

Department of ENVIRONMENT, PARKS AND WATER SECURITY

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File reference DP19/0050

22 November 2021

The Chairman Development Consent Authority GPO Box 1680 DARWIN NT 0801

Dear Chairman

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

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

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

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

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

Yours sincerely

Bill Cumberland

Principal Land Management Officer

TO: Development Assessment Services (das.ntg@nt.gov.au)

CC: Consultant (<u>David.Bramley@cardno.com.au</u>) Development Coordination Branch (<u>DevelopmentAssessment.DEPWS@nt.gov.au</u>)

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

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

GENERAL

- ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MUST BE IMPLEMENTED AND A REVISED EROSION AND SEDIMENT CONTROL PLAN (ESCP) MUST BE SUBMITTED FOR APPROVAL IN THE EVENT THAT SITE CONDITIONS CHANGE SIGNIFICANTLY FROM THOSE CONSIDERED WITHIN THE ESCP
- 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 (ESCP)
- IN CIRCUMSTANCES WHERE IT IS CONSIDERED NECESSARY TO PREPARE AN AMENDED EROSION AND SEDIMENT CONTROL PLAN (ESCP), AND WHERE THE DELIVERY OF SUCH AN AMENDED ESCP IS NOT 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.
- 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 SHORT NOTICE REPAIRS
- 6. THE IMPLEMENTATION OF THE ESCP WILL BE REGULARLY MONITORED BY THE SUPERINTENDENT AND DEPWS.
- THE IMPLEMENTATION OF THE ESCP WILL BE REGULARLY MONTORED BY THE SUPERINTENDENT AND DEPWS. SHOULD IT BE DEEMED NECESSARY FROM MONITORING, THE CONTRACTOR SHALL INSTALL ADDITIONAL MEASURES TO ENSURE THE OBJECTIVES OF THIS ELEMENT ARE MET AND TO MINIMISE THE IMPACT OF CONSTRUCTION ACTIVITIES ON THE SURROUNDING ENVIRONMENT. THE SUPERINTENDENT MAY, AT THEIR DISCRETION, DIRECT THE CONTRACTOR TO CARRY OUT ADDITIONAL CONTROLS, AS AND WHEN REQUIRED. THE CONTRACTOR MAY ALSO AT THEIR DISCRETION OP 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 DETALS 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
- 18. 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 DARWIN.

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
- ROADWAYS 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 EXISTING TOPSOIL. INCLUDING: 3. ALL REASONABLE AND FRACTICABLE MEASURES MOST BE LAKEN TO OBTAIN THE MAXIMUM BENEFIT FROM EAST TWO TOPSOLL, INCLUDING. (WHERE THE PROPOSED AREA OF SOLL DISTURBANCE EXCEEDS 2500M2, AND THE TOPSOLL DOES NOT CONTAIN UNDESIRABLE WEED SEED THE TOP SOMM OF SOLL MUST BE STRIPPED AND STOCKPILED SEPARATELY FROM THE REMAINING TOPSOL, AND SPREAD AS A FINAL SURFACE SOLL.
- (ii) IN AREAS WHERE THE TOPSOIL CONTAINS UNDESIRABLE WEED SEED, THE AFFECTED SOIL MUST BE SUITABLY BURIED OR REMOVED FROM THE SITE. 24. STOCKPILES OF ERODIBLE MATERIAL THAT HAS THE POTENTIAL TO CAUSE ENVIRONMENTAL HARM IF DISPLACED, MUST BE
- (i)APPROPRIATELY PROTECTED FROM WIND, RAIN, CONCENTRATED SURFACE FLOW AND EXCESSIVE UP-SLOPE STORMWATER SURFACE FLOWS.
- LOCATED AT LEAST 2M FROM ANY HAZARDOUS AREA, RETAINED VEGETATION, OR CONCENTRATED DRAINAGE LINE.
 (iii) LOCATED UP-SLOPE OF AN APPROPRIATE SEDIMENT CONTROL SYSTEM.
- (iv) PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 28 DAYS.
- (v) PROVIDED FOR MORE THAN 20 DATS. STOCKPILED FOR MORE THAN 10 DAYS DURING THOSE MONTHS THAT HAVE A HIGH EROSION RISK.
- (vi) 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 THE POTENTIAL EXCEEDS 1500M2

SITE MANAGEMENT

F 29.10.21 REVISED FOR APPROVAL

FOR APPROVA

FOR APPROVA

E 23.04.21 FOR APPROVAL

B 13.11.20 FOR APPROVA

A 23.09.19 FOR REVIEW

D 15.03.21

C 02.12.20

- 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 THE SITE.
- 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
- BE UNDERTAKEN TO INALLOW STORMWATER TO PASS THROUGH THE SITE IN A CONTROLLED MANNER AND AT NON-EROSIVE FLOW VELOCITIES UP TO THE
- SPECIFIED DESIGN STORM DISCHARGE;
- (ii) MINIMISE SOIL EROSION RESULTING FROM RAIN, WATER FLOW AND/OR WIND
- (ii) MINIMISE ADVERSE EROSION RESOLTING TRAIN, WATER FLOW AND/OR WINDOF, INCLUDING SAFETY ISSUES;
 (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/ROPERTIES 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 IN:
- (ii) THE DEVELOPMENT APPROVAL CONDITION ISSUED BY DEVELOPMENT CONSENT AUTHORITY; AND (iii) THE APPROVED ESCP AND SUPPORTING DOCUMENTATION; OR
- (iii) THE LATEST VERSION OF BPESC IF THE STANDARDS AND SPECIFICATIONS ARE NOT CONTAINED IN THE APPROVED ESCP
- (III) THE LATEST VERSION OF BPESC IF THE STANDARUS AND SPECIFICATIONS ARE NOT CONTINUED IN THE APPROVED ESCP.
 31. ANY WORKS THAT MAY CAUSE SIGNIFICANT SOLD ISTURBANCE 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 AND INTENANCE REFOREMENT 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.

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- 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
- DUEQUATE WASTE COLLECTION DINS MUST BE PROVIDED ON-SITE AND MAINTAINED SUCH THAT POTENTIAL AND ACTUAL ENVIRONMENTAL HARM RESULTING FROM SUCH MATERIAL WASTE IS MINIMISED.
 CONCRETE WASTE AND CHEMICAL PRODUCTS, INCLUDING PETROLEUM AND OIL-BASED PRODUCTS, MUST BE PREVENTED FROM ENTERING AN INTERNAL WATER BODY, OR AN EXTERNAL DRAIN, STORMWATER SYSTEM, OR WATER BODY.
- 38. ALL FLAMMABLE AND COMBUSTIBLE LIQUIDS, INCLUDING ALL LIQUID CHEMICALS IF SUCH CHEMICALS COULD POTENTIALLY BE WASHED OR DISCHARGED FROM THE SITE, ARE STORED AND HANDLED ON-SITE IN ACCORDANCE WITH RELEVANT STANDARDS SUCH AS AS1940 THE STORAGE AND HANDLING OF FLAMMABLE AND COMBUSTIBLE LIQUIDS.
- TRENCHES NOT LOCATED WITHIN ROADWAYS MUST BE BACKFILLED, CAPPED WITH TOPSOIL, AND COMPACTED TO A LEVEL AT LEAST 75MM ABOVE ADJOINING GROUND LEVEL AND APPROPRIATELY STABILISED.
- 40. ALL STORMWATER, SEWER LINE AND OTHER SERVICE TRENCHES, NOT LOCATED WITHIN ROADWAYS, MUST BE MULCHED AND SEEDED, OTHER OTHERWISE APPROPRIATELY STABILISED WITHIN 7 DAYS AFTER BACKFILL.
- 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 GUIDELINES. 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 DISTURBANCE, MUST BE DIVERTED AROUND OR THROUGH THAT AREA IN A MANNER THAT MINIMISES SOIL EROSION AND THE CONTAMINATION OF THAT WATER FOR ALL DISCHARGES UP TO THE SPECIFIED DESIGN STORM DISCHARGE. 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. 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.
- THE CONSTRUCTION AND STABILISATION OF EARTH BATTERS STEEPER THAN 6:1 (H:V) MUST BE STAGED SUCH THAT NO MORE THAN 3 VERTICAL-METRES OF ANY BATTER IS EXPOSED TO RAINFALL AT ANY INSTANT.
 SYNTHETIC REINFORCED EROSION CONTROL MATS AND BLANKETS MUST NOT BE PLACED WITHIN, OR ADJACENT TO, RIPARIAN ZONES AND WATERCOURSES IF SUCH MATERIALS ARE LIKELY TO CAUSE ENVIRONMENTAL HARM TO WILDLIFE OR WILDLIFE HABITATS.
- 54 ALL TEMPORARY FARTH 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% GOVER WITHIN 20 DAYS IF BETWEEN 100 AND 285 THAN 60; MINIMUM 75% COVER WITHIN 30 DAYS IF BETWEEN 20 AND 205; AND MINIMUM 70% COVER WITHIN 20 AND 205; MINIMUM 75% COVER XINIMUM 75% COVER XINIMIM 75% COVER XI EROSION RISK RATINGS FOR SITES IN DARWIN
- ERUSION HISK RATINGS FOR SITES IN DARWIN. 56. IF IMMINENT HEAVY RAINFALL IS FORCAST PRIOR TO THE STABILISATION OF ANY CHANNEL WORKS AREAS, THEN THE CONTRACTOR SHOULD CONSIDER TEMPORARY STABILISATION OF THE EXPOSED SOIL AREAS WITH A HYDRAULICALLY APPLIED BLANKET SUITABLE FOR USE IN CONCENTRATED FLOW AREAS. FOR HIGH BANK AREAS ABOVE NORMAL STREAM FLOWS TEMPORARY COVERINGS SUCH AS EROSION CONTROL BLANKETS AND MATS (OR APPROVED EQUIVALENT) APPROPRIATELY ANCHORED TO MANUFACTURER'S SPECIFICATION MAY BE UTILISED.

DUST CONTROL

- ALL DUST CONTROL MEASURES MUST BE APPLIED AND MAINTAINED IN ACCORDANCE WITH APPROVED ESCP DRAWINGS AND CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN. 58. WIND EROSION IS NORMALLY CONTROLLED USING ONE OR MORE OF THE FOLLOWING TECHNIQUES:
- (i) REVEGETATION
- (ii) MAINTAINING MOIST SOIL CONDITIONS
- SURFACE ROUGHENING (iv) WIND BREAKS
- (v) HYDRAULICALLY APPLIED SEALANTS/SOIL BINDERS PLACED OVER SOIL SURFACES
- DUST PROBLEMS CAN ALSO BE REDUCED BY THESE ACTIVITIES:
 (i) LIMITING THE AREA OF SOIL DISTURBANCES AT ANY GIVEN TIME
- (ii) PROMPTLY REPLACING TOPSOIL
- (iii) PROGRAMMING WORKS TO MINIMISE THE LIFE OF SOIL STOCKPILES
- (iii) PROGRAMMING WORKS TO MINIMISE THE LIFE OF SOLLS FOCKPILES.
 (iv) TEMPORARY STABILISING (E.G. WITH VEGETATION OR MULCHING) OF LONG TERM STOCKPILES.
 (v) 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
- (iii) PROVIDING OR RETAINING VEGETATION WIND BREAKS. (x) 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
- 61. OPTIMUM BENEFIT MUST BE MADE OF EVERY OPPORTUNITY TO TRAP SEDIMENT WITHIN THE WORK SITE, AND AS CLOSE AS PRACTICABLE TO ITS SOURCE.
- 62. SEDIMENT TRAPS MUST BE INSTALLED AND OPERATED TO BOTH COLLECT AND RETAIN SEDIMENT
- 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
- 35. SUITABLE ALL-WEATHER MAINTENANCE ACCESS MUST BE PROVIDED TO ALL SEDIMENT CONTROL DEVICES
- 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.
- 68. CONSTRUCTED SEDIMENT AREA ACHIEVES 80% GROUND COVER ON ALL SOIL SURFACES.

- 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 DEFINITION TECHNIQUES OF COAGULANTS AND / OR FLOCCULANTS, SUCH AS PLACING 'FLOC CULANTS TO BE USED, INCLUDING THEIR ECOTOXICITY INFORMATION, ARE TO BE CONFIRMED BY THE CONTRACTOR, FOR THE CHARACTERISTICS OF VARIOUS FLOCCULANTIG AGENTS REFER TO TABLE 1 IN 'CHMICAL CONTRACTOR, FOR THE CHARACTERISTICS OF VARIOUS FLOCCULANTIG AGENTS REFER TO TABLE 1 IN 'CHMICAL CONTROL 'APPENDING B' FACT SHEET BY IECA, OBTAINABLE FROM THE IECA WEBSITE UNDER THE BEST PRACTICE EROSION AND SEDIMENT CONTROL 'APPENDING B' APPLICATION OR THE SECTION. FOR DETAILS ON THE SOIL JAR TESTING PROCEDURE, REFER TO SECTION SOFT HE FARCTOR FOR THE CHARACTER STORAGE TO AND SEDIMENT CONTROL 'APPENDING B' APPLICATION AGENTS REFER TO TABLE 1 IN 'CHMICAL CONTROL 'APPENDING B' APPLICATION AGENTS REFER TO TABLE 1 IN 'CHMICAL CONTROL 'APPENDING B' APPLICATION AGENTS REFER TO TABLE 1 IN 'CONTROL 'APPENDING B' AFPLICATION ADD THE ICA WEBSITE UNDER THE BEST PRACTICE EROSION AND SEDIMENT CONTROL 'APPENDING B' AFPLICATION ADD THE ICA WEBSITE UNDER THE BEST PRACTICE EROSION AND SEDIMENT CONTROL 'APPENDING B' AFPLICATION ADD THE SOIL JAR TESTING PROCEDURE, REFER TO SECTION S OF THE FACT SHEET MENTIONED ABOVE
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	Drawn OAR	Date June '20	
Cardno	Checked DMB	Date June '20	Project MUIRHEAD NOR
	Designed OAR	Date June '20	LEE POINT ROA
ardno (NT) Pty Ltd ABN 78 078 713 934	Verified AGO	Date June '20	
Level 6, 93 Mitchell Street Darwin NT 0800 Tel: 08 8942 8200 Fax: 08 8942 8211 Web: www.cardno.com.au	Approved Carlo de Berl -	PE3C Date	GENERAL NOTE

DEWATERING

SITE REHABILITATION

ANAI YSIS

SITE MONITORING

SITE MAINTENANCE

OR TEMPORARY SOIL BINDERS.

EROSION OR ENVIRONMENTAL HARM

VERY LOW LOW

MODERATE

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EXTREME

MEASURES:

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

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

TE TELEMENTION TO A LL 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.

76. A MINIMUM 60% GROUND COVER MUST BE ACHIEVED ON ALL COMPLETED EARTHWORKS EXPOSED TO ACCELERATED SOIL EROSION WITHIN 30 DAYS DURING THOSE MONTHS WHEN THE EXPECTED RAINFALL IS LESS THAN 30mm; MINIMUM 70% COVER WITHIN 30 DAYS IF BETWEEN 30 AND 45mm; MINIMUM 70% COVER WITHIN 20 DAYS IF BETWEEN 45 AND 100mm; MINIMUM 75% COVER WITHIN 10 DAYS IF BETWEEN 100 AND 225mm; AND MINIMUM 80% COVER WITHIN 5 DAYS IF GREATER THAN 225mm. 77, NO COMPLETED FARTHWORKS 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.

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. 30. THE PH LEVEL (SOIL:WATER 1:5) OF TOPSOIL MUST BE ADEQUATE TO ENABLE ESTABLISHMENT AND GROWTH OF THE SPECIFIED VEGETATION. 81. SOIL AMELIORANTS MUST BE ADDED TO THE SOIL IN ACCORDANCE WITH THE APPROVED LANDSCAPE/REVEGETATION PLANS AND/OR SOIL

TEMPORARY SITE STABILISATION PROCEDURES MUST COMMENCE AT LEAST 30 DAYS PRIOR TO THE NOMINATED SITE SHUTDOWN DATE. AT LEAST 70% STABLE COVER OF ALL UNSTABLE AND/OR DISTURBED SOIL SURFACES MUST BE ACHIEVED PRIOR TO THE START OF THE SHUTDOWN PERIOD. THE STABILISATION WORKS MUST NOT RELLY UPON THE LONGEVITY OF NON-VEGETATED EROSION CONTROL BLANKETS.

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

A8. AT NOMINATED INSTREAM WATER MONITORING SITES, A MINIMUM OF 3 WATER SAMPLES MUST BE TAKEN AND ANALYSED, AND THE AVERAGE RESULT USED TO DETERMINE QUALITY.

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.

88. ALL EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING DRAINAGE CONTROL MEASURES, MUST BE MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES DURING THEIR OPERATIONAL LIVES.

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 RAINFALL; AND

(viii) WITHIN 18 HOURS OF A RAINFALL EVENT OF SUFFICIENT INTENSITY AND DURATION TO CAUSE RUNOFF ON-SITE).

(viii)Wit Hin 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 THAT WILL NOT CAUSE SAFETY AND PROPERTY FLOODING ISSUES SHALL BE EMPLOYED. SEDIMENT REMOVED FROM ROADWAYS MUST BE DISPOSED OF IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL EPOSION OF ENVIRONMENTAL HADM.

33. SEDIMENT REMOVED FROM SEDIMENT TRAPS AND PLACES OF SEDIMENT DEPOSITION MUST BE DISPOSED OF IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.

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 EARTH EMBANKMENTS.

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

ALTERNATIVE EROSION RISK BASED ON EXPECTED DAILY AND AVERAGE MONTHLY RAINFALL

EROSION RISK RATING EXPECTED 24-HOUR RAINFALL AVERAGE MONTHLY RAINFALL

0 to 2mm	0 to 30mm
2+ to 10mm	30+ to 45mm
10+ to 25mm	45+ to 100mm
25+ to 100mm	100+ to 225mm
> 100mm	> 225mm

97. EROSION AND SEDIMENT CONTROL TECHNIQUES AND ACTIONS THAT MAY BE UNDERTAKEN INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING

REVIEW THE CONDITION OF ALL EROSION, DRAINAGE AND SEDIMENT CONTROL DEVICES IMPLEMENTED ON SITE AND ENSURE THAT THESE MEASURES ARE IN AN EFFECTIVE OPERATIONAL CONDITION PRIOR TO THE EVENT. WORN, DAMAGED OR OTHERWISE DEFECTIVE MATERIALS AND COMPONENTS ARE TO BE REPAIRED OR REPLACED.

SEDIMENT CONTROL DEVICES WITH ACCUMULATED SEDIMENT VOLUMES IN EXCESS OF DESIGN CAPACITY SHOULD BE CLEANED OUT TO REINSTATE THE SETTLING AND STORAGE ZONE VOLUMES. MATERIALS REMOVED MUST BE DISPOSED OF IN A MANNER APPROVED BY THE CONSENT AUTHORITY THAT DOES NOT CAUSE POLLUTION.

COVERING EXPOSED SOIL SURFACES STILL SUBJECT TO CONSTUCTION WITH TEMPORARY EROSION CONTROL TECHNIQUES SUCH AS TEMPORARY EROSION CONTROL BLANKETS OR MATS, OR HYDRAULICALLY APPLIED BLANKETS. THE CONTRACTOR SHOULD CONSIDER RETAINING A STOCKPILE OF EROSION CONTROL MATERIALS ON SITE TO ENSURE MEASURES ARE READILY AVAILABLE AS NEEDED.

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

OUSING AUSTRALIA						
TH DEVELOPMENT 9, MUIRHEAD	Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSES				RPOSES	
	Datum AHD	Date July 2020	Scale AS SHOWN	Size	A1	
	Drawing Number					
	DC1603-MHN-1A-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
MARK OUT INI ENCOUNTERED	TIAL LIMITS OF DISTURBAD CONTACT THE SUPERIN	NCE. IDENTIFY LOCATION OF D TENDENT PRIOR TO COMMENC	ISPERSIVE SOIL IF ANY. IF DI ING WORK.	SPERSIVE SOIL IS
Entry/Exit	Construction entry/exit – vibration grid	DWG. DC1603-MHN-1A-ES04 & DC1603-MHN-1A-ES10	Day One	When Entry/Exit is no longer required
SF	Sediment Fence with Woven Fabric	DWG. DC1603-MHN-1A-ES04 TO DC1603-MHN-1A-ES08	Prior to clearing of upslope areas	When site office and Stockpile is removed and when upslope site is suitably stabilised
Site Office	Site Office		Day One	End of Work
Stockpile	Stockpile/Waste/Parts Washdown Area		Day One	End of Work
CD	Parabolic Catch Drain without bank – Type A	DWG. DC1603-MHN-1A-ES04 TO DC1603-MHN-1A-ES08	Day One	After site stabilisation
мв	Mulch Filter Berms	DWG. DC1603-MHN-1A-ES04 TO DC1603-MHN-1A-ES08	As soon as construction activities allows. Install as required	After site stabilisation or house construction on each individual lots commenced
OG, SA, FD	On Grade, Sag, and Fabric Drop Inlet Protection	DWG. DC1603-MHN-1A-ES07 & DC1603-MHN-1A-ES08	As soon as inlets and pipes are constructed	After site stabilisation
GFS	1.2m Grass Filter Strip	DWG. DC1603-MHN-1A-ES07 & DC1603-MHN-1A-ES08	As soon as construction activities allows	NA
LS	Level Spreader	DWG. DC1603-MHN-1A-ES04 & DC1603-MHN-1A-ES06	As soon as construction activities allows. Downslope land condition to be determined on site	When next stage begins and LS is no longer required
FR	Fibre Roll	DWG. DC1603-MHN-1A-ES04 TO DC1603-MHN-1A-ES08	As soon as open drains are constructed	After site stabilisation
RCD	Rock Check Dam	DWG. DC1603-MHN-1A-ES04 TO DC1603-MHN-1A-ES08	As soon as construction activities allows. Provide geotextile splash pad and ensure 150mm is provided between centre and outer check dam wing.	After drain stabilisation
RFD	Rock Filter Dam	DWG. DC1603-MHN-1A-ES04, DC1603-MHN-1A-ES05 & DC1603-MHN-1A-ES06	Following installation of boundary sediment controls and prior to land clearing	After adequate stabilisation of contributing upslope catchment
Dust	Dust Suppression		At sufficient interval to suppress dust generation	N/A
Revegetation	Revegetation by native species grassing in any disturbed areas		As soon as practicable	N/A

MONTHLY AND ANNUAL RAINFALL EROSIVITY (R-FACTOR) VALUES

DARWIN	12.42S, 130.87E	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
	MEAN	4496	3512	2826	808	160	15	5	47	80	472	948	2355	15724
	% OF ANNUAL	29	22	18	5	1	0	0	0	1	3	6	15	
2 yr ARI	(MEDIAN)	3572	2781	2124	514	0	0	0	0	0	322	906	1775	11994
3 yr ARI	(66.6th PERCENTILE)	5624	3573	2754	978	120	0	0	0	0	466	1207	2542	
4 yr ARI	(75th PERCENTILE)	5961	4538	3720	1182	151	0	0	0	28	753	1325	3318	
5 yr ARI	(80th PERCENTILE)	6242	4735	4440	1553	202	0	0	0	112	933	1488	3667	
10 yr ARI	(90th PERCENTILE)	8517	6370	5988	1728	417	0	0	237	317	1262	1624	4968	



F	29.10.21	REVISED FOR APPROVAL	C dB	DMB		
E	23.04.21	FOR APPROVAL	C dB	DMB		
D	15.03.21	FOR APPROVAL	C dB	DMB		
С	02.12.20	FOR APPROVAL	OAR	DMB		
В	13.11.20	FOR APPROVAL	OAR	DMB		
Α	23.09.19	FOR REVIEW	OAR	DMB		
2ev	Date	Description	Des	Verif	Appd.	De



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Drawn Dat OAR June '2	e Clien	[®] DEFENCE HOUSING AUSTRALIA					
Checked Dat DMB June '2	Proje	ect MUIRHEAD NORTH DEVELOPMENT	Status	FOR AP			
Designed Dat OAR June '2	e)	LEE POINT ROAD, MUIRHEAD	NOT TO BE	USED FOR CO	ONSTRUCTION	N PURP	OSES
Verified Dat		CITY OF DARWIN	Datum	Date	Scale	Size	
AGO June '2) Title	EROSION AND SEDIMENT CONTROL	AHD	July 2020	AS SHOWN	A1	1
Approved		SEQUENCE TABLE AND R-FACTORS	Drawing Number			Rev	vision
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H DEVELOPMENT , MUIRHEAD	Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSES				
	Datum Date Scale Size				
DIMENT CONTROL	AHD	July 2020	AS SHOWN		A1
	Drawing Number Rev			Revision	
	DC1603-MHN-1A-ES03				F



















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

ΙΝΟΤΔΙ Ι ΔΤΙΟΝ

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. WE HOU OF INSTALLATION, CONTACT THE ENGINEER OF RESPONSIBLE DIVISITE OFFICER FOR ASSISTANCE. 2 (CLEAR THE LOCATION OF THE VIRATION GRID, REMOVING STUMPS, ROOTS AND OTHER VEGETATION TO PROVIDE A FIRM FOUNDATION SO THAT THE ROCK IS 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 WIDT 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.
 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.
 ENSURE THAT THE INSTALLATION OF THE VIBRATION GRID INCLUDES ADEQUATE SEDIMENT STORAGE VOLUME UNDER THE GRID. WHERE NECESSARY, NOTAUL OUTPOT EDUPLOTED FOR DEVICE.

INSTALL SUITABLE PRECAST SEDIMENT COLLECTION CHAMBERS. 5. PLACE A ROCK PAD/RAMP 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. 1. 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 WHEER PRACTICABLE, AND AS WIDE AS THE FULL WIDTH OF THE ENTRY OR EXIT AND AT LEAST 3M. THE ROCK RAMPS 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. 2 IE SAND SOIL SEDIMENT OR MUD IS TRACKED OR WASHED ONTO THE ADJACENT SEALED ROADWAY. THEN SUCH MATERIAL MUST BE PHYSICALLY REMOVED

 IF SAND, SOL, SEDIMENT OR MUD IS TRACKED OR WASHED ONTO THE ADJACENT SEALED ROADWAY, THEN SUCH MATERIAL MUST BE PHYSICALLY REMOVED, FIRST USING A SQUARE-EDGED SHOVEL, AND THEN A STIFF-BISTLED BROM, AND THEN BY A MECHANICAL VACUUM UNIT, IF AVAILABLE.
 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.
 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 STE, A NEW 100MM LAYER OF ROCK MUST BE ADDED AND/OR THE ROCK PAD MUST BE EXTENDED.
 SENSURE 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.

REMOVAL

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

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

INSTALLATION

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 REPORTY BOUNDARRES; (11) ALONG A LINE OF CONSTANT ELEVATION WHEREVER PRACTICAL; (111) ALONG A LINE OF CONSTANT ELEVATION WHEREVER PRACTICAL; (111) AL LEAST 2M FROM THE TOE OF ANY FILLING OPERATIONS THAT MAY RESULT IN SHIFTING SOLUFILL DAMAGING THE FENCE. 3. INSTALL RETURNS WITHIN THE FENCE AT MAXIMUM 20M INTERVALS IF THE FENCE IS INSTALLED ALONG THE CONTOUR, OR 5 TO 10M MAXIMUM SPACING (DEPENDING ON SLOPE) IF THE FENCE IS INSTALLED AT AN ANGLE TO THE CONTOUR. THE 'RETURNS' SHALL CONSIST OF EITHER: (U) SUNDER DECIDING AT LEAST 1 ANU THE IS OPE, OP.

(I) V-SHAPED SECTION ÉXTENDING AT LEAST 1.5M UP THE SLOPE; OR (II) 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 BY PASSING AROUND THE

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

5. ENSURE THE SEDIMENT FERCE IS INSTALLED IN A MANNER THAT AVOIDS THE CONCENTRATION OF FLOW ALLONG THE FERCE, AND THE UNDESIRABLE DISCHARGE OF WATER AROUND THE ENDS OF THE FERCE. 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 FERCE DO 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 FERCE.

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. HENSIRE THE MESH AND FABRIC IS ATTACHED TO THE UP-SLOPE SIDE OF THE STAKES WITH THE MESH EXTENDING AT LEAST 200MM INTO THE EXCAVATED TRENCH. HENSIRE THE MESH AND FABRIC IS ATTACHED TO THE UP-SLOPE SIDE OF THE STAKES WITH THE MESH EXTENDING AT LEAST 200MM INTO THE EXCAVATED TRENCH. HENSIRE THE MESH AND FABRIC IS ATTACHED TO THE UP-SLOPE SIDE OF THE STAKES WITH THE MESH EXTENDING AT LEAST 200MM INTO THE EXCAVATED TRENCH. HENSIRE THE MESH AND FABRIC IS ATTACHED TO THE UP-SLOPE SIDE OF THE STAKES WITH THE MESH EXTENDING AT LEAST 200MM INTO THE EXCAVATED TRENCH. HENSIRE 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: (UA TATACH EACH EAD TO THE STAKES WITH THE EARDIC COUNCE ADOLING ADOL THE ASSOCIATED STAKE ONE THON AND WITH THE TWO STAKES THE DIME ADDITION THE ASSOCIATED STAKE ONE THON. AND WITH THE TWO STAKES THE DIME ADDITION ADDITION

(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) OVERI AP THE FABRIC TO THE NEXT AD ACENT SUPPORT POST (METHOD 2)

(III) OVERLAP THE FABRIC TO THE NEXT ADJACENT SUPPORT POST (METHOD 2).
(III) SECURELY ATTACH THE FABRIC TO THE SUPPORT POST (METHOD 2).
11. SECURELY ATTACH THE FABRIC TO THE SUPPORT WIRE/MESH (IF ANY) AT A MAXIMUM SPACING OF 1M.
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 FOLLOWING. FENCE.

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 FIRMLY ON THE GROUND

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 TOKIN SECTIONS WITH A CONTINUOUS PIECE OF FARIC FROM POST TO FOST. 3. WHEN MAKING REPAIRS, ALWAYS RESTORET HE 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.

CATCH DRAINS - ROCK LINED

MATERIALS

ALL ROCK MUST BE HARD, WEATHER RESISTANT, AND DURABLE AGAINST DISINTEGRATION UNDER CONDITIONS TO BE MET IN HANDLING, PLACEMENT AND OPERATION.

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

FILTER CLOTH

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

INSTALLATION

I. 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 VISUALLY CHECKED FOR SIZE, ELONGATION, CRACKS, DETERIORATION AND OTHER VISIBLE. THE DEGREE AND PURPOSE FOR WHICH THE MATERIAL WILB 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 USENS TO BUILD THE BANK. 5. REMOVE ALL SOFT, YIELDING MATERIAL, REPLACE 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 DOCUMENT SUCH 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 DOCUMENT SUCH THE DRAIN TO THE LINES AND GRADES SHOWN ON THE ELEVATION OF THE DRAIN TO A DEPTH EQUAL TO THE SPECIFIED DEPTH OF DOCUMENT SUCH THE DRAIN TO THE LINES AND CRADES SHOWN ON THE APPROVED PLANS, OVER-CUT THE DRAIN TO A DEPTH EQUAL TO THE SPECIFIED DEPTH OF DOCUMENT SUCH THE DRAIN TO THE LINES AND CRADES SHOWN ON THE APPROVED PLANS, OVER-CUT THE DRAIN TO A DEPTH EQUAL TO THE SPECIFIED DEPTH OF DOCUMENT SUCH THE DRAIN TO THE LINES AND CRADES SHOWN ON THE APPROVED PLANS, OVER-CUT THE DRAIN TO A DEPTH EQUAL TO THE SPECIFIED DEPTH OF DOCUMENT SUCH THE DRAIN TO THE LINES AND CRADES SHOWN ON THE A ELEVATION OF THE DRAIN TO A DEPTH EQUAL TO THE SPECIFIED DEPTH OF DOCUMENT SUCH THE DEPTH OF THE DEPTH DOCUMENT TO DOCUMENT ACCENT THE DRAIN TO A DEPTH EQUAL TO THE SPECIFIED DOCUMENT OF THE DEPTH OF THE DRAIN TO DEPTH ACCHINES AND CRACE AND THE DOCUMENT ACCHINE THE

ROCK PLACEMENT SUCH THAT THE FINISHED TOP SURFACE WILL BE AT THE ELEVATION OF THE SURROUNDING LAND. PLACEMENT OF THE ROCK LINING MUST

NOCK PEACEMENT SUCH THAT THE DRAINS TOP WIDTH AND EXEMPTION WILE BE AT THE ELEVATION OF THE SURGOUNDING DAME. FLACEMENT OF THE ACK LINING WIST NOT REDUCE THE DRAINS TOP WIDTH AND EXEMPTIALS 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 IOCM EVERY TWO FOR EACH TWO FOR HANN READ (RADIENT. 8. ENSURE THE SIDES OF THE CUT DRAIN ARE NO STEEPER THAN A 1.51 (HV) SLOPE AND THE EMBANKMENT FILL SLOPES NO STEEPER THAN 2.1.

9. IF THE DRAIN IS CUT INTO A DISPERSIVE (SOLIC) SOLI, THEN PRIOR TO PLACING FLITER CLOTH, THE EXPOSED DISPERSIVE SOLI MUST BE COVERED WITH A MINIMUM 200MM THICK LAYER OF NON-DISPERSIVE SOLI, THEN PRIOR TO PLACING FLITER CLOTH OR ROCKS. 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 IS REQUIRED TO OVER THE AREA, OVERLAP THE EDGE OF EACH SHEET AT LEAST 300MM, AND SECURE ANCHOR PINS AT MINIMUM 1M SPACING ALONG 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 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

BEDDING MATERIALS. 15. ENSURE THE ROCK IS PLACED WITH A MINIMUM THICKNESS OF 1.5 TIMES THE NOMINAL ROCK SIZE (D50). 16. ENSURE THE ROCK IS PLACED WITH A MINIMUM THICKNESS OF 1.5 TIMES THE NOMINAL ROCK SIZE (D50). 17. ENSURE THE ROCK IS PLACED WITH A MINIMUM THICKNESS OF 1.5 TIMES THE NOMINAL ROCK SIZE (D50). 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 WOULD CONTACT. 18. ENSURE THE COMPLETED DRAIN HAS SUFFICIENT DEEP (AS SPECIFIED FOR THE TYPE OF DRAIN) MEASURED FROM THE DRAIN INVERT (AVERAGE SURFACE 19. ENSURE THE COMPLETED DRAIN HAS SUFFICIENT DEEP (AS SPECIFIED FOR THE TYPE OF DRAIN) MEASURED FROM THE DRAIN INVERT (AVERAGE SURFACE 19. 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.

UVIS OF THE TUPS OF NOUNS WOULD UONTAGE. 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 FREEBOARD

TREEDUARD. 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

AEDUCED. 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

I. 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

STABILISE THE AREA BY GRASSING OR AS SPECIFIED WITHIN THE APPROVED PLAN

MULCH FILTER BERMS

MATERIALS

* 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

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

A WAVE 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 S. ENSURE THE BERM IS INSTALLED IN A MANAGER THAT AVOIDS THE CONCENTRATION OF FLOW ALONG THE BERM, OR THE UNDESIRABLE DISCHARGE OF WA AROUND THE EDRO FTHE BERM.
 ENSURE THE BERM HAS BEEN PLACED SUCH THAT PONDING UP-SLOPE OF THE BERM IS MAXIMISED.
 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.

7. WHERE SPECIFIED. TAKE APPROPRIATE STEPS TO VEGETATE THE BERM.

MAINTENANCE

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

1. DONING THE MAINTERVIEW EVENTS ON THE ADVISOR AT LEAST WEEKET AND AFTER ANY STORMART AND ANY STO

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REMOVAL (IF REQUIRED)

1. WHEN DISTURED AREAS UPSLOPE 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.

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. 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 FUNCTION

> NOTE INFOF FROM

^t MUIRHEAD NOR

LEE POINT ROAD

CITY OF DARWIN

FROSION AND S

DETAIL NOTES

SHEET 1 OF 2

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4.21	FOR APPROVAL	C dB	DMB			
3.21	FOR APPROVAL	C dB	DMB			
2.20	FOR APPROVAL	OAR	DMB		Defence Housing Australia	
1.20	FOR APPROVAL	OAR	DMB			
9.19	FOR REVIEW	OAR	DMB			
ate	Description	Des.	Verif.	Appd.	Development Permit: DP19/0050	

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FABRIC DROP INLET PROTECTION

MATERIALS

INSTALLATION

MAINTENANCE

REMOVAL

INSTALLATION

PLANTING.

THE TURF

AVOIDED

MAINTENANCE

3 WEEKS AFTER LAYING

FIBRE ROLLS MATERIALS

INSTALLATION

MINIMISE ELOW BYPASSING

ETHER END OF THE ROLL.

MAINTENANCE

REMOVAL

June 20

Date June 20

Date June 20 Date

June 20

Date

hecked DMB

AGO

OF THE TURF

GRASS FILTER STRIPS

* AGGREGATE: 15 TO 25MM CRUSHED ROCK

INAT ECHALD * 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

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 INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICIER FOR ASSISTANCE. 2. ENSURE THAT THE INSTALLATION OF THE SEDIMENT TRAP WILL NOT CAUSE UNDESIRABLE SAFETY OR FLODDING ISSUES. 3. WHERE POSSIBLE, EXCAVATE A 200X200MM TRENOH AROUND THE INLET STRUCTURE. 4. SPACE STAKES EVENLY AROUND THE PERIMETER OF THE STORMWATER INLET AT A MAXIMUM 11M SPACING, AND SECURELY DRIVE THEM INTO THE GROUND. 5. WHERE MOESSARY, 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 SAFETY HAZARD, INCLUDING UNDESIRABLE FLOODING OF AN ADJACENT PROPERTY OR ROADWAY. MHEREVER SOLUTION DUE DEILUTION WEIR SCHUL DE CAUSE AS SAFETY HAZARD, INCLUDING UNDESIRABLE FLOODING OF AN ADJACENT PROPERTY OR ROADWAY. MHEREVER SOLUTION WEIR SCHUL WEIR CAUSE AS AFETY HAZARD, INCLUDING UNDESIRABLE FLOODING OF AN ADJACENT PROPERTY OR ROADWAY.

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

IF A SPILL-THROUGH WEIR IS NOT INSTALLED, THEN FRAME THE TOP OF THE STAKES WITH HORIZONTAL CROSS MEMBERS.
 SCUT FABRIC FROM A CONTINUOUS ROLL TO ELININATE JOINTS.
 PLACE THE BOTTOM 300MM OF FABRIC IN THE EXCAVATED TRENCH.
 SEQURELY FASTEN THE FABRIC TO THE STAKES AND CROSS MEMBERS. AT THE FABRIC JOINT, OVERLAP THE FABRIC TO THE NEXT STAKE.
 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.
 WHERE REQUIRED, INSTALL A FLOW CONTROL BUND TO MAINTAIN THE SPECIFIED POOL DEPTH AND CONTROL THE MOVEMENT OF WATER.
 TAVE AN LAPCESSARD WEARINGET THE STARD THE STOREMENT DISK CALLED POOL DEPTH AND CONTROL 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

1 INSPECT THE SEDIMENT TRAP AFTER FACH RUNOFF-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.

INS TALLA HOW 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

3 REMOVE ALL OBJECTIONABLE MATERIAL FROM THE AREA TO BE TUREED. 4. ALL TURF SHOULD BE USED WITHIN 12-HOURS OF DELIVERY, OTHERWISE ENSURE THE TURF 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

IF THE TRET REVENTION OF ALL CONTROL TO THE TREE TREEST AND SOUTH AND ADDRESS AND ADDRESS

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 OF THE TOWN OF THE UP-SLOPE EDGE OF THE TURE THEN PLACE ADDITIONAL DIAGONAL TURE STRIPS ALTERNATIVELY USE

2. IF EXCESSIVE EXCESSIVE SUCCESSIVE SUCCESSIVE SUCCESSIVE THE UPSICE EXCESSIVE THE UPSICE ADDITIONAL DIAGONAL THR STRESS. ILLENNINUELT, USE SANDBAGS TO APPROPRIATE JOINERT RUNOFF 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 SOMM. MOWING SHOULD NOT BE ATTEMPTED UNTIL THE TURF IS FIRMLY ROOTED, USUALLY 2 TO UNIT OF A STRESS AND A STRESS AN

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

I. 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-VEGETATED OR NEWLY SEEDED SLOPES, THE ROLLS MUST BE PLACED ALONG THE CONTOUR. 3. IF PLACED ON OPEN OR LOOSE SOIL, ENSURE THE FIBER 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 FLOW BYPASSING. 5. WHEN PLACED ACROSS THE INVERT OF MINOR DRAINS, ENSURE THE SOCKS ARE PLACED SUCH THAT: (I) 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

EINER DRUG HIE AUCL. 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.

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RMATION ON DEVICES SHOWN ON THIS DRAWING SOURCED
I IECA(2008) BOOK 6 - STANDARD DRAWINGS.

TH DEVELOPMENT 9, MUIRHEAD	Status NOT TO BE U	N PUI	RPOSES					
	Datum	Date	Scale	Size				
	AHD	July 2020	AS SHOWN		A1			
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CHECK DAM SEDIMENT TRAP

MATERIALS

NOCK: 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 OTHER 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

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.
 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.
 CONSTRUCT EACH CHECK DAM TO THE DIMENSIONS AND PROFILE SHOWN WITHIN THE APPROVED PLAN.
 WHERE SPECIFIED, THE CHECK DAMS MUST BE CONSTRUCTED ON A SHEET OF GEOTEXTILE FABRIC USED AS A DOWNSTREAM SPLASH PAD.
 ZEACH CHECK DAM MUST BE EXTENDED UP THE CHANNEL BANK (WHERE PRACTICABLE) TO AN ELEVATION AT LEAST 150MM ABOVE THE CREST LEVEL OF THE DAM.

MAINTENANCE

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

1. INSPECT EACH CHECK DAM AND THE DRIINAGE CHANNEL AT LEAST WEEKLY AND AFTER RUNOFF-RODUCING RAINFALL. 2. CORRECT ALL DAMAGE IMMEDIATELY. IF SIGNIFICANT ERGOSION 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 SOLL 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 SOLL EROSION OCCURS EITHER UNDER OR AROUND THE CHECK DAMS, THEN SEEK EXPERT ADVICE ON AN ALTERNATIVE TREATMENT MEASURE. 6. DE SILT GENINENT TO AN IF UNE SCHWENTS 147 THE OFENER THE UNDER OR AROUND THE CHECK DAMS, THEN SEEK EXPERT ADVICE ON AN ALTERNATIVE TREATMENT MEASURE.

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.

REMOVAL

1. WHEN CONSTRUCTION WORK WITHIN THE DRAINAGE AREA ABOVE THE CHECK DAMS HAS BEEN COMPLETED AND DISTURBED AREAS SUFFICIENTLY 1. WHEN CONSTRUCTION WORK WITHIN THE DAMINAUE ARAY BOVIE THE CHECK DAMIN THAN BEEN CONFLICTED AND DISTORDED AREA STABILISED TO RESTRAIN RESOLON, THE DAMIN MUST BE REMOVED, UNLESS THE SEDIMENT TRAPS ARE TO REMAIN AS A PERMANENT FEATURE. 2. REMOVE AND APPROPRIATELY 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

INCIDATION OF 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 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 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

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.

KERB INLET TRAP - ON-GRADE

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

METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON SITE OFFICER FOR ASSISTANCE. 2. ENSURE THAT THE INSTALLATION OF THE SEDIMENT TRAY PULL NOT CAUSE UNDESIRABLE 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 STUP SUPPERVISOR. 5. IF INECESSARY, INSTALL ADDITIONAL SEDIMENT TRAPS UP-SLOPE OF THE KERB INLET TO ADEQUATELY RETAIN THE EXPECTED QUANTITY OF SEDIMENT RUNOFF

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

MAINTENANCE

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

LEVEL SPREADERS INSTALLATION

INCITATION OF APPROVED 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 A THE ORLET SHE WITH A MANUAL SHOULD BE A MINIMUM OF 1200MM 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 IN A VERTICAL TRENCH. THE DOWNSTREAM EDGE SHOULD BE SECURELY HELD IN PLACE WITH CL 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.

MAINTENANCE

INSTRUCTIVE 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.

REMOVAL

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 PROPRIATELY DISPOSE OF ANY EXPOSED 3. REMOVE AND APPROPRIATELY DISPOSE OF ANY EXPOSED EGTEXTILE. 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-MHN-1A-ES06
8 ESS8 OR AS DIRECTED BY SUPERINTENDENT AFTER CONSULTATION WITH DEPWS.
4. EXISTING GROUND TO BE GRADED TO AVOID PONDING OF STORMWATER AND TOP SOILED 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 FROSION CONTROL. SLASH / MAINTAIN TO LOW HEIGH

FUTURE USE

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



OUSING AUSTRALIA								
TH DEVELOPMENT 9, MUIRHEAD	Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSES							
	Datum	Date	Scale	Size				
DIMENT CONTROL	AHD	July 2020	AS SHOWN		A1			
	Drawing Number							
	DC1603-MHN-1A-ES13							

FROM IECA(2008) BOOK 6 - STANDARD DRAWINGS

NOTE: INFORMATION ON DEVICES SHOWN ON THIS DRAWING SOURCED









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

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

SEDIMENT BASIN NOTES

- FOR IDEAL SIZED SEDIMENT BASIN THE NOTED MINIMUM AVERAGE SETTLING ZONE AREAS, LENGTHS AND WIDTHS ARE AT THE MID-DEPTH OF THE SETTLING ZONE. THE TOTAL BASIN DIMENSIONS NEED TO CONSIDER THE ADOPTED BATTERS SLOPES
- IDEAL SIZED SEDIMENT BASIN RECOMMENDED 3:1 EFFECTIVE LENGTH TO 2. WIDTH RATIO
- BASIN DEPTH MINIMUM ADOPTED FOR COMBINED SETTLING, FREE WATER AND 3. STORAGE VOLUME
- ADDITIONAL 0.5m MINIMUM REQUIRED ABOVE FOR SPILLWAY HEIGHT AND FREEBOARD (0.3m)
- FOR IDEAL SIZED SEDIMENT BASIN: 5.

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- 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 6. 30% OF SETTLING ZONE VOLUME. A MARKER SHALL BE PLACED WITHIN THE BASIN TO SHOW THE LEVEL AT WHICH THE SEDIMENT STORAGE ZONE DESIGN CAPACITY OCCURS
- FOR IDEAL SIZED SEDIMENT BASIN EMERGENCY SPILLWAY WEIR LENGTHS BASED ON CONVEYING THE 20 YEAR ARI PEAK DISCHARGE, FOR THE CONTRIBUTING CATCHMENT AREA, WITH A MAXIMUM DEPTH OVER THE WEIR OF 0 20m
- SEDIMENT BASIN CUT/FILL BATTERS TO BE CONSTRUCTED TO TIE IN WITH THE 8. EXISTING GROUND
- DEWATERING AND SPILLWAY OUTLET LOCATIONS ARE TO BE SPECIFIED ON 9 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 ELATTER IF IT IS CONSIDERED THAT THE 1(V) : 2(H) SLOPE IS NOT SUFFICIENTLY STABLE FOR THE SOILS ENCOUNTERED. APPROPRIATE BASIN BATTER SLOPES FOR THE ON SITE CONDITIONS ENCOUNTERED TO BE CONFIRMED BY GEOTECHNICAL ENGINEER.

- 11. 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 BASIN'S OPERATION.
- TO INCREASE THE EFFECTIVE TREATMENT OF THE SEDIMENT BASINS, REFER 13. TO SEDIMENT BASIN DESIGN, CONSTRUCTION, OPERATION AND MAINTENANCE GUIDELINES FOR DETAILS ON THE INCORPORATION OF ANCILLARY ITEMS SUCH AS INTERNAL BAFFLES.
- 14 REFER IECA 'BEST PRACTICE EROSION AND SEDIMENT CONTROL' GUIDELINES APPENDIX B - SEDIMENT BASIN DESIGN AND OPERATION (REV. JUNE 2018) FOR THE FOLLOWING:
 - EXAMPLE BASIN PERFORMANCE REPORT.
- SECTION B4 DEFAULT CONSTRUCTION SPECIFICATION. REFER ABOVE, TO IECA STD DWGS SD-SB-05 AND SD-SB-06, AND TO APPENDIX 15. 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.
- 2. IF THE pH OR TSS / TURBIDITY READINGS ARE OUTSIDE THE ALLOWABLE RELEASE CRITERIA, THEN FURTHER DOSING WITH GYPSUM, LIME OR OTHER APPROPRIATE APPROVED COAGULANT AND / OR FLOCCULANT IS REQUIRED UNTIL ACCEPTABLE LEVELS ARE REACHED
- WATER QUALITY MONITORING RESULTS ARE TO BE RETAINED ON SITE AND BE 3. MADE AVAILABLE FOR VIEWING UPON REQUEST
- PRIOR TO A RAINFALL EVENT, TO IMPROVE THE EFFICIENCY AND 4. EFFECTIVENESS OF THE FLOCCULATION PROCESS, IT IS RECOMMENDED THAT THE CONTRACTOR UNDERTAKE TRIAL TESTING TO DETERMINE APPROPRIATE FLOCCULANT AND / OR COAGULANT TYPES, AND DOSING RATES FOR THE ON-SITE SOILS. THIS GENERALLY INVOLVES CONDUCTING SOIL JAR TESTS OF THE ON-SITE SOILS. FOR THE CHARACTERISTICS OF VARIOUS FLOCCULATING AGENTS REFER TO TABLE 1 IN THE 'CHEMICAL COAGULANTS AND FLOCCULANTS' FACT SHEET BY IECA, OBTAINABLE FROM THE IECA WEBSITE UNDER THE BEST PRACTICE EROSION AND SEDIMENT CONTROL 'APPENDIX B REVISION JUNE 2018' SECTION. FOR DETAILS ON THE SOIL JAR TESTING PROCEDURE. REFER TO SECTION 5 OF THE FACT SHEET MENTIONED ABOVE.
- MANAGING THE FLOCCULATION OF THE SEDIMENT BASINS SHOULD BE UNDERTAKEN USING AUTOMATED DOSING SYSTEMS SUCH AS RAINFALL OR FLOW ACTIVATED FLOCKING SYSTEMS. THIS WILL ALLOW MAXIMUM TIME FOR FLOCCULATION TO OCCUR TO ASSIST IN REDUCING THE RUNOFE HOLDING TIMES, THE EFFECTIVENESS OF THE FLOCCULANT WILL DETERMINE THE ACTUAL RUNGEF HOLDING TIMES FOR EACH BASIN. THE DETAILED METHODS FOR FLOCCULATION AND TYPES OF FLOCCULANTS TO BE USED ARE TO BE CONFIRMED BY THE CONTRACTOR.
- WHERE APPROPRIATE THE CONTRACTOR MAY ALSO CONSIDER PASSIVE APPLICATION TECHNIQUES OF COAGULANTS AND / OR FLOCCULANTS, SUCH AS 'FLOC BLOCKS' OR SIMILAR PLACED WITHIN CATCH DRAINS, TO IMPROVE THE EFFICIENCY AND EFFECTIVENESS OF THE FLOCCULATION PROCESS.

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Description	Des.	Verif.	Appd.	Development Permit: DP19/0050

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) Cardno"	Checked DMB Designed OAR	Date June 20 Date June 20	Project MUIRHEAD NORTH DEVELOPMENT LEE POINT ROAD, MUIRHEAD	ţ	Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSE				
Cardno (NT) Pty Ltd ABN 78 078 713 934	Verified AGO	Date June 20			Datum AHD	Date July 2020	Scale Size Size Size Size Size Size State	^{ze} A1	
Level o, 93 Mitchell Street Darwin NT 0800 Tel: 08 8942 8200 Fax: 08 8942 8211 Web: www.cardno.com.au	Approved Carlo du Byf	CPESC Date	SEDIMENT BASIN DETAILS		Drawing Number DC1603-MHN-1A-ES23 A				
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TO ASSIST WITH THE PERFORMANCE OF THE SEDIMENT BASINS, IN-LINE PERMEABLE INTERNAL BAFFLES CAN BE INCORPORATED ACROSS THE BASIN SETTLING ZONE PERPENDICULAR TO THE DIRECTION OF FLOW.

THE SEDIMENT BASINS MUST OPERATE AS WET BASINS, WITH THE TREATED RUNOFF TO BE DECANTED FROM THE BASINS ONCE COMPLIANT WITH THE 'DISCHARGE PERFORMANCE CRITERIA'. AS SOON AS CONDITIONS ALLOW, THE WATER LEVEL WITHIN THE BASINS SHOULD BE LOWERED BACK DOWN TO AT LEAST THE TOP OF THE FREE WATER ZONE. THIS WILL ALLOW THE SETTLING ZONE VOLUME OF THE BASINS TO BE AVAILABLE FOR THE NEXT RAINFALL **EVENT**

IN THE EVENT THAT THE SEDIMENT BASIN CANNOT BE DE-WATERED TO RE-INSTATE THE SETTLING ZONE VOLUME PRIOR TO BEING SURCHARGED BY THE FOLLOWING RAINFALL EVENT, THE CONTRACTOR MUST RECORD THE OCCURRENCE OF SUCH AN EVENT AND REPORT IT TO THE LOCAL AUTHORITY. SUBJECT TO CONSULTATION WITH AND APPROVAL FROM THE LOCAL AUTHORITY, ALTERNATIVE OPERATING PROCEDURES FOR THE SEDIMENT BASINS MAY NEED TO BE ADOPTED IN ORDER TO ACHIEVE OPTIMUM ENVIRONMENTAL PROTECTION.