Stormwater Drainage, Erosion and Sediment Control Design Report Mulwala Solar Farm – Stage 1b

Job Number:	Revision:	Date of issue:
24437	C04	10 September 2025

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24437-RBG-XX-XX-RP-CV-00002

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Report Amendment Register

Issue Ref	Amended Section(s)	Issue/Amendment Details	Author(s)	Reviewer	Date
P01	ALL	Issued For Approval	Hazel Arikan	Chris Waite	27 June 2025
C01	ALL	Issued for Construction	Chris Waite	Chris Waite	16 July 2025
C02	ALL	Issued for Construction	Chris Waite	Chris Waite	22 August 2025
C03	ALL	Issued for Construction	Chris Waite	Chris Waite	28 August 2025
C04	ALL	Issued for Construction	Chris Waite	Chris Waite	10 September 2025

Contents

1. Introduction

1.1 Document Scope

This document forms the stormwater drainage and erosion and sediment control design and the documentation for the Mulwala Solar Farm Project – Stage 1b. It denotes Robert Bird Group's (RBG) understanding of the client's requirements in relation to the Civil Engineering discipline of the project and basis of design that includes parameters, criteria, considerations, assumptions, guidelines, and standards used in the design. This document references codes, standards, project specifications, consultant reports, and RBG design and analysis procedures.

This document aims to provide information on the design to satisfy planning conditions 23 and 24, which relate to sediment and erosion control measures. General stormwater drainage has been included in this report to ensure the overall characteristics of the site conditions are informed.

The Project is to be staged as per the staging letter provided to the Department of Planning, Housing and Infrastructure (**DPHI**) on 7th July 2025. Should the subsequent stages proceed in the future, this Management Plan will be updated and revised accordingly and will be submitted to DPHI for approval.

This Management Plan is only applicable to Stage 1b of the Project, as approved by DPHI on the 8th July 2025. This Management Plan applies to the following:

- Stage 1b: Delivery of equipment and minor site establishment works, including installation of internal roads. Construction of the northern portion of the solar farm. Operation of the Mulwala Solar Farm – Stage 1b.

Construction of the intersection and road upgrades as required under condition 4 of Schedule 3 of the development consent are the subject of a separate approval under section 138 of the Roads Act 1993 and are not the subject of this Management Plan. Therefore, management measures provided in relation to the road upgrades are submitted for reference only.

2. Design Requirements

2.1 Stormwater Drainage

2.1.1 Design Intent

The road and drainage design philosophy is to provide minimal disturbance where possible. The roads will be designed so that they are accessible in minor flood events (10% AEP) and will allow surface water to follow the natural site grades. To ensure that the roads do not obstruct the natural shedding of surface water from the site, and to maintain the existing overland drainage paths, it is proposed to provide ford crossings where necessary. Furthermore, the design aims to reduce cost of earthworks, concrete, and labour from the use of ford crossings where an alternative solution is viable.

2.1.2 Design Criteria

Ford crossing locations are proposed throughout the site to generally maintain the existing natural drainage paths. Multiple road ford crossings are located at identified sag points in the natural surface to reduce earthworks requirements and allow for surface water crossings. The ford crossings are proposed to be

constructed with rock lining to protect the unsealed roads from scouring, with the main access through the site.

The lengths of the Ford crossings required have been individually calculated to satisfy the safety conditions for overland flow for vehicles as per the AR&R guidelines. The two general Ford crossing length types are 50m and 60m. The Ford crossings are generally governed by the natural sag points, instead of defined catchments flowing from one designated point to another. A check of flows has been undertaken and is noted below. Water ponds and moves slowly through the very flat site (instead of faster-moving channels), and thus are in excess of the minimum safe requirements.

Table 1: Ford Crossing Sizing Calculations

Ford Crossing Name	Total Catchment Area (m^2)	Q (m3/s)	n	Standard Size			Total FC Width a (m)	Water Depth (m)	V (m/sec)
				d	x	b Required			
MC01-FC02	139,366	0.296	0.040	0.20	75.00	30.00	60.00	0.029	0.319
MC03-FC01	69,132	0.189	0.040	0.20	75.00	20.00	50.00	0.028	0.306
MC02-FC01	305,730	0.729	0.040	0.20	75.00	20.00	50.00	0.061	0.488
MC01-FC01	56,421	0.134	0.040	0.20	75.00	30.00	60.00	0.018	0.237

2.2 Erosion & Sediment Control

2.2.1 Design Intent

The proposed erosion and sediment control design is based on considering the flat terrain, existing vegetation cover, nature of disturbance by the proposed construction works and site soil condition as indicated in the Mulwala Solar Farm Preliminary Geotechnical Investigative Report.

The main design intent will be to divert overland flow around the site to mitigate erosion and sediment through the development into downstream sites. Erosion & sediment control devices, such as sediment fences, will be implemented within the site where necessary to intercept and retain sediment before the overland flow exits the site.

2.2.2 Design Assumptions

Bulk earthworks will be generally undertaken under sheet flow conditions, which will not concentrate stormwater flows and therefore minimise erosion potential on the majority of the site.

The contractor on site will coordinate general and local erosion and sediment control needs to suit the staging of their road construction, drainage construction, bulk earthworks, site regrading, PCU pad construction, and other works.

Compacted roadbase in accordance with the approved road design, where vehicles are required to traverse, must occur as soon as practical after completion of bulk earthworks to minimise soil exposure, therefore reducing the erosion potential.

2.2.3 Design Criteria

Sediment and Erosion measures are to be designed with consideration to:

- Best Practice Erosion & Sediment Control (BPESC), International Erosion Control Association (IECA) Australasia

- Managing Urban Stormwater-Soil and Construction Volumes 1 and 2, 4th Edition
- Council development approval requirements
- Environmental management plan and any other associated sub-plans
- Rehabilitation requirements
- Site clearing strategies and ground disturbance derived from construction work

2.2.4 Design

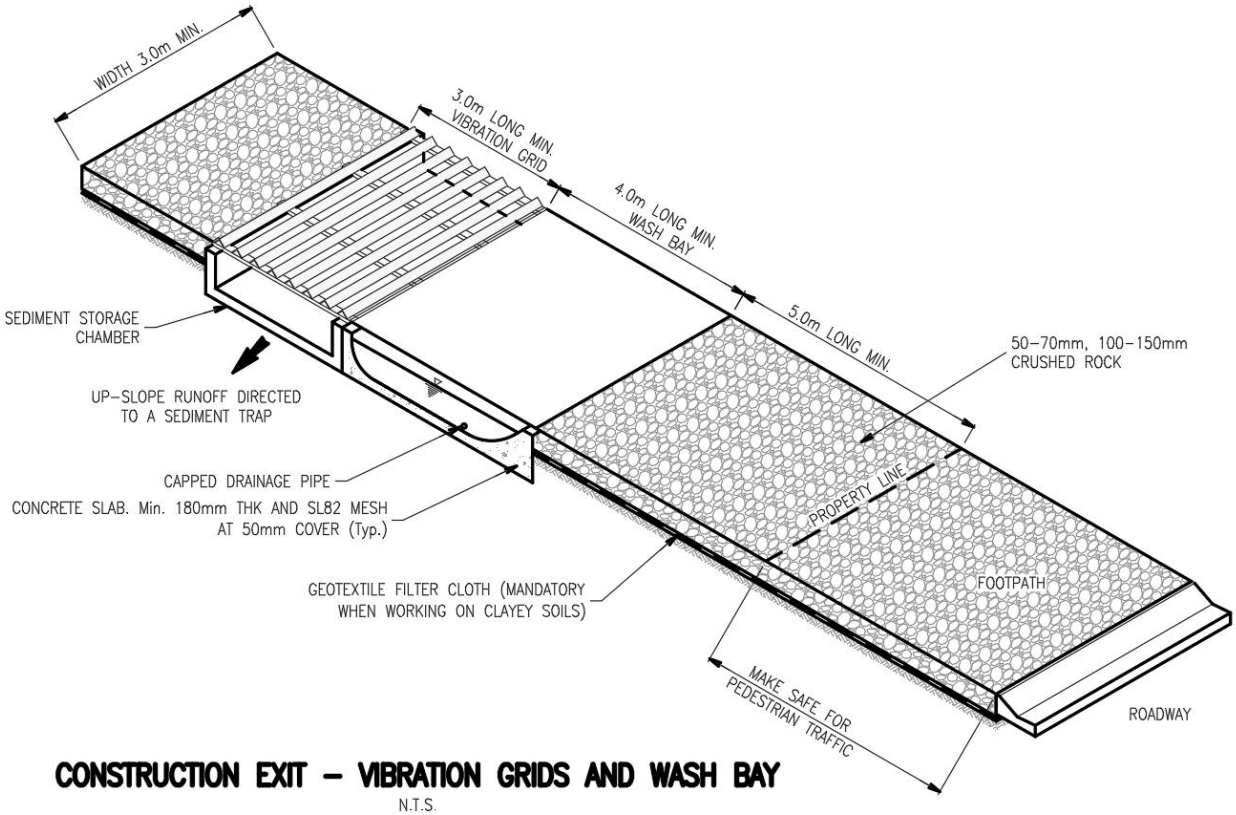
The nature of the site is defined as very flat, as such the extent of earthworks required for the site is noted to be minimal.

Specific Requirements:

Washdown Facility:

A washdown facility and vibration grid are proposed to be installed at the site entrance. This system is required to minimise any sediment transfer off the site/into the external roadways. It is currently proposed to place this inside the site gate and adjacent to the intersection with Lambruck Lane.

The final location is to be determined on site. This system is to be constructed to avoid the ability for workers from driving around the system.



CONSTRUCTION EXIT – VIBRATION GRIDS AND WASH BAY
N.T.S.

Refer to Civil Engineering sheet 24437-RBG-XX-XX-DR-CV-81101 for details.

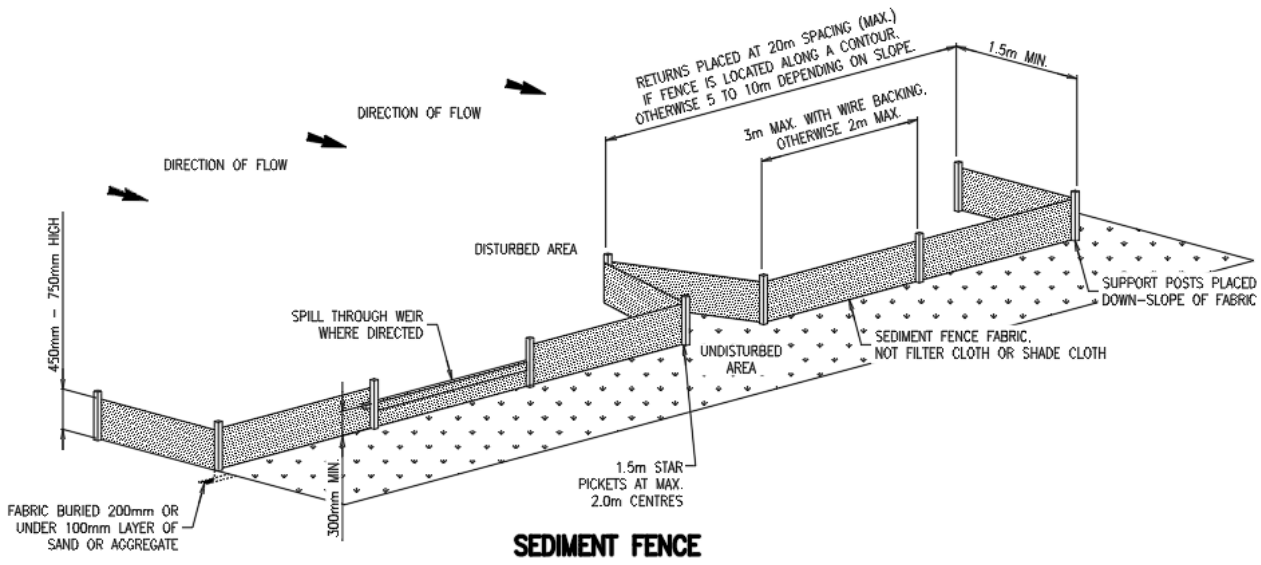
Sediment Fences:

Sediment Fences are proposed through the downstream boundary regions of the site where site disturbance could occur. This system is required to minimise any sediment transfer off the site/into the local environment.

Staging is a key consideration, and sediment fences are proposed to be shifted to suit the work lots as they are constructed.

It's proposed to cut a 200mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched. 1.5m long star pickets are proposed to be driven into the ground at 2.0m intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps. Fix self-supporting geotextile to the upslope side of the posts, ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory. Join sections of fabric at a support post with a 150mm overlap. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

The minor earthworks required for the site do not trigger the need for a sediment basin to be installed in accordance with the Landcom Blue Book design guide. The maximum area of soil disturbance is to be restricted to 2,500m^2 at any time. Each section is to be stabilised to prevent erosion prior to commencing any other sections.

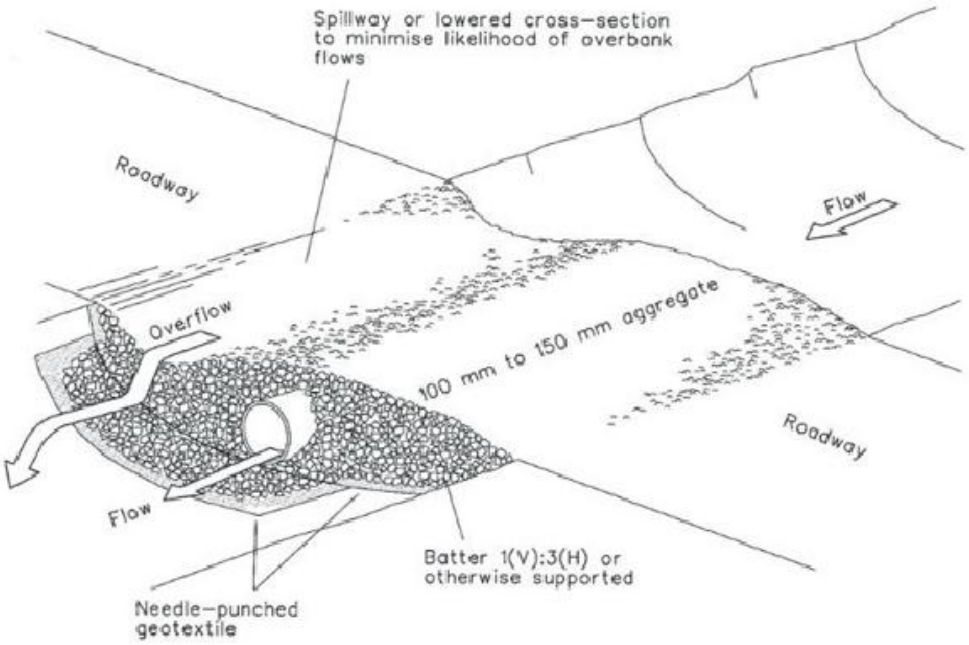


Refer to Civil Engineering sheet 24437-RBG-XX-XX-DR-CV-81101 for details.

Temporary Waterway Crossings:

Temporary Waterway Crossings are proposed in select regions to avoid erosion of roadways where site disturbance could occur. This system is required to minimise any sediment transfer off the site/into the local environment.

Aggregate and rock protection are proposed for the roadways, and then a small pipe is proposed to convey low flows without water buildup and sediment flow.



TEMPORARY WATER WAY CROSSING
N.T.S.

Refer to Civil Engineering sheet 24437-RBG-XX-XX-DR-CV-81101 for details and the sheet 24437-RBG-XX-XX-DR-CV-81001 for location details.

Construction Stage Specific Works:

An EMS has been prepared for the detailed on-site management of the works, and an extract is shown below for reference:

The following monitoring protocol is proposed to be implemented to ensure water quality remains at acceptable levels as per ANZECC 2000 Water Quality Guidelines:

- *Baseline surface water quality data to be established prior to construction at three separate points within the local catchment.*
- *A suitable interval of 3 to 6 months will be established in the EPC EMP to review water quality parameters as per ANZECC Guidelines during construction and between 2 to 3 years during operation.*
- *Should any threshold be surpassed for the trigger value of any water quality parameter over the baseline, the following action plan will be initiated:*
  - *Undertake additional round of sampling as soon as practical and analysis for the parameter concerned; if three consecutive results exceed the trigger level, an investigation of a contamination plume should be undertaken and implement appropriate actions to mitigate contamination.*
  - *Should the trigger value exceed contamination threshold under the ANZECC Guidelines, immediately report DCCEEW and organise further monitoring rounds to investigate possible causes.*
  - *If water quality measurements include concentrations outlined within the Protection of the Environment Operations (General) Regulation 2022 (Schedule 5), works must stop until the Secretary is satisfied that contamination is satisfactorily halted and remediated.*

The works will be monitored, staged, and constructed in accordance with the standards and methods noted above.

A biodiversity management plan (BMP) has been prepared and submitted as part of the planning approvals.

For consistency, the following BMP SMART objectives relating to sediment and erosion control have been also listed below. Refer to AEP BMP report for full details.

Table 2: AEP BMP Targets

Phase	Target	Measurement	Target	Frequency	Corrective Action
Prior to construction	Evidence of installation of sediment fencing around the north, south and western boundaries of the BMP Lands.	As built record and photographs provided	100% fencing installed	Before construction	Report non-compliance and stop works until evidence of installation
During construction	Evidence of continued sediment and erosion controls functioning correctly	Inspection & maintenance logs	All controls functioning, no significant fencing damage or sediment buildup	Monthly & as needed	Repair any defects within 48 hours of identification
During construction	Monitoring the eastern boundary and southern boundary for any evidence of sediment movement.	Inspection & maintenance logs	No evidence of silt mobilisation at eastern and southern boundary.	Monthly & after significant rainfall events (above 20mm of rainfall)	If sediment mobilisation is identified external to the site lands, install temporary silt fencing within 24 hours and seek stormwater engineer advice within 48 hours. Permanent solution to be enacted within 2 weeks (subject to any necessary approvals)

3. Appendix A - Planning Site Plan

INDICATIVE PROJECT DETAILS	
SECURE FENCED AREA	68.4ha
SECURITY FENCING LENGTH	3,997m
GATES	1
DC CAPACITY	TBC
AC CAPACITY	TBC
2-STRING TRACKER TABLES	22
3-STRING TRACKER TABLES	35
4-STRING TRACKER TABLES	420
PV PANELS	51,212
PITCH	7.7m

GENERAL LEGEND

- STAGE 1B PROJECT BOUNDARY - 68ha
- PROPERTY AREA - COMBINED 420ha
- CADASTRAL BOUNDARIES
- FENCING - SECURITY
- FENCING - SEDIMENT CONTROL
- AREAS SUBJECT TO INUNDATION - TO BE AVOIDED WITH 10M OFFSET
- AREAS OF ECOLOGICAL VALUE - TO BE AVOIDED WITH 10M OFFSET
- NO-GO ZONE - INCLUSIVE OF OFFSET REQUIREMENTS
- 10M ASSETT PROTECTION ZONE - TO BE MAINTAINED WITH 10M CLEARING
- 4M INTERNAL ACCESS ROADS - REFER TO ENGINEERING DRAWINGS
- EXTERNAL ACCESS UPGRADES - REFER TO ENGINEERING DRAWINGS
- EXTERNAL ACCESS ROADS - TO BE UTILISED
- WATER CROSSING - REFER TO ENGINEERING DRAWINGS
- SHAKER GRID & WASH - REFER TO ENGINEERING DRAWINGS
- INVERTERS - REFER TO ENGINEERING DRAWINGS
- EXISTING TRANSMISSION LINE TOWERS - TO BE AVOIDED
- EXISTING TRANSMISSION LINE - TO BE AVOIDED
- 5M VEGETATED SCREENING - REFER TO LANDSCAPE STRATEGY
- EXISTING NATIVE TREES (MARKED EXTENTS INCLUDE TPZ) - TO BE RETAINED AND PROTECTED
- EXISTING TREES - TO BE REMOVED AT STAGE 1
- GATE
- 45,0000L WATER TANK & HARDSTAND AREA
- LANDHOLDER - ASSOCIATED WITH THE PROJECT
- POTENTIAL ABORIGINAL ARTEFACT - TO BE SALVAGED PRIOR TO WORKS
- POTENTIAL ABORIGINAL ARTEFACT - TO BE AVOIDED DURING WORKS
- MET STATION - REFER TO ENGINEERING DRAWINGS
- SURFACE WATER FLOW - DIRECTION AS INDICATED

2-STRING TRACKER TABLES (22) - 56 PANELS PER TABLE

3-STRING TRACKER TABLES (35) - 84 PANELS PER TABLE

4-STRING TRACKER TABLES (420) - 112 PANELS PER TABLE

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URBIS

PROJECT

MULWALA SOLAR FARM
DRAWING NOT FOR CONSTRUCTION

255 SAVERNAKE ROAD

MULWALA, NEW SOUTH WALES, 2647

Olderfleet, Level 10, 477 Collins Street | Melbourne VIC 3000 AUSTRALIA | +61 3 8663 4888 | URBIS Ltd | ABN 50 105 256 228

ALL DRAWINGS ARE DESIGNED TO BE PRINTED AND READ IN COLOUR

IT IS THE CONTRACTORS' RESPONSIBILITY TO PRINT DRAWINGS IN COLOUR TO AVOID ANY POTENTIAL DISCREPANCIES IF DRAWINGS ARE PRINTED IN BLACK AND WHITE

REV	DESCRIPTION	DWN	CHK	DATE
H	FOR REVIEW	AF	PY	09.09.2025
G	FOR REVIEW	AF	PY	05.08.2025
F	FOR REVIEW	AF	PY	23.07.2025
E	FOR REVIEW	AF	PY	09.04.2025
D	FOR REVIEW	AF	PY	17.03.2025
C	FOR REVIEW	AF	PY	27.02.2025
B	FOR REVIEW	AF	PY	13.02.2025
A	FOR REVIEW	AF	SD	10.02.2025
-	FOR REVIEW	AF	-	04.02.2025

PROJECT DIRECTOR: CLARE BROWN

CLIENT
EUROPEAN ENERGY

DRAWING TITLE
SITE PLAN - STAGE 1B
.

ISSUE
FOR REVIEW

PROJECT NO.
P0055075

SCALE
1:3000 @ A1 1:16000 @ A3
30 60 90 120 150m

NORTH

DRAWING NO.
201-FI

REVISION
H

4. Appendix B Robert Bird Group Drawings

GENERAL NOTES

1. DO NOT SCALE FROM DRAWINGS.
2. ALL COORDINATES AND LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS ON PLANS AND SECTIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. ALL DIMENSIONS ON DETAILS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
5. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANTS DRAWINGS, SPECIFICATIONS AND WRITTEN INSTRUCTIONS ISSUED DURING THE DURATION OF THE WORKS. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT OR MANAGING CONTRACTOR PRIOR TO PROCEEDING.
6. THE CONTRACTOR SHALL COMPLY WITH ALL REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORKS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND APPROVALS FOR THE WORKS AND PAY ALL APPLICABLE FEES AS REQUIRED, INCLUDING BUT NOT LIMITED TO, SUBMISSION OF A SATISFACTORY SITE MANAGEMENT PLAN, CONSTRUCTION MANAGEMENT PLAN, TRAFFIC MANAGEMENT PLAN.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVING THE CONSTRUCTED WORKS COMPLY WITH THE DESIGN DRAWINGS AND SPECIFICATIONS, INCLUDING ENGAGEMENT OF A GEOTECHNICAL ENGINEER TO PROVIDE ADVICE AND CARRY OUT TESTING AS REQUIRED.
9. TITLE BOUNDARIES, EXISTING CONTOURS, LEVELS AND FEATURE SURVEY INFORMATION ARE REPRODUCED FROM SURVEY DRAWINGS PRODUCED BY OXLEY AND CO (REF. S8216 AND S8646). THE CONTRACTOR SHALL VERIFY RELEVANT SURVEY INFORMATION PRIOR TO CONSTRUCTION, PARTICULARLY WHERE PROPOSED WORKS TIE INTO EXISTING.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THE POSITION AND LEVEL OF PROPOSED WORKS IS IN ACCORDANCE WITH THE DESIGN AND SPECIFICATION. COORDINATES AND LEVELS ARE IN THE SAME TERMS AS THE LEVEL AND FEATURE SURVEY. THE CONTRACTOR SHALL VERIFY SETOUT PEGS AND BENCH MARK LEVELS AND ADVISE THE SUPERINTENDENT OF ANY DISCREPANCY PRIOR TO COMMENCING CONSTRUCTION AND WHEN USED FOR SETOUT OR AUDITING.
11. THE CONTRACTOR SHALL VERIFY THE EXISTING LEVELS WHERE NEW WORKS ARE TO JOIN INTO EXISTING AND NOTIFY THE SUPERINTENDENT IMMEDIATELY OF ANY DISCREPANCIES.
12. WHERE WORKS ARE TO BE COORDINATED WITH OTHERS OR MATCH WITH WORKS UNDERTAKEN BY OTHERS, THE CONTRACTOR SHALL CONFIRM THE POSITION OF OTHERS WORKS AS CONSTRUCTED CAN ACCOMMODATE THE PROPOSED WORKS AS DESIGNED. THE CONTRACTOR SHALL MONITOR WORKS BY OTHERS INSOFAR AS THEY AFFECT THE PROPOSED WORKS AND NOTIFY THE SUPERINTENDENT IMMEDIATELY OF ANY DISCREPANCIES.
13. WHERE NOT SPECIFICALLY STATED, ALL MATERIALS, CONSTRUCTION AND WORKMANSHIP TO BE IN ACCORDANCE WITH STANDARDS AUSTRALIA, LOCAL AUTHORITY AND STATE ROAD AUTHORITY SPECIFICATIONS, STANDARD DRAWINGS AND REQUIREMENTS. IN ALL CIRCUMSTANCES, THE STANDARD OF CONSTRUCTION FOR EACH ELEMENT SHALL BE FIT FOR THE PURPOSE TO WHICH THE ELEMENT WILL BE APPLIED.
14. EXISTING AND FINISHED SURFACE CONTOURS ARE SHOWN FOR GUIDANCE ONLY AND ARE NOT TO BE USED FOR SETOUT.
15. FOR GEOTECHNICAL INFORMATION REFER TO THE GEOTECHNICAL INVESTIGATION REPORTS PRODUCED BY SMEC (REF 30042113).
16. UPON COMPLETION, THE SITE SHALL BE LEFT IN A CLEAN AND TIDY CONDITION.
17. AT ALL TIMES THE CONTRACTOR SHALL ENSURE THE SITE IS MAINTAINED IN A SAFE AND STABLE WORKING CONDITION FOR ALL SITE WORKERS AND THE PUBLIC.
18. THE CONTRACTOR SHALL ENSURE NO EXISTING STRUCTURES ON OR ADJACENT TO THE SITE ARE UNDERMINED BY THE WORKS. THE CONTRACTOR SHALL ENGAGE A STRUCTURAL ENGINEER TO ASSESS THE IMPACT OF WORKS ON EXISTING STRUCTURES WHERE ANY UNCERTAINTY EXISTS.
19. THE CONTRACTOR SHALL EMPLOY THE USE OF SEDIMENT CONTROL DEVICES TO ENSURE DISCHARGE FROM THE SITE IS WITHIN LIMITS PRESCRIBED BY RELEVANT AUTHORITIES.
20. THE CONTRACTOR SHALL APPLY MEASURES AS NECESSARY TO PREVENT EROSION OF COMPLETED WORKS AND MAINTAIN AREAS OF COMPLETED WORKS UNTIL VEGETATION HAS BEEN ADEQUATELY ESTABLISHED.
21. VEGETATION MANAGEMENT FOR THE PROJECT IS NOT DOCUMENTED WITHIN CIVIL DRAWINGS. REFER TO MANAGEMENT PLANS PREPARED BY OTHERS.
22. DAMAGE TO ITEMS UNDER THE JURISDICTION OF LOCAL AUTHORITIES CAUSED BY CONSTRUCTION ACTIVITIES SHALL BE REINSTATED TO LOCAL AUTHORITY REQUIREMENTS UNDER THE SUPERVISION OF THE LOCAL AUTHORITY AT THE CONTRACTORS EXPENSE.

SITE LEVELS NOTES

1. GRADES ARE SHOWN FOR GUIDANCE ONLY. SET OUT FROM LEVELS ONLY.

DUCTS AND SERVICES NOTES

1. ALL DUCTS AND SERVICES UNDER PAVEMENTS TO HAVE MINIMUM 600MM COVER TO TOP OF CONDUIT.
2. BACKFILL TRENCHES WITH ROAD SUBBASE.
3. COMPACT BACKFILL IN 150MM COMPACTED LAYER THICKNESS TO 97% MODIFIED DRY DENSITY RATIO.
4. COMPACTION TESTING SHALL BE AT A RATE OF 1 TEST PER 75M OR PART THEREOF IN ALTERNATING BACKFILL LAYERS.
5. ABOVE REQUIREMENTS DO NOT APPLY TO CABLE TRENCHING REQUIREMENTS FOR SOLAR FARM. PLEASE REFER TO PROJECT REQUIREMENTS FOR THESE ITEMS.

EXISTING SERVICES NOTES

1. EXISTING SERVICES MAY NOT BE SHOWN ON THE DRAWINGS.
2. WHERE EXISTING SERVICES ARE SHOWN, NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.
3. EXISTING SERVICES SHOWN ARE INDICATIVE ONLY.
4. THE CONTRACTOR SHALL HAVE UNDERTAKEN THEIR OWN INVESTIGATIONS AS TO THE EXISTENCE AND LOCATION OF SERVICES AND THEIR POTENTIAL IMPACT ON THE WORKS PRIOR TO TENDERING FOR THE WORKS, INCLUDING, BUT NOT LIMITED TO, VISITING THE SITE AND DIAL BEFORE YOU DIG SEACRHES. WHERE THE CONTRACTOR BELIEVES EXISTING SERVICES MAY IMPACT THE WORKS THEY SHALL IDENTIFY POTENTIAL IMPACTS TO THE PRINCIPAL OR MANAGING CONTRACTOR PRIOR TO EXECUTION OF A CONTRACT OF SERVICES.
5. THE CONTRACTOR SHALL DETERMINE THE EXACT POSITION AND LEVEL OF EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION.
6. THE CONTRACTOR SHALL CONTACT THE RELEVANT SERVICE AUTHORITY PRIOR TO ANY WORKS WITHIN CLOSE PROXIMITY OF SERVICES AND COMPLY WITH THE RELEVANT AUTHORITIES REQUIREMENTS INCLUDING MINIMUM CLEARANCE FOR CONSTRUCTION MACHINERY AND COMMISSIONING OF AN ACCREDITED PLANT LOCATOR IF REQUIRED.
7. ANY DAMAGE TO EXISTING SERVICES IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL PROTECT ALL SERVICES AND SHALL RECTIFY ANY DAMAGE AT THEIR EXPENSE.
8. EXISTING SERVICE COVERS MUST BE RAISED OR LOWERED AS APPROPRIATE TO BE SET FLUSH WITH THE FINISHED CONSTRUCTED SURFACE, INCLUDING SLOPING THE COVER TO MATCH CROSSFALLS, UNLESS SPECIFIED OTHERWISE.

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATION OF UNDERGROUND SERVICES ARE INDICATIVE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL OR ANY EXISTING SERVICES ARE SHOWN.

ENVIRONMENTAL NOTES

1. CONSTRUCTION ACTIVITIES (INCLUDING THE ENTRY AND DEPARTURE OF HEAVY VEHICLES) MUST BE LIMITED TO HOURS AS APPROVED BY THE LOCAL AUTHORITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LIASING WITH THE LOCAL AUTHORITY REGARDING APPROVED WORKING HOURS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING NUISANCE RESULTING FROM DUST LEAVING THE SITE AFFECTING NEIGHBOURING PROPERTIES. NO VISIBLE DUST EMISSIONS ARE TO OCCUR AT THE SITE BOUNDARIES.
3. ANY CONTAMINATED MATERIALS OR SOILS DETECTED DURING CONSTRUCTION ACTIVITIES ARE TO BE HANDLED, STORED AND DISPOSED OF IN AN APPROVED MANNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A MANAGEMENT PLAN FOR THE HANDLING, STORING AND DISPOSING OF CONTAMINATED MATERIALS OR SOILS. THE MANAGEMENT PLAN IS TO BE APPROVED BY THE SUPERINTENDENT.
4. ALL MATERIAL WON ON-SITE THAT IS NOT SUITABLE FOR REUSE IS TO BE DISPOSED OF IN ACCORDANCE WITH THE LOCAL AUTHORITY REQUIREMENTS.
5. REMOVED VEGETATION IS TO BE MULCHED ON-SITE AND THE RESULTANT MULCH IS TO BE UTILISED IN REVEGETATION AND LANDSCAPING WORKS. BURNING OF WASTE AND VEGETATION MUST NOT BE CARRIED OUT ON THE SITE.
6. DURING ANY CLEARING WORKS AN ACCREDITED FAUNA SPOTTER IS TO BE PRESENT TO IDENTIFY AND RELOCATE WHERE NECESSARY ANY FAUNA CONSIDERED TO BE AT RISK BY LAND CLEARING ACTIVITIES. TREE HOLLOWS ARE TO BE EXAMINED FOR THE PRESENCE OF HOLLOW DEPENDENT FAUNA PRIOR TO THE COMMENCEMENT OF CLEARING OPERATIONS.
7. VEGETATION IDENTIFIED ON THE DRAWINGS, AS "TO BE RETAINED" IS TO BE VISIBLY SECTIONED OFF, AND CONSTRUCTION PLANT IS NOT TO ENTER THE SECTIONED OFF AREA.
8. PROPOSED SERVICES ADJACENT TO VEGETATION DENOTED AS "TO BE RETAINED" ARE TO BE TUNNEL BORED UNDER THE ROOTS OF THE VEGETATION DENOTED AS "TO BE RETAINED".
9. ANY VEGETATION CLEARED DURING CONSTRUCTION IS TO BE REPLACED WITH APPROPRIATE LOCAL VEGETATION ONCE COMPLETE.

BULK EARTHWORKS NOTES

1. THE BULK EARTHWORKS DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATIONS.
2. ALL FILLING SHALL BE DONE IN ACCORDANCE WITH AS 3798 LEVEL 1 SUPERVISION (FULL TIME INSPECTION AND TESTING). THE CONTRACTOR SHALL ENGAGE A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO UNDERTAKE TESTING. TESTING LOCATIONS AND FREQUENCY SHALL BE A MINIMUM OF THAT LISTED IN TABLE 8.1 OF AS3798. ON COMPLETION, A REPORT FROM THE GEOTECHNICAL ENGINEER SHALL BE PROVIDED TO THE SUPERINTENDENT DETAILING THE LOCATIONS (INCLUDING LAYER) AND RESULTS OF ALL INSPECTIONS, SAMPLING AND TESTING UNDERTAKEN AND A STATEMENT THAT EARTHWORKS HAVE BEEN UNDERTAKEN IN ACCORDANCE WITH THE SPECIFICATION.
3. REFER TO THE GEOTECHNICAL ENGINEERING REPORT SPECIFIED IN THE GENERAL NOTES INCLUDING REQUIREMENTS FOR REMOVAL OF UNSUITABLE MATERIAL FOR SUBGRADE PREPARATION AND SUITABILITY OF EXISTING MATERIALS FOR RE-USE AS FILL.
4. STRIP ONLY THE SITE AREAS TO BE OCCUPIED BY OR AFFECTED BY WORKS OF ALL TOPSOIL, VEGETATION AND DELETERIOUS MATTER TO A MINIMUM DEPTH OF 200mm. IF TOPSOIL IS TO BE RE-USED, AND FOR IMPORTED TOPSOIL, STOCKPILE TO HEIGHTS NOT EXCEEDING 1.5 METRES AND PROVIDE SEDIMENT & EROSION CONTROL.
5. THE CONTRACTOR IS TO NOTIFY ALL SERVICE AUTHORITIES AND ARRANGE FOR DISCONTINUANCE OF SERVICES OR SUPPLY AS APPLICABLE AND DO ALL CUTTING, DISCONNECTION OR SEALING OFF OF SERVICES AND DRAINS AS REQUIRED. SERVICES OR SUPPLY LINES THAT ARE TO BE RETAINED SHALL REMAIN UNDAMAGED AND GIVEN ALL NECESSARY PROTECTION.
6. EXISTING REDUNDANT SERVICES BELOW BUILDING SLABS ON-GROUND ARE TO BE FULLY GROUTED OR REMOVED AND BACKFILLED AS SPECIFIED FOR DUCTS AND SERVICES UNDER BUILDINGS UNLESS ALLOWED TO REMAIN BY THE STRUCTURAL ENGINEER.
7. THE CONTRACTOR SHALL ENSURE ALL EXISTING STRUCTURES FOOTINGS AND TREE ROOTS ARE PROTECTED FROM, AND UNAFFECTED BY, EXCAVATION. EXCAVATION MUST BE OUTSIDE THE ZONE OF INFLUENCE FOR EXISTING STRUCTURE FOOTINGS.
8. THE CONTRACTOR SHALL ENSURE THE EXCAVATION DOES NOT UNDERMINE ANY LAND OUTSIDE THE PROPERTY BOUNDARY. THE CONTRACTOR SHALL ENGAGE A GEOTECHNICAL ENGINEER TO ASSESS THE IMPACT OF WORKS ON ADJACENT LAND WHERE ANY UNCERTAINTY EXISTS.
9. USE OF EXPLOSIVES IS NOT PERMITTED.
10. POSSIBLE CONTAMINATION OF THIS SITE HAS NOT BEEN INVESTIGATED. SUSPECT SOILS EXPOSED DURING EXCAVATION AND GROUND WORKS SHALL BE REPORTED TO THE SUPERINTENDENT OR MANAGING CONTRACTOR.
11. THE CONTRACTOR SHALL CLASSIFY ALL WASTES LEAVING THE SITE IN ACCORDANCE WITH EPA REQUIREMENTS.
12. THE CONTRACTOR SHALL EMPLOY SEDIMENT POLLUTION CONTROL TECHNIQUES AS REQUIRED TO ENSURE DISCHARGE FROM THE SITE IS IN ACCORDANCE WITH AUHTORITY GUIDELINES.
13. MEASURES SHALL BE ADOPTED AS NECESSARY TO PREVENT EROSION.
14. THE BULK EXCAVATION SHALL BE CARRIED OUT TO THE LEVELS AND DEPTHS SHOWN ON THE DRAWINGS.
15. EXCAVATED BATTERS SHALL BE AT A SLOPE NO GREATER THAN THE LIMITS PRESCRIBED BY THE GEOTECHNICAL INVESTIGATION REPORT. LENGTHS SHOWN ARE BASED ON CURRENT GEOTECHNICAL ADVICE. DO NOT SCALE BATTER LENGTHS FROM DRAWINGS. AT ALL TIMES A STABLE AND SAFE BATTER MUST BE MAINTAINED AND IS THE RESPONSIBILITY OF THE CONTRACTOR. THE BUILDER SHALL ENGAGE A GEOTECHNICAL ENGINEER TO ASSESS AND ADVISE ON TEMPORARY BATTER CONDITIONS WHERE SIGNS OF INSTABILITY OR UNCERTAINTY ARE OBSERVED.
16. REMOVE OFF SITE ALL EXCESS EXCAVATED MATERIAL IN ACCORDANCE WITH AUTHORITY REQUIREMENTS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
17. AREAS SUBJECT TO FILLING SHALL BE STRIPPED, PREPARED AND COMPACTED TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT AND SPECIFICATIONS AND PROOF ROLLED TO IDENTIFY SOFT SPOTS TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER PRIOR TO FILLING.
18. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SLOPES, GRADES AND DRAINS IN THE EARTHWORKS AS REQUIRED TO ENSURE THE SITE IS WELL DRAINED AND COMPLETELY FREE OF STANDING WATER DURING CONSTRUCTION. SURFACE WATER SHALL NOT BE DIRECTED TOWARDS BUILDINGS AND OTHER SUCH STRUCTURES. THE CONTRACTOR SHALL PROVIDE PUMPS, TEMPORARY SUMPS AND DRAINS AND DO ALL BAILING ETC. AS MAY BE NECESSARY TO ENSURE THAT NO WATER IS PERMITTED TO REMAIN IN EARTHWORKS AREAS DURING CONSTRUCTION.
19. SOFT SPOTS ARE TO BE REMOVED AND BACKFILLED WITH MATERIAL APPROVED FOR USE BY THE GEOTECHNICAL ENGINEER.
20. MATERIAL WON FROM SITE IS TO BE ASSESSED AND APPROVED BY A QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO USE AS FILL.
21. REFER TO THE SPECIFICATIONS FOR IMPORTED FILL MATERIAL REQUIREMENTS. A QUALIFIED GEOTECHNICAL ENGINEER SHALL CONFIRM IMPORTED MATERIAL MEETS THE SPECIFICATION AND IS SUITABLE FOR USE AS FILL.
22. ALL FILL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS.
23. AREAS OUTSIDE THE EARTHWORKS ENVELOPE DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REINSTATED TO THEIR PRIOR CONDITION.
24. UPON COMPLETION, AN AS-CONSTRUCTED SURVEY OF THE FINAL EARTHWORKS PROFILE SHALL BE PROVIDED BY THE CONTRACTOR.
25. WHERE TREE ROOTS HAVE BEEN GRUBBED OUT, FORMER FARM DAMS, WATERCOURSES OR OTHER DEPRESIONS ARE TO BE BACKFILLED PRIOR TO PILE INSTALLATION THE CONTRACTOR IS TO ENSURE THAT FILL IS FREE OF ORGANICS OR OTHER DELETERIOUS MATERIAL WITH THE FOLLOWING SPECIFICATIONS:
    - MAXIMUM LIQUID LIMIT: 50%
    - MAXIMUM PLASTICITY INDEX: 25%
    - MINIMUM PLASTICITY INDEX: 10%
    - PI x %<0.425mm < 1200
    - POTENTIAL SWELL IN 4 DAY SOAKED CBR < 0.5% (4.5KG SURCHARGE)
    - LESS THAN 20% RETAINED ON THE 37.5mm SIEVE

    MATERIAL CONTAINING COARSE GRAVELS OR COBBLES OR ROCK MUST BE AVOIDED AS THESE MAY IMPEDE PILE DRIVING.
    FILL SHALL BE PLACED IN LOOSE LAYERS NOT EXCEEDING 300mm THICKNESS AND COMPACTED TO AT LEAST 98% STANDARD MAXIMUM DRY DENSITY AND A +/- 3% OPTIMUM MOISTURE CONTENT.
    REFER TO GEOTECHNICAL REPORTS FOR FURTHER INFORMATION.

PAVEMENTS NOTES

1. PAVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS.
2. EXISTING AND PROPOSED SERVICE COVERS MUST BE SET FLUSH WITH THE FINISHED CONSTRUCTED SURFACE, INCLUDING SLOPING THE COVER TO MATCH CROSSFALLS, UNLESS SPECIFIED OTHERWISE.
3. STRIP ONLY THE SITE AREAS TO BE OCCUPIED BY OR AFFECTED BY WORKS.
4. EXCAVATE TO THE LEVELS AND DEPTHS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL NOT BE ENTITLED TO A VARIATION FOR EXCESS EXCAVATION, REPLACEMENT MATERIAL, TESTING, AND EXTENSION OF TIME RESULTING FROM OVER EXCAVATION, INCLUDING EXCAVATION FOR ANCILLARY WORKS REQUIRED TO FACILITATE CONSTRUCTION OF THE DOCUMENTED WORKS SUCH AS TEMPORARY EXCAVATION, EROSION & SEDIMENT CONTROL, DEWATERING, TRENCHING FOR SERVICES, ETC. PAVEMENT SUBBASE SHALL BE USED FOR FILLING OVER EXCAVATED AREAS.
5. REMOVE OFF SITE ALL EXCESS EXCAVATED MATERIAL IN ACCORDANCE WITH AUTHORITY REQUIREMENTS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
6. CUT SUBGRADES SHALL BE PREPARED, COMPACTED AND TESTED TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT AND SPECIFICATIONS, AND PROOF ROLLED TO IDENTIFY SOFT SPOTS TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER PRIOR TO COVERING.
7. AREAS OF SOFT SPOTS ARE TO BE AGREED WITH THE SUPERINTENDENT OR MANAGING CONTRACTOR PRIOR TO REMOVAL TO ALLOW VARIATIONS TO BE QUANTIFIED. IF THE CONTRACTOR FAILS TO OBTAIN AGREEMENT PRIOR TO REMOVAL OF SOFT SPOTS THEY SHALL UNDERTAKE THE WORK AT THEIR OWN EXPENSE.
8. SOFT SPOTS ARE TO BE REMOVED AND BACKFILLED WITH MATERIAL APPROVED FOR USE BY THE GEOTECHNICAL ENGINEER.
9. MATERIAL WON FROM SITE IS TO BE ASSESSED AND APPROVED BY A QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO USE AS FILL.
10. REFER TO THE SPECIFICATIONS FOR IMPORTED FILL MATERIAL REQUIREMENTS. A QUALIFIED GEOTECHNICAL ENGINEER SHALL CONFIRM IMPORTED MATERIAL MEETS THE SPECIFICATION AND IS SUITABLE FOR USE AS FILL.
11. REFER TO THE GEOTECHNICAL REPORT AND SPECIFICATIONS FOR SUBGRADE PREPARATION REQUIREMENTS.
12. THE CONTRACTOR SHALL USE A STRING LINE TO CONFIRM SUBGRADE LEVELS HAVE BEEN ACHIEVED AND PROVIDE REPORTS TO THE SUPERINTENDENT.
13. AREAS OUTSIDE THE PAVEMENTS ENVELOPE DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REINSTATED TO THEIR PRIOR CONDITION.
14. UPON COMPLETION, AN AS-CONSTRUCTED SURVEY OF THE PAVEMENTS SHALL BE PROVIDED BY THE CONTRACTOR.

WORKS WITHIN THE JURISDICTION OF LOCAL AUTHORITIES

WORKS WITHIN THE JURISDICTION OF LOCAL AUTHORITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL REQUIREMENTS AND INSTRUCTIONS OF THE RELEVANT LOCAL AUTHORITY. THE CONTRACTOR MUST CONTACT THE RELEVANT AUTHORITY PRIOR TO COMMENCEMENT AND DURING THE WORKS TO ENSURE THE REQUIRED PERMITS AND PREPARATIONS ARE IN PLACE AND ALLOW INSPECTION OF THE WORKS AT POINTS REQUIRED BY THE RELEVANT AUTHORITY TO ENABLE SIGNOFF OF THE WORKS AT COMPLETION BY THE RELEVANT AUTHORITY. FAILURE TO DO SO MAY NECESSITATE REMOVAL AND RECONSTRUCTION OF ALL OR PART OF THE WORKS.

SETOUT NOTES

1. SURVEY DATUM
   HORIZONTAL – MAP GRID AUSTRALIA (MGA94/ZONE 55 – GROUND)

   VERTICAL – AUSTRALIAN HEIGHT DATUM (AHD)
   WINTON PM 37 RL 185.939m

SURVEY CONTROL MARKS

ID	mE	mN	RL (m)
TBM STARPICKET	421 362.490	5 961 608.962	170.01
TBM STARPICKET	422 012.199	5 961 641.284	172.29
TBM DUMPY	422 012.199	5 961 436.991	168.50
TBM DUMPY	421 870.463	5 961 971.084	169.43

EROSION AND SEDIMENT CONTROL NOTES

1. THESE NOTES SHALL BE READ IN CONJUNCTION WITH:
   A. GENERAL NOTES AND DISCLAIMERS FOR PROJECT
   B. ENVIRONMENTAL NOTES FOR THE PROJECT, AND
   C. BULK EARTHWORKS NOTES FOR THE PROJECT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A PLAN TO THE LOCAL AUTHORITY SPECIFYING THE STAGING OF THE VARIOUS EROSION AND SEDIMENT CONTROLS DURING THE DIFFERENT CONSTRUCTION PHASES.
3. EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED BY THE CONTRACTOR AS BEING REQUIRED FOR THE FIRST CONSTRUCTION PHASE ARE TO BE PLACED PRIOR TO ANY CLEARING AND GRUBBING, AND ANY OTHER EARTHWORKS ASSOCIATED WITH THE MAIN WORKS.
4. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO REMAIN OPERATIONAL UNTIL THE SITE IS ACCEPTED "ON MAINTENANCE" BY THE LOCAL AUTHORITY.
5. EROSION AND SEDIMENT CONTROL DEVICES MUST COMPLY WITH:
   A. LOCAL AUTHORITY GUIDELINES
   B. IECA 2008, BEST PRACTICE EROSION AND SEDIMENT CONTROL. INTERNATIONAL EROSION CONTROL ASSOCIATION (AUSTRALASIA), PICTON NSW.
6. UNDER NO CIRCUMSTANCES IS SILT TO BE ALLOWED TO LEAVE THE SITE.
7. AN ON-SITE REGISTER LOGGING RAINFALL DATES, WATER QUALITY ANALYSIS RESULTS, AND DATES OF RELEASE OF STORMWATER FROM THE SITE IS TO BE MAINTAINED. THIS REGISTER IS TO BE AVAILABLE ON-SITE FOR INSPECTION BY LOCAL AUTHORITY OFFICERS UPON REQUEST.
8. ALL EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE INSPECTED WITH A MINIMUM FREQUENCY OF WEEKLY, AND PRIOR TO ANY EXPECTED RAINFALL, AND AFTER ANY RAINFALL. ANY DAMAGE OR DEVICE FAILURE IS TO BE REPAIRED / MANAGED AS REQUIRED.
9. ANY EROSION AND SEDIMENT CONTROL DEVICES NOT PERFORMING ADEQUATELY ARE TO BE SUPPLEMENTED WITH ADDITIONAL MEASURES, THAT COMPLY WITH THE RELEVANT GUIDELINES. THE SUPERINTENDENT IS TO BE ADVISED OF THE DETAILS OF ANY ADDITIONAL MEASURES PROPOSED.
10. ALL EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE MAINTAINED IN WORKING ORDER AT ALL TIMES. ANY DAMAGE TO ANY DEVICE IS TO BE IMMEDIATELY RECTIFIED.
11. THE CONTRACTOR SHALL MINIMISE THE EXTENT OF AREAS DISTURBED BY EARTHWORKS AT ANY ONE TIME AS DIRECTED BY THE SUPERINTENDENT, AND SHALL RETAIN EXISTING VEGETATION COVER WHERE POSSIBLE.
12. ALL DISTURBED SURFACES ARE TO BE REHABILITATED AS SHOWN IN THE SPECIFICATIONS PRIOR TO ON MAINTENANCE. IF REHABILITATION METHODS ARE NOT SHOWN / SPECIFIED THEN DISTURBED AREAS ARE TO BE REHABILITATED WITH GRASS SEED APPLIED AT A RATE OF 30kg OF SEED PER HECTARE. ALL SEEDED AREAS ARE TO BE WATERED UNTIL 90% GROUND COVER IS ACHIEVED.
13. TOPSOIL STOCKPILES ARE TO BE NOT GREATER THAN 1.5m IN HEIGHT.
14. ALL STOCKPILES THAT ARE TO REMAIN FOR LONGER THAN 4 WEEKS ARE TO BE SEEDED WITH RYE, OATS OR MILLET SEEDS AT A RATE OF 20kg OF SEED PER HECTARE OF STOCKPILE. ALL STOCKPILES ARE TO BE LOCATED 2.0m CLEAR OF WATERCOURSE AND DRAINAGE WORKS.
15. PRIOR TO THE RELEASE OF ANY STORMWATER FROM ANY SOURCE OF ONSITE PONDED WATER, WATER QUALITY SAMPLES ARE TO BE TAKEN, AND ARE TO BE ANALYSED. THE QUALITY OF ANY STORMWATER RELEASED FROM THE SITE IS TO MEET THE FOLLOWING CRITERIA:
    A. TOTAL SUSPENDED SOLIDS < 50MG/L, AND
    B. TURBIDITY 20 N.T.U
    C. PH BETWEEN 6.5 AND 8.5
16. ANALYSIS RESULTS ARE TO BE PROVIDED TO THE SUPERINTENDENT AND THE RELEVANT LOCAL AUTHORITY OFFICER WITHIN 48 HOURS OF SAMPLING.
17. IF THE LEVEL OF TOTAL SUSPENDED SOLIDS IN STORMWATER RUNOFF EXCEEDS 50MG/L THEN THE STORMWATER RUNOFF HELD IN THE WATER STORAGE POND IS TO BE FLOCCULATED WITH A SUITABLE COLAGULANT OR FLOCULANT AT A RATE TO BE DETERMINED BY TEST RESULTS. ADDITIONAL WATER QUALITY SAMPLING IS TO BE UNDERTAKEN, AND THE STORMWATER RUNOFF HELD IN SEDIMENT BASINS, SEDIMENT TRAPS OR EXISTING DAMS IS NOT TO BE RELEASED UNTIL THE TOTAL SUSPENDED SOLIDS WATER QUALITY CRITERIA IS ACHIEVED.
18. ALL DISTURBED SURFACES ARE TO BE REHABILITATED AS SHOWN ON THE DRAWINGS / SPECIFIED IN THE SPECIFICATIONS. IF REHABILITATION METHODS ARE NOT SHOWN / SPECIFIED THEN DISTURBED AREAS ARE TO BE REHABILITATED WITH GRASS SEED APPLIED AT A RATE OF 30KG OF SEED PER HECTARE. ALL SEEDED AREAS ARE TO BE WATERED UNTIL 90% GROUND COVER IS ACHIEVED.
19. ALL DISTURBED SURFACES ARE TO BE TRACK ROLLED, PERPENDICULAR TO THE CONTOURS AT THE END OF EACH DAYS WORK AND PRIOR TO ANY EXPECTED RAINFALL EVENT TO MINIMISE EROSION.
20. PAVEMENT LAYERS ARE TO BE PLACED AS SOON AS PRACTICABLE AFTER THE ROADS HAVE BEEN BOXED OUT TO PREVENT EROSION.
21. EROSION CONTROLS ASSOCIATED WITH EARTHWORKS FOR THE SOLAR PANEL INSTALLATION WILL BE FINALISED ONCE THE EARTHWORKS DESIGN HAS BEEN CONFIRMED.

EROSION AND SEDIMENT CONTROL ADDITIONAL NOTES:

1. SUPERINTENDENT TO COORDINATE MINOR SEDIMENT MITIGATION MEASURES ASSOCIATED WITH THE STAGING OF THE INTERNAL ACCESS ROADS AND SITE GRADING.
2. DRAWING TO BE READ IN CONJUNCTION WITH DRAWING 19612-RBG-ZZ-XX-DR-CV-82-000.
3. SEDIMENT FENCE INTENT SHOWN INDICATIVELY, STAGING OF SEDIMENT FENCES FOR BULK EARTHWORKS TO BE CONFIRMED BY SITE ENGINEER.
4. THE MAXIMUM AREA OF SOIL DISTURBANCE IS TO BE RESTRICTED TO $2500m^2$ AT ANY TIME. EACH SECTION IS TO BE STABILISED TO PREVENT EROSION PRIOR TO COMMENCING ANY OTHER SECTIONS.
5. THIS ESC DESIGN WILL COMPLY WITH THE REQUIREMENTS OF IECA BEST PRACTICE GUIDELINES PROVIDED THAT THE CONTRACTOR STRICTLY COMPLIES WITH ALL REQUIREMENTS INCLUDED WITHIN THESE DRAWINGS AND ASSOCIATED REPORTS AND SPECIFICATIONS ESPECIALLY NOTE 4 ABOVE.

STORMWATER DRAINAGE NOTES

1. INSTALLATION AND CONSTRUCTION TO BE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS, AS 3500.3, LOCAL AUTHORITY STANDARDS AND STATE ROAD AUHTORITY STANDARDS AS APPROPRIATE UNLESS OTHERWISE DIRECTED.
2. THE TERM "DRAINAGE" REFERS TO THE DRAINAGE SYSTEM FOR THE SITE WHICH MAY INCLUDE OPEN CHANNELS, OVERLAND FLOW PATHS, DAMS, ETC.
3. THE CONTRACTOR SHALL CONFIRM THE LEVEL AND POSITION OF EXISTING DRAINS AND PITS BEING CONNECTED TO PRIOR TO STARTING CONSTRUCTION.
4. THE CONTRACTOR SHALL INVESTIGATE AND ACCURATELY LOCATE EXISTING DRAINAGE SYSTEMS THAT ARE REQUIRED TO BE RETAINED FOR THE SITE. SUCH EXISTING DRAINAGE SHALL REMAIN UNDAMAGED AND BE GIVEN ALL NECESSARY PROTECTION. ANY DAMAGE TO EXISTING DRAINAGE SHALL BE REPAIRED OR DIVERTED AT THE CONTRACTORS EXPENSE. THE CONTRACTOR SHALL REFER EXISTING DRAINAGE CLASHES WITH THE PROPOSED WORKS TO THE ENGINEER FOR CLARIFICATION.
5. PRIOR TO STARTING CONSTRUCTION THE CONTRACTOR MUST SET OUT THE DRAINAGE ALIGNMENT ON THE GROUND AND REPORT ON ANY OBSTRUCTIONS THAT MAY NECESSITATE AMENDMENTS TO THE PROPOSED ALIGNMENT.
6. THE CONTRACTOR SHALL USE EXISTING SERVICE LOCATION DETECTION METHODS ALONG THE ALIGNMENT OF ALL PROPOSED STORMWATER DRAINS TO IDENTIFY CROSSING SERVICES PRIOR TO CONSTRUCTION. CROSSING SERVICES SHALL BE MARKED ON THE GROUND.
7. THE CONTRACTOR SHALL INVESTIGATE AND CONFIRM EXISTING SERVICES CLEARANCES FROM EXACT LOCATIONS (E.G. POTHOLING) PRIOR TO CONSTRUCTION AND REPORT ANY CLASHES TO THE ENGINEER FOR CLARIFICATION.
8. PIPELAYING SHALL COMMENCE AT THE DOWNSTREAM END OF THE DRAINAGE SYSTEM AND PROCEED IN AN UPSTREAM DIRECTION. PIPE SOCKETS AND REBATES SHALL POINT UPSTREAM.
9. EXISTING OBSOLETE DRAINS AND PITS UNDER PROPOSED BUILDINGS AND PAVEMENTS ARE TO BE REMOVED TO WASTE AND BACKFILLED AS PER DRAINAGE TRENCH DETAIL UNLESS ALLOWED TO REMAIN BY THE ENGINEER.
10. THE CONTRACTOR SHALL NOT REMOVE ANY EXISTING OBSOLETE DRAINAGE SYSTEM UNTIL WORKS HAVE BEEN DONE TO CATER FOR DRAINAGE OF THE SITE.
11. PIPE GRADES ARE SHOWN FOR GUIDANCE ONLY AND/OR TO INFORM MINIMUM GRADE REQUIREMENTS. INVERT LEVELS SHALL BE USED FOR SETOUT AND TO DETERMINE EXACT GRADES FOR CONSTRUCTION.
12. HEADWALLS AND OUTLETS ARE TO BE PROPRIETARY PRECAST UNITS TO ACCOMMODATE AS 5100 LOADS.
13. DOWNPIPE CONNECTIONS TO BE THE SAME DIAMETER AS DOWNPIPES AND LAID AT A MINIMUM GRADE OF 1:100 WITH MINIMUM COVER AS SPECIFIED IN AUSTRALIAN STANDARDS.
14. WHERE DOWNPIPES DO NOT DISCHARGE DIRECTLY TO OPEN GRATES, PROVIDE INSPECTION OPENINGS ABOVE GROUND IN ALL DOWNPIPES TO ALLOW FOR MAINTENANCE ACCESS.
15. EXISTING AND PROPOSED COVERS MUST BE SET FLUSH WITH THE FINISHED CONSTRUCTED SURFACE, INCLUDING SLOPING THE COVER TO MATCH CROSSFALLS, UNLESS SPECIFIED OTHERWISE.
16. ALL INSPECTION OPENINGS TO BE BROUGHT TO THE SURFACE AND CAPPED TO APPROPRIATE LOAD CAPACITY FOR AREA OF USE.
17. ALL PITS ARE TO BE BENCHED WITH A STEEL TROWELLED FINISH TO PROVIDE SMOOTH FLOW THROUGH THE PIT.
18. ALLOW TO CLEAN AND FLUSH ALL EXISTING PITS AND PIPES FROM POINT OF NEW CONNECTION TO POINT OF DISCHARGE FROM THE SITE IN ADDITION TO FLUSHING ALL NEW DRAINAGE AT COMPLETION OF THE WORKS.
19. THE CONTRACTOR SHALL COMPLY WITH CONFINED SPACE REQUIREMENTS TO AS 2865.
20. THE CONTRACTOR SHALL PROVIDE AS-CONSTRUCTED DRAWINGS OF THE STORMWATER DRAINAGE NETWORK AT COMPLETION OF THE WORKS.
21. CONNECT ALL SUBSOIL DRAINS TO THE NEAREST AVAILABLE STORMWATER PIT THAT HAS AN INVERT LEVEL ABLE TO ACCOMMODATE THE SUBSOIL DRAIN AT MINIMUM GRADE.
22. FLUSHING POINTS ARE TO BE PROVIDED AT THE UPSTREAM END OF ALL SUBSOIL DRAINS WHERE ACCESS CANNOT BE OBTAINED VIA PITS. PROVIDE ADDITIONAL FLUSHING POINTS AT A SPACING NO GREATER THAN 50 METERS.

Rev	Revision Description	By	App	Date
C01	ISSUE FOR CONSTRUCTION	NR	CW	20.06.25

Rev	Revision Description	By	App	Date

Scale 1 2 3 4 5 6 7 8

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

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Client
EUROPEAN ENERGY

Title
GENERAL NOTES

Project
MULWALA SOLAR FARM

Date	Drawn	Design Checker
APRIL 2025	N.ROBINSON	A.WILSS
Scale at A1	Designer	Approved
NTS	N.ROBINSON	C.WAITE
		RBG Project No.

FOR CONSTRUCTION

Drawing Number: 24437-RBG-XX-XX-DR-CV-80001
Revision: C01

LEGEND

- EXISTING SITE BOUNDARY
- EXISTING EASEMENT
- EXISTING CONTOURS MAJOR (3.00)
- EXISTING CONTOURS MINOR (3.50)
- PROPOSED SITE BOUNDARY
- PROPOSED SEDIMENT FENCE
- TEMPORARY WATER CROSSING
- FLOW DIRECTION ARROW
- PROPOSED SHAKER GRID

NOTES

1. FOR DISTURBANCE AREAS OVER 2000m², STAGE WORKS TO BE DIVIDED INTO MAX. 2000m² SUBSTAGES.
2. SEDIMENT FENCES PROPOSED TO REUSED WITH CONSTRUCTION STAGES.
3. THE PROPOSED SEDIMENT FENCE, EARTH BANK, TEMPORARY CATCH DRAIN ARE INDICATIVE. IF ANY ISSUE OF CLASHES WITH TRACKER, PILES AND OTHERS TO BE RESOLVED LOCALLY AT SITE.

PROVIDE TEMPORARY WATER WAY CROSSING AT ALL FORD CROSSING LOCATION (TYP.).

PROVIDE SEDIMENT FENCE (TYP.).

STABILISED SITE ACCESS (SHAKER GRID) WITH WHEEL WASH FACILITIES FOR WORKS ON LAMBRUCK LANE.

SITE ACCESS GATE

MC01 FC02

MC03 FC01

MC02 FC01

MC01 FC01

LAMBRUCK LANE

SAVERNAKE ROAD

SCALE 1:3000

30 0 30 60 90 120m

Rev	Revision Description	By	App	Date
P01	FOR INFORMATION	HS	CW	15.11.24
A01	ISSUED FOR APPROVAL	HA	CW	17.06.25
C01	ISSUED FOR CONSTRUCTION	HA	CW	20.06.25
C02	ISSUED FOR CONSTRUCTION	CW	CW	10.08.25
C03	ISSUED FOR CONSTRUCTION	CW	CW	14.08.25
C04	ISSUED FOR CONSTRUCTION	CW	CW	22.08.25
C05	ISSUED FOR CONSTRUCTION	CW	CW	10.09.25

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Client: EUROPEAN ENERGY

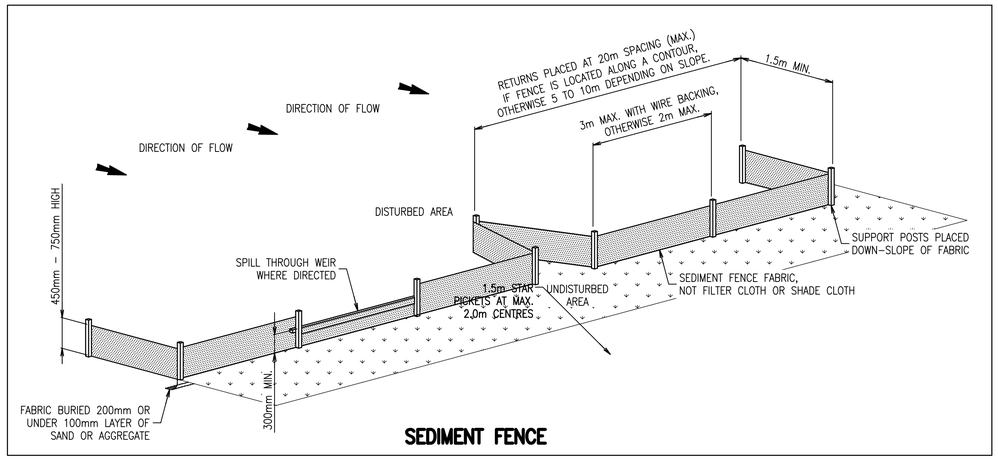
Title: EROSION AND SEDIMENT CONTROL PLAN

Project: MULWALA SOLAR FARM

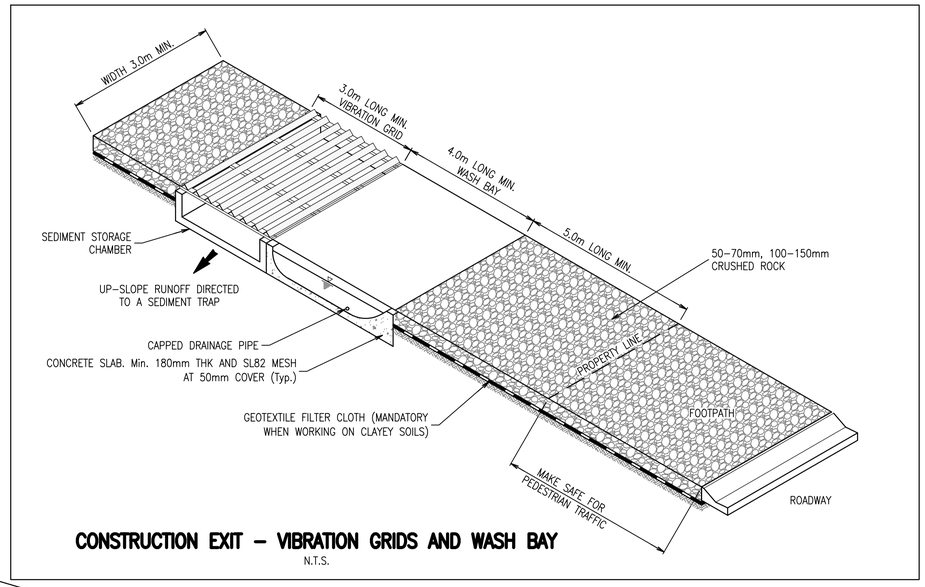
Date	Drawn	Design Checker
NOV 2024	N.ROBINSON	A.WILSS
Scale at A1	Designer	Approved
1:3000	N.ROBINSON	C.WAITE
		RBG Project No.

FOR CONSTRUCTION

Drawing Number	Revision
24437-RBG-XX-XX-DR-CV-81001	C05

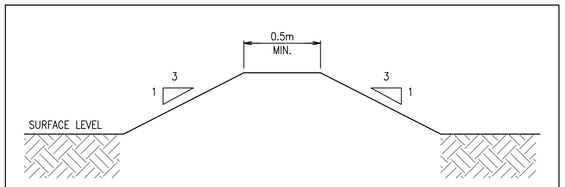


SEDIMENT FENCE



CONSTRUCTION EXIT – VIBRATION GRIDS AND WASH BAY

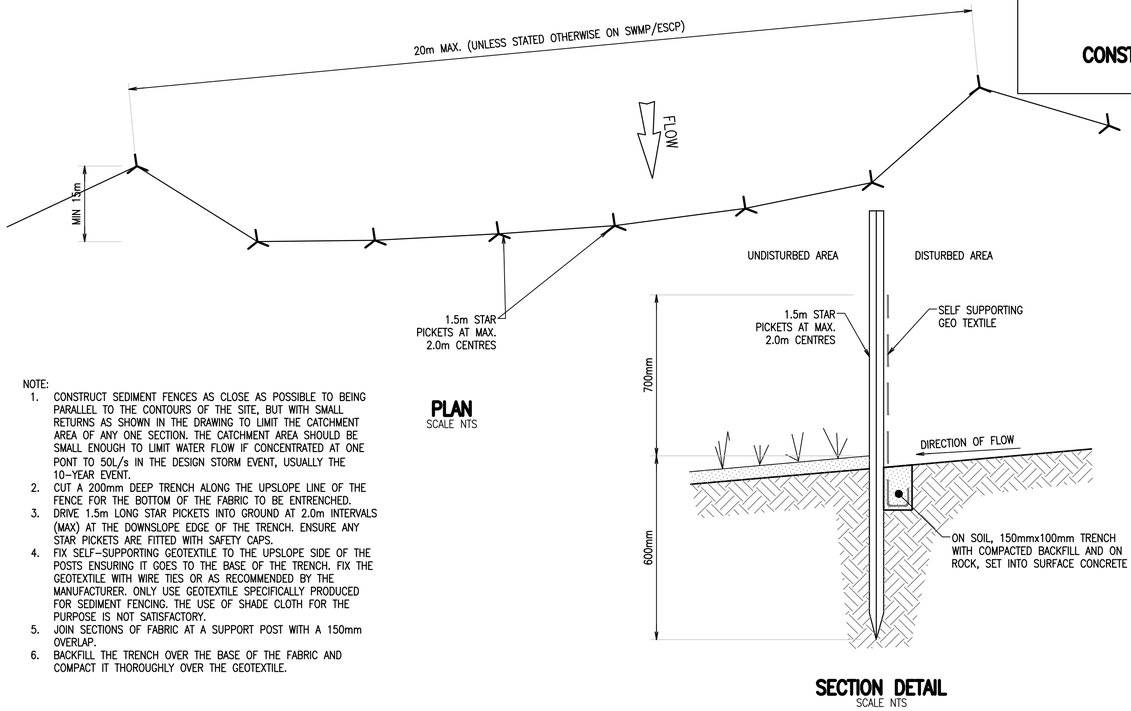
N.T.S.



NOTE:
DIMENSION TO BE CONFIRMED AT SITE CONSIDERING SIZE OF UPSTREAM CATCHMENT, SLOPE, STAGING OF WORKS AND VEGETATION COVER

TYPICAL DIVERSION BUND DETAIL

N.T.S.



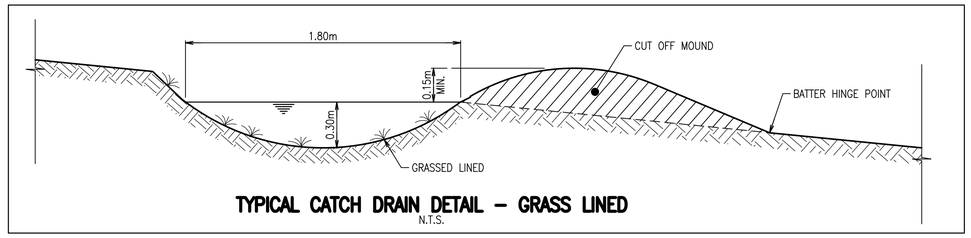
PLAN

SCALE NTS

SECTION DETAIL

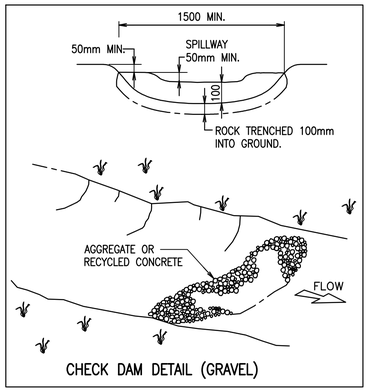
SCALE NTS

NOTE:
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50L/s IN THE DESIGN STORM EVENT, USUALLY THE 10–YEAR EVENT.
2. CUT A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO GROUND AT 2.0m INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF–SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THE PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

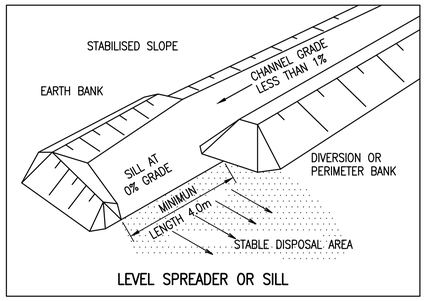


TYPICAL CATCH DRAIN DETAIL – GRASS LINED

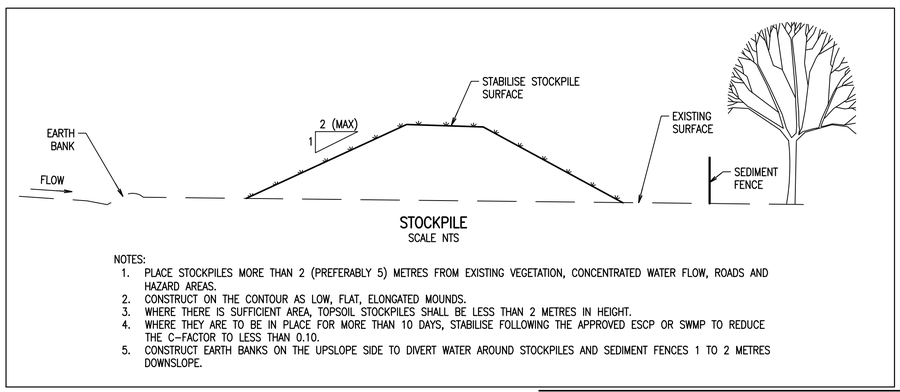
N.T.S.



CHECK DAM DETAIL (GRAVEL)



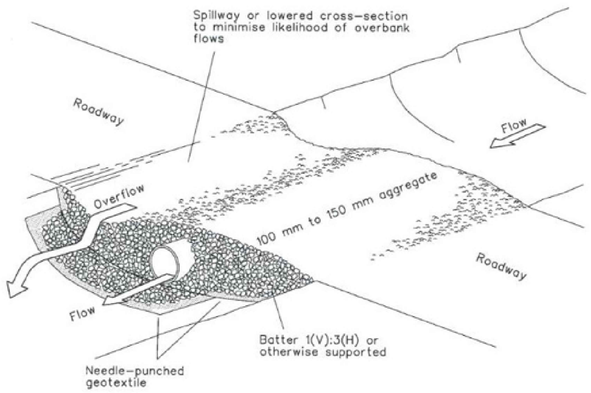
LEVEL SPREADER OR SILL



STOCKPILE

SCALE NTS

NOTES:
1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C–FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.



TEMPORARY WATER WAY CROSSING

N.T.S.

Rev	Revision Description	By	App	Date
P01	FOR INFORMATION	HS	CW	15.11.24
A01	ISSUED FOR APPROVAL	HA	CW	17.06.25
C01	ISSUED FOR CONSTRUCTION	HA	CW	20.06.25

Rev Revision Description By App Date

Scale 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

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Client
EUROPEAN ENERGY

Title
EROSION AND SEDIMENT CONTROL DETAILS

Project
MULWALA SOLAR FARM

Date	Drawn	Design Checker
NOV 2024	N.ROBINSON	A.WILSS
Scale at A1	Designer	Approved
NTS	N.ROBINSON	C.WAITE
		RBG Project No.

FOR CONSTRUCTION

Drawing Number	Revision
24437–RBG–XX–XX–DR–CV–81101	C01

CUT / FILL DEPTH		
DEPTH COLOUR	LOWER DEPTH	UPPER DEPTH
	−2.0m	−1.5m
	−1.5m	−1.0m
	−1.0m	−0.5m
	−0.5m	0.0m
	0.0m	0.5m
	0.5m	1.0m
	1.0m	1.5m
	1.5m	2.0m

ESTIMATED EARTHWORKS VOLUMES:

TOTAL CUT:	1415m³
TOTAL FILL:	2760m³
BALANCE EXCESS FILL OVER CUT:	1345m³

- EARTHWORKS VOLUMES CALCULATED FROM EXISTING SURFACE TO UNDERSIDE OF SUBGRADE SURFACE AND DOES NOT ACCOUNT FOR CLEARING, STRIPPING AND ROAD PAVEMENT VOLUMES.

SCALE 1:3000

30 0 30 60 90 120m

Rev	Revision Description	By	App	Date
P01	80% DESIGN ISSUE	NR	CW	28.03.25
C01	ISSUE FOR CONSTRUCTION	NR	CW	20.06.25
C02	ISSUE FOR CONSTRUCTION	CW	CW	22.08.25

Rev Revision Description By App Date

Scale 1 2 3 4 5 6 7 8

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Client
EUROPEAN ENERGY

Title
BULK EARTHWORKS LAYOUT PLAN

Project
MULWALA SOLAR FARM

Date	Drawn	Design Checker
APRIL 2025	N.ROBINSON	A.WILSS
Scale at A1	Designer	Approved
1:3000	N.ROBINSON	C.WAITE
		RBG Project No.

FOR CONSTRUCTION

Drawing Number	Revision
24437-RBG-XX-XX-DR-CV-82001	C02

LEGEND

- EXISTING SITE BOUNDARY
- EXISTING EASEMENT
- 3.00 EXISTING CONTOURS MAJOR
- 3.50 EXISTING CONTOURS MINOR
- PROPOSED SITE BOUNDARY

PCU ELEVATION

PCU No.	GROUND LEVEL	DESIGN RL	REMARKS
PCU01	126.14	126.44	
PCU02	125.91	126.21	
PCU03	126.14	126.44	
PCU04	125.97	126.52	FLOOD AFFECTED (0–0.05m)
PCU05	125.72	126.52	FLOOD AFFECTED (0.25m–0.3m)
PCU06	126.34	126.64	

SCALE 1:3000

30 0 30 60 90 120m

Rev	Revision Description	By	App	Date
P01	FOR INFORMATION	HS	CW	15.11.24
P02	80% DESIGN ISSUE	NR	CW	28.03.25
A01	ISSUED FOR APPROVAL	HA	CW	17.06.25
C01	ISSUED FOR CONSTRUCTION	HA	CW	20.06.25
C02	ISSUED FOR CONSTRUCTION	HA	CW	14.08.25
C03	ISSUED FOR CONSTRUCTION	CW	CW	22.08.25

Rev Revision Description By App Date

Scale 1 2 3 4 5 6 7 8

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Client
EUROPEAN ENERGY

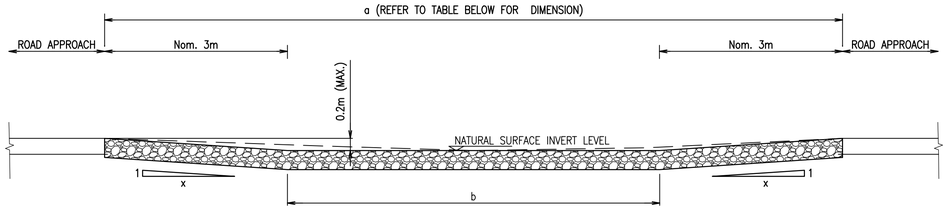
Title
GENERAL ARRANGMENT
OVERALL LAYOUT PLAN

Project
MULWALA SOLAR FARM

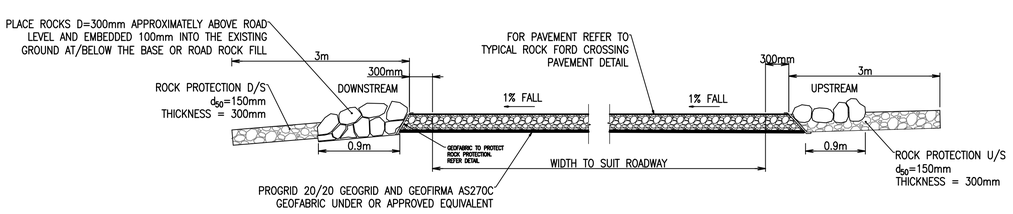
Date	Drawn	Design Checker
NOV 2024	N.ROBINSON	A.WILSS
Scale at A1	Designer	Approved
1:3000	N.ROBINSON	C.WAITE
		RBG Project No.

FOR CONSTRUCTION

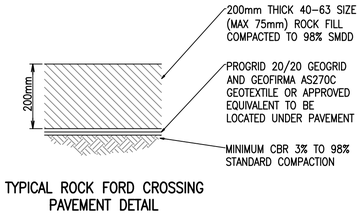
Drawing Number	Revision
24437-RBG-XX-XX-DR-CV-83000	C03



FORD CROSSING TYPICAL DETAIL
SCALE 1:50



FORD CROSSING TYPICAL SECTION



TYPICAL ROCK FORD CROSSING PAVEMENT DETAIL

SCALE 1:50

1 0 1 2m

SCALE 1:100

1 0 1 2 3 4m

Rev	Revision Description	By	App	Date
P01	FOR INFORMATION	HS	CW	15.11.24
P02	80% DESIGN ISSUE	NR	CW	28.03.25
A01	ISSUED FOR APPROVAL	HA	CW	17.06.25
C01	ISSUED FOR CONSTRUCTION	HA	CW	20.06.25

Rev	Revision Description	By	App	Date

Scale 1:1 1:2 1:3 1:4 1:5 1:6 1:7 1:8

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Client
EUROPEAN ENERGY

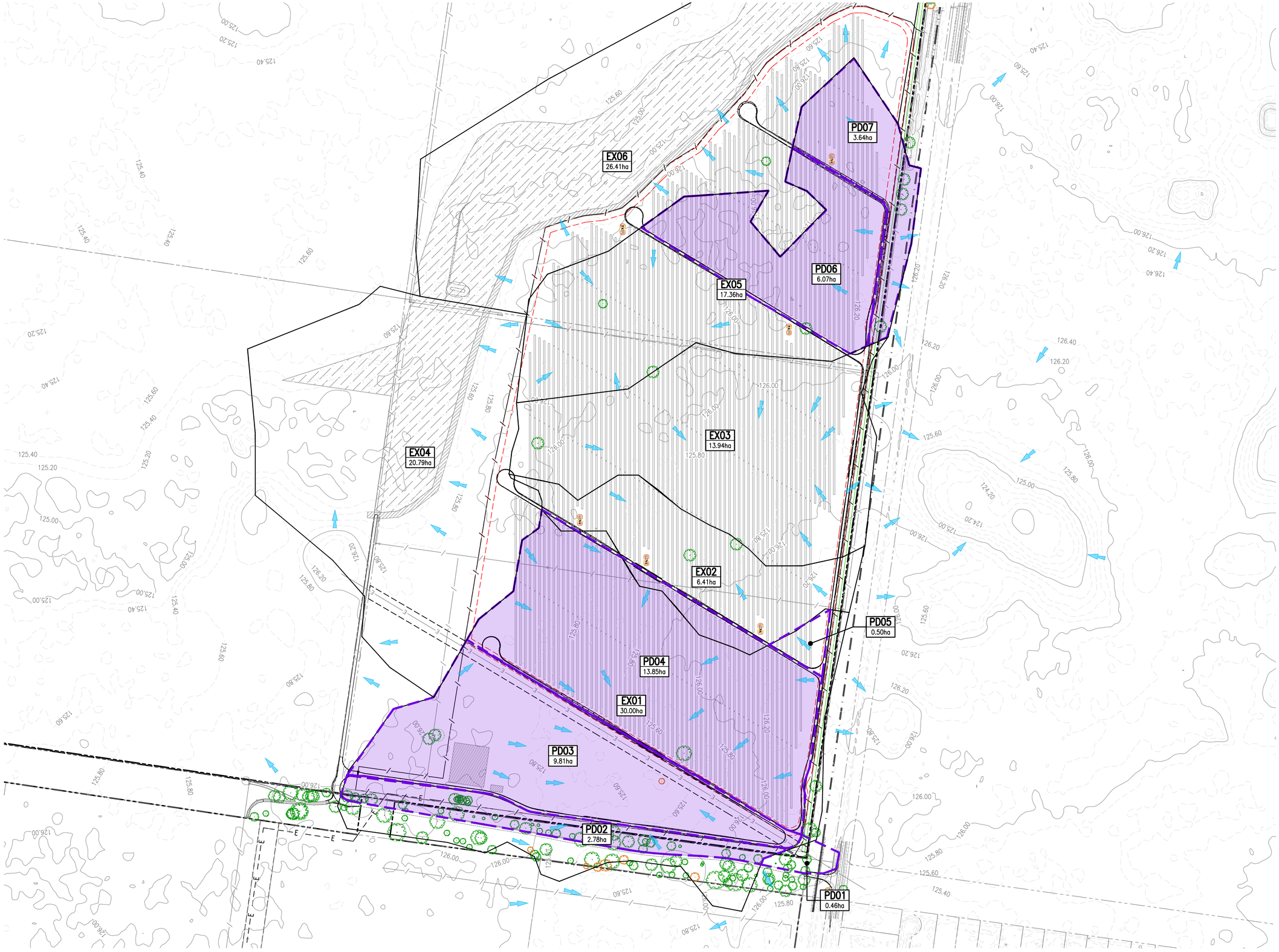
Title
STORMWATER DETAILS

Project
MULWALA SOLAR FARM

Date	Drawn	Design Checker
NOV 2024	N.ROBINSON	A.WILSS
Scale at A1	Designer	Approved
AS SHOWN	N.ROBINSON	C.WAITE
		RBG Project No.

FOR CONSTRUCTION

Drawing Number	Revision
24437-RBG-XX-XX-DR-CV-87101	C01



LEGEND

- EXISTING SITE BOUNDARY
- EXISTING EASEMENT
- 3.00 EXISTING CONTOURS MAJOR
- 3.50 EXISTING CONTOURS MINOR
- PROPOSED SITE BOUNDARY
- FLOW DIRECTION ARROW
- POST DEVELOPMENT CATCHMENT AREAS
- PRE DEVELOPMENT CATCHMENT AREAS
- PD01 50.0ha — POST DEVELOPMENT CATCHMENT LABEL
- EX01 50.0ha — PRE DEVELOPMENT CATCHMENT LABEL

SCALE 1:3000

30 0 30 60 90 120m

Rev	Revision Description	By	App	Date
P01	FOR INFORMATION	HS	CW	15.11.24
C01	ISSUE FOR CONSTRUCTION	NR	CW	20.06.25
C02	ISSUE FOR CONSTRUCTION	CW	CW	22.08.25

Rev Revision Description By App Date

Scale 1:1 1:2 1:3 1:4 1:5 1:6 1:7 1:8

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Client
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Title
PRE AND POST DEVELOPMENT CATCHMENTS

Project
MULWALA SOLAR FARM

Date	Drawn	Design Checker
NOV 2024	N.ROBINSON	A.WILSS
Scale at A1	Designer	Approved
1:3000	N.ROBINSON	C.WAITE
		RBG Project No.

FOR CONSTRUCTION

Drawing Number	Revision
24437-RBG-XX-XX-DR-CV-87401	C02

Mulwala Solar Farm – Stage 1b

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