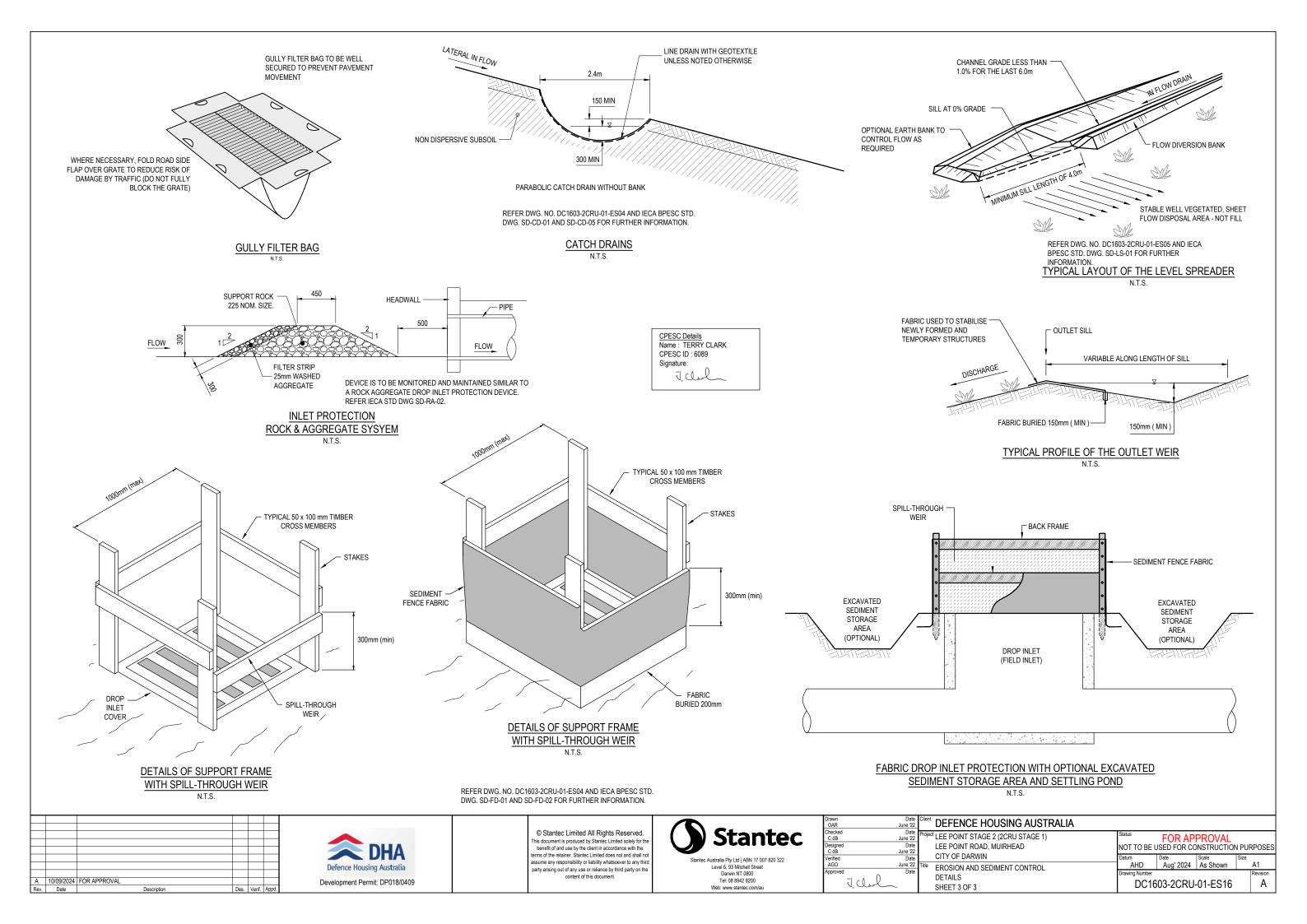




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## SEDIMENT BASIN NOTES

- 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)
- 5. 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
  2 200
- 8. 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.
- 10. 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 I 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.

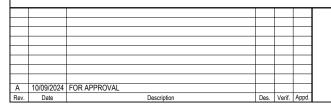
- EARTH EMBANKMENTS IN EXCESS OF 1m IN HEIGHT SHOULD BE CERTIFIED BY GEOTECHNICAL ENGINEER.
- 12. IF BATTER SLOPES STEEPER THAN 1(V): 4(H) ARE USED AROUND EDGE OF SEDIMENT BASIN, THEN SAFETY FENCING IS TO BE SUPPLIED TO THE FULL PERIMETER FOR THE DURATION OF THE RASIN'S OPERATION
- 13. TO INCREASE THE 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.
- 15. 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.
- 3. 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.
- 5. 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.
- 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.

- 7. 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
- 8. 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.

CPESC Details
Name: TERRY CLARK
CPESC ID: 6089
Signature





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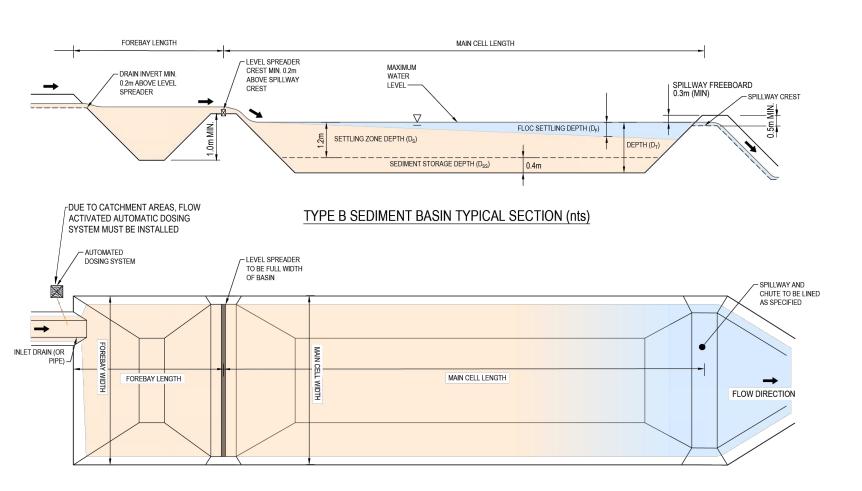
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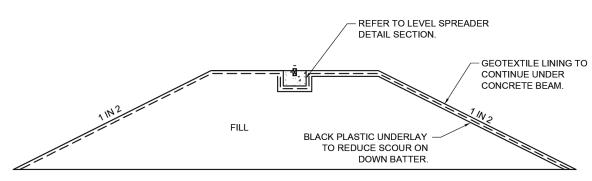
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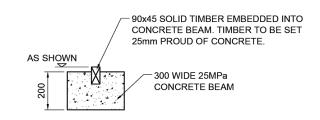
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ate '22	Title	CITY OF DARWIN EROSION AND SEDIMENT CONTROL	Datum AHD	Date Aug' 2024	Scale As Shown	Size	A1
ate		SEDIMENT BASIN NOTES	Drawing Number DC16	03-2CRU	-01-ES17		Revision A



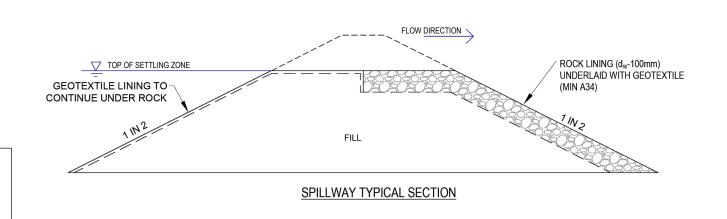
TYPE B SEDIMENT BASIN PLAN VIEW (nts)

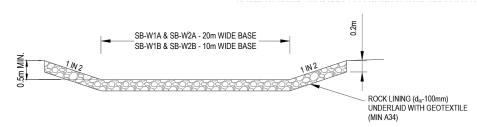


# LEVEL SPREADER TYPICAL SECTION

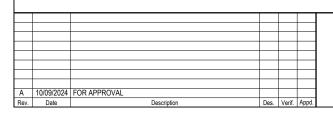


# LEVEL SPREADER DETAIL SECTION





SPILLWAY - TYPICAL CROSS SECTION



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Drawn Date OAR June '22	Client DEFENCE HOUSING AUSTRALIA					
Checked         Date           C dB         June '22           Designed         Date           C dB         June '22	LEE POINT STAGE 2 (2CRU STAGE 1)  LEE POINT ROAD, MUIRHEAD	Status NOT TO BE I	FOR AP	PROVAL DNSTRUCTION	N PURP	OSE
Verified Date AGO June '22	CITY OF DARWIN  Title EROSION AND SEDIMENT CONTROL	Datum AHD	Date Aug' 2024	Scale As Shown	Size A	.1
Approved Date	SEDIMENT BASIN CALCULATIONS AND SIZING	Drawing Number	603-2CRU			evision A

# TYPE B SEDIMENT BASIN CALCULATIONS

															SEDI	MENT STORA	GE			APPR	OX. DIMENS	IONS	
BASIN ID	CATCH AREA (HA)	BATTERS (1 IN X)	L:W RATIO	SETTLING DEPTH D <sub>s</sub> (m)	<b>C</b> <sub>1</sub>	TIME OF CONC (MINS)	I <sub>1</sub> (mm/hr)	0.5Q <sub>1</sub> (m³/s)	JAR TEST SETTLE AFTER 15 MINUTES (mm)	FLOC SETTLE DEPTH D <sub>F</sub> (m)	MINIMUM A <sub>s</sub> (m²)	ACTUAL V <sub>s</sub> (m³)	SCOUR CHECK	SED STORAGE OPTION?	RUSLE SOIL LOSS (t/ha/yr)	CLEAN OUT FREQUENCY (MONTHS)	MIN SED. STORAGE VOLUME (m³)	APPROX. REQ SED STORAGE DEPTH (m)	CDILLWAY	APPROX. WIDTH AT SPILLWAY (m)		SETTLING VOLUME (m³)	TOTAL VOLUME AT SPILLWAY (m³)
SB-W1B	2.3	2	3	1.20	0.62	10	120	0.239	150	0.60	957	1148	NOTOK	30% VSET			344	0.4	60.8	20.3	1.6	1148	1493
SB-W1A	7.9	2	3	1.20	0.62	20	93	0.636	150	0.60	2544	3053	NOT OK	30% VSET			916	0.4	94.6	31.5	1.6	3053	3969
SB-W2A	7.5	2	3	1.20	0.62	20	93	0.604	150	0.60	2415	2898	NOT OK	30% VSET			870	0.4	92.3	30.8	1.6	2898	3768
SB-W2B	1	2	3	1.20	0.62	10	120	0.104	150	0.60	416	499	OK	30% VSET			150	0.4	42.5	14.2	1.6	499	649
SB-W2C	1.8	2	3	1.20	0.62	10	120	0.187	150	0.60	749	899	NOT OK	30% VSET			270	0.4	54.6	18.2	1.6	899	1168

## TABLE NOTES:

- 1. SEDIMENT BASINS HAVE BEEN SIZED BASED ON A SETTLEMENT RATE OF 150mm IN 15 MINS. DUE TO TIME CONSTRAINTS, NO JAR TESTS HAVE BEEN UNDERTAKEN. SETTLEMENT RATE IS TO BE VERIFIED PRIOR TO CONSTRUCTION OF SEDIMENT BASINS.
- 2. DUE TO EXCEEDANCE OF SCOUR CHECK, PERMEABLE BAFFLES TO BE INSTALLED AND BASIN PERFORMANCE MONITORED.
- 3. SB-W1A TO BE CONSTRUCTED DURING PHASE 1 WORKS AND WILL SATISFY PHASE 2 BASED ON CATCHMENT CHANGES (PER SB-W2A)

# TYPE B SEDIMENT BASIN SIZING SUMMARY

			FOREBAY					MAIN CELL			
BASIN ID	CATCHMENT (ha)	LENGTH (m)	WIDTH (m)	MINIMUM DEPTH (m)	APPROX. VOLUME TO SPILLWAY (m³)	LENGTH (m)	WIDTH (m)	TOTAL DEPTH (m)	SEDIMENT STORAGE DEPTH (m)	FREE WATER DEPTH (m)	SETTLING ZONE DEPTH (m)
SB-W1B	2.3	6.2	22.3	1.0	1,493	62.3	22.3	2.1	0.4	N/A	1.2
SB-W1A	7.9	9.6	33.5	2.0	3,969	96.1	33.5	2.1	0.4	N/A	1.2
SB-W2A	7.5	9.4	32.8	3.0	3,768	93.8	32.8	2.1	0.4	N/A	1.2
SB-W2B	1.0	5.0	16.2	4.0	649	44.0	16.2	2.1	0.4	N/A	1.2
SB-W2C	1.8	5.6	20.2	5.0	1,168	56.1	20.2	2.1	0.4	N/A	1.2

# SEDIMENT BASIN SPILLWAY SUMMARY

									W	EIR					CHUTE					DISSI	PATER	
BASIN ID	CATCH AREA (HA)	ARI	$C_{ARI}$	TIME OF CONC (MINS)	I <sub>ARI</sub>	FLOW - Q (m³/s)	BASE WIDTH	SIDE SLOPE 1 (1 in x)	U/S WATER LEVEL (m)	FREEBOAR D (m)	MIN. HEIGHT SPILLWAY TO TOB (m)	TOP WIDTH (m)	LONG. SLOPE (m/m)	ROCK SIZE - D <sub>50</sub> (mm)	MANNING ROUGH COEFF		DEPTH OF FLOW (m)		MEAN ROCK SIZE - D <sub>50</sub> (mm)	WIDTH 1 (m)	WIDTH 2 (m)	LENGTH (m)
SB-W1B	2.3	50	0.897	10	218	1.25	10	2	0.17	0.3	0.47	11.89	0.2	83	0.080	1.20	0.10	0.40	100	12.2	12.4	2.1
SB-W1A	7.9	50	0.897	20	168	3.31	20	2	0.21	0.3	0.51	22.04	0.2	99	0.082	1.33	0.12	0.42	100	22.3	22.5	2.1
SB-W2A	7.5	50	0.897	20	168	3.14	20	2	0.20	0.3	0.50	22.01	0.2	96	0.081	1.31	0.12	0.42	100	22.3	22.5	2.1
SB-W2B	1	50	0.897	10	218	0.54	10	2	0.10	0.3	0.40	11.60	0.2	48	0.073	0.92	0.06	0.36	100	12.0	12.0	1.3
SB-W2C	1.8	50	0.897	10	218	0.98	10	2	0.15	0.3	0.45	11.79	0.2	70	0.078	1.11	0.09	0.39	100	12.1	12.1	1.3

CPESC Details
Name: TERRY CLARK
CPESC ID: 6089
Signature:

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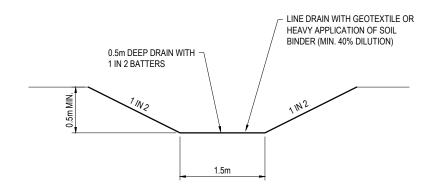


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e 2	Client DEFENCE HOUSING AUSTRALIA	
e 2 e 2	Project LEE POINT STAGE 2 (2CRU STAGE 1) LEE POINT ROAD, MUIRHEAD	Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPO
e 2	CITY OF DARWIN  Title EROSION AND SEDIMENT CONTROL	Datum   Date   Scale   Size
е	SEDIMENT BASIN CALCULATIONS AND SIZING	DC1603-2CRU-01-ES19



CATCH DRAIN - TYPICAL DETAIL CATCHMENT 1A & 2A

NOTE: CATCH DRAINS MUST NOT BE CONSTRUCTED IN DISPERSIVE SOILS, UNLESS ADEQUATE SOIL TREATMENT IS UNDERTAKEN OR IMPERMEABLE LINER USED

NOTE : IF ROCK CHECK DAMS ARE INSTALLED, DRAIN DIMENSIONS MUST BE INCREASED BY DEPTH OF ROCK CHECK DAM.

U.4m DEEP DRAIN WITH

1 IN 2 BATTERS

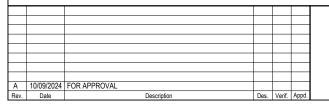
LINE DRAIN WITH GEOTEXTILE OR HEAVY APPLICATION OF SOIL BINDER (MIN. 40% DILUTION)

1.0m

CATCH DRAIN - TYPICAL DETAIL OTHER CATCHMENTS

N.T.S.

CPESC Details
Name: TERRY CLARK
CPESC ID: 6089
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Level 6, 93 Mitchell Street	
Darwin NT 0800	
Tel: 08 8942 8200	
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Drav	R June '22	Client	DEFENCE HOUSING AUSTRALIA					
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Verit AG	ied Date	Title	CITY OF DARWIN	Datum AHD	Date Aug' 2024	Scale As Shown	Size	A1
Аррі		Title	ERUSIUN AND SEDIMENT CONTROL	Drawing Number	03-2CRU			Revision
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