STORMWATER

CIVIL

FLOODING

STRUCTURAL

REMEDIAL

20240210

PROPOSED **CIVIL** PLANS

Proposed Subdivision Development
698 Red Hills Road Marulan 2579

Reference
20240210-DA-CIV-DWG-01

Client
FIDES Environmental

Architect

deboke
ENGINEERING CONSULTANTS

Drawing Register

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DBYD DECLARATION

DIAL BEFORE YOU DIG SHOULD BE CONTACTED PRIOR TO ANY EXCAVATION ON SITE

TM: TRADE MARK OF THE ASSOCIATION OF DIAL BEFORE YOU DIG SERVICES LTD. USED UNDER LICENSE.

SERVICES NOTE

SERVICES SHOWN ON PLAN ARE INDICATIVE, EXACT DEPTH AND LOCATION TO BE CONFIRMED ONSITE. CONTRACTOR TO CARRY OUT DIAL BEFORE YOU DIG APPLICATION AND ENGAGE A REGISTERED SURVEYOR TO PEG OUT ALL EXISTING SERVICES PRIOR TO ANY WORK COMMENCING ONSITE.

ABBREVIATIONS

Ø or DIA	DIAMETER
CO	CLEAR OUT
DDO	DISH DRAIN OUTLET
DP	DOWNPIPE
e	EXISTING
FFL	FINISHED FLOOR LEVEL
GTD	GRATED TRENCH DRAIN
GSIP	GRATED SURFACE INLET PIT
IL	INVERT LEVEL
KIP	KERB INLET PIT
NGL	NATURAL GROUND LEVEL
OFP	OVERLAND FLOWPATH
OSD	ON-SITE DETENTION
RCP	REINFORCED CONCRETE PIPE
RL	REDUCED LEVEL
RWT	RAINWATER TANK
SW	STORMWATER
SWP	STORMWATER PIT
SWRM	STORMWATER RISING MAIN
SWS	STORMWATER SUMP
TOK	TOP OF KERB
TOW	TOP OF WALL
uPVC	UNPLASTICISED POLYVINYL CHLORIDE

General Notes

1. All work shall be carried out in accordance with council's requirements, building code of Australia, NSW code of practice and the to the relevant service codes.
2. These drawings shall be read in conjunction with all architectural and other consultants' drawings and specifications and with such other written instructions as may be issued during the course of the contract. All discrepancies shall be referred to the superintendent for decision before proceeding with the work.
3. All dimensions shown on the drawings are in meters (u.n.o.). Dimensions shall not be obtained by scaling of these drawings. Use figured dimensions only.
4. Benchmarks have been established where indicated on the drawings. All levels are to Australian height datum A.H.D.). The contractor shall undertake all necessary survey work to ensure that the works are constructed to design line and level.
5. Setting out dimensions and levels shown on the drawings shall be verified by the contractor.
6. All materials shall be in accordance with the requirements of the relevant codes and the by-laws and ordinances of the relevant building authorities.
7. It is the contractor's responsibility to provide all safety fences, warning signs, traffic diversions and the like during construction. All works to comply with work health and safety requirements and other relevant authority safety requirements.
8. No trees shall be removed, cutback or relocated without the written instruction from the superintendent.
9. Where new works abut existing the contractor shall ensure that a smooth even profile, free from abrupt changes is obtained.
10. All works shall be carried out in accordance with the details shown on the drawings and these specifications.
11. Design levels given are to finished surface level and inclusive of topsoil. (topsoil depth varies)
12. The contractor shall arrange all survey set out to be carried out by a registered surveyor.
13. Care is to be taken when excavating near existing services. No mechanical excavations are to be undertaken over telecommunications or electrical services. Hand excavate in these areas.
14. The locations of underground services shown on the drawing have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.
15. The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment after installation.
16. Deboke Engineering Consultants do not guarantee that the services information shown on the drawing shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.
17. It is the contractor's responsibility to obtain from the utility services authorities a current copy of underground services search for the location of all existing services prior to commencement of any work and notify any conflict with the drawings immediately. Clearance shall be obtained from the relevant regulatory authority. Contractor to keep copy of underground services search on site at all times. Any damages to services or services adjustments shall be carried out by the contractor or relevant authority at the contractor's expense.
18. Visit the site before submitting the final tender price to assess 'on site' conditions. Failure to do so will forfeit any claim for not being aware of conditions affecting the tender.
19. The contractor shall prepare accurate work-as-executed drawings following the completion of all works.
20. It is the contractor's responsibility to have in place & maintain traffic facilities at all times during construction.
21. Contractor to provide workshop coordinated drawings prior to commencing works on site. Workshop drawings to be reviewed and approved by design engineer.

Site Works

1. Contractor must verify all dimensions & existing levels, services & structures on site prior to commencement of work.
2. The contractor is to design, obtain approvals and carry out required temporary traffic control procedures during construction in accordance with all regulatory authorities, inclusive of local council regulations and requirements.
3. The contractor shall arrange all survey setout to be carried out by a registered surveyor prior to commencement of works.the contractor is to ensure that survey boundaries are derived from a cadastral survey rather than a detail survey.
4. The contractor is to obtain all authority approvals as required prior to commencement of works.
5. On completion of works, all disturbed areas shall be restored to their original condition or as directed by the site superintendent, including kerbs, footpaths, concrete areas, gravel, grassed areas and road pavements.
6. Where new works abut existing the contractor shall ensure that a smooth even profile, free from abrupt changes is obtained. make smooth transition to existing features and make good where joined.
7. The contractor is responsible for dealing with community complaints associated with the works under the contract and to compensate for/rectify any damage reasonably caused by the contractor.
8. Tolerances to be in accordance with council/authority requirements.

Concrete Pavements

1. This section refers to civil concrete works and does not include structural elements such as buildings, below ground structures or retaining walls.
2. All workmanship and materials shall be in accordance with AS3600 current edition with amendments, except where varied by the contract documents.
3. Concrete quality and reinforcing cover

Element	Concrete Strength f'c(MPa)	Specified SLump	Nominal Aggregate Size	Max. 56Day Drying Shrinkage	Cover (mm)
Kerb and Paths	25	60	20	650microns	TOP 40
Vehicular Pavements	32	80	20	650microns	TOP 40

4. All reinforcement shall be firmly supported on mild steel plastic tipped chairs. plastic chairs or concrete chairs at not greater than 1m centres both ways. bars shall be tied at alternate intersections.
5. Cement to be type sl U.N.O. to AS3972-1997:'Portland and blended cements'. and maximum water/cement ratio of 0.40.
   No admixtures shall be used without the approval of the engineer.
6. Falls in slab as shown on plan maintain minimum slab thickness as shown.
7. The finished concrete shall be a dense homogenous mass, completely filling the formwork, thoroughly embedding the reinforcement and free of stone pockets.
8. Formwork class shall be in accordance with AS3600
9. Surface Finishes:

Elements	Formwork class
Stormwater Pit	Off form
Pavements	Machine float or broom finish
Kerbs	Steel floate or trowel

10. Curing shall commence within two hours of finishing operations and shall be continued for a minimum of seven days by an approved proprietary compound or by keeping continuously wet.
11. Concrete to be covered by asphalt shall be cured by the use of one of the following:-
    - Bitumen emulsion grade CRS/170 complying with AS1160-1996:'bituminous emulsions for the construction and maintenance of pavements' for asphalt wearing surface
    - Chlorinated rubber curing compound complying with AS3799-1998:'liquid membrane-forming curing compound for concrete' class C type 1d or resin-based curing compound complying with AS3799-1998 class B, type 1D or type 2.
12. Reinforcement symbols:

N	denotes grade 450 N bars to AS1302 grade N
R	denotes 230 R hot rolled plain bars to AS1302
SL	denotes hard-drawn wire reinforcing fabric to AS1304

13. Concrete testing shall comply with AS1012:'methods of testing concrete' AS amended.
14. Formwork shall be designed and constructed in accordance with AS3610-1995:'formwork for concrete'. formwork shall not be stripped nor props removed without the approval of the engineer.

Pavements Notes

1. The subgrade and/or subgrade replacement to be compacted to a minimum relative compaction of 100% when tested in accordance with AS1289-e4.1:'standard compaction effect' or a minimum density of 80% for cohesiveless soils.
2. All soft, wet or unsuitable material to be removed as directed by the superintendent & replaced with approved selected fill satisfying the requirements listed below & approved by the superintendent.
   - free from organic & perishable matter
   - maximum particle size 75mm
   - plasticity index between 2% and 15%
3. Compaction testing of the subgrade and the base course shall be carried out by a NATA registered soil laboratory for a minimum of:
   Subgrade - 1 test per 500m² (2 test min.)
   Base course - 1 test per 500m² (2 test per layer min.) .
4. Minimum dry density ratios (AS1289:3.4.1-1993) to be:

base course	98% modified
subbase	95% modified
subgrade	100% standard
subgrade replacement	100% standard

5. The degree of compaction shall be measured by one of the following parameters:-
   - granular fill (non-cohesive soils). the density index (id) determined in accordance with AS1289.e6.1 based on the maximum and minimum dry densities in accordance with AS1289.e5.1 and the field dry density in accordance with AS1289.5.3.2., AS1289.e.3.5 or AS1289.e.8.1.
   - non-granualr fill (cohesive soils). the dry density ration (rd) determined in accordance with AS1289.5.4.1 based on the field dry density in accordance with AS1289.5.3.2 and the maximum dry density in accordance with AS1289.5.1.1.

Pavement Joints

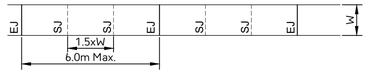
1. Provide 10mm ABLEFLEX between new concrete works and existing structures.
2. Local authority requirements shall take precedence within the public road reserve.
3. Dowels to be placed on proprietary cradles to ensure correct spacing and alignment.

Pedestrian Pavements

All pedestrian pavements are to be jointed as follows U.N.O.on the design drawings

4. Expansion joints are to be located where possible at tangent points of curves and elsewhere at max. 6.0m centres.
5. Weakened plane joints (sawn or tool joints) are to be located at a max. spacing of 1.5m x width of the pavement.
6. Where possible joints should be located to match kerbing and or adjacent pavement joints.

Typical pedestrian pavement joint arrangement

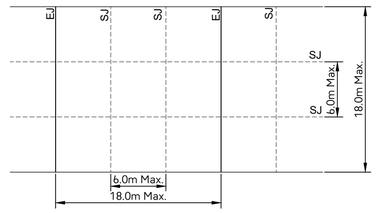


Vehicular Pavements

All vehicular pavements to be jointed as follows U.N.O on the design drawings.

7. Tied keyed construction joints should generally be located longitudinally at a max. of 6.0m centres.
8. Sawn joints should generally be located laterally at a max. of 6.0m centres with doweled expansion joints at max. 18.0m centres.

Typical vehicular pavement joint detail.



9. Kerb expansion joints shall be formed from 10mm ABLEFLEX for full depth of section.
10. Kerb expansion joints to be located at drainage pits, tangent points of curves / corners and at 12m max centres.
11. Tooled joints to be min 3mm wide and located at max 3m centres.
12. Integral kerb joints shall match the location of pavement joints.

Kerb Notes

1. All concrete shall be of 25mpa compressive strength (f'c) at 28 days unless noted otherwise in concrete notes.
2. Expansion joints of approved bitumen impregnated jointing material or equivalent shall be placed at 12m intervals, at junctions with existing work. kerb transitions and adjacent to gully pit.
3. Weaked plane joints (dummy joints) shall be cut at 3m intervals.
4. For integral kerb, all joints should match the slab joints.
5. Broomed Finish to all ramped and vehicular crossing. all other kerbing or dish drains to be steel float finish.

Legend

- RAINWATER TANK LINES
- STORMWATER LINE
- SUBSOIL LINE (SSD)
- STORMWATER RISING MAIN (SWRM)
- HIGH LEVEL STORMWATER LINE (HL)
- OVERFLOW LINE (OF)
- EXISTING STORMWATER LINE (e)
- AUTHORITY STORMWATER LINE (SW)
- AUTHORITY SEWER LINE (S)
- AUTHORITY WATER LINE (W)
- AUTHORITY GAS LINE (G)
- AUTHORITY ELECTRICITY LINE (E)
- AUTHORITY UNDERGROUND ELECTRICITY LINE (UE)
- AUTHORITY FIBRE OPTIC LINE (FO)
- AUTHORITY COMMS LINE (TEL)
- FENCE LINE
- GRATED SURFACE INLET PIT
- JUNCTION PIT
- KERB INLET PIT
- EXISTING KERB INLET PIT
- EXISTING TELSTRA PIT (eTEL)
- EXISTING HYDRANT (eHYD)
- EXISTING STOP VALVE (eSV)
- EXISTING POWER POLE (ePP)
- EXISTING SEWER MANHOLE (eSMH)
- OVERLAND FLOW PATH (OFP)
- RAINWATER OUTLET (RWO)
- CLEAR OUT POINT (CO)
- CAPPING
- DOWNPIPE DROP
- DOWNPIPE (DP)
- SPOT LEVELS (FSL)
- BENCHMARK
- PROPOSED VEHICULAR CROSSING (V.C.)
- PROPOSED KERB & GUTTER (K&G)
- PROPOSED FOOTPATH
- PROPOSED DRIVEWAY
- PROPOSED SAW-CUT TO PAVEMENT

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Project No. 20240210-DA-CIV-DWG-01
Drawing No. S101
Title: Specifications Sheet
Scale:

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project: Proposed Subdivision Development
Application: Development Application
Address: 698 Red Hills Road Marulan 2579
LGA: GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

Andrew Arida
B.E Civil/Structural
MIEAust (NO: 5579488)
Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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SOIL AND WATER MANAGEMENT PLAN

1:500

LEGEND:

- A — TEMPORARY SURFACE INLET SEDIMENT TRAP OR GROSS POLLUTANT TRAP
- B — SEDIMENT BARRIER FOR KERB INLET PITS
- C — GRAVEL FILLED SAUSAGE
- D — CATCH DRAIN
- E — SILT FENCE
- F — TEMPORARY CONSTRUCTION VEHICLE EXIT
- G — SEDIMENT BASIN
- H — STOCKPILE

NOTE:

THE ARRANGEMENT OF EROSION AND SEDIMENT CONTROL MEASURES SHOWN ARE INDICATIVE ONLY AND RELATE TO A PARTICULAR STAGE OF THE CONSTRUCTION WORKS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DESIGN, CONSTRUCT AND MAINTAIN ANY ADDITIONAL MEASURES THAT MAY BE REQUIRED FOR THE CONTRACTOR'S CONSTRUCTION METHODOLOGIES, IN ORDER TO MEET ALL CONDITIONS AND REQUIREMENTS IMPOSED BY ANY STATUTORY AUTHORITY.

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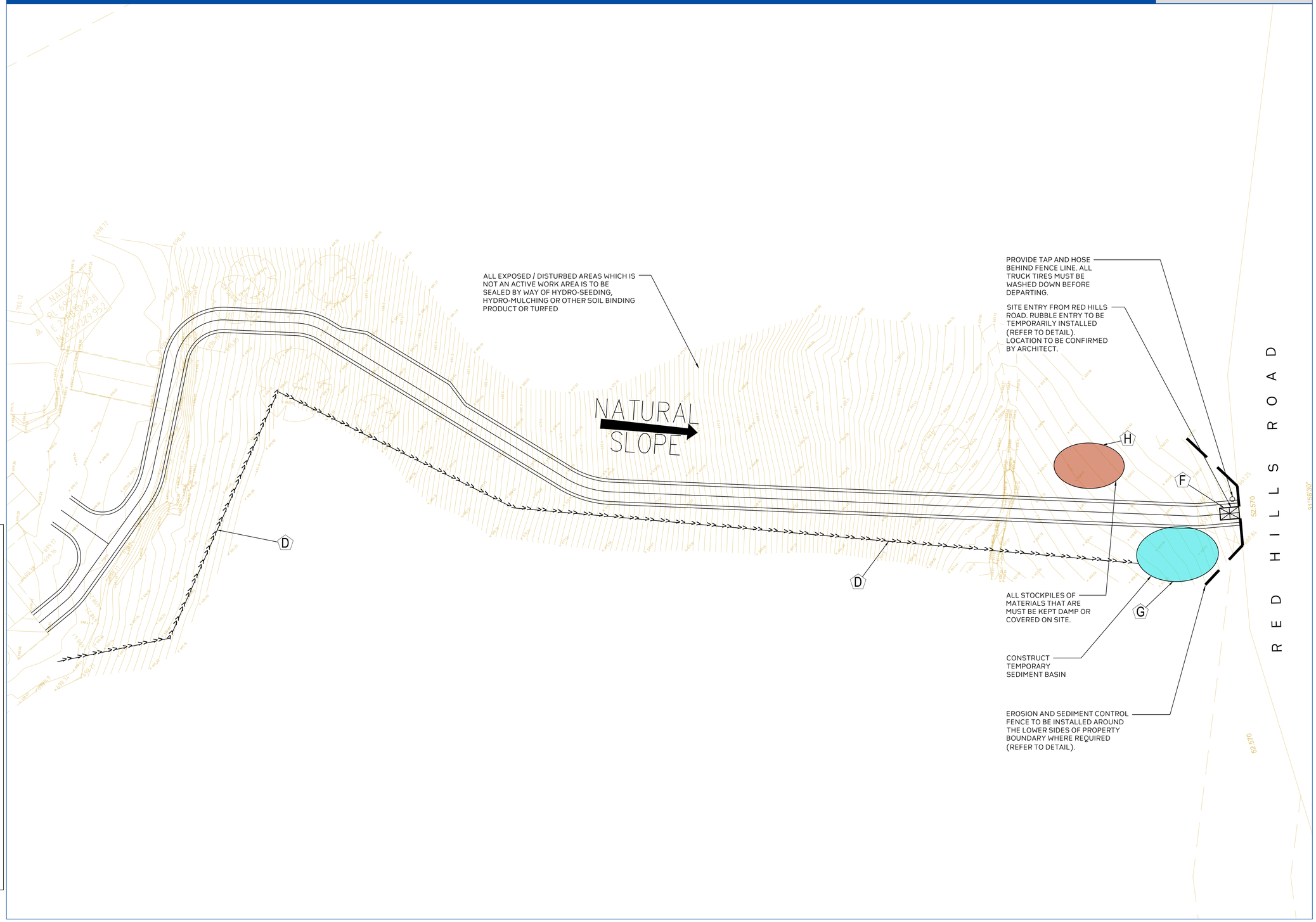
THE STABILITY OF TEMPORARY BATTERS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

CONTRACTOR TO VERIFY SETOUT BEFORE COMMENCING EARTHWORKS. REFER ANY DISCREPANCIES TO ENGINEER.



1. Erosion Hazard and Sediment Basins

Site Name: 698 Red Hills Road Marulan 2579

Site Location: 698 Red Hills Road Marulan 2579

Precinct/Stage:

Other Details:

Site area	Sub-catchment or Name of Structure						Notes
	LOT 1	LOT 2					
Total catchment area (ha)	10	40.05					
Disturbed catchment area (ha)	10	40.05					

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:	D	D					From Appendix C (if known)
% sand (fraction 0.02 to 2.00 mm)							Enter the percentage of each soil fraction. E.g. enter 10 for 10%
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(b). Auto-calculated
Soil Texture Group	D	D					Automatic calculation from above

Rainfall data

Design rainfall depth (no of days)	5	5					See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)	75	75					
x-day, y-percentile rainfall event (mm)	20.3	20.3					
Rainfall R-factor (if known)							Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)	5.96	5.96					

RUSLE Factors

Rainfall erosivity (*R*-factor)	1010	1010					Auto-filled from above
Soil erodibility (*K*-factor)	0.04	0.04					
Slope length (m)	300	300					
Slope gradient (%)	2.33333	12.3333					RUSLE LS factor calculated for a high rill/interrill ratio.
Length/gradient (*LS*-factor)	0.85	9.84					
Erosion control practice (*P*-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (*C*-factor)	1	1	1	1	1	1	

Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)

Storage (soil) zone design (no of months)	2	2					Minimum is generally 2 months
Cv (Volumetric runoff coefficient)	0.39	0.39					See Table F2, page F-4 in Appendix F

Calculations and Type D/F Sediment Basin Volumes

Soil loss (t/ha/yr)	45	517					
Soil Loss Class	1	5					See Table 4.2, page 4-13
Soil loss (m^3/ha/yr)	34	398					Conversion to cubic metres
Sediment basin storage (soil) volume (m^3)	57	2654					See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m^3)	792	3171					See Sections 6.3.4(i) for calculations
Sediment basin total volume (m^3)	849	5825					

NB for sizing of Type C (coarse) sediment basins, see Worksheet 3 (if required).

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Project No. 20240210-DA-CIV-DWG-01

Drawing No. S110

Title: Soil and Water Management Plan 1 of 2

Scale: 0m 5 10 15 20 25 — SCALE 1:500 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Contractor

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Application: Development Application

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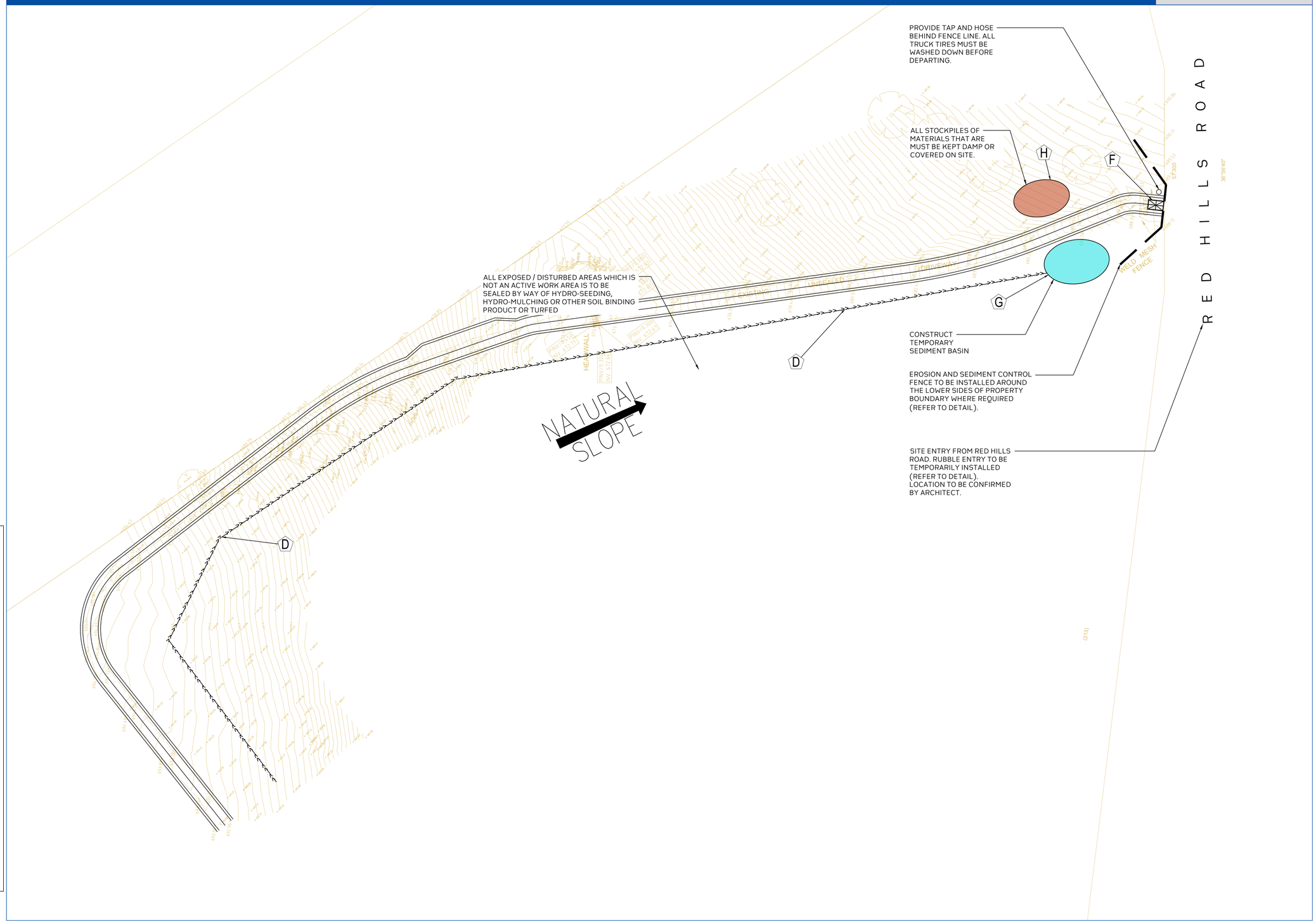

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Other Details:

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% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(e). Auto-calculated
Soil Texture Group	D	D					Automatic calculation from above
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Rainfall R-factor (if known)							Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)	5.96	5.96					
RUSLE Factors							
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Ground cover (*C*-factor)	1	1	1	1	1	1	
Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)							
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deboke CIVIL

Project No. 20240210-DA-CIV-DWG-01

Drawing No. S111

Title: Soil and Water Management Plan 2 of 2

Scale: 0m 5 10 15 20 25 — SCALE 1:500 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

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Structural				
Hydraulic/Fire				
Mechanical				

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SOIL AND WATER MANAGEMENT NOTES

NOTES

1. THIS PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS AND ANY WRITTEN INSTRUCTIONS THAT MAY BE ISSUED.

2. THE CONTRACTOR SHALL INSTIGATE ALL SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH STATUTORY REQUIREMENTS AND IN PARTICULAR THE 'BLUE BOOK' (MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION), PRODUCED BY THE DEPARTMENT OF HOUSING AND COUNCILS POLICIES. THESE ME ASURES ARE TO BE INSPECTED AND MAINTAINED ON A DAILY BASIS.

3. ALL SUBCONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWN SLOPE AREAS.

4. LAND DISTURBANCE SHALL BE LIMITED TO THAT NECESSARY FOR IMPLEMENTATION OF THE PLANS OF WORKS. BUFFER ZONES AND LANDS NOT TO BE DISTURBED SHALL BE CLEARLY MARKED WITH BARRIER FENCES. "SILT" FENCES OR STRAW BALE SEDIMENT TRAPS SHALL BE PLACED AT REGULAR INTERVALS IMMEDIATELY DOWNSLOPE OF ALL UNPROTECTED DISTURBED LANDS

5. THE LOCATION OF "SILT" FENCES, BARRIER FENCES, SEDIMENT TRAPS AND OTHER DEVICES ARE INDICATIVE ONLY AND FINAL LOCATIONS ARE TO BE DECIDED ON SITE. VARIATIONS WILL BE PERMITTED TO BEST SUIT THE CIRCUMSTANCES. CONTRACTOR TO PREPARE DETAILED CONSTRUCTION SEDIMENT AND EROSION CONTROL PLAN.

6. ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED FOLLOWING EACH STORM EVENT AND ANY NECESSARY MAINTENANCE WORK SHALL BE UNDERTAKEN TO ENSURE THEIR CONTINUED PROPER OPERATION. SEDIMENT SHALL BE REMOVED FROM THE THE SOIL EROSION & SEDIMENT CONTROL STRUCTURES WHEN NO MORE THAN 40% CAPACITY HAS BEEN REACHED. THESE STRUCTURES SHALL CONTINUE IN PROPER OPERATION UNTIL ALL DEVELOPMENT ACTIVITIES HAVE BEEN COMPLETED AND THE SITE FULLY STABILISED.

7. TEMPORARY REHABILITATION SHALL BE UNDERTAKEN WITHIN 14 WORKING DAYS ON DISTURBED AREAS WHERE WORKS HAVE STOPPED AND SOILS ARE EXPECTED TO REMAIN EXPOSED FOR MORE THAN 14 DAYS BEFORE EITHER WORKS CONTINUE OR PERMANENT REHABILITATION IS UNDERTAKEN.

8. AT LEAST WEEKLY, THE CONTRACTOR WILL INSPECT THE SITE, PROVIDING PARTICULAR ATTENTION TO THE FOLLOWING MATTERS :

   A. ENSURE DRAINS OPERATE EFFECTIVELY AND INITIATE REPAIR AS REQUIRED.
   B. REMOVE SPILLED SAND (OR OTHER MATERIALS) FROM HAZARD AREAS, INCLUDING LANDS.
   C. REMOVE TRAPPED SEDIMENT WHENEVER LESS THAN DESIGN CAPACITY REMAINS
   D. ENSURE REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND INITIATE UPGRADING OR REPAIR AS APPROPRIATE
   E. CONSTRUCT ADDITIONAL EROSION AND/OR SEDIMENT CONTROL WORKS AS MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS, I.E. MAKE ONGOING CHANGES TO THE PLAN.
   F. MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN A FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.
   G. REMOVE TEMPORARY SOIL CONSERVATION STRUCTURES AS A LAST ACTIVITY IN THE REHABILITATION PROGRAM

   H. THE CONTRACTOR WILL KEEP A LOG BOOK, MAKING ENTRIES AT LEAST WEEKLY AND IMMEDIATELY PRIOR TO FORECAST RAINFALL AND/OR SITE CLOSURE. RECORD:

   I. THE VOLUME OF ANY RAINFALL EVENTS;
   J. THE CONDITION OF ANY SOIL AND WATER MANAGEMENT WORKS;
   K. APPLICATIONS OF FLOCCULATING AGENTS TO SEDIMENT RETENTION SYSTEMS:
   L. VOLUMES OF WATER DISCHARGED FROM SEDIMENT RETENTION SYSTEMS; AND
   M. REMEDIAL WORKS.

   THE BOOK WILL BE KEPT ON-SITE AND MADE AVAILABLE TO ANY AUTHORISED PERSON ON REQUEST. IT WILL BE GIVEN TO THE PROJECT MANAGER AT THE CONCLUSION OF WORKS. COPIES OF MONTHLY ENTRIES ARE TO BE PROVIDED WITH PROGRESS CLAIMS.

10. DO NOT TAINT CLEAN CATCHMENT WATER WITH SILT FROM THE WORKS.

11. FACILITIES AND/OR EQUIPMENT MUST BE PROVIDED FOR THE APPLICATION OF WATER TO DISTURBED AREAS TO MINIMISE THE GENERATION OF AIRBORNE DUST FROM ANY AREA DISTURBED BY CONSTRUCTION ACTIVITIES. DUST CONTROL MEASURES SHALL BE IMPLEMENTED CONTINUOUSLY DURING CONSTRUCTION WORKS TO THE SATISFACTION OF THE SUPERINTENDENT AND COUNCIL.

12. MATERIAL REMOVED FROM SEDIMENT CONTROL STRUCTURES MUST BE DISPOSED OF IN A WAY THAT DOES NOT POLLUTE WATERS OR BUSHLAND AND DISPOSED OF TO AN APPROVED DUMP SITE.

13. RUNOFF FROM VEHICLE OR CONSTRUCTION PLANT MAINTENANCE AND CLEANING AREAS SHALL BE COLLECTED AND DISPOSED OF IN A MANNER THAT DOES NOT POLLUTE.

14. CONFORMITY WITH THE PLAN SHALL IN NO WAY REDUCE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT AGAINST WATER DAMAGE DURING THE COURSE OF THE CONTRACT.

15. ALL POSITIONS SHOWN ARE APPROXIMATE AND ARE BEST DETERMINED ON SITE IN CONJUNCTION WITH THE SUPERINTENDENT.

EXISTING AND PROPOSED DRAINAGE WORKS

EXISTING

THE SITE, 3 - 5 ROSARIO PLACE, ROUSE HILL, SLOPES FROM EAST TO WEST WITH AN AVERAGE PRE-DEVELOPED SLOPE OF AROUND 3-5%. THE CURRENT SITE GENERALLY CONSISTS OF UNDEVELOPED LAND WITH EXISTING DRAINAGE INFRASTRUCTURE ALONG THE SOUTHERN BOUNDARY FROM MILE END ROAD AS WELL AS AN EXISTING OSD TANK. THERE IS LIMITED EXISTING VEGETATION THROUGHOUT THE SITE.

PROPOSED CLEARING AND DISTURBANCE WORKS

- THE PROPOSED CLEARING AND DISTURBANCE WORKS INCLUDE:
  - SITE CLEARING TO SUIT THE FULL EXTENT OF EARTHWORKS PROPOSED FOR THE DEVELOPMENT
  - CLEARING AND GRUBBING TO SUIT THE EXTENT OF THE PROPOSED WORKS.
  - EXCAVATION AND FILLING TO ACHIEVE THE FINAL DESIGN LEVELS AND PROPOSED OVERLAND FLOW PATTERNS; INCLUDING EVCAVATION AND BACKFILL OF EXISTING DAM

PROPOSED DRAINAGE

AS PART OF THIS DEVELOPMENT, THE FOLLOWING PERMANENT AND TEMPORARY DRAINAGE WORKS ARE PROPOSED:

TEMPORARY WORKS:

- PLACEMENT OF SEDIMENT FENCING AND INCREMENTAL SEDIMENT TRAPS AROUND DISTURBED AREAS
- UNLINED DRAINAGE DIVERSION SWALES INCLUDING EITHER ROCK CHECK DAMS OR COIR LOGS PLACED AT NOMINAL CENTRES (AS REQUIRED)
- ESTABLISHMENT OF STOCKPILE LOCATIONS

PERMANENT WORKS:

- PIT AND PIPE NETWORK TO CAPTURE STORM WATER FROM PADS, WITH DISCHARGE TO EXISTING STREAM IN THE WEST DIRECTION AS PER CIVIL WORKS PLAN
- ON-SITE DETENTION TANK AS PER CIVIL WORKS PLAN
- OVERLAND FLOW PATHWAY AS PER CIVIL WORKS PLAN

PRINCIPAL CONTRACTOR'S RESPONSIBILITIES

- THE PRINCIPAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL REQUIRED SEDIMENT AND EROSION CONTROL MEASURES THROUGHOUT THE CONSTRUCTION PHASE OF THIS PROJECT. THE CONSTRUCTION PHASE IS CONSIDERED TO EXTEND THROUGH UNTIL THE FINAL LANDSCAPING HAS ESTABLISHED TO PROVIDE A MINIMUM 70% GROUND COVER OVER AREAS LANDSCAPED AND COMPLETION OF ALL HARDSTAND/GRAVEL SURFACES TO THE DESIGN INTENT. THIS INCLUDES ANY AREAS DISTURBED THROUGH THE CONSTRUCTION WORKS, SUCH AS STOCKPILE LOCATIONS AND LOCALISED ACCESS TRACKS.
- UPON COMPLETION TO THE ABOVE ACCEPTED VEGETATION COVER, THE CONTRACTOR SHALL THEN BE RESPONSIBLE FOR REMOVING ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES, AS WELL AS DESILTING ANY SEDIMENT TRAPS OR BASINS AND DISPOSING OF THE ACCUMULATED SEDIMENTS. THE PROPOSED METHOD OF TRANSPORTATION AND DISPOSAL OF ANY MATERIAL NOT ABLE TO BE REUSED WITHIN THE SITE SHALL BE APPROVED AS PART OF THE PROJECT WASTE MANAGEMENT PLAN.

- THE CONTRACTOR IS REQUIRED TO NOTIFY THE SUPERINTENDENT OF ANY DISCHARGE OFFSITE OF SEDIMENT LADEN WATERS AND ALSO TO NOTIFY THE SUPERINTENDENT OF ANY PLANNED DISCHARGE OF TREATED STORMWATER FROM ANY CONSTRUCTED SEDIMENT BASINS OR OTHER WATER HOLDING DEVICES.

STAGING PLAN

THE SITE CLEARING, ESTABLISHMENT AND GENERAL CONSTRUCTION IS ASSUMED TO BE COMPLETED IN ONE STAGE. THE WORKS WILL INCLUDE:

- CONSTRUCTION OF INITIAL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING STABILISED SITE ACCESS, ESTABLISHMENT OF NO-GO ZONES (WHERE FEASIBLE), PERIMETER SEDIMENT FENCE AROUND PROPOSED SOIL STOCKPILE LOCATIONS.
- CONSTRUCTION OF DIVERSION DRAINAGE INCLUDING PLACEMENT OF COIR LOGS OR OTHER SIMILAR SEDIMENT RETENTION METHODS ALONG THE LENGTH OF DRAINAGE.
- CLEARING AND GRUBBING WORKS, WITH ANY TOPSOIL INTENDED TO BE REUSED TO BE STOCKPILED IN MAXIMUM 2 METRE HIGH WINDROWS SEPARATE TO GENERAL SOIL STOCKPILES.
- SITE GRADING TO SUIT REQUIRED DESIGN LEVELS AND CONSTRUCTION OF ASSOCIATED INFRASTRUCTURE.
- CONSTRUCTION OF THE FINAL PAVEMENT, SLABS AND OTHER SURFACE TREATMENTS (AS REQUIRED).
- BASED ON THE ABOVE WORKS, THE RUSLE CHECK WAS UNDERTAKEN, TO CHECK FOR INCLUSION OF A SEDIMENT BASIN WITHIN THE SITE, ALONG WITH ESTIMATION OF THE EROSION HAZARD ASSESSMENT.

SIZING HAS BEEN CARRIED OUT FOR ALL SEDIMENT BASINS SHOWN ON DRAWING 20230368-CC1-CIV-DWG-1 S111.

THE FOLLOWING SECTION OUTLINES THE INTENDED EROSION CONTROL FACTORS THAT SHOULD BE CONSIDERED SUFFICIENT FOR THIS SITE, GIVEN THE CLASSIFICATION OF MODERATE EROSION HAZARD AS PER SECTION 4.4.1 OF THE "BLUE BOOK".

EROSION CONTROL MEASURES

- THE CONTRACTOR IS REQUIRED TO IMPLEMENT THE NECESSARY EROSION CONTROL MEASURES REQUIRED TO MAXIMISE THE RETENTION OF SOILS AT SOURCE. AS A GUIDE, THE FOLLOWING MEASURES SHOULD BE CONSIDERED:

TEMPORARY GROUND COVER OR STABILISATION

- WHERE AREAS OF WORKS ARE TO BE ON-HOLD FOR PERIODS EXCEEDING 14 DAYS, THE CONTRACTOR MAY APPLY A TEMPORARY GROUND COVER TO REDUCE THE SEDIMENT MOVEMENT AND REDUCE DUST GENERATION.
- TEMPORARY GROUND COVERS MAY INCLUDE MULCH, GRAVEL, SEEDING, POLYMER, SURFACE WETTING OR OTHER MEANS TO BIND THE SURFACE.
- ALTERNATIVE MANAGEMENT MAY INCLUDE SURFACE ROUGHENING OR LIGHT SCARIFYING.

NO GO ZONES OR VEGETATIVE FILTER STRIPS

- WHERE AREAS OF THE SITE ARE CURRENTLY VEGETATED/STABILISED AND NOT INTENDED TO BE DISTURBED, THE CONTRACTOR SHALL NOMINATE VIA INSTALLATION OF FLAGGING, A NO-GO ZONE FOR THIS AREA. THIS IS INTENDED TO KEEP ALL VEHICLES, STOCKPILES OR MATERIALS OFF THESE AREAS TO PROTECT THE SOIL STRUCTURE AND EXISTING VEGETATION.
- EXISTING VEGETATION SHOULD ALSO BE RETAINED WHERE POSSIBLE DOWNSTREAM OF DISTURBED AREAS TO ENHANCE THE SEDIMENT REMOVAL AT SOURCE.

DUST CONTROL

- TEMPORARY PROTECTION FROM WIND AND WATER EROSION WILL BE UNDERTAKEN ON LANDS WHERE WORKS ARE UNLIKELY TO PROCEED FOR PERIODS OF AT LEAST TWO MONTHS AND FINAL SHAPING HAS NOT BEEN COMPLETED (EG. TOPSOIL STOCKPILES). THIS MAY BE ACHIEVED WITH A VEGETATIVE COVER. A RECOMMENDED LISTING OF PLANT SPECIES FOR TEMPORARY COVER IS AS FOLLOWS:

  SEPTEMBER - MARCH SOWING:

  -JAPANESE MILLET @ 50 KG/HA

  APRIL - AUGUST SOWING:

  -OATS/RYECORN @ 50 KG/HA

  -TETILA RYE @ 5 KG/HA

FOOT AND VEHICULAR TRAFFIC SHOULD BE KEPT AWAY FROM ANY REHABILITATED AREAS WHERE PRACTICAL.

- DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS ARE TO BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER FOR DUST CONTROL.

SEDIMENT CONTROL MEASURES

STABILISED SITE ACCESS

- A STABILISED SITE ACCESS SHALL BE PLACED AS PART OF THE INITIAL EROSION AND SEDIMENT CONTROL ESTABLISHMENT. THE LOCATION SHALL ALLOW ACCESS FOR ALL VEHICLES EXITING THE SITE.
- WHERE EVIDENCE OF SEDIMENT TRANSPORTATION ONTO PUBLIC ROADS IS EVIDENT, THESTABILISED SITE ACCESS POINT MAY REQUIRE INCLUSION OF A SHAKER GRATE OR WASH BATH TO AID IN THE REMOVAL OF SEDIMENTS BEFORE EXITING THE SITE.

ROCK CHECK DAMS/COIR LOGS

- ROCK CHECK DAMS/COIR LOGS SHOULD BE ADOPTED BY THE CONTRACTOR TO MANAGE THE VELOCITY OF WATERS AND SETTLEMENT OF SEDIMENTS AS FOLLOWS:
  - ALONG EXCAVATED CHANNELS TO STRIP OUT SEDIMENTS AT REGULAR INTERVALS
  - AT END OF COLLECTION POINTS PRIOR TO DISCHARGE OFFSITE, TO ALLOW FOR A TEMPORARY COLLECTION AND SLOW RELEASE THROUGH INFILTRATION.
- WHERE ROCK CHECK DAMS ARE LOCATED, THE ACCUMULATION OF SEDIMENT SHOULD BE MONITORED AND CLEANED OUT AFTER EACH RAINFALL EVENT.
- WHERE SCOURING IS IDENTIFIED WITHIN EXCAVATED CHANNELS, ROCK CHECK DAMS SHOULD BE CONSIDERED FOR INCLUSION TO MANAGE THE SCOURING.
- TO ASSIST IN REMOVAL OF SEDIMENTS AND ALLOW FOR EASE OF CLEANING, FILTER WRAPPING WITH AN APPROPRIATE GEOTEXTILE SHOULD BE CONSIDERED.

SEDIMENT FENCING

- SEDIMENT FENCING IS INTENDED TO TRAP LARGER SEDIMENTS AT THEIR SOURCE, PREVENTING SEDIMENT TRANSPORTATION INTO PITS, CHANNELS OR OFFSITE. SEDIMENT FENCING SHOULD BE EMPLOYED IN THE LOCATIONS SHOWN ON THE PLAN, PLACED PARALLEL TO THE CONTOURS. WHERE PLACED ALONG SLOPES, RETURNS SHALL BE INCLUDED AT REGULAR INTERVALS TO PREVENT CONCENTRATING FLOW ALONG THE FENCE LINE.
- SEDIMENT FENCES SHALL BE MONITORED REGULARLY TO REMOVE BUILD-UP OF SEDIMENTS THAT MAY CAUSE THE FENCE TO FAIL.
- SEDIMENT FENCES, OR STRAW BALES SHOULD ALSO BE PLACED TO FORM A PERIMETER AROUND STORM WATER PITS TO PREVENT SEDIMENT BLOCKAGE WITHIN PIPES. NOTE, WHERE STRAW BALES ARE USED, THESE SHOULD BE INTENDED FOR SHORT DURATION (LESS THAN 2 MONTHS) AND CLOSELY MONITORED FOR DETERIORATION/LOSS OF STRAW WHICH MAY CAUSE THE BALES TO LOSE THEIR STRUCTURE AND WASH AWAY.

DIVERSION CHANNELS

- DIVERSION CHANNELS HAVE BEEN NOMINATED TO DIRECT COLLECTED RUNOFF TO A CONTROLLED DISCHARGE POINT.
- THE DIVERSION CHANNELS WILL ALSO DIVERT COLLECTED RUNOFF DURING THE CONSTRUCTION PHASE TO THE SEDIMENT BASIN.
- DIVERSION CHANNELS HAVE BEEN DESIGNED TO CATER FOR THE 10-YEAR ARI FLOW RATE, EXAMPLE DIVERSION SWALE SIZING AND DESIGN ARE AS FOLLOWS:
  10-YEAR ARI PEAK FLOW

= (RUNOFF COEFFICIENT TABLE F3 OF "BLUE BOOK") x (10YR, 5 MIN INTENSITY) x (AREA TO SWALE) / 3600

= 0.88 x 154 x 21600 / 3600

= 813L/s

SIZING HAS BEEN CARRIED OUT USING THE MANNING EQUATION FOR ALL DIVERSION CHANNELS REFER TO DRAWING 20230368-CC1-CIV-DWG-1 S112 FOR DETAILS

- DIVERSION CHANNEL STABILISATION: LINE BASE AND SIDE WITH 50MM GRAVEL COMPACTED IN PLACE OR APPROVED ALTERNATIVE GEOTEXTILE.

EMEDIATION METHODOLOGY

- THE EARTHWORKS ARE ANTICIPATED TO BE COMPLETED WITHIN A SIX MONTH TIME PERIOD. THROUGHOUT THE WORKS, THE PROGRESSIVE STABILISATION OF LANDSCAPING ZONES IS SUGGESTED.
- ALL COMPLETED FINAL EARTHWORKS LEVELS WILL BE REMEDIATION WITHIN 20 DAYS OF FINAL EARTHWORKS LEVELS BEING ACHIEVED. REMEDIATION IS CONSIDERED TO OCCUR WHEN A MINIMUM 70% GROUND COVER IS ACHIEVED.

MAINTENANCE AND RECORD KEEPING

- THE SITE MANAGER (PRINCIPAL CONTRACTOR) WILL ENSURE THAT ALL SEDIMENT AND EROSION CONTROL WORKS ARE LOCATED AS INSTRUCTED IN THIS SPECIFICATION OR IN ANY SUBSEQUENT SITE INSTRUCTION AND APPROVED CONSTRUCTION DRAWINGS.

- ALL BUILDERS AND SUB-CONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES BY THE SITE MANAGER (PRINCIPAL CONTRACTOR) IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS.

- RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE SITE SUPERINTENDENT AND GENERALLY OFF SITE.

- ALL CHEMICALS SHALL BE STORED IN APPROVED, FIT FOR PURPOSE BUNDING, STORAGE BUNDING SHALL HAVE A CAPACITY OF 120% OF THE STORED CHEMICAL.

- AT LEAST WEEKLY, THE CONTRACTOR SHALL INSPECT THE SITE AND ENSURE THAT:-
  - DRAINS OPERATE EFFECTIVELY AND INITIATE REPAIR OR MAINTENANCE AS REQUIRED.
  - SPILLED SOIL (OR OTHER MATERIAL) IS REMOVED FROM HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS WHERE THERE IS POTENTIAL TO BE TRANSPORTED OFFSITE.
  - REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND INITIATE UPGRADING OR REPAIRS AS APPROPRIATE.

- THE CONTRACTOR SHALL PROVIDE A DETAILED 'LOG BOOK' RECORDING INFORMATION & DATA WITH RESPECT TO THE SEDIMENT & EROSION CONTROL PLAN AND TO ENSURE SEDIMENT CONTROL DEVICES ARE FUNCTIONING PROPERLY. THIS IS TO BE KEPT ON SITE AT ALL TIMES AND UPDATED DAILY. INFORMATION RECORDED MUST INCLUDE:-
  - RAINFALL EVENTS
  - RAINFALL IN MILLIMETERS
  - RESULTS OF ANY INSPECTIONS

STRAW BALE FILTERS

1. CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DIAGRAM TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION.

2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN THE BALES. THE STRAWS IN EACH BALE ATE TO BE ALIGNED PARALLEL TO THE GROUND.

3. ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.

4. EMBED EACH BALE IN THE GROUND 75MM TO 100MM AND ANCHOR WITH 1.2M STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600MM INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.

5. WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE BALES ARE PLACED 1M TO 2M DOWNSLOPE FROM THE TOE.

6. ESTABLISH A MAINTENANCE PROGRAM THE ENSURES THE INTEGRITY OF THE BALES IS RETAINED - THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.

WATER QUALITY TESTING REQUIREMENTS

1. PRIOR TO DISCHARGE OF SITE STORMWATER, GROUNDWATER AND SEEPAGE WATER INTO COUNCIL'S STORMWATER SYSTEM, CONTRACTORS MUST UNDERTAKE WATER QUALITY TESTS IN CONJUNCTION WITH A SUITABLY QUALIFIED ENVIRONMENT CONSULTANT OUTLINING THE FOLLOWING:

   - COMPLIANCE WITH THE CRITERIA OF THE AUSTRALIAN AND NEW ZEALAND GUIDELINES FOR FRESH AND MARINE WATER QUALITY (2000)

   - IF REQUIRED SUBJECT TO THE ENVIRONMENTAL CONSULTANTS ADVICE, PROVIDE REMEDIAL MEASURES TO IMPROVE THE QUALITY OF WATER THAT IS TO BE DISCHARGED INTO COUNCILS STORM WATER DRAINAGE SYSTEM.THIS SHOULD INCLUDE COMMENTS FROM A SUITABLY QUALIFIED ENVIRONMENTAL CONSULTANT CONFIRMING THE SUITABILITY OF THESE REMEDIAL MEASURES TO MANAGE THE WATER DISCHARGED FROM THE SITE INTO COUNCILS STORM WATER DRAINAGE SYSTEM. OUTLINING THE PROPOSED, ONGOING MONITORING, CONTINGENCY PLANS AND VALIDATION PROGRAM THAT WILL BE IN PLACE TO CONTINUALLY MONITOR THE QUALITY OF WATER DISCHARGED FROM THIS SITE. THIS SHOULD OUTLINE THE FREQUENCY OF WATER QUALITY TESTING THAT WILL BE UNDERTAKEN BY A SUITABLY QUALIFIED ENVIRONMENTAL CONSULTANT.

EROSION AND SEDIMENT CONTROL PUMP OUT NOTES

ANY ACCUMULATED WATER CONTAMINATED WITH SEDIMENT, FROM A SEDIMENT BASIN OR EXCAVATION PIT, IS TO BE FLOCCULATED OR FILTERED IN ORDER TO LOWER THE SUSPENDED SOLID LOAD TO LESS THAN 50mg PER LITRE GYPSUM GAS OR OTHER APPROVED FLOCCULANT SHOULD BE APPLIED WITHIN 24 HOURS OF THE END OF THE STORM EVENT. THE GYPSUM MUST BE SPREAD EVENLY OVER THE ENTIRE WATER SURFACE. PUMPING IS NOT TO OCCUR FOR AT LEAST 36 HOURS AND PREFERABLY 48 HOURS AFTER APPLICATION. CLEAN WATER IS TO BE DISCHARGED TO THE RECEIVING CHANNEL VIA A HALE BALE SEDIMENT FILTER IN A WAY THAT DOES NOT PICK UP SEDIMENT THAT HAS DROPPED TO THE BOTTOM.

NOTE: GYPSUM IS A HYDRATED FORM OF CALCIUM SULPHATE AND IS AVAILABLE AT MANY SWIMMING POOL SHOPS AND HARDWARE STORES.

deboke CIVIL

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Title: Soil and Water Management Notes
Scale:

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Contractor:

Client: Abu Bader

Project: Proposed Subdivision Development
Application: Development Application
Address: 698 Red Hills Road Marulan 2579
LGA: GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

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Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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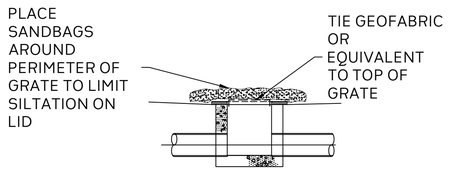
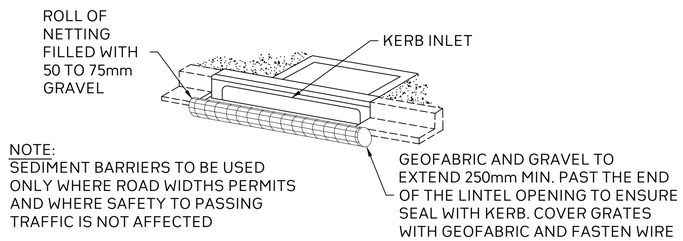
SOIL AND WATER MANAGEMENT CONTROL DETAILS



TEMPORARY SURFACE INLET SEDIMENT TRAP OR GROSS POLLUTANT TRAP

WHEN USED AS A GROSS POLLUTANT TRAP STRUCTURE SHALL BE REGULARLY DESILTED

A



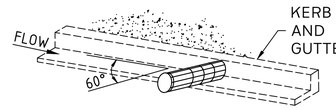
NOTE:
SEDIMENT BARRIERS TO BE USED ONLY WHERE ROAD WIDTHS PERMITS AND WHERE SAFETY TO PASSING TRAFFIC IS NOT AFFECTED

SEDIMENT BARRIER FOR KERB INLET PITS

NTS

B

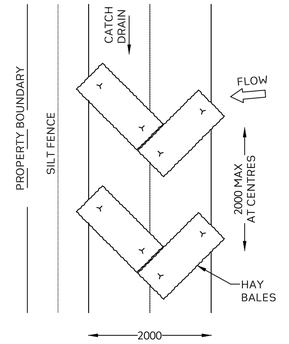
NOTE:
SEDIMENT BARRIERS TO BE USED ONLY WHERE ROAD WIDTHS PERMITS AND WHERE SAFETY TO PASSING TRAFFIC IS NOT AFFECTED



GRAVEL FILLED SAUSAGE TEMPORARY GUTTER GROSS POLLUTANT/SEDIMENT TRAP

COARSE GRAVEL ROLLED IN NETTING MATERIAL TOTALING 200mm HIGH & PLACED HARD AGAINST FACE OF KERB

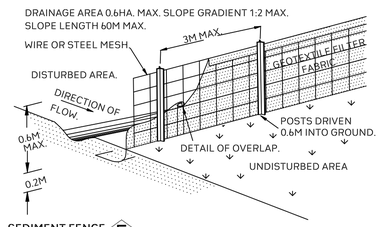
C



CATCH DRAIN

NTS

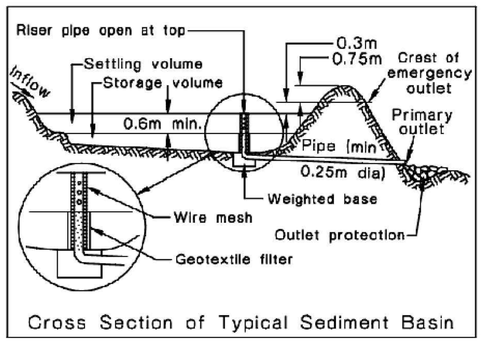
D



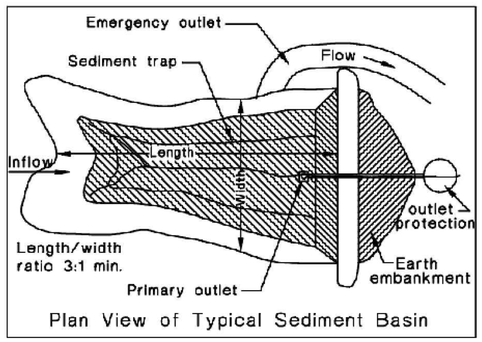
SEDIMENT FENCE E

CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND, 3 METRES APART.
3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC.
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES or AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.



Cross Section of Typical Sediment Basin



Plan View of Typical Sediment Basin

SEDIMENT BASIN

NTS

G

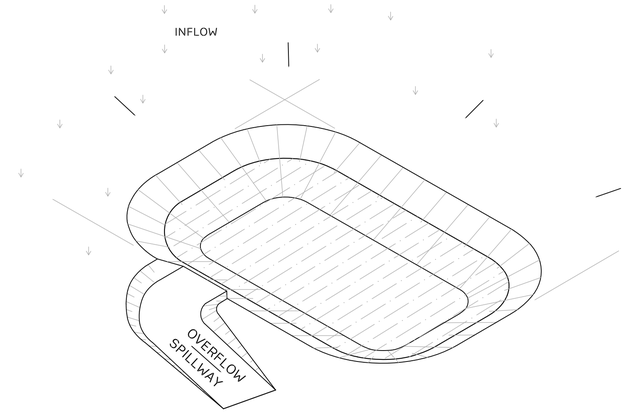
REQUIRED VOLUMES

SEDIMENT BASIN:
SETTLING ZONE VOLUME = 75m³
SEDIMENT STORAGE VOLUME = 6m³
THEREFORE BASIN STORAGE CAPACITY = 81m³

AREA PROVIDED = 146m²
DEPTH PROVIDED = 0.6m
TOTAL VOLUME PROVIDED = 87.6m³

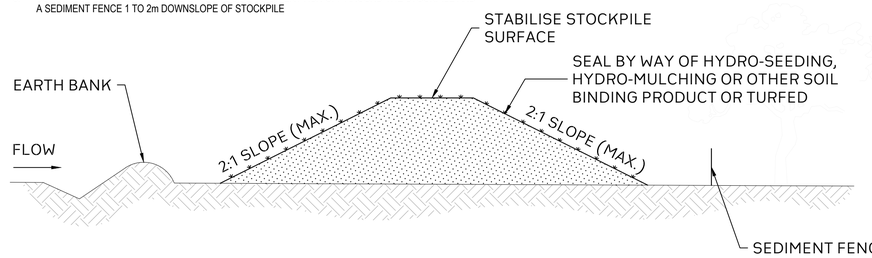
LEGEND:

- A — TEMPORARY SURFACE INLET SEDIMENT TRAP OR GROSS POLLUTANT TRAP
- B — SEDIMENT BARRIER FOR KERB INLET PITS
- C — GRAVEL FILLED SAUSAGE
- D — CATCH DRAIN
- E — SILT FENCE
- F — TEMPORARY CONSTRUCTION VEHICLE EXIT
- G — SEDIMENT BASIN
- H — STOCKPILE



GENERAL CONSTRUCTION NOTES

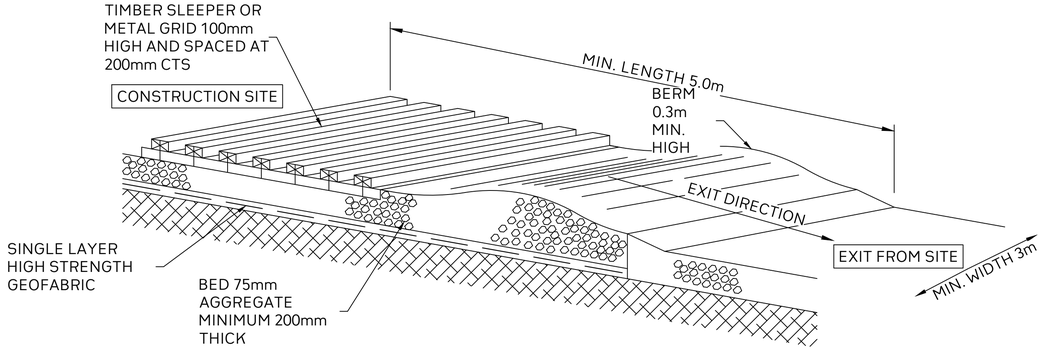
1. LOCATE STOCKPILE AT LEAST 5m FROM EXISTING VEGETATION, CONCENTRATED WATER FLOWS, ROADS AND HAZARD AREAS
2. CONSTRUCT ON THE CONTOUR AS A LOW, FLAT, ELONGATED MOUND
3. WHERE THERE IS SUFFICIENT AREA TOPSOIL STOCKPILES SHALL BE LASS THAN 2m IN HEIGHT
4. REHANILITATE IN ACCORDANCE WITH THE SWMP/ESCP
5. CONSTRUCT EARTH BANK ON THE UPSLOPE SIDE TO DIVERT RUN OFF AROUND THE STOCKPILE AND A SEDIMENT FENCE 1 TO 2m DOWNSLOPE OF STOCKPILE



STOCKPILE

NTS

H



TEMPORARY CONSTRUCTION VEHICLE EXIT

NTS

F

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Project No. 20240210-DA-CIV-DWG-01
Drawing No. S113
Title: Soil and Water Management Details
Scale

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Contractor

Client: Abu Bader

Project: Proposed Subdivision Development
Application: Development Application
Address: 698 Red Hills Road Marulan 2579
LGA: GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

Andrew Arida
B.E Civil/Structural
MIEAust (NO: 5579488)
Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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GENERAL ARRANGEMENT PLAN

1:1000

deboke CIVIL

Project No.	20240210-DA-CIV-DWG-01
Drawing No.	S200
Title	Master Plan
Scale	0m 10 20 30 40 50 SCALE 1:1000 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Abu Bader

Client

Project
Proposed Subdivision Development

Application
Development Application

Address
698 Red Hills Road Marulan 2579

LGA
GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

Andrew Arida
B.E Civil/Structural
MIEAust (NO: 5579488)
Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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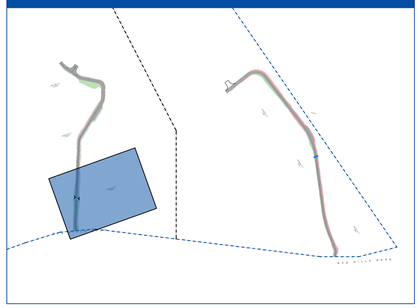
KEYPLAN



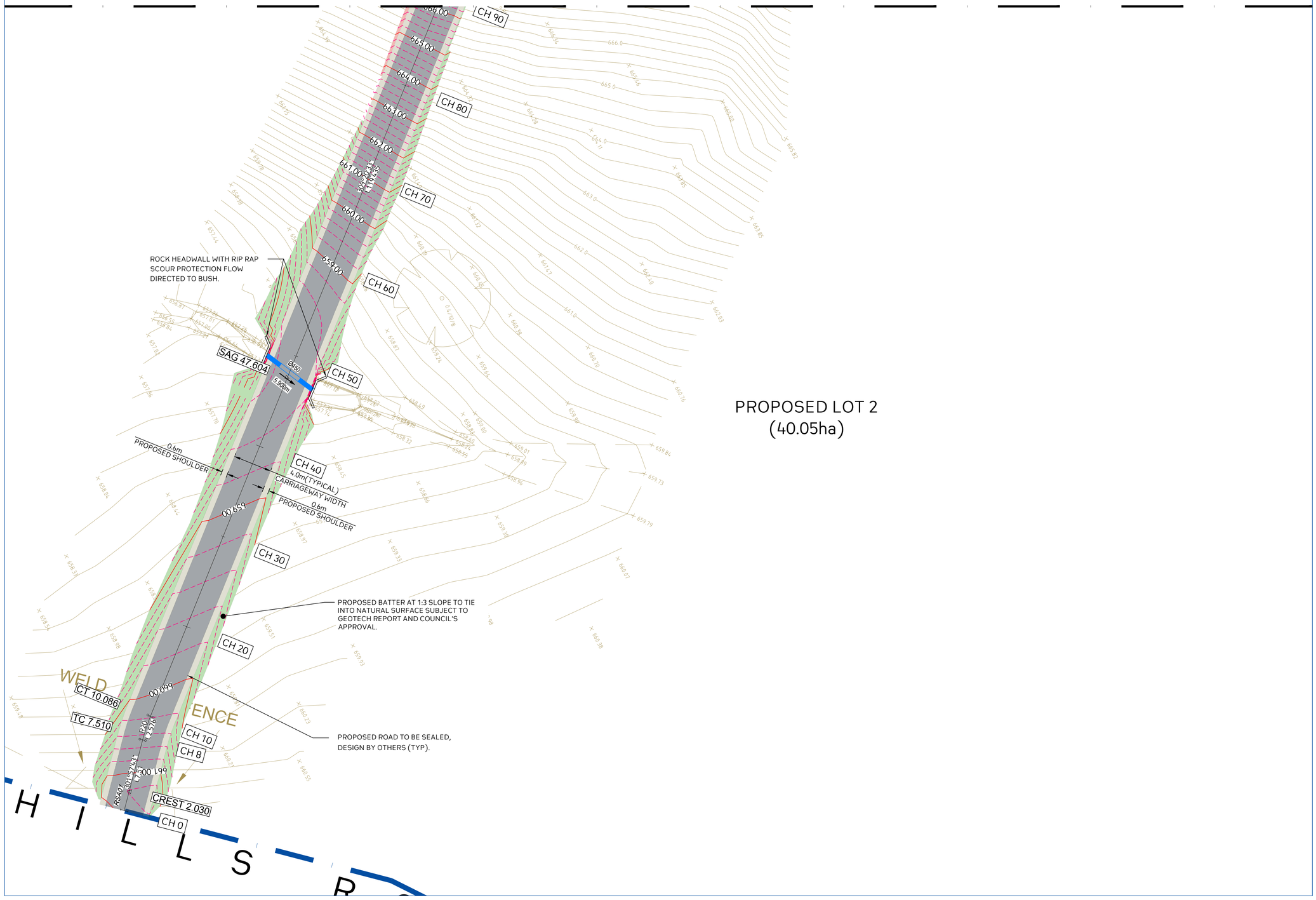
LEGEND

- PROPOSED LOT BOUNDARIES
- EXISTING LOT BOUNDARIES
- PROPOSED PERIMETER ROAD
- PROPOSED BATTER IN FILL
- PROPOSED BATTER IN CUT
- xxx.xx — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- HEADWALL

LOT 2 - GENERAL ARRANGEMENT PLAN 1 OF 3

1:200

C O N T I N U A T I O N O N S 2 0 2



deboke CIVIL	Project No. 20240210-DA-CIV-DWG-01	Drawing No. S201	
	Title: LOT 2 - General Arrangement Plan 1 of 3		
	Scale: 0m 2 4 6 8 10 — SCALE 1:200 ON ORIGINAL SIZE		

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project Proposed Subdivision Development

Application Development Application

Address 698 Red Hills Road Marulan 2579

LGA GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

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Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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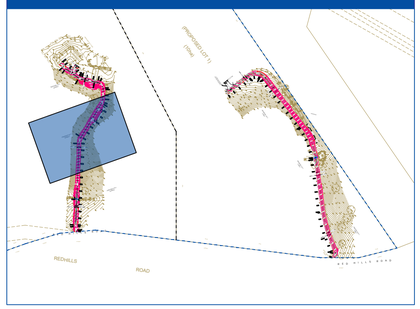
KEYPLAN



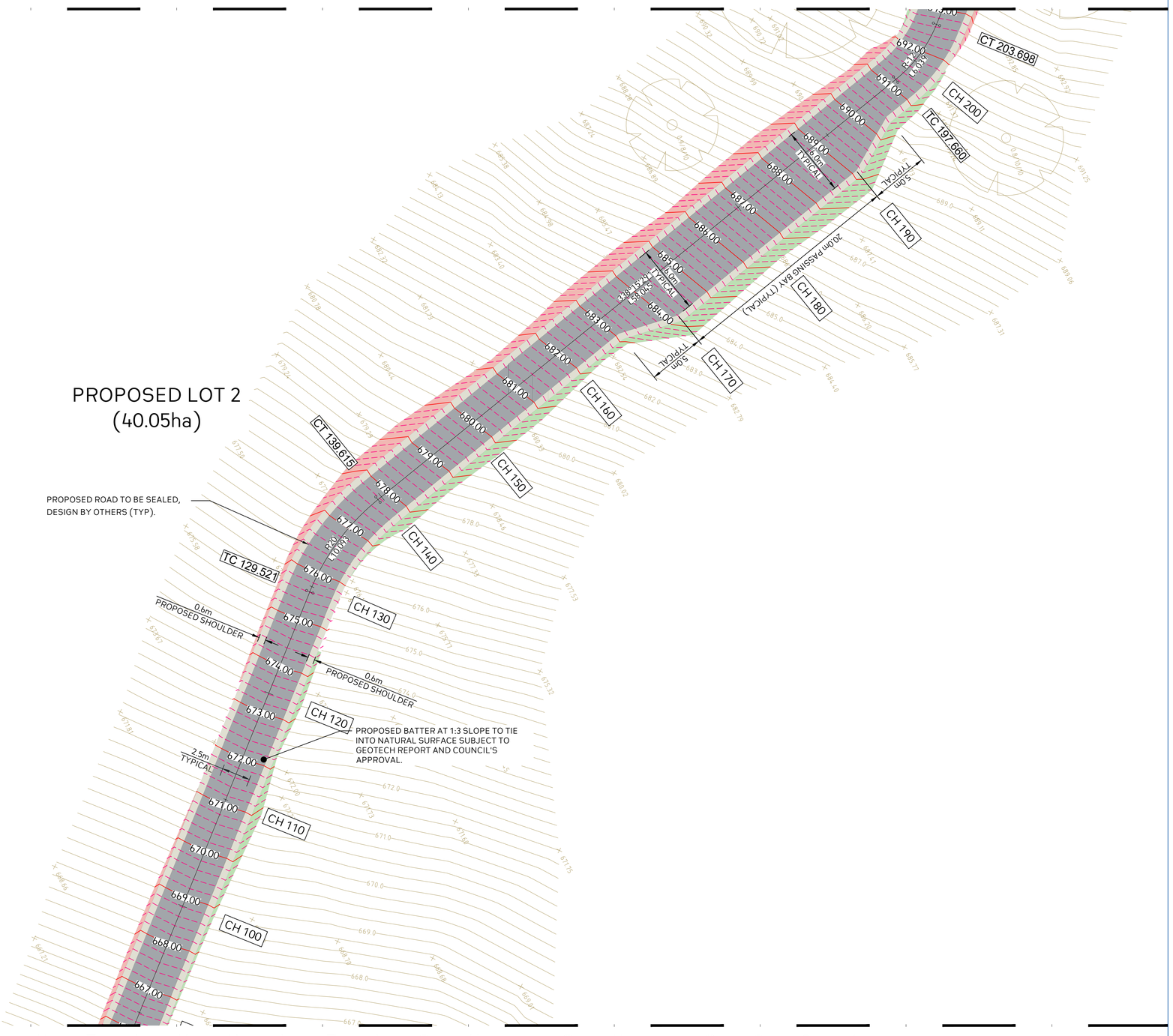
LEGEND

- PROPOSED LOT BOUNDARIES
- EXISTING LOT BOUNDARIES
- PROPOSED PERIMETER ROAD
- PROPOSED BATTER IN FILL
- PROPOSED BATTER IN CUT
- xxx.xx — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

LOT 2 - GENERAL ARRANGEMENT PLAN 2 OF 3

1:200

C O N T I N U A T I O N O N S 2 0 3



C O N T I N U A T I O N O N S 2 0 1

deboke CIVIL

Project No. 20240210-DA-CIV-DWG-01
Drawing No. S202
Title: LOT 2 - General Arrangement Plan 2 of 3
Scale: 0m 2 4 6 8 10 — SCALE 1:200 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project: Proposed Subdivision Development
Application: Development Application
Address: 698 Red Hills Road Marulan 2579
LGA: GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

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Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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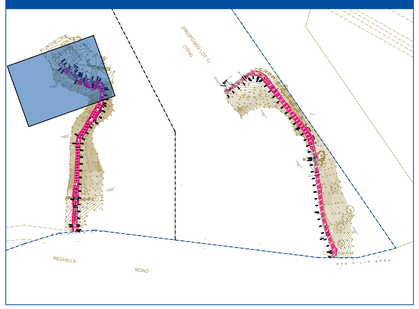
KEYPLAN



LEGEND

- PROPOSED LOT BOUNDARIES
- EXISTING LOT BOUNDARIES
- PROPOSED PERIMETER ROAD
- PROPOSED BATTER IN FILL
- PROPOSED BATTER IN CUT
- xxx.xx — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

LOT 2 - GENERAL ARRANGEMENT PLAN 3 OF 3

1:200

CONTINUATION ON S202

deboke CIVIL

Project No.	20240210-DA-CIV-DWG-01
Drawing No.	S203
Title	LOT 2 - General Arrangement Plan 3 of 3
Scale	0m 2 4 6 8 10 — SCALE 1:200 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project
Proposed Subdivision Development

Application
Development Application

Address
698 Red Hills Road Marulan 2579

LGA
GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

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Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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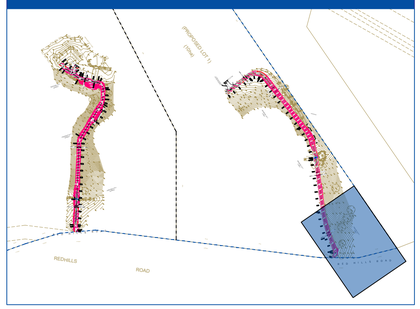
KEYPLAN

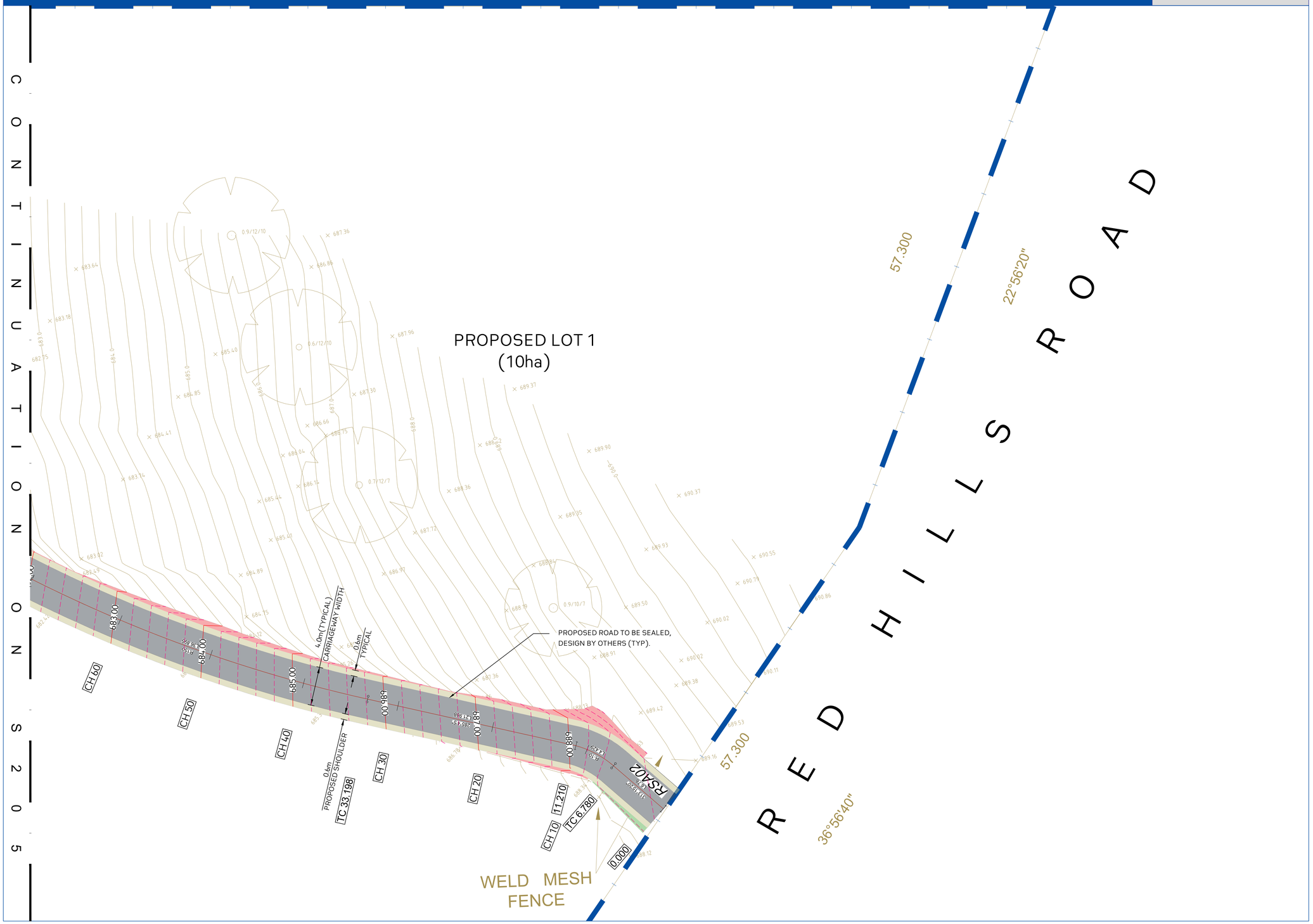


LEGEND

- PROPOSED LOT BOUNDARIES
- EXISTING LOT BOUNDARIES
- PROPOSED PERIMETER ROAD
- PROPOSED BATTER IN FILL
- PROPOSED BATTER IN CUT
- xxx.xx — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

LOT 1 - GENERAL ARRANGEMENT PLAN 1 OF 3

1:200



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	Title: LOT 1 - General Arrangement Plan 1 of 3		
	Scale: 0m 2 4 6 8 10 — SCALE 1:200 ON ORIGINAL SIZE		

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project
Proposed Subdivision Development

Application
Development Application

Address
698 Red Hills Road Marulan 2579

LGA
GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

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Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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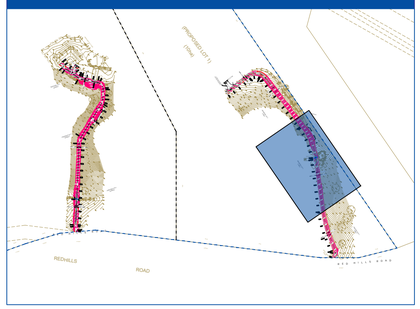
KEYPLAN

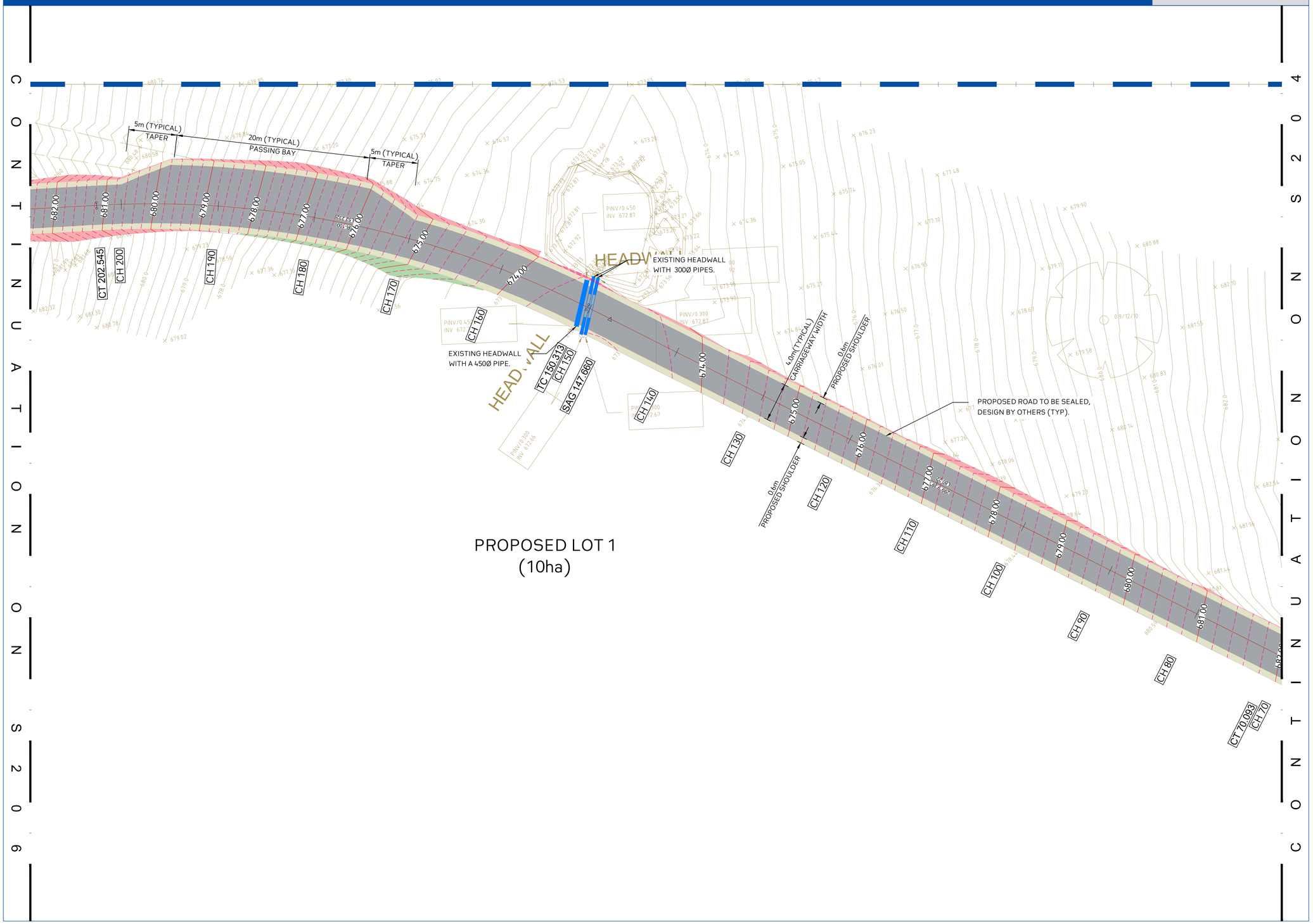


LEGEND

- PROPOSED LOT BOUNDARIES
- EXISTING LOT BOUNDARIES
- PROPOSED PERIMETER ROAD
- PROPOSED BATTER IN FILL
- PROPOSED BATTER IN CUT
- xxx.xx — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

LOT 1 - GENERAL ARRANGEMENT PLAN 2 OF 3

1:200



deboke CIVIL

Project No.	20240210-DA-CIV-DWG-01
Drawing No.	S205
Title	LOT 1 - General Arrangement Plan 2 of 3
Scale	0m 2 4 6 8 10 — SCALE 1:200 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project Proposed Subdivision Development

Application Development Application

Address 698 Red Hills Road Marulan 2579

LGA GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

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Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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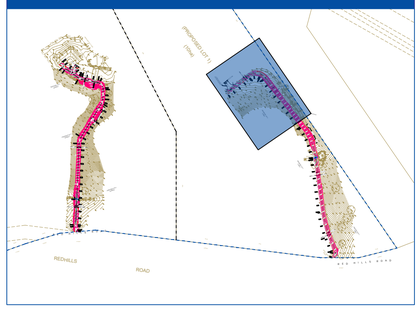
A 65 Blaxcell Street, Granville 2142

KEYPLAN

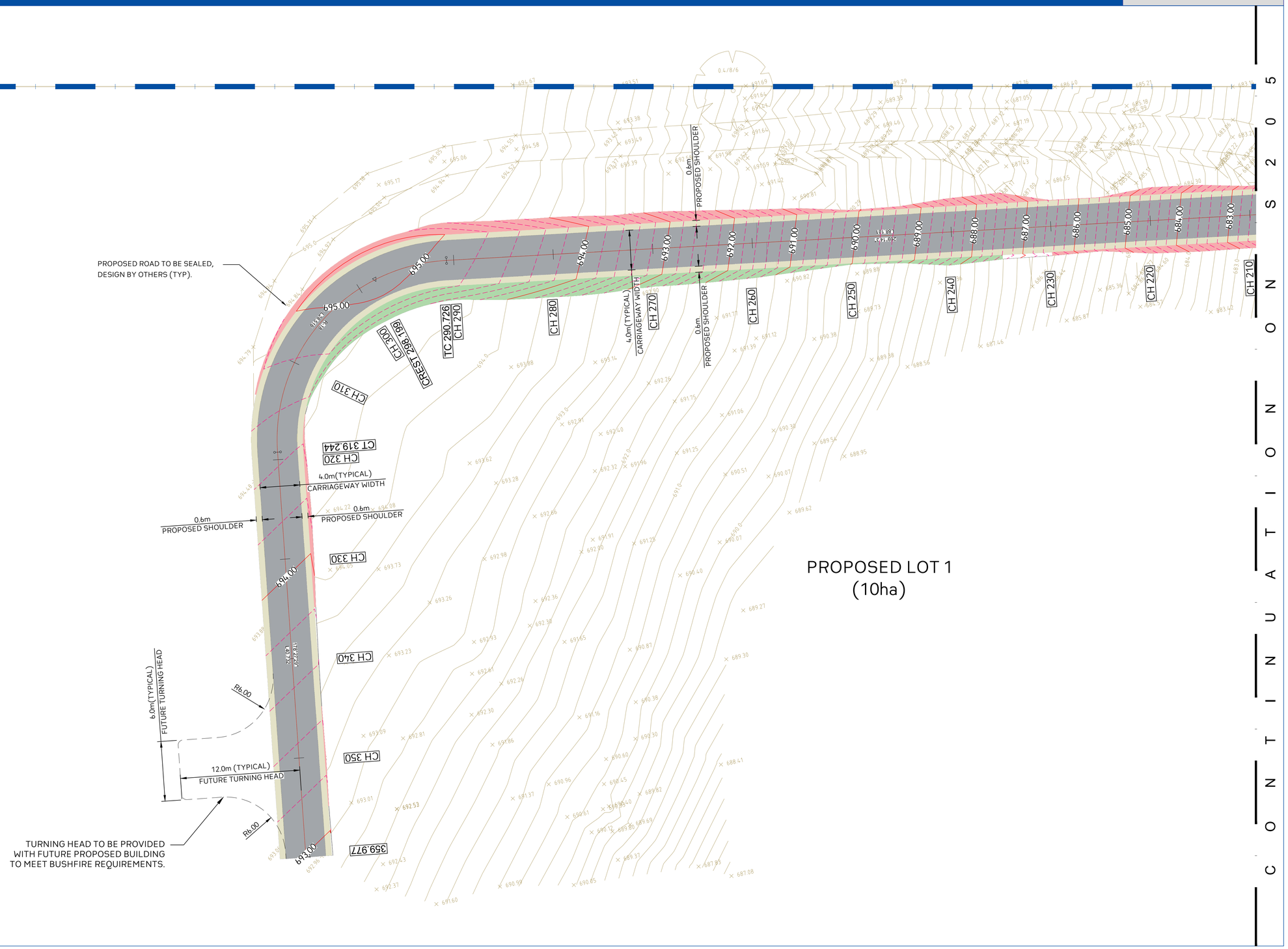


LEGEND

- PROPOSED LOT BOUNDARIES
- EXISTING LOT BOUNDARIES
- PROPOSED PERIMETER ROAD
- PROPOSED BATTER IN FILL
- PROPOSED BATTER IN CUT
- xxx.xx — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR

LOT 1 - GENERAL ARRANGEMENT PLAN 3 OF 3

1:200



deboke CIVIL

Project No.	20240210-DA-CIV-DWG-01
Drawing No.	S206
Title	LOT 1 - General Arrangement Plan 3 of 3
Scale	0m 2 4 6 8 10 — SCALE 1:200 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project: Proposed Subdivision Development

Application: Development Application

Address: 698 Red Hills Road Marulan 2579

LGA: GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

Andrew Arida
B.E Civil/Structural
MIEAust (NO: 5579488)
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Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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A 65 Blaxcell Street, Granville 2142

General Notes

ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL AND RELEVANT AUTHORITIES SPECIFICATIONS AND DETAILS.

BULKING FACTORS ARE NOT CONSIDERED IN THE EARTHWORK MODEL AND VOLUME CALCULATION.

ALL DETAILED EARTHWORKS ARE NOT CONSIDERED SUCH AS FOOTINGS, SERVICE TRENCH AND RETAINING WALLS IN THE EARTHWORK MODEL AND VOLUME CALCULATION.

EXISTING SURFACE LEVEL ARE BASED ON RPS AAP CONSULTING PTY LTD BY DATE

BULK EARTHWORKS PLAN ARE BASED ON THE FINISHED LEVELS, THE PAVEMENT / SLAB THICKNESS ARE NOT CONSIDERED.

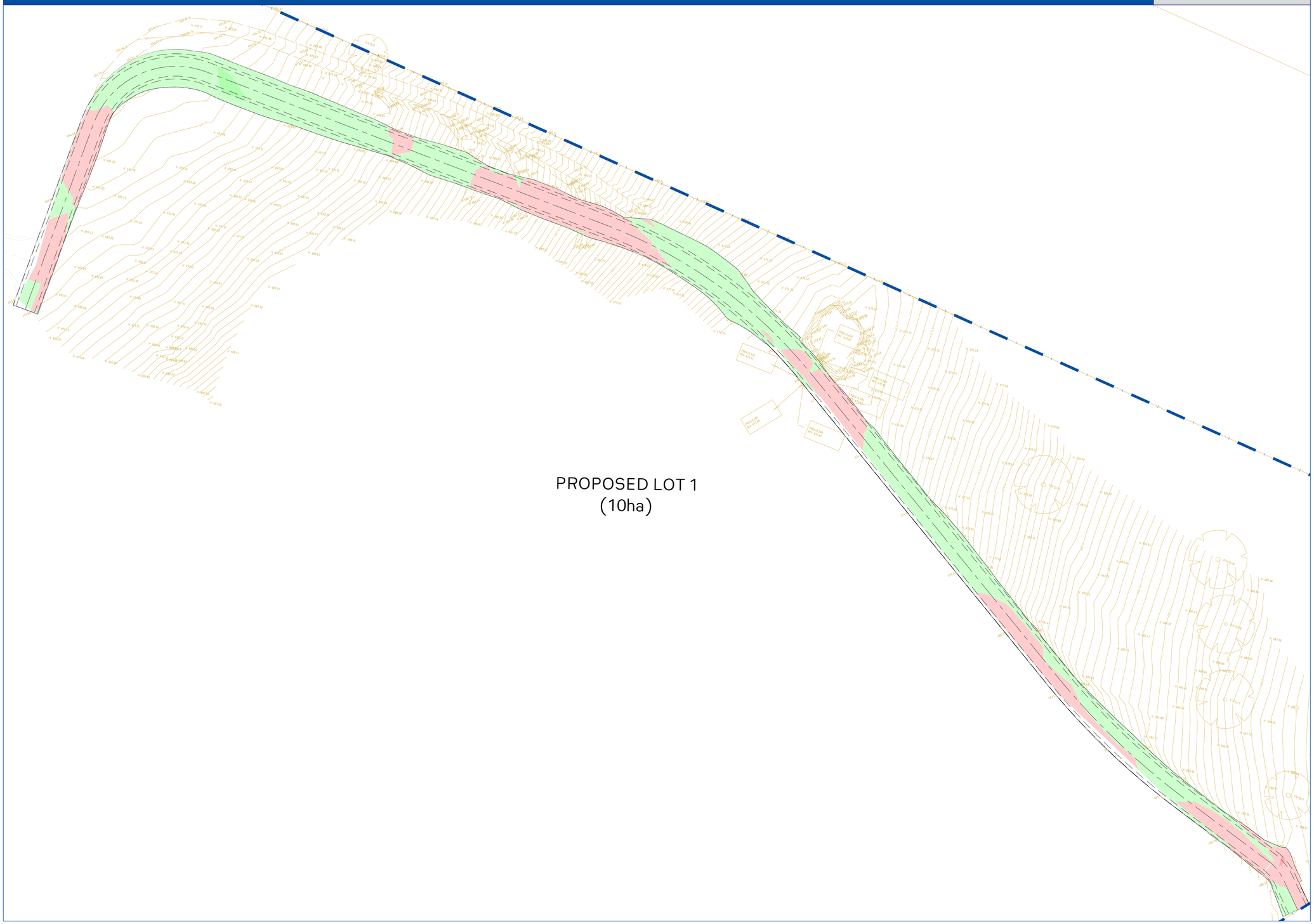
APPROXIMATE BULK EARTHWORK VOLUMES AS FOLLOWS:

CUT : 74.315m³
FILL : 216.316m³
NET<FILL> : 142.001m³

Lower Value	Upper Value	Color
−50.000	−2.500	
−2.500	−2.250	
−2.250	−2.000	
−2.000	−1.750	
−1.750	−1.500	
−1.500	−1.250	
−1.250	−1.000	
−1.000	−0.750	
−0.750	−0.500	
−0.500	−0.250	
−0.250	0.000	
0.000	0.250	
0.250	0.500	
0.500	0.750	
0.750	1.000	
1.000	1.250	
1.250	1.500	
1.500	1.750	
1.750	2.000	
2.000	2.250	
2.250	2.500	
2.500	50.000	

BULK EARTHWORKS PLAN

1:400



deboke CIVIL

Project No.
20240210-DA-CIV-DWG-01

Drawing No.
S230

Title
Bulk Earthworks Plan

Scale
0m 40 80 120 160 200
SCALE 1:400 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client
Abu Bader

Project
Proposed Subdivision Development

Application
Development Application

Address
698 Red Hills Road Marulan 2579

LGA
GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

Andrew Arida
B.E Civil/Structural
MIEAust (NO: 5579488)
Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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General Notes

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BULKING FACTORS ARE NOT CONSIDERED IN THE EARTHWORK MODEL AND VOLUME CALCULATION.

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EXISTING SURFACE LEVEL ARE BASED ON RPS AAP CONSULTING PTY LTD BY DATE

BULK EARTHWORKS PLAN ARE BASED ON THE FINISHED LEVELS, THE PAVEMENT / SLAB THICKNESS ARE NOT CONSIDERED.

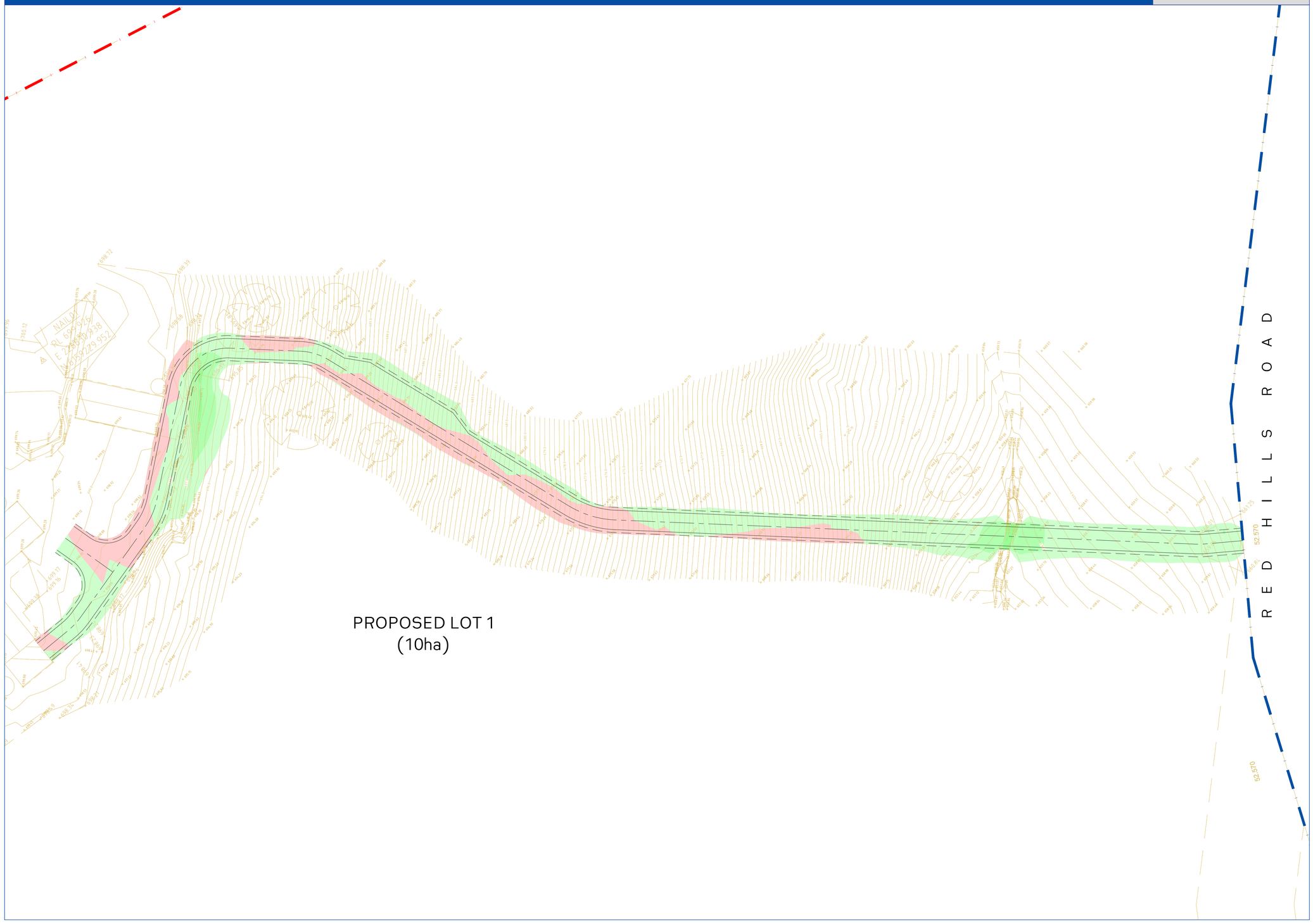
APPROXIMATE BULK EARTHWORK VOLUMES AS FOLLOWS:

CUT : 56.627m³
FILL : 387.383m³
NET<FILL> : 331.355m³

Lower Value	Upper Value	Color
−50.000	−2.500	
−2.500	−2.250	
−2.250	−2.000	
−2.000	−1.750	
−1.750	−1.500	
−1.500	−1.250	
−1.250	−1.000	
−1.000	−0.750	
−0.750	−0.500	
−0.500	−0.250	
−0.250	0.000	
0.000	0.250	
0.250	0.500	
0.500	0.750	
0.750	1.000	
1.000	1.250	
1.250	1.500	
1.500	1.750	
1.750	2.000	
2.000	2.250	
2.250	2.500	
2.500	50.000	

BULK EARTHWORKS PLAN

1:400



deboke CIVIL

Project No. 20240210-DA-CIV-DWG-01
Drawing No. S231
Title: Bulk Earthworks Plan

Scale
0m 40 80 120 160 200
SCALE 1:400 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project: Proposed Subdivision Development

Application: Development Application

Address: 698 Red Hills Road Marulan 2579

LGA: GOULBURN MULWAREE Council.

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

Andrew Arida
B.E Civil/Structural
MIEAust (NO: 5579488)
Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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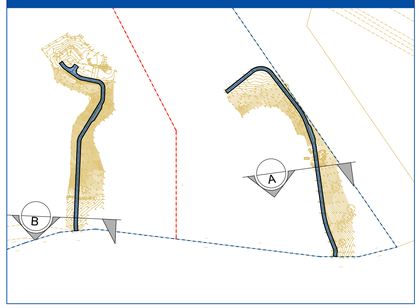
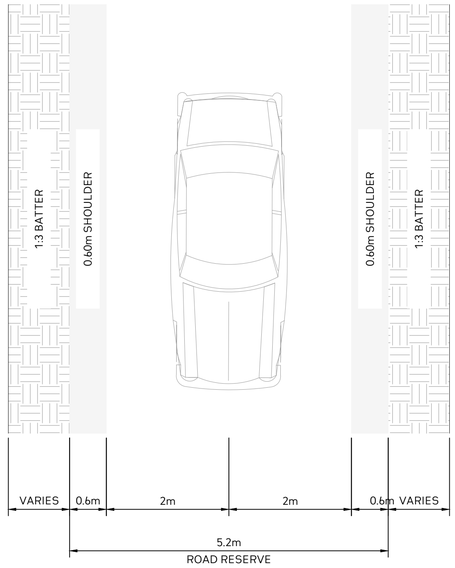
KEYPLAN

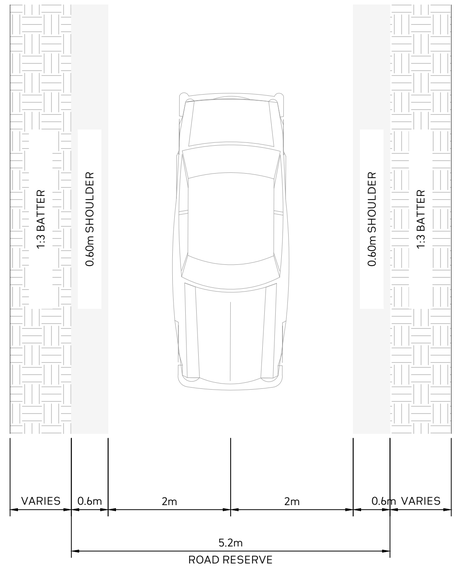


TYPICAL SECTIONS AND DETAILS

1:50



7.2m TYPICAL ROAD
SECTION A LOT 1
SCALE 1:50



7.2m TYPICAL ROAD
SECTION B LOT 2
SCALE 1:50

deboke CIVIL

Project No. 20240210-DA-CIV-DWG-01
Drawing No. S240
Title: Typical Sections and Details
Scale: 0m 0.5 1 1.5 2 2.5 — SCALE 1:50 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

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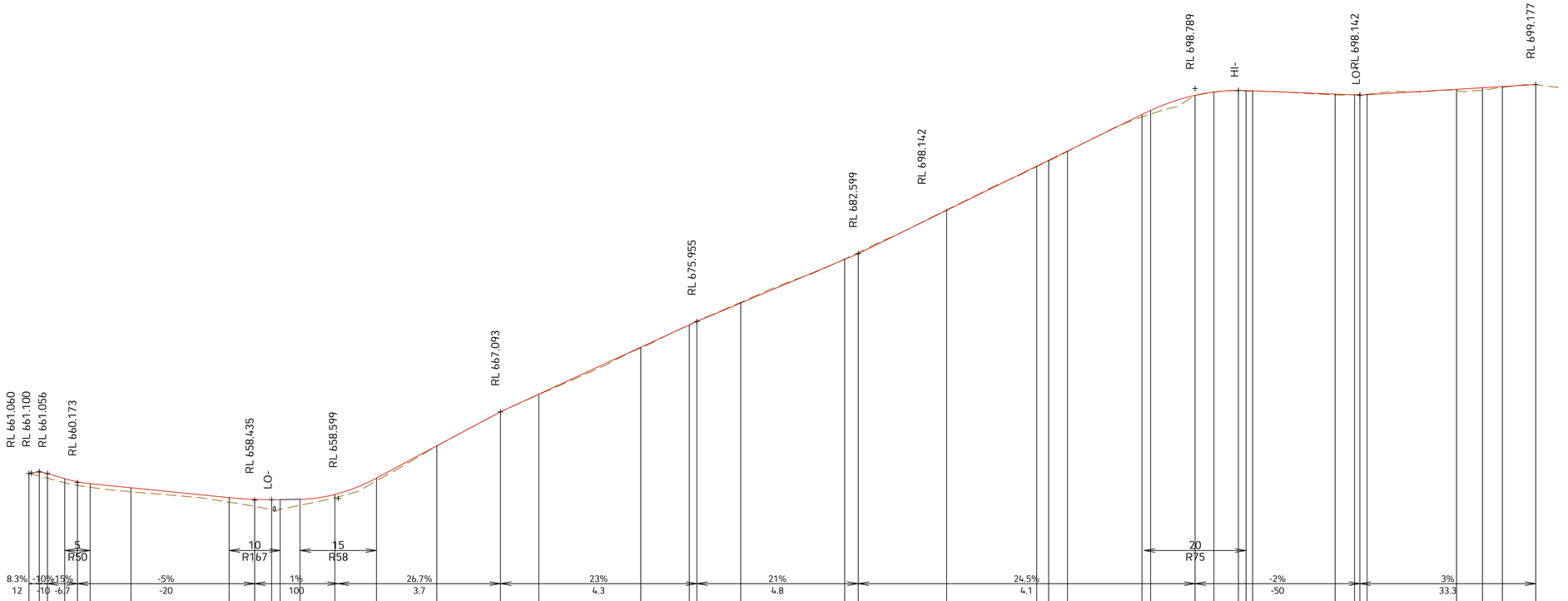
INTERNAL ROAD LONGITUDINAL SECTION 1 OF 2

1:100



DATUM RL.644.000

CUT / FILL DEPTH	-0.000	0.423	0.474	0.408	0.363	0.348	0.391	0.445	0.693	1.059	0.938	0.590	0.315	0.273
DESIGN LEVELS ON ROAD LOT 2	661.060	661.216	661.056	660.548	660.235	660.048	659.649	658.685	658.510	658.477	658.485	658.524	658.993	660.602
EXISTING SURFACE ON ROAD LOT 2	661.060	660.793	660.582	660.140	659.873	659.700	659.258	658.240	657.818	657.417	657.547	657.934	658.678	660.328
CHAINAGE	0.000	2.030	3.630	7.016	9.516	12.016	20.000	39.271	44.271	47.604	49.271	53.164	60.000	68.164

CUT / FILL DEPTH	0.025	0.000	0.029	0.068	-0.024	-0.033	-0.064	-0.028	-0.080	-0.051	0.041	0.056	0.043	0.233
DESIGN LEVELS ON ROAD LOT 2	663.762	667.093	668.823	673.423	675.613	675.955	677.763	682.043	682.599	686.851	691.177	691.751	692.657	696.237
EXISTING SURFACE ON ROAD LOT 2	663.737	667.093	668.795	673.355	675.637	675.988	677.827	682.072	682.680	686.902	691.137	691.695	692.614	696.004
CHAINAGE	80.000	92.476	100.000	120.000	129.521	131.006	139.615	160.000	162.648	180.000	197.660	200.000	203.698	218.312

CUT / FILL DEPTH	0.352	0.045	0.019	0.035	0.037	0.027	0.074	-0.021	-0.067	-0.040	0.144	0.239	0.070	0.000
DESIGN LEVELS ON ROAD LOT 2	696.640	698.126	698.451	698.604	698.589	698.563	698.239	698.163	698.142	698.184	698.711	698.864	698.981	699.177
EXISTING SURFACE ON ROAD LOT 2	696.288	698.081	698.432	698.569	698.552	698.536	698.165	698.184	698.209	698.225	698.567	698.624	698.911	699.177
CHAINAGE	220.000	228.727	232.415	237.217	238.727	240.000	256.199	260.000	261.047	262.448	280.000	285.092	288.991	295.530

LONGITUDINAL SECTION ROAD LOT2

SCALE: HORIZONTAL - 1 : 500
VERTICAL - 1 : 250

NOTES:

- ROAD DESIGNED TO BE READ IN CONJUNCTION WITH BUSHFIRE REPORT PREPARED BY EMBER BUSHFIRE CONSULTING, REF.RM.53.23, DATED AUGUST 28,2022.
- ROAD DESIGNED FOR SEALED PAVEMENT. PAVEMENT DESIGN TO BE COMPLETED BY OTHERS.
- MAX GRADES FOR SEALED ROADS TO NOT EXCEED 15 DEGREES (26.79%).
- CROSS FALL NO GREATER THAN 10 DEGREES (17.63%)

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CIVIL

Project No.
20240210-DA-CIV-DWG-01

Drawing No.
S300

Title
Internal Road Longitudinal
Road LOT2

Scale
0m 10 20 30 40 50
SCALE 1:1000 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Abu Bader
Client

Project
Proposed Subdivision Development

Application
Development Application

Address
698 Red Hills Road Marulan 2579

LGA
GOULBURN MULWAREE Council

Drawn	JP	**Designed**	ZZ
Reviewed	AA	**Date**	23-09-2024
Approved	AA	**Date**	23-09-2024

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Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)
Arida

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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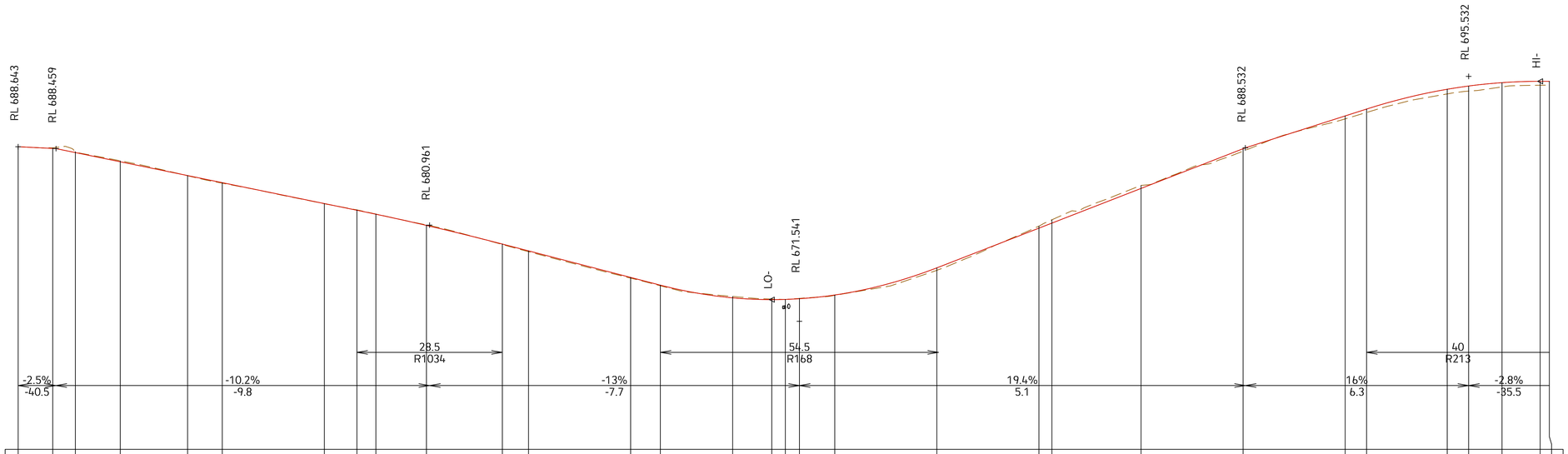
INTERNAL ROAD LONGITUDINAL SECTION 2 OF 2

1:100



CUT / FILL DEPTH	0.000	-0.053	-0.084	-0.096	0.015	0.049	0.014	-0.036	-0.016	-0.043	0.043	0.081	0.069	0.058	-0.136	-0.059
DESIGN LEVELS ON ROAD LOT 1	688.643	688.475	688.071	687.171	685.819	685.122	683.073	682.421	682.032	680.934	679.108	678.441	675.841	675.084	673.839	673.664
EXISTING SURFACE ON ROAD LOT 1	688.643	688.528	688.155	687.266	685.804	685.072	683.059	682.456	682.048	680.978	679.065	678.360	675.772	675.026	673.975	673.723
CHAINAGE	0.000	6.780	11.210	20.000	33.198	40.000	60.000	66.367	70.093	80.000	94.867	100.000	120.000	125.823	140.000	147.660

CUT / FILL DEPTH	0.003	-0.034	0.033	0.239	-0.195	-0.325	-0.295	0.236	0.289	0.332	0.457	0.501	0.422	0.385	0.372
DESIGN LEVELS ON ROAD LOT 1	673.685	673.751	674.118	676.778	680.667	681.162	684.557	688.446	691.661	692.332	694.274	694.591	694.921	695.053	695.045
EXISTING SURFACE ON ROAD LOT 1	673.682	673.785	674.085	676.539	680.862	681.487	684.851	688.210	691.372	692.000	693.817	694.090	694.500	694.667	694.673
CHAINAGE	150.313	153.073	160.000	180.000	200.000	202.545	220.000	240.000	260.000	264.193	280.000	284.193	290.726	298.199	300.000

LONGITUDINAL SECTION ROAD LOT 1
SCALE: HORIZONTAL - 1 : 500
VERTICAL - 1 : 250

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- CROSS FALL NO GREATER THAN 10 DEGREES (17.63%)

12d Model

deboke
CIVIL

Project No. 20240210-DA-CIV-DWG-01
Drawing No. S301
Title Internal Road Longitudinal Road LOT1
Scale
0m 10 20 30 40 50
SCALE 1:1000 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Abu Bader
Client

Project
Proposed Subdivision Development

Application
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ENGINEERING CONSULTANTS

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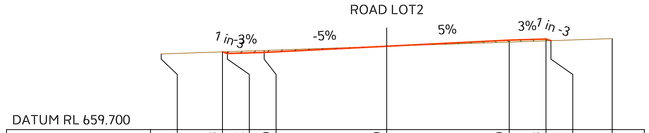
A 65 Blaxcell Street, Granville 2142

LOT 2 - ROAD CROSS SECTIONS SHEET 1 OF 3

1:200

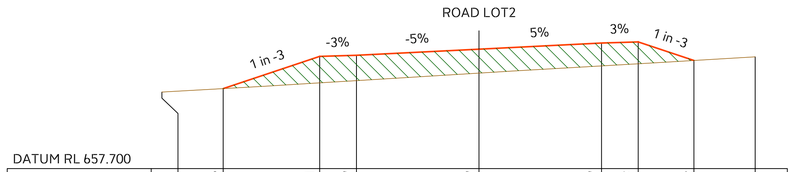


DATUM RL 659.700

PROPOSED SURFACE LEVEL ROAD LOT2		660.968	660.942	660.960	661.060	661.160	661.178	661.151			
CUT & FILL DEPTH		0.000	0.030	0.032	0.000	-0.032	-0.030	0.000			
EXISTING SURFACE LEVEL LOT2	660.934	660.968	660.971	660.992	661.060	661.128	661.148	661.151	661.185		
OFFSET	-3.681	-2.681	-2.600	-2.000	0.000	2.000	2.600	2.680	3.680		

Scale: H 50 : V 50

CH 0.000

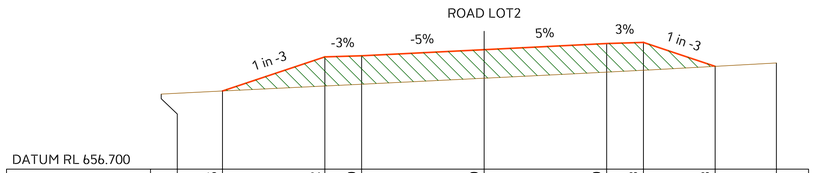


DATUM RL 657.700

PROPOSED SURFACE LEVEL ROAD LOT2		659.006	659.531	659.549	659.649	659.749	659.767	659.464			
CUT & FILL DEPTH		0.000	-0.432	-0.413	-0.391	-0.373	-0.356	0.000			
EXISTING SURFACE LEVEL LOT2	658.949	659.006	659.099	659.136	659.258	659.376	659.411	659.464	659.523		
OFFSET	-5.176	-4.176	-2.600	-2.000	0.000	2.000	2.600	3.509	4.509		

Scale: H 50 : V 50

CH 20.000

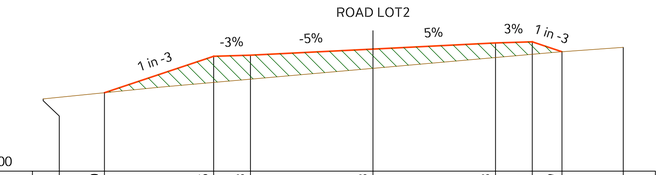


DATUM RL 656.700

PROPOSED SURFACE LEVEL ROAD LOT2		657.975	658.532	658.550	658.650	658.750	658.768	658.378			
CUT & FILL DEPTH		0.000	-0.475	-0.464	-0.466	-0.467	-0.454	0.000			
EXISTING SURFACE LEVEL LOT2	657.925	657.975	658.057	658.086	658.184	658.284	658.314	658.378	658.433		
OFFSET	-5.271	-4.271	-2.600	-2.000	0.000	2.000	2.600	3.771	4.771		

Scale: H 50 : V 50

CH 40.000

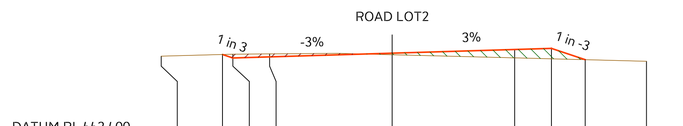


DATUM RL 657.000

PROPOSED SURFACE LEVEL ROAD LOT2		658.280	658.875	658.893	658.993	659.093	659.111	658.949			
CUT & FILL DEPTH		0.000	-0.426	-0.391	-0.315	-0.238	-0.204	0.000			
EXISTING SURFACE LEVEL LOT2	658.180	658.280	658.448	658.501	658.678	658.854	658.907	658.949	659.020		
OFFSET	-5.384	-4.384	-2.600	-2.000	0.000	2.000	2.600	3.085	4.085		

Scale: H 50 : V 50

CH 60.000

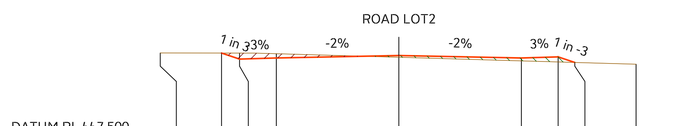


DATUM RL 662.400

PROPOSED SURFACE LEVEL ROAD LOT2		663.740	663.684	663.702	663.762	663.822	663.840	663.656			
CUT & FILL DEPTH		0.000	0.061	0.049	-0.025	-0.136	-0.170	0.000			
EXISTING SURFACE LEVEL LOT2	663.713	663.740	663.745	663.750	663.737	663.685	663.670	663.656	663.630		
OFFSET	-3.769	-2.769	-2.600	-2.000	0.000	2.000	2.600	3.152	4.152		

Scale: H 50 : V 50

CH 80.000

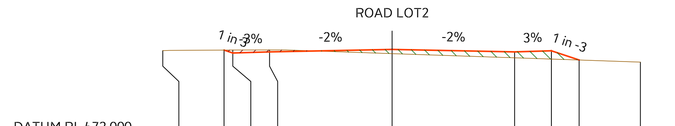


DATUM RL 667.500

PROPOSED SURFACE LEVEL ROAD LOT2		668.864	668.765	668.783	668.823	668.783	668.801	668.711			
CUT & FILL DEPTH		0.000	0.098	0.070	-0.029	-0.047	-0.083	0.000			
EXISTING SURFACE LEVEL LOT2	668.866	668.864	668.863	668.853	668.795	668.736	668.719	668.711	668.681		
OFFSET	-3.895	-2.895	-2.600	-2.000	0.000	2.000	2.600	2.872	3.872		

Scale: H 50 : V 50

CH 100.000



DATUM RL 672.000

PROPOSED SURFACE LEVEL ROAD LOT2		673.413	673.365	673.383	673.423	673.383	673.401	673.250			
CUT & FILL DEPTH		0.000	0.049	0.031	-0.068	-0.097	-0.136	0.000			
EXISTING SURFACE LEVEL LOT2	673.405	673.413	673.414	673.414	673.355	673.286	673.266	673.250	673.215		
OFFSET	-3.743	-2.743	-2.600	-2.000	0.000	2.000	2.600	3.053	4.053		

Scale: H 50 : V 50

CH 120.000

deboke CIVIL

Project No. 20240210-DA-CIV-DWG-01

Drawing No. S400

Title
Main Road LOT2 Cross Sections
Sheet 1 of 3

Scale
0m 10 20 30 40 50
SCALE 1:1000 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

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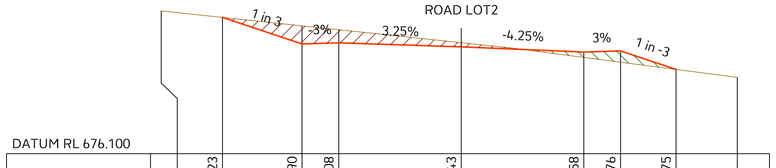
LOT 2 - ROAD CROSS SECTIONS SHEET 2 OF 3

1:200

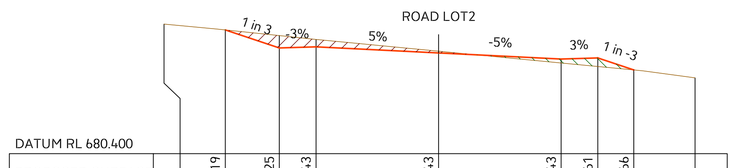


DATUM RL 676.100

PROPOSED SURFACE LEVEL ROAD LOT2		678.323	677.890	677.908	677.843	677.758	677.776	677.475		
CUT & FILL DEPTH		0.000	0.295	0.214	0.067	-0.088	-0.184	0.000		
EXISTING SURFACE LEVEL LOT2	678.429	678.323	678.186	678.122	677.911	677.670	677.592	677.475	677.345	
OFFSET	-4.898	-3.898	-2.600	-2.000	0.000	2.000	2.600	3.505	4.505	

Scale: H 50 : V 50

CH 140.000

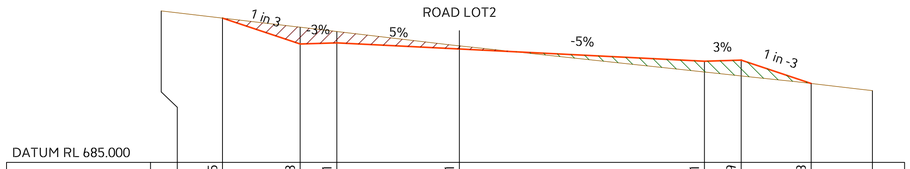


DATUM RL 680.400

PROPOSED SURFACE LEVEL ROAD LOT2		682.419	682.125	682.143	682.043	681.943	681.961	681.766		
CUT & FILL DEPTH		0.000	0.201	0.121	0.028	-0.064	-0.139	0.000		
EXISTING SURFACE LEVEL LOT2	682.515	682.419	682.327	682.264	682.072	681.880	681.822	681.766	681.637	
OFFSET	-4.482	-3.482	-2.600	-2.000	0.000	2.000	2.600	3.187	4.187	

Scale: H 50 : V 50

CH 160.000

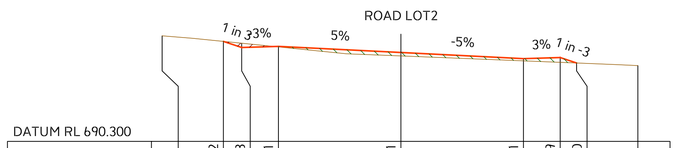


DATUM RL 685.000

PROPOSED SURFACE LEVEL ROAD LOT2		687.355	686.933	686.951	686.851	686.651	686.669	686.288		
CUT & FILL DEPTH		0.000	0.274	0.185	0.051	-0.176	-0.258	0.000		
EXISTING SURFACE LEVEL LOT2	687.473	687.355	687.206	687.136	686.902	686.475	686.411	686.288	686.172	
OFFSET	-4.867	-3.867	-2.600	-2.000	0.000	4.000	4.600	5.742	6.742	

Scale: H 50 : V 50

CH 180.000



DATUM RL 690.300

PROPOSED SURFACE LEVEL ROAD LOT2		691.932	691.833	691.851	691.751	691.651	691.669	691.580		
CUT & FILL DEPTH		0.000	0.069	-0.009	-0.056	-0.036	-0.078	0.000		
EXISTING SURFACE LEVEL LOT2	692.023	691.932	691.902	691.842	691.695	691.614	691.590	691.580	691.537	
OFFSET	-3.898	-2.898	-2.600	-2.000	0.000	2.000	2.600	2.868	3.868	

Scale: H 50 : V 50

CH 200.000

deboke CIVIL

Project No. 20240210-DA-CIV-DWG-01

Drawing No. S401

Title
Main Road LOT2 Cross Sections
Sheet 2 of 3

Scale
0m 10 20 30 40 50
SCALE 1:1000 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project
Proposed Subdivision Development

Application
Development Application

Address
698 Red Hills Road Marulan 2579

LGA
GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

Andrew Arida
B.E Civil/Structural
MIEAust (NO: 5579488)
Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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LOT 2 - ROAD CROSS SECTIONS SHEET 3 OF 3

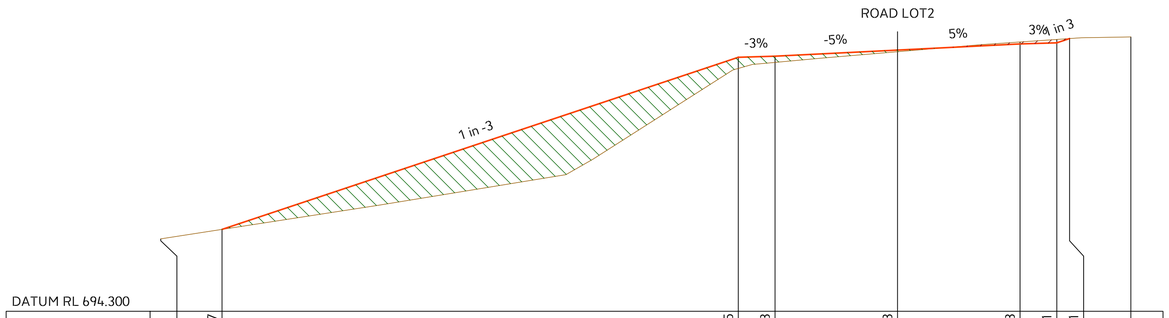
1:200

DATUM RL 694.800

PROPOSED SURFACE LEVEL ROAD LOT2		696.084		696.642	696.660	696.640		696.620	696.638	696.424	
CUT & FILL DEPTH		0.000		-0.478	-0.467	-0.352		-0.237	-0.234	0.000	
EXISTING SURFACE LEVEL LOT2	696.037	696.084		696.164	696.193	696.288		696.383	696.404	696.424	696.456
OFFSET	-5.273	-4.273		-2.600	-2.000	0.000		2.000	2.600	3.241	4.241

Scale: H 50 : V 50

CH 220.000



DATUM RL 694.300

PROPOSED SURFACE LEVEL ROAD LOT2		695.637				698.445	698.463	698.563	698.663	698.681	698.751
CUT & FILL DEPTH		0.000				-0.182	-0.102	-0.027	0.032	0.055	0.000
EXISTING SURFACE LEVEL LOT2	695.482	695.637				698.263	698.362	698.536	698.695	698.737	698.751	698.777
OFFSET	-12.026	-11.026				-2.600	-2.000	0.000	2.000	2.600	2.809	3.809

Scale: H 50 : V 50

CH 240.000

DATUM RL 696.400

PROPOSED SURFACE LEVEL ROAD LOT2		697.715	698.045	698.063		698.163	698.263	698.281	698.497		
CUT & FILL DEPTH		0.000	-0.176	-0.102		0.021	0.116	0.157	0.000		
EXISTING SURFACE LEVEL LOT2	697.557	697.715	697.869	697.961		698.184	698.380	698.438	698.497	698.580	
OFFSET	-4.591	-3.591	-2.600	-2.000		0.000	2.000	2.600	3.248	4.248	

Scale: H 50 : V 50

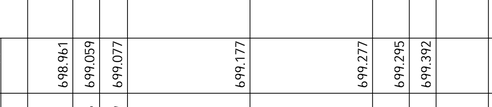
CH 260.000

DATUM RL 696.800

PROPOSED SURFACE LEVEL ROAD LOT2		698.187	698.593	698.611		698.711	
CUT & FILL DEPTH		0.000	-0.285	-0.243		-0.144	
EXISTING SURFACE LEVEL LOT2	697.985	698.187	698.308	698.368		698.567	698.543
OFFSET	-4.817	-3.817	-2.600	-2.000		0.000	1.000

Scale: H 50 : V 50

CH 280.000



DATUM RL 697.700

PROPOSED SURFACE LEVEL ROAD LOT2		698.961	699.059	699.077		699.177	699.277	699.295	699.392		
CUT & FILL DEPTH		0.000	-0.076	-0.049		0.000	0.049	0.076	0.000		
EXISTING SURFACE LEVEL LOT2	698.908	698.961	698.983	699.028		699.177	699.326	699.370	699.392	699.395	
OFFSET	-3.892	-2.892	-2.600	-2.000		0.000	2.000	2.600	2.892	3.892	

Scale: H 50 : V 50

CH 295.530

deboke CIVIL

Project No. 20240210-DA-CIV-DWG-01

Drawing No. S403

Title: Main Road LOT2 Cross Sections Sheet 3 of 3

Scale: 0m 10 20 30 40 50 SCALE 1:1000 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project: Proposed Subdivision Development

Application: Development Application

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LGA: GOULBURN MULWAREE Council

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Structural				
Hydraulic/Fire				
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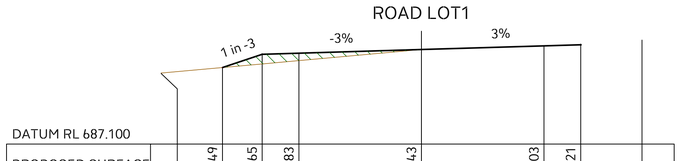
LOT 1 - ROAD CROSS SECTIONS SHEET 1 OF 3

1:200

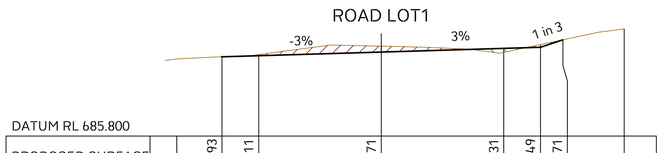


DATUM RL 687.100

PROPOSED SURFACE LEVEL ROAD LOT1		688.349	688.565	688.583	688.643	688.703	688.721		
CUT & FILL DEPTH		0.000	-0.157	-0.121	0.000				
EXISTING SURFACE LEVEL LOT1	688.258	688.349	688.407	688.462	688.643			688.798	
OFFSET	-4.248	-3.248	-2.600	-2.000	0.000	2.000	2.600	3.600	

Scale: H 50 : V 50

CH 0.000



DATUM RL 685.800

PROPOSED SURFACE LEVEL ROAD LOT1		687.093	687.111	687.171	687.231	687.249	687.371		
CUT & FILL DEPTH		0.000	0.019	0.096	-0.065	0.044	0.000		
EXISTING SURFACE LEVEL LOT1	686.969	687.093	687.129	687.266	687.166	687.293	687.371	687.548	
OFFSET	-3.600	-2.600	-2.000	0.000	2.000	2.600	2.966	3.966	

Scale: H 50 : V 50

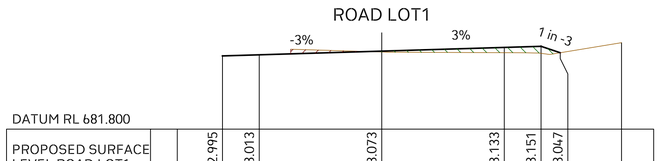
CH 20.000

DATUM RL 683.800

PROPOSED SURFACE LEVEL ROAD LOT1		685.044	685.062	685.122	685.182	685.200	685.105	
CUT & FILL DEPTH				-0.049	-0.140	-0.172	0.000	
EXISTING SURFACE LEVEL LOT1				685.072	685.042	685.028	685.105	685.347
OFFSET	-3.600	-2.600	-2.000	0.000	2.000	2.600	2.883	3.883

Scale: H 50 : V 50

CH 40.000

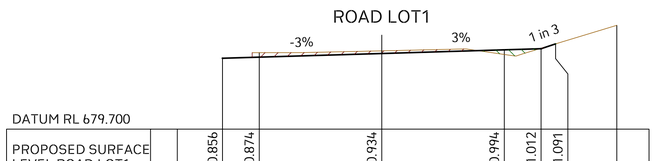


DATUM RL 681.800

PROPOSED SURFACE LEVEL ROAD LOT1		682.995	683.013	683.073	683.133	683.151	683.047	
CUT & FILL DEPTH				-0.014	-0.086	-0.114	0.000	
EXISTING SURFACE LEVEL LOT1				683.059	683.047	683.038	683.047	683.211
OFFSET	-3.600	-2.600	-2.000	0.000	2.000	2.600	2.914	3.914

Scale: H 50 : V 50

CH 60.000

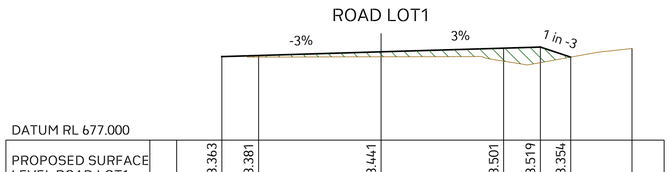


DATUM RL 679.700

PROPOSED SURFACE LEVEL ROAD LOT1		680.856	680.874	680.934	680.994	681.012	681.091		
CUT & FILL DEPTH			0.073	0.043	-0.076	0.007	0.000		
EXISTING SURFACE LEVEL LOT1			680.947	680.978	680.918	681.019	681.091	681.395	
OFFSET	-3.600	-2.600	-2.000	0.000	2.000	2.600	2.837	3.837	

Scale: H 50 : V 50

CH 80.000

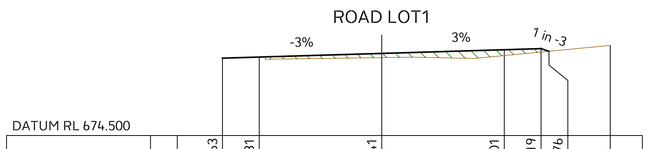


DATUM RL 677.000

PROPOSED SURFACE LEVEL ROAD LOT1		678.363	678.381	678.441	678.501	678.519	678.354	
CUT & FILL DEPTH			-0.025	-0.081	-0.212	-0.255	0.000	
EXISTING SURFACE LEVEL LOT1			678.356	678.360	678.289	678.264	678.354	678.495
OFFSET	-3.600	-2.600	-2.000	0.000	2.000	2.600	3.095	4.095

Scale: H 50 : V 50

CH 100.000

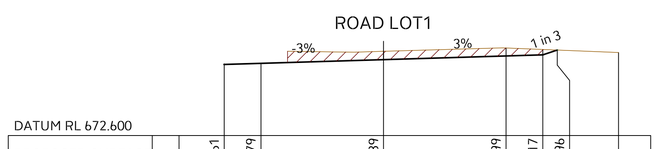


DATUM RL 674.500

PROPOSED SURFACE LEVEL ROAD LOT1		675.763	675.781	675.841	675.901	675.919	675.876	
CUT & FILL DEPTH				-0.069	-0.095	-0.055	0.000	
EXISTING SURFACE LEVEL LOT1				675.772	675.806	675.863	675.876	675.972
OFFSET	-3.600	-2.600	-2.000	0.000	2.000	2.600	2.729	3.729

Scale: H 50 : V 50

CH 120.000

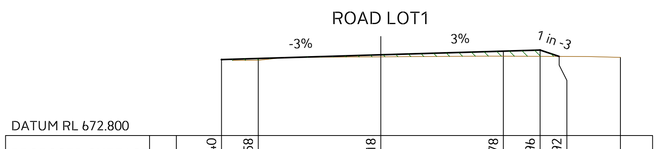


DATUM RL 672.600

PROPOSED SURFACE LEVEL ROAD LOT1		673.761	673.779	673.839	673.899	673.917	673.996	
CUT & FILL DEPTH				0.136	0.131	0.088	0.000	
EXISTING SURFACE LEVEL LOT1				673.975	674.029	674.005	673.996	673.955
OFFSET	-3.600	-2.600	-2.000	0.000	2.000	2.600	2.836	3.836

Scale: H 50 : V 50

CH 140.000



DATUM RL 672.800

PROPOSED SURFACE LEVEL ROAD LOT1		674.040	674.058	674.118	674.178	674.196	674.092	
CUT & FILL DEPTH			-0.029	-0.033	-0.083	-0.103	0.000	
EXISTING SURFACE LEVEL LOT1			674.028	674.085	674.095	674.093	674.092	674.076
OFFSET	-3.600	-2.600	-2.000	0.000	2.000	2.600	2.912	3.912

Scale: H 50 : V 50

CH 160.000

deboke CIVIL

Project No. 20240210-DA-CIV-DWG-01

Drawing No. S404

Title
Main Road LOT1 Cross Sections
Sheet 1 of 3

Scale
0m 10 20 30 40 50
SCALE 1:1000 ON ORIGINAL SIZE

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Architect

Client
Abu Bader

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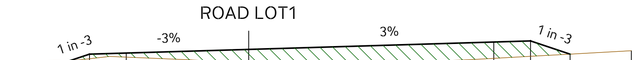
A 65 Blaxcell Street, Granville 2142

LOT 1 - ROAD CROSS SECTIONS SHEET 2 OF 3

1:200

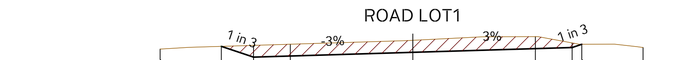


DATUM RL 675.300

PROPOSED SURFACE LEVEL ROAD LOT1		676.586	676.700	676.718	676.778		676.898	676.916	676.701		
CUT & FILL DEPTH		0.000	-0.075	-0.066	-0.239		-0.266	-0.251	0.000		
EXISTING SURFACE LEVEL LOT1	676.529	676.586	676.625	676.652	676.539		676.631	676.665	676.701	676.756	
OFFSET	-3.942	-2.942	-2.600	-2.000	0.000		4.000	4.600	5.246	6.246	

Scale: H 50 : V 50

CH 180.000

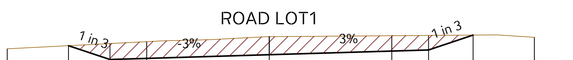


DATUM RL 679.400

PROPOSED SURFACE LEVEL ROAD LOT1		680.764	680.589	680.607	680.667		680.727	680.745	680.798		
CUT & FILL DEPTH		0.000	0.191	0.192	0.195		0.196	0.075	0.000		
EXISTING SURFACE LEVEL LOT1	680.720	680.764	680.780	680.799	680.862		680.923	680.820	680.798	680.746	
OFFSET	-4.125	-3.125	-2.600	-2.000	0.000		2.000	2.600	2.759	3.759	

Scale: H 50 : V 50

CH 200.000

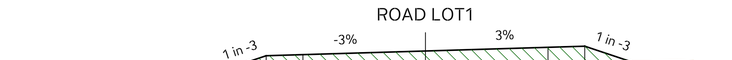


DATUM RL 683.300

PROPOSED SURFACE LEVEL ROAD LOT1		684.704	684.479	684.497	684.557		684.617	684.635	684.877		
CUT & FILL DEPTH		0.000	0.261	0.273	0.295		0.250	0.237	0.000		
EXISTING SURFACE LEVEL LOT1	684.653	684.704	684.739	684.770	684.851		684.867	684.871	684.877	684.840	
OFFSET	-4.277	-3.277	-2.600	-2.000	0.000		2.000	2.600	3.327	4.327	

Scale: H 50 : V 50

CH 220.000

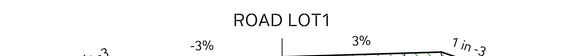


DATUM RL 686.900

PROPOSED SURFACE LEVEL ROAD LOT1		688.130	688.368	688.386	688.446		688.506	688.524	688.264		
CUT & FILL DEPTH		0.000	-0.225	-0.227	-0.236		-0.244	-0.264	0.000		
EXISTING SURFACE LEVEL LOT1	688.120	688.130	688.143	688.159	688.210		688.262	688.261	688.264	688.292	
OFFSET	-4.315	-3.315	-2.600	-2.000	0.000		2.000	2.600	3.380	4.380	

Scale: H 50 : V 50

CH 240.000



DATUM RL 690.100

PROPOSED SURFACE LEVEL ROAD LOT1		691.288	691.583	691.601	691.661		691.721	691.739	691.489		
CUT & FILL DEPTH		0.000	-0.280	-0.285	-0.289		-0.288	-0.281	0.000		
EXISTING SURFACE LEVEL LOT1	691.269	691.288	691.304	691.316	691.372		691.434	691.458	691.489	691.530	
OFFSET	-4.487	-3.487	-2.600	-2.000	0.000		2.000	2.600	3.352	4.352	

Scale: H 50 : V 50

CH 260.000

DATUM RL 692.400

PROPOSED SURFACE LEVEL ROAD LOT1		693.640	694.196	694.214	694.274		694.334	694.352	693.983		
CUT & FILL DEPTH		0.000	-0.496	-0.487	-0.457		-0.427	-0.418	0.000		
EXISTING SURFACE LEVEL LOT1	693.613	693.640	693.700	693.727	693.817		693.907	693.934	693.983	694.028	
OFFSET	-5.267	-4.267	-2.600	-2.000	0.000		2.000	2.600	3.705	4.705	

Scale: H 50 : V 50

CH 280.000

deboke CIVIL

Project No. 20240210-DA-CIV-DWG-01

Drawing No. S405

Title: Main Road LOT1 Cross Sections Sheet 2 of 3

Scale: 0m 2 4 6 8 10 — SCALE 1:200 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

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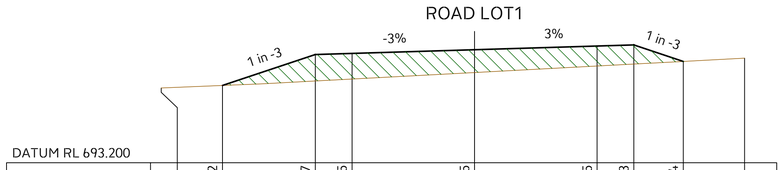
LOT 1 - ROAD CROSS SECTIONS SHEET 3 OF 3

1:200

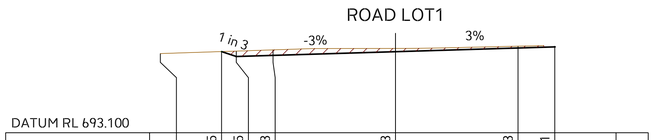


DATUM RL 693.200

PROPOSED SURFACE LEVEL ROAD LOT1		694.462	694.967	694.985	695.045	695.105	695.123	694.854		
CUT & FILL DEPTH		0.000	-0.433	-0.419	-0.372	-0.326	-0.312	0.000		
EXISTING SURFACE LEVEL LOT1	694.421	694.462	694.535	694.566	694.673	694.779	694.811	694.854	694.907	
OFFSET	-5.115	-4.115	-2.600	-2.000	0.000	2.000	2.600	3.407	4.407	

Scale: H 50 : V 50

CH 300.000

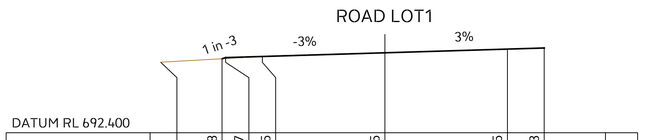


DATUM RL 693.100

PROPOSED SURFACE LEVEL ROAD LOT1		694.425	694.345	694.363	694.423	694.483	694.501		
CUT & FILL DEPTH		0.000	0.088	0.089	0.053	0.030			
EXISTING SURFACE LEVEL LOT1	694.392	694.425	694.433	694.453	694.476	694.513	694.531		
OFFSET	-3.839	-2.839	-2.600	-2.000	0.000	2.000	2.600	3.600	

Scale: H 50 : V 50

CH 320.000

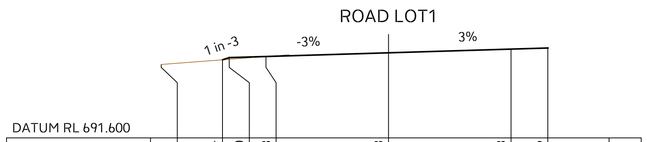


DATUM RL 692.400

PROPOSED SURFACE LEVEL ROAD LOT1		693.608	693.627	693.645	693.705	693.765	693.783	
CUT & FILL DEPTH		0.000	-0.016	-0.000	0.002			
EXISTING SURFACE LEVEL LOT1	693.552	693.608	693.611	693.645	693.708			
OFFSET	-3.658	-2.658	-2.600	-2.000	0.000	2.000	2.600	3.600

Scale: H 50 : V 50

CH 340.000



DATUM RL 691.600

PROPOSED SURFACE LEVEL ROAD LOT1		692.874	692.910	692.928	692.988	693.048	693.066		
CUT & FILL DEPTH		0.000	-0.028	-0.001					
EXISTING SURFACE LEVEL LOT1	692.798	692.874	692.882	692.927					
OFFSET	-3.710	-2.710	-2.600	-2.000	0.000	2.000	2.600	3.600	

Scale: H 50 : V 50

CH 359.977

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Project No. 20240210-DA-CIV-DWG-01

Drawing No. S406

Title
Main Road LOT1 Cross Sections
Sheet 3 of 3

Scale
0m 2 4 6 8 10
SCALE 1:200 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project
Proposed Subdivision Development

Application
Development Application

Address
698 Red Hills Road Marulan 2579

LGA
GOULBURN MULWAREE Council

Drawn	JP	Designed	ZZ
Reviewed	AA	Date	23-09-2024
Approved	AA	Date	23-09-2024

Andrew Arida
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MIEAust (NO: 5579488)
Professional Engineer (PRE0000268)
Design Practitioner (DEP0000455)

Discipline	Consultant	Reference	Revision	Date
Architect				
Surveyor	RPS AAP Consulting Pty Ltd	----	A	08.08.2024
Landscape				
Geotechnical	Australian Geoenviro	----	----	30.05.2024
Structural				
Hydraulic/Fire				
Mechanical				

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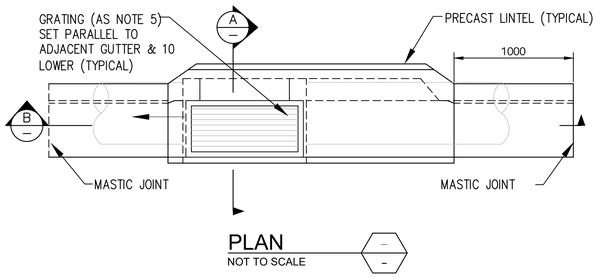
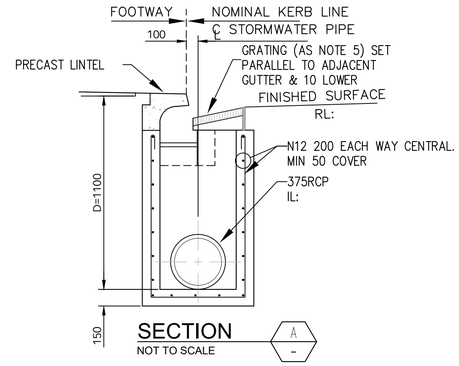
DETAILS SHEET



PLAN
NOT TO SCALE



SECTION
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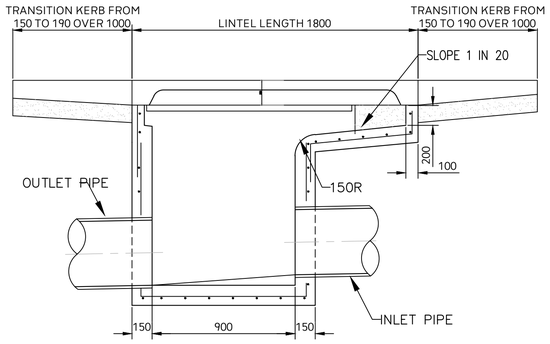

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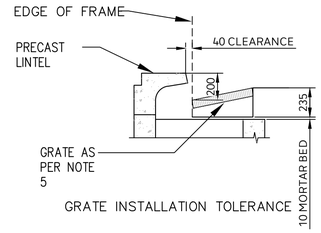
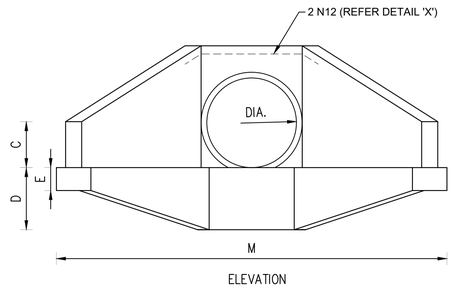


KERB INLET PIT DETAIL
NOT TO SCALE

KERB INLET PIT NOTES

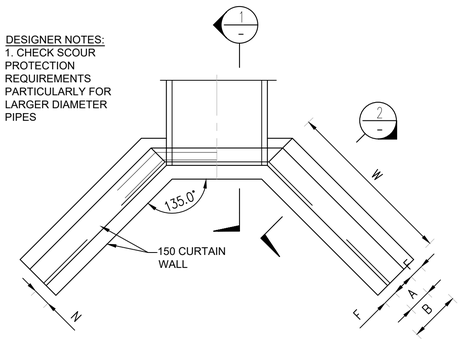
1. COMPRESSIVE STRENGTH (F'C) FOR CAST IN SITU CONCRETE SHALL BE A MINIMUM 20MPa AT 28 DAYS.
2. ALL PITS SHALL BE PROVIDED WITH A LOCKING CLIP.
   PIT GRATE SHALL BE 'WELDLOK' GULLY GRATE GG78-42A WITH SKIRT FOR INDUSTRIAL ROADS, WITH 42x5 EDGE BARS.
   DURING INSTALLATION OF GRATE & FRAME, CONTRACTOR SHALL ENSURE CLEARANCE BETWEEN LINTEL & OPENED GRATE (REFER TO INSTALLATION TOLERANCE)
3. ALL DIMENSIONS ARE IN MILLIMETRES.



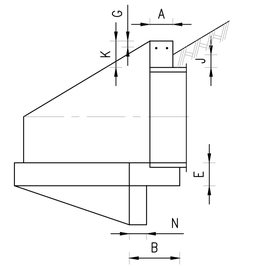
ELEVATION

NOTES
COMPRESSIVE STRENGTH (Fc) FOR CAST-IN-SITU CONCRETE TO BE A MINIMUM OF 20MPa AT 28 DAYS

DESIGNER NOTES:
1. CHECK SCOUR PROTECTION REQUIREMENTS PARTICULARLY FOR LARGER DIAMETER PIPES



NOTE
25mm CHAMFER ON ALL EXPOSED SURFACES
CONCRETE GRADE 20 MPa.



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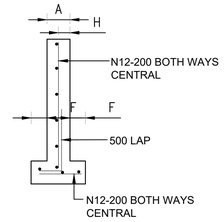

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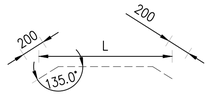

DETAIL X

HEADWALL TYPE "A" & "B"									
PIPE DIAMETER	300	375	450	525	600	675	750	825	900
A	150	150	150	175	175	175	200	200	225
B	300	300	300	450	450	450	600	600	600
C	300	300	300	300	350	350	350	350	350
D	375	375	375	375	530	530	530	530	530
E	150	150	150	150	175	175	200	200	225
F	75	75	75	138	100	100	200	200	188
G	40	40	40	40	50	50	50	50	50
H	70	70	70	70	75	75	100	100	125
J	100	100	100	100	100	100	100	100	100
K	200	200	200	200	300	300	300	30	300
N	150	150	150	150	150	150	150	150	150
W	700	700	850	1000	1100	1300	1450	1600	1750
L	800	850	950	1000	1100	1200	1250	1350	1400
M	1800	1900	2100	2200	2400	2100	2700	2900	3000
REINFORCEMENT DIAMETER	12	12	12	12	12	12	12	12	12
REINFORCEMENT LENGTH (mm)	1600	1700	1900	2000	2200	2400	2500	2700	2800

CONCRETE HEADWALL
NOT TO SCALE

NATURAL OUTLET NOTES :

DESIGN AND POSITION

1. OUTLET ANGLE IS TO BE NO GREATER THAN 30 DEGREES IN THE DIRECTION OF THE CHANNEL FLOW.

2. THE COVER OVER THE PIPE MUST BE A MINIMUM OF 300 MM.

3. SETBACK OF THE END OF THE PIPE MUST BE:
A. AT LEAST THREE TIMES THE BANK HEIGHT FROM THE TOE OF THE BANK ON THE SAME SIDE OF THE CHANNEL
B. AT LEAST 10 TIMES THE PIPE DIAMETER FROM THE TOE OF THE BANK ON THE OPPOSITE SIDE OF THE CHANNEL, IF THERE IS ONLY ONE PIPE
C. AT LEAST 13 TIMES THE LARGEST PIPE DIAMETER FROM THE TOE OF THE BANK ON THE OPPOSITE SIDE OF THE CHANNEL, IF THERE ARE MULTIPLE PIPES.

4. A MAXIMUM OF ONE METRE OF THE PIPE CAN BE EXPOSED.

5. PLACE THE HEADWALL SO AS TO AVOID VERTICAL DROPS OF OVER 900 MM.

6. FOR LOCATIONS WHERE THE VERTICAL FALL IS GREATER THAN 900 MM AND WHERE ROCK BATTERS ARE STEEPER THAN 1H:1V, YOU MUST INSTALL MONOWILLS BALLTUBE FENCING WITH BAND AND KNEE RAILS.

MATERIAL COMPOSITION

1. THE HEADWALL FOUNDATION MUST SIT ON A GEOTEXTILE FABRIC OF BIDIM A44 OR APPROVED EQUIVALENT.

2. THERE MUST BE A 100 MM THICK LAYER OF COARSE GRANULAR MATERIAL, SUCH AS CRUSHED RECYCLED TERRACOTTA 10–40 MM Ø (NOT BLUE METAL) ON THE GEOTEXTILE FABRIC.

3. STACKED ROCK RIP RAP IS TO BE A MIXTURE OF HARD SANDSTONE ROCKS TO FILL VOIDS DURING PLACEMENT. IT SHOULD BE MADE UP OF:
- 70% LARGE ROCKS OF REGULAR DIMENSION SUITABLE FOR NEAT INTERLOCKING STACKS
(TYPICALLY 200 KG TO 500 KG AND 0.75–1.2 M X 0.5 M X 0.25–0.45 M)
- 15% MEDIUM ROCKS (TYPICALLY THE SIZE OF A SOCCER BALL)
- 15% SMALL ROCKS (TYPICALLY THE SIZE OF A CLOSED FIST)
- HAND-COMPACTED GROWING MEDIUM FOR VOIDS LESS THAN 200 MM Ø. THIS SHOULD NOT BE OVER COMPACTED.

4. ALL ROCK BATTERS STEEPER THAN 2H:1V REQUIRE TO BE ROCK ARMOURED.

5. ALL NON-ROCK BATTERS ARE TO BE NO STEEPER THAN 3H:1V.

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Project No. 20240210-DA-CIV-DWG-01
Drawing No. S500
Title: Details Sheet
Scale: 0m 75 150 225 300 375 — SCALE 1:750 ON ORIGINAL SIZE

Rev.	Description	Design	Date
01	Issued For DA	ZZ	23-09-2024

Architect

Client: Abu Bader

Project: Proposed Subdivision Development
Application: Development Application
Address: 698 Red Hills Road Marulan 2579
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