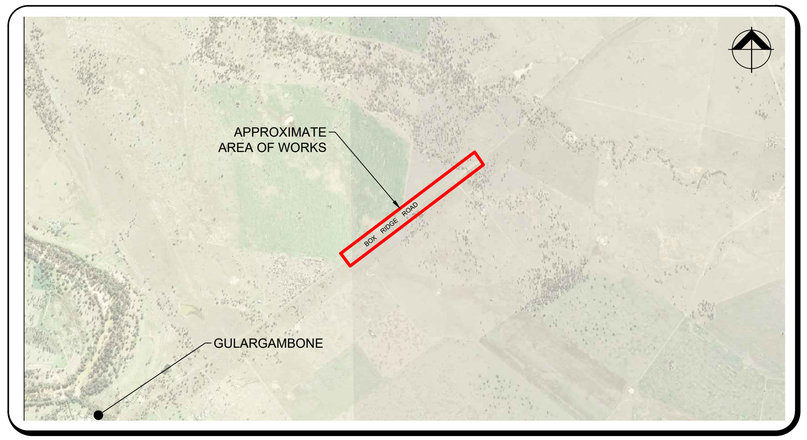


LOCALITY MAP
N.T.S

BOX RIDGE ROAD - SITE 1

FULL WIDTH REHABILITATION

FROM CH 2.2 TO 3.5km
From Intersection with Castlereagh Hwy

For: Coonamble Shire Council

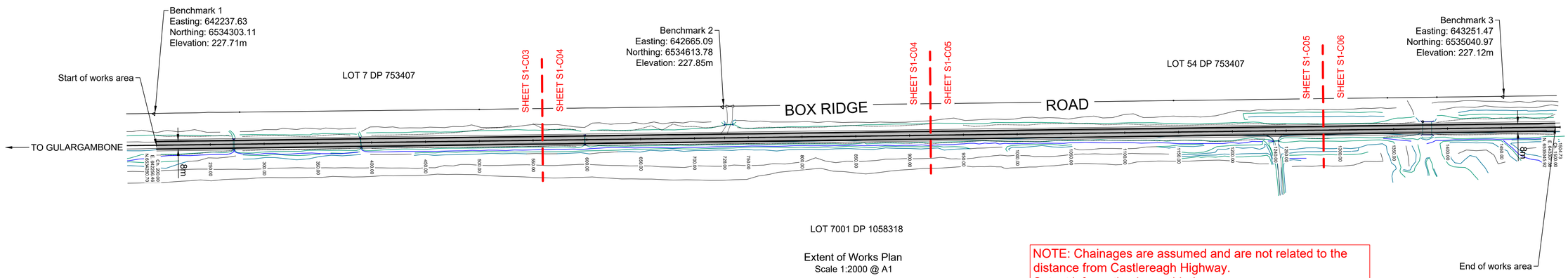
ARDILL PAYNE
& P a r t n e r s
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT

BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955

A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

DRAWING SCHEDULE

DRAWINGS	SHEET	DESCRIPTION
11551 -No. S1-C01	1 of 11	Overall Site Layout Notes & Details
11551 -No. S1-C02	2 of 11	Erosion & Sediment Control Layout Plan, Notes & Details
11551 -No. S1-C03	3 of 11	Layout Plan & Longitudinal Sections Ch 200.00 to Ch 560.00
11551 -No. S1-C04	4 of 11	Layout Plan & Longitudinal Sections Ch 560.00 to Ch 920.00
11551 -No. S1-C05	5 of 11	Layout Plan & Longitudinal Sections Ch 920.00 to Ch 1280.00
11551 -No. S1-C06	6 of 11	Layout Plan & Longitudinal Sections Ch 1280.00 to Ch 1500.00
11551 -No. S1-C07	7 of 11	Cross Sections Ch 200.00 to Ch 650.00
11551 -No. S1-C08	8 of 11	Cross Sections Ch 700.00 to Ch 1250.00
11551 -No. S1-C09	9 of 11	Cross Sections Ch 1300.00 to Ch 1500.00
11551 -No. S1-C10	10 of 11	Linemarking Layout Plan - Sheet 1
11551 -No. S1-C11	11 of 11	Linemarking Layout Plan - Sheet 2



LOT 7001 DP 1058318

Extent of Works Plan
Scale 1:2000 @ A1

NOTE: Chainages are assumed and are not related to the distance from Castlereagh Highway.
Setout information is provided

General Notes

1. All setout shall be by suitably experienced personnel. All works-as-executed plans shall be certified by a Registered Surveyor or Engineer.
2. Dimensions are generally in millimetres unless noted otherwise.
3. All levels are in metres unless noted otherwise.
4. All levels shown are finished surface unless noted otherwise.
5. Council inspection hold points of road works are required at the following construction stages:
   a. Box inspection of subgrade and proof roll.
   b. Inspection of select layers - proof roll.
   c. Inspection of sub base gravels and proof roll.
   d. Inspection of base gravels and proof roll prior to sealing.
   e. Any service crossings of road pavement.
6. Inspections are organised by contacting Council's Development Engineer. Please note 24hours notice of inspection is required.
7. Density testing is to be carried out at max.100m spacing or in accordance with Table 8.1 of AS 3798 - Guidelines on Earthworks for Commercial and Residential Development, whichever gives the greater frequency of testing.
   Compaction is to be to the following:
   - general filling to 98% standard compaction;
   - subgrade to 98% standard compaction;
   - sub-base gravels to 102% standard compaction;
   - base course gravels to 102% standard compaction;
8. Minimum cover to stormwater pipes shall be 450mm in landscape areas, and 600mm under road pavements, unless noted otherwise.
9. The Contractor is responsible for maintaining sufficient cover over stormwater and sewer mains during construction, and ensuring that trenches are correctly backfilled and compacted to eliminate damage caused by construction traffic.
10. General concrete works shall have the following properties:
    a. Class of concrete shall be normal.
    b. Maximum slump shall be 80mm.
    c. Maximum aggregate size shall be 20mm.
    d. Min 28 days concrete compressive strength shall be 25 Mpa including all kerbs u.n.o
    e. Concrete works shall conform to AS 3600.
11. Linemarking and signage shall confirm to AS 1742 Manual of Uniform Traffic Control Devices.
12. It is the responsibility of the Contractor to ensure that adequate erosion and sedimentation control devices are erected and maintained at all times during construction, and to the satisfaction of the Local Authority.
13. All traffic control during construction shall be in accordance with the RTA's Guidelines - Traffic Control at Work Sites and AS 1742.3 - 2002 Manual of Uniform Traffic Control Devices: Traffic Control Devices for Works on Roads.
14. All works shall be carried out in accordance with the Local Authorities Development Code and Austroads Standards.
15. It is the Contractor's responsibility to provide to the Surveyor any information necessary to prepare works-as-executed drawings for submission to the Local Authority. It will be necessary to liaise with the Surveyor to coordinate the location of some items prior to backfilling.

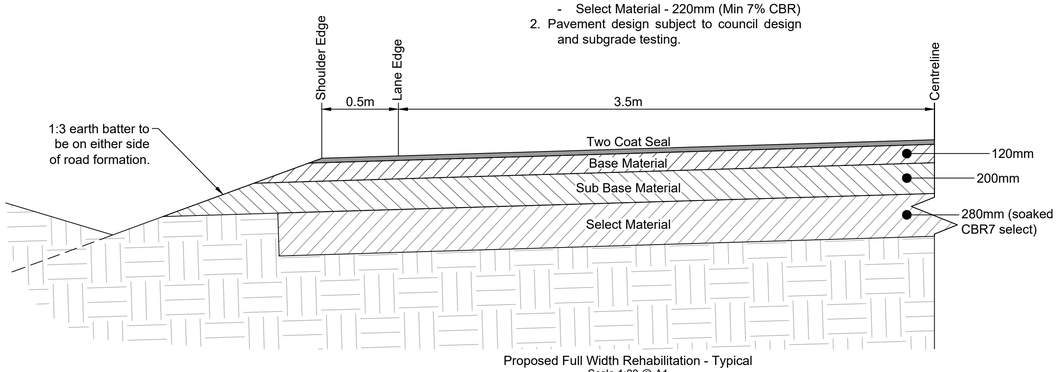
Site Preparation

The following scope of work is required as a minimum to prepare the site prior to filling:

- Prior to construction and placement of any fill, the proposed areas should be stripped to remove all vegetation, topsoil, uncontrolled fill, organic, root affected or other potentially deleterious material.
- Boxed-out excavations should be drained permanently to allow any infiltration from subsequent fill to escape the excavation profile.
- Where the ground slopes at more than 1V:10H (6deg), the ground profile should be benched in 300m vertical steps to create near-level platforms for filling. The platforms should be graded with a cross fall no stepper than 2% downslope to allow drainage to any infiltration to the fill and to prevent pooling of subsurface moisture.
- Following stripping, the exposed subgrade materials should be proof rolled in the presence of a suitably qualified and experienced Geotechnical Engineer to identify any wet or excessively deflecting material.
- Proof rolling should involve compacting the site with an 8-ton roller, trimming the rolled surface to level and clean finish. Where there are areas indicating excessive deflection then these may require over-excavation and backfilling with an approved select material.
- Re-use of Site Material: Where feasible, site won material is to be trucked directly to the placement site to avoid double handling. Site won material is suitable for general fill material. However, engineered fill for permanent works may require a coarser particle size blend to comply with specification grading requirements. Excavated material used during construction are subject to further testing to confirm specification and design acceptability requirements.
- Bulk Earthworks: Subgrade preparation will generally only require removal of topsoil and compaction to 98% relative to standard compaction of the excavated subgrade material. Slope angles of 1V:1H and 1V:2V is considered appropriate for compacted embankment fill materials in the temporary and permanent conditions respectively.
- Trafficability: Note, Clay subgrades at the site have a low wet strength and poor subgrade strength. The site soils would be trafficable during dry periods. Some desiccation of exposed surfaces can be expected and large quantities of dust will be generated during dry periods under traffic. The soils will be soft and difficult to traverse following wet weather or inundation. Drying out these soils could take several days or weeks before being able to accommodate construction traffic.

Road Pavement Notes:

1. Pavement and seal to be as follows
   - Seal - 2 Coat Spray Seal
   - Base - 120mm DGB20
   - Subbase - 200mm DGS20/40
   - Select Material - 220mm (Min 7% CBR)
2. Pavement design subject to council design and subgrade testing.



Proposed Full Width Rehabilitation - Typical
Scale 1:20 @ A1

Legend

- Existing edge of bitumen
- Existing bottom of bank
- Existing top of bank
- Existing natural surface
- Existing fence
- Existing Drain
- Survey point
- Proposed edge of bitumen
- Proposed re-construction
- Proposed centreline
- Proposed bottom of batter

Contour @ 0.2m intervals

P.F.R = Plotted from records

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Services located in the area.
Services shown on plans are indicative only unless noted otherwise. Contractor to obtain current Dial Before You Dig and confirm location and level of any services prior to commencement of works. The contractor is responsible for maintaining safe work clearances to services and notifying the engineer of any discrepancies.

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0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 1
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

Title: Overall Site Layout Notes & Details

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
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A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	CW	Scale	1:2000 @ A1, 1:4000 @ A3
Drawn	CW		0 20 40 60 80 100
Checked	TC	Datum	
Approved	TC	Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
Date	24/02/2023	Design File	
Job No.	11551	Dwg No.	S1-C01
		Issue	B

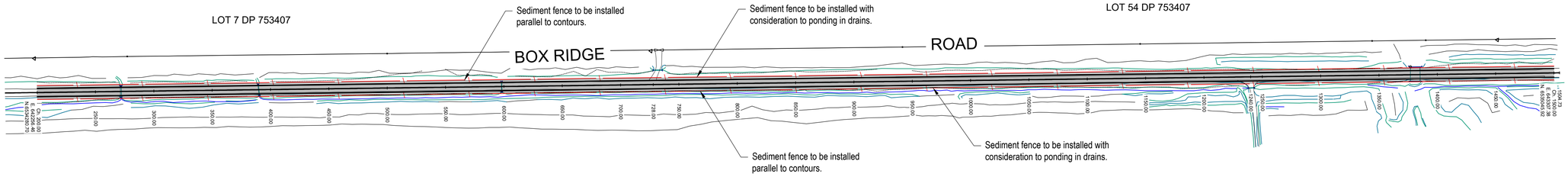
S:\01 Jobs\11500-11599\11551 Civil_Roads_Guiargambone_CSC\05 Drawings\01 Civil\01 Current\SITE 1\11551_SITE 1_DESIGN_ISSB\11551_SITE 1_DESIGN_ISSB.dwg, 6/03/2023 2:50:56 PM, DWG To PDF.pc3

Legend

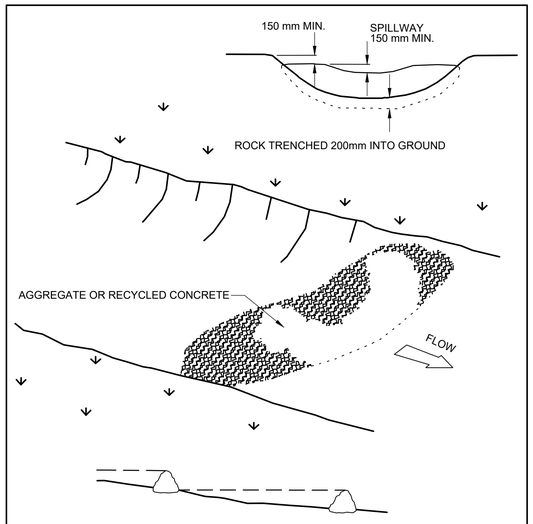
- Existing edge of bitumen
- Existing bottom of bank
- Existing top of bank
- Existing natural surface
- Existing fence
- Existing Drain
- Survey point
- Proposed edge of bitumen
- Proposed re-construction
- Proposed centreline
- Proposed bottom of batter
- Sediment fence

Contour @ 0.2m intervals

P.F.R = Plotted from records



Erosion & Sediment Control Layout Plan
Scale 1:2000 @ A1

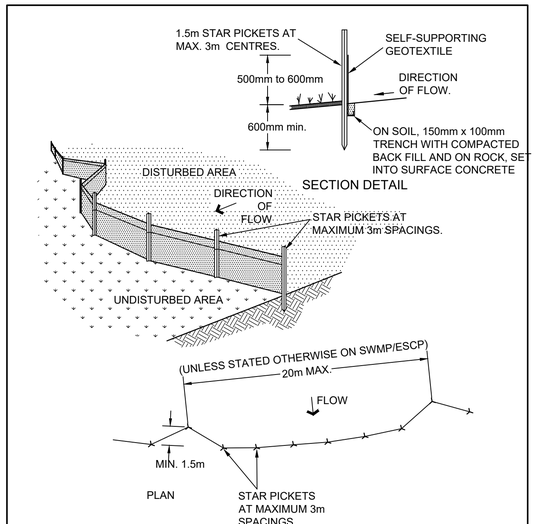


SPACING OF CHECK DAMSN ALONG CENTRELINE AND SCOUR PROTECTION BELOW EACH CHECK DAM TO BE SPECIFIED ON SWMP/ESCP

CONSTRUCTION NOTES:

1. TRENCH STRUCTURE 200mm INTO GROUND SURFACE WHEREVER THE STUCTURE CONTACTS THE GULLY BASE. FILL TRENCHES TO 100mm ABOVE GROUND SURFACE TO REDUCE RISK OF UNDERCUTTING.
2. ENSURE HEIGHT OF SPILLWAY IS LESS THAN 1m ABOVE THE GULLY FLOOR.
3. SPACE CHECKS SO THE TOE OF THE UPSTREAM DAM IS LEVEL WITH THE SPILLWAY OF THE NEXT DOWNSTREAM DAM.

ROCK CHECK DAM

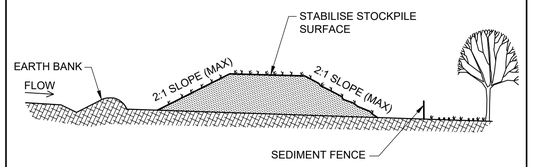


CONSTRUCTION NOTES:

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 UPSLOP 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 POST WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER
6. JOIN SECTIONS OF FABRIC AT SUPPORT POST WITH A 150mm OVERLAP.

SEDIMENT FENCE

NOTE:
SEDIMENT FENCE SHOWN DIAGRAMMATICALLY. FENCE TO BE LOCATED AT EDGE OF EARTHWORKS WHERE PRACTICABLE. SEDIMENT FENCE TO RUN PARALLEL TO CONTOURS.



CONSTRUCTION NOTES:

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

STOCKPILES

NOTES - EROSION AND SEDIMENTATION CONTROL

1. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS AS DETAILED IN LANDCOM'S ' MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION - VOLUME 1', 2004.
2. CONSTRUCTION SHALL BE PHASED SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE. THIS WILL LIMIT THE DURATION DISTURBED AREAS ARE EXPOSED TO EROSION. STABILISATION SHALL BE APPLIED TO THE FIRST DISTURBED AREA BEFORE THE NEXT SECTION IS OPENED UP. ANY DISTURBED AREAS THAT WILL NOT BE STABILISED WITHIN 30 DAYS SHALL BE REVEGETATED AND ANY THAT FAIL TO ESTABLISH SHALL BE RESOWN.
3. TOPSOIL STOCKPILES ARE TO BE LOCATED AWAY FROM ANY NATURAL DRAINAGE WATERCOURSE AND SHALL HAVE HAY BALES AND/OR SEDIMENT CONTROL FENCES PLACED AROUND THEM TO ACT AS SEDIMENTATION CONTROLS.
4. TEMPORARY EARTHEN DIVERSION DRAINS SHALL BE CONSTRUCTED TO DIVERT WATERS AWAY FROM ALL DISTURBED AREAS AND TOWARDS HAY BALE CHECK DAMS LOCATED IN NATURAL DRAINAGE DEPRESSIONS.
5. TEMPORARY SEDIMENT DETENTION BARRIERS SHALL BE PLACED AROUND OUTLET HEADWALLS AND DRAINAGE DISCHARGE POINTS AS DETAILED AND PERMANENT ENERGY DISSIPATERS SHALL BE INSTALLED AT ALL OUTLETS TO LIMIT VELOCITIES AND THUS THE POTENTIAL FOR SCOURING. WITH ALL DRAINAGE OUTLETS, WATER SHALL BE RELEASED IN A NON-ERODIBLE MANNER.
6. TEMPORARY SEDIMENT TRAPS SHALL BE CONSTRUCTED AT DRAINAGE INLET POINTS AS DETAILED.
7. TEMPORARY SEDIMENT FENCING SHALL BE INSTALLED ALONG THE DOWNSLOPE EDGE OF DISTURBED AREAS AND FILL BATTERS.
8. SEDIMENT AND DEBRIS SHALL BE REMOVED FROM DETENTION BARRIERS WHEN THEY ARE 60% FULL. ALL SEDIMENT REMOVED SHALL BE DISPOSED OF AS DIRECTED BY THE SUPERVISING ENGINEER.
9. UPON COMPLETION OF SHAPING AND DRAINAGE WORKS, BATTERS AND DRAINAGE LINES SHALL BE TOPSOILED TO A MINIMUM DEPTH OF 100mm WITH STOCKPILED MATERIAL AND ANY AREAS WITH INSUFFICIENT GRASS/TOPSOIL MIX SHALL BE SEEDED AND MULCHED WITH ANY FAILED AREAS RESOWN OR REVEGETATED AS DIRECTED BY THE SUPERVISING ENGINEER. A 400mm WIDE TURF STRIP SHALL BE INSTALLED NEXT TO ALL KERB, OR OTHER CONCRETE SURFACES, TO STABILISE THE INTERFACE BETWEEN CONCRETE SURFACES AND TOPSOILED AREAS.
10. TEMPORARY EROSION AND SEDIMENTATION CONTROLS ARE TO BE INSTALLED DURING THE CONSTRUCTION PHASE AND SHALL BE RETAINED AND MAINTAINED WHILE DISTURBED AREAS REMAIN OR ARE CONTRIBUTING SEDIMENT TO THE STORMWATER SYSTEM. NO DEVICE SHALL BE REMOVED UNTIL DIRECTED BY THE SUPERVISING ENGINEER.
11. WIND EROSION ON THE SITE SHALL BE MANAGED BY LIMITING TRAFFIC ON DISTURBED AREAS, UTILISING WATER TRUCKS, COVERING STOCKPILES WITH ANCHORED GEOFABRIC, AND PROVIDING DUST COVERS ON TRUCKS AND DUMPERS. IF WIND SPEED EXCEEDS 10m/s, INCREASE WATERING OR CEASE DUST GENERATING ACTIVITIES UNTIL DUST CONTROLS ARE OPERATING EFFECTIVELY. OTHER MEASURES MAY BE EMPLOYED AS OUTLINED IN THE LANDCOM MANUAL.

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Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 1
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

Title: Erosion & Sediment Control Layout Plan, Notes & Details

ARDILL PAYNE & Partners
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Design	CW
Drawn	CW
Checked	TC
Approved	TC
Date	24/02/2023
Job No.	11551
Scale	1:2000 @ A1, 1:4000 @ A3
Datum	
Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
Design File	
Dwg No.	S1-C02
Issue	B

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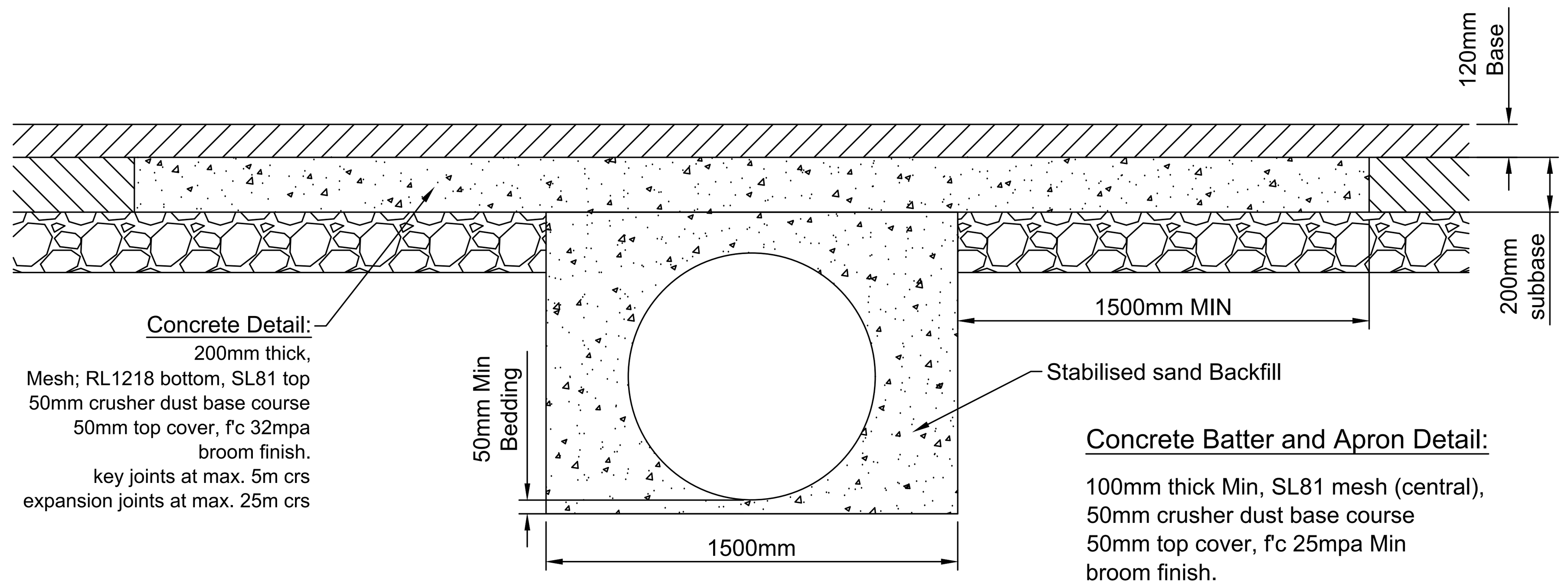

Ø900mm Pipe Detail
Ch. 271.80
Scale 1:20 @ A1

Concrete Batter and Apron Detail:

100mm thick Min, SL81 mesh (central),
50mm crusher dust base course
50mm top cover, f'c 25mpa Min
broom finish.
key joints at max. 5m crs
expansion joints at max. 25m crs

Legend

Existing edge of bitumen	Survey point
Existing bottom of bank	Proposed edge of bitumen
Existing top of bank	Proposed re-construction
Existing natural surface	Proposed centreline
Existing fence	Proposed bottom of batter
Existing Drain	Contour @ 0.2m intervals
	P.F.R = Plotted from records

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Services located in the area.
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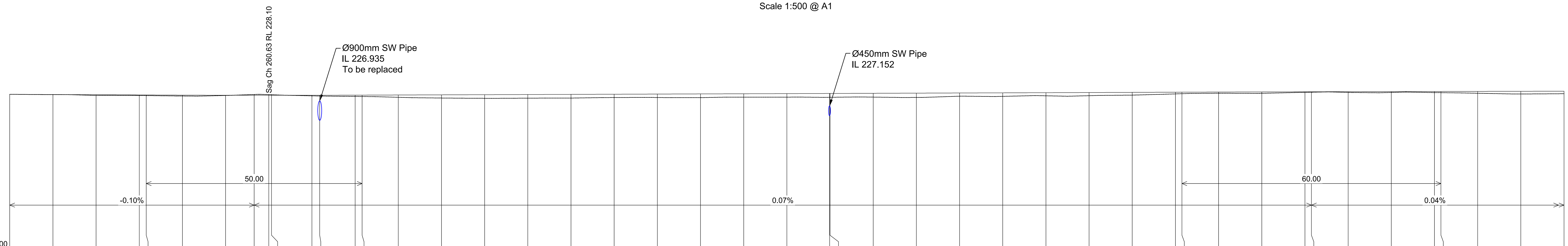
Box Ridge Road - Site 1 Plan
Ch 200.00 to Ch 560.00
Scale 1:500 @ A1



CHAINAGE	Cut/Fill	DESIGN SURFACE	EXISTING SURFACE
200.00	+0.00	228.14	228.14
210.00	+0.00	228.13	228.13
220.00	+0.03	228.12	228.09
230.00	+0.02	228.11	228.09
231.62	+0.03	228.11	228.08
240.00	+0.04	228.10	228.06
250.00	+0.01	228.10	228.09
256.62	-0.03	228.10	228.13
260.00	-0.03	228.10	228.13
260.63	-0.02	228.10	228.12
270.00	+0.03	228.10	228.07
271.80	+0.04	228.10	228.06
280.00	+0.06	228.10	228.04
281.62	+0.06	228.10	228.04
290.00	+0.11	228.11	228.00
300.00	+0.15	228.12	227.97
310.00	+0.17	228.13	227.96
320.00	+0.17	228.13	227.96
330.00	+0.17	228.14	227.97
340.00	+0.16	228.15	227.99
350.00	+0.16	228.15	227.99
360.00	+0.17	228.16	227.99
370.00	+0.16	228.17	228.01
380.00	+0.17	228.18	228.01
389.90	+0.18	228.18	228.00
390.00	+0.18	228.18	228.00
400.00	+0.18	228.19	228.01
410.00	+0.20	228.20	228.00
420.00	+0.15	228.20	228.05
430.00	+0.16	228.21	228.05
440.00	+0.15	228.22	228.07
450.00	+0.15	228.23	228.08
460.00	+0.12	228.23	228.11
470.00	+0.08	228.24	228.16
471.50	+0.07	228.24	228.17
480.00	+0.06	228.25	228.19
490.00	+0.06	228.25	228.19
500.00	+0.03	228.26	228.23
501.50	+0.02	228.26	228.24
510.00	+0.03	228.26	228.23
520.00	+0.04	228.27	228.23
530.00	+0.05	228.27	228.22
531.50	+0.05	228.27	228.22
540.00	+0.09	228.28	228.19
550.00	+0.12	228.28	228.16
560.00	+0.12	228.29	228.17

ALIGNMENT DETAILS: L=1504.73 B=53°56'25"

Box Ridge Road - Site 1 Longitudinal Section
Ch 200.00 to Ch 560.00
Scale Horizontal 1:500 Vertical 1:100 @ A1

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Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: **BOX RIDGE ROAD - SITE 1**
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

Title: Layout Plan & Longitudinal Sections Ch 200.00 to Ch. 560.00

ARDILL PAYNE & Partners
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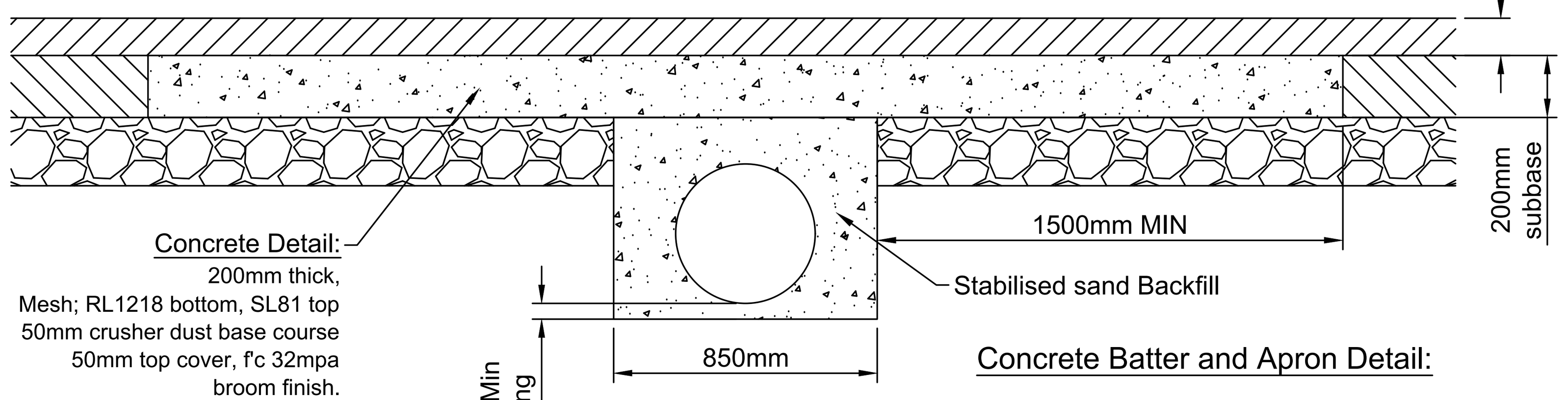
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	CW	Scale	1:500 @ A1, 1:1000 @ A3
Drawn	CW		0 5 10 15 20 25
Checked	TC	Datum	
Approved	TC	Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
Date	24/02/2023	Design File	
Job No.	11551	Dwg No.	S1-C03 Issue B

S:\01 Jobs\11500-11599\11551 Civil_Roads_Gulargambone_CSC\05 Drawings\01 Civil\01 Current\SITE 1\11551_SITE 1_DESIGN_ISSB\11551_SITE 1_DESIGN_ISSB.dwg, 6/03/2023 2:51:36 PM, DWG To PDF.pc3

Ø450mm Pipe Detail
Ch. 598.15
Scale 1:20 @ A1



Concrete Detail:
200mm thick,
Mesh; RL1218 bottom, SL81 top
50mm crusher dust base course
50mm top cover, f'c 32mpa
broom finish.
key joints at max. 5m crs
expansion joints at max. 25m crs

Concrete Batter and Apron Detail:
100mm thick Min, SL81 mesh (central),
50mm crusher dust base course
50mm top cover, f'c 25mpa Min
broom finish.
key joints at max. 5m crs
expansion joints at max. 25m crs

Legend

- Existing edge of bitumen
- Existing bottom of bank
- Existing top of bank
- Existing natural surface
- Existing fence
- Existing Drain
- Survey point
- Proposed edge of bitumen
- Proposed re-construction
- Proposed centreline
- Proposed bottom of batter
- Contour @ 0.2m intervals
- P.F.R = Plotted from records

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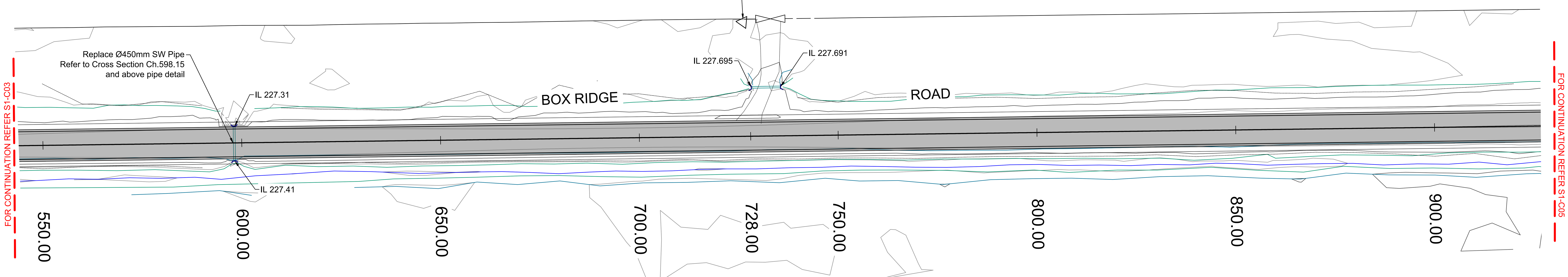
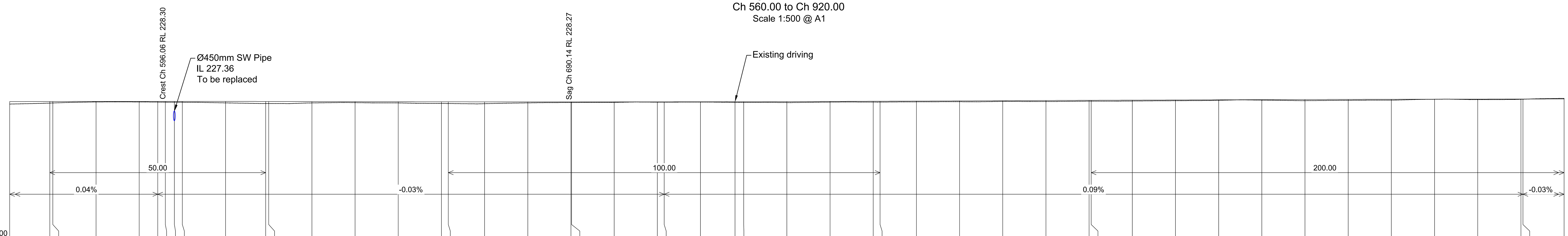


Box Ridge Road - Site 1 Plan
Ch 560.00 to Ch 920.00
Scale 1:500 @ A1



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569.31	+0.07	228.29	228.22
570.00	+0.07	228.29	228.22
580.00	+0.02	228.29	228.27
590.00	+0.03	228.30	228.27
594.31	+0.04	228.30	228.26
596.06	+0.04	228.30	228.26
598.15	+0.04	228.30	228.26
600.00	+0.05	228.30	228.25
610.00	+0.06	228.29	228.23
619.31	+0.09	228.29	228.20
620.00	+0.09	228.29	228.20
630.00	+0.07	228.29	228.22
640.00	+0.04	228.28	228.24
650.00	+0.06	228.28	228.22
660.00	+0.08	228.28	228.20
661.59	+0.08	228.28	228.20
670.00	+0.08	228.27	228.19
680.00	+0.04	228.27	228.23
690.00	+0.03	228.27	228.24
690.14	+0.03	228.27	228.24
700.00	+0.02	228.27	228.25
710.00	+0.01	228.27	228.26
711.59	+0.01	228.27	228.26
720.00	+0.01	228.28	228.27
728.00	+0.03	228.28	228.25
730.00	+0.03	228.28	228.25
740.00	+0.05	228.29	228.24
750.00	+0.03	228.29	228.26
760.00	+0.04	228.30	228.26
761.59	+0.04	228.30	228.26
770.00	+0.03	228.31	228.28
780.00	+0.04	228.32	228.28
790.00	+0.04	228.33	228.29
800.00	+0.05	228.34	228.29
810.00	+0.04	228.35	228.31
810.48	+0.04	228.35	228.31
820.00	+0.04	228.35	228.31
830.00	+0.03	228.36	228.33
840.00	+0.02	228.37	228.35
850.00	+0.03	228.38	228.35
860.00	+0.05	228.38	228.33
870.00	+0.04	228.39	228.35
880.00	+0.04	228.39	228.35
890.00	+0.01	228.40	228.39
900.00	+0.02	228.40	228.38
910.00	+0.01	228.40	228.39
910.48	+0.00	228.40	228.40
920.00	-0.02	228.41	228.43

ALIGNMENT DETAILS: L=1504.73, B=53°56'25"

Box Ridge Road - Site 1 Longitudinal Section
Ch 560.00 to Ch 920.00
Scale Horizontal 1:500 Vertical 1:100 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 1
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

Title: Layout Plan & Longitudinal Sections Ch. 560.00 to Ch. 920.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

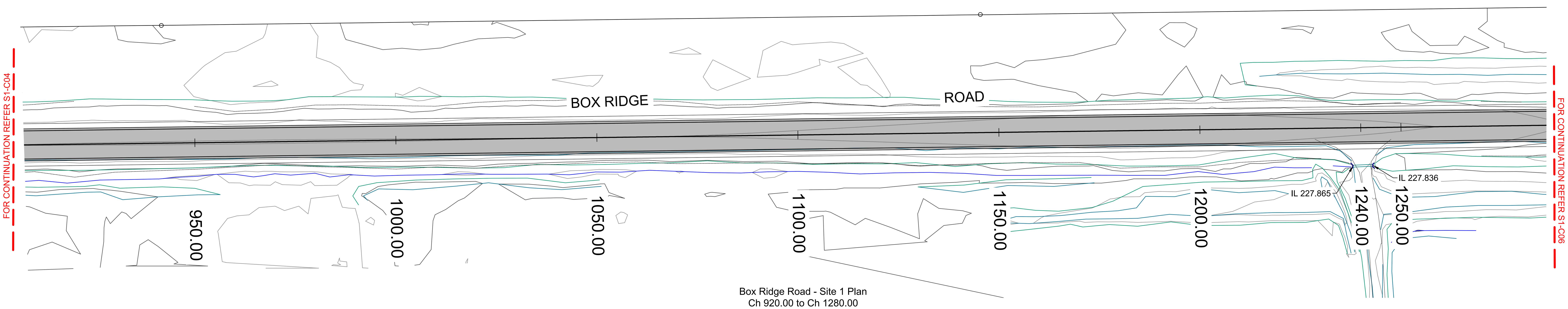
Design	CW	Scale	1:500 @ A1, 1:1000 @ A3
Drawn	CW		0 5 10 15 20 25
Checked	TC	Datum	
Approved	TC	Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
Date	24/02/2023	Design File	
Job No.	11551	Dwg No.	S1-C04 Issue B

Legend

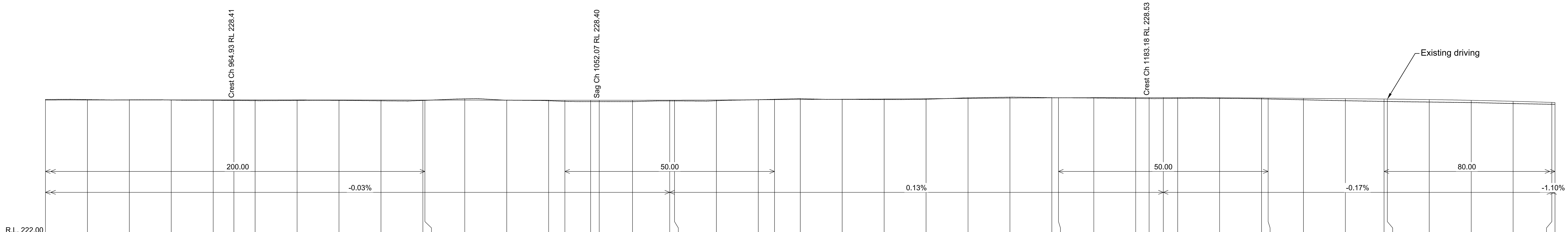
Existing edge of bitumen	Survey point
Existing bottom of bank	Proposed edge of bitumen
Existing top of bank	Proposed re-construction
Existing natural surface	Proposed centreline
Existing fence	Proposed bottom of batter
Existing Drain	Contour @ 0.2m intervals
	P.F.R = Plotted from records

DIAL BEFORE YOU DIG
www.1100.com.au

Services located in the area.
Services shown on plans are indicative only unless noted otherwise. Contractor to obtain current Dial Before You Dig and confirm location and level of any services prior to commencement of works. The contractor is responsible for maintaining safe work clearances to services and notifying the engineer of any discrepancies.



Box Ridge Road - Site 1 Plan
Ch 920.00 to Ch 1280.00
Scale 1:500 @ A1



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930.00	-0.02	228.41	228.43
940.00	-0.01	228.41	228.42
950.00	+0.00	228.41	228.41
960.00	+0.01	228.41	228.40
964.93	+0.02	228.41	228.39
970.00	+0.03	228.41	228.38
980.00	+0.02	228.41	228.39
990.00	+0.01	228.41	228.40
1000.00	+0.04	228.41	228.37
1010.00	+0.02	228.41	228.39
1010.48	+0.02	228.41	228.39
1020.00	-0.07	228.40	228.47
1030.00	+0.00	228.40	228.40
1040.00	+0.02	228.40	228.38
1043.86	+0.05	228.40	228.35
1050.00	+0.07	228.40	228.33
1052.07	+0.07	228.40	228.33
1060.00	+0.07	228.40	228.33
1068.86	+0.03	228.40	228.37
1070.00	+0.03	228.40	228.37
1080.00	+0.03	228.41	228.38
1090.00	+0.00	228.42	228.42
1093.86	-0.01	228.43	228.44
1100.00	-0.04	228.43	228.47
1110.00	+0.01	228.45	228.44
1120.00	+0.03	228.46	228.43
1130.00	+0.02	228.47	228.45
1140.00	-0.02	228.49	228.51
1150.00	-0.04	228.50	228.54
1160.00	-0.01	228.51	228.52
1161.58	-0.01	228.51	228.52
1170.00	+0.01	228.52	228.51
1180.00	+0.04	228.53	228.49
1183.18	+0.05	228.53	228.48
1186.58	+0.05	228.53	228.48
1190.00	+0.04	228.53	228.49
1200.00	+0.03	228.52	228.49
1210.00	+0.04	228.51	228.47
1211.58	+0.04	228.50	228.46
1220.00	+0.07	228.49	228.42
1230.00	+0.09	228.47	228.38
1239.22	+0.12	228.46	228.34
1240.00	+0.11	228.45	228.34
1250.00	+0.12	228.43	228.31
1260.00	+0.10	228.39	228.29
1270.00	+0.11	228.35	228.24
1279.22	+0.09	228.29	228.20
1280.00	+0.09	228.29	228.20

ALIGNMENT DETAILS: L=1504.73 B=53°56'25"

Box Ridge Road - Site 1 Longitudinal Section
Ch 920.00 to Ch 1280.00
Scale Horizontal 1:500 Vertical 1:100 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 | 100 Table of millimetres | 200 | 300 | 400 | 500 | 600 | 700 | 780

Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

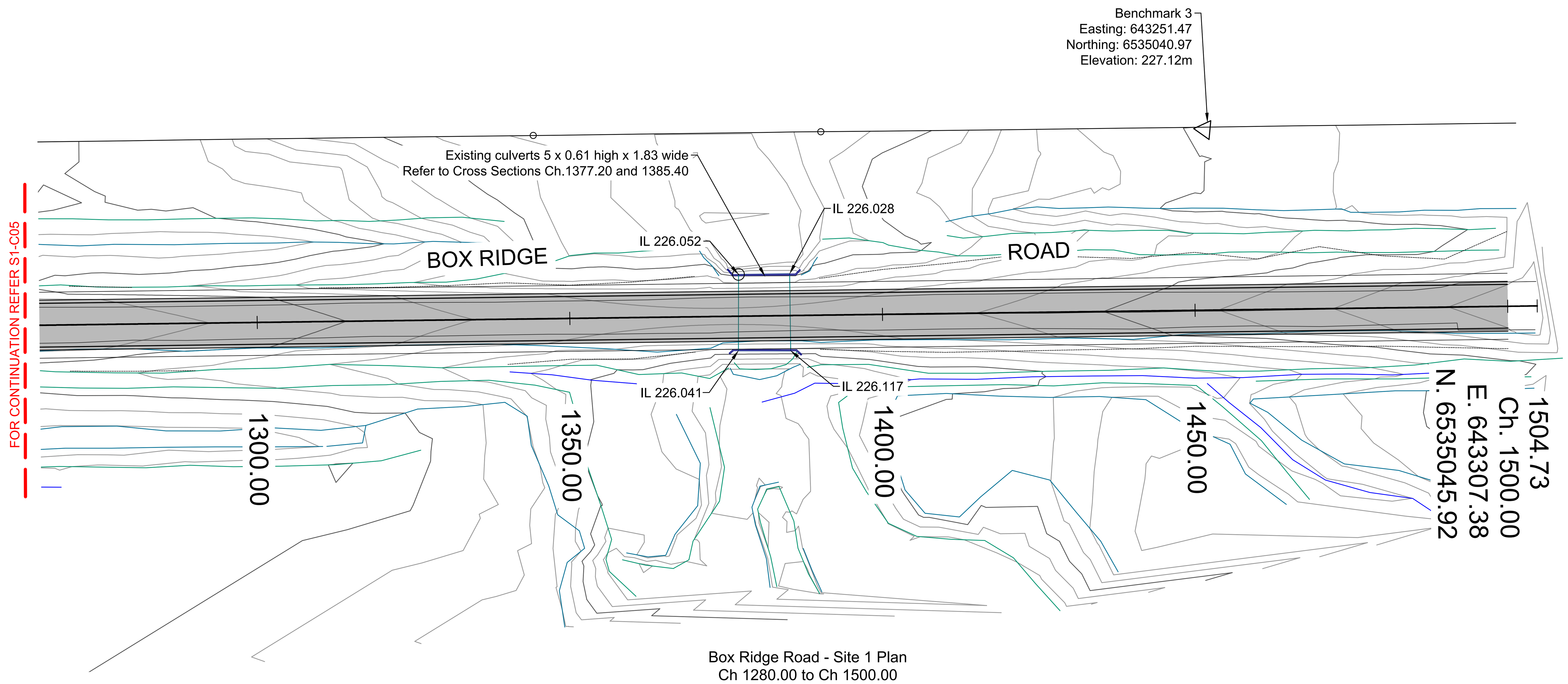
Project: **BOX RIDGE ROAD - SITE 1**
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

Title: Layout Plan & Longitudinal Sections Ch. 920.00 to Ch. 1280.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	CW	Scale	1:500 @ A1, 1:1000 @ A3 (0 5 10 15 20 25)
Drawn	CW		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
Date	24/02/2023	Design File	
Job No.	11551	Dwg No.	S1-C05
		Issue	B

S:\01 Jobs\11500-11599\11551 Civil_Roads_Gulargambone_CSC\05 Drawings\01 Civil\01 Current\SITE 1\11551_SITE 1_DESIGN_ISSB\11551_SITE 1_DESIGN_ISSB.dwg, 6/03/2023 2:52:16 PM, DWG To PDF.pc3



Box Ridge Road - Site 1 Plan
Ch 1280.00 to Ch 1500.00
Scale 1:500 @ A1

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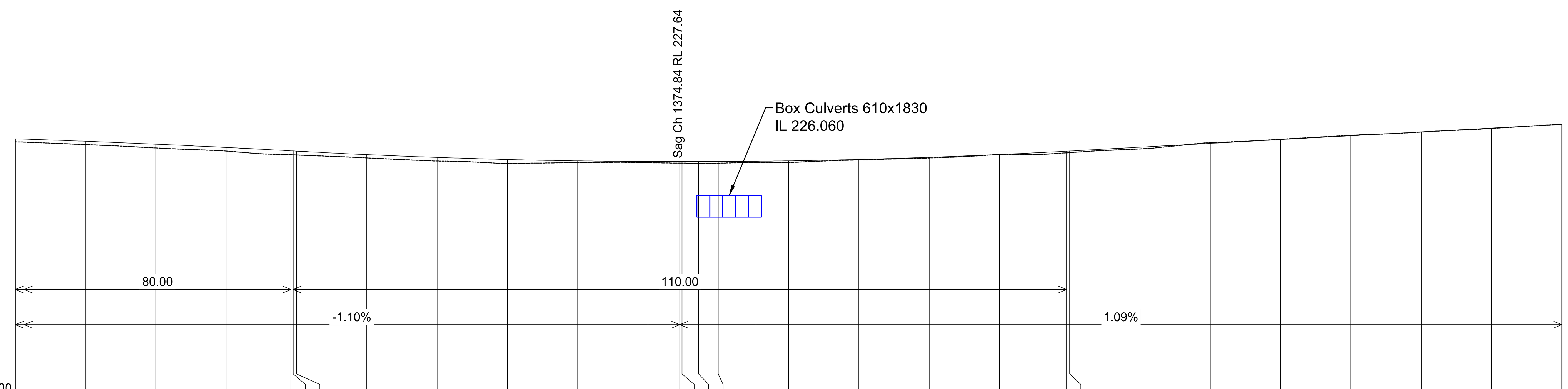
Services located in the area.
Services shown on plans are indicative only unless noted otherwise. Contractor to obtain current Dial Before You Dig and confirm location and level of any services prior to commencement of works. The contractor is responsible for maintaining safe work clearances to services and notifying the engineer of any discrepancies.

Legend

- Existing edge of bitumen
- Existing bottom of bank
- Existing top of bank
- Existing natural surface
- Existing fence
- Existing Drain
- Survey point
- Proposed edge of bitumen
- Proposed re-construction
- Proposed centreline
- Proposed bottom of batter

Contour @ 0.2m intervals

P.F.R = Plotted from records



CHAINAGE	Cut/Fill	DESIGN SURFACE	EXISTING SURFACE
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1290.00	+0.10	228.22	228.12
1300.00	+0.11	228.14	228.03
1310.00	+0.10	228.04	227.94
1319.22	+0.12	227.95	227.83
1319.54	+0.11	227.94	227.83
1320.00	+0.11	227.94	227.83
1330.00	+0.09	227.84	227.75
1340.00	+0.10	227.76	227.66
1350.00	+0.11	227.70	227.59
1360.00	+0.05	227.66	227.61
1370.00	+0.03	227.64	227.61
1374.54	+0.04	227.64	227.60
1374.84	+0.04	227.64	227.60
1377.20	+0.05	227.64	227.59
1380.00	+0.05	227.64	227.59
1385.40	+0.04	227.65	227.61
1390.00	+0.04	227.66	227.62
1400.00	+0.01	227.70	227.69
1410.00	+0.02	227.76	227.74
1420.00	+0.01	227.84	227.83
1429.54	+0.05	227.94	227.89
1430.00	+0.04	227.94	227.90
1440.00	+0.05	228.05	228.00
1450.00	-0.02	228.16	228.18
1460.00	-0.01	228.27	228.28
1470.00	-0.01	228.38	228.39
1480.00	+0.01	228.49	228.48
1490.00	+0.01	228.59	228.58
1500.00	+0.00	228.70	228.70

ALIGNMENT DETAILS: L=1504.73, B=53°56'25"

Box Ridge Road - Site 1 Longitudinal Section
Ch 1280.00 to Ch 1500.00
Scale Horizontal 1:500 Vertical 1:100 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

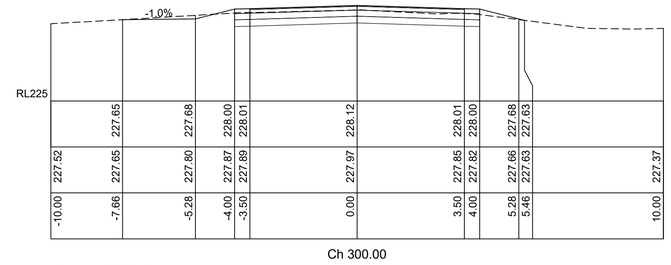
Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 1
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

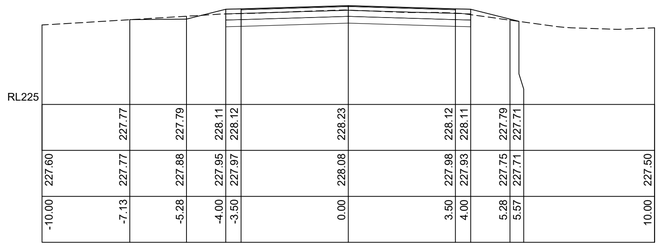
Title: Layout Plan & Longitudinal Sections Ch. 1280.00 to Ch. 1500.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

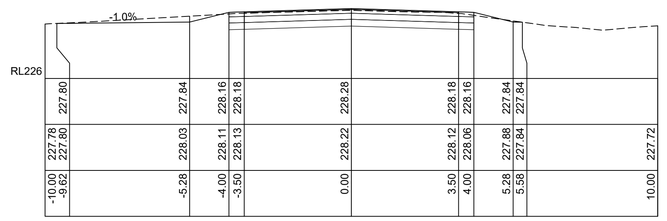
Design	CW	Scale	1:500 @ A1, 1:1000 @ A3 (0 5 10 15 20 25)
Drawn	CW		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
Date	24/02/2023	Design File	
Job No.	11551	Dwg No. S1-C06	Issue B



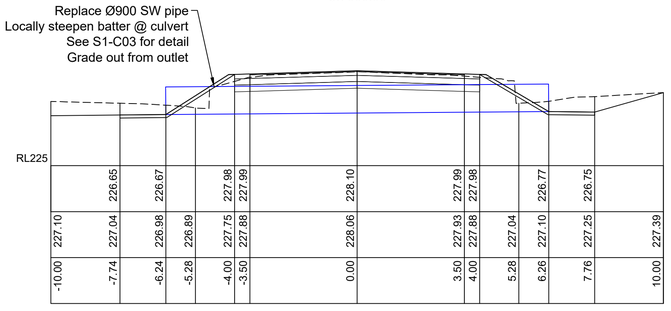
Ch 300.00



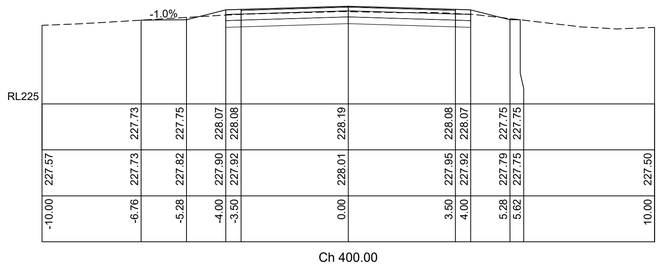
Ch 450.00



Ch 650.00



Ch 271.8



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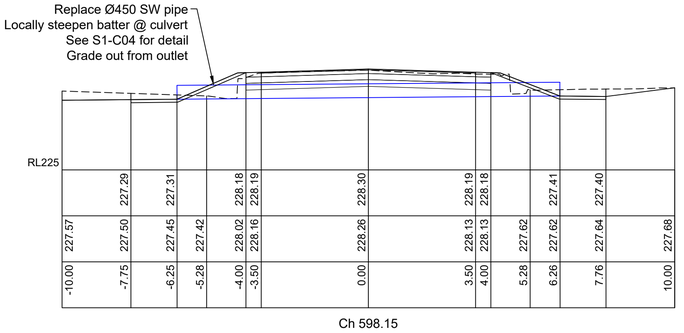
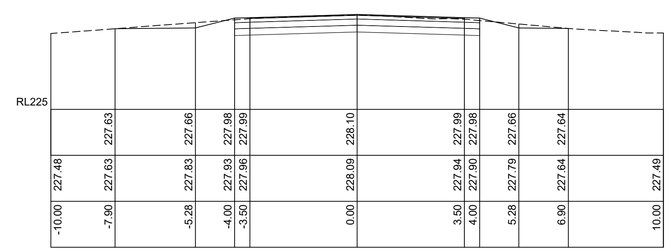
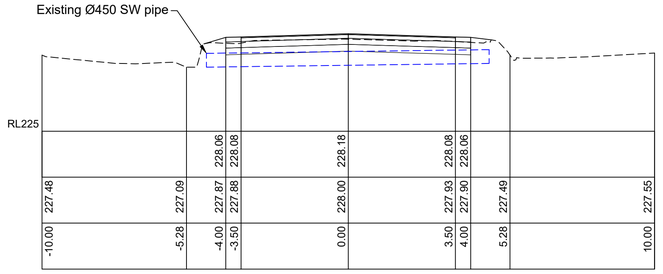


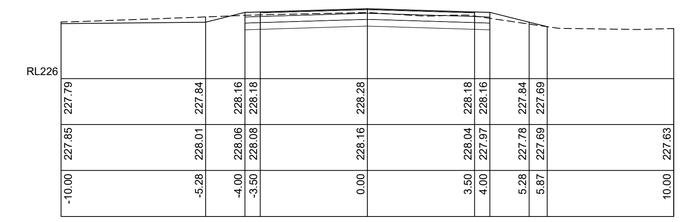
Ch 598.15



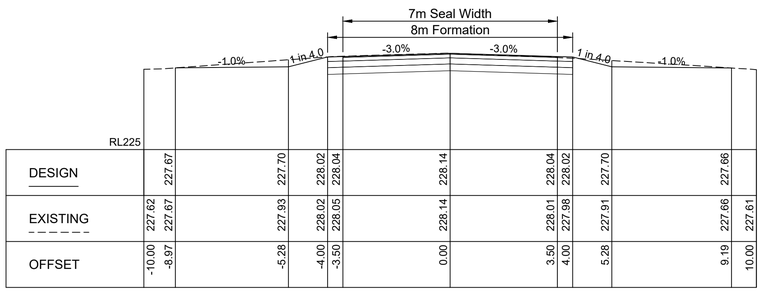
Ch 250.00



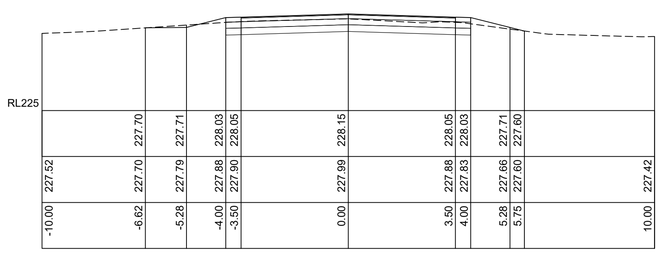
Ch 389.90



Ch 550.00



Ch 200.00



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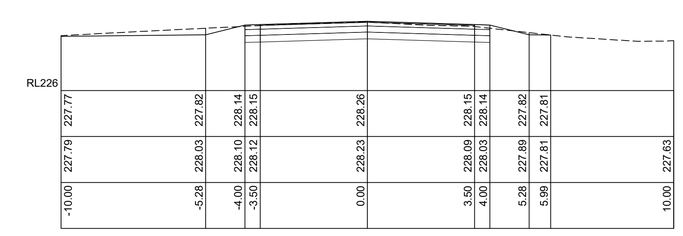


Ch 500.00

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

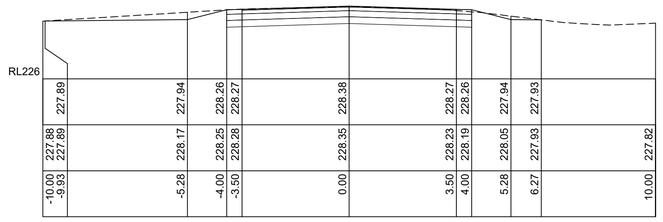
Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 1
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

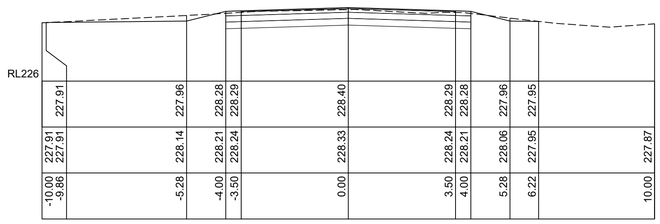
Title: Cross Sections Ch. 200.00 to Ch. 650.00

ARDILL PAYNE
& Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	CW	Scale	1:100 @ A1, 1:200 @ A3
Drawn	CW		0 1 2 3 4 5
Checked	TC	Datum	
Approved	TC	Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
Date	24/02/2023	Design File	
Job No	11551	Dwg No.	S1-C07
		Issue	B



Ch 850.00



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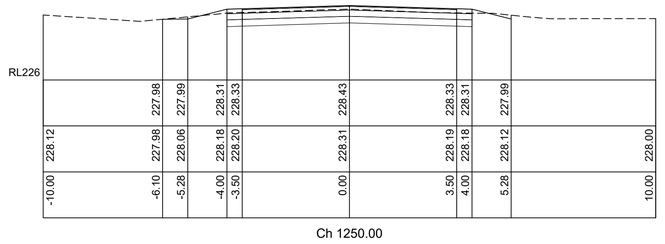
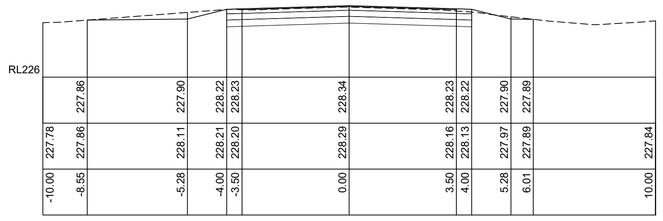
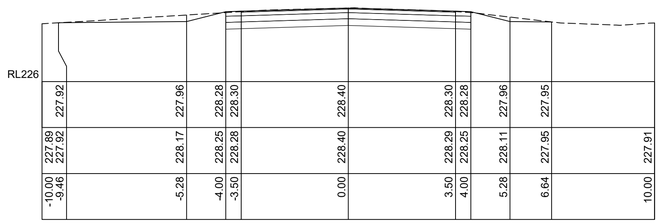


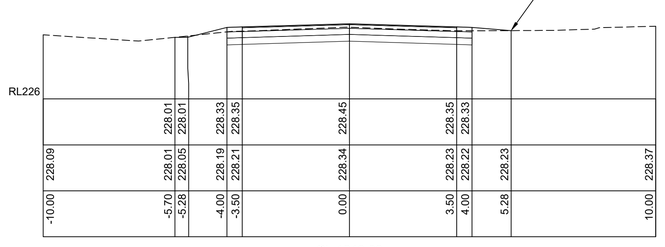
Ch 1250.00



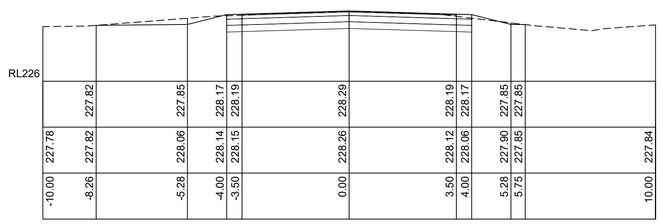
Ch 800.00



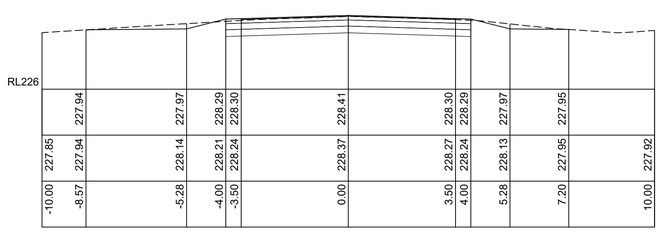
Ch 1030.00



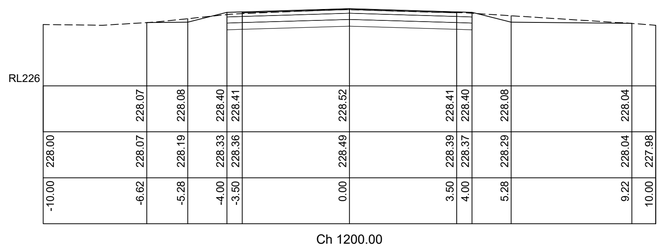
Ch 1240.00



Ch 750.00

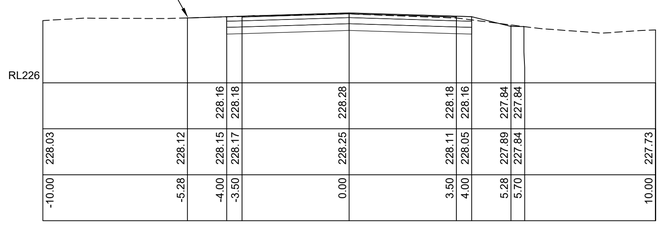


Ch 1000.00

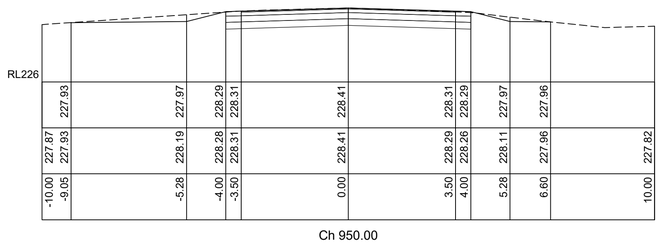


Ch 1200.00

Existing driveway - taper to existing



Ch 728.00



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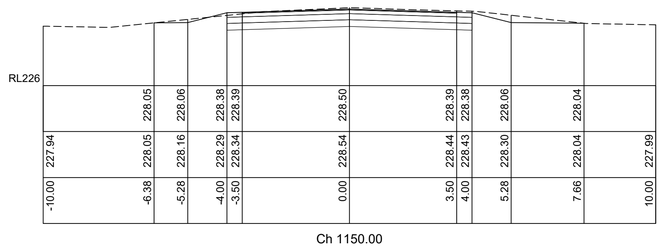

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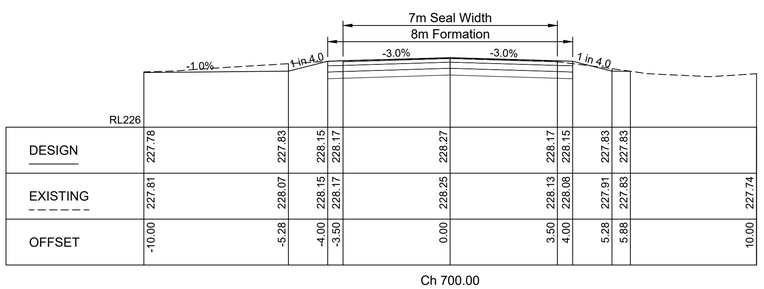

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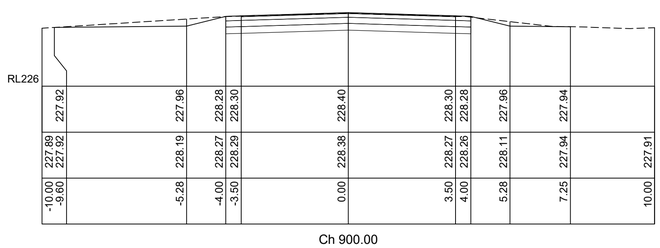

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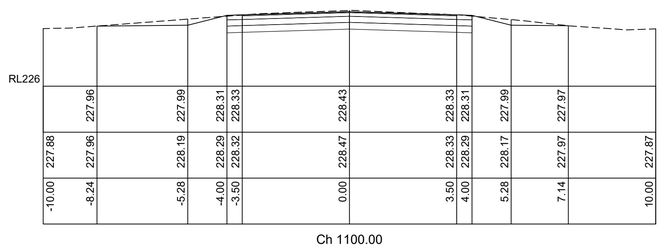

Ch 1100.00

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 1
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

Title: Cross Sections Ch. 700.00 to Ch. 1250.00

ARDILL PAYNE
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Design	CW
Drawn	CW
Checked	TC
Approved	TC
Date	24/02/2023
Job No	11551
Scale	1:100 @ A1, 1:200 @ A3 (0 1 2 3 4 5)
Datum	
Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
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Dwg No.	S1-C08
Issue	B

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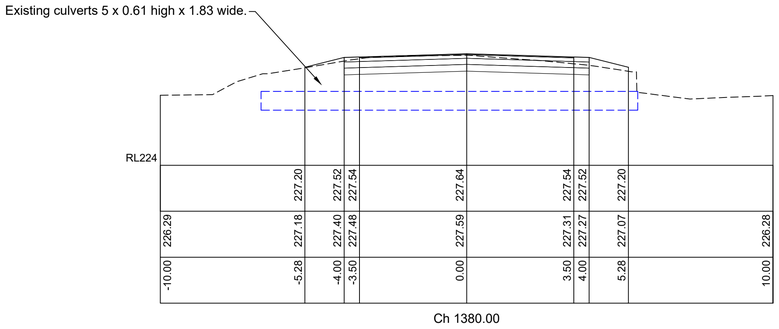

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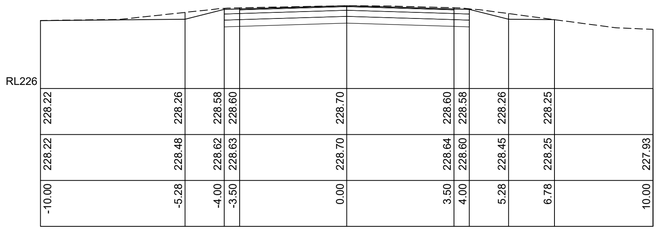

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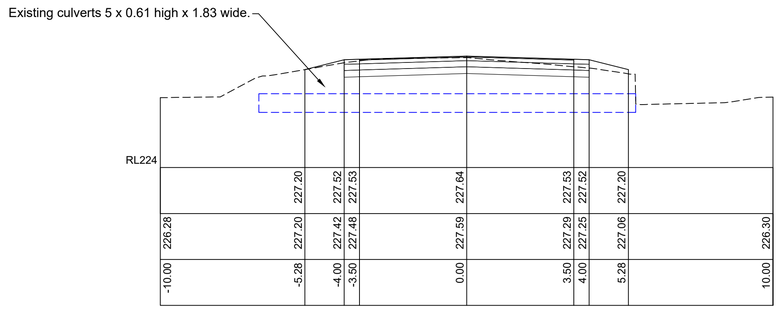

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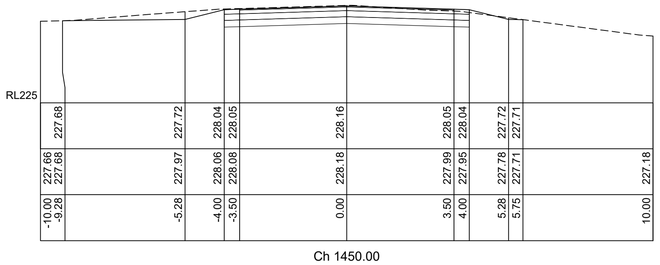

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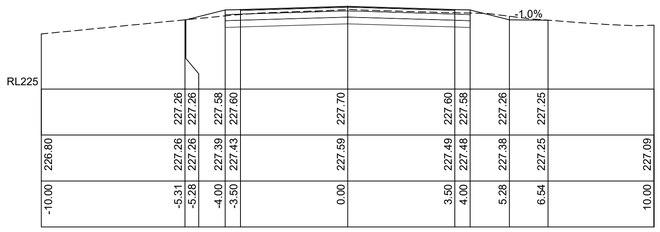

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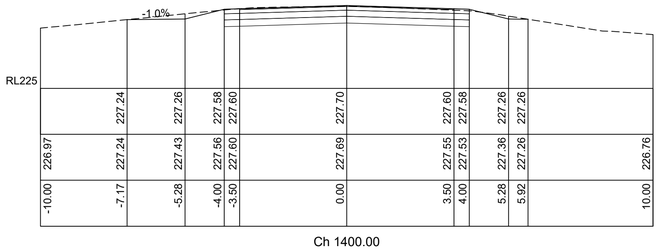

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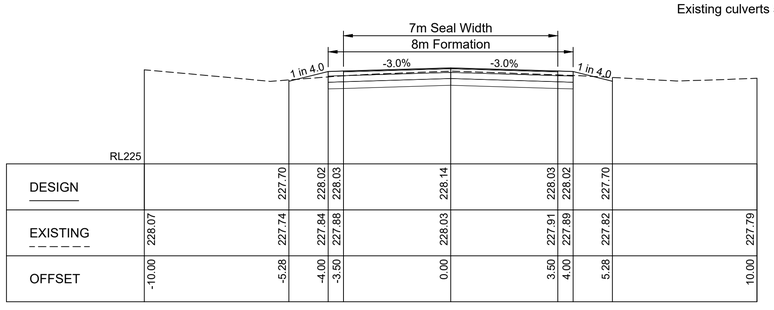
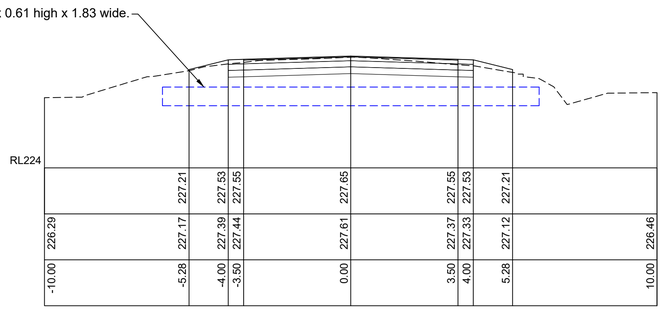


Ch 1300.00



Ch 1385.40

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 1
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

Title: Cross Sections
Ch. 1300.00 to Ch. 1500.00

ARDILL PAYNE
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BALLINA 45 River Street Ph. 02 6686 3280
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Design	CW	Scale	1:100 @ A1, 1:200 @ A3
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Approved	TC	Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
Date	24/02/2023	Design File	
Job No.	11551	Dwg No.	S1-C09
		Issue	B

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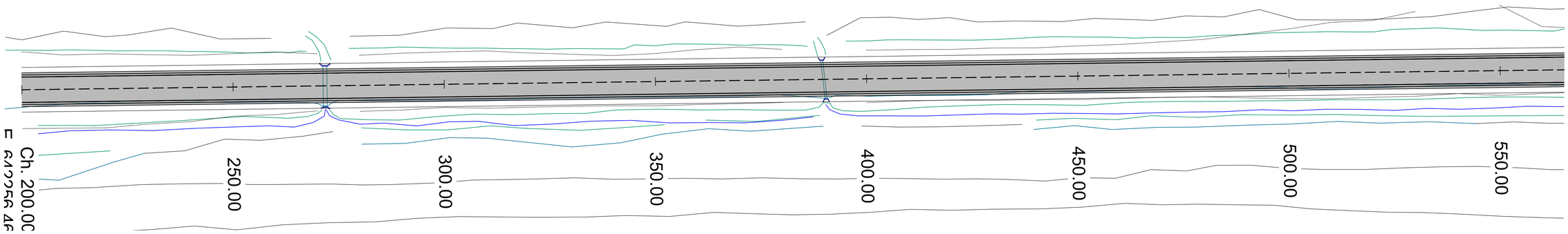
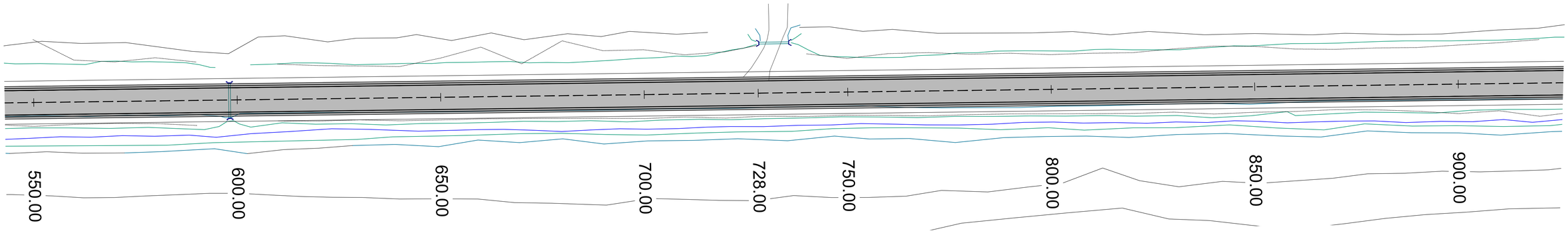


Linemarking Layout Plan (200.00 - 560.00)
Scale 1:500 @ A1



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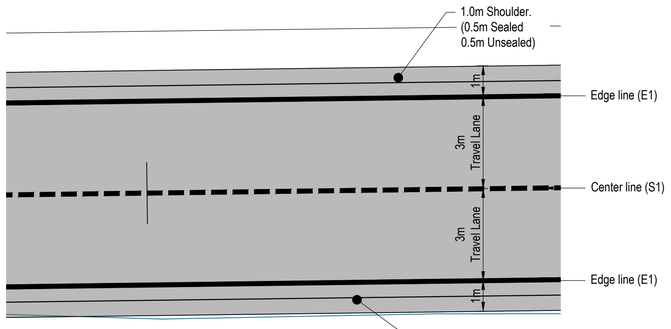

Proposed Road Delineation Plan
Scale 1:100 @ A1

LINE MARKING LEGEND

Curve radius	Spacing (m)	
	On outside curve	On inside curve
< 100	6	12
100 - 199	10	20
200 - 299	15	30
300 - 399	20	40
400 - 599	30	60
600 - 699	40	60
800 - 1999	60	60
1200 - 2000	90	90
> 2000 including straights	150	150

Table 16.1: Spacing of posts on curves (including spacing of delineators on guard fence)

Guide Post Spacing Guidlines
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

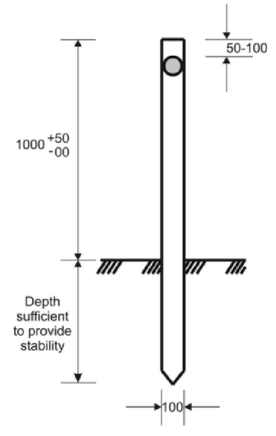

Figure 16.1: Typical Guide Post

Rigid Guide Post Detail
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

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0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 1
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

Title: Linemarking Layout Plan Sheet 1

ARDILL PAYNE & Partners
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Approved	TC	Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
Date	24/02/2023	Design File	
Job No.	11551	Dwg No.	S1-C10
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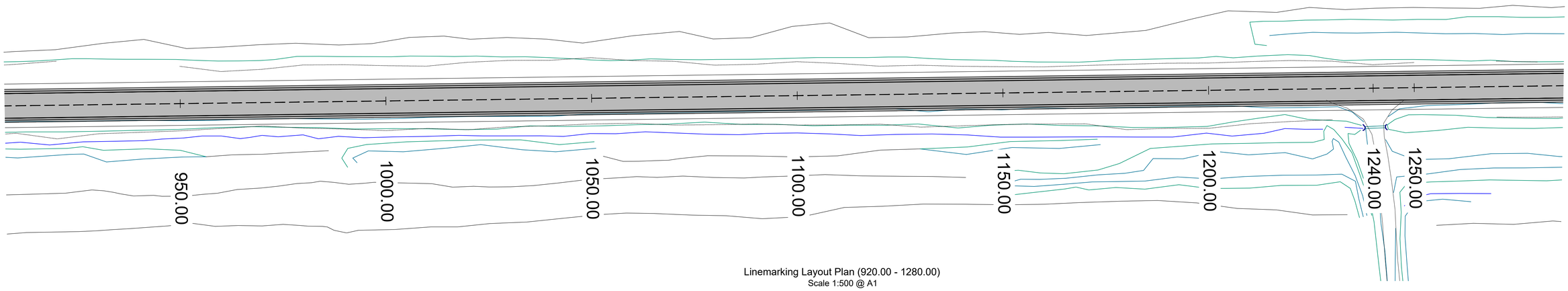
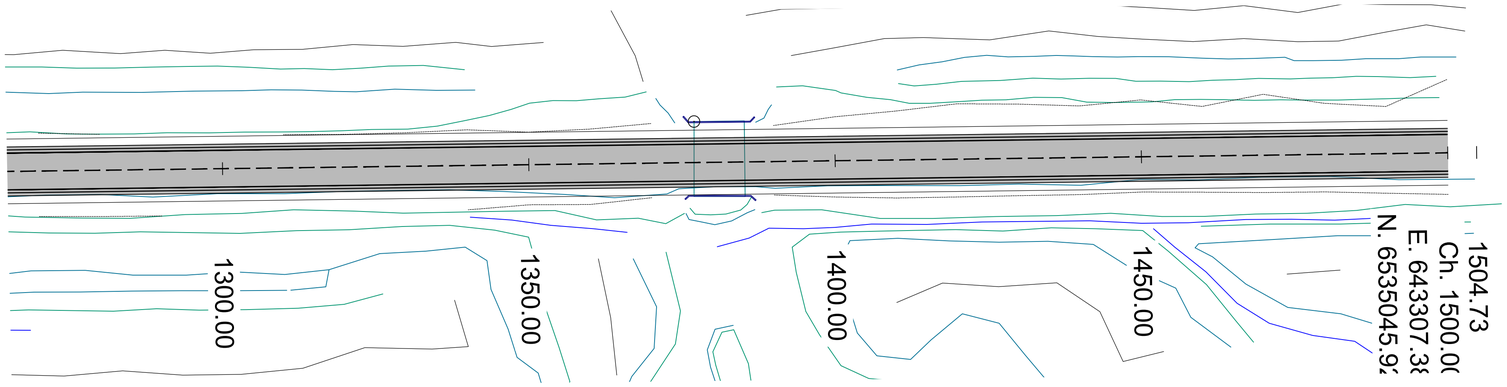
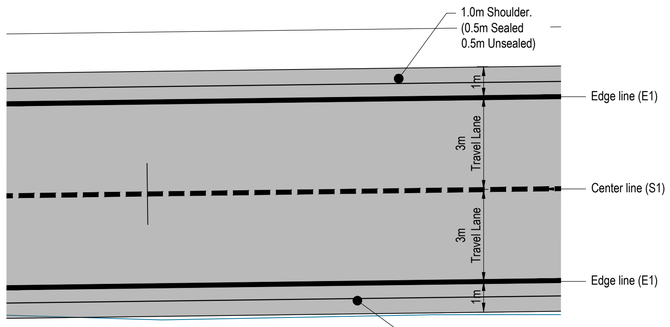


Linemarking Layout Plan (920.00 - 1280.00)
Scale 1:500 @ A1



Linemarking Layout Plan (1280.00 - 1500.00)
Scale 1:500 @ A1



Proposed Road Delineation Plan
Scale 1:100 @ A1

LINE MARKING LEGEND

S1
0.1m THICK

E1
0.15m THICK

0.1m

Curve radius	Spacing (m)	
	On outside curve	On inside curve
< 100	6	12
100 - 199	10	20
200 - 299	15	30
300 - 399	20	40
400 - 599	30	60
600 - 699	40	60
800 - 1999	60	60
1200 - 2000	90	90
> 2000 including straights	150	150

Table 16.1: Spacing of posts on curves (including spacing of delineators on guard fence)

Guide Post Spacing Guidlines
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

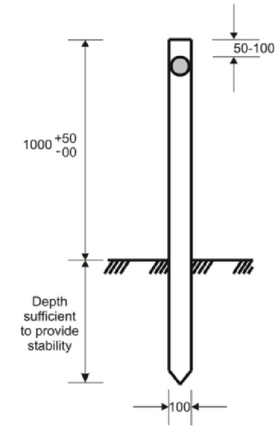


Figure 16.1: Typical Guide Post

Rigid Guide Post Detail
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	24/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 1
FULL WIDTH REHABILITATION
FROM CH2.2 TO 3.5km From Intersection With Castlereagh Hwy

Title: Linemarking Layout Plan Sheet 2

ARDILL PAYNE & Partners
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A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	CW
Drawn	CW
Checked	TC
Approved	TC
Date	24/02/2023
Job No.	11551
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Datum	
Drafting File	11551_SITE 1_DESIGN_ISSB.dwg
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Dwg No.	S1-C11
Issue	B

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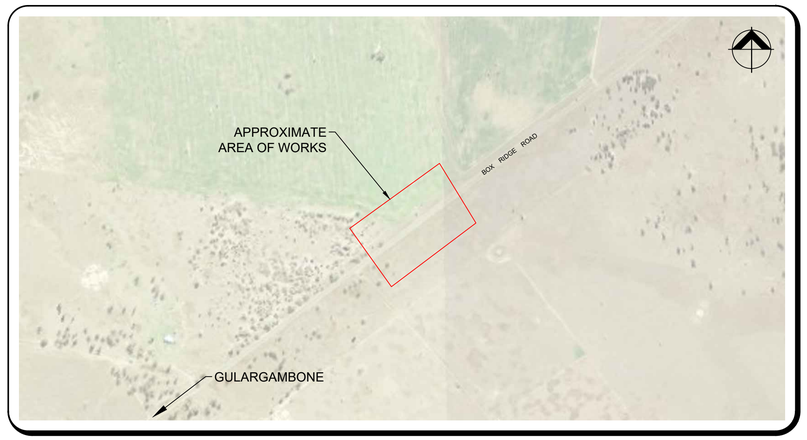

LOCALITY MAP
N.T.S

BOX RIDGE ROAD - SITE 2

WIDENING AND SEALING

FROM CH 2.0 TO 2.2km
From Intersection with Castlereagh Hwy

For: Coonamble Shire Council

ARDILL PAYNE
& P a r t n e r s
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT

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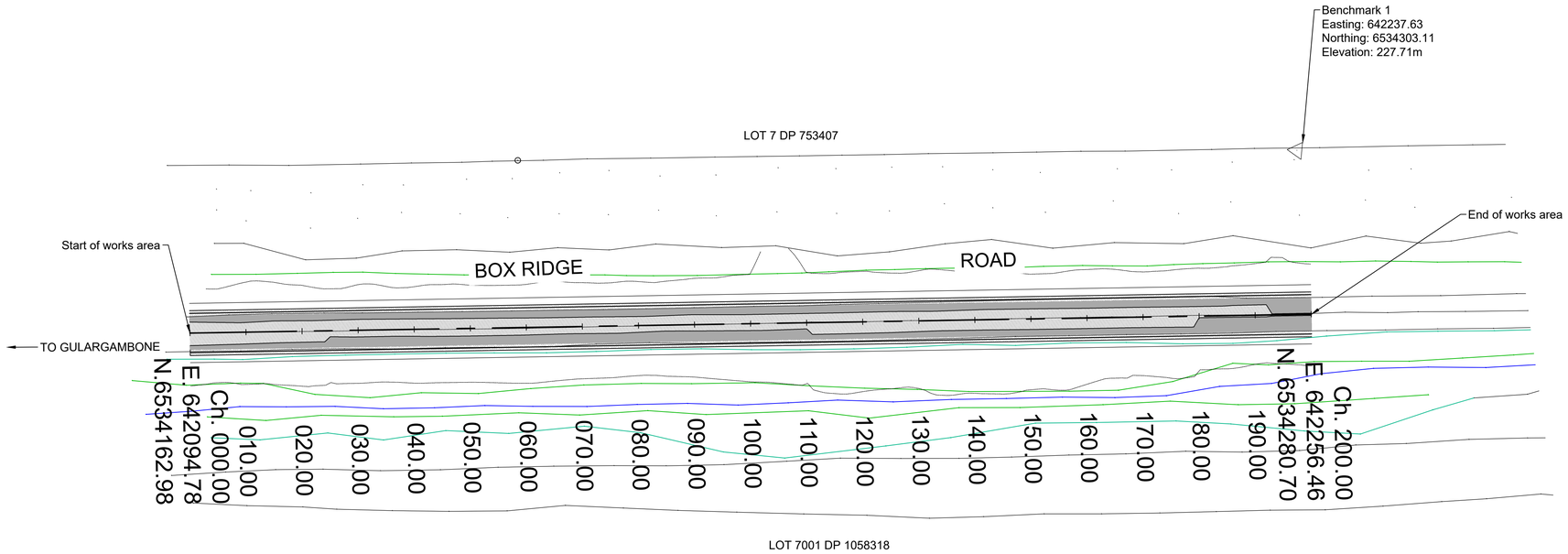
DRAWING SCHEDULE

DRAWINGS	SHEET	DESCRIPTION
11551 -No. S2-C01	1 of 6	Overall Site Layout Notes & Details
11551 -No. S2-C02	2 of 6	Erosion & Sediment Control Layout Plan, Notes & Details
11551 -No. S2-C03	3 of 6	Layout Plan & Longitudinal Sections Ch 0.00 to Ch 200.00
11551 -No. S2-C04	4 of 6	Cross Sections Ch 0.00 to Ch 140.00
11551 -No. S2-C05	5 of 6	Cross Sections Ch 150.00 to Ch 200.00
11551 -No. S2-C06	6 of 6	Linemarking Layout Plan



Extent of Works Plan
Scale 1:500 @ A1

Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain

Legend Continued

- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)

DIAL BEFORE YOU DIG www.1100.com.au

Services located in the area.

Services shown on plans are indicative only unless noted otherwise. Contractor to obtain current Dial Before You Dig and confirm location and level of any services prior to commencement of works. The contractor is responsible for maintaining safe work clearances to services and notifying the engineer of any discrepancies.

NOTE: Chainages are assumed and are not related to the distance from Castlereagh Highway.
Setout information is provided

Road Pavement Notes:
1. Pavement and seal to be as follows
   - Seal - 2 Coat Spray Seal
   - Base - 120mm DGB20
   - Subbase - 200mm DGS20/40
   - Select Material - 220mm (Min 7% CBR)
2. Pavement design subject to council design and subgrade testing.

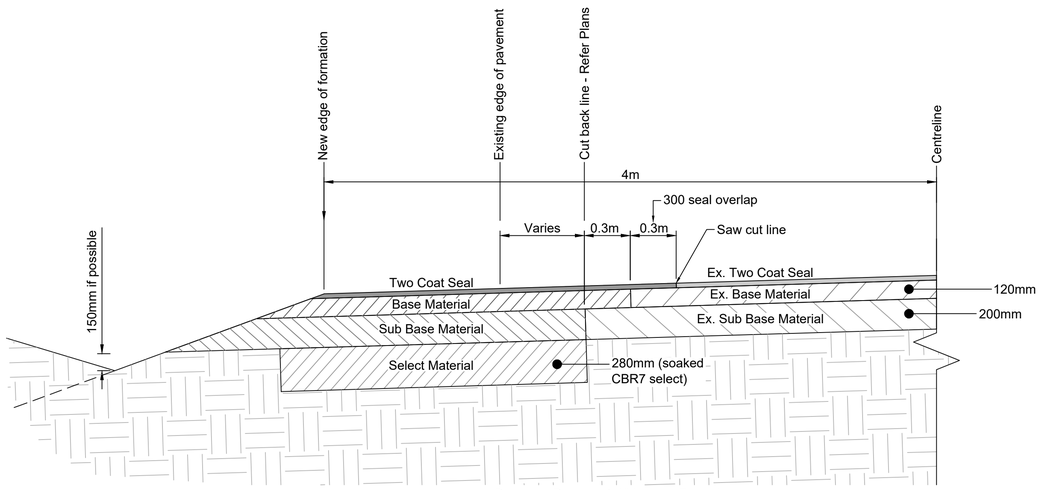
General Notes

1. All setout shall be by suitably experienced personnel. All works-as-executed plans shall be certified by a Registered Surveyor or Engineer.
2. Dimensions are generally in millimetres unless noted otherwise.
3. All levels are in metres unless noted otherwise.
4. All levels shown are finished surface unless noted otherwise.
5. Council inspection hold points of road works are required at the following construction stages:
   a. Box inspection of subgrade and proof roll.
   b. Inspection of select layers - proof roll.
   c. Inspection of sub base gravels and proof roll.
   d. Inspection of base gravels and proof roll prior to sealing.
   e. Any service crossings of road pavement.
6. Inspections are organised by contacting Council's Development Engineer. Please note 24hours notice of inspection is required.
7. Density testing is to be carried out at max.100m spacing or in accordance with Table 8.1 of AS 3798 - Guidelines on Earthworks for Commercial and Residential Development, whichever gives the greater frequency of testing.
   Compaction is to be to the following:
   - general filling to 98% standard compaction;
   - subgrade to 98% standard compaction;
   - sub-base gravels to 102% standard compaction;
   - base course gravels to 102% standard compaction;
8. Minimum cover to stormwater pipes shall be 450mm in landscape areas, and 600mm under road pavements, unless noted otherwise.
9. The Contractor is responsible for maintaining sufficient cover over stormwater and sewer mains during construction, and ensuring that trenches are correctly backfilled and compacted to eliminate damage caused by construction traffic.
10. General concrete works shall have the following properties:
    a. Class of concrete shall be normal.
    b. Maximum slump shall be 80mm.
    c. Maximum aggregate size shall be 20mm.
    d. Min 28 days concrete compressive strength shall be 25 Mpa including all kerbs u.n.o
    e. Concrete works shall conform to AS 3600.
11. Linemarking and signage shall confirm to AS 1742 Manual of Uniform Traffic Control Devices.
12. It is the responsibility of the Contractor to ensure that adequate erosion and sedimentation control devices are erected and maintained at all times during construction, and to the satisfaction of the Local Authority.
13. All traffic control during construction shall be in accordance with the RTA's Guidelines - Traffic Control at Work Sites and AS 1742.3 - 2002 Manual of Uniform Traffic Control Devices: Traffic Control Devices for Works on Roads.
14. All works shall be carried out in accordance with the Local Authorities Development Code and Austroads Standards.
15. It is the Contractor's responsibility to provide to the Surveyor any information necessary to prepare works-as-executed drawings for submission to the Local Authority. It will be necessary to liaise with the Surveyor to coordinate the location of some items prior to backfilling.

Site Preparation

The following scope of work is required as a minimum to prepare the site prior to filling:

- Prior to construction and placement of any fill, the proposed areas should be stripped to remove all vegetation, topsoil, uncontrolled fill, organic, root affected or other potentially deleterious material.
- Boxed-out excavations should be drained permanently to allow any infiltration from subsequent fill to escape the excavation profile.
- Where the ground slopes at more than 1V:10H (6deg), the ground profile should be benched in 300m vertical steps to create near-level platforms for filling. The platforms should be graded with a cross fall no stepper than 2% downslope to allow drainage to any infiltration to the fill and to prevent pooling of subsurface moisture.
- Following stripping, the exposed subgrade materials should be proof rolled in the presence of a suitably qualified and experienced Geotechnical Engineer to identify any wet or excessively deflecting material.
- Proof rolling should involve compacting the site with an 8-ton roller, trimming the rolled surface to level and clean finish. Where there are areas indicating excessive deflection then these may require over-excavation and backfilling with an approved select material.
- Re-use of Site Material: Where feasible, site won material is to be trucked directly to the placement site to avoid double handling. Site won material is suitable for general fill material. However, engineered fill for permanent works may require a coarser particle size blend to comply with specification grading requirements. Excavated material used during construction are subject to further testing to confirm specification and design acceptability requirements.
- Bulk Earthworks: Subgrade preparation will generally only require removal of topsoil and compaction to 98% relative to standard compaction of the excavated subgrade material. Slope angles of 1V:1H and 1V:2V is considered appropriate for compacted embankment fill materials in the temporary and permanent conditions respectively.
- Trafficability: Note, Clay subgrades at the site have a low wet strength and poor subgrade strength. The site soils would be trafficable during dry periods. Some desiccation of exposed surfaces can be expected and large quantities of dust will be generated during dry periods under traffic. The soils will be soft and difficult to traverse following wet weather or inundation. Drying out these soils could take several days or weeks before being able to accommodate construction traffic.



Proposed Pavement Widening - Typical
Scale 1:20 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	20/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/02/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 2
WIDENING AND SEALING
FROM CH 2.0 TO 2.2km From Intersection With Castlereagh Hwy

Title: Overall Site Layout Notes & Details

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
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A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH
Drawn	CW
Checked	TC
Approved	TC
Date	20/02/2023
Job No.	11551
Scale	1:500 @ A1, 1:1000 @ A3
Datum	
Drafting File	11551_SITE 2_DESIGN_ISSB.dwg
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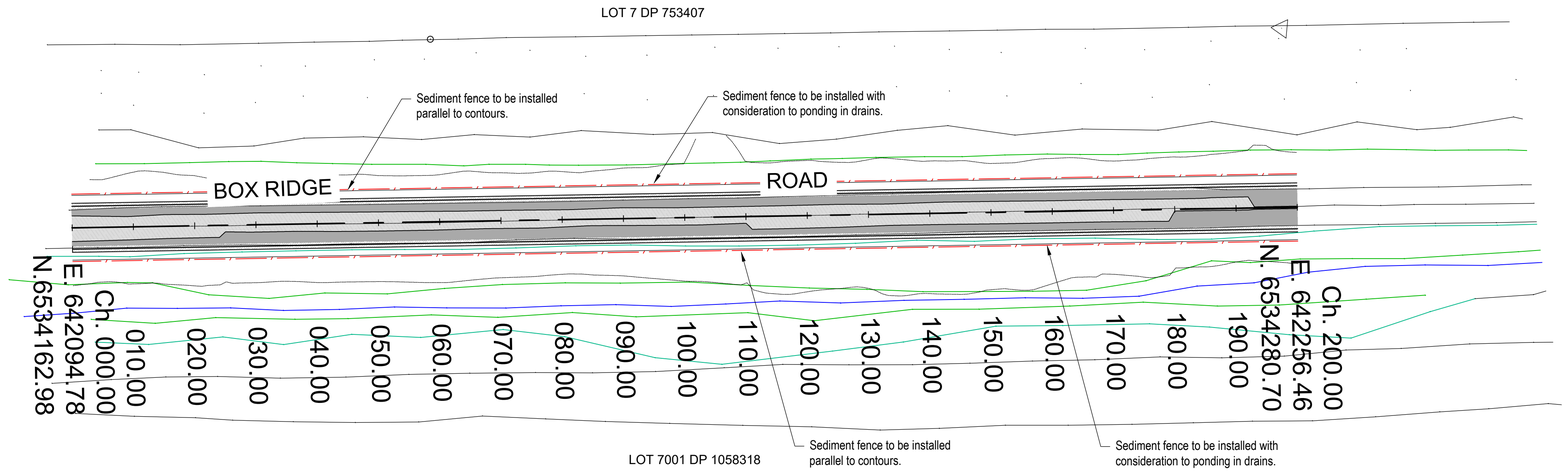
Dwg No.	S2-C01
Issue	B

S:\01 Jobs\11500-11599\11551 Civil_Roads_Gulargambone_CSC\05 Drawings\01 Civil\01 Current\SITE 2\11551_SITE 2_DESIGN_ISSB\11551_SITE 2_DESIGN_ISSB.dwg, 20/02/2023 3:35:45 PM, DWG To PDF.pc3



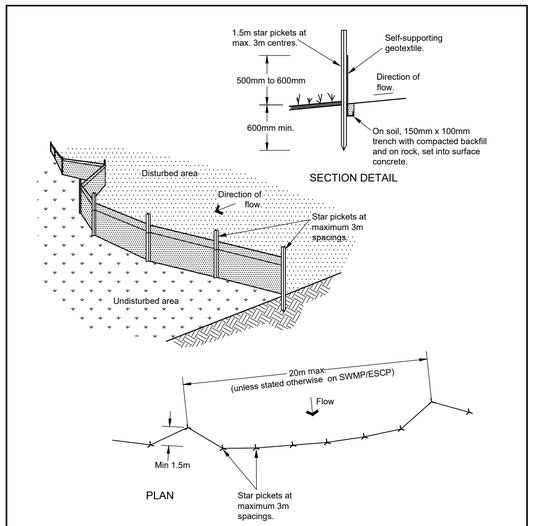
Erosion & Sediment Control Layout Plan
Scale 1:500 @ A1

Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain

Legend Continued

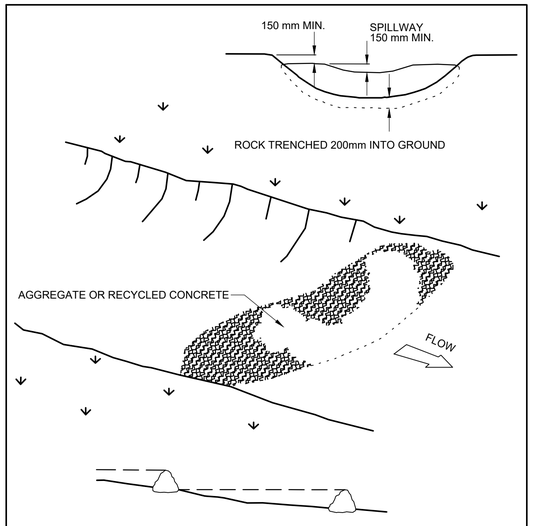
- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)
- Sediment Fence



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 of posts with wire ties or as recommended by geotextile manufacturer.
6. Join sections of fabric at support post with a 150mm overlap.

SEDIMENT FENCE



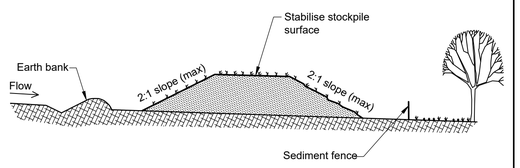
SPACING OF CHECK DAMSN ALONG CENTRELINE AND SCOUR PROTECTION BELOW EACH CHECK DAM TO BE SPECIFIED ON SWMP/ESCP

CONSTRUCTION NOTES:

1. TRENCH STRUCTURE 200mm INTO GROUND SURFACE WHEREVER THE STUCTURE CONTACTS THE GULLY BASE. FILL TRENCHES TO 100mm ABOVE GROUND SURFACE TO REDUCE RISK OF UNDERCUTTING.
2. ENSURE HEIGHT OF SPILLWAY IS LESS THAN 1m ABOVE THE GULLY FLOOR.
3. SPACE CHECKS SO THE TOE OF THE UPSTREAM DAM IS LEVEL WITH THE SPILLWAY OF THE NEXT DOWNSTREAM DAM.

ROCK CHECK DAM

NOTE:
SEDIMENT FENCE SHOWN DIAGRAMMATICALLY. FENCE TO BE LOCATED AT EDGE OF EARTHWORKS WHERE PRACTICABLE. SEDIMENT FENCE TO RUN PARALLEL TO CONTOURS.



Construction Notes

1. Locate stockpile at least 5 metres 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 less than 2 metres in height.
4. Rehabilitate 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 2 metres downslope of stockpile.

STOCKPILES

Notes - Erosion and Sedimentation Control

1. All erosion and sedimentation controls shall be in accordance with the guidelines and specifications as detailed in Landcom's ' Managing Urban Stormwater: Soils and Construction - Volume 1', 2004.
2. Construction shall be phased so that land disturbance is confined to areas of workable size. This will limit the duration disturbed areas are exposed to erosion. Stabilisation shall be applied to the first disturbed area before the next section is opened up. Any disturbed areas that will not be stabilised within 30 days shall be revegetated and any that fail to establish shall be resown.
3. Topsoil stockpiles are to be located away from any natural drainage watercourse and shall have hay bales and/or sediment control fences placed around them to act as sedimentation controls.
4. Temporary earthen diversion drains shall be constructed to divert waters away from all disturbed areas and towards hay bale check dams located in natural drainage depressions.
5. Temporary sediment detention barriers shall be placed around outlet headwalls and drainage discharge points as detailed and permanent energy dissipaters shall be installed at all outlets to limit velocities and thus the potential for scouring. With all drainage outlets, water shall be released in a non-erodible manner.
6. Temporary sediment traps shall be constructed at drainage inlet points as detailed.
7. Temporary sediment fencing shall be installed along the downslope edge of disturbed areas and fill batters.
8. Sediment and debris shall be removed from detention barriers when they are 60% full. All sediment removed shall be disposed of as directed by the Supervising Engineer.
9. Upon completion of shaping and drainage works, batters and drainage lines shall be topsoiled to a minimum depth of 100mm with stockpiled material and any areas with insufficient grass/topsoil mix shall be seeded and mulched with any failed areas resown or revegetated as directed by the Supervising Engineer. A 400mm wide turf strip shall be installed next to all kerb, or other concrete surfaces, to stabilise the interface between concrete surfaces and topsoiled areas.
10. Where there is a footpath in the verge, turf is required between the back of the kerb and the footpath as well as a single turf strip along the property side of the footpath with the remainder of the verge finished as either turf or grass seed.
11. Temporary erosion and sedimentation controls are to be installed during the construction phase and shall be retained and maintained while disturbed areas remain or are contributing sediment to the stormwater system. No device shall be removed until directed by the Supervising Engineer.
12. Wind erosion on the site shall be managed by limiting traffic on disturbed areas, utilising water trucks, covering stockpiles with anchored geofabric, and providing dust covers on trucks and dumpers. If wind speed exceeds 10m/s, increase watering or cease dust generating activities until dust controls are operating effectively. Other measures may be employed as outlined in the Landcom manual.

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Issue	Date	Description	App'd
B	20/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/02/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 2
WIDENING AND SEALING
FROM CH 2.0 TO 2.2km From Intersection With Castlereagh Hwy

Title: Erosion & Sediment Control Layout Plan, Notes & Details

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
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Design	AH
Drawn	CW
Checked	TC
Approved	TC
Date	20/02/2023
Job No.	11551
Scale	1:500 @ A1, 1:1000 @ A3 (0 5 10 15 20 25)
Datum	
Drafting File	11551_SITE 2_DESIGN_ISSB.dwg
Design File	
Dwg No.	S2-C02
Issue	B

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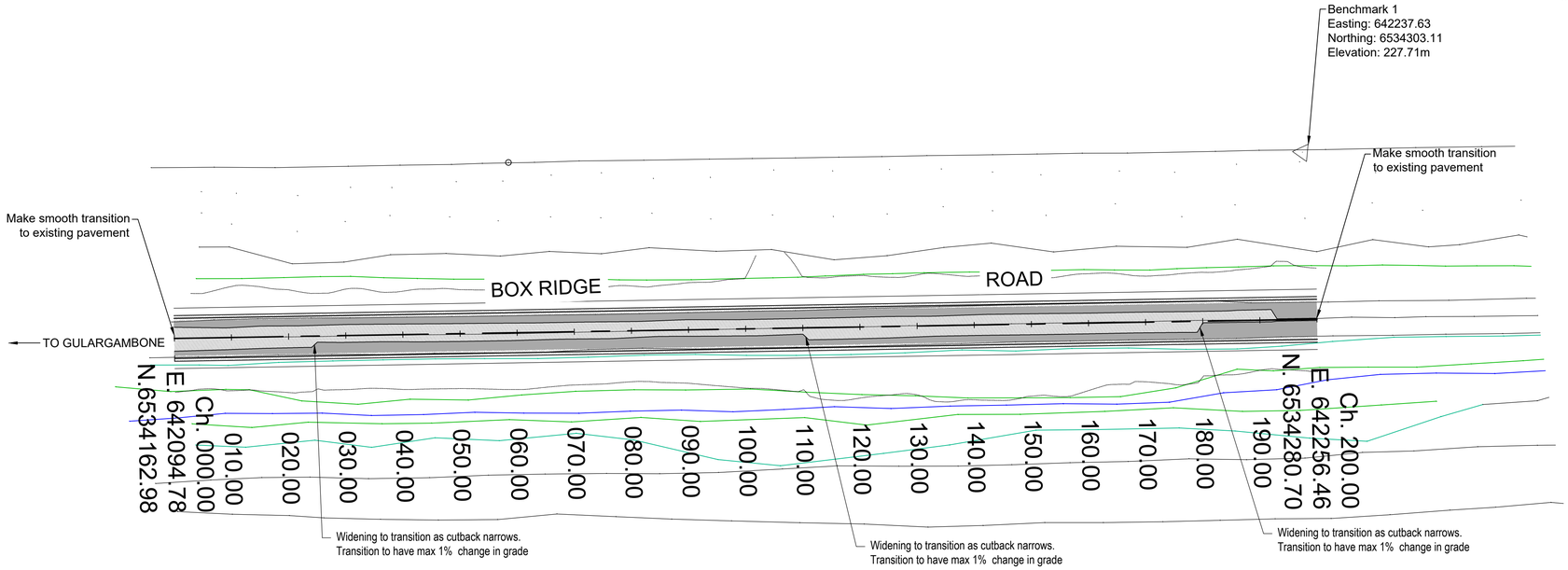
Services located in the area.
Services shown on plans are indicative only unless noted otherwise. Contractor to obtain current Dial Before You Dig and confirm location and level of any services prior to commencement of works. The contractor is responsible for maintaining safe work clearances to services and notifying the engineer of any discrepancies.



Box Ridge Road - Site 2 Plan
Ch 0.00 to Ch 200.00
Scale 1:500 @ A1

R.L. 226.00

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EXISTING SURFACE	228.32	228.31	228.33	228.33	228.33	228.30	228.27	228.26	228.27	228.25	228.25	228.25	228.24	228.24	228.24	228.23	228.21	228.21	228.19	228.17	228.14
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00	150.00	160.00	170.00	180.00	190.00	200.00
ALIGNMENT DETAILS	L=200.00 B=53°56'25"																				

Box Ridge Road - Site 2 Longitudinal Section
Ch 0.00 to Ch 200.00
Scale Horizontal 1:500 Vertical 1:100 @ A1

Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain
- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)

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Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 2
WIDENING AND SEALING
FROM CH 2.0 TO 2.2km From Intersection With Castlereagh Hwy

Title: Layout Plan & Longitudinal Plan Ch 0.00 to Ch 200.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
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Design	AH	Scale	1:500 @ A1, 1:1000 @ A3
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Checked	TC	Datum	
Approved	TC	Drafting File	11551_SITE 2_DESIGN_ISSB.dwg
Date	20/02/2023	Design File	
Job No	11551	Dwg No.	S2-C03
		Issue	B

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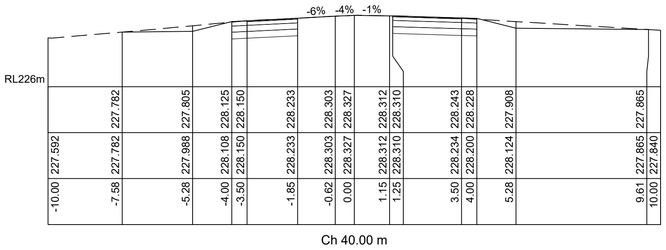

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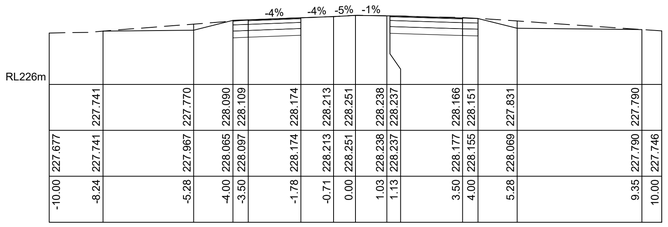

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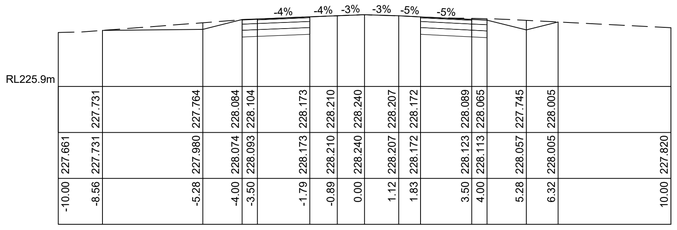

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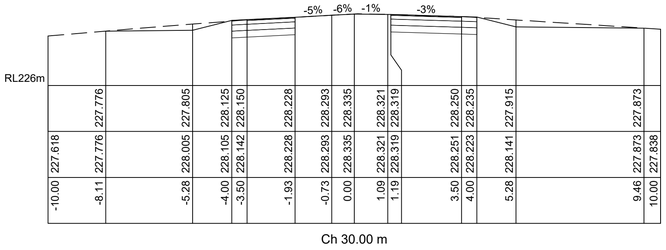

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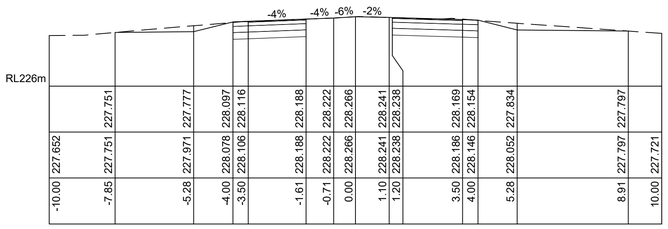

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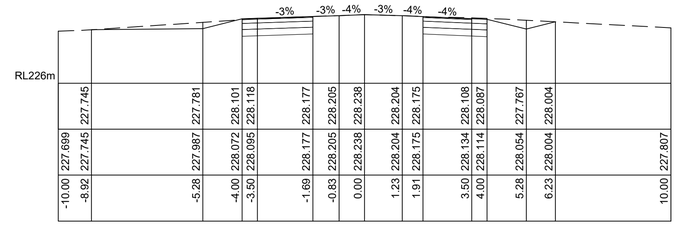

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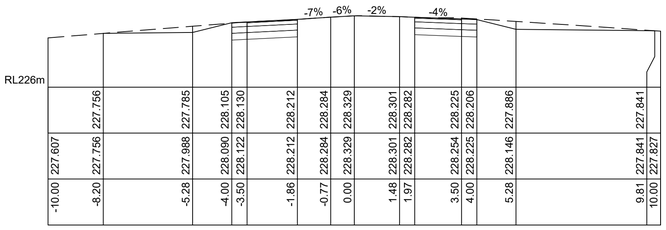

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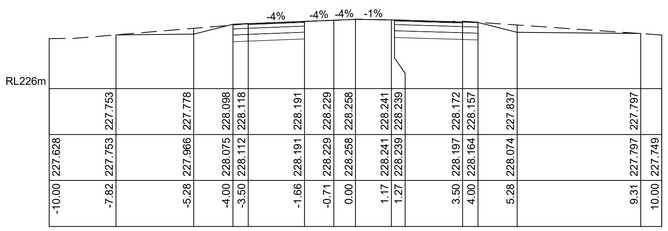

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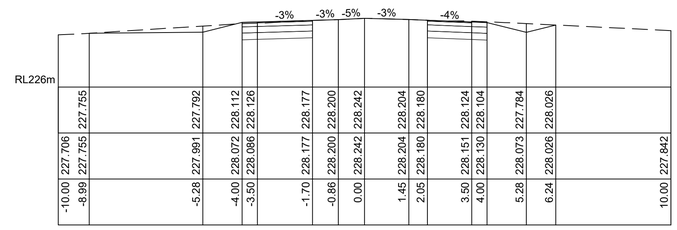
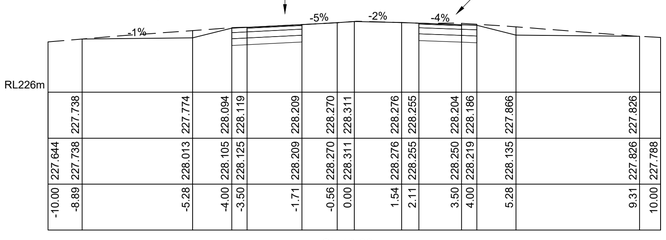


Ch 120.00 m

Cut back to existing sound pavement and install saw joint as detailed on C01.

Cut back to existing sound pavement and install saw joint as detailed on C01.



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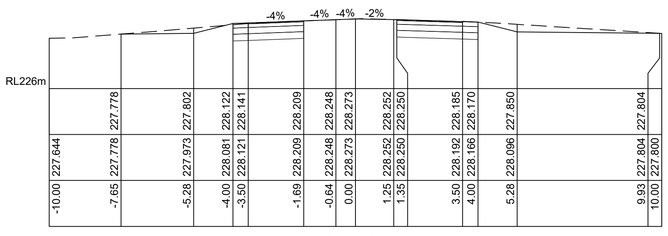

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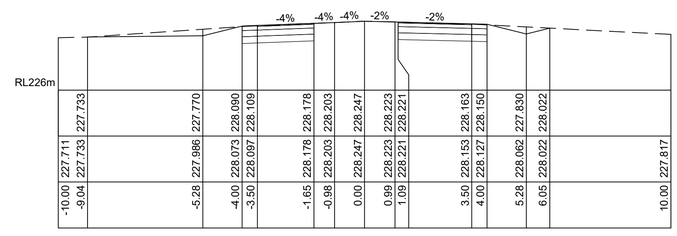
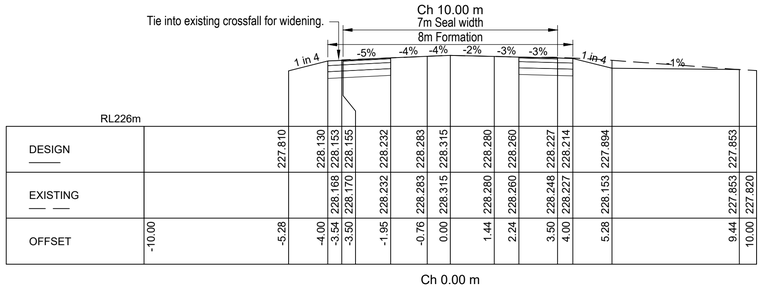


Ch 110.00 m

Tie into existing crossfall for widening.

7m Seal width

8m Formation



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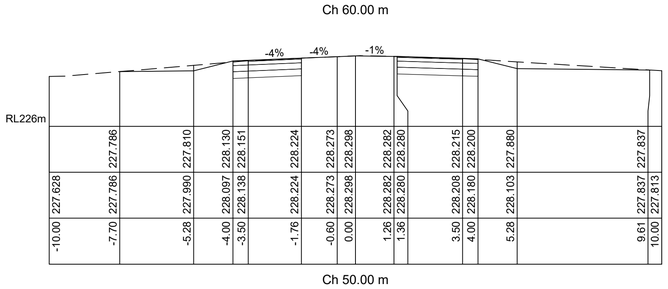

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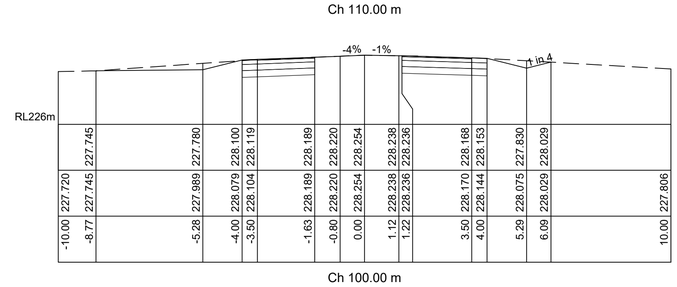

Ch 100.00 m

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0 | 100 Table of millimetres | 200 | 300 | 400 | 500 | 600 | 700 | 780

Issue	Date	Description	App'd
B	20/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/02/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 2
WIDENING AND SEALING
FROM CH 2.0 TO 2.2km From Intersection With Castlereagh Hwy

Title: Cross Sections Ch 0.00 to Ch 140.00

ARDILL PAYNE
& P a r t n e r s
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
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A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH
Drawn	CW
Checked	TC
Approved	TC
Date	20/02/2023
Job No.	11551
Scale	1:100 @ A1, 1:200 @ A3 (0 1 2 3 4 5)
Datum	
Drafting File	11551_SITE 2_DESIGN_ISSB.dwg
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Dwg No.	S2-C04
Issue	B

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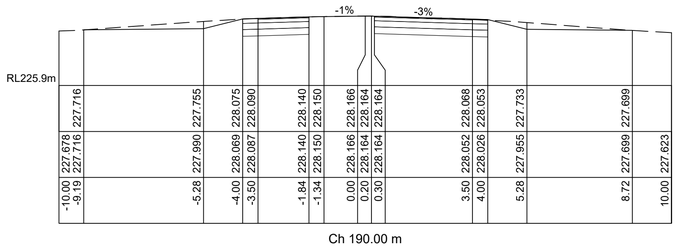

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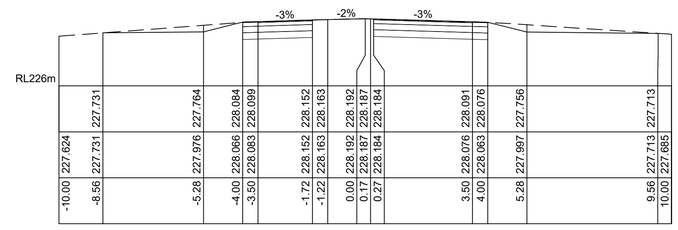

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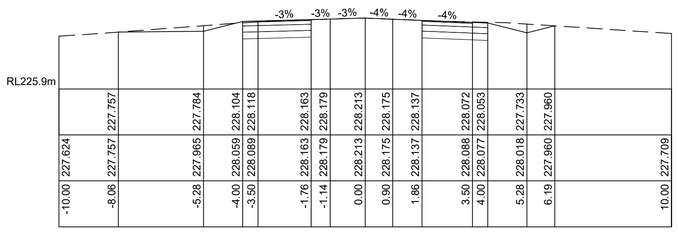

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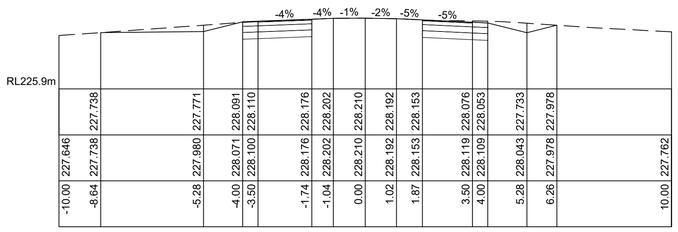

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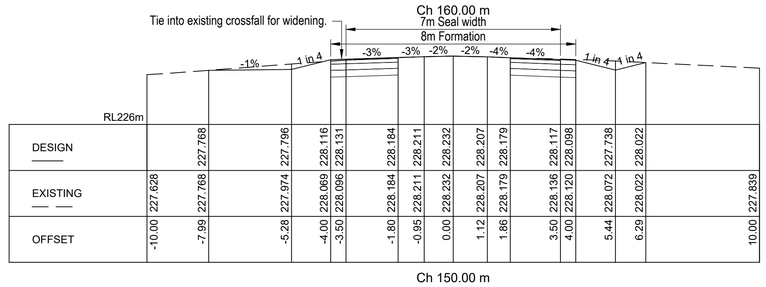

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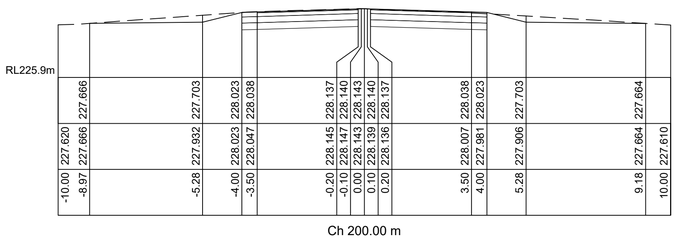

Ch 200.00 m

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
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A	20/02/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 2
WIDENING AND SEALING
FROM CH 2.0 TO 2.2km From Intersection With Castlereagh Hwy

Title: Cross Sections Ch 150.00 to Ch 200.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH
Drawn	CW
Checked	TC
Approved	TC
Date	20/02/2023
Job No.	11551
Scale	1:100 @ A1, 1:200 @ A3 (0 1 2 3 4 5)
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Dwg No.	S2-C05
Issue	B

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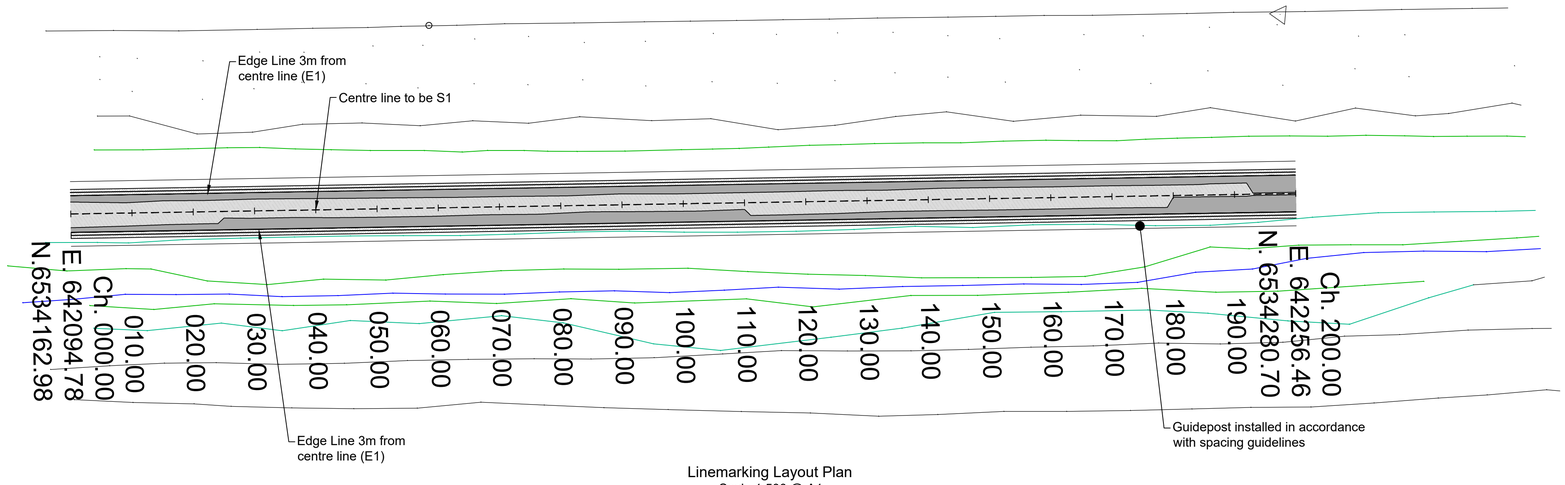
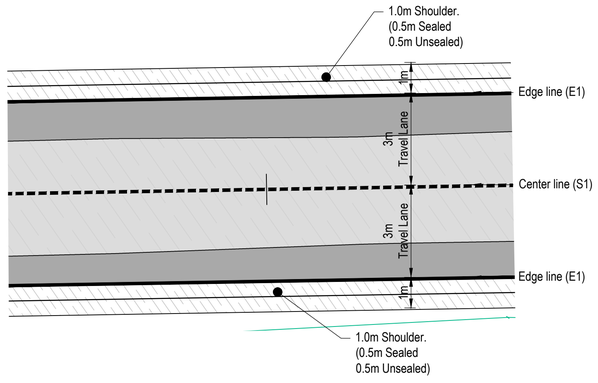


Linemarking Layout Plan
Scale 1:500 @ A1



Proposed Road Delineation Plan
Scale 1:100 @ A1

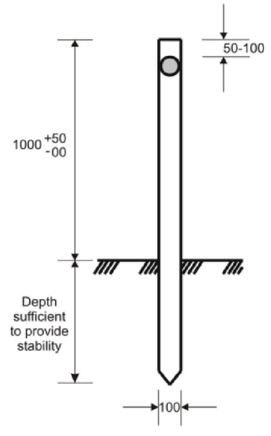
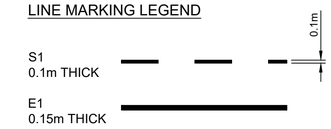


Figure 16.1: Typical Guide Post

Rigid Guide Post Detail
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

LINE MARKING LEGEND



Curve radius	Spacing (m)	
	On outside curve	On inside curve
< 100	6	12
100 - 199	10	20
200 - 299	15	30
300 - 399	20	40
400 - 599	30	60
600 - 699	40	60
800 - 1999	60	60
1200 - 2000	90	90
> 2000 including straights	150	150

Table 16.1: Spacing of posts on curves (including spacing of delineators on guard fence)

Guide Post Spacing Guidlines
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	20/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	20/02/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 2
WIDENING AND SEALING
FROM CH 2.0 TO 2.2km From Intersection With Castlereagh Hwy

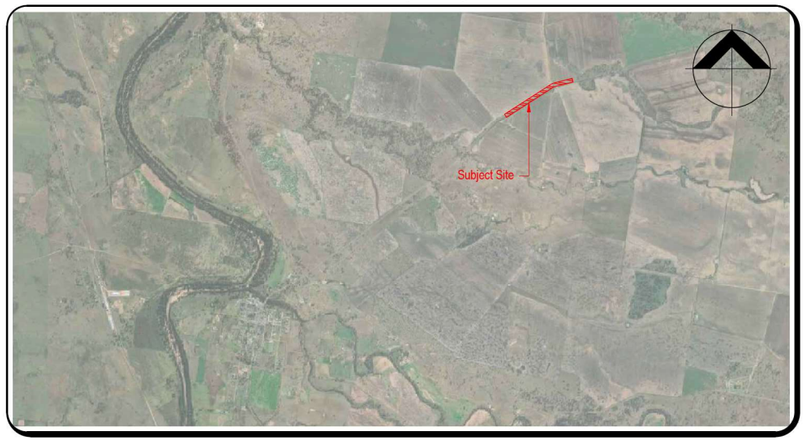
Title: Linemarking Layout Plan

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH	Scale	Various - refer plan
Drawn	CW		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_SITE 2_DESIGN_ISSB.dwg
Date	20/02/2023	Design File	
Job No	11551	Dwg No.	S2-C06
		Issue	B

S:\01 Jobs\11500-11599\11551 Civil_Roads_Gulargambone_CSC\05 Drawings\01 Civil\01 Current\SITE 2\11551_SITE 2_DESIGN_ISSB\11551_SITE 2_DESIGN_ISSB.dwg, 20/02/2023 3:41:22 PM, DWG To PDF.pc3

Locality Map



BOX RIDGE ROAD - SITE 4

WIDENING AND SEALING

FROM CH 5.100 TO 6.300km
From Intersection with Castlereagh Hwy

For: Coonamble Shire Council

ARDILL PAYNE
& Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT

BALLINA 45 River Street Ph. 02 6686 3280
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Drawing Schedule

Drawing	Sheet	Description
11551 - S4 - C01	1 of 12	Overall Site Layout Notes & Details
11551 - S4 - C02	2 of 12	Erosion & Sediment Control Layout Plan, Notes, & Details
11551 - S4 - C03	3 of 12	Layout Plan & Longitudinal Sections Ch 0.00 to Ch 360.00
11551 - S4 - C04	4 of 12	Layout Plan & Longitudinal Sections Ch 360.00 to Ch 720.00
11551 - S4 - C05	5 of 12	Layout Plan & Longitudinal Sections Ch 720.00 to Ch 1080.00
11551 - S4 - C06	6 of 12	Layout Plan & Longitudinal Sections Ch 1080.00 to Ch 1252.29
11551 - S4 - C07	7 of 12	Road Widening Cross Sections Ch 0.00 to Ch 260.00
11551 - S4 - C08	8 of 12	Road Widening Cross Sections Ch 280.00 to Ch 560.00
11551 - S4 - C09	9 of 12	Road Widening Cross Sections Ch 580.00 to Ch 840.00
11551 - S4 - C10	10 of 12	Road Widening Cross Sections Ch 860.00 to Ch 1120.00
11551 - S4 - C11	11 of 12	Road Widening Cross Sections Ch 1130.73 to Ch 1252.29
11551 - S4 - C12	12 of 12	Linemarking Layout Plan

DIAL BEFORE YOU DIG
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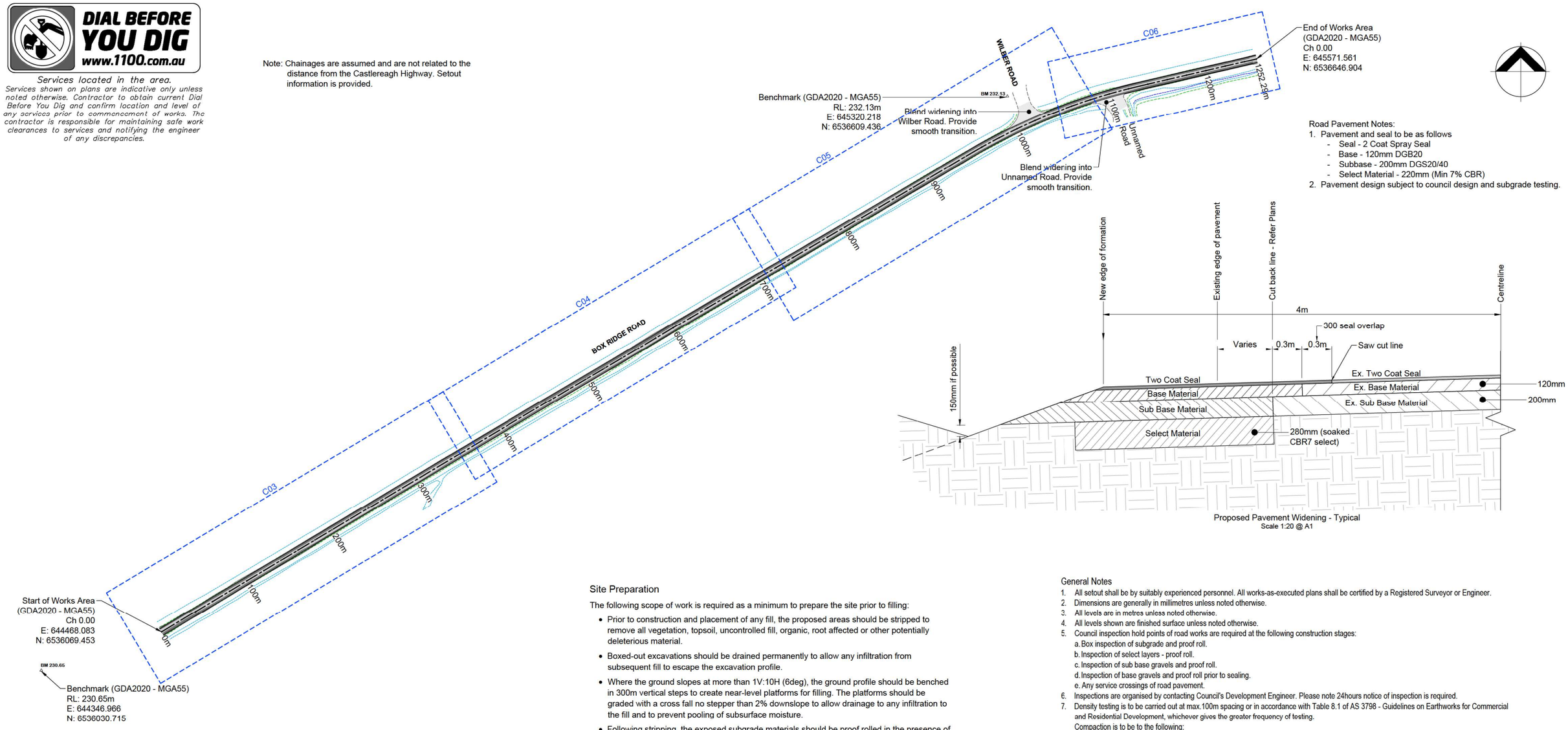
Services located in the area.
Services shown on plans are indicative only unless noted otherwise. Contractor to obtain current Dial Before You Dig and confirm location and level of any services prior to commencement of works. The contractor is responsible for maintaining safe work clearances to services and notifying the engineer of any discrepancies.

Note: Chainages are assumed and are not related to the distance from the Castlereagh Highway. Setout information is provided.



Road Pavement Notes:
1. Pavement and seal to be as follows
   - Seal - 2 Coat Spray Seal
   - Base - 120mm DGB20
   - Subbase - 200mm DGS20/40
   - Select Material - 220mm (Min 7% CBR)
2. Pavement design subject to council design and subgrade testing.

Proposed Pavement Widening - Typical
Scale 1:20 @ A1

Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain

Legend Continued

- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)

Site Preparation

The following scope of work is required as a minimum to prepare the site prior to filling:

- Prior to construction and placement of any fill, the proposed areas should be stripped to remove all vegetation, topsoil, uncontrolled fill, organic, root affected or other potentially deleterious material.
- Boxed-out excavations should be drained permanently to allow any infiltration from subsequent fill to escape the excavation profile.
- Where the ground slopes at more than 1V:10H (6deg), the ground profile should be benched in 300m vertical steps to create near-level platforms for filling. The platforms should be graded with a cross fall no stepper than 2% downslope to allow drainage to any infiltration to the fill and to prevent pooling of subsurface moisture.
- Following stripping, the exposed subgrade materials should be proof rolled in the presence of a suitably qualified and experienced Geotechnical Engineer to identify any wet or excessively deflecting material.
- Proof rolling should involve compacting the site with an 8-ton roller, trimming the rolled surface to level and clean finish. Where there are areas indicating excessive deflection then these may require over-excavation and backfilling with an approved select material.
- Re-use of Site Material: Where feasible, site won material is to be trucked directly to the placement site to avoid double handling. Site won material is suitable for general fill material. However, engineered fill for permanent works may require a coarser particle size blend to comply with specification grading requirements. Excavated material used during construction are subject to further testing to confirm specification and design acceptability requirements.
- Bulk Earthworks: Subgrade preparation will generally only require removal of topsoil and compaction to 98% relative to standard compaction of the excavated subgrade material. Slope angles of 1V:1H and 1V:2V is considered appropriate for compacted embankment fill materials in the temporary and permanent conditions respectively.
- Trafficability: Note, Clay subgrades at the site have a low wet strength and poor subgrade strength. The site soils would be trafficable during dry periods. Some desiccation of exposed surfaces can be expected and large quantities of dust will be generated during dry periods under traffic. The soils will be soft and difficult to traverse following wet weather or inundation. Drying out these soils could take several days or weeks before being able to accommodate construction traffic.

General Notes

1. All setout shall be by suitably experienced personnel. All works-as-executed plans shall be certified by a Registered Surveyor or Engineer.
2. Dimensions are generally in millimetres unless noted otherwise.
3. All levels are in metres unless noted otherwise.
4. All levels shown are finished surface unless noted otherwise.
5. Council inspection hold points of road works are required at the following construction stages:
   a. Box inspection of subgrade and proof roll.
   b. Inspection of select layers - proof roll.
   c. Inspection of sub base gravels and proof roll.
   d. Inspection of base gravels and proof roll prior to sealing.
   e. Any service crossings of road pavement.
6. Inspections are organised by contacting Council's Development Engineer. Please note 24hours notice of inspection is required.
7. Density testing is to be carried out at max.100m spacing or in accordance with Table 8.1 of AS 3798 - Guidelines on Earthworks for Commercial and Residential Development, whichever gives the greater frequency of testing.
   Compaction is to be to the following:
   - general filling to 98% standard compaction;
   - subgrade to 98% standard compaction;
   - sub-base gravels to 102% standard compaction;
   - base course gravels to 102% standard compaction;
8. Minimum cover to stormwater pipes shall be 450mm in landscape areas, and 600mm under road pavements, unless noted otherwise.
9. The Contractor is responsible for maintaining sufficient cover over stormwater and sewer mains during construction, and ensuring that trenches are correctly backfilled and compacted to eliminate damage caused by construction traffic.
10. General concrete works shall have the following properties:
    a. Class of concrete shall be normal.
    b. Maximum slump shall be 80mm.
    c. Maximum aggregate size shall be 20mm.
    d. Min 28 days concrete compressive strength shall be 25 Mpa including all kerbs u.n.o
    e. Concrete works shall conform to AS 3600.
11. Linemarking and signage shall confirm to AS 1742 Manual of Uniform Traffic Control Devices.
12. It is the responsibility of the Contractor to ensure that adequate erosion and sedimentation control devices are erected and maintained at all times during construction, and to the satisfaction of the Local Authority.
13. All traffic control during construction shall be in accordance with the RTA's Guidelines - Traffic Control at Work Sites and AS 1742.3 - 2002 Manual of Uniform Traffic Control Devices: Traffic Control Devices for Works on Roads.
14. All works shall be carried out in accordance with the Local Authorities Development Code and Austroads Standards.
15. It is the Contractor's responsibility to provide to the Surveyor any information necessary to prepare works-as-executed drawings for submission to the Local Authority. It will be necessary to liaise with the Surveyor to coordinate the location of some items prior to backfilling.

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	16/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Overall Site Layout Notes & Details

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH
Drawn	AH
Checked	TC
Approved	TC
Date	16/01/2023
Job No.	11551
Scale	1:2000 @ A1, 1:4000 @ A3 (0 20 40 60 80 100)
Datum	AHD
Drafting File	11551_Stage-4_Civils_ISSB.dwg
Design File	#
Dwg No.	S4-C01
Issue	B

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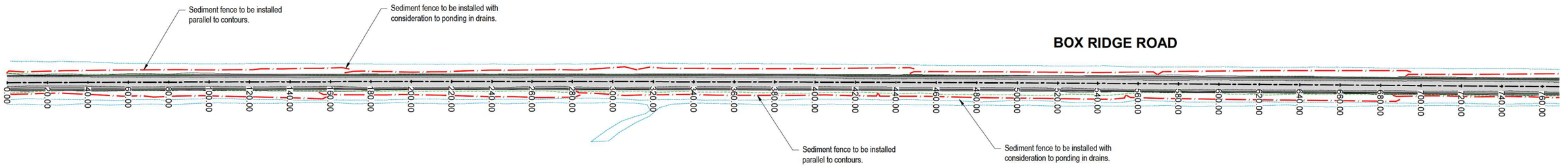
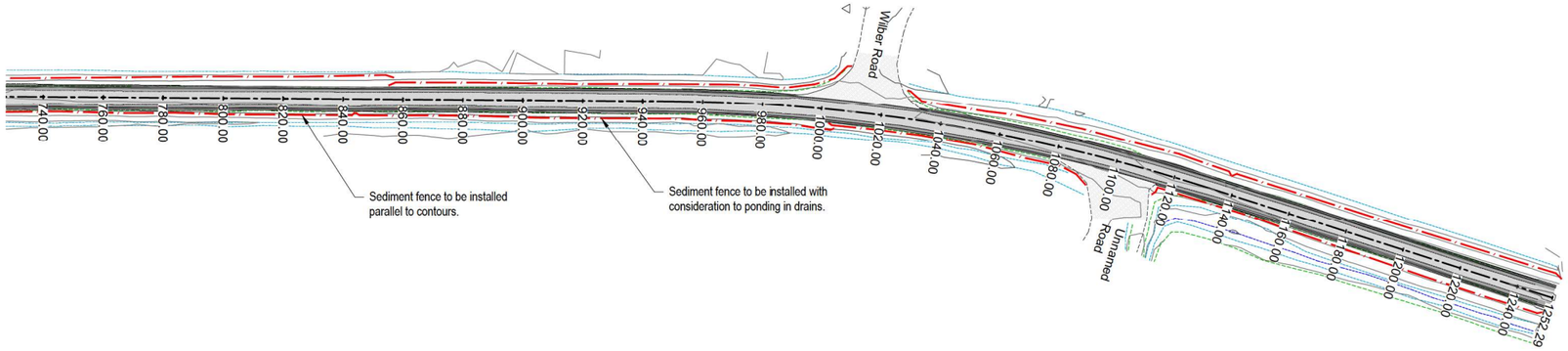




Legend

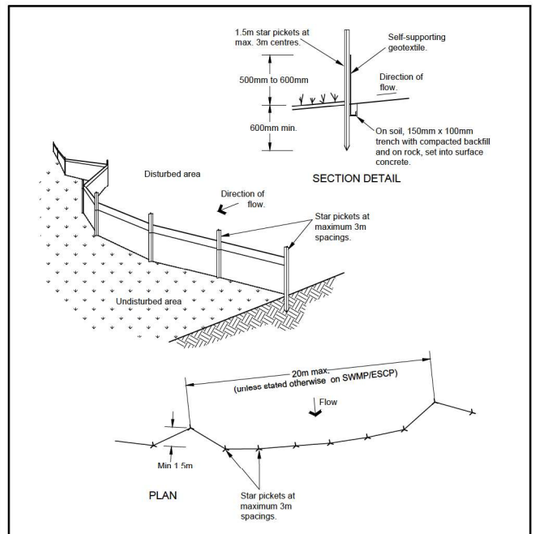
- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain

Legend Continued

- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)
- Sediment Fence

Notes - Erosion and Sedimentation Control

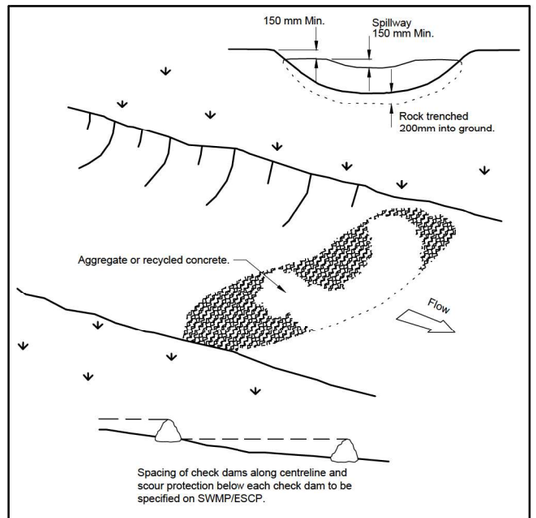
1. All erosion and sedimentation controls shall be in accordance with the guidelines and specifications as detailed in Landcom's ' Managing Urban Stormwater: Soils and Construction - Volume 1', 2004.
2. Construction shall be phased so that land disturbance is confined to areas of workable size. This will limit the duration disturbed areas are exposed to erosion. Stabilisation shall be applied to the first disturbed area before the next section is opened up. Any disturbed areas that will not be stabilised within 30 days shall be revegetated and any that fail to establish shall be resown.
3. Topsoil stockpiles are to be located away from any natural drainage watercourse and shall have hay bales and/or sediment control fences placed around them to act as sedimentation controls.
4. Temporary earthen diversion drains shall be constructed to divert waters away from all disturbed areas and towards hay bale check dams located in natural drainage depressions.
5. Temporary sediment detention barriers shall be placed around outlet headwalls and drainage discharge points as detailed and permanent energy dissipaters shall be installed at all outlets to limit velocities and thus the potential for scouring. With all drainage outlets, water shall be released in a non-erodible manner.
6. Temporary sediment traps shall be constructed at drainage inlet points as detailed.
7. Temporary sediment fencing shall be installed along the downslope edge of disturbed areas and fill batters.
8. Sediment and debris shall be removed from detention barriers when they are 60% full. All sediment removed shall be disposed of as directed by the Supervising Engineer.
9. Upon completion of shaping and drainage works, batters and drainage lines shall be topsoiled to a minimum depth of 100mm with stockpiled material and any areas with insufficient grass/topsoil mix shall be seeded and mulched with any failed areas resown or revegetated as directed by the Supervising Engineer. A 400mm wide turf strip shall be installed next to all kerb, or other concrete surfaces, to stabilise the interface between concrete surfaces and topsoiled areas.
10. Where there is a footpath in the verge, turf is required between the back of the kerb and the footpath as well as a single turf strip along the property side of the footpath with the remainder of the verge finished as either turf or grass seed.
11. Temporary erosion and sedimentation controls are to be installed during the construction phase and shall be retained and maintained while disturbed areas remain or are contributing sediment to the stormwater system. No device shall be removed until directed by the Supervising Engineer.
12. Wind erosion on the site shall be managed by limiting traffic on disturbed areas, utilising water trucks, covering stockpiles with anchored geofabric, and providing dust covers on trucks and dumpers. If wind speed exceeds 10m/s, increase watering or cease dust generating activities until dust controls are operating effectively. Other measures may be employed as outlined in the Landcom manual.



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 of posts with wire ties or as recommended by geotextile manufacturer.
6. Join sections of fabric at support post with a 150mm overlap.

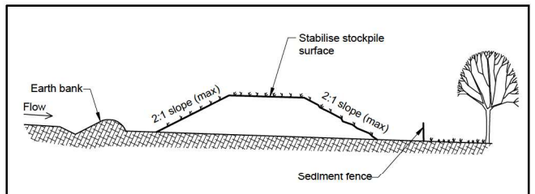
SEDIMENT FENCE



Construction Notes:

1. Trench structure 200mm into ground surface wherever the stucture contacts the gully base. Fill trenches to 100mm above ground surface to reduce risk of undercutting.
2. Ensure height of spillway is less than 1m above the gully floor.
3. Space checks so the toe of the upstream dam is level with the spillway of the next downstream dam.

Rock Check Dam



Construction Notes

1. Locate stockpile at least 5 metres 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 less than 2 metres in height.
4. Rehabilitate 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 2 metres downslope of stockpile.

STOCKPILES

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	16/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Erosion & Sediment Control Layout Plan, Notes, & Details

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
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A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH	Scale	Various - refer plan
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-4_Civils_ISSB.dwg
Date	16/01/2023	Design File	#
Job No.	11551	Dwg No.	S4-C02
		Issue	B

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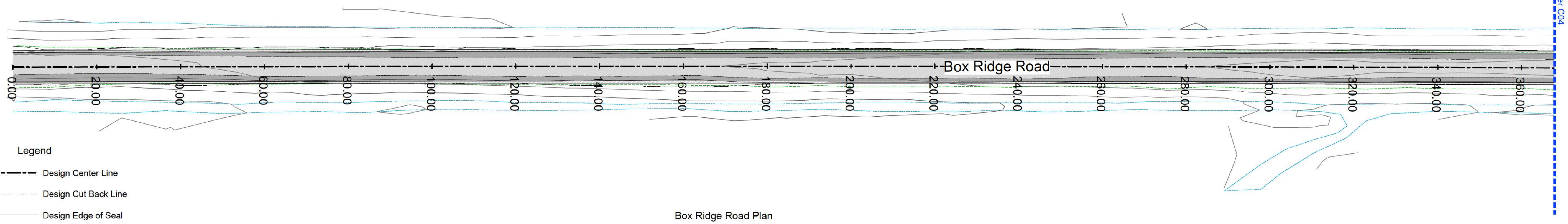

Box Ridge Road Plan
Scale: 1:500 @A1

Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain
- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)

EX CL Crest Ch 90.00 RL 231.39
EX CL Sag Ch 100.00 RL 231.38
EX CL Crest Ch 150.00 RL 231.48
EX CL Sag Ch 160.00 RL 231.48
EX CL Crest Ch 310.00 RL 231.81
EX CL Sag Ch 330.00 RL 231.79

R.L. 225.00

CHAINAGE	DESIGN REB SURFACE	DESIGN LEB SURFACE	EXISTING CENTER LINE SURFACE	Grade (to next chainage)
0.00	231.07	231.17	231.18	0.04%
10.00	231.09	231.27	231.18	0.03%
20.00	231.08	231.27	231.18	0.16%
30.00	231.09	231.28	231.20	0.23%
37.59	231.11	231.29	231.22	0.26%
40.00	231.12	231.29	231.22	0.50%
50.00	231.17	231.30	231.27	0.47%
60.00	231.23	231.28	231.32	0.37%
70.00	231.26	231.28	231.36	0.25%
80.00	231.27	231.30	231.38	0.06%
90.00	231.27	231.26	231.39	-0.08%
100.00	231.27	231.25	231.38	0.13%
110.00	231.29	231.28	231.39	0.24%
120.00	231.32	231.31	231.42	0.26%
130.00	231.35	231.34	231.44	0.24%
140.00	231.37	231.36	231.47	0.14%
150.00	231.39	231.39	231.48	-0.01%
160.00	231.39	231.40	231.48	0.21%
170.00	231.42	231.42	231.50	0.15%
180.00	231.45	231.43	231.52	0.06%
190.00	231.46	231.43	231.52	0.31%
200.00	231.46	231.44	231.55	0.20%
210.00	231.49	231.46	231.57	0.06%
220.00	231.51	231.48	231.58	0.28%
230.00	231.54	231.51	231.61	0.24%
240.00	231.55	231.54	231.63	0.14%
250.00	231.57	231.54	231.65	0.21%
260.00	231.57	231.57	231.67	0.32%
270.00	231.58	231.59	231.70	0.36%
280.00	231.63	231.62	231.73	0.34%
290.00	231.67	231.65	231.77	0.24%
300.00	231.71	231.67	231.79	0.16%
310.00	231.72	231.70	231.81	-0.17%
320.00	231.71	231.69	231.79	-0.04%
330.00	231.68	231.67	231.79	0.01%
340.00	231.69	231.67	231.79	0.02%
350.00	231.68	231.68	231.79	0.08%
360.00	231.69	231.70	231.80	

ALIGNMENT DETAILS: L=37.59 B=58°58'30"; L=563.74 R=50000.00

Box Ridge Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:100 @A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 | 100 Table of millimetres | 200 | 300 | 400 | 500 | 600 | 700 | 780

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	16/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: **BOX RIDGE ROAD - SITE 4**
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Layout Plan & Longitudinal Section Ch 0.00 to Ch 360.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
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A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH	Scale	Various - refer plan
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-4_Civils_ISSB.dwg
Date	16/01/2023	Design File	#
Job No.	11551	Dwg No.	S4-C03
		Issue	B

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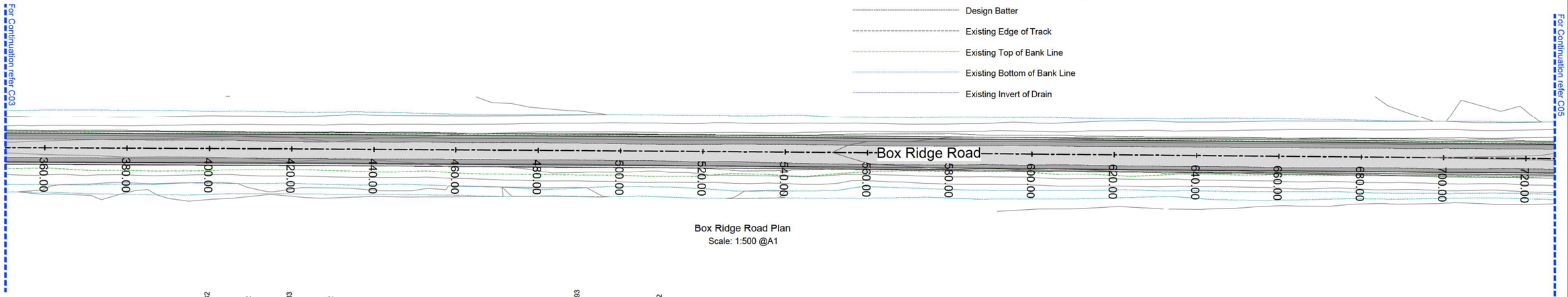
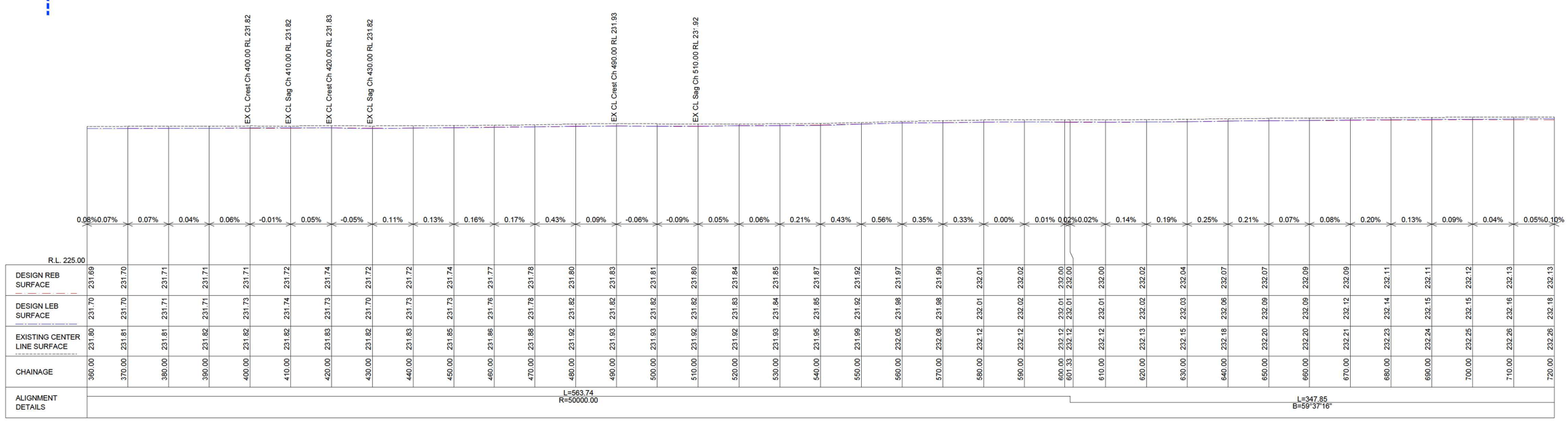


Box Ridge Road Plan
Scale: 1:500 @A1



CHAINAGE	DESIGN REB SURFACE	DESIGN LEB SURFACE	EXISTING CENTER LINE SURFACE
360.00	231.69	231.70	231.80
370.00	231.70	231.70	231.81
380.00	231.71	231.71	231.81
390.00	231.71	231.71	231.82
400.00	231.71	231.73	231.82
410.00	231.72	231.74	231.82
420.00	231.74	231.73	231.83
430.00	231.72	231.70	231.82
440.00	231.72	231.73	231.83
450.00	231.74	231.73	231.85
460.00	231.77	231.76	231.86
470.00	231.78	231.78	231.88
480.00	231.80	231.82	231.92
490.00	231.83	231.82	231.93
500.00	231.81	231.82	231.93
510.00	231.80	231.82	231.92
520.00	231.84	231.83	231.92
530.00	231.85	231.84	231.93
540.00	231.87	231.85	231.95
550.00	231.92	231.92	231.99
560.00	231.97	231.98	232.05
570.00	231.99	231.98	232.08
580.00	232.01	232.01	232.12
590.00	232.02	232.02	232.12
600.00	232.00	232.01	232.12
601.33		232.01	232.12
610.00	232.00	232.01	232.12
620.00	232.02	232.02	232.13
630.00	232.04	232.03	232.15
640.00	232.07	232.06	232.18
650.00	232.07	232.09	232.20
660.00	232.09	232.09	232.20
670.00	232.09	232.12	232.21
680.00	232.11	232.14	232.23
690.00	232.11	232.15	232.24
700.00	232.12	232.15	232.25
710.00	232.13	232.16	232.26
720.00	232.13	232.18	232.26

Box Ridge Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:100 @A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	16/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Layout Plan & Longitudinal Section Ch 360.00 to Ch 720.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
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Design	AH	Scale	Various - refer plan
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-4_Civils_ISSB.dwg
Date	16/01/2023	Design File	#
Job No.	11551	Dwg No.	S4-C04
		Issue	B

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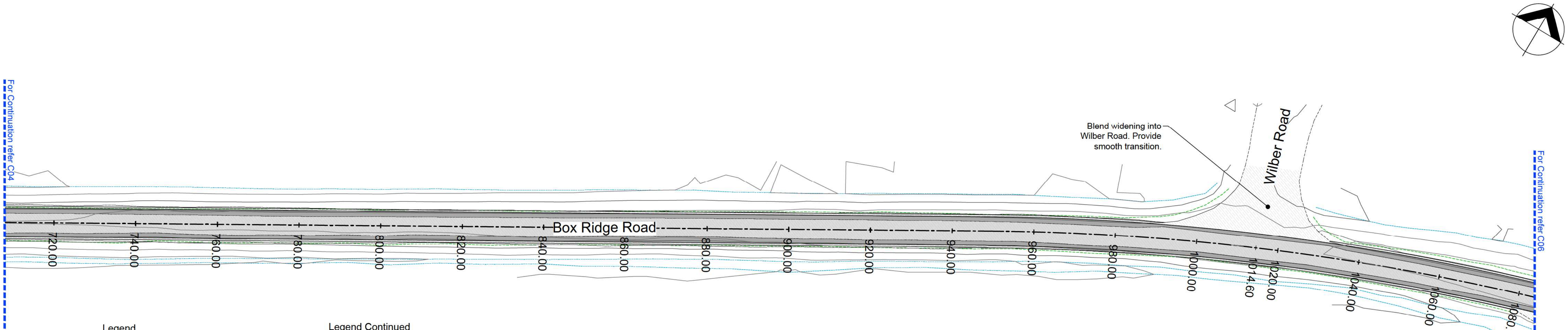


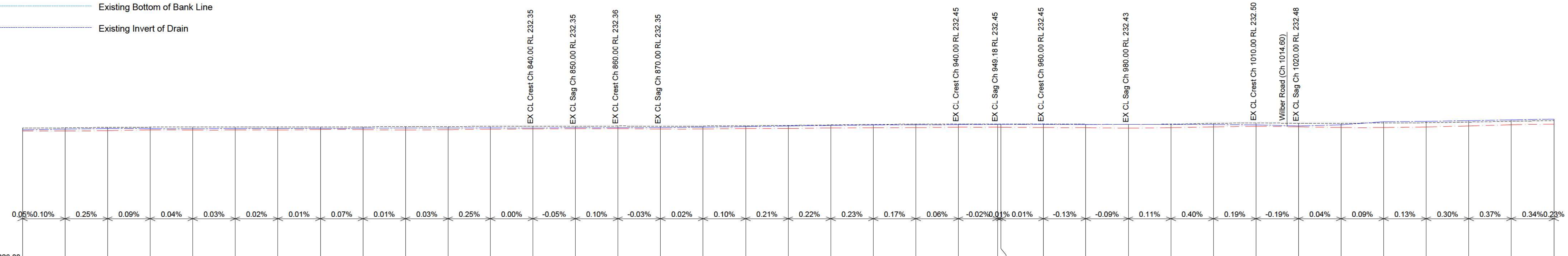
Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain

Legend Continued

- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)

Box Ridge Road Plan
Scale: 1:500 @A1



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730.00	232.13	232.21	232.27
740.00	232.14	232.24	232.30
750.00	232.18	232.24	232.31
760.00	232.17	232.24	232.31
770.00	232.17	232.24	232.31
780.00	232.17	232.24	232.31
790.00	232.19	232.25	232.32
800.00	232.19	232.26	232.32
810.00	232.17	232.26	232.32
820.00	232.19	232.26	232.33
830.00	232.21	232.27	232.35
840.00	232.22	232.27	232.35
850.00	232.23	232.27	232.35
860.00	232.24	232.28	232.36
870.00	232.21	232.28	232.35
880.00	232.22	232.31	232.36
890.00	232.24	232.33	232.37
900.00	232.24	232.36	232.39
910.00	232.27	232.38	232.41
920.00	232.28	232.40	232.43
930.00	232.28	232.42	232.45
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990.00	232.28	232.43	232.44
1000.00	232.32	232.43	232.48
1010.00	232.34	232.41	232.50
1020.00	232.32	232.36	232.48
1030.00	232.29	232.41	232.49
1040.00	232.29	232.56	232.50
1050.00	232.31	232.57	232.51
1060.00	232.36	232.61	232.54
1070.00	232.42	232.64	232.58
1080.00	232.45	232.68	232.61

ALIGNMENT DETAILS: L=347.85 B=59°37'16" ; L=181.55 R=600.00

Box Ridge Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:100 @A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	16/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Layout Plan & Longitudinal Section Ch 720.00 to Ch 1080.00

ARDILL PAYNE & Partners
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ENVIRONMENTAL PROJECT MANAGEMENT
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Design	AH	Scale	Various - refer plan
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-4_Civils_ISSB.dwg
Date	16/01/2023	Design File	#
Job No.	11551	Dwg No.	S4-C05
		Issue	B

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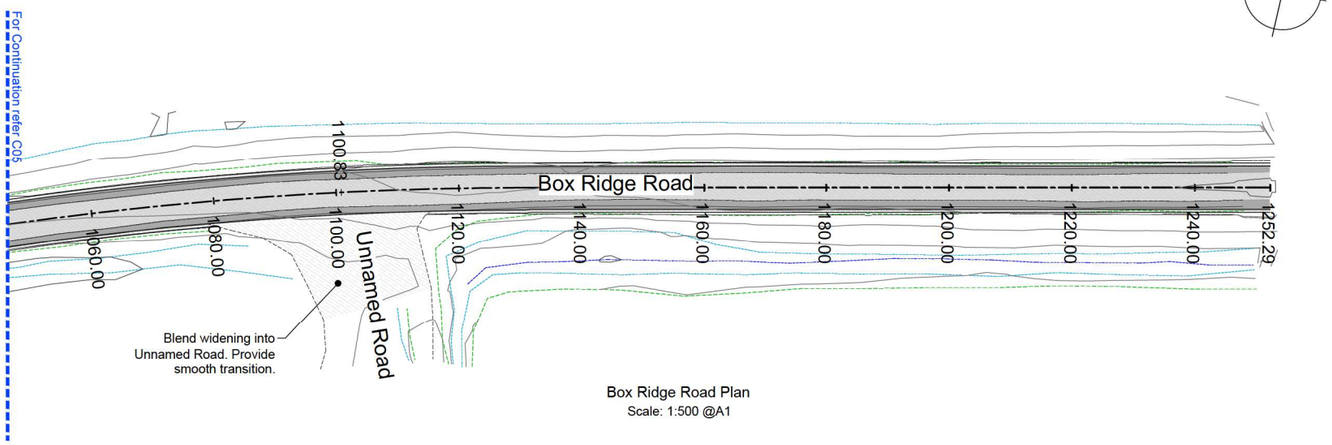
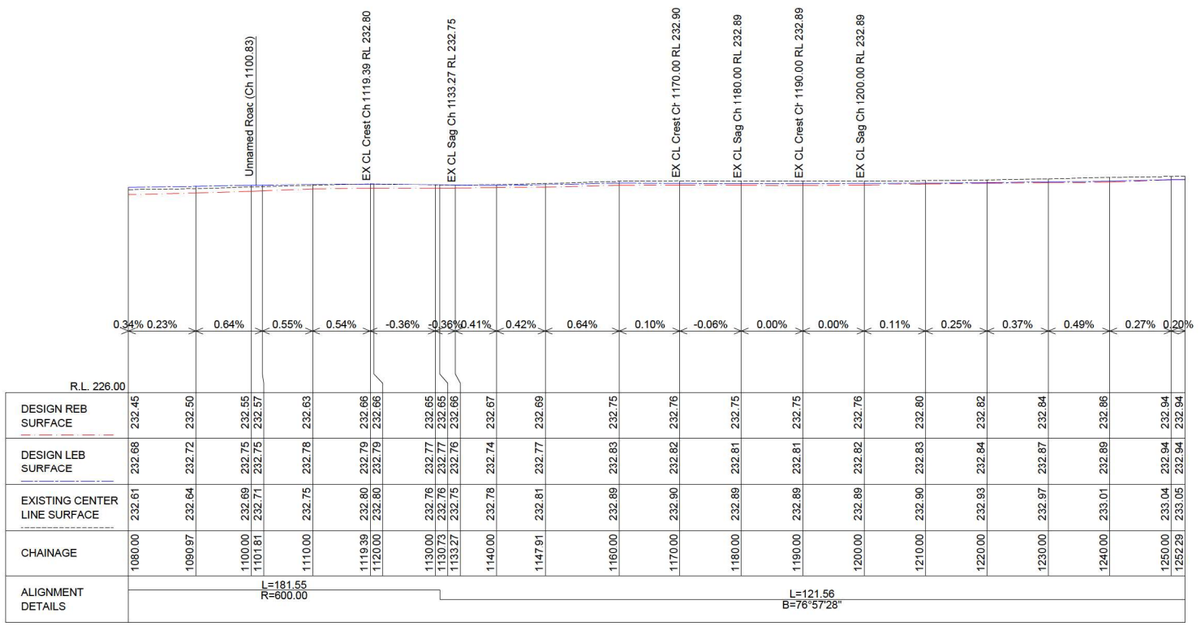


Box Ridge Road Plan
Scale: 1:500 @A1



Box Ridge Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:100 @A1

Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain
- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)

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Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Layout Plan & Longitudinal Section Ch 1080.00 to Ch 1252.29

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
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Design	AH	Scale	Various - refer plan
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Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-4_Civils_ISSB.dwg
Date	16/01/2023	Design File	#
Job No.	11551	Dwg No.	S4-C06
		Issue	B

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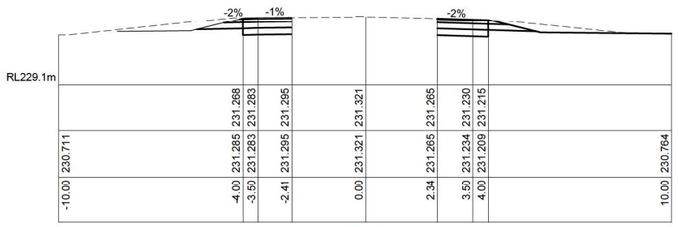

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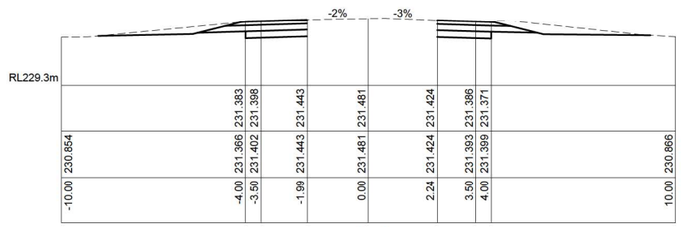

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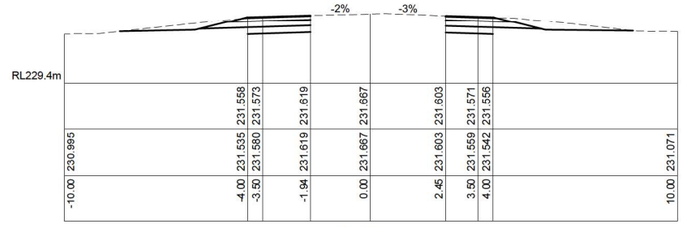

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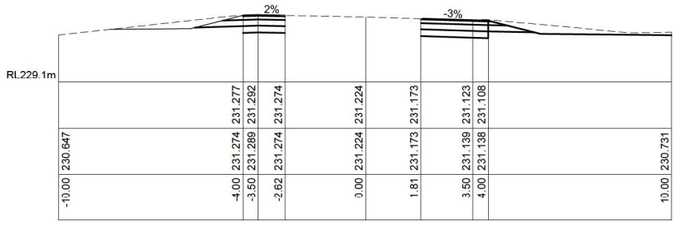

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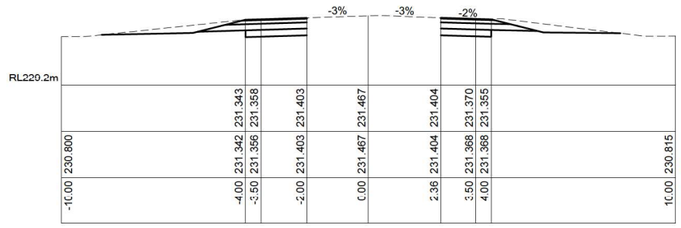

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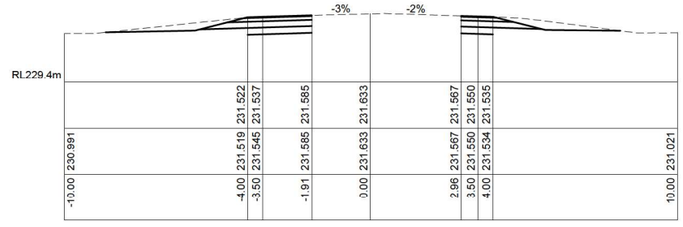

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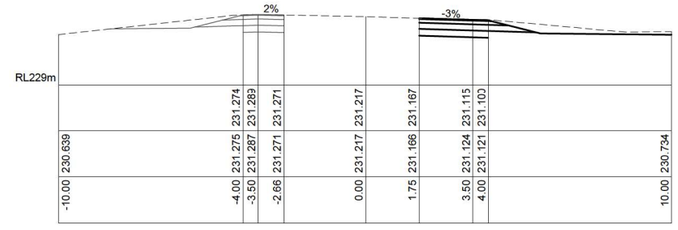

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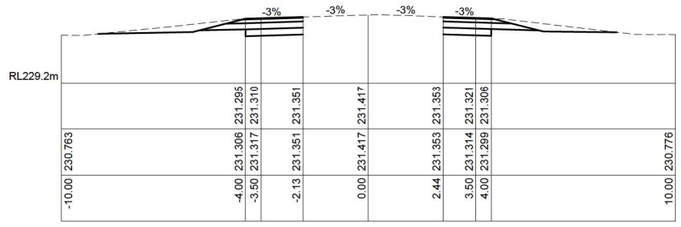

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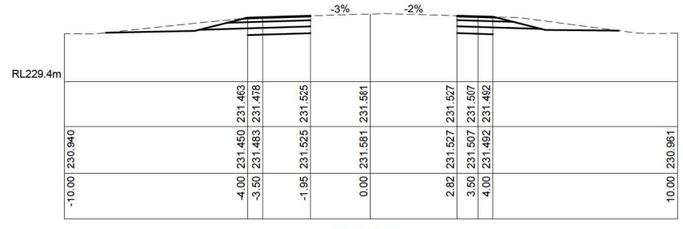

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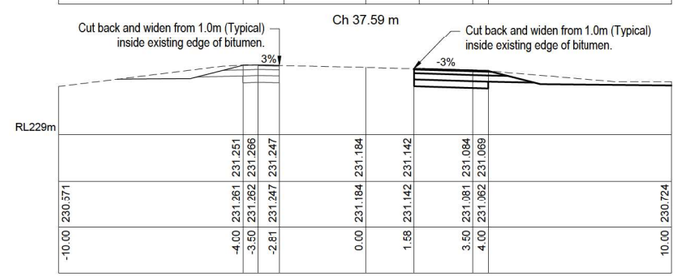

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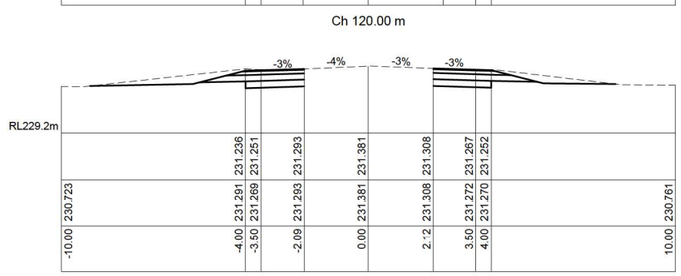

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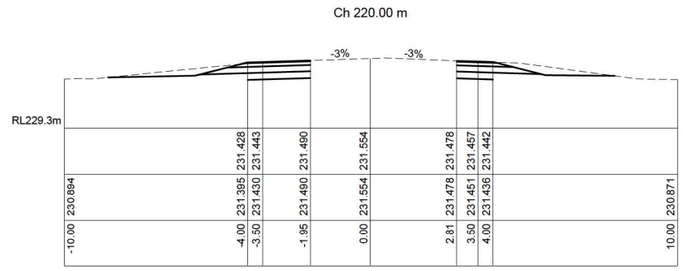

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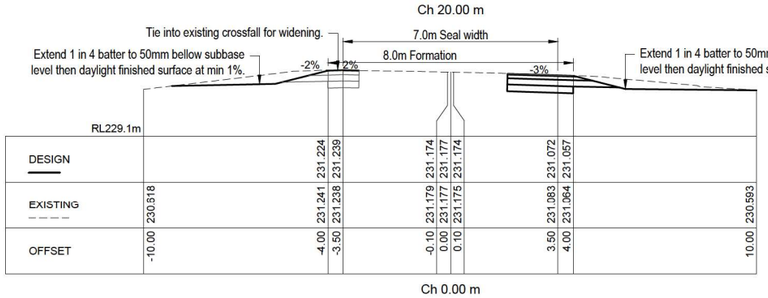

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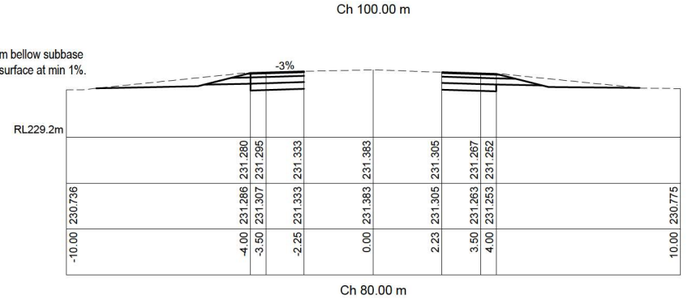

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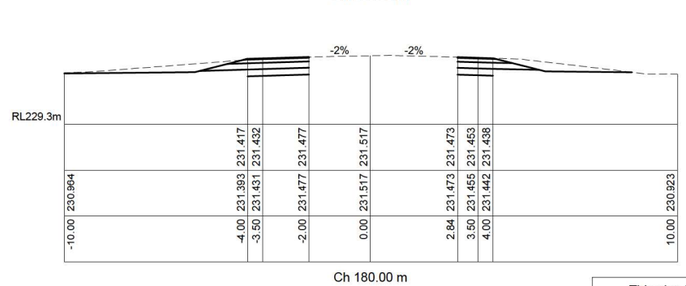

Ch 180.00 m

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Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Road Widening Cross Sections Ch 0.00 to Ch 260.00

ARDILL PAYNE & Partners
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A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH	Scale	Not to scale
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-4_Civils_ISSB.dwg
Date	16/01/2023	Design File	#
Job No.	11551	Dwg No.	S4-C07
		Issue	B

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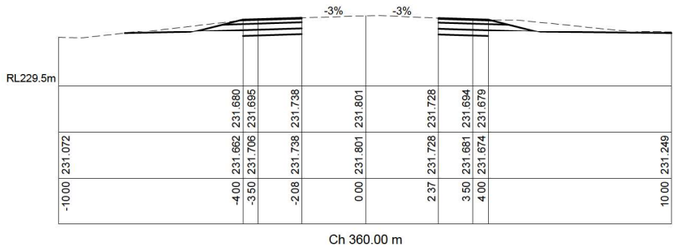

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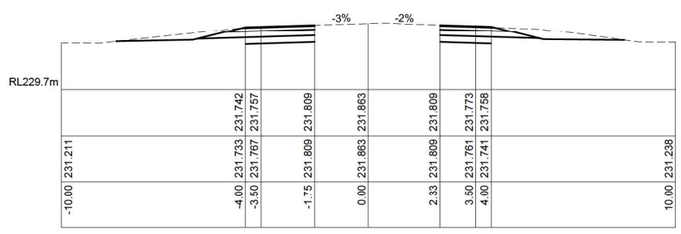

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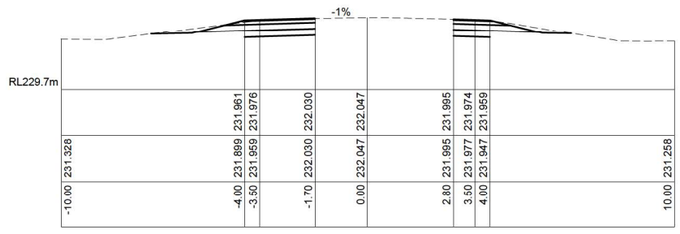

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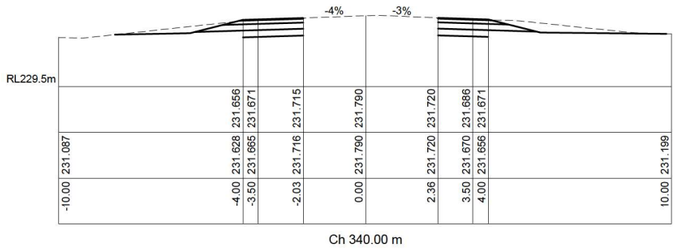

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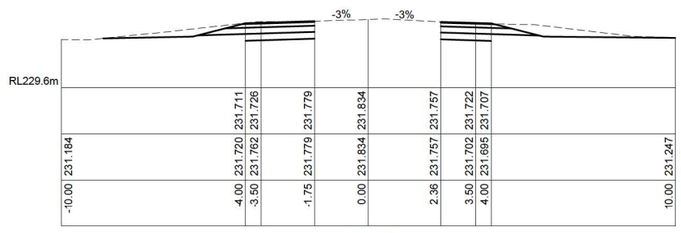

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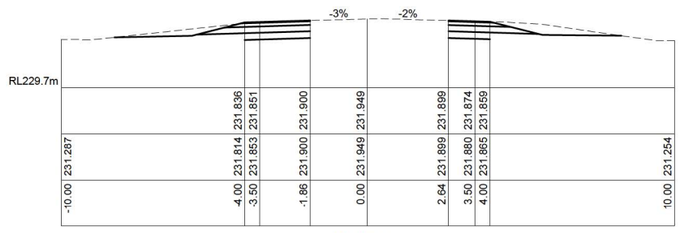

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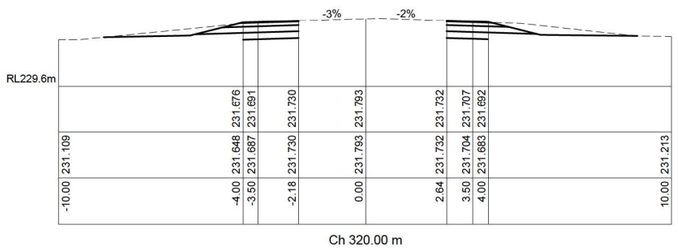

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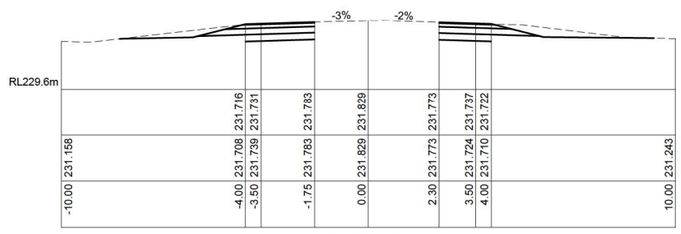

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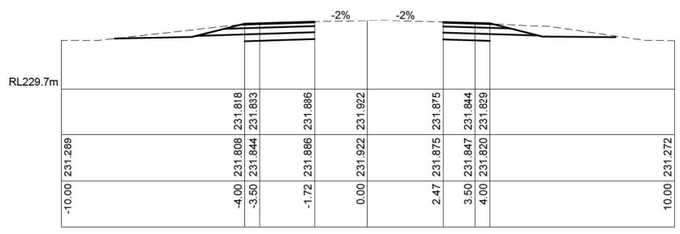

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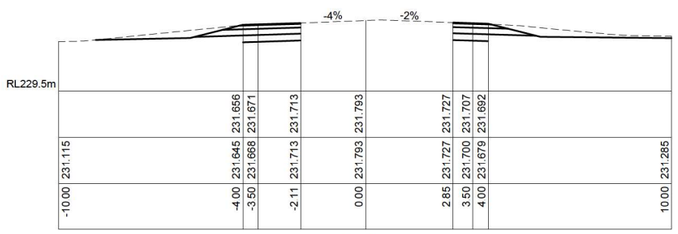

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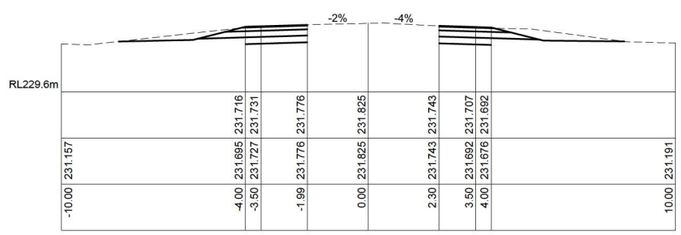

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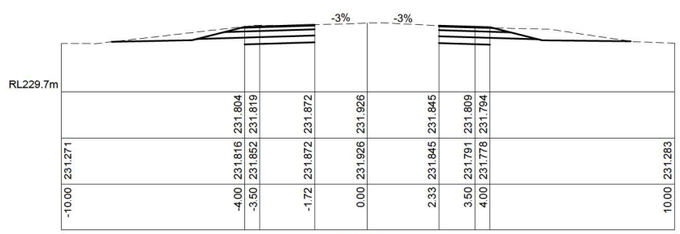

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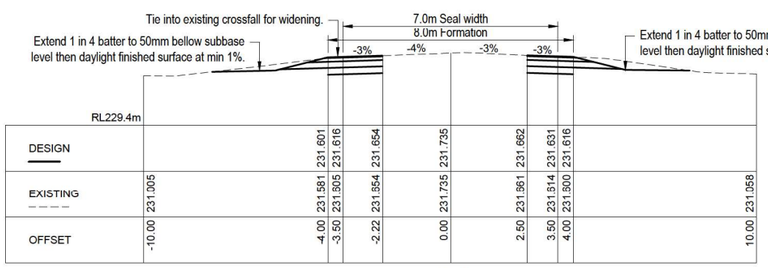

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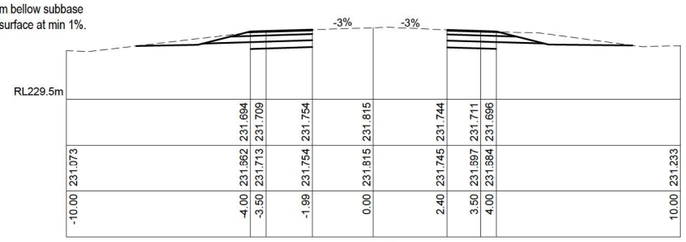

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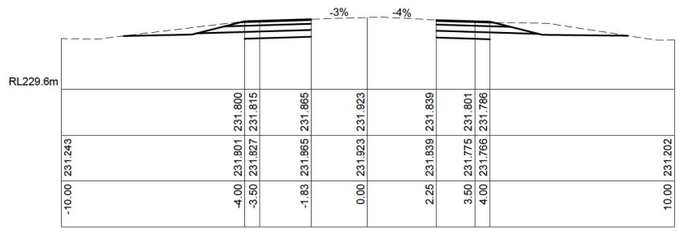

Ch 480.00 m

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Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Road Widening Cross Sections Ch 280.00 to Ch 560.00

ARDILL PAYNE
& Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
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Design	AH	Scale	Not to scale
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		Issue	B

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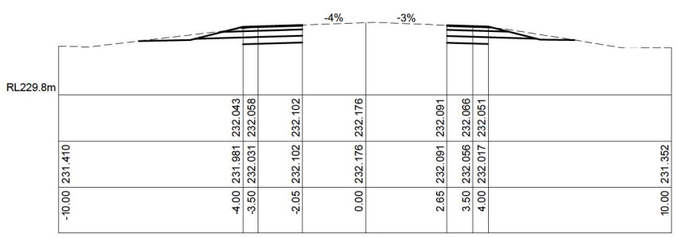

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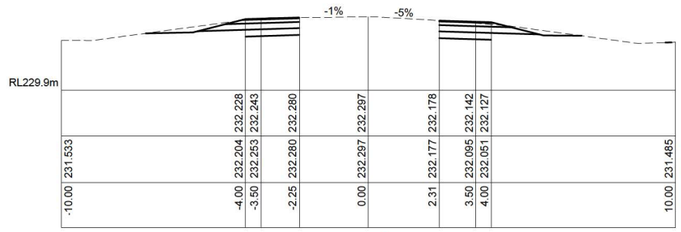

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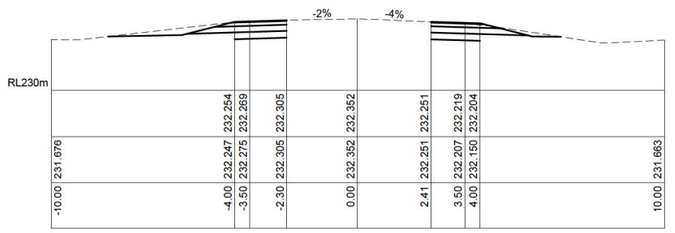

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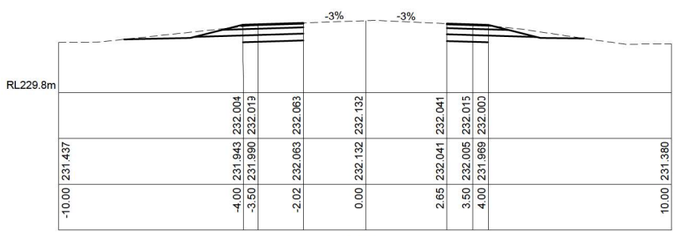

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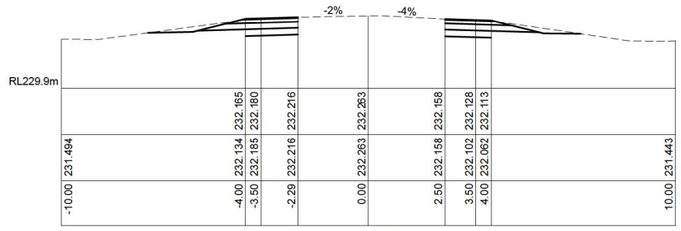

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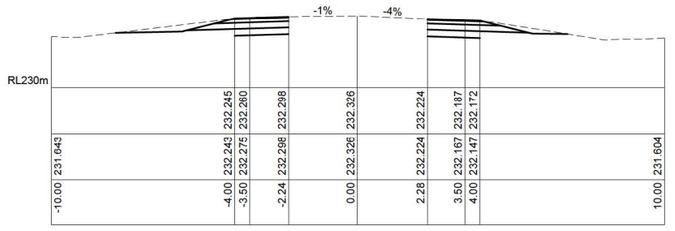

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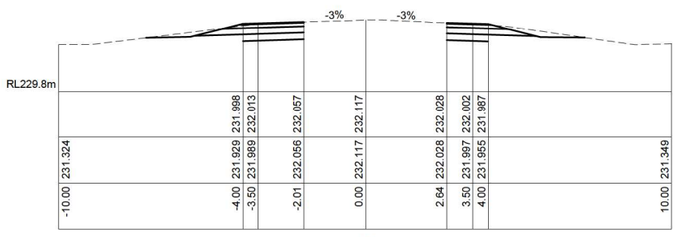

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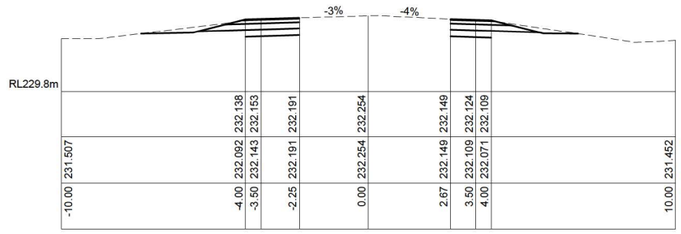

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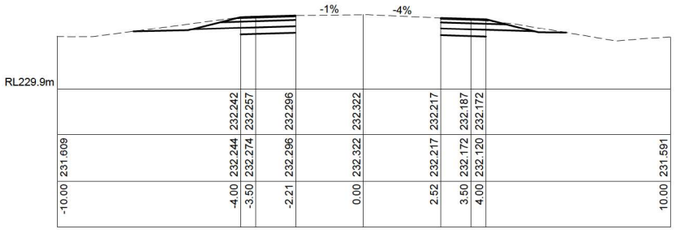

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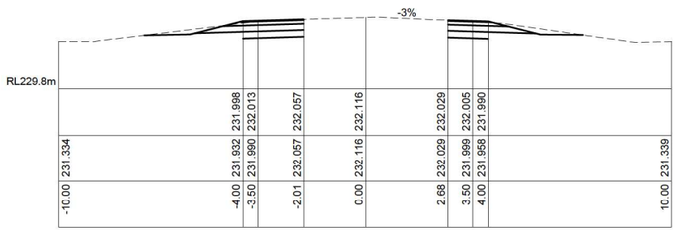

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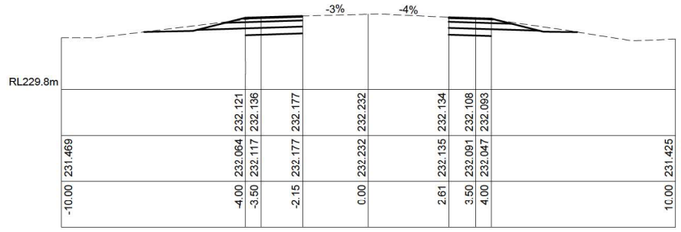

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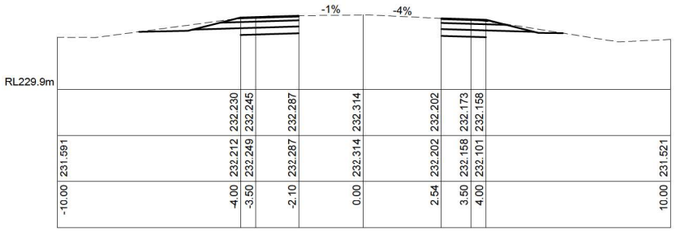

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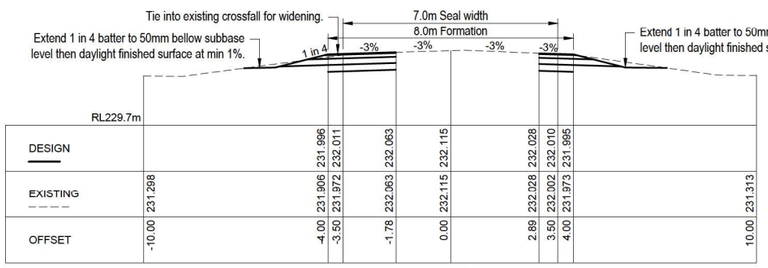

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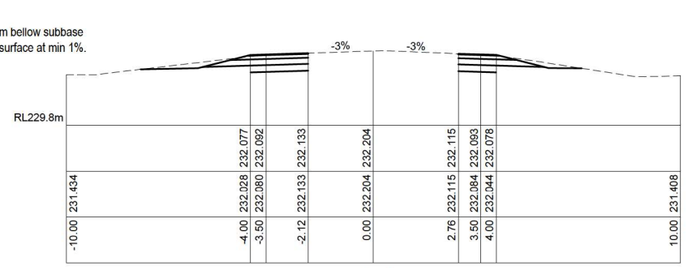

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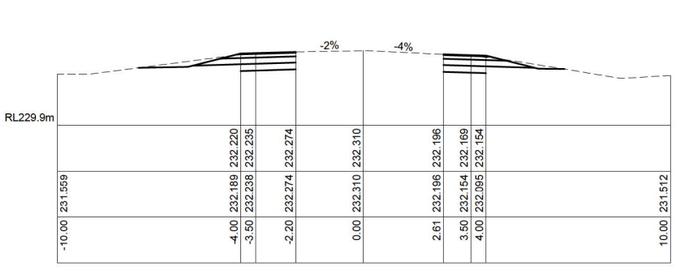

Ch 760.00 m

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	16/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Road Widening Cross Sections Ch 580.00 to Ch 840.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
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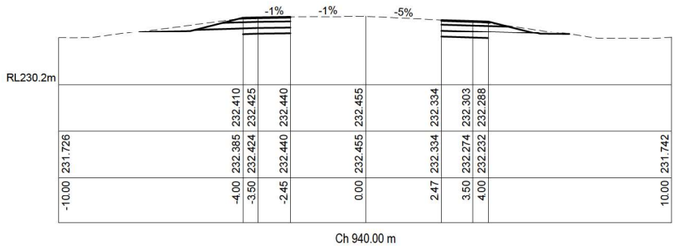
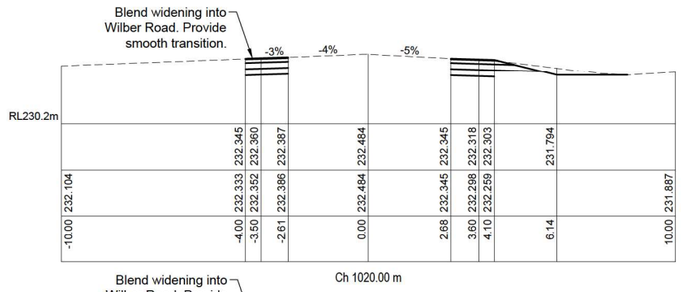
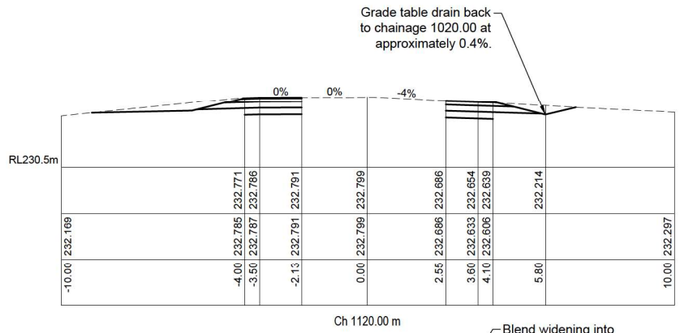
Design	AH	Scale	Not to scale
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-4_Civils_ISSB.dwg
Date	16/01/2023	Design File	#
Job No.	11551	Dwg No.	S4-C09
		Issue	B



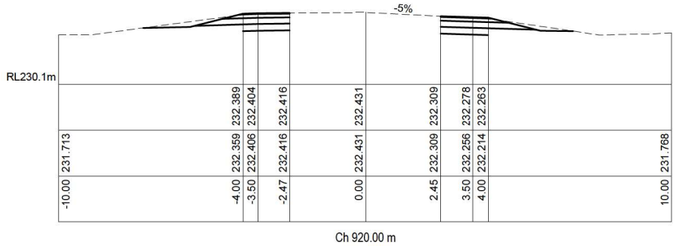
Ch 940.00 m



Ch 1020.00 m



Ch 1120.00 m



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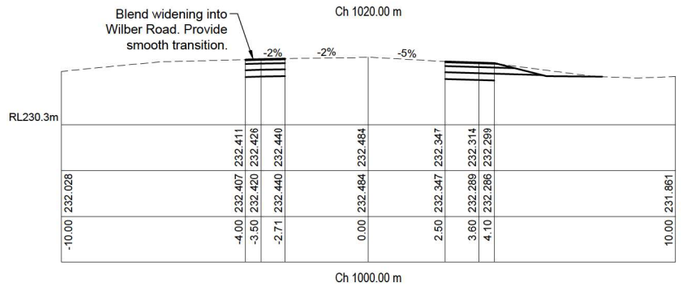

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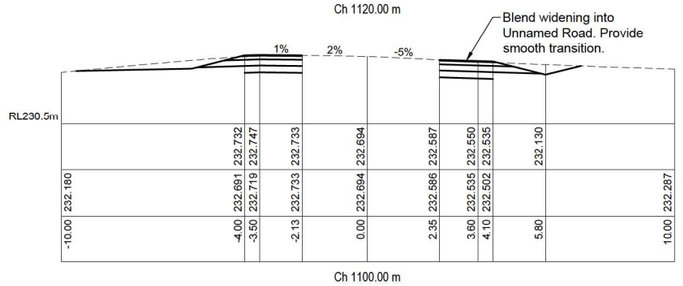

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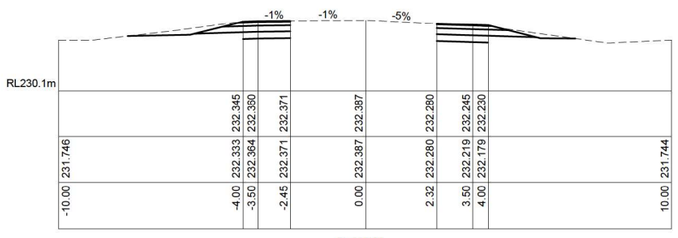

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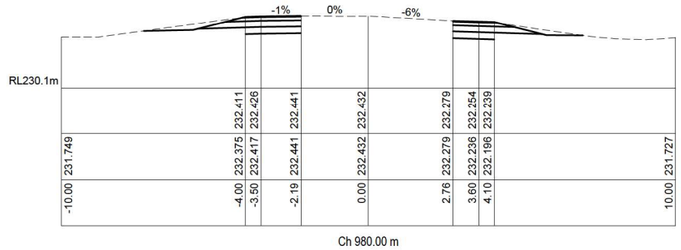

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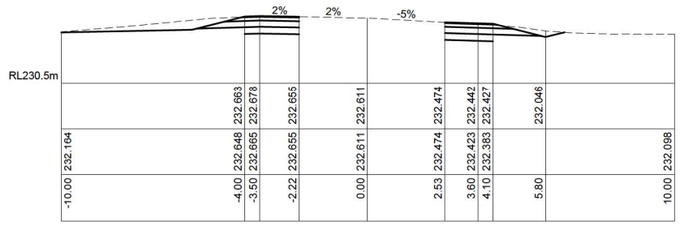

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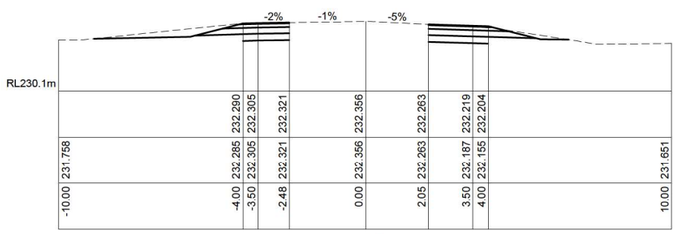

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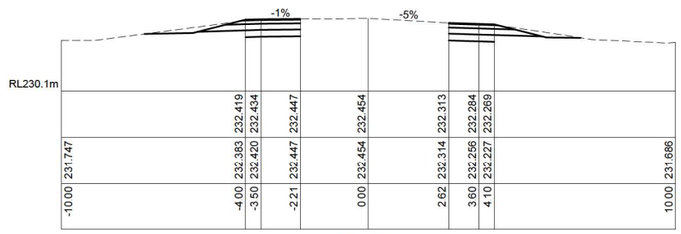

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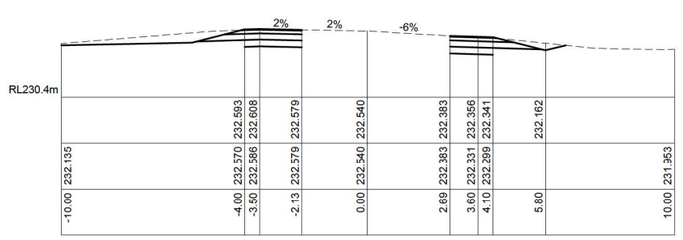

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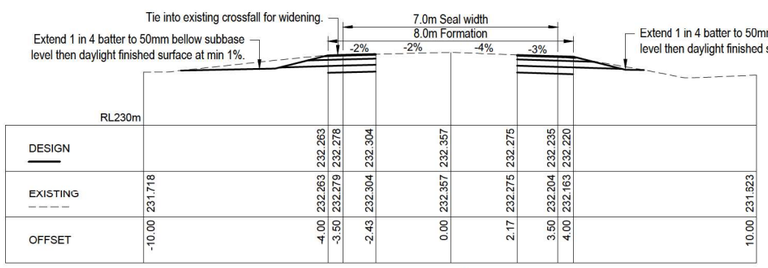

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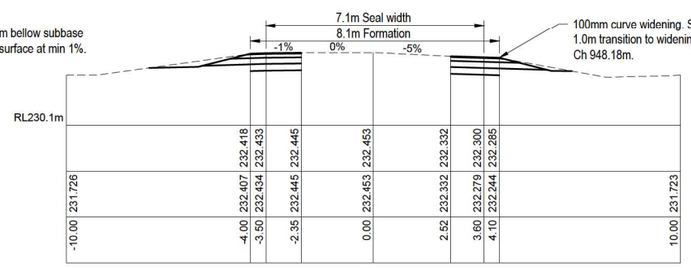

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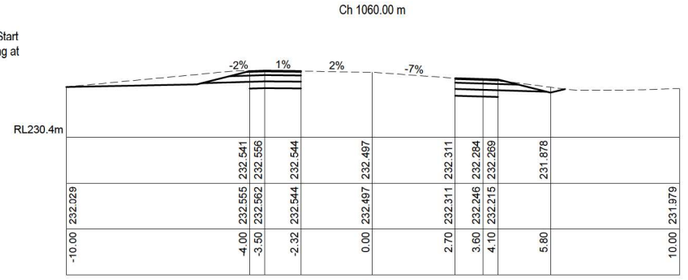

Ch 1040.00 m

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	16/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Road Widening Cross Sections Ch 860.00 to Ch 1120.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
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Design	AH
Drawn	AH
Checked	TC
Approved	TC
Date	16/01/2023
Job No.	11551
Scale	Not to scale
Datum	AHD
Drafting File	11551_Stage-4_Civils_ISSB.dwg
Design File	#
Dwg No.	S4-C10
Issue	B

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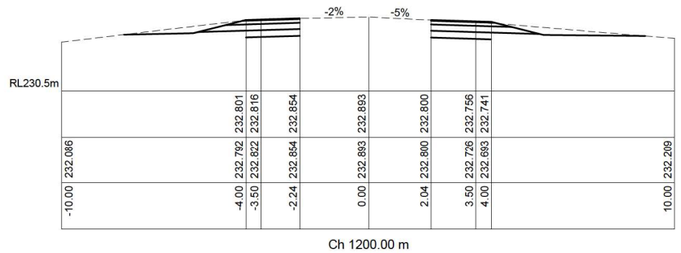

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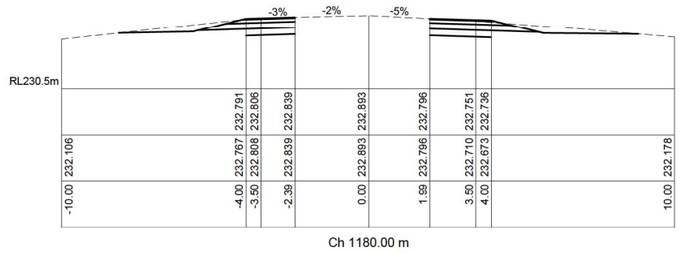

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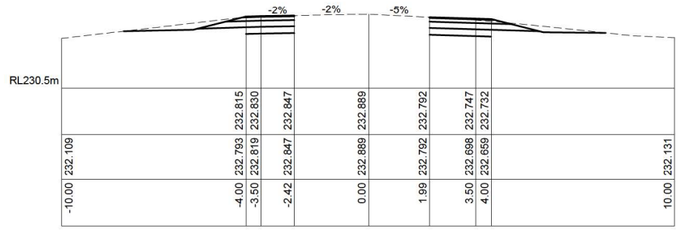

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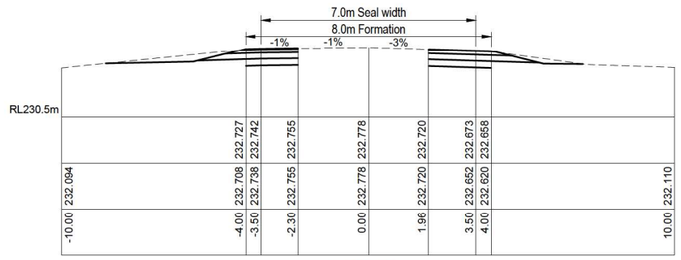

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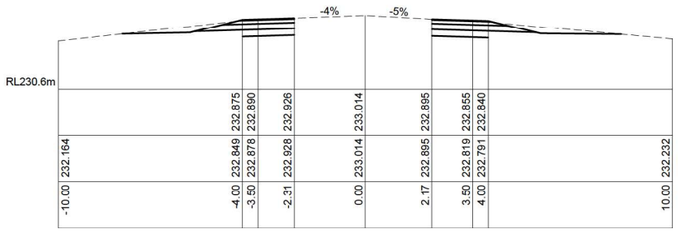

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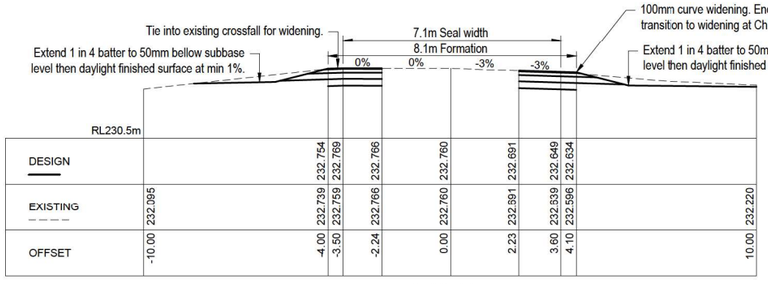

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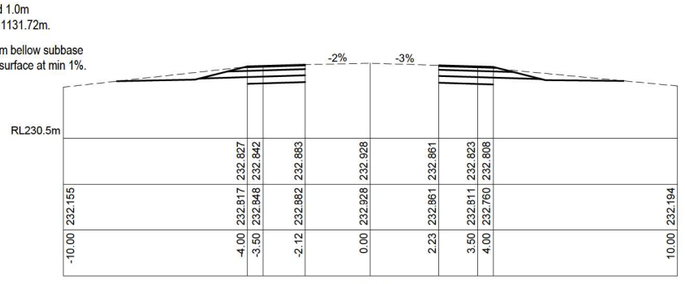

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Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	16/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Road Widening Cross Sections Ch 1130.73 to Ch 1252.29

ARDILL PAYNE & Partners
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A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH	Scale	Not to scale
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-4_Civils_ISSB.dwg
Date	16/01/2023	Design File	#
Job No.	11551	Dwg No.	S4-C11
		Issue	B

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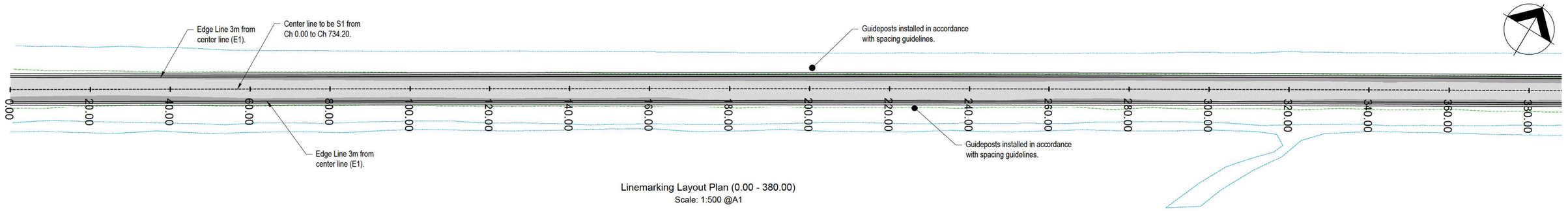
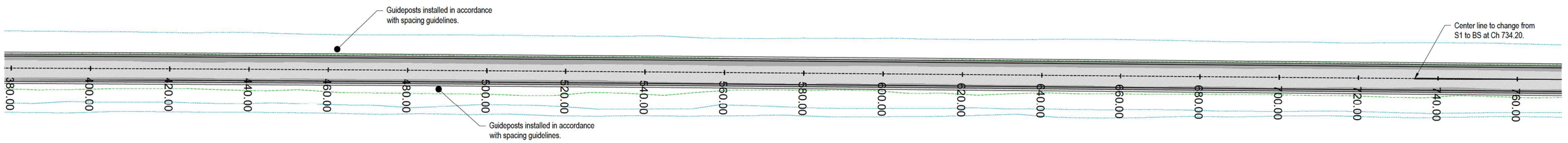
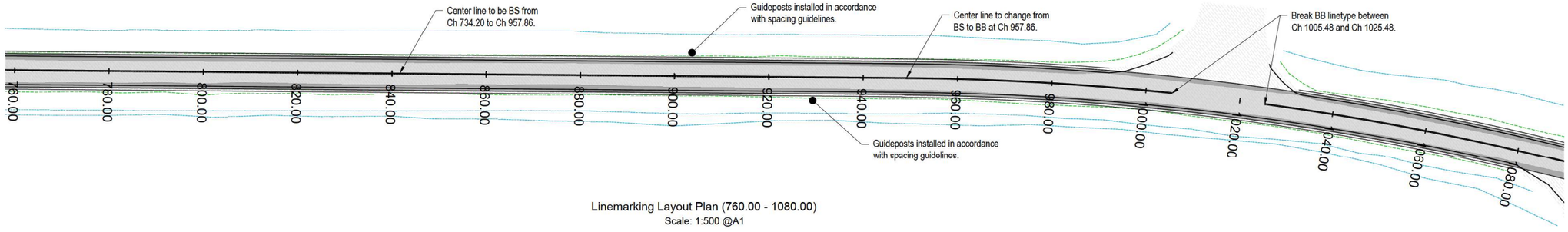


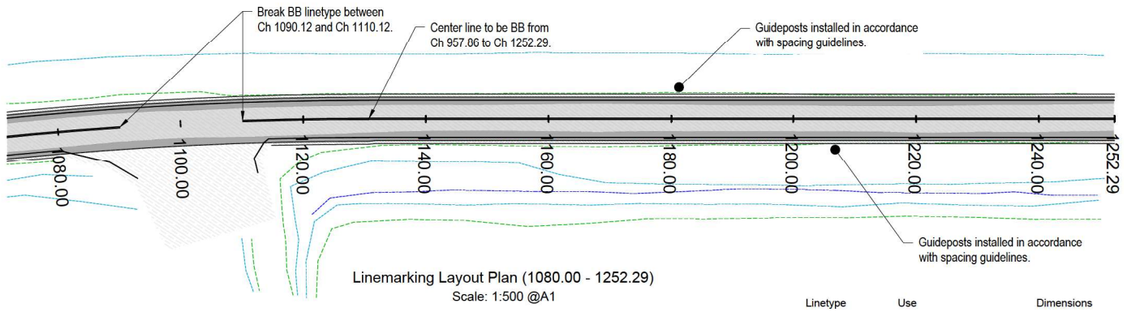
Linemarking Layout Plan (0.00 - 380.00)
Scale: 1:500 @A1



Linemarking Layout Plan (380.00 - 760.00)
Scale: 1:500 @A1

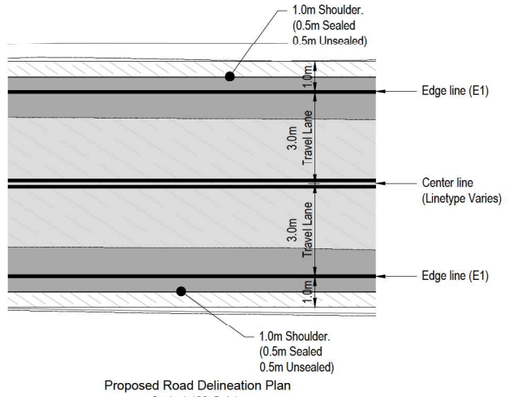


Linemarking Layout Plan (760.00 - 1080.00)
Scale: 1:500 @A1



Linemarking Layout Plan (1080.00 - 1252.29)
Scale: 1:500 @A1

Linetype	Use	Dimensions
E1	Left hand edge line on general purpose road	0.15m
S1	Dividing (seperation) line on 2 lane road	0.10m
BS	Dividing (Barrier) lines overtaking in one direction	0.10m 0.10m 0.10m
BB	Dividing (Barrier) lines	0.10m 0.10m 0.10m



Proposed Road Delineation Plan
Scale 1:100 @ A1

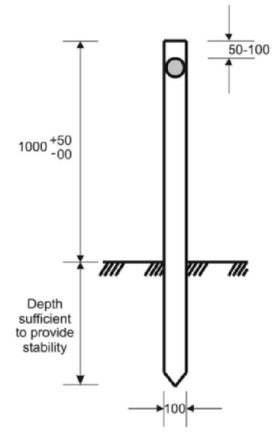


Figure 16.1: Typical Guide Post

Rigid Guide Post Detail
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

Curve radius	Spacing (m)	
	On outside curve	On inside curve
< 100	6	12
100 - 199	10	20
200 - 299	15	30
300 - 399	20	40
400 - 599	30	60
600 - 699	40	60
800 - 1999	60	60
1200 - 2000	90	90
> 2000 including straights	150	150

Table 16.1: Spacing of posts on curves (including spacing of delineators on guard fence)

Guide Post Spacing Guidlines
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

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Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	16/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 4
WIDENING AND SEALING
FROM CH5.100 TO 6.300km From Intersection With Castlereagh Hwy

Title: Linemarking Layout Plan

ARDILL PAYNE & Partners
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Design	AH	Scale	Various - refer plan
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-4_Civils_ISSB.dwg
Date	16/01/2023	Design File	#
Job No.	11551	Dwg No.	S4-C12
		Issue	B

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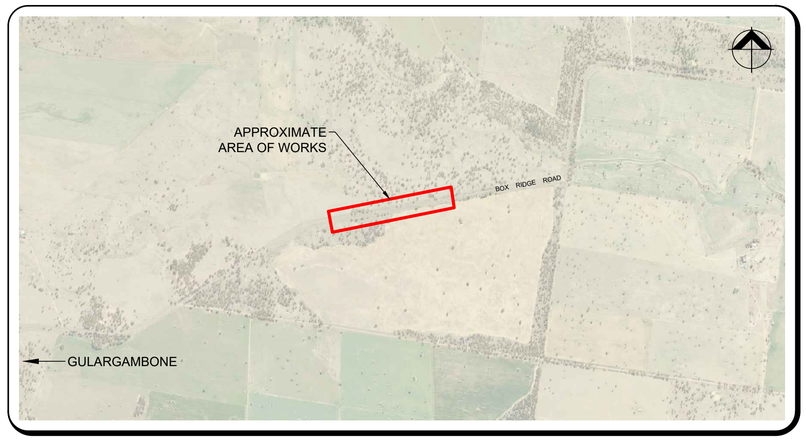

LOCALITY MAP
N.T.S

BOX RIDGE ROAD - SITE 5

FULL WIDTH REHABILITATION

FROM CH 13.10 TO 13.67km
From Intersection with Castlereagh Hwy

For: Coonamble Shire Council

ARDILL PAYNE
& P a r t n e r s
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT

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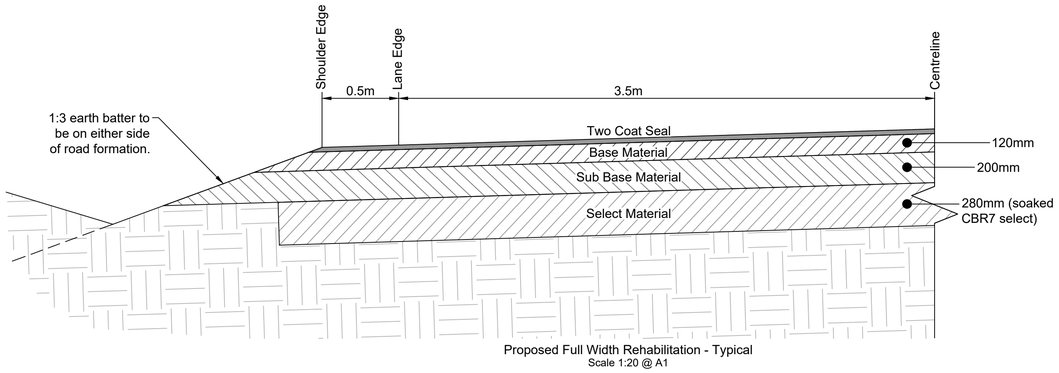
DRAWING SCHEDULE

DRAWINGS	SHEET	DESCRIPTION
11551 -No. S5-C01	1 of 6	Overall Site Layout Notes & Details
11551 -No. S5-C02	2 of 6	Erosion & Sediment Control Layout Plan, Notes & Details
11551 -No. S5-C03	3 of 6	Layout Plan & Longitudinal Sections Ch 0.00 to Ch 360.00
11551 -No. S5-C04	4 of 6	Layout Plan & Longitudinal Sections Ch 360.00 to Ch 557.19
11551 -No. S5-C05	5 of 6	Cross Sections Ch 0.00 to Ch 557.19
11551 -No. S5-C06	6 of 6	Linemarking Layout Plan



Proposed Full Width Rehabilitation - Typical
Scale 1:20 @ A1

Road Pavement Notes:
1. Pavement and seal to be as follows
   - Seal - 2 Coat Spray Seal
   - Base - 120mm DGB20
   - Subbase - 200mm DGS20/40
   - Select Material - 220mm (Min 7% CBR)
2. Pavement design subject to council design and subgrade testing.

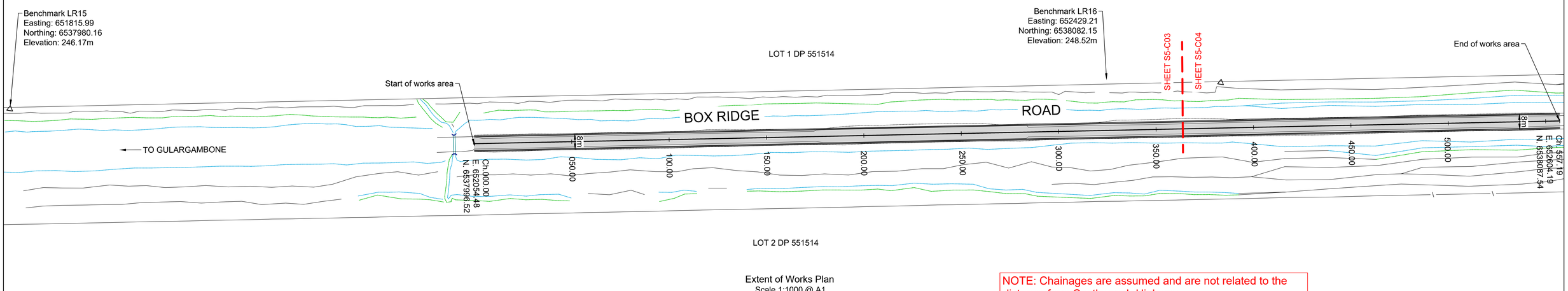
Legend
- Existing edge of bitumen
- Existing bottom of bank
- Existing top of bank
- Existing natural surface
- Existing fence
- Survey point
- Proposed edge of bitumen
- Proposed re-construction
- Proposed centreline
- Proposed bottom of batter

Contour @ 0.2m intervals

P.F.R = Plotted from records

DIAL BEFORE YOU DIG www.1100.com.au

Services located in the area.
Services shown on plans are indicative only unless noted otherwise. Contractor to obtain current Dial Before You Dig and confirm location and level of any services prior to commencement of works. The contractor is responsible for maintaining safe work clearances to services and notifying the engineer of any discrepancies.



Extent of Works Plan
Scale 1:1000 @ A1

NOTE: Chainages are assumed and are not related to the distance from Castlereagh Highway.
Setout information is provided

General Notes

1. All setout shall be by suitably experienced personnel. All works-as-executed plans shall be certified by a Registered Surveyor or Engineer.
2. Dimensions are generally in millimetres unless noted otherwise.
3. All levels are in metres unless noted otherwise.
4. All levels shown are finished surface unless noted otherwise.
5. Council inspection hold points of road works are required at the following construction stages:
   a. Box inspection of subgrade and proof roll.
   b. Inspection of select layers - proof roll.
   c. Inspection of sub base gravels and proof roll.
   d. Inspection of base gravels and proof roll prior to sealing.
   e. Any service crossings of road pavement.
6. Inspections are organised by contacting Council's Development Engineer. Please note 24hours notice of inspection is required.
7. Density testing is to be carried out at max.100m spacing or in accordance with Table 8.1 of AS 3798 - Guidelines on Earthworks for Commercial and Residential Development, whichever gives the greater frequency of testing.
   Compaction is to be to the following:
   - general filling to 98% standard compaction;
   - subgrade to 98% standard compaction;
   - sub-base gravels to 102% standard compaction;
   - base course gravels to 102% standard compaction;
8. Minimum cover to stormwater pipes shall be 450mm in landscape areas, and 600mm under road pavements, unless noted otherwise.
9. The Contractor is responsible for maintaining sufficient cover over stormwater and sewer mains during construction, and ensuring that trenches are correctly backfilled and compacted to eliminate damage caused by construction traffic.
10. General concrete works shall have the following properties:
    a. Class of concrete shall be normal.
    b. Maximum slump shall be 80mm.
    c. Maximum aggregate size shall be 20mm.
    d. Min 28 days concrete compressive strength shall be 25 Mpa including all kerbs u.n.o
    e. Concrete works shall conform to AS 3600.
11. Linemarking and signage shall confirm to AS 1742 Manual of Uniform Traffic Control Devices.
12. It is the responsibility of the Contractor to ensure that adequate erosion and sedimentation control devices are erected and maintained at all times during construction, and to the satisfaction of the Local Authority.
13. All traffic control during construction shall be in accordance with the RTA's Guidelines - Traffic Control at Work Sites and AS 1742.3 - 2002 Manual of Uniform Traffic Control Devices: Traffic Control Devices for Works on Roads.
14. All works shall be carried out in accordance with the Local Authorities Development Code and Austroads Standards.
15. It is the Contractor's responsibility to provide to the Surveyor any information necessary to prepare works-as-executed drawings for submission to the Local Authority. It will be necessary to liaise with the Surveyor to coordinate the location of some items prior to backfilling.

Site Preparation

The following scope of work is required as a minimum to prepare the site prior to filling:

- Prior to construction and placement of any fill, the proposed areas should be stripped to remove all vegetation, topsoil, uncontrolled fill, organic, root affected or other potentially deleterious material.
- Boxed-out excavations should be drained permanently to allow any infiltration from subsequent fill to escape the excavation profile.
- Where the ground slopes at more than 1V:10H (6deg), the ground profile should be benched in 300m vertical steps to create near-level platforms for filling. The platforms should be graded with a cross fall no stepper than 2% downslope to allow drainage to any infiltration to the fill and to prevent pooling of subsurface moisture.
- Following stripping, the exposed subgrade materials should be proof rolled in the presence of a suitably qualified and experienced Geotechnical Engineer to identify any wet or excessively deflecting material.
- Proof rolling should involve compacting the site with an 8-ton roller, trimming the rolled surface to level and clean finish. Where there are areas indicating excessive deflection then these may require over-excavation and backfilling with an approved select material.
- Re-use of Site Material: Where feasible, site won material is to be trucked directly to the placement site to avoid double handling. Site won material is suitable for general fill material. However, engineered fill for permanent works may require a coarser particle size blend to comply with specification grading requirements. Excavated material used during construction are subject to further testing to confirm specification and design acceptability requirements.
- Bulk Earthworks: Subgrade preparation will generally only require removal of topsoil and compaction to 98% relative to standard compaction of the excavated subgrade material. Slope angles of 1V:1H and 1V:2V is considered appropriate for compacted embankment fill materials in the temporary and permanent conditions respectively.
- Trafficability: Note, Clay subgrades at the site have a low wet strength and poor subgrade strength. The site soils would be trafficable during dry periods. Some desiccation of exposed surfaces can be expected and large quantities of dust will be generated during dry periods under traffic. The soils will be soft and difficult to traverse following wet weather or inundation. Drying out these soils could take several days or weeks before being able to accommodate construction traffic.

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 | 100 Table of millimetres | 200 | 300 | 400 | 500 | 600 | 700 | 780

Issue	Date	Description	App'd
B	17/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	16/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 5
FULL WIDTH REHABILITATION
FROM CH13.1 TO 13.67km From Intersection With Castlereagh Hwy

Title: Overall Site Layout Notes & Details

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	CW
Drawn	CW
Checked	TC
Approved	TC
Date	17/02/2023
Job No	11551
Scale	1:1000 @ A1, 1:2000 @ A3 (0 10 20 30 40 50)
Datum	
Drafting File	11551_Site 5_Design_ISSB.dwg
Design File	
Dwg No.	S5-C01
Issue	B

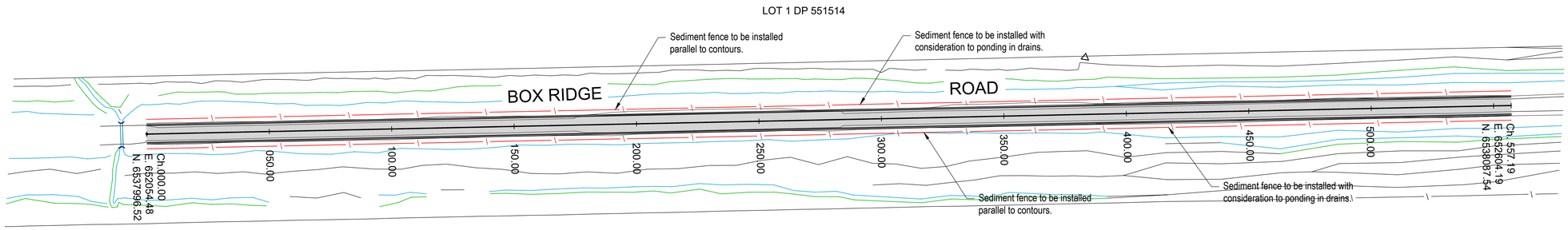
S:\01 Jobs\11500-11599\11551 Civil_Roads_Gulargambone_CSC\05 Drawings\01 Civil\01 Current\SITE 5\11551_SITE 5_DESIGN_ISSB\11551_Site 5_Design_ISSB.dwg, 20/02/2023 3:47:18 PM, DWG To PDF.pc3

Legend

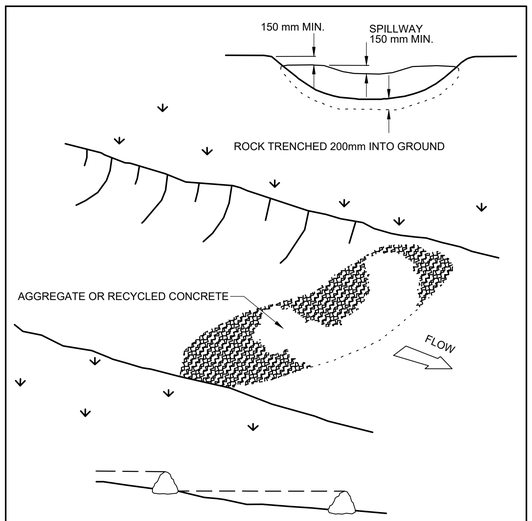
- Existing edge of bitumen
- Existing bottom of bank
- Existing top of bank
- Existing natural surface
- Existing fence
- Survey point
- Proposed edge of bitumen
- Proposed re-construction
- Proposed centreline
- Proposed bottom of batter
- Sediment fence

Contour @ 0.2m intervals

P.F.R = Plotted from records



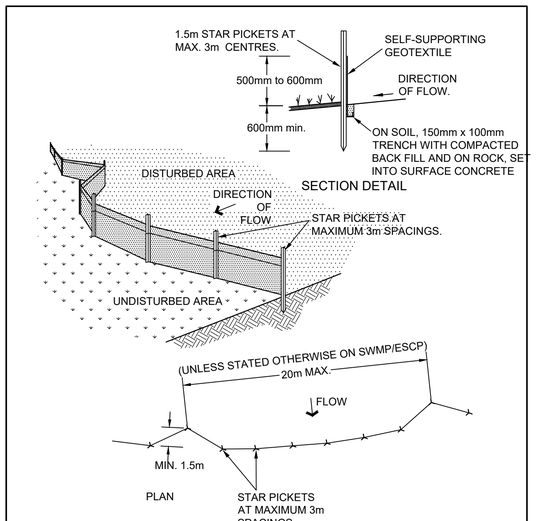
Erosion & Sediment Control Layout Plan
Scale 1:1000 @ A1



CONSTRUCTION NOTES:

1. TRENCH STRUCTURE 200mm INTO GROUND SURFACE WHEREVER THE STUCTURE CONTACTS THE GULLY BASE. FILL TRENCHES TO 100mm ABOVE GROUND SURFACE TO REDUCE RISK OF UNDERCUTTING.
2. ENSURE HEIGHT OF SPILLWAY IS LESS THAN 1m ABOVE THE GULLY FLOOR.
3. SPACE CHECKS SO THE TOE OF THE UPSTREAM DAM IS LEVEL WITH THE SPILLWAY OF THE NEXT DOWNSTREAM DAM.

ROCK CHECK DAM

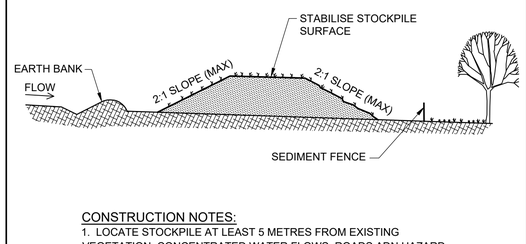


CONSTRUCTION NOTES:

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 UPSLOP 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 POST WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER
6. JOIN SECTIONS OF FABRIC AT SUPPORT POST WITH A 150mm OVERLAP.

SEDIMENT FENCE

NOTE:
SEDIMENT FENCE SHOWN DIAGRAMMATICALLY. FENCE TO BE LOCATED AT EDGE OF EARTHWORKS WHERE PRACTICABLE. SEDIMENT FENCE TO RUN PARALLEL TO CONTOURS.



CONSTRUCTION NOTES:

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

STOCKPILES

NOTES - EROSION AND SEDIMENTATION CONTROL

1. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS AS DETAILED IN LANDCOM'S ' MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION - VOLUME 1', 2004.
2. CONSTRUCTION SHALL BE PHASED SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE. THIS WILL LIMIT THE DURATION DISTURBED AREAS ARE EXPOSED TO EROSION. STABILISATION SHALL BE APPLIED TO THE FIRST DISTURBED AREA BEFORE THE NEXT SECTION IS OPENED UP. ANY DISTURBED AREAS THAT WILL NOT BE STABILISED WITHIN 30 DAYS SHALL BE REVEGETATED AND ANY THAT FAIL TO ESTABLISH SHALL BE RESOWN.
3. TOPSOIL STOCKPILES ARE TO BE LOCATED AWAY FROM ANY NATURAL DRAINAGE WATERCOURSE AND SHALL HAVE HAY BALES AND/OR SEDIMENT CONTROL FENCES PLACED AROUND THEM TO ACT AS SEDIMENTATION CONTROLS.
4. TEMPORARY EARTHEN DIVERSION DRAINS SHALL BE CONSTRUCTED TO DIVERT WATERS AWAY FROM ALL DISTURBED AREAS AND TOWARDS HAY BALE CHECK DAMS LOCATED IN NATURAL DRAINAGE DEPRESSIONS.
5. TEMPORARY SEDIMENT DETENTION BARRIERS SHALL BE PLACED AROUND OUTLET HEADWALLS AND DRAINAGE DISCHARGE POINTS AS DETAILED AND PERMANENT ENERGY DISSIPATERS SHALL BE INSTALLED AT ALL OUTLETS TO LIMIT VELOCITIES AND THUS THE POTENTIAL FOR SCOURING. WITH ALL DRAINAGE OUTLETS, WATER SHALL BE RELEASED IN A NON-ERODIBLE MANNER.
6. TEMPORARY SEDIMENT TRAPS SHALL BE CONSTRUCTED AT DRAINAGE INLET POINTS AS DETAILED.
7. TEMPORARY SEDIMENT FENCING SHALL BE INSTALLED ALONG THE DOWNSLOPE EDGE OF DISTURBED AREAS AND FILL BATTERS.
8. SEDIMENT AND DEBRIS SHALL BE REMOVED FROM DETENTION BARRIERS WHEN THEY ARE 60% FULL. ALL SEDIMENT REMOVED SHALL BE DISPOSED OF AS DIRECTED BY THE SUPERVISING ENGINEER.
9. UPON COMPLETION OF SHAPING AND DRAINAGE WORKS, BATTERS AND DRAINAGE LINES SHALL BE TOPSOILED TO A MINIMUM DEPTH OF 100mm WITH STOCKPILED MATERIAL AND ANY AREAS WITH INSUFFICIENT GRASS/TOPSOIL MIX SHALL BE SEEDED AND MULCHED WITH ANY FAILED AREAS RESOWN OR REVEGETATED AS DIRECTED BY THE SUPERVISING ENGINEER. A 400mm WIDE TURF STRIP SHALL BE INSTALLED NEXT TO ALL KERB, OR OTHER CONCRETE SURFACES, TO STABILISE THE INTERFACE BETWEEN CONCRETE SURFACES AND TOPSOILED AREAS.
10. TEMPORARY EROSION AND SEDIMENTATION CONTROLS ARE TO BE INSTALLED DURING THE CONSTRUCTION PHASE AND SHALL BE RETAINED AND MAINTAINED WHILE DISTURBED AREAS REMAIN OR ARE CONTRIBUTING SEDIMENT TO THE STORMWATER SYSTEM. NO DEVICE SHALL BE REMOVED UNTIL DIRECTED BY THE SUPERVISING ENGINEER.
11. WIND EROSION ON THE SITE SHALL BE MANAGED BY LIMITING TRAFFIC ON DISTURBED AREAS, UTILISING WATER TRUCKS, COVERING STOCKPILES WITH ANCHORED GEOFABRIC, AND PROVIDING DUST COVERS ON TRUCKS AND DUMPERS. IF WIND SPEED EXCEEDS 10m/s, INCREASE WATERING OR CEASE DUST GENERATING ACTIVITIES UNTIL DUST CONTROLS ARE OPERATING EFFECTIVELY. OTHER MEASURES MAY BE EMPLOYED AS OUTLINED IN THE LANDCOM MANUAL.

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Issue	Date	Description	App'd
B	17/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	16/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 5
FULL WIDTH REHABILITATION
FROM CH13.1 TO 13.67km From Intersection With Castlereagh Hwy

Title: Erosion & Sediment Control Layout Plan, Notes & Details

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	CW
Drawn	CW
Checked	TC
Approved	TC
Date	17/02/2023
Job No	11551
Scale	1:1000 @ A1, 1:2000 @ A3 (0 10 20 30 40 50)
Datum	
Drafting File	11551_Site 5_Design_ISSB.dwg
Design File	
Dwg No.	S5-C02
Issue	B

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Legend

- Existing edge of bitumen
- Existing bottom of bank
- Existing top of bank
- Existing natural surface
- Existing fence
- Survey point
- Proposed edge of bitumen
- Proposed re-construction
- Proposed centreline
- Proposed bottom of batter

Contour @ 0.2m intervals

P.F.R = Plotted from records

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Services located in the area.
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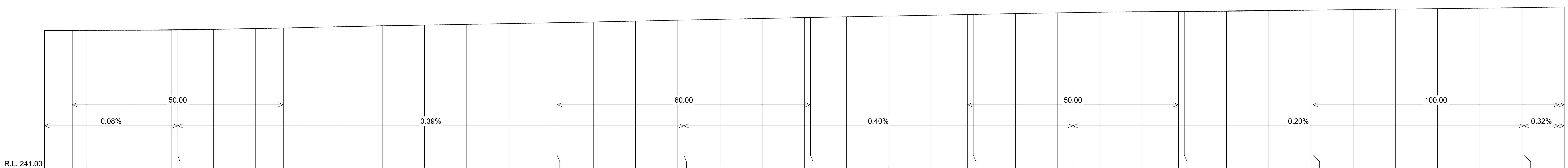
Box Ridge Road - Site 5 Plan
Ch 0.00 to Ch 360.00
Scale 1:500 @ A1



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30.00	+0.02	247.56	247.54
31.56	+0.03	247.57	247.54
40.00	+0.01	247.59	247.58
50.00	+0.01	247.62	247.61
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60.00	+0.00	247.66	247.66
70.00	+0.00	247.70	247.70
80.00	-0.01	247.74	247.75
90.00	+0.00	247.78	247.78
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300.46	+0.01	248.50	248.49
310.00	+0.01	248.52	248.51
320.00	+0.00	248.54	248.54
330.00	+0.00	248.56	248.56
340.00	+0.01	248.59	248.58
350.00	+0.00	248.61	248.61
350.46	+0.00	248.61	248.61
360.00	+0.00	248.64	248.64

ALIGNMENT DETAILS: L=557.19 B=80°35'54"

Box Ridge Road - Site 5 Longitudinal Section
Ch 0.00 to Ch 360.00
Scale Horizontal 1:500 Vertical 1:100 @ A1

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0 | 100 Table of millimetres | 200 | 300 | 400 | 500 | 600 | 700 | 780

Issue	Date	Description	App'd
B	17/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	16/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project:
BOX RIDGE ROAD - SITE 5
FULL WIDTH REHABILITATION
FROM CH13.1 TO 13.67km From Intersection With Castlereagh Hwy

Title: Layout Plan & Longitudinal Plan Ch 0.00 to Ch 360.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
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GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	CW	Scale	1:500 @ A1, 1:1000 @ A3 (0 5 10 15 20 25)
Drawn	CW		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site 5_Design_ISSB.dwg
Date	17/02/2023	Design File	
Job No.	11551	Dwg No.	S5-C03
		Issue	B

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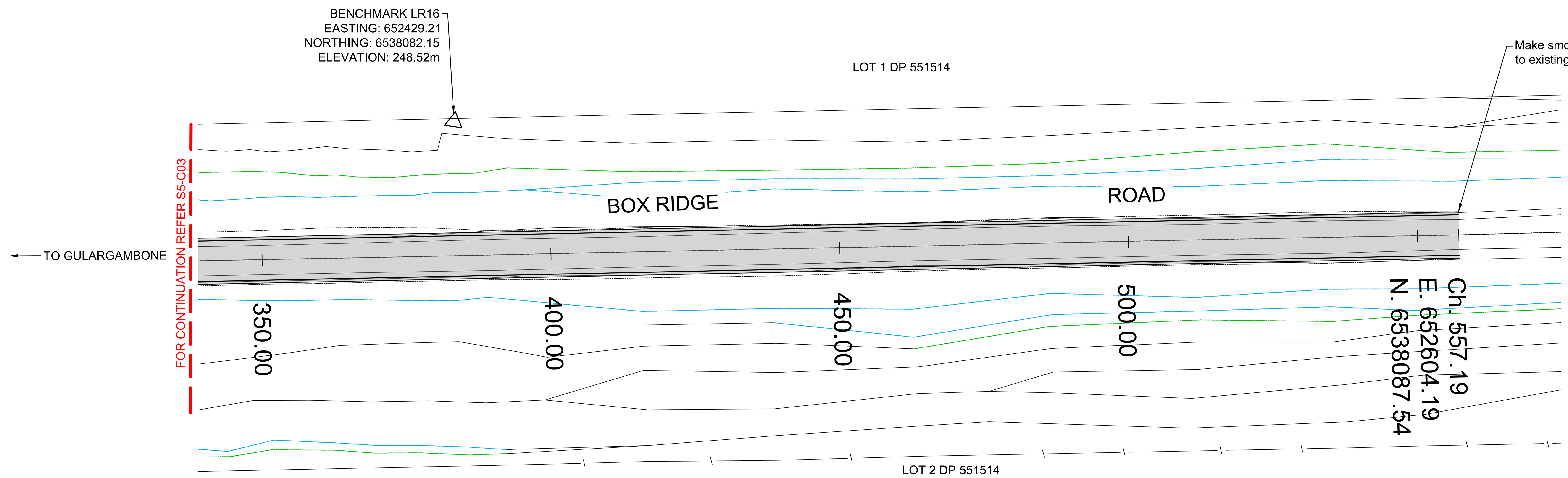

Box Ridge Road - Site 5 Plan
Ch 360.00 to Ch 557.19
Scale 1:500 @ A1

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Services located in the area.
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Legend

- Existing edge of bitumen
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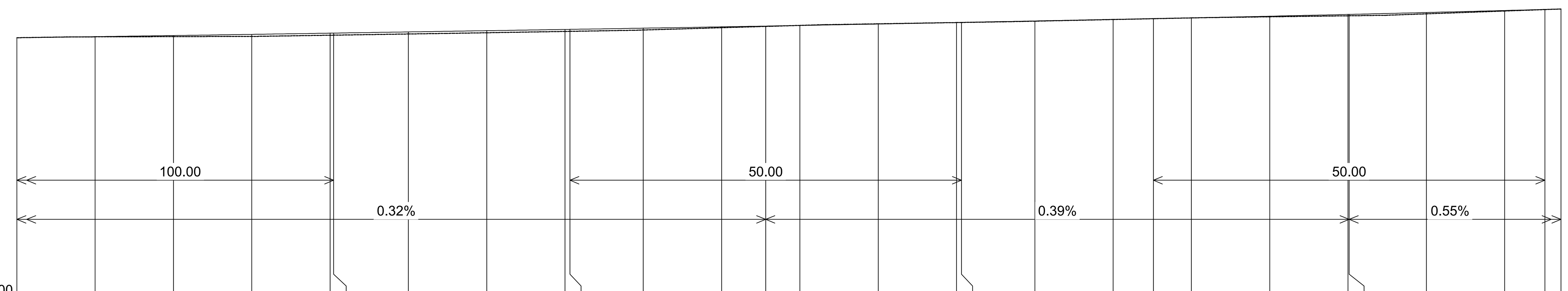
- Survey point
- Proposed edge of bitumen
- Proposed re-construction
- Proposed centreline
- Proposed bottom of batter

Contour @ 0.2m intervals

P.F.R = Plotted from records



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DESIGN SURFACE	248.64	248.67	248.69	248.72	248.75	248.76	248.79	248.82	248.85	248.85	248.88	248.92	248.94	248.95
EXISTING SURFACE	248.64	248.66	248.67	248.67	248.70	248.70	248.73	248.77	248.80	248.80	248.84	248.89	248.93	248.95
CHAINAGE	360.00	370.00	380.00	390.00	400.00	400.46	410.00	420.00	430.00	430.63	440.00	450.00	455.63	460.00

Cut/Fill	+0.00	+0.00	+0.00	+0.01	+0.01	+0.01	+0.01	+0.02	+0.03	+0.03	+0.03	+0.01	+0.00	+0.00
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EXISTING SURFACE	248.99	249.03	249.03	249.06	249.10	249.12	249.14	249.17	249.20	249.20	249.25	249.32	249.36	249.37
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ALIGNMENT DETAILS	L=557.19 B=80°35'54"

Box Ridge Road - Site 5 Longitudinal Section
Ch 360.00 to Ch 557.19
Scale Horizontal 1:500 Vertical 1:100 @ A1

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Issue	Date	Description	App'd
B	17/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	16/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 5
FULL WIDTH REHABILITATION
FROM CH13.1 TO 13.67km From Intersection With Castlereagh Hwy

Title: LONGITUDINAL SECTION
CH. 360.00 TO CH.557.19

ARDILL PAYNE & Partners
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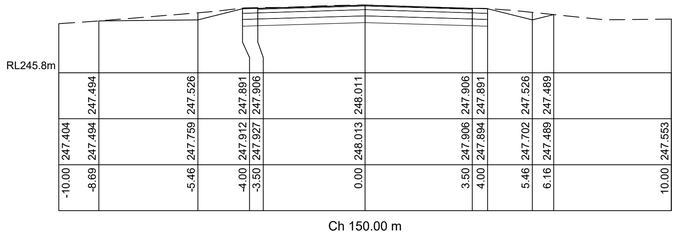
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	CW	Scale	1:500 @ A1, 1:1000 @ A3 (0 5 10 15 20 25)
Drawn	CW		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site 5_Design_ISSB.dwg
Date	17/02/2023	Design File	
Job No.	11551	Dwg No.	S5-C04
		Issue	B



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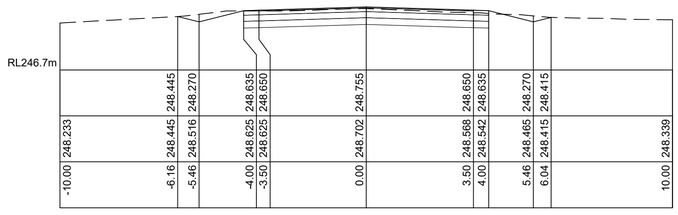

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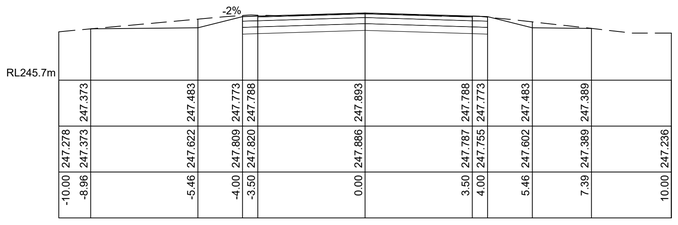

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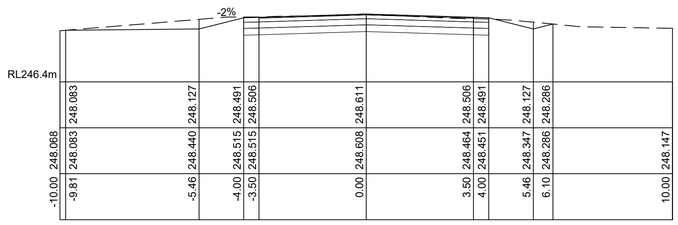

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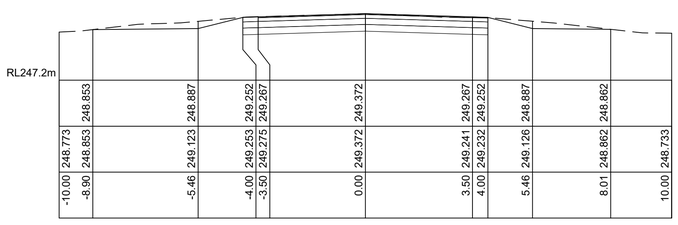
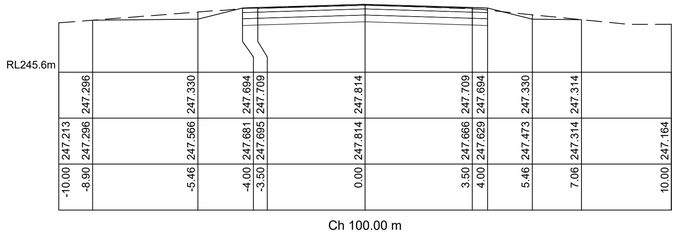


Ch 557.19 m



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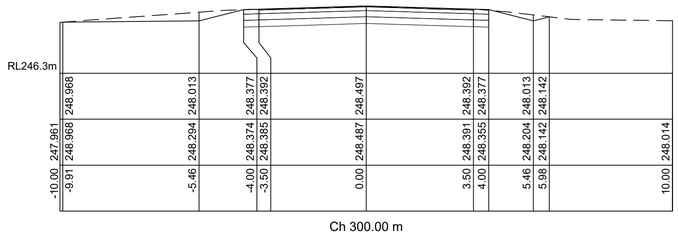

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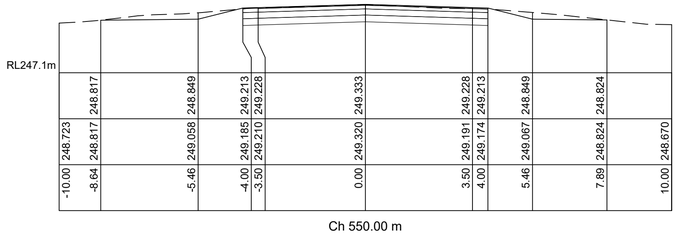

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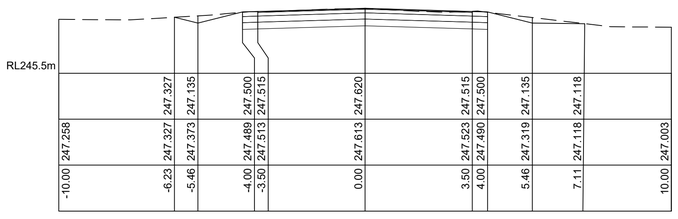

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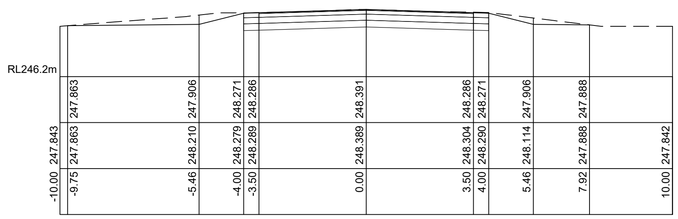

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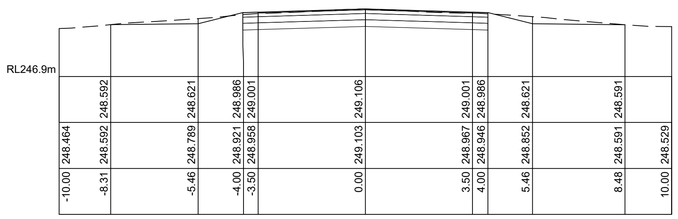

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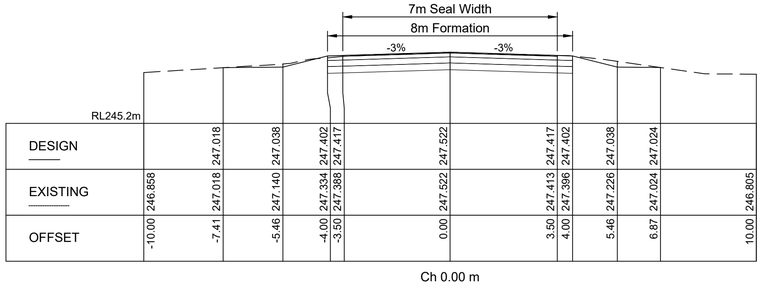

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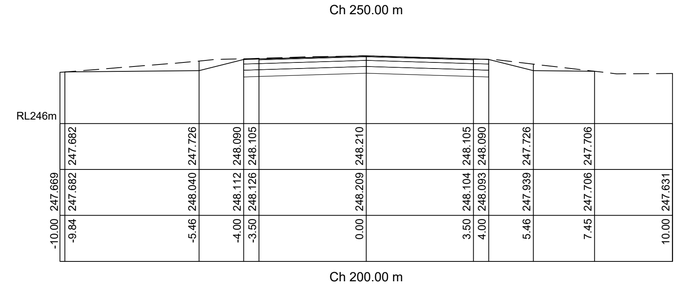

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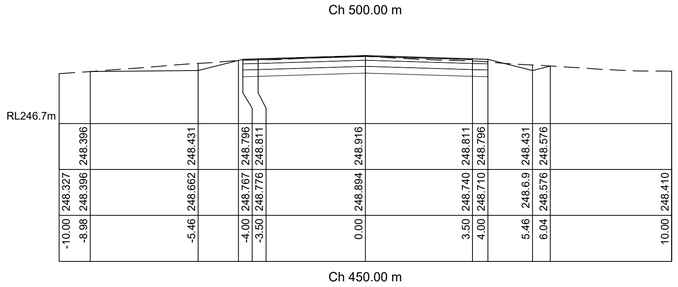

Ch 450.00 m

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	17/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	16/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 5
FULL WIDTH REHABILITATION
FROM CH13.1 TO 13.67km From Intersection With Castlereagh Hwy

Title: Cross Sections Ch 0.00 to Ch 557.19

ARDILL PAYNE
& P a r t n e r s
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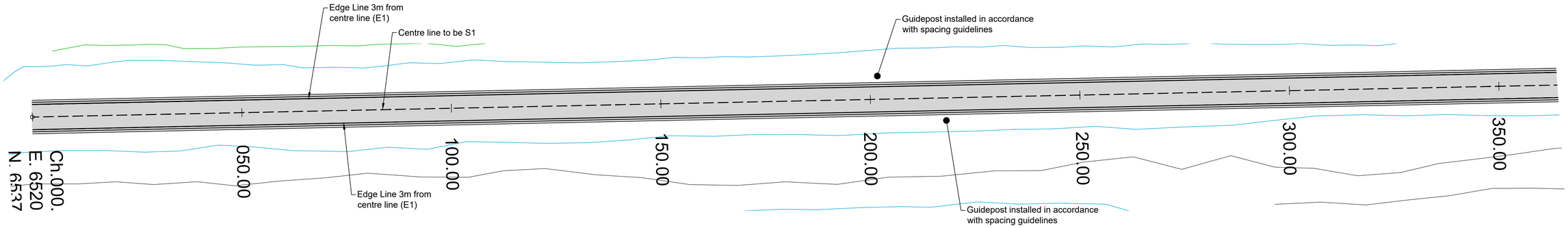
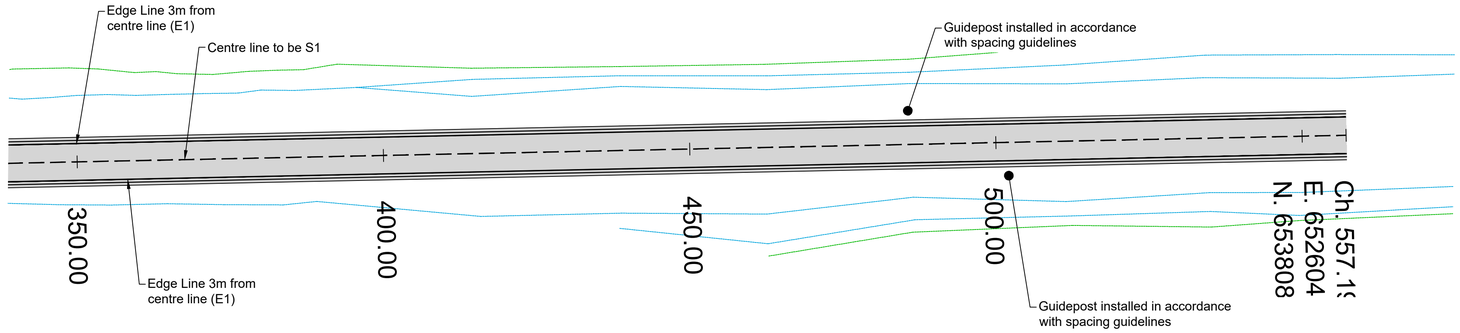
Design	CW	Scale	1:100 @ A1, 1:200 @ A3
Drawn	CW		0 1 2 3 4 5
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site 5_Design_ISSB.dwg
Date	17/02/2023	Design File	
Job No	11551	Dwg No.	S5-C05
		Issue	B

S:\01 Jobs\11500-11599\11551 Civil_Roads_Gulargambone_CSC\05 Drawings\01 Civil\01 Current\SITE 5\11551_SITE 5_DESIGN_ISSB\11551_Site 5_Design_ISSB.dwg, 20/02/2023 3:56:10 PM, DWG To PDF.pc3



Linemarking Layout Plan (0.00 - 360.00)
Scale 1:500 @ A1



Linemarking Layout Plan (360.00 - 557.19)
Scale 1:500 @ A1

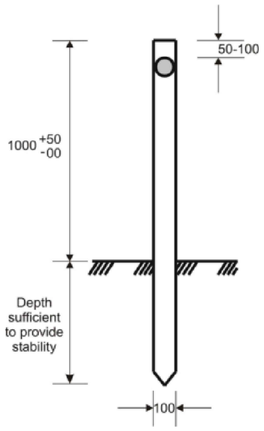
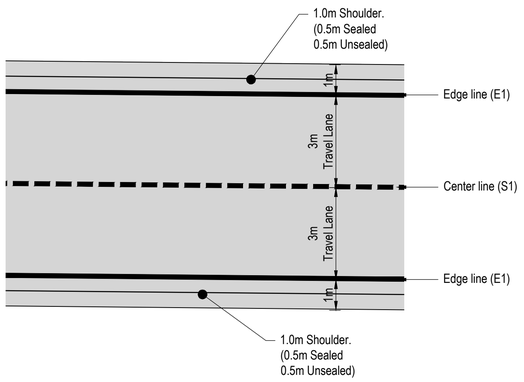


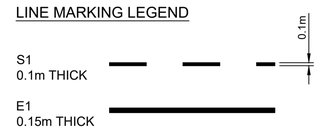
Figure 16.1: Typical Guide Post

Rigid Guide Post Detail
(Delineation: Section 16 - Guide posts and delineation of safety barriers)



Proposed Road Delineation Plan
Scale 1:100 @ A1

LINE MARKING LEGEND



Curve radius	Spacing (m)	
	On outside curve	On inside curve
< 100	6	12
100 - 199	10	20
200 - 299	15	30
300 - 399	20	40
400 - 599	30	60
600 - 699	40	60
800 - 1999	60	60
1200 - 2000	90	90
> 2000 including straights	150	150

Table 16.1: Spacing of posts on curves (including spacing of delineators on guard fence)

Guide Post Spacing Guidlines
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	17/02/2023	100% ISSUE FOR CONSTRUCTION	TC
A	16/01/2023	ORIGINAL ISSUE	TC

Client: Coonamble Shire Council

Project: BOX RIDGE ROAD - SITE 5
FULL WIDTH REHABILITATION
FROM CH13.1 TO 13.67km From Intersection With Castlereagh Hwy

Title: Linemarking Layout Plan

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Design	CW	Scale	1:500 @ A1, 1:1000 @ A3
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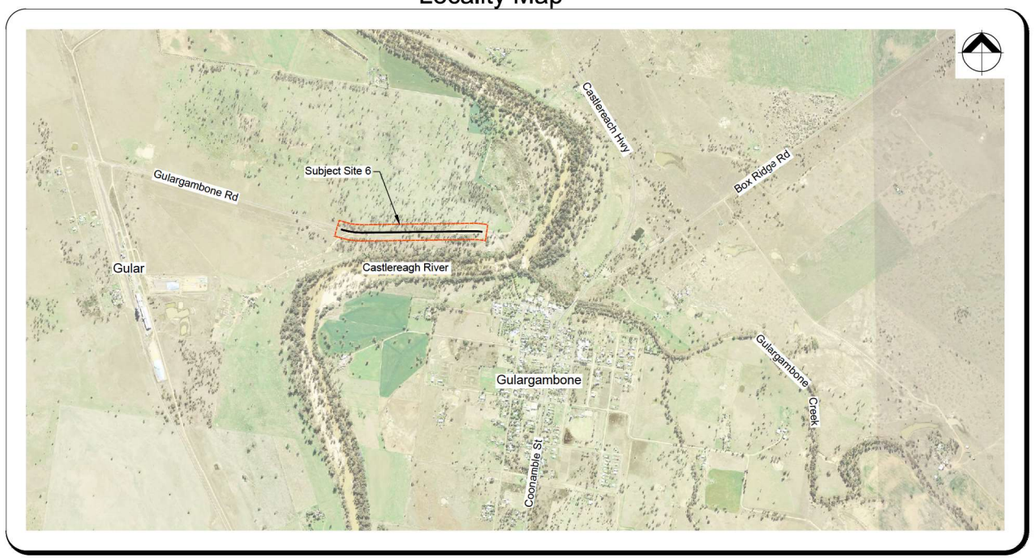
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site 5_Design_ISSB.dwg
Date	17/02/2023	Design File	
Job No	11551	Dwg No.	S5-C06
		Issue	B

S:\01 Jobs\11500-11599\11551 Civil_Roads_Gulargambone_CSC\05 Drawings\01 Civil\01 Current\SITE 5\11551_SITE 5_DESIGN_ISSB\11551_Site 5_Design_ISSB.dwg, 20/02/2023 3:56:28 PM, DWG To PDF.pc3

Locality Map



Gulargambone - Site 6

Full Road Width Rehabilitation

Ch 0.55km to Ch 1.45km from Bourbah Street

For: Coonamble Shire Council

ARDILL PAYNE
& Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT

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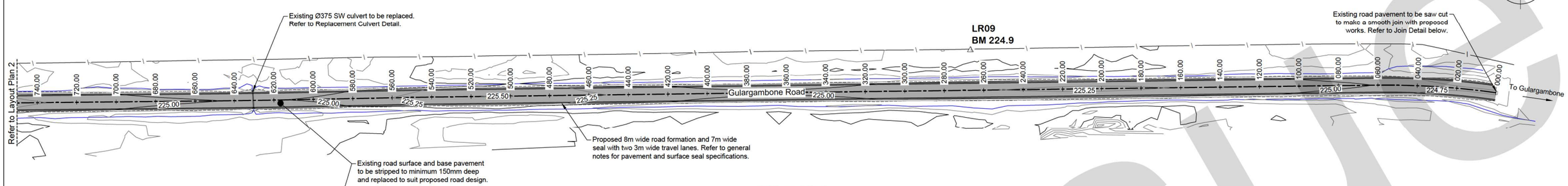
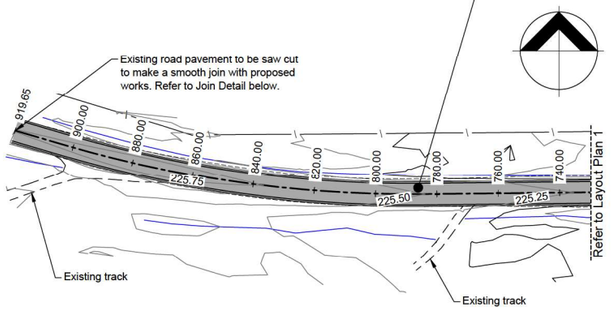
Drawing Schedule

Drawing	Sheet	Description
11551 -No. C01	1 of 8	Site Layout Plan
11551 -No. C02	2 of 8	Erosion & Sediment Control Layout Plan & Details
11551 -No. C03	3 of 8	Gulargambone road plan & longitudinal section (0.00 to 366.55)
11551 -No. C04	4 of 8	Gulargambone road plan & longitudinal section (366.55 to 730.00)
11551 -No. C05	5 of 8	Gulargambone road plan & longitudinal section (730.00 to 919.65)
11551 -No. C06	6 of 8	Gulargambone Cross Section (Ch 0.00 to Ch 550.00)
11551 -No. C07	7 of 8	Gulargambone Cross Section (Ch 551.77 to Ch 919.65)
11551 -No. C08	8 of 8	Proposed road delineation & signage plan

S:\01 Jobs\11500-11599\11551 Civil_Road upgrades_Gulargambone_Coonamble SC\05 Drawings\01 Civil\01 Current\SITE 6\11551_Site6_CC_Plan.dwg, C00, 19/01/2023 5:15:12 PM



Site Layout Plan 1
Scale 1:1000 @ A1



Site Layout Plan 2
Scale 1:1000 @ A1

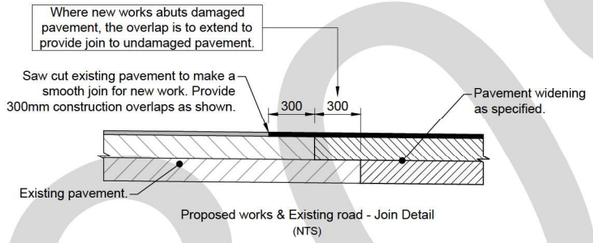
General Notes

1. All setout shall be by suitably experienced personnel. All works-as-executed plans shall be certified by a Registered Surveyor or Engineer.
2. Dimensions are generally in metres unless noted otherwise.
3. All levels are in metres unless noted otherwise.
4. All levels shown are finished surface unless noted otherwise.
5. Council inspection hold points of civil works are required at the following construction stages:
   a. Prior to backfilling of stormwater, sewer and water services (pipe to be trenched, bedded and laid).
   b. Box inspection of subgrade and proof roll.
   c. Inspection of sub base gravels and proof roll prior to installation of kerb.
   d. Inspection of base gravels and proof roll prior to sealing.
   e. Any service crossings of road pavement.
6. Inspections are organised by contacting Council's Development Engineer. Please note 24hours notice of inspection is required.
7. Typical road pavement to consist of:
   - **TBC**
   (both subject to subgrade testing).
8. Density testing is to be carried out at max.100m spacing or in accordance with Table 8.1 of AS 3798 - Guidelines on Earthworks for Commercial and Residential Development, whichever gives the greater frequency of testing.
   Compaction is to be to the following:
   - General filling to 95% standard compaction;
   - Subgrade to 95% standard compaction;
   - Sub-base gravels to 100% standard compaction;
   - Base course gravels to 100% standard compaction;
9. The gravel pavement shall extend full depth under, and 150 behind all kerbs.
10. RC pipes of 900 dia or less shall be minimum class '2', rubber ring jointed, unless noted otherwise.
11. Minimum cover to stormwater pipes shall be 450mm in landscape areas, and 600mm under road pavements, unless noted otherwise.
12. The Contractor is responsible for maintaining sufficient cover over stormwater and sewer mains during construction, and ensuring that trenches are correctly backfilled and compacted to eliminate damage caused by construction traffic.
13. Drainage easements, where not shown, shall be confirmed by survey after construction.
14. Linemarking and signage shall confirm to AS 1742 Manual of Uniform Traffic Control Devices.
15. It is the responsibility of the Contractor to ensure that adequate erosion and sedimentation control devices are erected and maintained at all times during construction, and to the satisfaction of the Local Authority.
16. All traffic control during construction shall be in accordance with the RMS's Guidelines - Traffic Control at Work Sites and AS 1742.3 - 2009 Manual of Uniform Traffic Control Devices: Traffic Control Devices for Works on Roads.
17. All works shall be carried out in accordance with the Local Authorities Subdivision Code and associated standard drawings.
18. It is the Contractor's responsibility to provide to the Surveyor any information necessary to prepare works-as-executed drawings for submission to the Local Authority. It will be necessary to liaise with the Surveyor to coordinate the location of some items prior to backfilling.

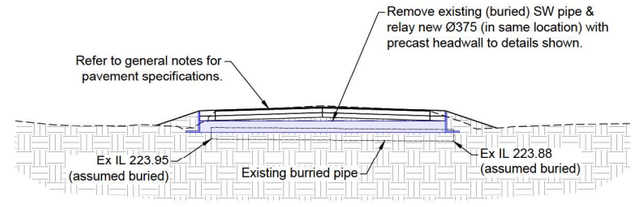
Legend:

- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Approx location of existing drainage invert
- Existing fence
- 225.00 Major contour
- 225.25 Minor contour

Contours @ 0.25m intervals



Proposed works & Existing road - Join Detail
(NTS)



Replacement Culvert Detail
Scale: Horizontal 1:100 @ A1 Vertical 1:100 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Site Layout Plan

ARDILL PAYNE & Partners
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ENVIRONMENTAL PROJECT MANAGEMENT
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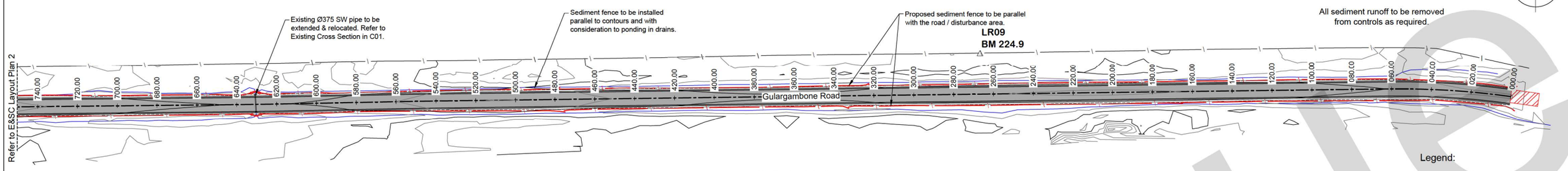
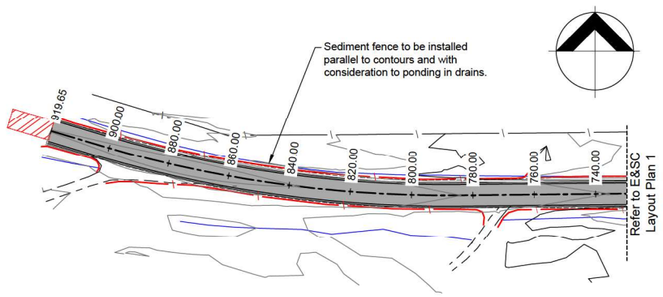
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C01
		Issue	A



Site Erosion & Sediment
Control Layout Plan 1
Scale 1:1000 @ A1



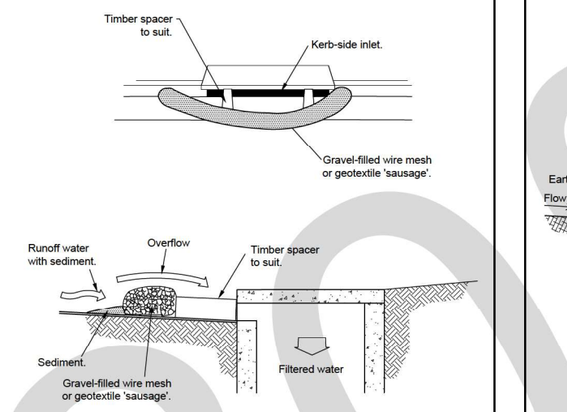
Site Erosion & Sediment
Control Layout Plan 2
Scale 1:1000 @ A1

Notes - Erosion and Sedimentation Control

1. All erosion and sedimentation controls shall be in accordance with the guidelines and specifications as detailed in Landcom's ' Managing Urban Stormwater: Soils and Construction - Volume 1', 2004.
2. Construction shall be phased so that land disturbance is confined to areas of workable size. This will limit the duration disturbed areas are exposed to erosion. Stabilisation shall be applied to the first disturbed area before the next section is opened up. Any disturbed areas that will not be stabilised within 30 days shall be revegetated and any that fail to establish shall be resown.
3. Topsoil stockpiles are to be located away from any natural drainage watercourse and shall have hay bales and/or sediment control fences placed around them to act as sedimentation controls.
4. Temporary earthen diversion drains shall be constructed to divert waters away from all disturbed areas and towards hay bale check dams located in natural drainage depressions.
5. Temporary sediment detention barriers shall be placed around outlet headwalls and drainage discharge points as detailed and permanent energy dissipaters shall be installed at all outlets to limit velocities and thus the potential for scouring. With all drainage outlets, water shall be released in a non-erodible manner.
6. Temporary sediment traps shall be constructed at drainage inlet points as detailed.
7. Temporary sediment fencing shall be installed along the downslope edge of disturbed areas and fill batters.
8. Sediment and debris shall be removed from detention barriers when they are 60% full. All sediment removed shall be disposed of as directed by the Supervising Engineer.
9. Upon completion of shaping and drainage works, batters and drainage lines shall be topsoiled to a minimum depth of 100mm with stockpiled material and any areas with insufficient grass/topsoil mix shall be seeded and mulched with any failed areas resown or revegetated as directed by the Supervising Engineer. A 400mm wide turf strip shall be installed next to all kerb, or other concrete surfaces, to stabilise the interface between concrete surfaces and topsoiled areas.
10. Where there is a footpath in the verge, turf is required between the back of the kerb and the footpath as well as a single turf strip along the property side of the footpath with the remainder of the verge finished as either turf or grass seed.
11. Temporary erosion and sedimentation controls are to be installed during the construction phase and shall be retained and maintained while disturbed areas remain or are contributing sediment to the stormwater system. No device shall be removed until directed by the Supervising Engineer.
12. Wind erosion on the site shall be managed by limiting traffic on disturbed areas, utilising water trucks, covering stockpiles with anchored geofabric, and providing dust covers on trucks and dumpers. If wind speed exceeds 10m/s, increase watering or cease dust generating activities until dust controls are operating effectively. Other measures may be employed as outlined in the Landcom manual.

Legend:

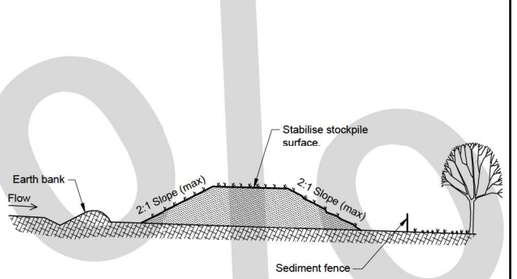
- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Existing drainage invert
- Existing fence
- 225.00 — Major contour
- 225.25 — Minor contour
- Stabilised site access
- Sediment Fence
- Mesh & Gravel inlet filter



Note: This practise only to be used where specified in an aproved SWMP/ESCP.

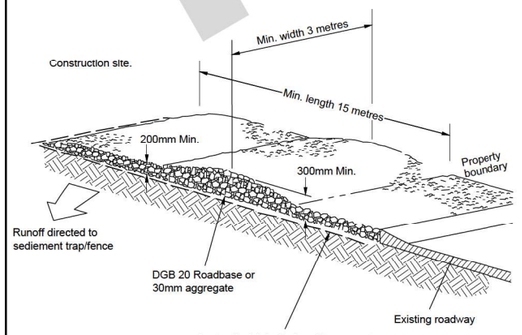
Construction Notes:
1. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit.
2. Fill the sleeve with 25mm to 50mm gravel.
3. Form an elliptical cross-section about 150mm high x 400mm wide.
4. Place filter at the opening of the kerb inlet leaving a 100mm gap at the top to act as an emergency spillway.
5. Maintain the opening with the sapcer blocks.
6. Form a seal with the kerbing and prevent sediment bypassing the filter.
7. Fit to all kerb inlets at sag point.

Mesh and Gravel Inlet Filter



Construction Notes:
1. Locate stockpile at least 5 metres from existing vegetation, concentrated water flows, roads and hazard areas.
2. Construct on the contour as a low, fat, elongated mound.
3. Where there is sufficient area topsoil stockpiles shall be less than 2 metres in height.
4. Rehabilitate in accordance with the SWMP/ESCP.
5. Construct earth bank on the upslope to divert run off around the stockpile and a sediment fence 1 to 2 metres downslope of stockpile.

Stockpiles

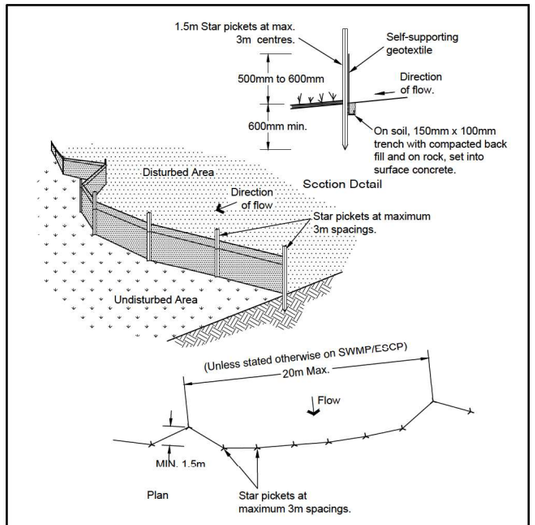


Geotextile fabric designed to prevent intermis=xing of subgrade and base materials and to maintain good porperties of the sub-base laters.

Geotextile may be a woven or needle punched product with a minimum cbr burst strength (AS3706.4-90) of 2500 N.

Construction Notes:
1. Strip topsoil and level site.
2. Compact subgrade.
3. Cover are with needle punched geotextile.
4. Construct 200mm thich pad over geotextile using roadbase or 30mm aggregate. Minimum length 15 metres or to building alignment. minimum width 3 meteres.
5. Construct hump immediately within boundary to divert water to a sediment fence ot other sediment trap.

Stabilised Site Access



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 upslop 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 post with wire ties or as recommended by geotextile manufacturer.
6. Join sections of fabric at support post with a 150mm overlap.

Sediment Fence

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Erosion & Sediment Control Layout Plan & Details

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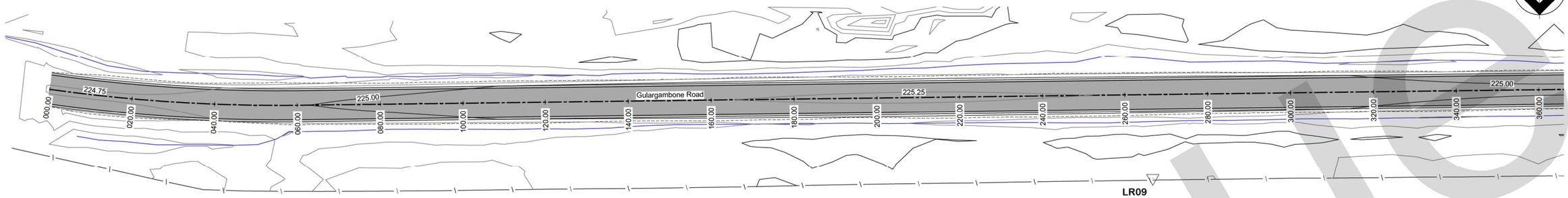
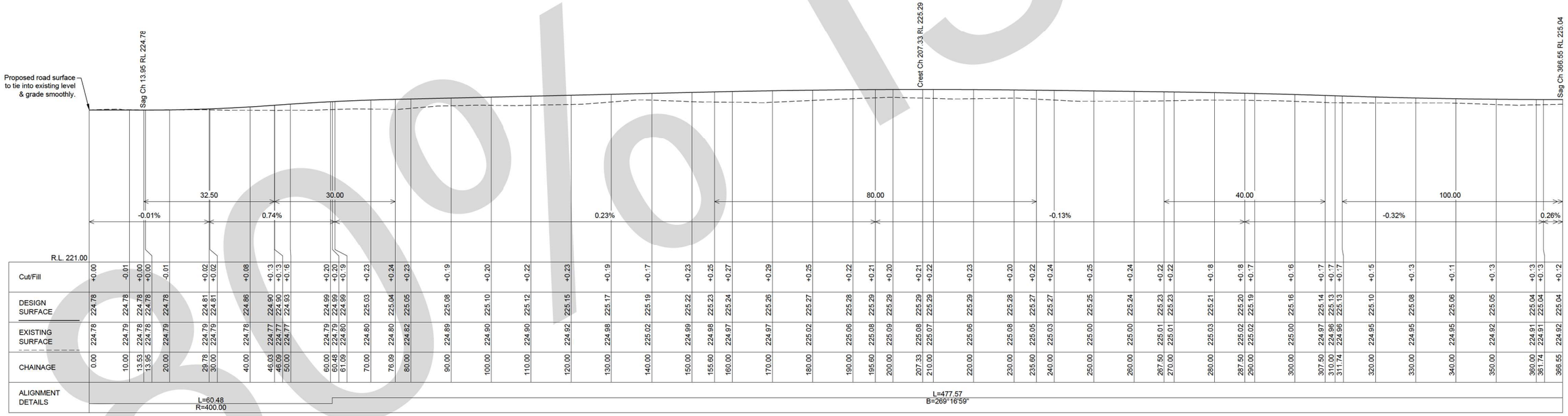
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C02
		Issue	A



Gulargambone Road Plan
Scale 1:500 @ A1

Legend:
- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Existing drainage invert
- Existing fence
- 225.00 Major contour
- 225.25 Minor contour



Cut/Fill	+0.00	-0.01	+0.00	+0.00	-0.01	+0.02	+0.02	+0.08	+0.13	+0.20	+0.20	+0.19	+0.23	+0.24	+0.23	+0.19	+0.20	+0.22	+0.23	+0.19	+0.17	+0.23	+0.25	+0.27	+0.29	+0.25	+0.22	+0.21	+0.20	+0.21	+0.22	+0.23	+0.20	+0.22	+0.24	+0.25	+0.24	+0.22	+0.22	+0.18	+0.18	+0.17	+0.16	+0.17	+0.17	+0.17	+0.15	+0.13	+0.11	+0.13	+0.13	+0.12
DESIGN SURFACE	224.78	224.78	224.78	224.78	224.78	224.81	224.81	224.86	224.90	224.99	224.99	224.99	225.03	225.04	225.05	225.08	225.10	225.12	225.15	225.17	225.19	225.22	225.23	225.24	225.26	225.27	225.28	225.29	225.29	225.29	225.29	225.29	225.28	225.27	225.27	225.25	225.24	225.23	225.23	225.21	225.20	225.19	225.16	225.14	225.13	225.13	225.10	225.08	225.06	225.05	224.92	224.91	225.04	225.04
EXISTING SURFACE	224.78	224.79	224.78	224.78	224.79	224.79	224.79	224.78	224.77	224.77	224.77	224.77	224.80	224.80	224.82	224.89	224.90	224.90	224.92	224.98	225.02	224.99	224.98	224.97	224.97	225.02	225.06	225.08	225.09	225.08	225.07	225.06	225.08	225.05	225.03	225.00	225.00	225.01	225.01	225.03	225.02	225.02	225.00	224.97	224.96	224.96	224.95	224.95	224.95	224.92	224.91	224.91	224.92
CHAINAGE	0.00	10.00	13.53	13.95	20.00	29.78	30.00	40.00	46.03	46.09	50.00	60.00	60.48	61.09	70.00	76.09	80.00	90.00	100.00	110.00	120.00	130.00	140.00	150.00	155.60	160.00	170.00	180.00	190.00	195.60	200.00	207.33	210.00	220.00	230.00	235.60	240.00	250.00	260.00	267.50	270.00	280.00	287.50	290.00	300.00	307.50	310.00	311.74	320.00	330.00	340.00	350.00	360.00	361.74	366.55

Gulargambone Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:50 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

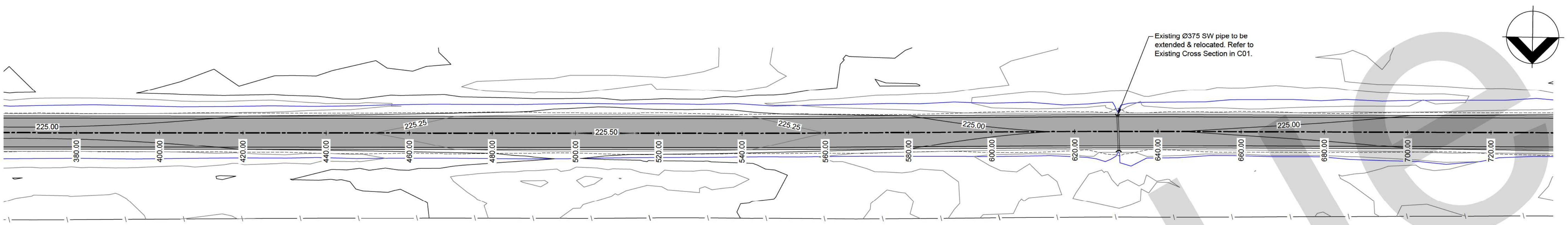
Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Layout Plan & Longitudinal Section Ch 0.00 to Ch 366.55

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

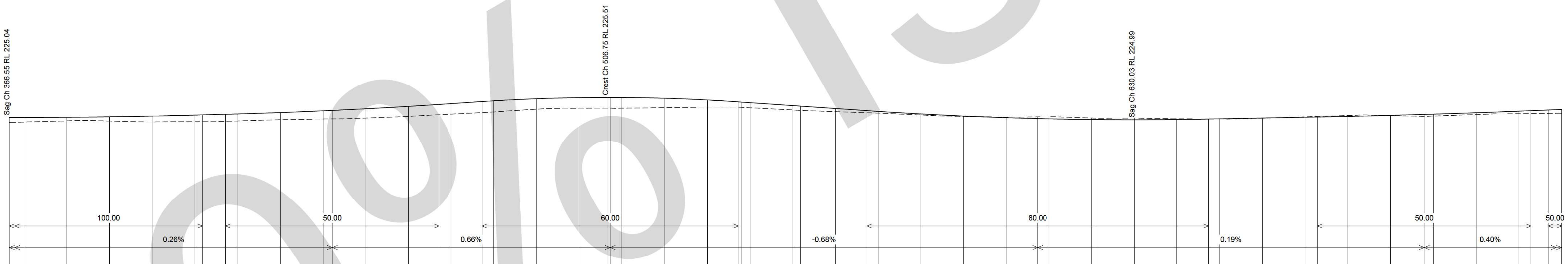
Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No	11551	Dwg No.	S6-C03
		Issue	A



Gulargambone Road Plan
Scale 1:500 @ A1

Legend:

- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Existing drainage invert
- Existing fence
- 225.00 Major contour
- 225.25 Minor contour



CHAINAGE	Cut/Fill	DESIGN SURFACE	EXISTING SURFACE
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370.00	+0.11	225.04	224.93
380.00	+0.09	225.05	224.96
390.00	+0.10	225.06	224.96
400.00	+0.14	225.07	224.93
410.00	+0.15	225.10	224.95
411.74	+0.16	225.10	224.94
417.14	+0.16	225.11	224.95
420.00	+0.16	225.12	224.96
430.00	+0.16	225.15	224.99
440.00	+0.19	225.19	225.00
442.14	+0.19	225.20	225.01
450.00	+0.21	225.24	225.03
460.00	+0.24	225.30	225.06
467.14	+0.24	225.34	225.10
470.00	+0.24	225.36	225.12
477.26	+0.26	225.41	225.15
480.00	+0.26	225.43	225.17
490.00	+0.25	225.48	225.23
500.00	+0.25	225.50	225.25
506.75	+0.25	225.51	225.26
507.26	+0.25	225.51	225.26
510.00	+0.25	225.51	225.26
520.00	+0.22	225.49	225.27
530.00	+0.17	225.45	225.28
537.26	+0.12	225.40	225.28
538.05	+0.12	225.40	225.28
540.00	+0.12	225.39	225.27
550.00	+0.10	225.32	225.22
551.77	+0.10	225.31	225.21
560.00	+0.07	225.25	225.18
567.34	+0.05	225.20	225.15
570.00	+0.04	225.18	225.14
580.00	+0.02	225.12	225.10
590.00	+0.00	225.07	225.07
600.00	-0.01	225.04	225.05
607.34	-0.04	225.01	225.05
610.00	-0.05	225.01	225.06
620.00	-0.04	224.99	225.03
621.04	-0.03	224.99	225.02
630.00	-0.04	224.99	225.03
630.03	-0.04	224.99	225.03
639.86	-0.02	224.99	225.01
640.00	-0.02	224.99	225.01
647.34	+0.00	225.00	225.00
650.00	+0.01	225.01	225.00
660.00	+0.01	225.03	225.02
670.00	+0.00	225.05	225.05
672.86	-0.01	225.05	225.06
680.00	-0.03	225.06	225.09
690.00	+0.01	225.09	225.08
697.86	+0.04	225.11	225.07
700.00	+0.05	225.12	225.07
710.00	+0.04	225.15	225.11
720.00	+0.06	225.19	225.13
722.86	+0.07	225.20	225.13
726.91	+0.08	225.21	225.13
730.00	+0.09	225.23	225.14

ALIGNMENT DETAILS: L=477.57 B=269°16'59" | L=13.72 R=2000.00 | L=69.27 B=268°53'24" | L=18.82 R=2000.00 | L=144.77 B=269°25'44"

Gulargambone Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:50 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 | 100 Table of millimetres | 200 | 300 | 400 | 500 | 600 | 700 | 780

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Layout Plan & Longitudinal Section
Ch 366.55 to Ch 730.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
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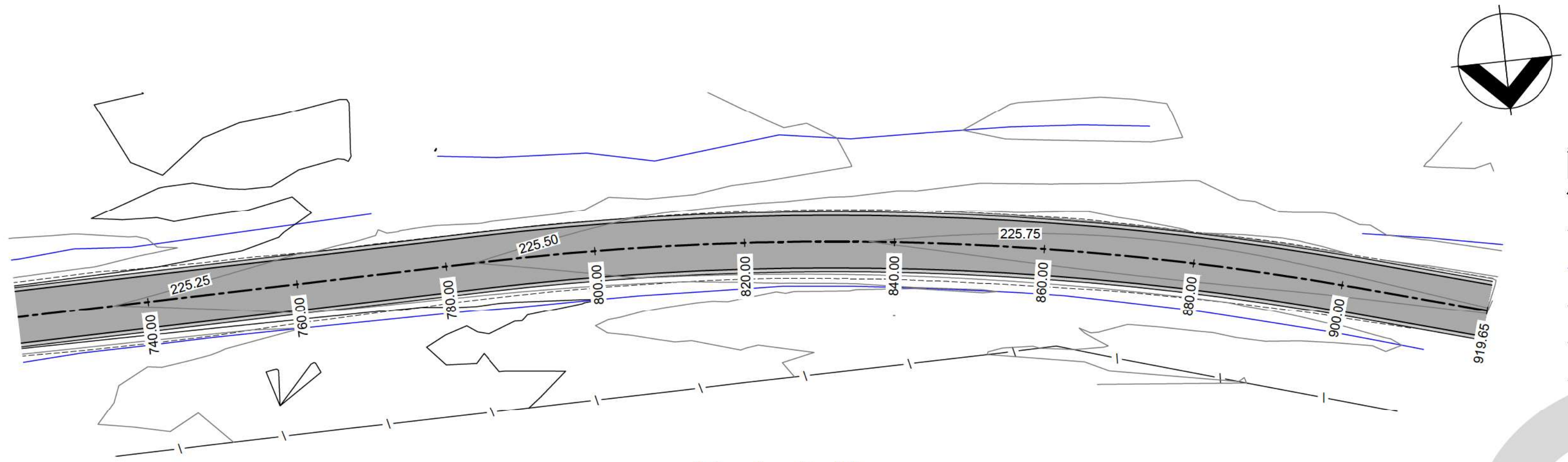
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

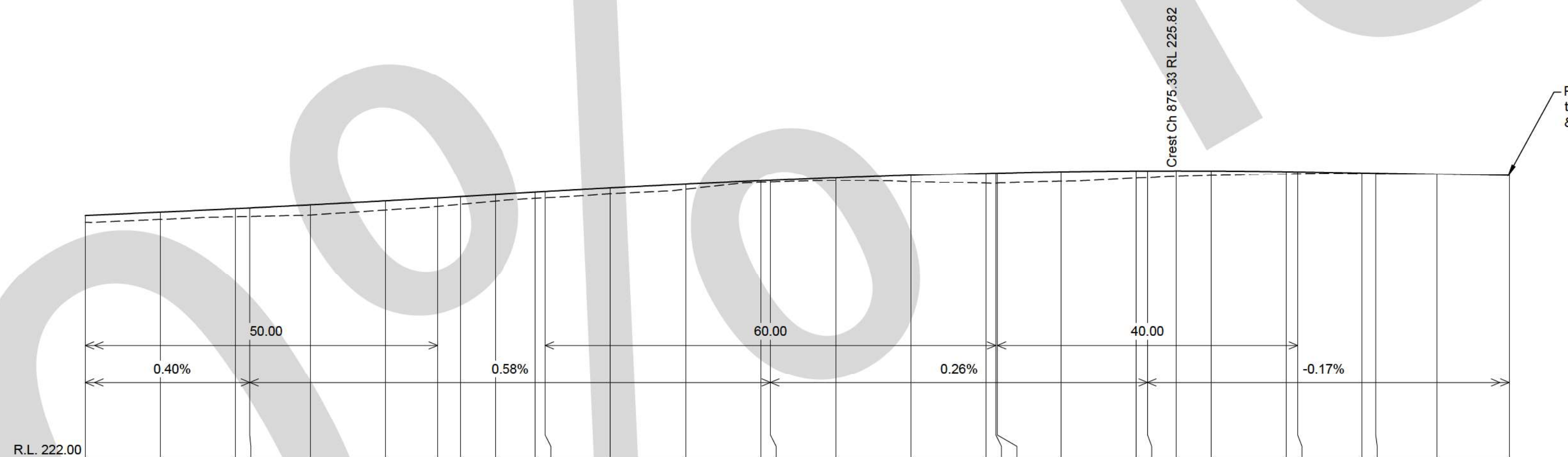
Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C04
		Issue	A



Gulargambone Road Plan
Scale 1:500 @ A1

Legend:

- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Existing drainage invert
- Existing fence
- 225.00 Major contour
- 225.25 Minor contour



Cut/Fill	+0.09	+0.10	+0.11	+0.12	+0.14	+0.12	+0.11	+0.11	+0.08	+0.09	+0.08
DESIGN SURFACE	225.23	225.27	225.32	225.33	225.37	225.42	225.46	225.48	225.50	225.54	225.54
EXISTING SURFACE	225.14	225.17	225.21	225.21	225.23	225.30	225.35	225.37	225.42	225.45	225.46
CHAINAGE	730.00	740.00	750.00	751.91	760.00	770.00	776.91	780.00	784.63	790.00	791.29

Cut/Fill	+0.08	+0.07	+0.02	+0.02	+0.04	+0.09	+0.13	+0.13	+0.13	+0.13
DESIGN SURFACE	225.59	225.64	225.69	225.69	225.73	225.76	225.79	225.79	225.79	225.81
EXISTING SURFACE	225.51	225.57	225.67	225.67	225.69	225.67	225.66	225.66	225.66	225.68
CHAINAGE	800.00	810.00	820.00	821.29	830.00	840.00	850.00	851.29	851.49	860.00

Cut/Fill	+0.10	+0.09	+0.07	+0.06	+0.03	+0.03	+0.01	+0.00	+0.00	+0.00
DESIGN SURFACE	225.82	225.82	225.82	225.82	225.81	225.81	225.80	225.79	225.78	225.76
EXISTING SURFACE	225.72	225.73	225.75	225.76	225.78	225.78	225.79	225.79	225.78	225.76
CHAINAGE	870.00	871.49	875.33	880.00	890.00	891.49	900.00	901.87	910.00	919.65

ALIGNMENT DETAILS: L=144.77 B=269°25'44" | L=117.24 R=400.00 | L=17.78 B=286°13'19"

Gulargambone Road - Site 6 Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:50 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 | 100 Table of millimetres | 200 | 300 | 400 | 500 | 600 | 700 | 780

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

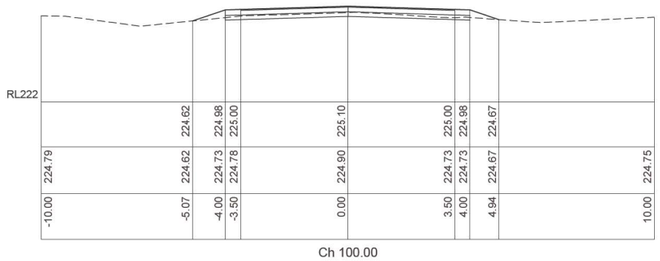
Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

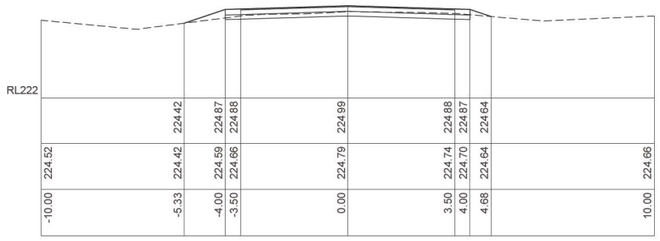
Title: Layout Plan & Longitudinal Section
Ch 730.00 to Ch 919.65

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C05
Issue	A		

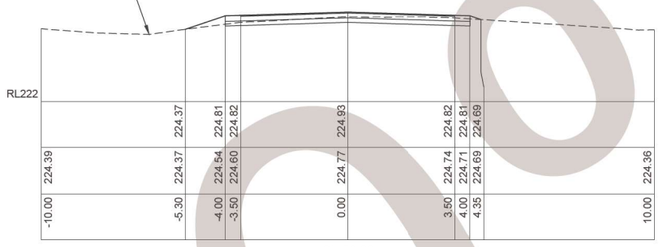


Ch 100.00



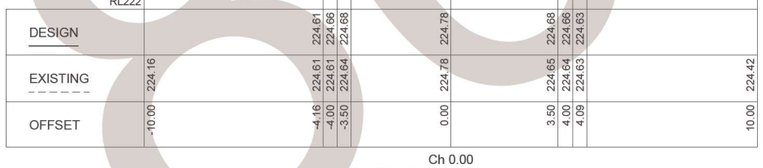
Ch 60.48
TP

Existing road side drainage invert level to be maintained as shown.

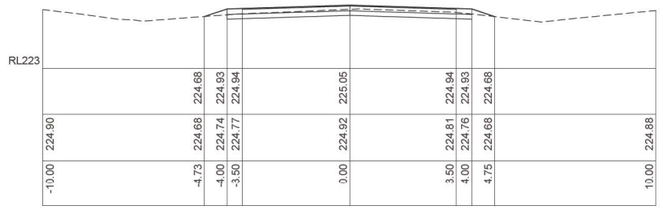


Ch 50.00

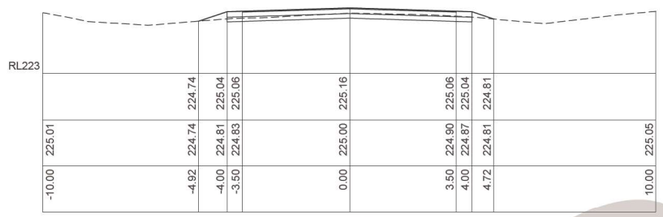
0.5m Unsealed Shoulder
8m Formation
7m Seal width
-3.0%
-3.0%
1:3 earth batter to be on either side of road formation.
Refer to Pavement Spec. on C01



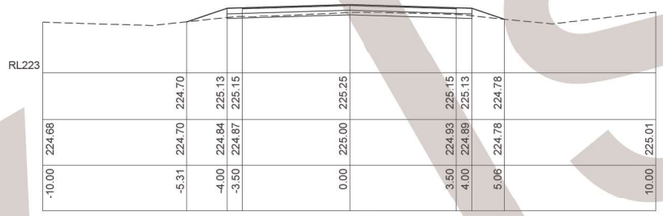
Ch 0.00
TP & Begin width transition



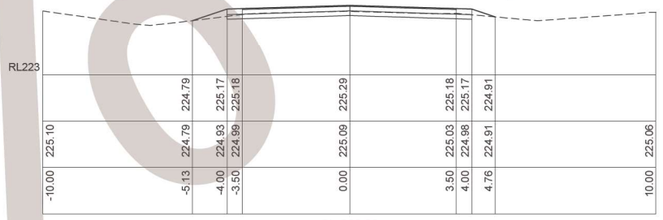
Ch 350.00



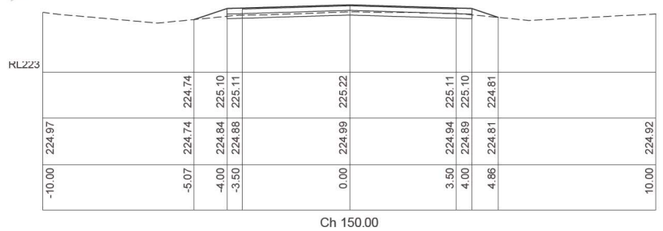
Ch 300.00



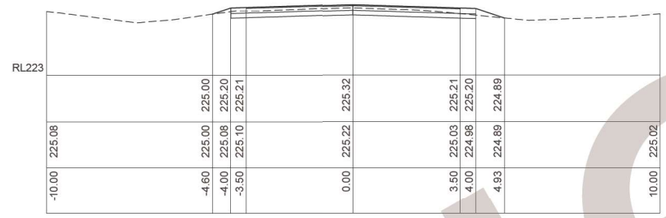
Ch 250.00



Ch 200.00

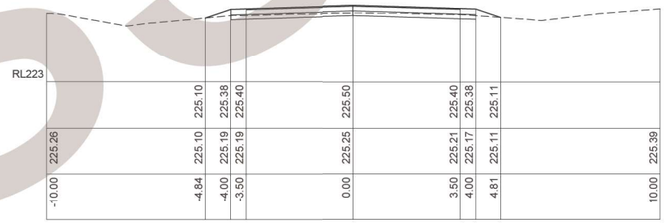


Ch 150.00

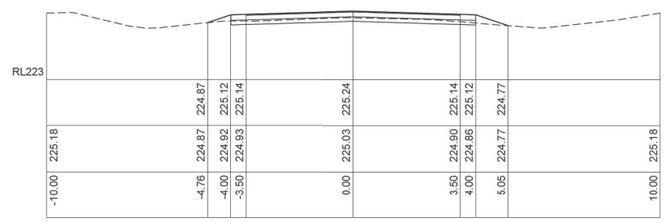


Ch 550.00

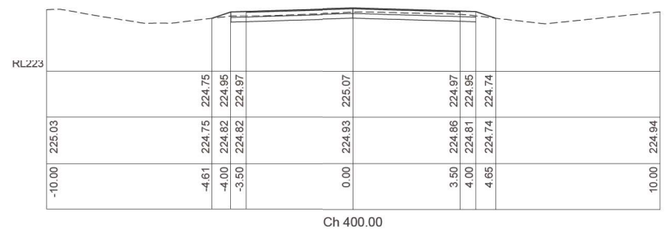
Ch 538.05
TP



Ch 500.00



Ch 450.00



Ch 400.00

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Gulargambone cross section (Ch 0.00 to Ch 550.00)

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
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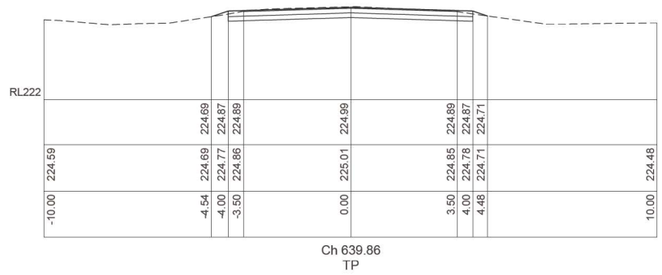
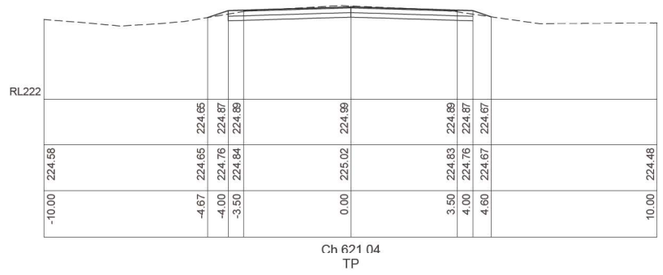
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

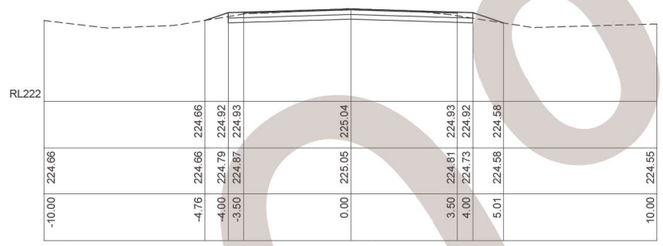
Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C06
		Issue	A



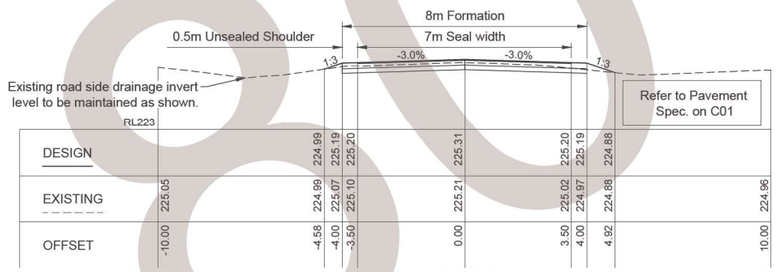
Ch 639.86
TP



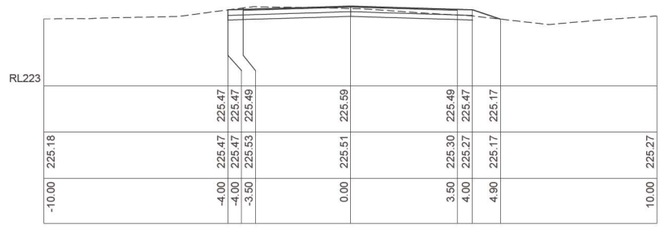
Ch 621.04
TP



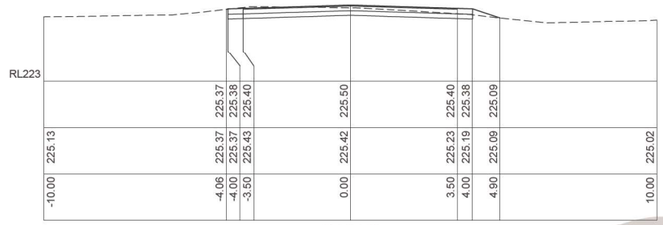
Ch 600.00



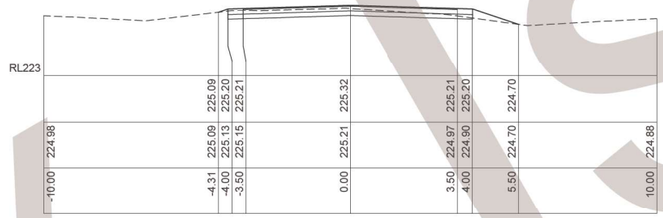
Ch 551.77
TP



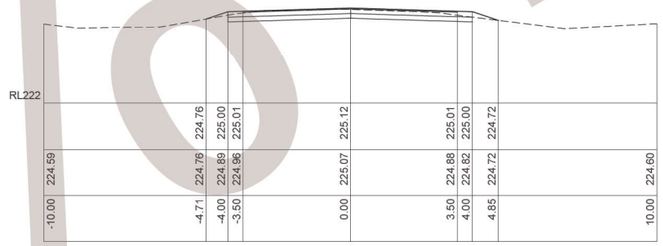
Ch 800.00



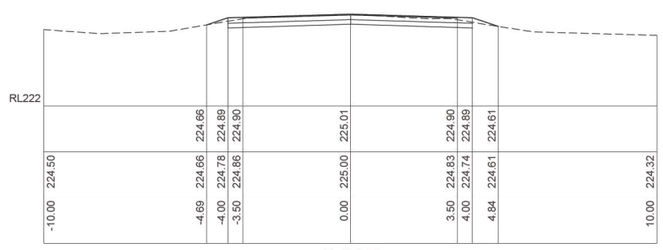
Ch 784.63
TP



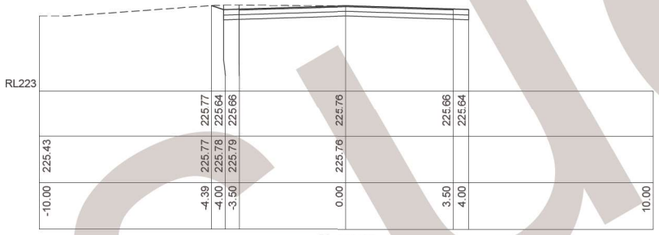
Ch 750.00



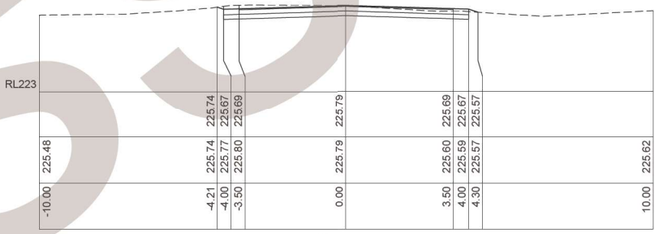
Ch 700.00



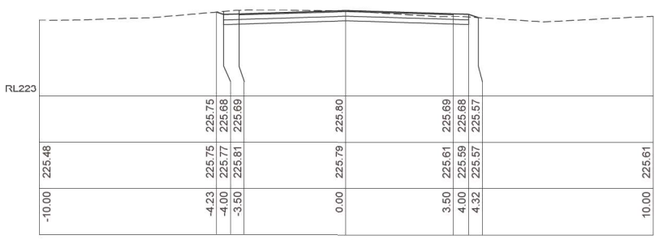
Ch 650.00



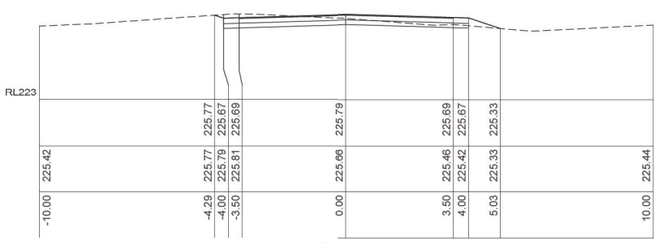
Ch 919.65
TP & End width transition



Ch 901.87
TP



Ch 900.00



Ch 850.00

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Gulargambone cross section (Ch 551.77 to Ch 919.65)

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Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C07
		Issue	A

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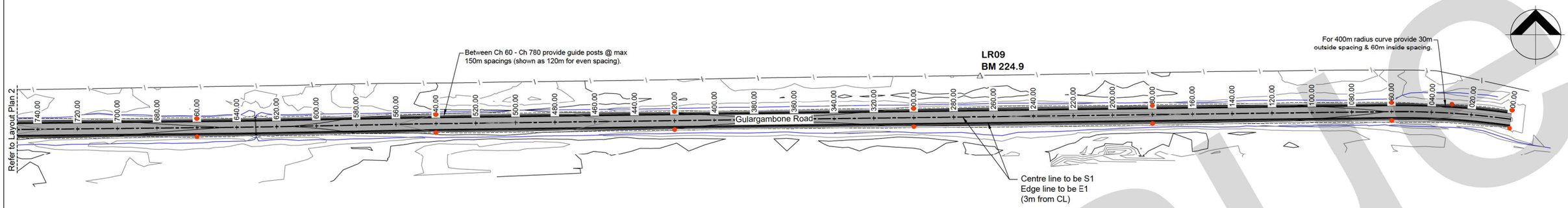
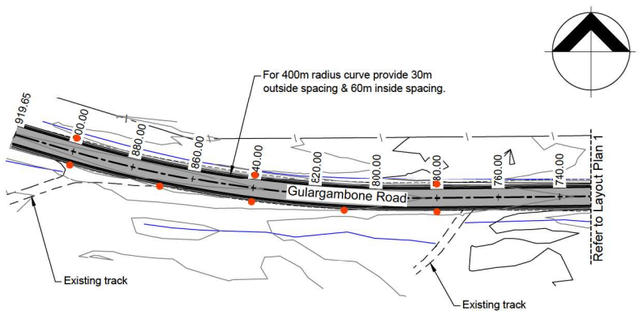


Road Signage Plan 1
Scale 1:1000 @ A1



Road Signage Plan 2
Scale 1:1000 @ A1

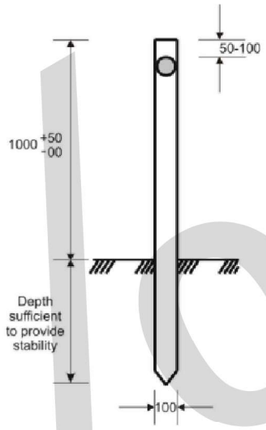


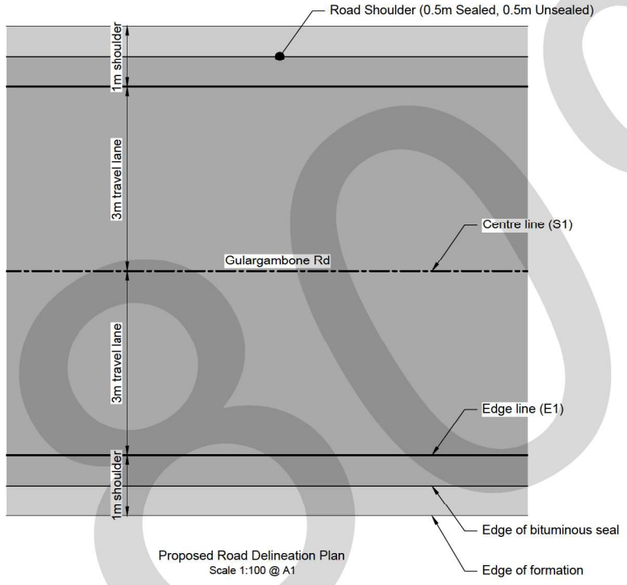
Figure 16.1: Typical Guide Post

Rigid Guide Post Detail
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

Curve radius	Spacing (m)	
	On outside curve	On inside curve
< 100	6	12
100 - 199	10	20
200 - 299	15	30
300 - 399	20	40
400 - 599	30	60
600 - 699	40	60
800 - 1999	60	60
1200 - 2000	90	90
> 2000 including straights	150	150

Table 16.1: Spacing of posts on curves (including spacing of delineators on guard fence)

Guide Post Spacing Guidlines
(Delineation: Section 16 - Guide posts and delineation of safety barriers)



Proposed Road Delineation Plan
Scale 1:100 @ A1

Legend:

- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Approx location of existing drainage invert
- Existing fence
- 225.00 Major contour
- 225.25 Minor contour
- Proposed guide post
- Contour @ 0.25m intervals

Guide post size is indicative only to display proposed location.

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Proposed road delineation & signage plan

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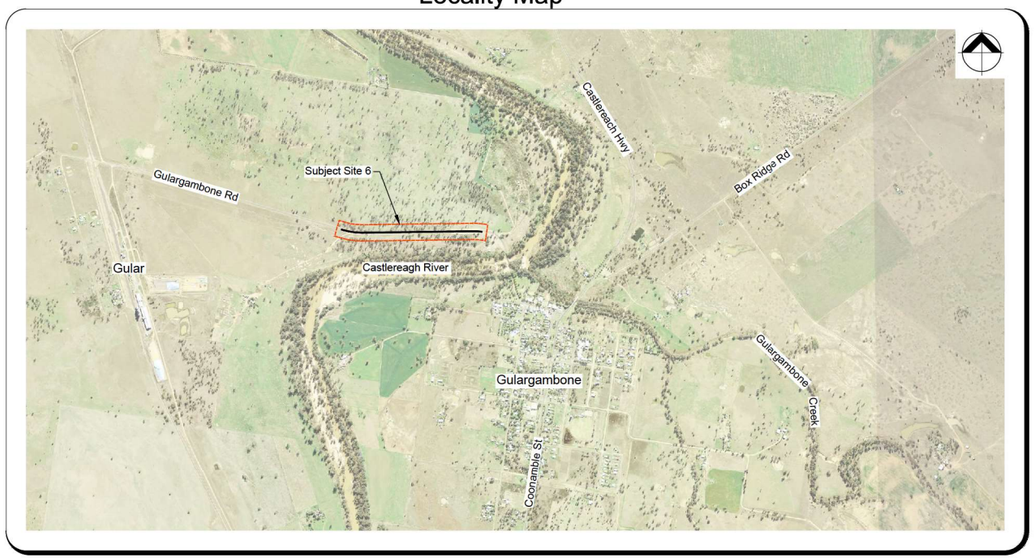
Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C08
		Issue	A

Locality Map



Gulargambone - Site 6

Full Road Width Rehabilitation

Ch 0.55km to Ch 1.45km from Bourbah Street

For: Coonamble Shire Council

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Drawing Schedule

Drawing	Sheet	Description
11551 -No. C01	1 of 8	Site Layout Plan
11551 -No. C02	2 of 8	Erosion & Sediment Control Layout Plan & Details
11551 -No. C03	3 of 8	Gulargambone road plan & longitudinal section (0.00 to 366.55)
11551 -No. C04	4 of 8	Gulargambone road plan & longitudinal section (366.55 to 730.00)
11551 -No. C05	5 of 8	Gulargambone road plan & longitudinal section (730.00 to 919.65)
11551 -No. C06	6 of 8	Gulargambone Cross Section (Ch 0.00 to Ch 550.00)
11551 -No. C07	7 of 8	Gulargambone Cross Section (Ch 551.77 to Ch 919.65)
11551 -No. C08	8 of 8	Proposed road delineation & signage plan

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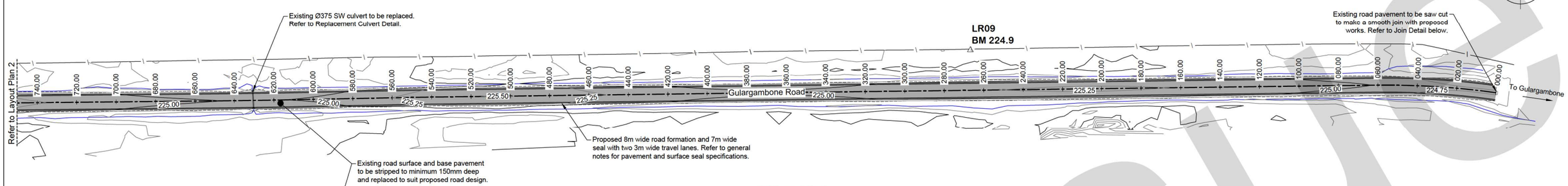
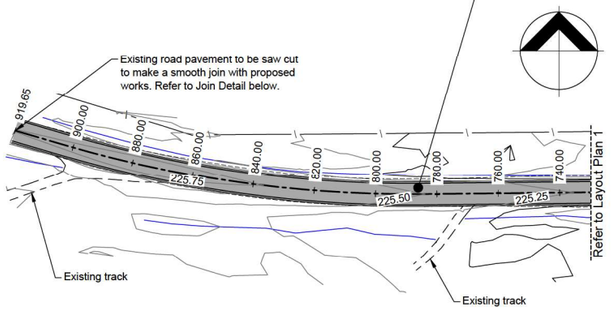


Site Layout Plan 1
Scale 1:1000 @ A1



Site Layout Plan 2
Scale 1:1000 @ A1

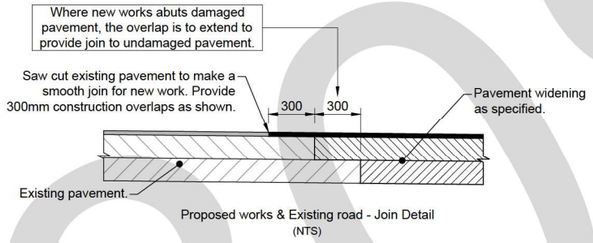
General Notes

1. All setout shall be by suitably experienced personnel. All works-as-executed plans shall be certified by a Registered Surveyor or Engineer.
2. Dimensions are generally in metres unless noted otherwise.
3. All levels are in metres unless noted otherwise.
4. All levels shown are finished surface unless noted otherwise.
5. Council inspection hold points of civil works are required at the following construction stages:
   a. Prior to backfilling of stormwater, sewer and water services (pipe to be trenched, bedded and laid).
   b. Box inspection of subgrade and proof roll.
   c. Inspection of sub base gravels and proof roll prior to installation of kerb.
   d. Inspection of base gravels and proof roll prior to sealing.
   e. Any service crossings of road pavement.
6. Inspections are organised by contacting Council's Development Engineer. Please note 24hours notice of inspection is required.
7. Typical road pavement to consist of:
   - **TBC**
   (both subject to subgrade testing).
8. Density testing is to be carried out at max.100m spacing or in accordance with Table 8.1 of AS 3798 - Guidelines on Earthworks for Commercial and Residential Development, whichever gives the greater frequency of testing.
   Compaction is to be to the following:
   - General filling to 95% standard compaction;
   - Subgrade to 95% standard compaction;
   - Sub-base gravels to 100% standard compaction;
   - Base course gravels to 100% standard compaction;
9. The gravel pavement shall extend full depth under, and 150 behind all kerbs.
10. RC pipes of 900 dia or less shall be minimum class '2', rubber ring jointed, unless noted otherwise.
11. Minimum cover to stormwater pipes shall be 450mm in landscape areas, and 600mm under road pavements, unless noted otherwise.
12. The Contractor is responsible for maintaining sufficient cover over stormwater and sewer mains during construction, and ensuring that trenches are correctly backfilled and compacted to eliminate damage caused by construction traffic.
13. Drainage easements, where not shown, shall be confirmed by survey after construction.
14. Linemarking and signage shall confirm to AS 1742 Manual of Uniform Traffic Control Devices.
15. It is the responsibility of the Contractor to ensure that adequate erosion and sedimentation control devices are erected and maintained at all times during construction, and to the satisfaction of the Local Authority.
16. All traffic control during construction shall be in accordance with the RMS's Guidelines - Traffic Control at Work Sites and AS 1742.3 - 2009 Manual of Uniform Traffic Control Devices: Traffic Control Devices for Works on Roads.
17. All works shall be carried out in accordance with the Local Authorities Subdivision Code and associated standard drawings.
18. It is the Contractor's responsibility to provide to the Surveyor any information necessary to prepare works-as-executed drawings for submission to the Local Authority. It will be necessary to liaise with the Surveyor to coordinate the location of some items prior to backfilling.

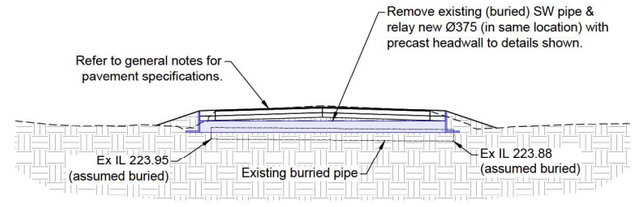
Legend:

- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Approx location of existing drainage invert
- Existing fence
- 225.00 Major contour
- 225.25 Minor contour

Contours @ 0.25m intervals



Proposed works & Existing road - Join Detail
(NTS)



Replacement Culvert Detail
Scale: Horizontal 1:100 @ A1 Vertical 1:100 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Site Layout Plan

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ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
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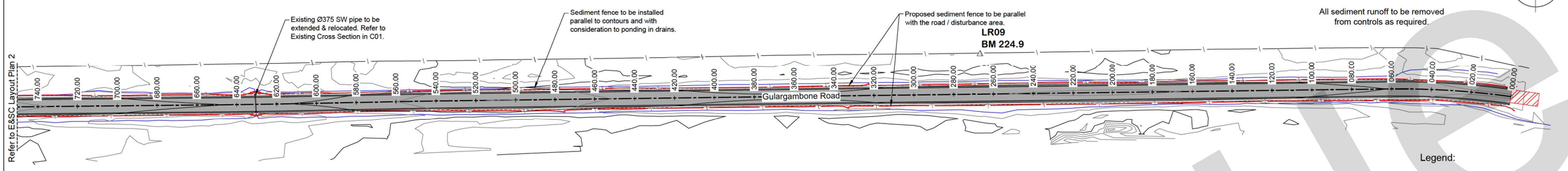
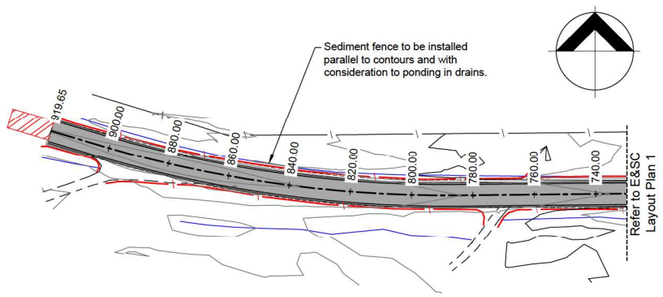
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C01
		Issue	A



Site Erosion & Sediment
Control Layout Plan 1
Scale 1:1000 @ A1



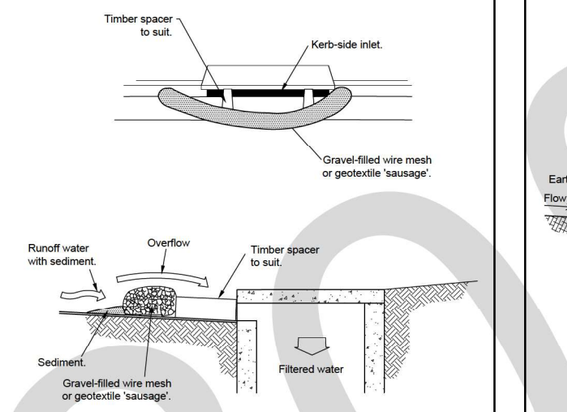
Site Erosion & Sediment
Control Layout Plan 2
Scale 1:1000 @ A1

Notes - Erosion and Sedimentation Control

1. All erosion and sedimentation controls shall be in accordance with the guidelines and specifications as detailed in Landcom's ' Managing Urban Stormwater: Soils and Construction - Volume 1', 2004.
2. Construction shall be phased so that land disturbance is confined to areas of workable size. This will limit the duration disturbed areas are exposed to erosion. Stabilisation shall be applied to the first disturbed area before the next section is opened up. Any disturbed areas that will not be stabilised within 30 days shall be revegetated and any that fail to establish shall be resown.
3. Topsoil stockpiles are to be located away from any natural drainage watercourse and shall have hay bales and/or sediment control fences placed around them to act as sedimentation controls.
4. Temporary earthen diversion drains shall be constructed to divert waters away from all disturbed areas and towards hay bale check dams located in natural drainage depressions.
5. Temporary sediment detention barriers shall be placed around outlet headwalls and drainage discharge points as detailed and permanent energy dissipaters shall be installed at all outlets to limit velocities and thus the potential for scouring. With all drainage outlets, water shall be released in a non-erodible manner.
6. Temporary sediment traps shall be constructed at drainage inlet points as detailed.
7. Temporary sediment fencing shall be installed along the downslope edge of disturbed areas and fill batters.
8. Sediment and debris shall be removed from detention barriers when they are 60% full. All sediment removed shall be disposed of as directed by the Supervising Engineer.
9. Upon completion of shaping and drainage works, batters and drainage lines shall be topsoiled to a minimum depth of 100mm with stockpiled material and any areas with insufficient grass/topsoil mix shall be seeded and mulched with any failed areas resown or revegetated as directed by the Supervising Engineer. A 400mm wide turf strip shall be installed next to all kerb, or other concrete surfaces, to stabilise the interface between concrete surfaces and topsoiled areas.
10. Where there is a footpath in the verge, turf is required between the back of the kerb and the footpath as well as a single turf strip along the property side of the footpath with the remainder of the verge finished as either turf or grass seed.
11. Temporary erosion and sedimentation controls are to be installed during the construction phase and shall be retained and maintained while disturbed areas remain or are contributing sediment to the stormwater system. No device shall be removed until directed by the Supervising Engineer.
12. Wind erosion on the site shall be managed by limiting traffic on disturbed areas, utilising water trucks, covering stockpiles with anchored geofabric, and providing dust covers on trucks and dumpers. If wind speed exceeds 10m/s, increase watering or cease dust generating activities until dust controls are operating effectively. Other measures may be employed as outlined in the Landcom manual.

Legend:

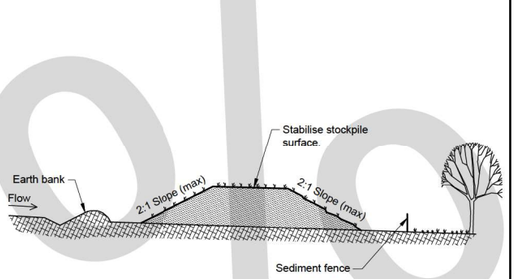
- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Existing drainage invert
- Existing fence
- 225.00 — Major contour
- 225.25 — Minor contour
- Stabilised site access
- Sediment Fence
- Mesh & Gravel inlet filter



Note: This practise only to be used where specified in an aproved SWMP/ESCP.

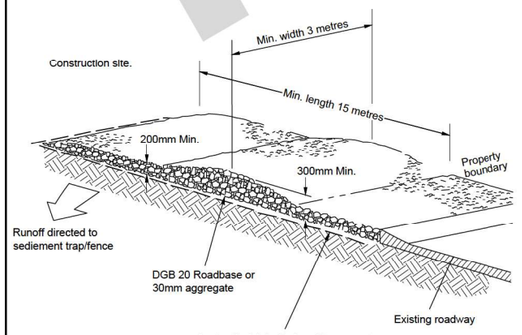
Construction Notes:
1. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit.
2. Fill the sleeve with 25mm to 50mm gravel.
3. Form an elliptical cross-section about 150mm high x 400mm wide.
4. Place filter at the opening of the kerb inlet leaving a 100mm gap at the top to act as an emergency spillway.
5. Maintain the opening with the sapcer blocks.
6. Form a seal with the kerbing and prevent sediment bypassing the filter.
7. Fit to all kerb inlets at sag point.

Mesh and Gravel Inlet Filter



Construction Notes:
1. Locate stockpile at least 5 metres from existing vegetation, concentrated water flows, roads and hazard areas.
2. Construct on the contour as a low, fat, elongated mound.
3. Where there is sufficient area topsoil stockpiles shall be less than 2 metres in height.
4. Rehabilitate in accordance with the SWMP/ESCP.
5. Construct earth bank on the upslope to divert run off around the stockpile and a sediment fence 1 to 2 metres downslope of stockpile.

Stockpiles

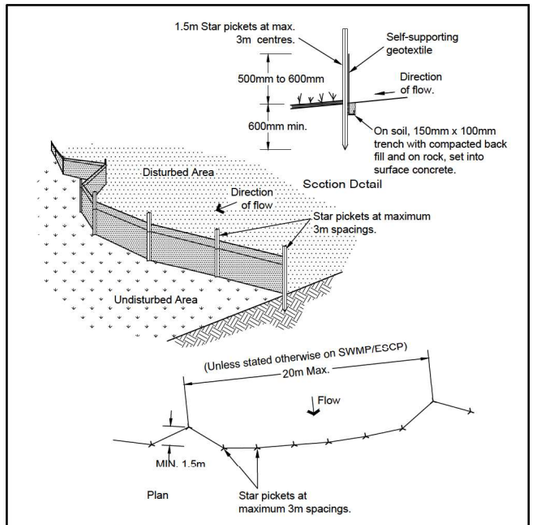


Geotextile fabric designed to prevent intermis=xing of subgrade and base materials and to maintain good porperties of the sub-base laters.

Geotextile may be a woven or needle punched product with a minimum cbr burst strength (AS3706.4-90) of 2500 N.

Construction Notes:
1. Strip topsoil and level site.
2. Compact subgrade.
3. Cover are with needle punched geotextile.
4. Construct 200mm thich pad over geotextile using roadbase or 30mm aggregate. Minimum length 15 metres or to building alignment. minimum width 3 meteres.
5. Construct hump immediately within boundary to divert water to a sediment fence ot other sediment trap.

Stabilised Site Access



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 upslop 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 post with wire ties or as recommended by geotextile manufacturer.
6. Join sections of fabric at support post with a 150mm overlap.

Sediment Fence

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Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Erosion & Sediment Control Layout Plan & Details

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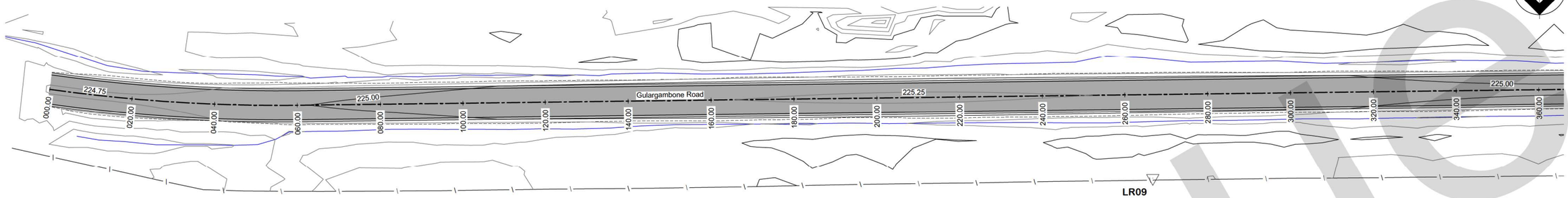
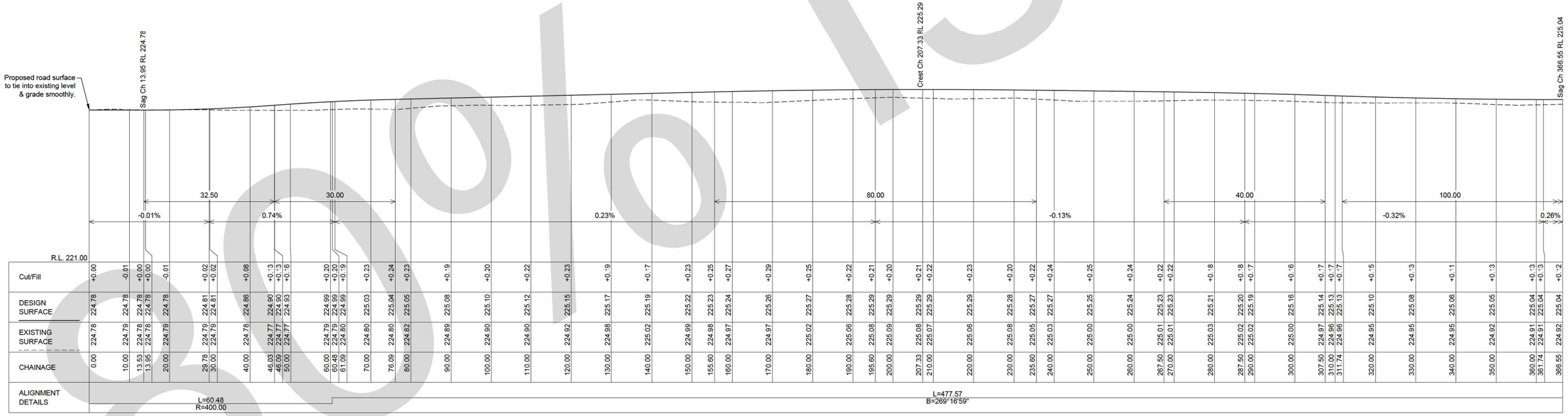
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C02
		Issue	A



Gulargambone Road Plan
Scale 1:500 @ A1

Legend:
- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Existing drainage invert
- Existing fence
- 225.00 Major contour
- 225.25 Minor contour



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DESIGN SURFACE	224.78	224.78	224.78	224.78	224.78	224.81	224.81	224.86	224.90	224.99	224.99	224.99	225.03	225.04	225.05	225.08	225.10	225.12	225.15	225.17	225.19	225.22	225.23	225.24	225.26	225.27	225.28	225.29	225.29	225.29	225.29	225.29	225.28	225.27	225.27	225.25	225.24	225.23	225.23	225.21	225.20	225.19	225.16	225.14	225.13	225.13	225.10	225.08	225.06	225.05	224.92	224.91	225.04	225.04
EXISTING SURFACE	224.78	224.79	224.78	224.78	224.79	224.79	224.79	224.78	224.77	224.77	224.77	224.77	224.80	224.80	224.82	224.89	224.90	224.90	224.92	224.98	225.02	224.99	224.98	224.97	224.97	225.02	225.06	225.08	225.09	225.08	225.07	225.06	225.08	225.05	225.03	225.00	225.00	225.01	225.01	225.03	225.02	225.02	225.00	224.97	224.96	224.96	224.95	224.95	224.95	224.92	224.91	224.91	224.92
CHAINAGE	0.00	10.00	13.53	13.95	20.00	29.78	30.00	40.00	46.03	46.09	50.00	60.00	60.48	61.09	70.00	76.09	80.00	90.00	100.00	110.00	120.00	130.00	140.00	150.00	155.60	160.00	170.00	180.00	190.00	195.60	200.00	207.33	210.00	220.00	230.00	235.60	240.00	250.00	260.00	267.50	270.00	280.00	287.50	290.00	300.00	307.50	310.00	311.74	320.00	330.00	340.00	350.00	360.00	361.74	366.55

Gulargambone Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:50 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Layout Plan & Longitudinal Section Ch 0.00 to Ch 366.55

ARDILL PAYNE & Partners
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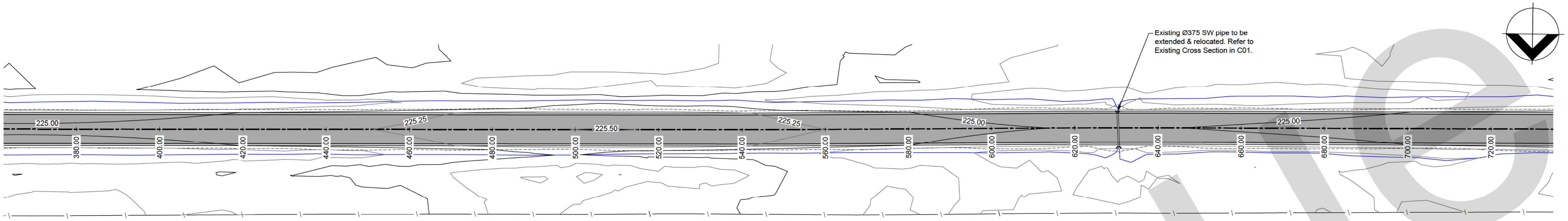
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

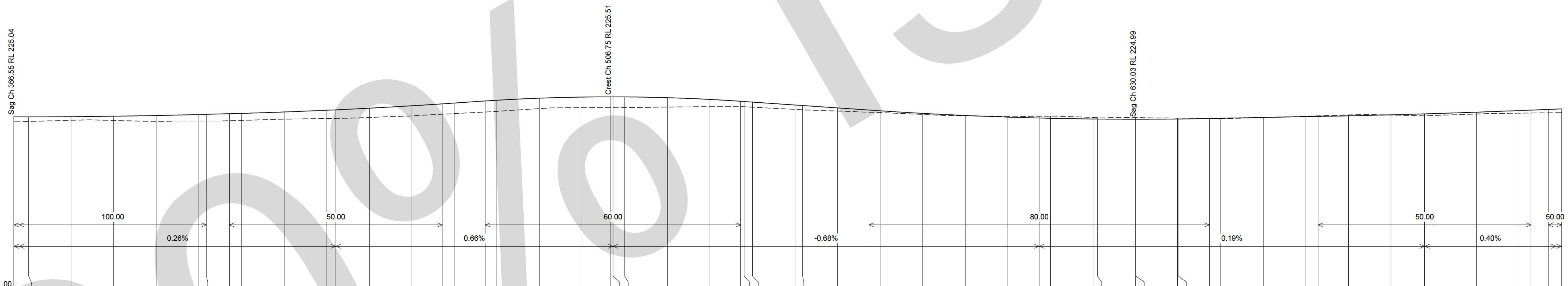
Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No	11551	Dwg No.	S6-C03
		Issue	A



Gulargambone Road Plan
Scale 1:500 @ A1

Legend:

- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Existing drainage invert
- Existing fence
- 225.00 Major contour
- 225.25 Minor contour



CHAINAGE	Cut/Fill	DESIGN SURFACE	EXISTING SURFACE
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370.00	+0.11	225.04	224.93
380.00	+0.09	225.05	224.96
390.00	+0.10	225.06	224.96
400.00	+0.14	225.07	224.93
410.00	+0.15	225.10	224.95
411.74	+0.16	225.10	224.94
417.14	+0.16	225.11	224.95
420.00	+0.16	225.12	224.96
430.00	+0.16	225.15	224.99
440.00	+0.19	225.19	225.00
442.14	+0.19	225.20	225.01
450.00	+0.21	225.24	225.03
460.00	+0.24	225.30	225.06
467.14	+0.24	225.34	225.10
470.00	+0.24	225.36	225.12
477.26	+0.26	225.41	225.15
480.00	+0.26	225.43	225.17
490.00	+0.25	225.48	225.23
500.00	+0.25	225.50	225.25
506.75	+0.25	225.51	225.26
507.26	+0.25	225.51	225.26
510.00	+0.25	225.51	225.26
520.00	+0.22	225.49	225.27
530.00	+0.17	225.45	225.28
537.26	+0.12	225.40	225.28
538.05	+0.12	225.40	225.28
540.00	+0.12	225.39	225.27
550.00	+0.10	225.32	225.22
551.77	+0.10	225.31	225.21
560.00	+0.07	225.25	225.18
567.34	+0.05	225.20	225.15
570.00	+0.04	225.18	225.14
580.00	+0.02	225.12	225.10
590.00	+0.00	225.07	225.07
600.00	-0.01	225.04	225.05
607.34	-0.04	225.01	225.05
610.00	-0.05	225.01	225.06
620.00	-0.04	224.99	225.03
621.04	-0.03	224.99	225.02
630.00	-0.04	224.99	225.03
630.03	-0.04	224.99	225.03
639.86	-0.02	224.99	225.01
640.00	-0.02	224.99	225.01
647.34	+0.00	225.00	225.00
650.00	+0.01	225.01	225.00
660.00	+0.01	225.03	225.02
670.00	+0.00	225.05	225.05
672.86	-0.01	225.05	225.06
680.00	-0.03	225.06	225.09
690.00	+0.01	225.09	225.08
697.86	+0.04	225.11	225.07
700.00	+0.05	225.12	225.07
710.00	+0.04	225.15	225.11
720.00	+0.06	225.19	225.13
722.86	+0.07	225.20	225.13
726.91	+0.08	225.21	225.13
730.00	+0.09	225.23	225.14

ALIGNMENT DETAILS: L=477.57 B=269°16'59" · L=13.72 R=2000.00 · L=69.27 B=268°53'24" · L=18.82 R=2000.00 · L=144.77 B=269°25'44"

Gulargambone Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:50 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 | 100 Table of millimetres | 200 | 300 | 400 | 500 | 600 | 700 | 780

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

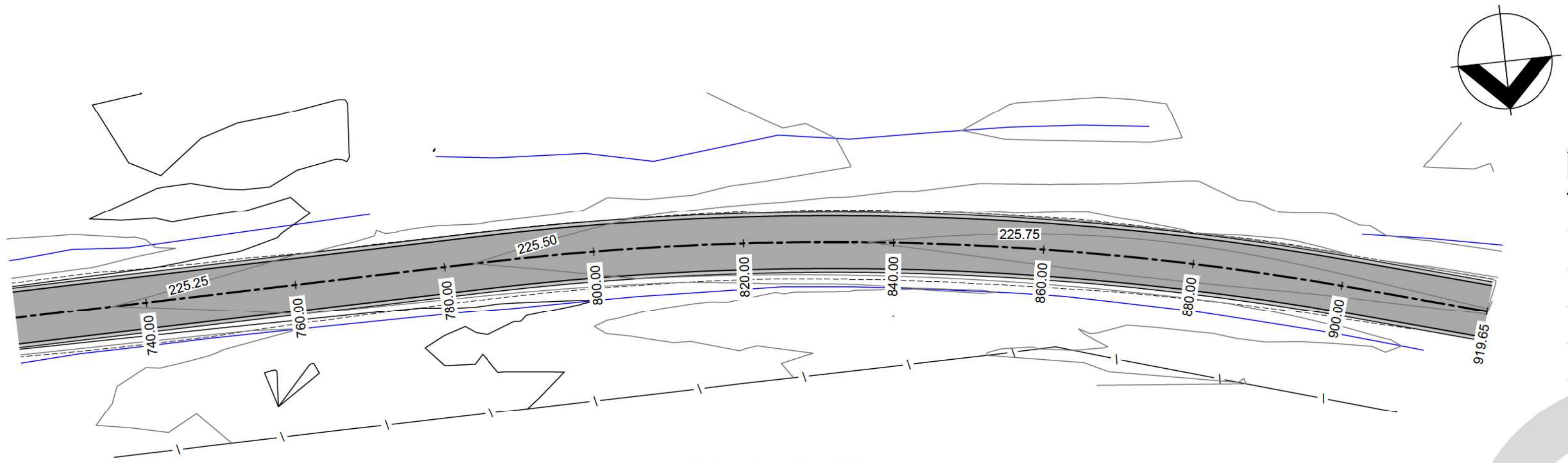
Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Layout Plan & Longitudinal Section Ch 366.55 to Ch 730.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

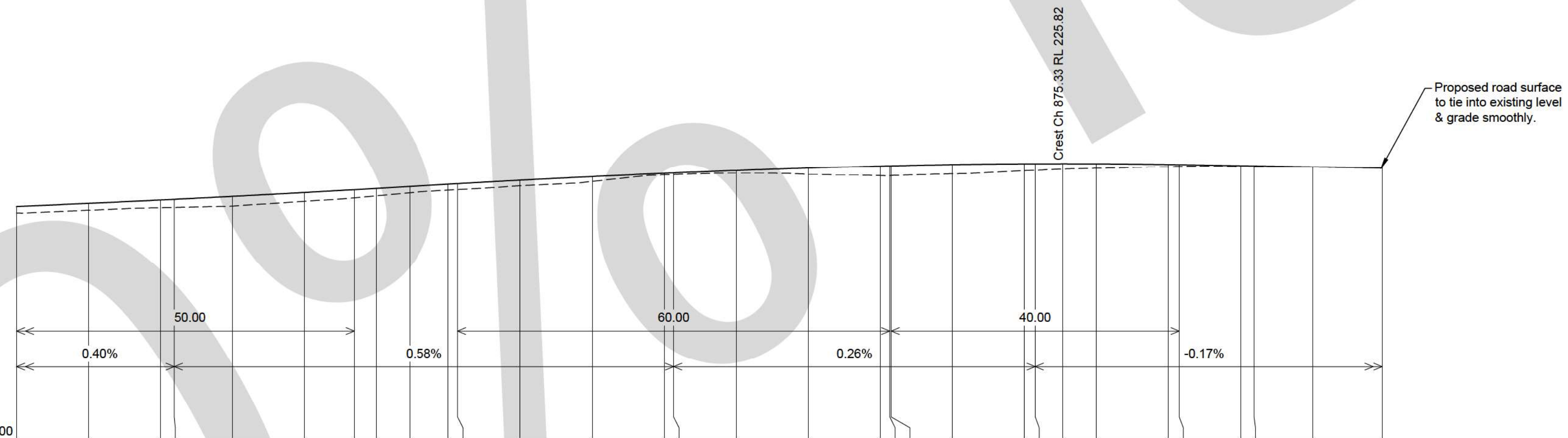
Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C04
		Issue	A



Legend:

- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Existing drainage invert
- Existing fence
- 225.00 Major contour
- 225.25 Minor contour

Gulargambone Road Plan
Scale 1:500 @ A1



CHAINAGE	Cut/Fill	DESIGN SURFACE	EXISTING SURFACE
730.00	+0.09	225.23	225.14
740.00	+0.10	225.27	225.17
750.00	+0.11	225.32	225.21
751.91	+0.12	225.33	225.21
760.00	+0.14	225.37	225.23
770.00	+0.12	225.42	225.30
776.91	+0.11	225.46	225.35
780.00	+0.11	225.48	225.37
784.63	+0.08	225.50	225.42
790.00	+0.09	225.54	225.45
791.29	+0.08	225.54	225.46
800.00	+0.08	225.59	225.51
810.00	+0.07	225.64	225.57
820.00	+0.02	225.69	225.67
821.29	+0.02	225.69	225.67
830.00	+0.04	225.73	225.69
840.00	+0.09	225.76	225.67
850.00	+0.13	225.79	225.66
851.29	+0.13	225.79	225.66
851.49	+0.13	225.79	225.66
860.00	+0.13	225.81	225.68
870.00	+0.10	225.82	225.72
871.49	+0.09	225.82	225.73
875.33	+0.07	225.82	225.75
880.00	+0.06	225.82	225.76
890.00	+0.03	225.81	225.78
891.49	+0.03	225.81	225.78
900.00	+0.01	225.80	225.79
901.87	+0.00	225.79	225.79
910.00	+0.00	225.78	225.78
919.65	+0.00	225.76	225.76

ALIGNMENT DETAILS: L=144.77 B=269°25'44" ; L=117.24 R=400.00 ; L=17.78 B=286°13'19"

Gulargambone Road - Site 6 Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:50 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Layout Plan & Longitudinal Section
Ch 730.00 to Ch 919.65

ARDILL PAYNE & Partners
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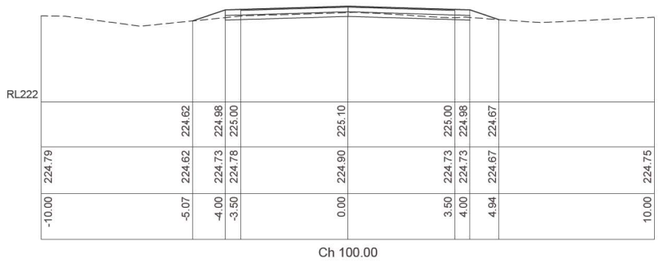
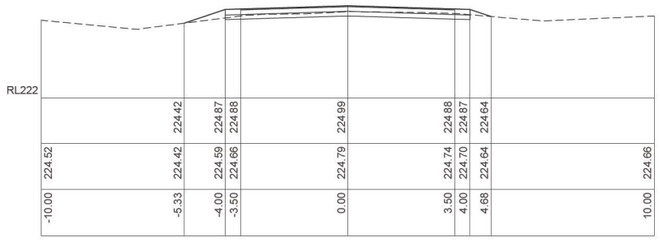
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C05 — Issue A

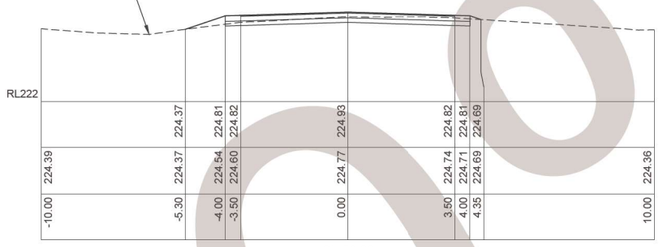


Ch 100.00



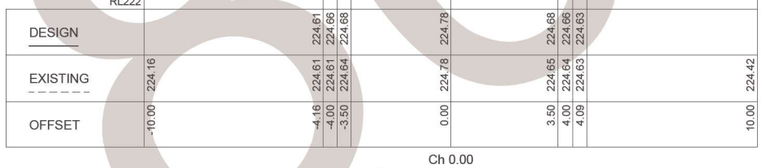
Ch 60.48
TP

Existing road side drainage invert level to be maintained as shown.

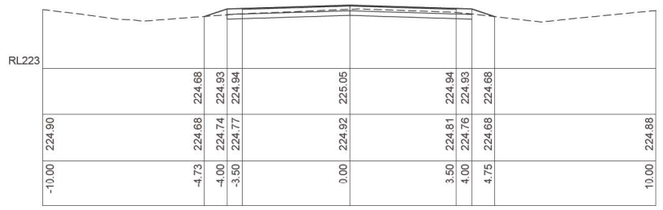


Ch 50.00

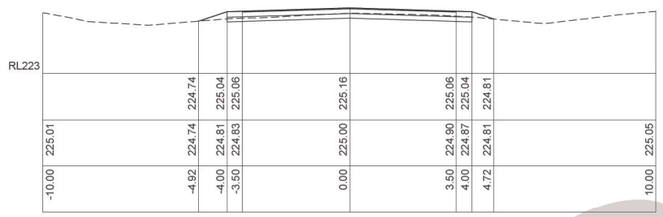
0.5m Unsealed Shoulder
8m Formation
7m Seal width
-3.0%
-3.0%
1:3 earth batter to be on either side of road formation.
Refer to Pavement Spec. on C01



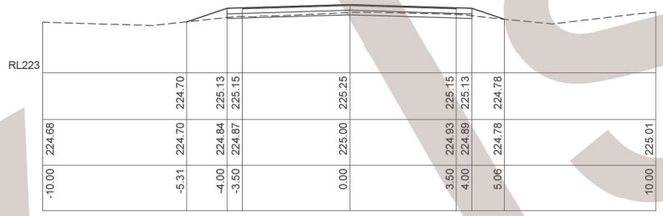
Ch 0.00
TP & Begin width transition



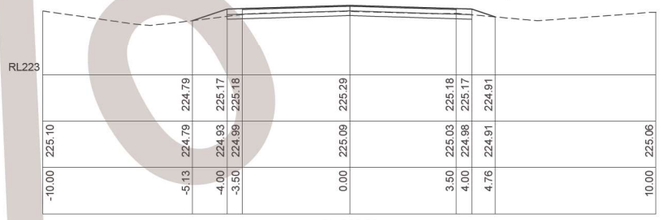
Ch 350.00



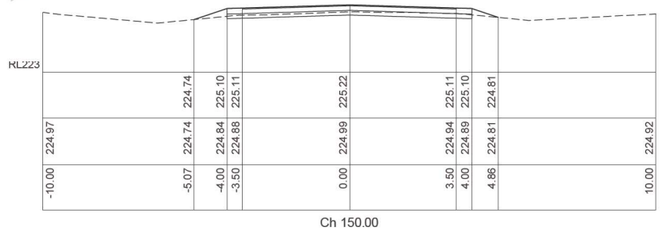
Ch 300.00



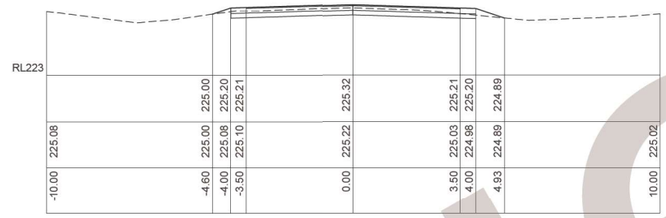
Ch 250.00



Ch 200.00

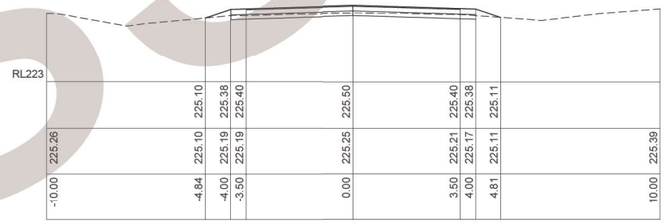


Ch 150.00

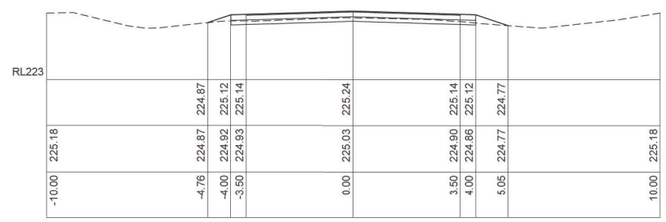


Ch 550.00

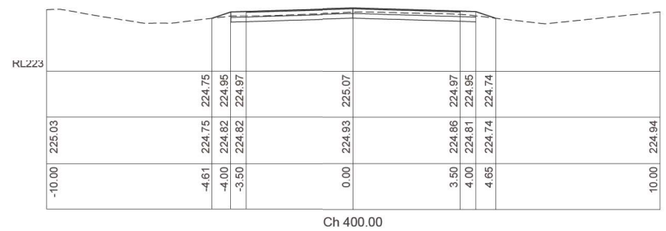
Ch 538.05
TP



Ch 500.00



Ch 450.00



Ch 400.00

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Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

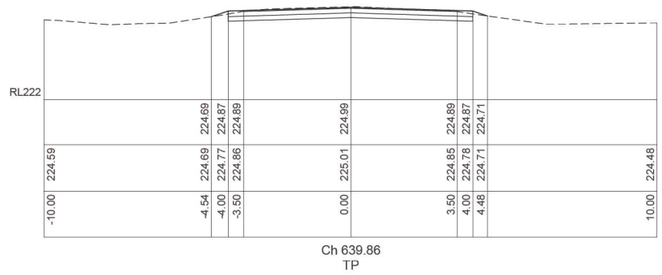
Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

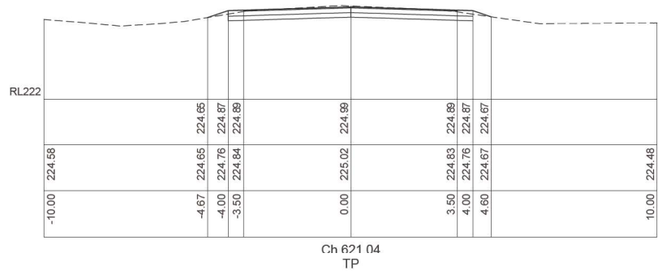
Title: Gulargambone cross section (Ch 0.00 to Ch 550.00)

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

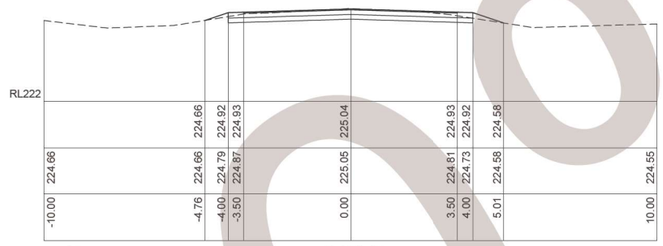
Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C06
		Issue	A



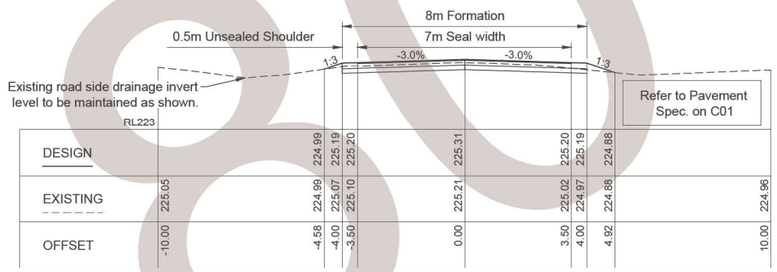
Ch 639.86
TP



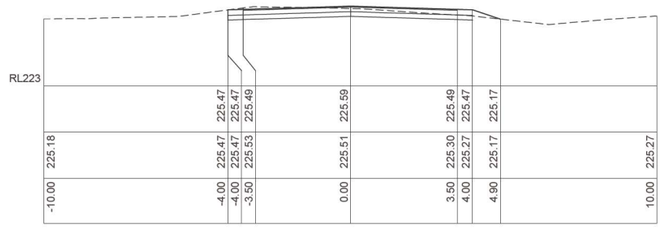
Ch 621.04
TP



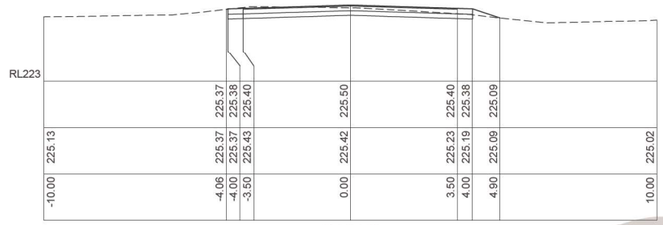
Ch 600.00



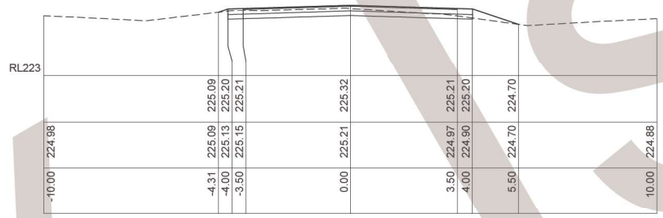
Ch 551.77
TP



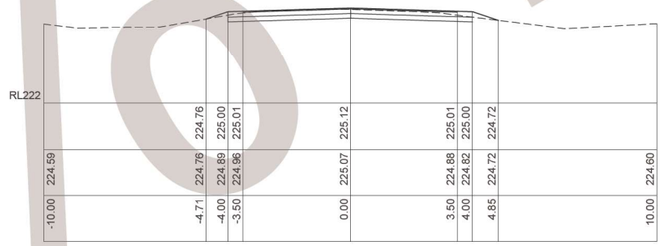
Ch 800.00



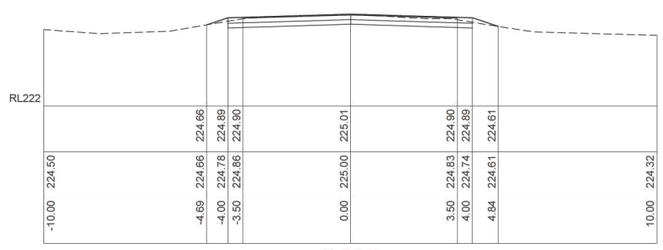
Ch 784.63
TP



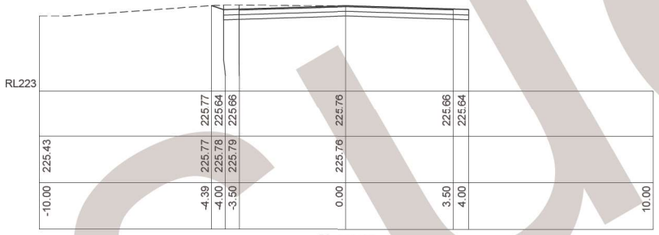
Ch 750.00



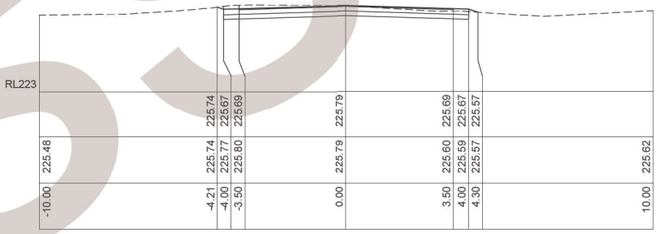
Ch 700.00



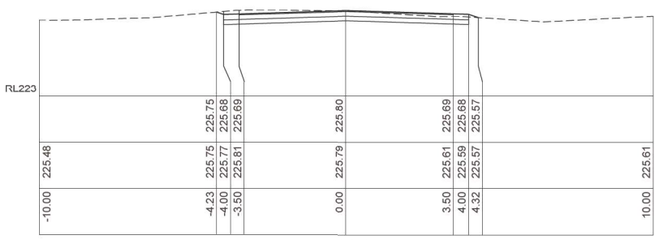
Ch 650.00



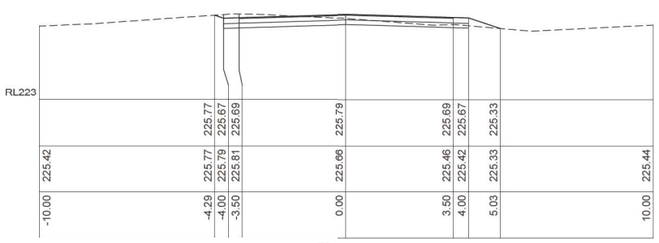
Ch 919.65
TP & End width transition



Ch 901.87
TP



Ch 900.00



Ch 850.00

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Gulargambone cross section (Ch 551.77 to Ch 919.65)

ARDILL PAYNE
& Partners
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BALLINA 45 River Street Ph. 02 6686 3280
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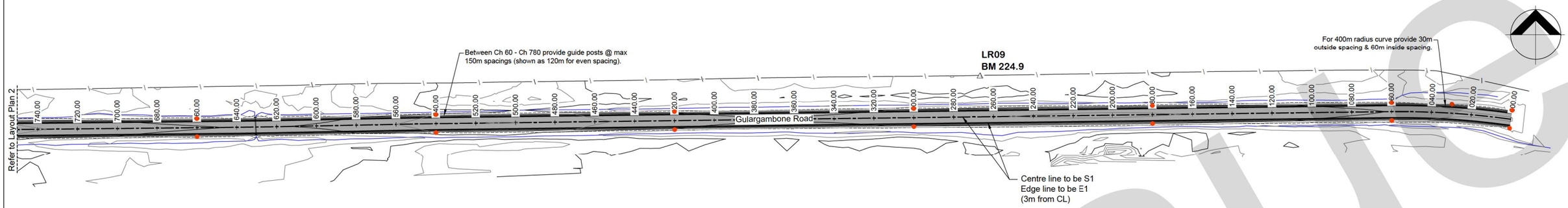
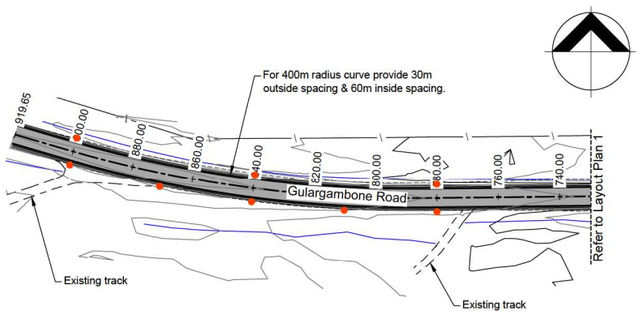
Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C07
		Issue	A

S:\01 Jobs\11500-11599\11551 Civil_Road upgrades_Gulargambone_Coonamble SC\05 Drawings\01 Civil\01 Current\SITE 6\11551_Site6_CC_Plan.dwg, S6-C07, 19/01/2023 5:15:43 PM



Road Signage Plan 1
Scale 1:1000 @ A1



Road Signage Plan 2
Scale 1:1000 @ A1

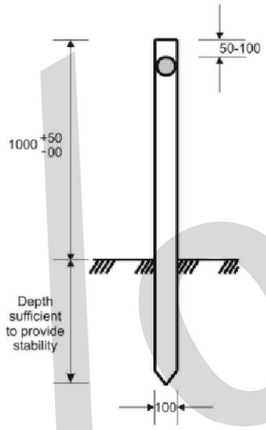


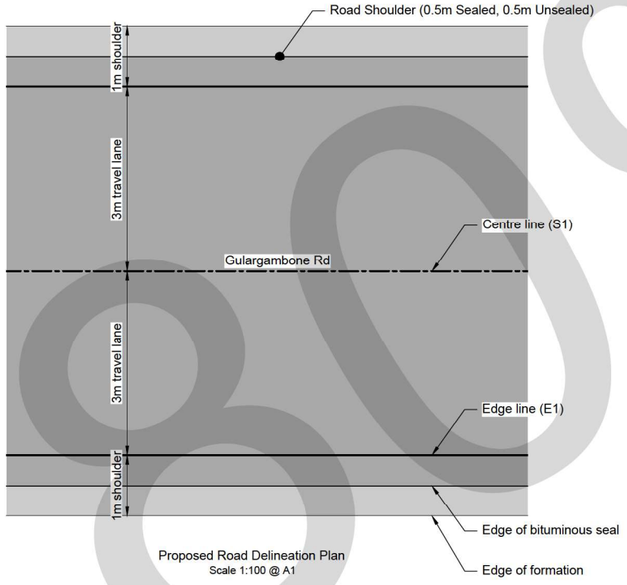
Figure 16.1: Typical Guide Post

Rigid Guide Post Detail
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

Curve radius	Spacing (m)	
	On outside curve	On inside curve
< 100	6	12
100 - 199	10	20
200 - 299	15	30
300 - 399	20	40
400 - 599	30	60
600 - 699	40	60
800 - 1999	60	60
1200 - 2000	90	90
> 2000 including straights	150	150

Table 16.1: Spacing of posts on curves (including spacing of delineators on guard fence)

Guide Post Spacing Guidlines
(Delineation: Section 16 - Guide posts and delineation of safety barriers)



Proposed Road Delineation Plan
Scale 1:100 @ A1

Legend:

- Design sealed road & edge of formation
- Design road centerline
- Design 1:3 road batter
- Approx location of existing drainage invert
- Existing fence
- 225.00 Major contour
- 225.25 Minor contour
- Proposed guide post
- Contour @ 0.25m intervals

Guide post size is indicative only to display proposed location.

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
A	16/01/2023	Original Issue	EMR

Client: Coonamble Shire Council

Project: Gulargambone - Site 6
Full Road Width Rehabilitation
Ch 0.55km to Ch 1.45km from Bourbah Street

Title: Proposed road delineation & signage plan

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
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Design	EMR	Scale	Various - refer plan
Drawn	EMR		
Checked	TC	Datum	
Approved	TC	Drafting File	11551_Site6_CC_Plan.dwg
Date	16/01/2023	Design File	
Job No.	11551	Dwg No.	S6-C08
		Issue	A

Locality Map

GULARGAMBONE ROAD - SITE 7

WIDENING AND SEALING

FROM CH 1.900 TO 2.800km
From Intersection with Bourbah Street

For: Coonamble Shire Council

ARDILL PAYNE
& Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT

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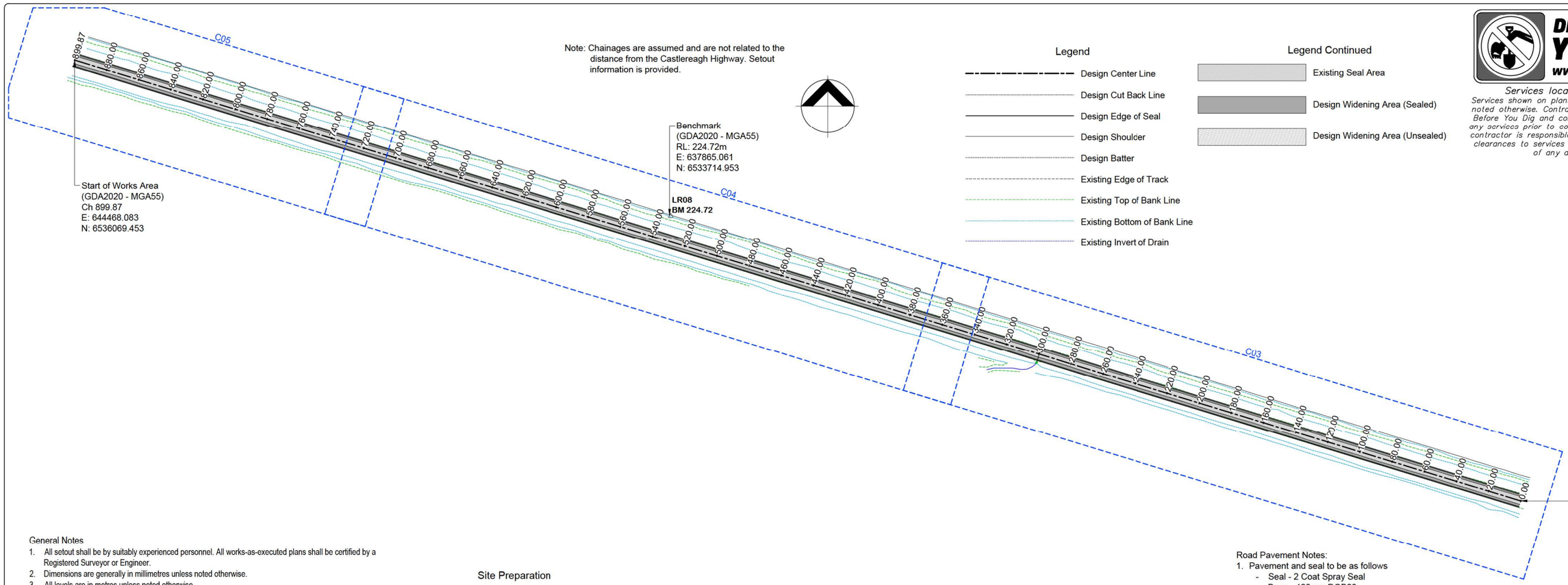
Drawing Schedule

Drawing	Sheet	Description
11551 - S7 - C01	1 of 9	Overall Site Layout Notes & Details
11551 - S7 - C02	2 of 9	Erosion & Sediment Control Layout Plan, Notes, & Details
11551 - S7 - C03	3 of 9	Layout Plan & Longitudinal Sections Ch 0.00 to Ch 360.00
11551 - S7 - C04	4 of 9	Layout Plan & Longitudinal Sections Ch 360.00 to Ch 720.00
11551 - S7 - C05	5 of 9	Layout Plan & Longitudinal Sections Ch 720.00 to Ch 899.87
11551 - S7 - C06	6 of 9	Road Widening Cross Sections Ch 0.00 to Ch 280.00
11551 - S7 - C07	7 of 9	Road Widening Cross Sections Ch 300.00 to Ch 580.00
11551 - S7 - C08	8 of 9	Road Widening Cross Sections Ch 600.00 to Ch 880.00
11551 - S7 - C09	9 of 9	Linemarking Layout Plan



Note: Chainages are assumed and are not related to the distance from the Castlereagh Highway. Setout information is provided.

Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain

Legend Continued

- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)

DIAL BEFORE YOU DIG www.1100.com.au

Services located in the area.

Services shown on plans are indicative only unless noted otherwise. Contractor to obtain current Dial Before You Dig and confirm location and level of any services prior to commencement of works. The contractor is responsible for maintaining safe work clearances to services and notifying the engineer of any discrepancies.

General Notes

1. All setout shall be by suitably experienced personnel. All works-as-executed plans shall be certified by a Registered Surveyor or Engineer.
2. Dimensions are generally in millimetres unless noted otherwise.
3. All levels are in metres unless noted otherwise.
4. All levels shown are finished surface unless noted otherwise.
5. Council inspection hold points of road works are required at the following construction stages:
   a. Box inspection of subgrade and proof roll.
   b. Inspection of select layers - proof roll.
   c. Inspection of sub base gravels and proof roll.
   d. Inspection of base gravels and proof roll prior to sealing.
   e. Any service crossings of road pavement.
6. Inspections are organised by contacting Council's Development Engineer. Please note 24hours notice of inspection is required.
7. Density testing is to be carried out at max.100m spacing or in accordance with Table 8.1 of AS 3798 - Guidelines on Earthworks for Commercial and Residential Development, whichever gives the greater frequency of testing.
   Compaction is to be to the following:
   - general filling to 98% standard compaction;
   - subgrade to 98% standard compaction;
   - sub-base gravels to 102% standard compaction;
   - base course gravels to 102% standard compaction;
8. Minimum cover to stormwater pipes shall be 450mm in landscape areas, and 600mm under road pavements, unless noted otherwise.
9. The Contractor is responsible for maintaining sufficient cover over stormwater and sewer mains during construction, and ensuring that trenches are correctly backfilled and compacted to eliminate damage caused by construction traffic.
10. General concrete works shall have the following properties:
    a. Class of concrete shall be normal.
    b. Maximum slump shall be 80mm.
    c. Maximum aggregate size shall be 20mm.
    d. Min 28 days concrete compressive strength shall be 25 Mpa including all kerbs u.n.o
    e. Concrete works shall conform to AS 3600.
11. Linemarking and signage shall confirm to AS 1742 Manual of Uniform Traffic Control Devices.
12. It is the responsibility of the Contractor to ensure that adequate erosion and sedimentation control devices are erected and maintained at all times during construction, and to the satisfaction of the Local Authority.
13. All traffic control during construction shall be in accordance with the RTA's Guidelines - Traffic Control at Work Sites and AS 1742.3 - 2002 Manual of Uniform Traffic Control Devices: Traffic Control Devices for Works on Roads.
14. All works shall be carried out in accordance with the Local Authorities Development Code and Austroads Standards.
15. It is the Contractor's responsibility to provide to the Surveyor any information necessary to prepare works-as-executed drawings for submission to the Local Authority. It will be necessary to liaise with the Surveyor to coordinate the location of some items prior to backfilling.

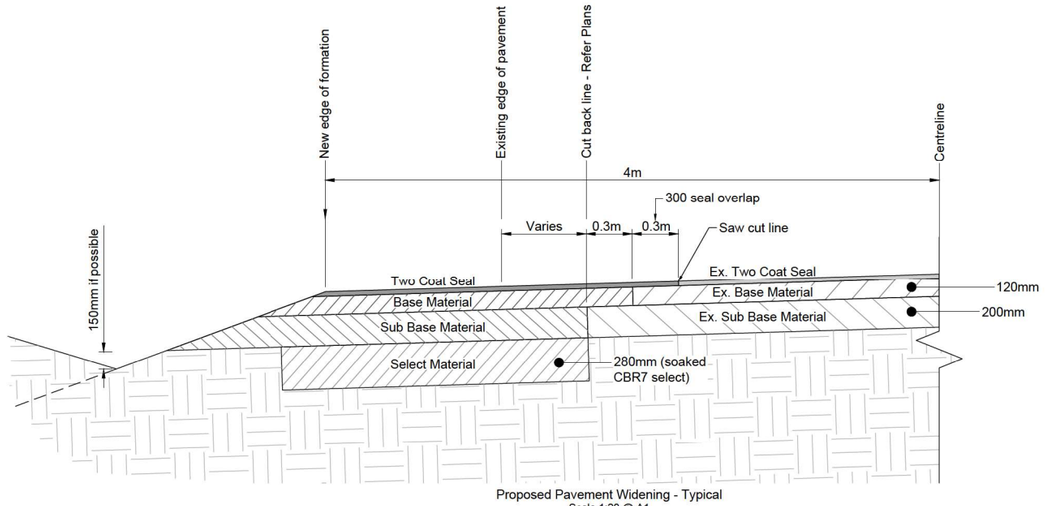
Site Preparation

The following scope of work is required as a minimum to prepare the site prior to filling:

- Prior to construction and placement of any fill, the proposed areas should be stripped to remove all vegetation, topsoil, uncontrolled fill, organic, root affected or other potentially deleterious material.
- Boxed-out excavations should be drained permanently to allow any infiltration from subsequent fill to escape the excavation profile.
- Where the ground slopes at more than 1V:10H (6deg), the ground profile should be benched in 300m vertical steps to create near-level platforms for filling. The platforms should be graded with a cross fall no stepper than 2% downslope to allow drainage to any infiltration to the fill and to prevent pooling of subsurface moisture.
- Following stripping, the exposed subgrade materials should be proof rolled in the presence of a suitably qualified and experienced Geotechnical Engineer to identify any wet or excessively deflecting material.
- Proof rolling should involve compacting the site with an 8-ton roller, trimming the rolled surface to level and clean finish. Where there are areas indicating excessive deflection then these may require over-excavation and backfilling with an approved select material.
- Re-use of Site Material: Where feasible, site won material is to be trucked directly to the placement site to avoid double handling. Site won material is suitable for general fill material. However, engineered fill for permanent works may require a coarser particle size blend to comply with specification grading requirements. Excavated material used during construction are subject to further testing to confirm specification and design acceptability requirements.
- Bulk Earthworks: Subgrade preparation will generally only require removal of topsoil and compaction to 98% relative to standard compaction of the excavated subgrade material. Slope angles of 1V:1H and 1V:2V is considered appropriate for compacted embankment fill materials in the temporary and permanent conditions respectively.
- Trafficability: Note, Clay subgrades at the site have a low wet strength and poor subgrade strength. The site soils would be trafficable during dry periods. Some desiccation of exposed surfaces can be expected and large quantities of dust will be generated during dry periods under traffic. The soils will be soft and difficult to traverse following wet weather or inundation. Drying out these soils could take several days or weeks before being able to accommodate construction traffic.

Road Pavement Notes:

1. Pavement and seal to be as follows
   - Seal - 2 Coat Spray Seal
   - Base - 120mm DGB20
   - Subbase - 200mm DGS20/40
   - Select Material - 280mm (Min 7% CBR)
2. Pavement design subject to council design and subgrade testing.



Proposed Pavement Widening - Typical
Scale 1:20 @ A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	20/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: GULARGAMBONE ROAD - SITE 7
WIDENING AND SEALING
FROM CH 1.900 TO 2.800km From Intersection With Bourbah Street

Title: Overall Site Layout Notes & Details

ARDILL PAYNE
& P a r t n e r s
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
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GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH
Drawn	AH
Checked	TC
Approved	TC
Date	20/01/2023
Job No.	11551
Scale	1:2000 @ A1, 1:4000 @ A3
Datum	AHD
Drafting File	11551_Stage-7_Civils_ISSB.dwg
Design File	#
Dwg No.	S7-C01
Issue	B

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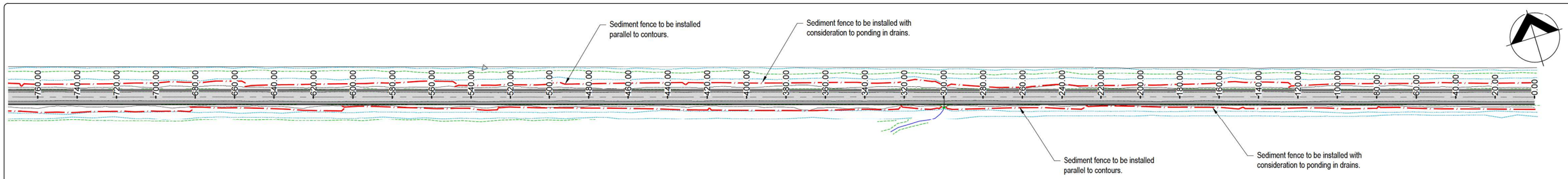
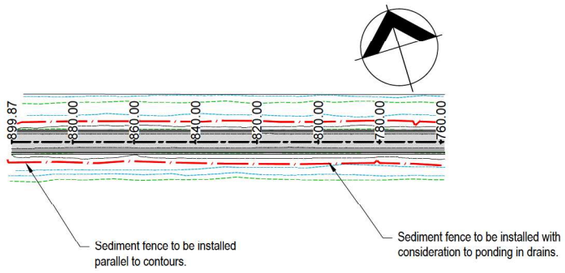




Legend

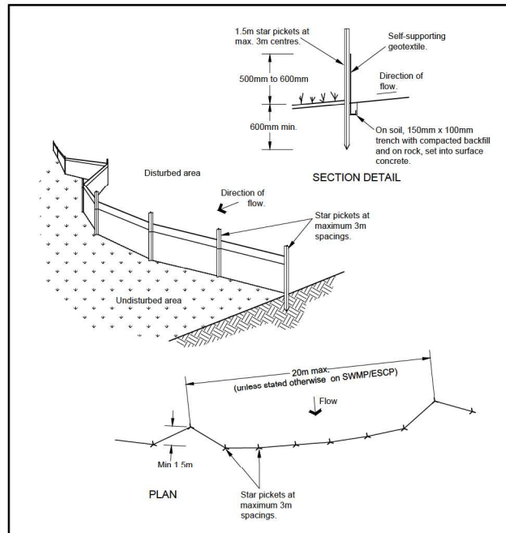
- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain

Legend Continued

- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)
- Sediment Fence

Notes - Erosion and Sedimentation Control

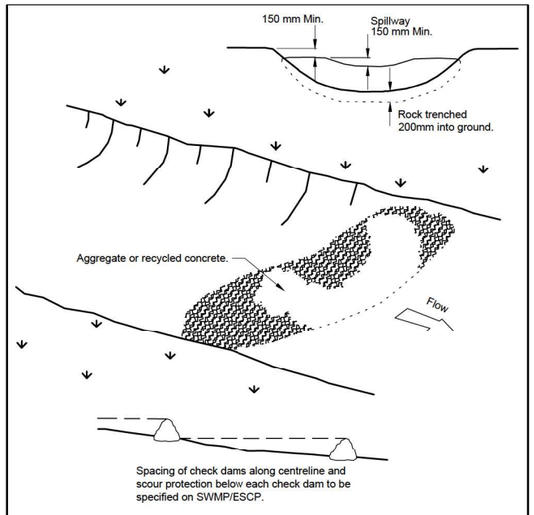
1. All erosion and sedimentation controls shall be in accordance with the guidelines and specifications as detailed in Landcom's ' Managing Urban Stormwater: Soils and Construction - Volume 1', 2004.
2. Construction shall be phased so that land disturbance is confined to areas of workable size. This will limit the duration disturbed areas are exposed to erosion. Stabilisation shall be applied to the first disturbed area before the next section is opened up. Any disturbed areas that will not be stabilised within 30 days shall be revegetated and any that fail to establish shall be resown.
3. Topsoil stockpiles are to be located away from any natural drainage watercourse and shall have hay bales and/or sediment control fences placed around them to act as sedimentation controls.
4. Temporary earthen diversion drains shall be constructed to divert waters away from all disturbed areas and towards hay bale check dams located in natural drainage depressions.
5. Temporary sediment detention barriers shall be placed around outlet headwalls and drainage discharge points as detailed and permanent energy dissipaters shall be installed at all outlets to limit velocities and thus the potential for scouring. With all drainage outlets, water shall be released in a non-erodible manner.
6. Temporary sediment traps shall be constructed at drainage inlet points as detailed.
7. Temporary sediment fencing shall be installed along the downslope edge of disturbed areas and fill batters.
8. Sediment and debris shall be removed from detention barriers when they are 60% full. All sediment removed shall be disposed of as directed by the Supervising Engineer.
9. Upon completion of shaping and drainage works, batters and drainage lines shall be topsoiled to a minimum depth of 100mm with stockpiled material and any areas with insufficient grass/topsoil mix shall be seeded and mulched with any failed areas resown or revegetated as directed by the Supervising Engineer. A 400mm wide turf strip shall be installed next to all kerb, or other concrete surfaces, to stabilise the interface between concrete surfaces and topsoiled areas.
10. Where there is a footpath in the verge, turf is required between the back of the kerb and the footpath as well as a single turf strip along the property side of the footpath with the remainder of the verge finished as either turf or grass seed.
11. Temporary erosion and sedimentation controls are to be installed during the construction phase and shall be retained and maintained while disturbed areas remain or are contributing sediment to the stormwater system. No device shall be removed until directed by the Supervising Engineer.
12. Wind erosion on the site shall be managed by limiting traffic on disturbed areas, utilising water trucks, covering stockpiles with anchored geofabric, and providing dust covers on trucks and dumpers. If wind speed exceeds 10m/s, increase watering or cease dust generating activities until dust controls are operating effectively. Other measures may be employed as outlined in the Landcom manual.



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 of posts with wire ties or as recommended by geotextile manufacturer.
6. Join sections of fabric at support post with a 150mm overlap.

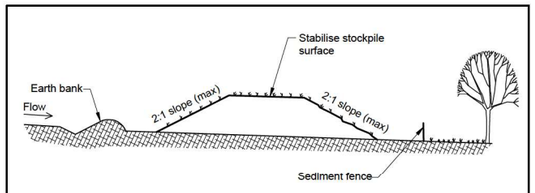
SEDIMENT FENCE



Construction Notes:

1. Trench structure 200mm into ground surface wherever the stucture contacts the gully base. Fill trenches to 100mm above ground surface to reduce risk of undercutting.
2. Ensure height of spillway is less than 1m above the gully floor.
3. Space checks so the toe of the upstream dam is level with the spillway of the next downstream dam.

Rock Check Dam



Construction Notes

1. Locate stockpile at least 5 metres 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 less than 2 metres in height.
4. Rehabilitate 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 2 metres downslope of stockpile.

STOCKPILES

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	20/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: GULARGAMBONE ROAD - SITE 7
WIDENING AND SEALING
FROM CH 1.900 TO 2.800km From Intersection With Bourbah Street

Title: Erosion & Sediment Control Layout Plan, Notes, & Details

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Design	AH	Scale	Various - refer plan
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-7_Civils_ISSB.dwg
Date	20/01/2023	Design File	#
Job No.	11551	Dwg No.	S7-C02
		Issue	B

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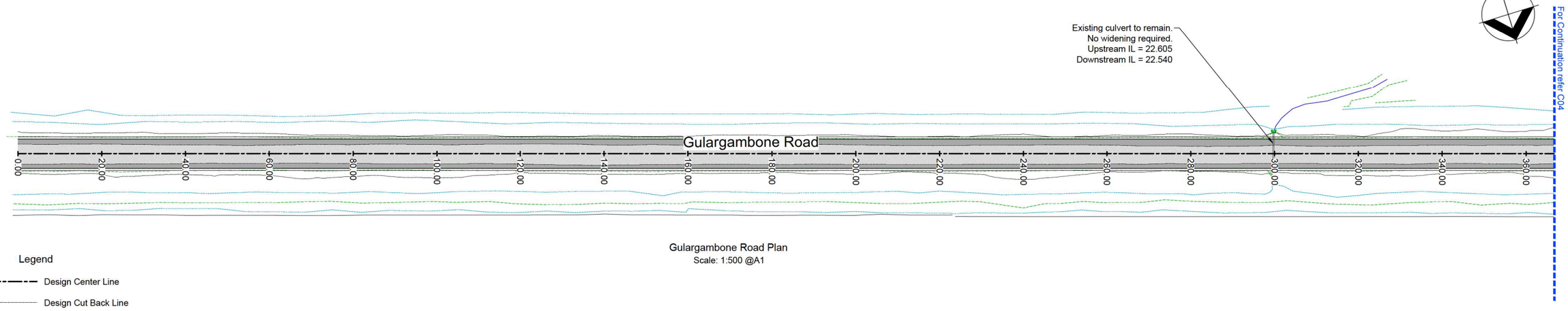
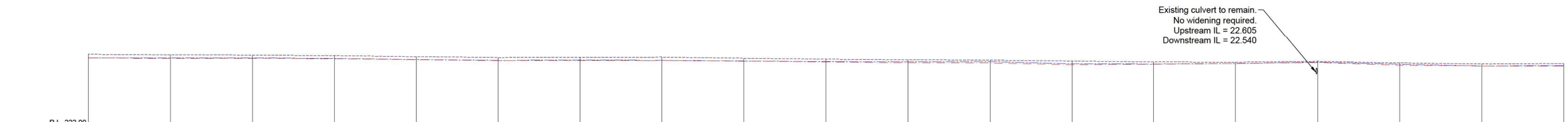


Gulargambone Road Plan
Scale: 1:500 @A1

Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain
- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)



R.L. 222.00

CHAINAGE	DESIGN REB SURFACE	DESIGN LEB SURFACE	EXISTING CENTER LINE SURFACE
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20.00	225.32	225.34	225.50
40.00	225.33	225.35	225.48
60.00	225.31	225.32	225.46
80.00	225.26	225.27	225.41
100.00	225.22	225.23	225.37
120.00	225.23	225.24	225.38
140.00	225.23	225.23	225.39
160.00	225.20	225.19	225.33
180.00	225.15	225.17	225.29
200.00	225.11	225.16	225.26
220.00	225.10	225.17	225.24
240.00	225.02	225.06	225.19
260.00	225.05	225.04	225.15
280.00	225.08	225.07	225.14
300.00	225.13	225.14	225.18
320.00	224.99	225.04	225.10
340.00	224.96	224.95	225.05
360.00	224.96	224.98	225.07

ALIGNMENT DETAILS: L=899.87, B=286°56'24"

Gulargambone Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:100 @A1

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Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	20/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: GULARGAMBONE ROAD - SITE 7
WIDENING AND SEALING
FROM CH 1.900 TO 2.800km From Intersection With Bourbah Street

Title: Layout Plan & Longitudinal Section Ch 0.00 to Ch 360.00

ARDILL PAYNE
& P a r t n e r s
ENGINEERS PLANNERS SURVEYORS
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Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-7_Civils_ISSB.dwg
Date	20/01/2023	Design File	#
Job No.	11551	Dwg No.	S7-C03
		Issue	B

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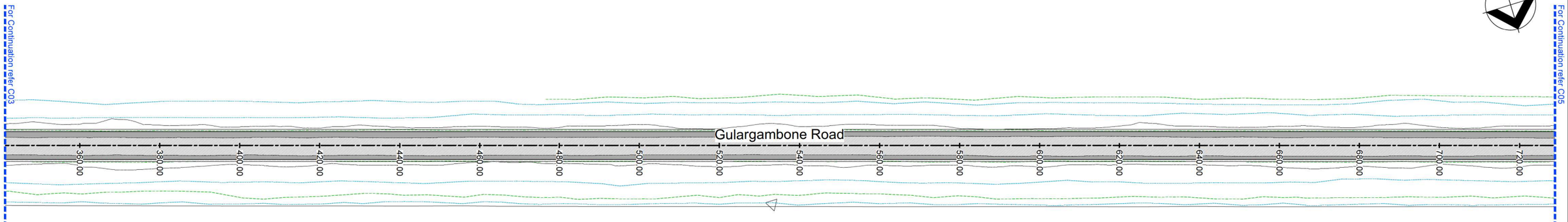
For Continuation refer C03

For Continuation refer C05



Gulargambone Road Plan
Scale: 1:500 @A1

Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain
- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)

R.L. 222.00

DESIGN REB SURFACE	224.96	224.93	224.98	224.98	224.99	225.04	224.98	224.93	224.88	224.87	224.79	224.73	224.69	224.71	224.67	224.58	224.56	224.57	224.53
DESIGN LEB SURFACE	224.98	225.00	225.06	225.06	225.03	225.03	225.00	224.95	224.93	224.84	224.81	224.81	224.77	224.68	224.63	224.60	224.59	224.59	224.57
EXISTING CENTER LINE SURFACE	225.07	225.09	225.13	225.12	225.12	225.14	225.11	225.06	225.01	224.96	224.93	224.89	224.85	224.83	224.76	224.72	224.68	224.70	224.69
CHAINAGE	360.00	380.00	400.00	420.00	440.00	460.00	480.00	500.00	520.00	540.00	560.00	580.00	600.00	620.00	640.00	660.00	680.00	700.00	720.00
ALIGNMENT DETAILS	L=899.87 B=286°56'24"																		

Gulargambone Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:100 @A1

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Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	20/01/2023	80% Issue for Review	TC

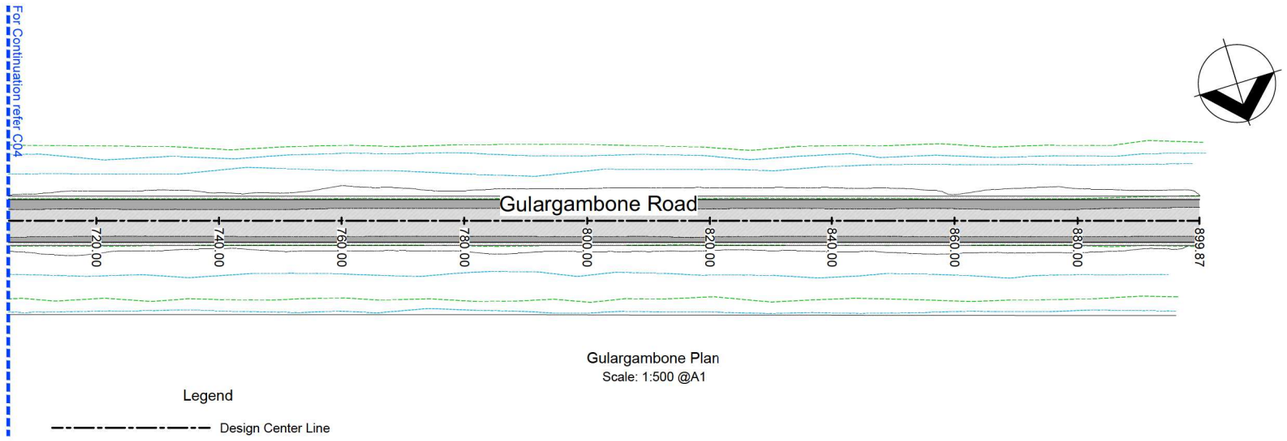
Client: Coonamble Shire Council

Project: GULARGAMBONE ROAD - SITE 7
WIDENING AND SEALING
FROM CH 1.900 TO 2.800km From Intersection With Bourbah Street

Title: Layout Plan & Longitudinal Section Ch 360.00 to Ch 720.00

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
GUNNEDAH 285 Conadilly Street Ph. 02 6742 9955
A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH	Scale	Various - refer plan
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-7_Civils_ISSB.dwg
Date	20/01/2023	Design File	#
Job No.	11551	Dwg No.	S7-C04
		Issue	B



Gulargambone Plan
Scale: 1:500 @A1

Legend

- Design Center Line
- Design Cut Back Line
- Design Edge of Seal
- Design Shoulder
- Design Batter
- Existing Edge of Track
- Existing Top of Bank Line
- Existing Bottom of Bank Line
- Existing Invert of Drain
- Existing Seal Area
- Design Widening Area (Sealed)
- Design Widening Area (Unsealed)

R.L. 222.00

DESIGN REB SURFACE	224.53	224.56	224.54	224.57	224.57	224.59	224.57	224.56	224.57	224.60
DESIGN LEB SURFACE	224.57	224.60	224.52	224.53	224.54	224.54	224.52	224.55	224.46	224.48
EXISTING CENTER LINE SURFACE	224.69	224.69	224.68	224.69	224.71	224.69	224.69	224.65	224.63	224.56
CHAINAGE	720.00	740.00	760.00	780.00	800.00	820.00	840.00	860.00	880.00	899.87
ALIGNMENT DETAILS	L=899.87 B=286°56'24"									

Gulargambone Road Longitudinal Section
Scales: Horizontal 1:500 Vertical 1:100 @A1

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

0 100 Table of millimetres 200 300 400 500 600 700 780

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	20/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: GULARGAMBONE ROAD - SITE 7
WIDENING AND SEALING
FROM CH 1.900 TO 2.800km From Intersection With Bourbah Street

Title: Layout Plan & Longitudinal Section Ch 720.00 to Ch 899.87

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
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A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

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Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-7_Civils_ISSB.dwg
Date	20/01/2023	Design File	#
Job No.	11551	Dwg No.	S7-C05
		Issue	B

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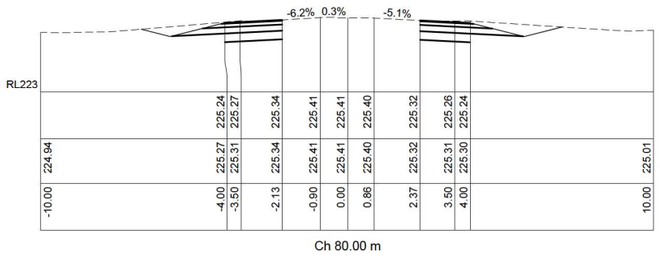
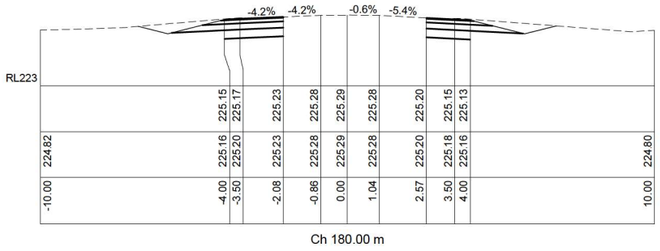


Ch 80.00 m



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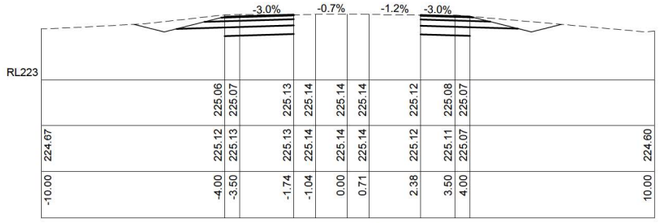

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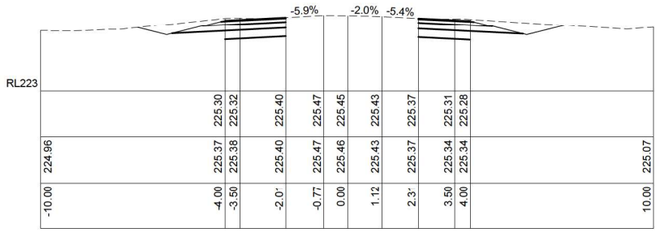

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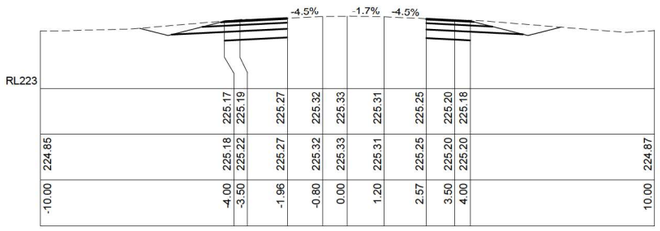

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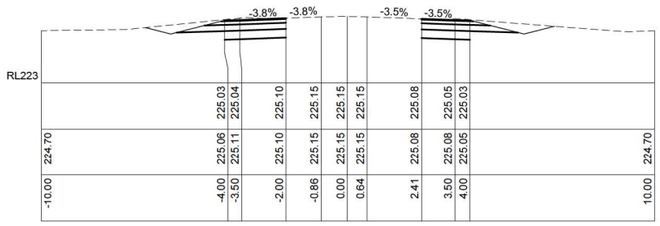

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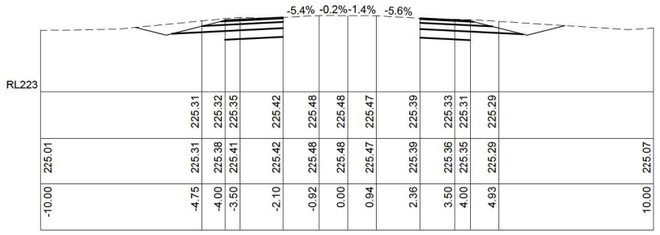

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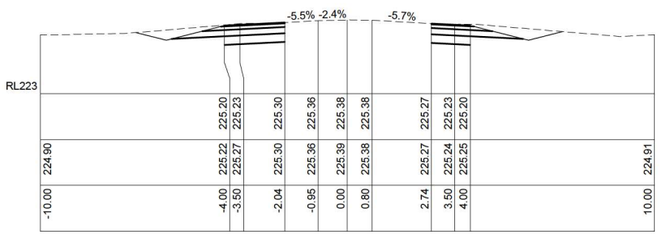

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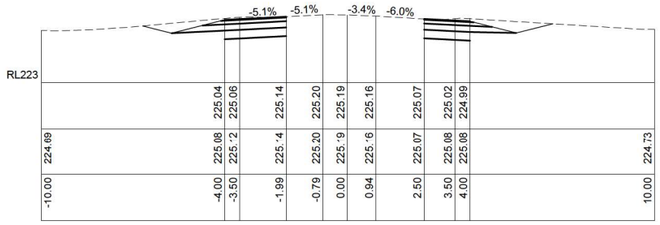

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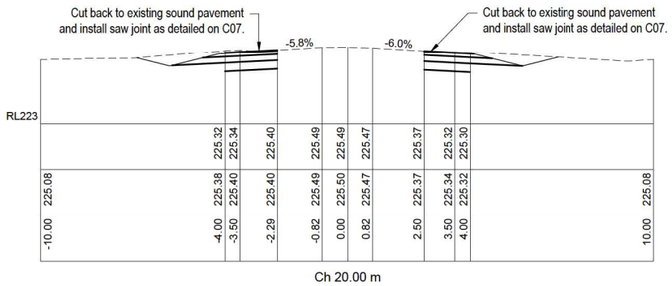

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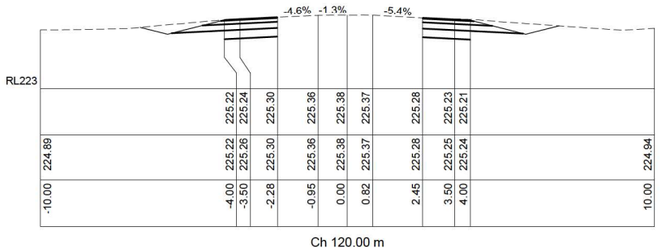

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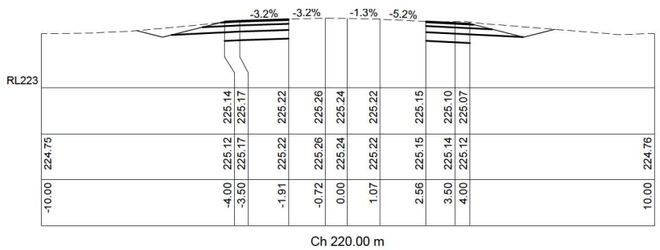

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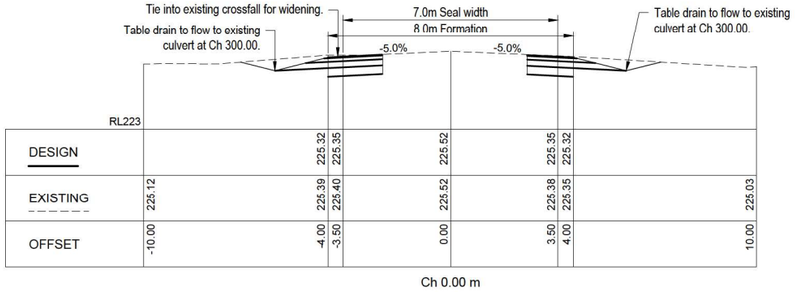

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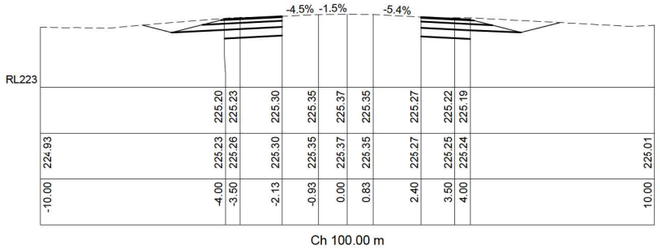

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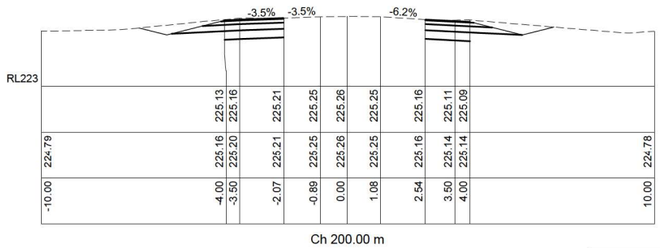

Ch 200.00 m

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Client: Coonamble Shire Council

Project: GULARGAMBONE ROAD - SITE 7
WIDENING AND SEALING
FROM CH 1.900 TO 2.800km From Intersection With Bourbah Street

Title: Road Widening Cross Sections Ch 0.00 to Ch 280.00

ARDILL PAYNE
& P a r t n e r s
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
BALLINA 45 River Street Ph. 02 6686 3280
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A.B.N. 51 808 558 977 e-mail: info@ardillpayne.com.au

Design	AH	Scale	Not to scale
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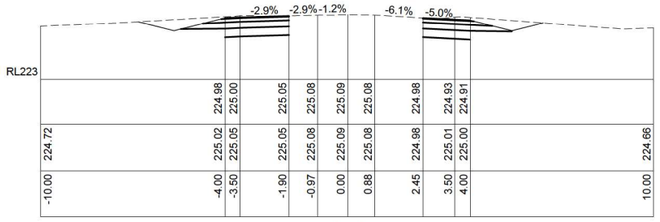
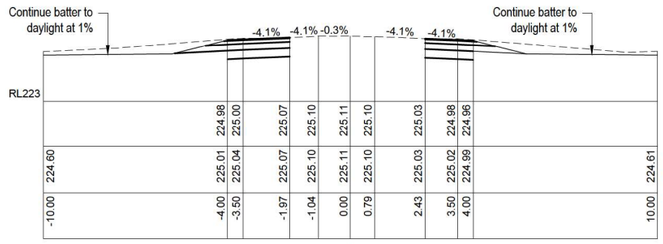
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-7_Civils_ISSB.dwg
Date	20/01/2023	Design File	#
Job No.	11551	Dwg No.	S7-C06
		Issue	B



Ch 380.00 m



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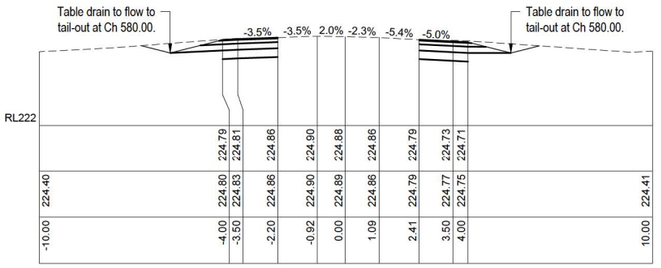

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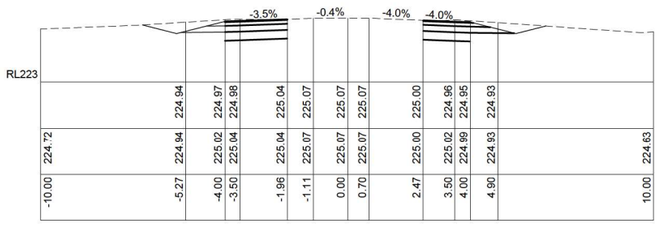

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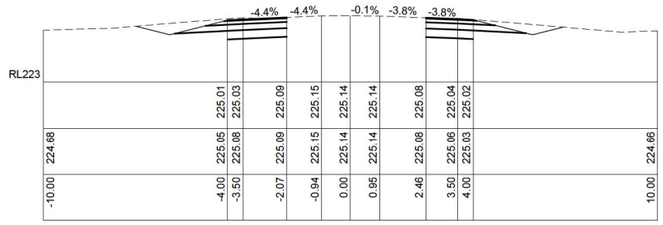

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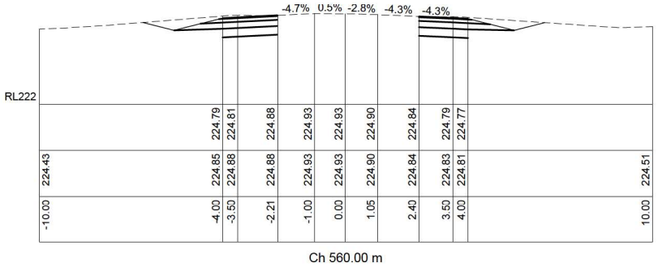

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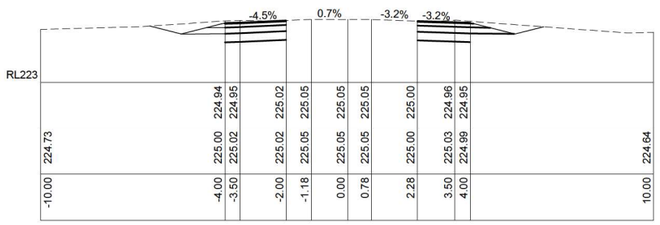

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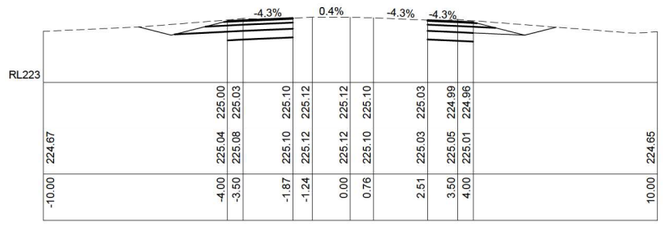

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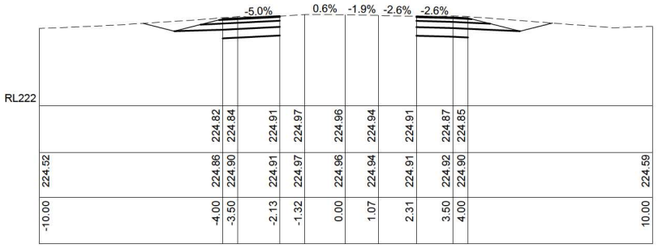

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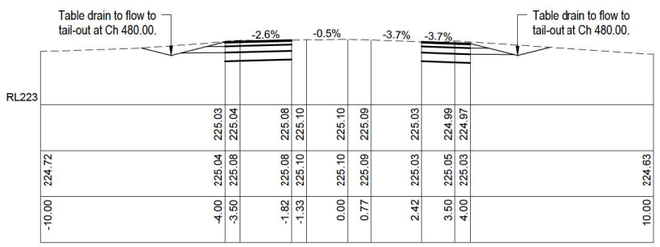

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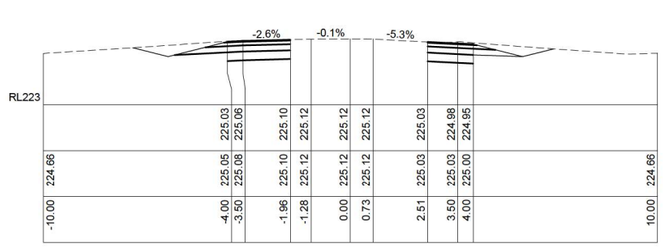

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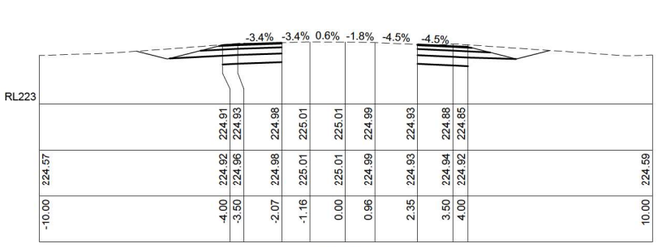

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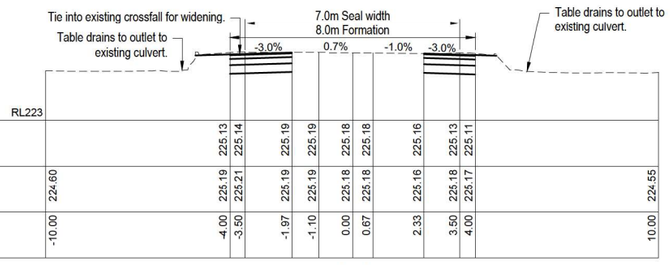

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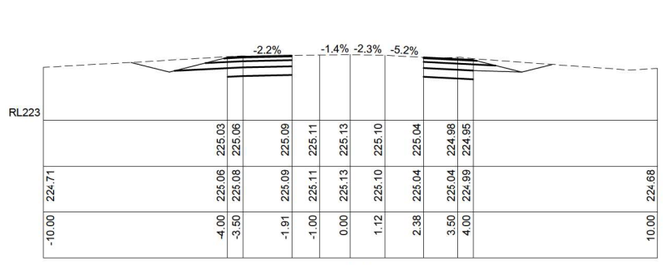

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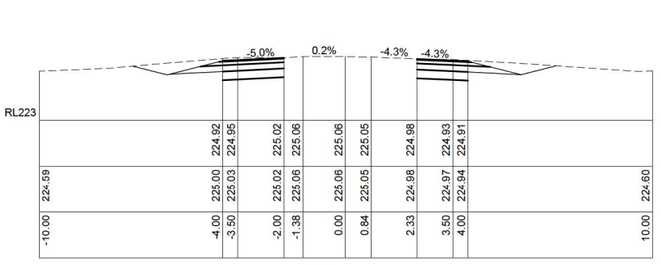

Ch 500.00 m

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WIDENING AND SEALING
FROM CH 1.900 TO 2.800km From Intersection With Bourbah Street

Title: Road Widening Cross Sections Ch 300.00 to Ch 580.00

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Design	AH	Scale	Not to scale
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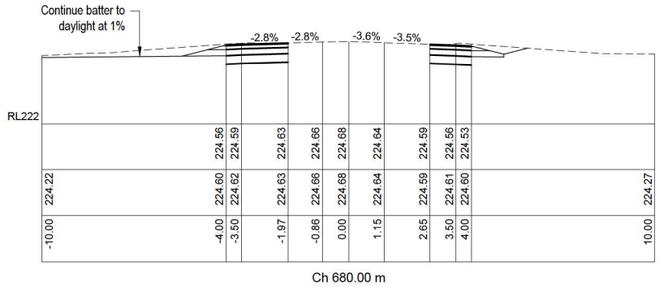
Date	20/01/2023	Design File	#
Job No.	11551	Dwg No.	S7-C07
		Issue	B



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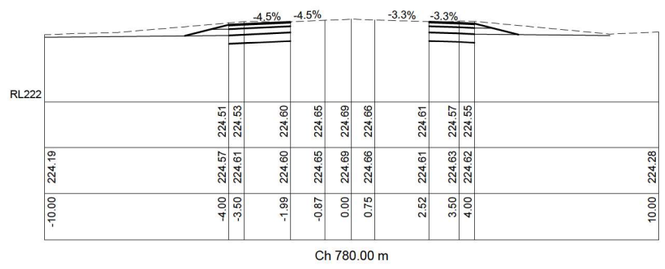

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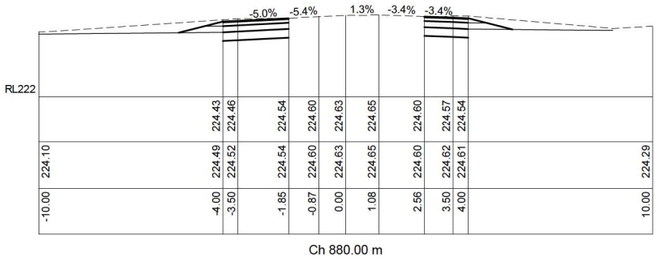

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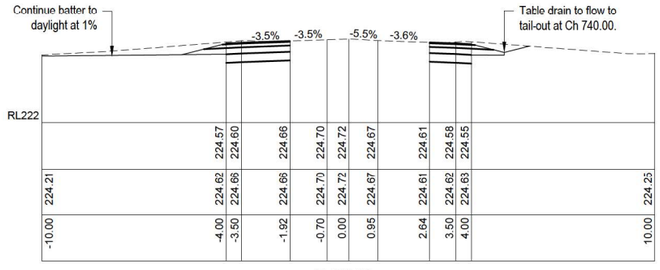

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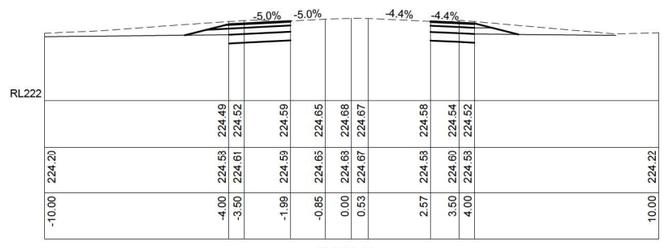

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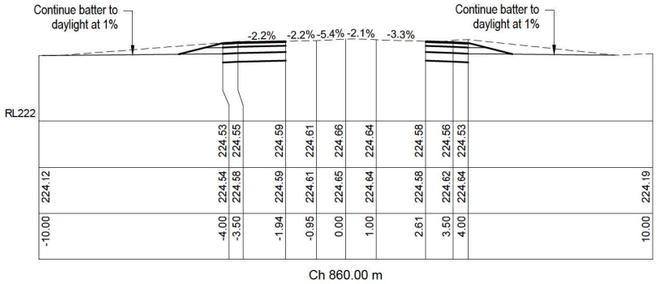

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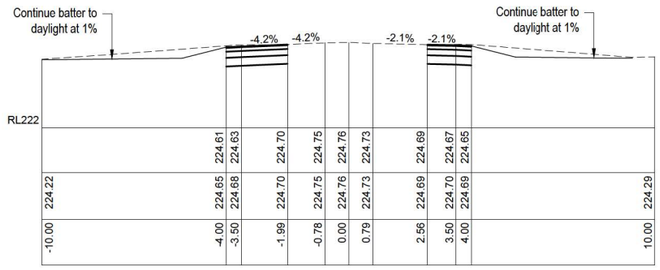

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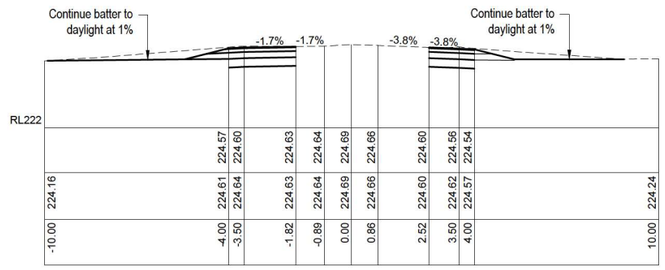

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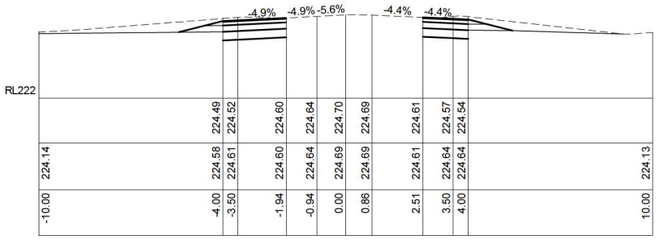

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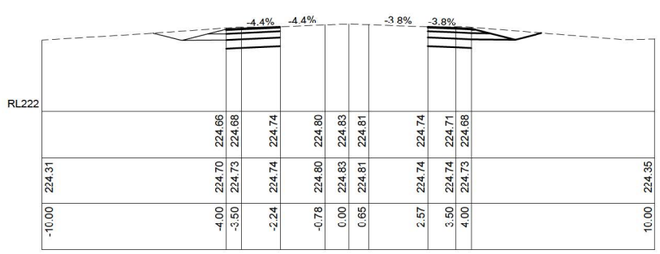

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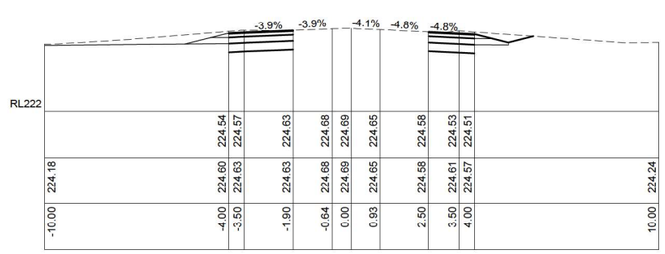

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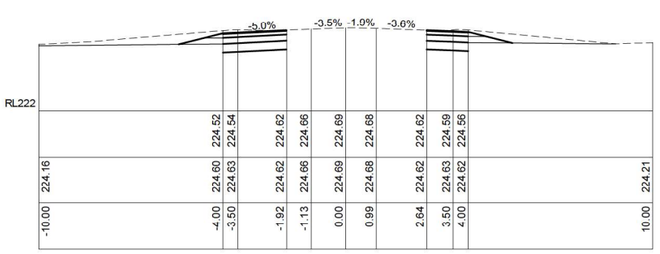

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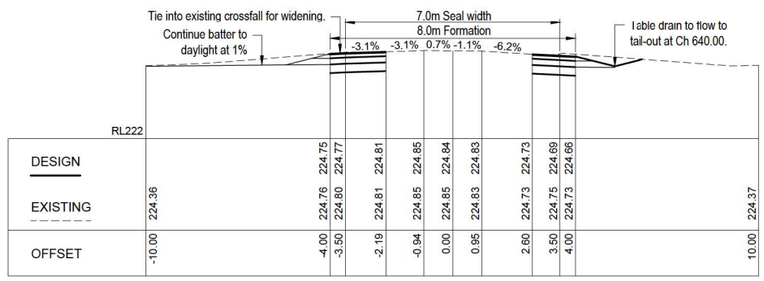

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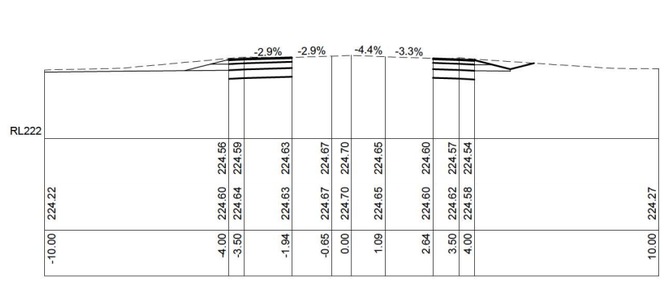

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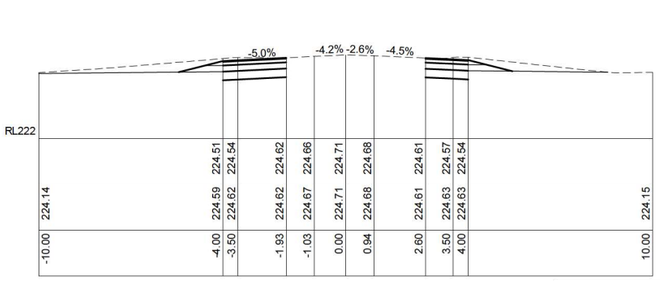

Ch 800.00 m

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Client: Coonamble Shire Council

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WIDENING AND SEALING
FROM CH 1.900 TO 2.800km From Intersection With Bourbah Street

Title: Road Widening Cross Sections Ch 600.00 to Ch 880.00

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ENVIRONMENTAL PROJECT MANAGEMENT
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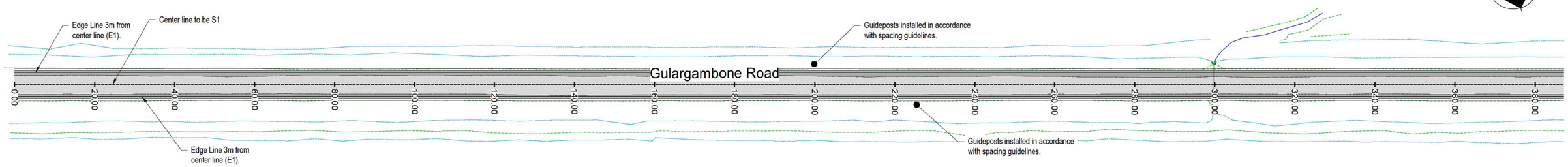
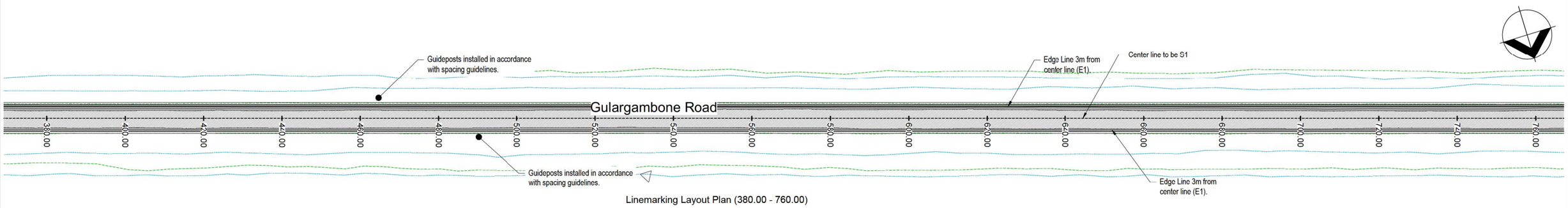
Design	AH	Scale	Not to scale
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-7_Civils_ISSB.dwg
Date	20/01/2023	Design File	#
Job No.	11551	Dwg No.	S7-C08
		Issue	B



Linemarking Layout Plan (0.00 - 380.00)
Scale: 1:500 @A1



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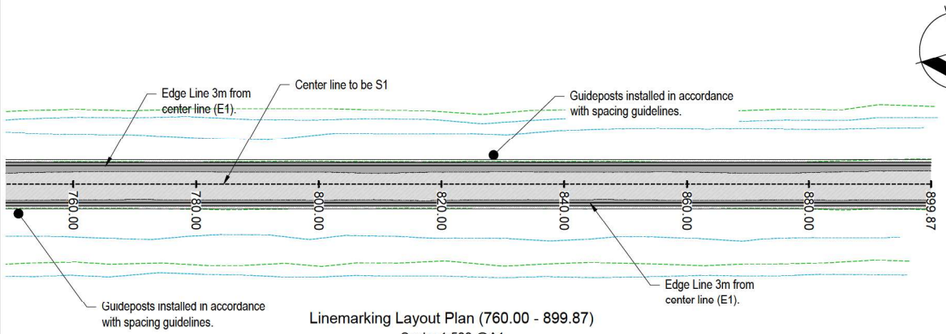
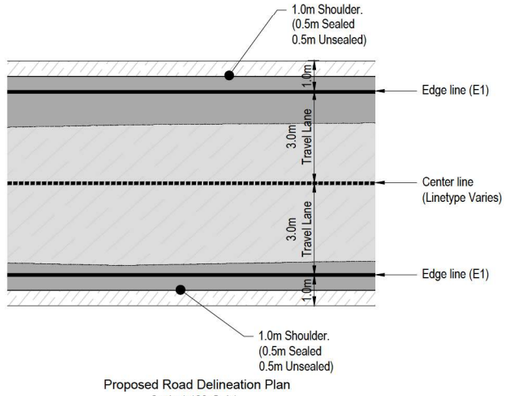


Linemarking Layout Plan (760.00 - 899.87)
Scale: 1:500 @A1

Linetype	Use	Dimensions
E1	Left hand edge line on general purpose road	0.15m
S1	Dividing (seperation) line on 2 lane road	0.10m
BS	Dividing (Barrier) lines overtaking in one direction	0.10m 0.10m 0.10m
BB	Dividing (Barrier) lines	0.10m 0.10m 0.10m



Proposed Road Delineation Plan
Scale 1:100 @ A1

Curve radius	Spacing (m)	
	On outside curve	On inside curve
< 100	6	12
100 - 199	10	20
200 - 299	15	30
300 - 399	20	40
400 - 599	30	60
600 - 699	40	60
800 - 1999	60	60
1200 - 2000	90	90
> 2000 including straights	150	150

Table 16.1: Spacing of posts on curves (including spacing of delineators on guard fence)

Guide Post Spacing Guidlines
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

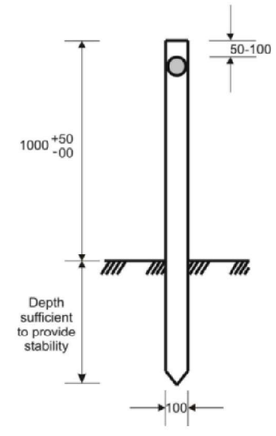


Figure 16.1: Typical Guide Post

Rigid Guide Post Detail
(Delineation: Section 16 - Guide posts and delineation of safety barriers)

This plan is NOT to be used for construction purposes unless it carries the approval stamp of the local authority.

Issue	Date	Description	App'd
B	16/02/2023	100% Issue for Construction	AH
A	20/01/2023	80% Issue for Review	TC

Client: Coonamble Shire Council

Project: GULARGAMBONE ROAD - SITE 7
WIDENING AND SEALING
FROM CH 1.900 TO 2.800km From Intersection With Bourbah Street

Title: Linemarking Layout Plan

ARDILL PAYNE & Partners
ENGINEERS PLANNERS SURVEYORS
ENVIRONMENTAL PROJECT MANAGEMENT
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Design	AH	Scale	Various - refer plan
Drawn	AH		
Checked	TC	Datum	AHD
Approved	TC	Drafting File	11551_Stage-7_Civils_ISSB.dwg
Date	20/01/2023	Design File	#
Job No.	11551	Dwg No.	S7-C09
		Issue	B

S:\01 Jobs\11500-11599\11551 Civil_Roads_Gulargambone_CSCV\05 Drawings\01 Civil\01 Current\SITE 7\11551_Stage-7_Civils_ISSB.dwg, 16/02/2023 11:09:40 AM

Box Ridge Rd and Gulargambone Rd

Geotechnical Investigation

Geotechnical Investigation Report

Job No.: B21674

Submitted To:

Ardill Payne and Partners

45 River Street

Ballina NSW 2478

Attn: Tony Cromack

Report No.: B21674

Ardill Payne and Partners – Box Ridge Rd and Gulargambone Rd

REVISION CONTROL

Revision	Date	Details	Prepared By	Reviewed By
00	03/02/23	Draft	D. O'Donnell	D. Clarkson

MACQUARIE GEOTECH

Contents

Figures

Tables

Appendices

1 INTRODUCTION

At the request Ardill Payne and Partners, Macquarie Geotechnical (MG) has carried out a geotechnical investigation for the widening and rehabilitation including drainage works of sections of Box Ridge Road and Gulargambone Road, Gulargambone, NSW.

Table 1 below provides a summary of the road locations to be investigated.

Table 1: Summary of Road Locations

Location	Description
SR87 Box Ridge Road	Rehabilitation & Culvert Replacement: Full width rehabilitation CH: 2.200 – 3.500km (1300m) & Culvert Replacement (x 2) from intersection with Castlereagh Hwy.
SR87 Box Ridge Road	Widening and sealing: Shoulder Widening and Full Width Reseal/seal CH: 2.000 – 2.200km (200m) from intersection with Castlereagh Hwy.
SR87 Box Ridge Road	Drainage works: Culvert Extension & Headwall CH: 4.05 – 4.06km (10m) from intersection with Castlereagh Hwy.
SR87 Box Ridge Road	Widening and sealing: Shoulder widening RHS (Southern Lane) CH: 5.100 – 6.300km (1200m) from intersection with Castlereagh Hwy.
SR87 Box Ridge Road	Rehabilitation: Full width rehab CH: 13.100 – 13.670km (570m) from intersection with Castlereagh Hwy.
SR19 Gulargambone Road	Rehabilitation: Full Width Rehab CH: 0.0550 – 1.450km (900m) from intersection with Bourbah Street, Gulargambone.
SR19 Gulargambone Road	Widening and sealing: Shoulder widening LHS & RHS CH: 1.900 - 2.800km (900m) from intersection with Bourbah Street, Gulargambone.

The comments and opinions expressed in this report are based on the ground conditions encountered during the site work and on the results of tests carried out in the field and in the laboratory. There may, however, be special conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report.

2 SCOPE OF INVESTIGATION

Undertake a desk study of the site to confirm the likely geological conditions of the site and to develop a geological model for the site.

Undertake Dial Before You Dig (DBYD) Search.

Mobilisation of one drill rig. Drilling, logging and sampling of twenty-one boreholes as per Table 2 below. In-situ testing comprised of Dynamic Cone Penetrometer (DCP) testing at each borehole.

Table 2: Borehole Scope

Hole ID	Eastings	Northings	Depth (m)	Area
BH01	639889.0	6533064.2	1.0	SR19 Gulargambone Road 0.055 – 1.45km
BH02	639842.7	6533280.1	1.0	SR19 Gulargambone Road 0.055 – 1.45km
BH03	639677.2	6533400.1	1.0	SR19 Gulargambone Road 0.055 – 1.45km
BH04	639373.5	6533397.1	1.0	SR19 Gulargambone Road 0.055 – 1.45km
BH05	638816.7	6533410.2	1.0	SR19 Gulargambone Road 1.90 - 2.80km
BH06	638596.8	6533474.3	1.0	SR19 Gulargambone Road 1.90 - 2.80km
BH07	638312.4	6533563.4	1.0	SR19 Gulargambone Road 1.90 - 2.80km
BH08	638059.1	6533637.9	1.0	SR19 Gulargambone Road 1.90 - 2.80km
BH09	642093.5	6534161.1	1.0	SR87 Box Ridge Road 2.00 – 2.20km
BH10	642233.0	6534265.7	1.0	SR87 Box Ridge Road 2.00 – 2.20km
BH11	642313.8	6534314.4	3.0	SR87 Box Ridge Road Culvert Replacement 2.20 – 3.50km
BH12	642351.9	6534349.7	1.0	SR87 Box Ridge Road 2.20 – 3.50km
BH13	642639.7	6534557.3	1.0	SR87 Box Ridge Road 2.20 – 3.50km
BH14	642981.5	6534807.2	1.0	SR87 Box Ridge Road 2.20 – 3.50km
BH15	643202.6	6534959.8	3.0	SR87 Box Ridge Road Culvert Replacement 2.20 – 3.50km
BH16	643716.1	6535384.9	3.0	SR87 Box Ridge Road Culvert Replacement 4.05 – 4.06km
BH17	644500.5	6536087.0	1.0	SR87 Box Ridge Road 5.10 – 6.30km
BH18	644795.5	6536262.9	1.0	SR87 Box Ridge Road 5.10 – 6.30km
BH19	645148.1	6536471.1	1.0	SR87 Box Ridge Road 5.10 – 6.30km
BH20	652042.2	6537993.3	1.0	SR87 Box Ridge Road 13.10 – 13.67km
BH21	652528.8	6538074.5	1.0	SR87 Box Ridge Road 13.10 – 13.67km

Samples were taken at regular intervals and at every change of strata to allow for laboratory testing and returned to our NATA accredited laboratory in Dubbo, NSW. Laboratory testing comprised the following:

- California Bearing Ratio.
- Atterberg Limits and Linear Shrinkage.
- Particle Size Distribution.

2.1 Site Description

The project is located along two local roads within the Coonamble Shire Council area. Boreholes BH01 to BH08 are located at two sections of Gulargambone Road, 0.055 to 2.80km from the intersection of the Castlereagh Highway. Boreholes BH09 to BH21 are located at five sections of Box Ridge Road, 2.00 to 13.67km from the intersection of the Castlereagh Highway.

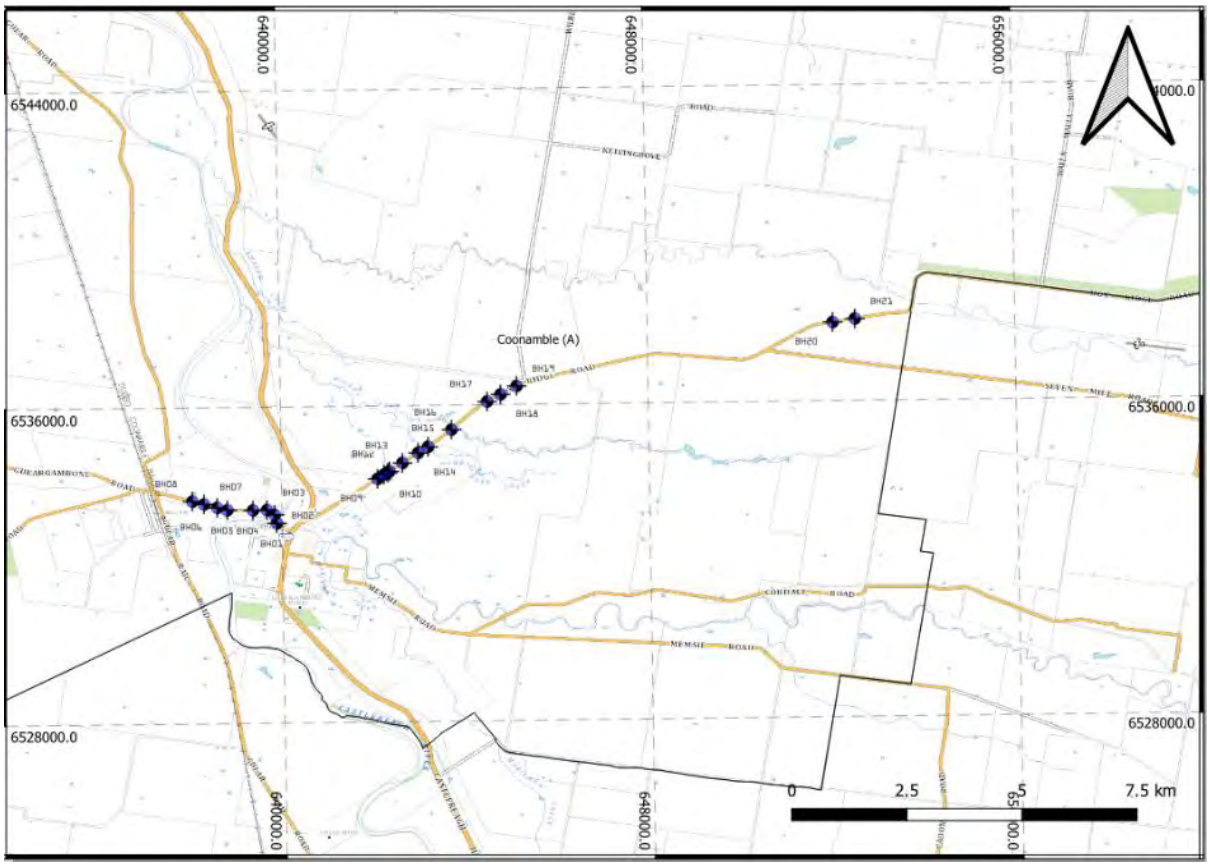

Figure 1: Site Location

2.2 Desk Study

A desk study was undertaken using readily available geological and geotechnical information and included the following:

- NSW Seamless Geology.
- ASRIS/CSIRO.
- Google Earth.
- NSW Department of Primary Industries – Groundwater Bore Data.
- Naturally Occurring Asbestos Hazard Maps.
- ESpade.

2.3 Regional Geology

The Seamless Geological map overlay is shown in Figures 2 and 3 below:

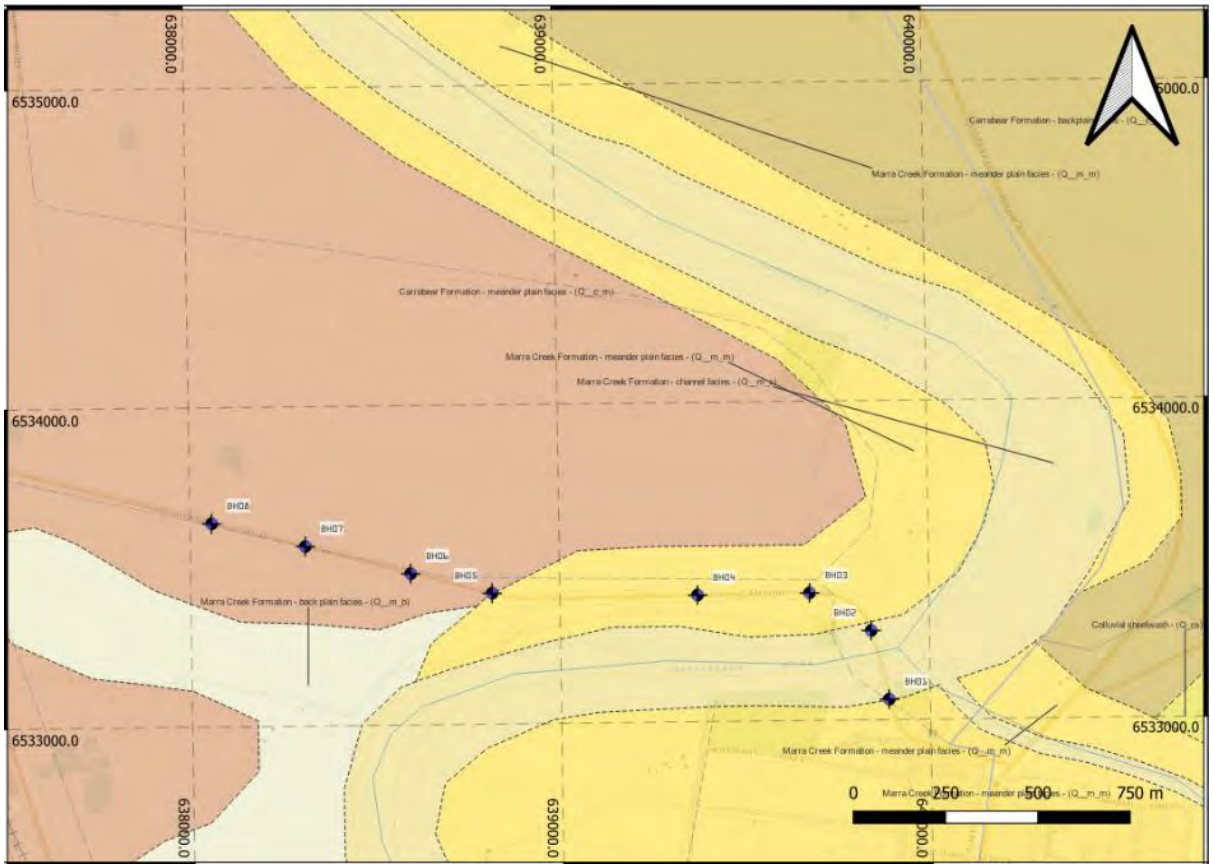

Figure 2: Gulargambone Road Seamless map overlay

With reference to Seamless Geological map, the site is underlain by the following:

Table 3: Summary of Geology – Gulargambone Road

Geological Symbol	Unit Name	Lithology
Qmc	Marra Creek Formation – channel facies	Unconsolidated pale to dark grey, in places pale brown-grey, silty clay. Some channels are lined with boulders and pebbles. Carbonate nodules present in places.
Qmm	Marra Creek Formation – meander plain facies	Unconsolidated dark to pale grey and pale yellow-grey clayey silt.
Qcm	Carrabear Formation – meander plain facies	Unconsolidated to poorly consolidated structureless pale orange to brown silt and fine- to medium-grained sand. Very poorly sorted with grainsize decreasing to the north. Well-developed soil profile with pisolite horizons.

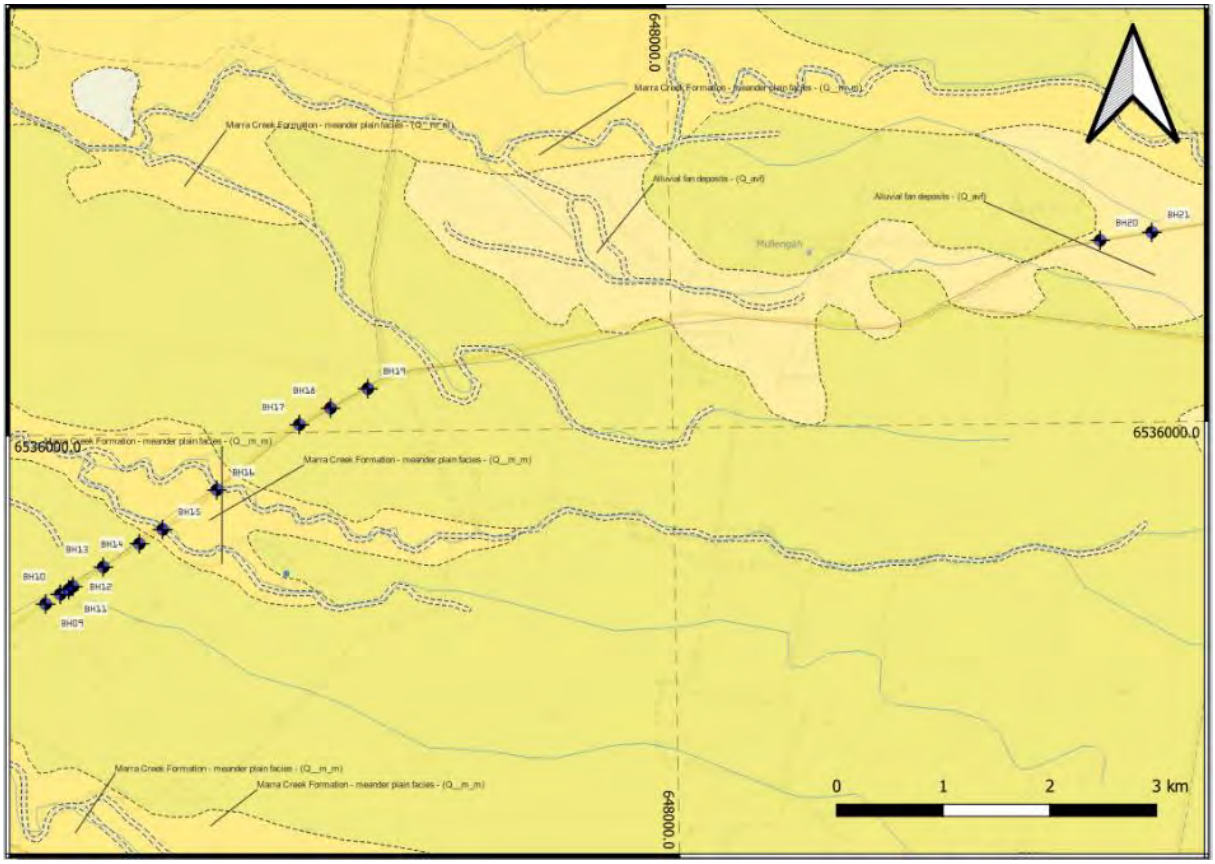

Figure 3: Box Ridge Road Seamless map overlay

Table 4: Summary of Geology – Box Ridge Road

Geological Symbol	Unit Name	Lithology
Qmc	Marra Creek Formation – channel facies	Unconsolidated pale to dark grey, in places pale brown-grey, silty clay. Some channels are lined with boulders and pebbles. Carbonate nodules present in places.
Qmm	Marra Creek Formation – meander plain facies	Unconsolidated dark to pale grey and pale yellow-grey clayey silt.
Qcs	Colluvial Sheetwash	Unconsolidated surficial lag deposits of rounded to sub-angular pebble- to cobble-sized (usually) polymictic clasts derived from underlying or adjacent upslope parent material; surficial sheet flow removes fine-grained material.
Qavf	Alluvial fan deposits	Fluvially-deposited quartz-lithic sand, silt, gravel, clay.

2.3.1 Groundwater Bores

The groundwater data indicates the following ground conditions:

Table 5: Groundwater Data – GW804776 (within 200m of BH21)

Depth (m)	Drillers Description
0.00 – 1.00	TOPSOIL
1.00 – 27.00	CLAY – RED, GREY BROWN AND BROWN

Table 6: Groundwater Data – GW025452 (within 400m of BH14)

Depth (m)	Drillers Description
0.00 – 19.81	CLAY YELLOW
19.81 – 24.38	CLAY SANDY WATER SUPPLY
24.38 – 48.77	CLAY

Table 7: Groundwater Data – GW030999 (within 100m of BH02)

Depth (m)	Drillers Description
0.00 – 5.55	CLAY
5.55 – 10.10	SAND FINE CLAY
10.10 – 11.65	CLAY GREY SANDY

2.3.2 Acid Sulphate Maps

Reference is made to the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Atlas of Australian Acid Sulphate Soils and presented in Figure 4 below:

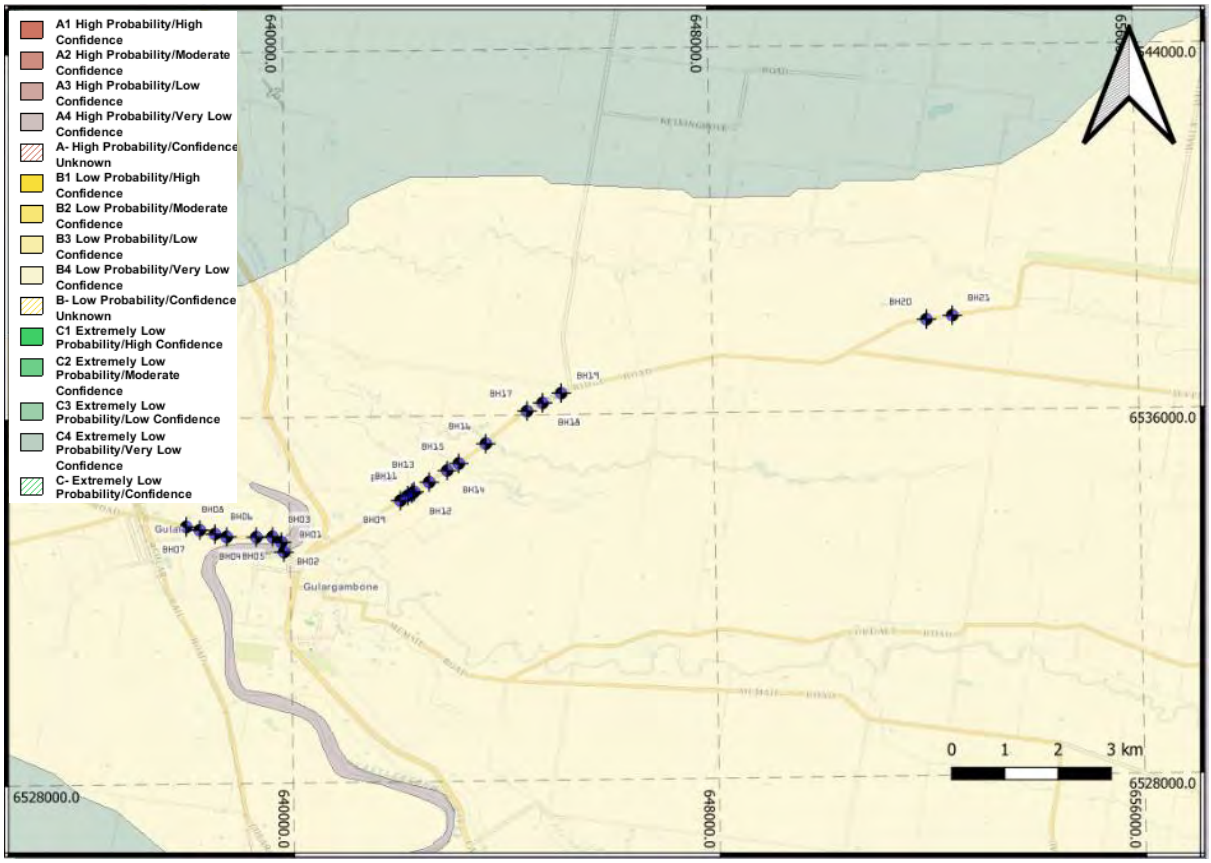

Figure 4: Acid Sulphate Risk Map

The acid sulphate risk map generally indicates a low probability of acid sulphate soils at the sites. Except for boreholes BH01 and BH02, which are located adjacent to a high probability area of acid sulphate soils.

2.3.3 Naturally Occurring Asbestos Maps

Reference is made to the NSW Department of Primary Industry Naturally Occurring Asbestos Hazard Maps and presented in Figure 5 below:

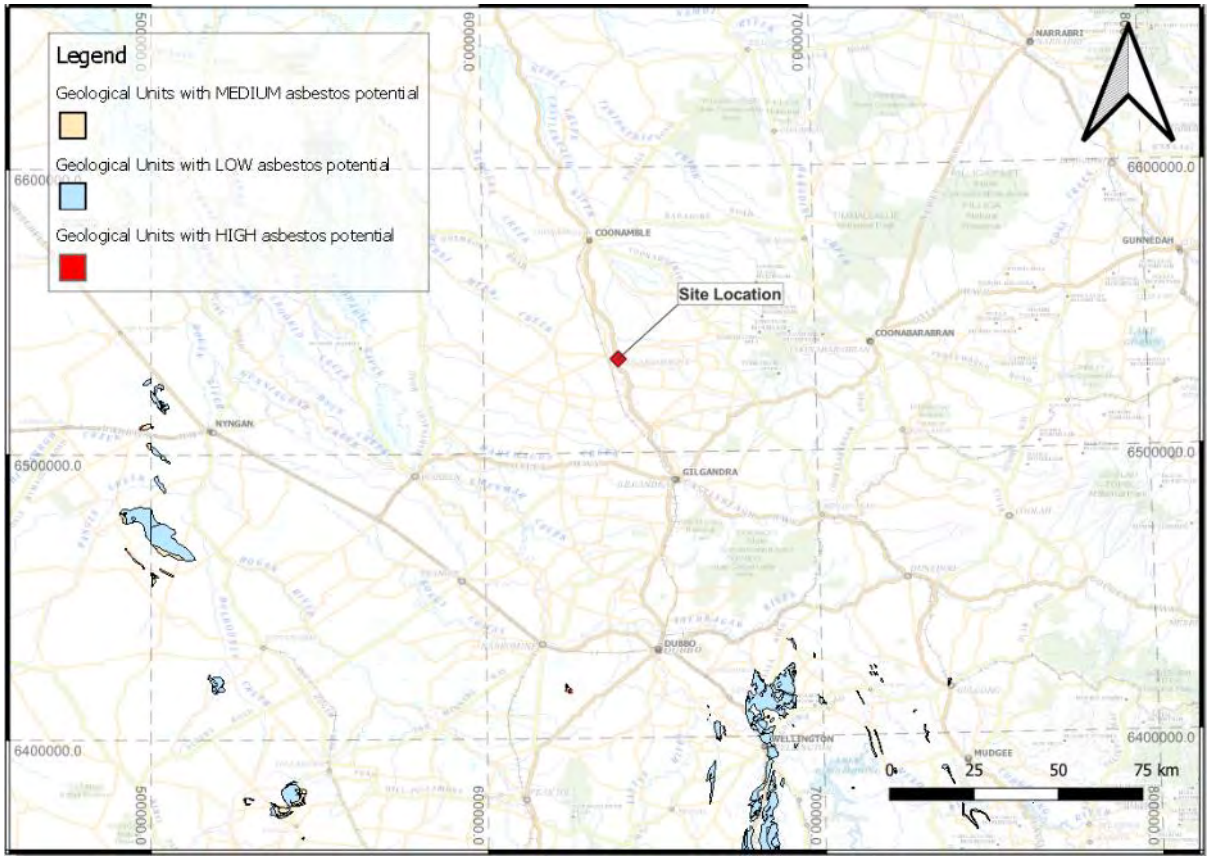

Figure 5: Naturally Occurring Asbestos Hazard Map

The Hazard Map indicates no known Naturally Occurring Asbestos (NOA) at the sites.

2.3.4 Topography

The site is in a relatively flat area with elevation ranging from 220m to 250m AHD. The elevation generally increases in an easterly direction.

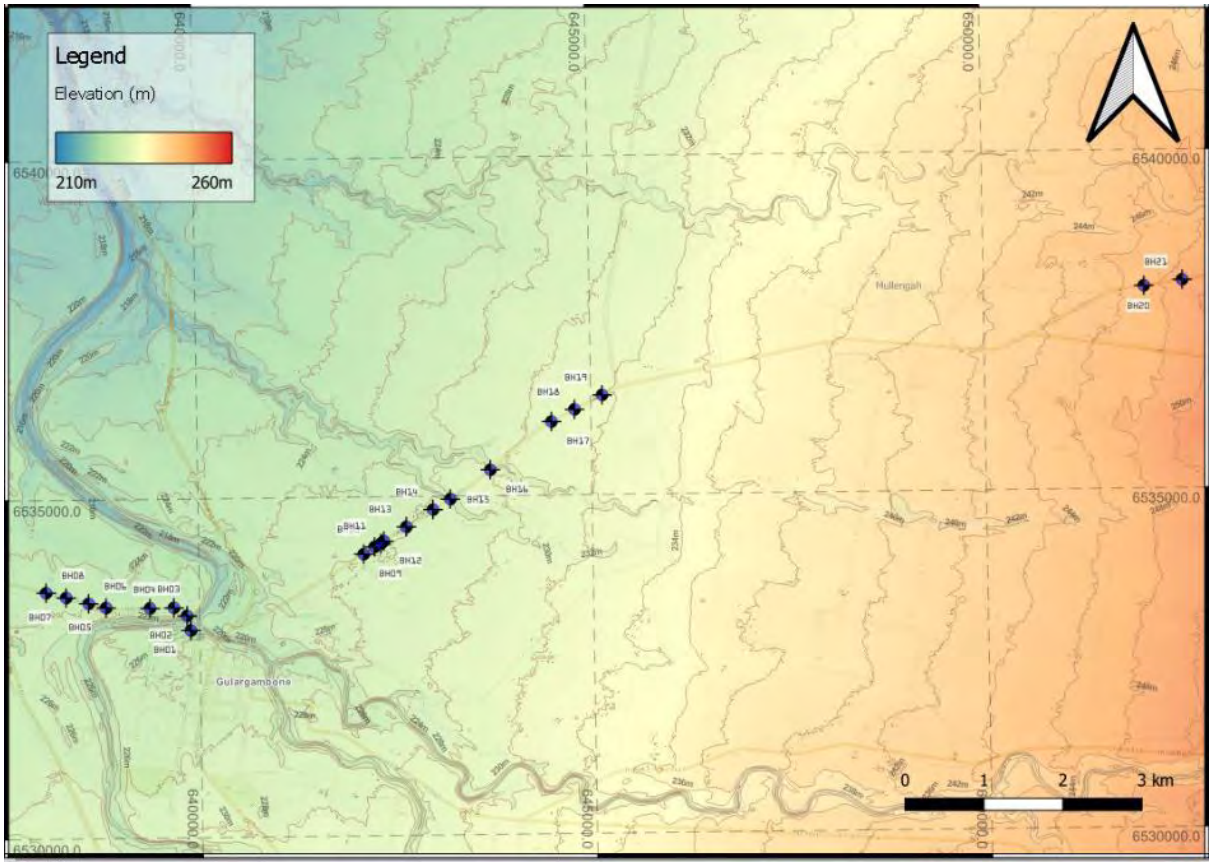

Figure 6: Elevation (AHD)

2.4 Fieldwork

Fieldwork was undertaken from the 14th to 16th November 2022 by a team of Drillers and Engineering Geologist from our Bathurst office. The fieldwork was undertaken in accordance with our proposal and AS1726 Geotechnical Site Investigation.

2.4.1 Service Location

Macquarie Geotechnical obtained underground services and utility plans through 'Dial Before You Dig (DBYD)' services.

2.4.2 GPS

All test locations were surveyed using a handheld GPS with co-ordinates recorded in MGA Zone 55 format and elevations in Australian Height Datum (AHD).

2.4.3 Boreholes

The boreholes were drilled at locations nominated by Macquarie Geotechnical and are summarised in Table 1.

A truck mounted Innovative Sampla 24LT was used to drill twenty-one boreholes to depths of up to 3.00m utilising a 300mm diameter solid flight auger. In-situ testing comprised of Dynamic Cone Penetrometer (DCP) in each of the boreholes.

The boreholes were backfilled with arising's on completion.

Borehole logs are presented in Appendix C.

2.5 Sampling

The sampling was undertaken in general accordance with AS1289 1.2.1 and based on that defined in the proposal and considered the engineering requirements of the investigation and the nature of the materials encountered.

2.6 In-Situ Testing

In-situ testing as specified by the client or our proposal was carried out in selected exploratory holes in accordance with the techniques outlined in the relevant Australian Standards and Macquarie Geotechnical Quality procedures. The results are presented on the relevant borehole logs in Appendix C.

2.6.1 Dynamic Cone Penetrometer Testing

Dynamic Cone Penetrometer (DCP) testing was carried out in the boreholes with techniques outlined in AS1289 6.3.2 in order to determine the relative density and consistency of the strata encountered. The numbers of blows per 100mm penetration were recorded.

2.7 Laboratory Testing

The samples were returned to Macquarie Geotechnical NATA accredited laboratory in Dubbo for further assessment and testing. A summary of the laboratory tests is provided in Table 8 below.

Table 8: Summary of Laboratory Tests

Laboratory Test	Quantity
AS1289 3.1.1, 3.2.1, 3.3.1 Atterberg Limits	10
AS1289 3.4.1 Linear Shrinkage	10
AS1289.3.6.1 Particle Size Distribution	10
AS 1289 6.1.1 & 2.1.1 California Bearing Ratio	18

3 FIELDWORK RESULTS

3.1 Borehole Summary

The subsurface conditions observed in all boreholes are broadly summarised in Table 9 below. Detailed descriptions of the strata can be found within the borehole logs provided in Appendix C.

Table 9: Borehole Summary

Unit	Name	Depth Range (m)	Maximum Thickness (m)	Material Description
1	Fill	0.00 – 0.30	0.30	Sandy Gravelly CLAY, Silty CLAY, Sandy SILT with gravel, Gravelly Sandy SILT, Clayey Gravelly SAND, Silty Gravelly SAND, Clayey SAND
2	Alluvial	0.10 – 3.00	2.70	CLAY, Silty CLAY, Sandy CLAY, Clayey SILT, Clayey SAND

3.2 Groundwater

The comments on groundwater are based on the observations made at the time of the investigation. Groundwater was encountered in boreholes BH15 and BH16 at depths of 1.3m and 2.0m below ground level respectively.

Seasonal variation in groundwater may be encountered and shall be considered as part of the design process.

4 LABORATORY TEST RESULTS

The laboratory tests were carried out on the samples nominated by Macquarie Geotechnical. The summary of test results is shown in Table 10 below.

Table 10: Laboratory Test Results

Borehole	Depth (m)	Field Moisture Content (%)	Sample Description (USCS)	California Bearing Ratio (CBR)				Atterberg Limits			Linear Shrinkage (%)
				MDD (t/m^3)	OMC (%)	CBR (%)	CBR Swell (%)	LL (%)	PL (%)	PI (%)	
BH01	0.30 – 0.50	13.9	Silty CLAY with sand trace gravel*	1.99	10.5	3.0	0.0	-	-	-	-
BH02	0.80 – 1.00	13.6	Silty CLAY trace sand trace gravel	1.94	11.5	7.0	0.0	25	14	11	7.5
BH03	0.30 – 0.50	13.4	Clayey SILT trace sand*	2.00	10.0	3.0	0.0	-	-	-	-
BH04	0.80 – 1.00	6.8	Sandy CLAY*	2.10	8.5	8.0	0.0	-	-	-	-
BH05	0.30 – 0.50	15.9	CLAY with sand*	1.82	14.5	2.5	1.0	-	-	-	-
BH06	0.80 – 1.00	23.7	CLAY trace sand*	1.69	18.0	4.0	2.0	-	-	-	-
BH07	0.30 – 0.50	26.0	CLAY with sand trace gravel	1.79	16.5	4.5	1.5	-	-	-	-
BH07	0.80 – 1.00	-	CLAY with sand trace gravel	-	-	-	-	60	16	44	15.0
BH08	0.80 – 1.00	22.6	CLAY with gravel*	1.71	19.5	2.0	2.5	-	-	-	-
BH09	0.30 – 0.50	13.0	Sandy CLAY with gravel*	1.98	11.0	4.5	1.0	-	-	-	-
BH10	0.80 – 1.00	22.1	CLAY trace sand*	1.73	18.5	3.0	2.0	-	-	-	-
BH11	0.80 – 1.00	-	CLAY with sand trace gravel	-	-	-	-	52	17	35	16.5
BH11	1.80 – 2.00	-	CLAY with sand	-	-	-	-	52	17	35	16.0
BH12	0.30 – 1.00	13.5	Sandy CLAY trace gravel*	2.01	11.5	6.0	0.0	-	-	-	-
BH13	0.80 – 1.00	19.7	CLAY trace sand*	1.76	17.0	2.5	2.0	-	-	-	-
BH14	0.30 – 0.50	22.3	CLAY trace sand*	1.71	19.5	3.0	2.5	-	-	-	-
BH15	0.80 – 1.00	-	Clayey SAND trace gravel	-	-	-	-	15	11	4	3.0
BH15	1.8 – 2.00	-	SAND with clay	-	-	-	-	N/O	N/O	N/P	N/P
BH16	0.50 – 1.00	-	Sandy CLAY trace gravel	-	-	-	-	40	13	27	11.0

Borehole	Depth (m)	Field Moisture Content (%)	Sample Description (USCS)	California Bearing Ratio (CBR)				Atterberg Limits			Linear Shrinkage (%)
				MDD (t/m^3)	OMC (%)	CBR (%)	CBR Swell (%)	LL (%)	PL (%)	PI (%)	
BH16	1.80 – 2.00	-	Sandy CLAY trace gravel	-	-	-	-	30	11	19	10.5
BH17	0.80 – 1.00	15.2	CLAY with sand*	1.60	20.5	2.5	2.5	-	-	-	-
BH18	0.30 – 0.50	12.4	Sandy CLAY*	1.97	10.0	5.0	0.0	-	-	-	-
BH19	0.80 – 1.00	21.1	CLAY with sand trace gravel	1.73	17.5	4.5	1.5	51	15	36	15.0
BH20	0.30 – 0.50	7.7	Sandy CLAY*	1.97	11.5	3.0	0.5	-	-	-	-
BH21	0.80 – 1.00	16.7	CLAY with sand	1.73	16.5	3.5	2.0	49	46	33	15.0

Note: USCS – Unified Soil Classification System; MDD – Maximum Dry Density; OMC – Optimum Moisture Content.
LL – Liquid Limit; PL – Plastic Limit; PI – Plasticity Index; N/O – Not Obtainable; N/P – Non Plastic.
*Visual description.

5 GEOTECHNICAL ASSESSMENT

5.1 Site Classification

The classification of a site involves a number of geotechnical factors such as depth of bedrock, the nature and extent of subsurface soils and any specific problems (slope stability, soft soils, filling, reactivity, etc).

In accordance with AS2870 2011 the proposed development site will have an anticipated surface movement (Ys) of **60** – **70mm** and is classified as "**Class H2-D**".

An appropriate footing system should be designed in accordance with the above code to accommodate these anticipated movements. The possibility of additional movements, due to abnormal moisture variations, should be minimised by proper "site management" procedures.

It should be noted that this assessment is based on site conditions being represented by the natural soil profile. Any change in conditions noted during development, including cut or fill should be referred to Macquarie Geotechnical for appropriate inspection and assessment.

The above classifications, based on AS2870 which relates to construction of residential dwellings, is not technically correct for the type of structures proposed and therefore it is given as a guide only with respect to soil reactivity.

5.2 Foundations

The investigation indicates that the ground conditions generally comprised of fill material overlying alluvial soils. Bedrock was not encountered.

5.2.1 Geotechnical Design Parameters

Based on our investigation, and our experience in this region, we recommend the following geotechnical design parameters:

Table 11: Estimated Geotechnical Engineering Parameters

Depth (m)	Soil Description	Unit Weight (KN/m3)	Angle of Friction (degrees)		Cohesion (KPa)		Concrete to Soil Friction Angle δ (degrees)
			Drained ϕ'	Undrained ϕ	Drained c'	Undrained Cu	
Varying Depth	Silty CLAY, Sandy CLAY, CLAY - Firm	18	21	0	0	25	16
	Silty CLAY, Sandy CLAY, CLAY - Stiff	19	26	0	0	50	20
	Silty CLAY, Sandy CLAY, CLAY - Very Stiff	19	29	0	0	100	23
	Silty CLAY, Sandy CLAY - Hard	20	32	0	0	200	25
	Clayey SAND / SAND - Loose	17	29	29	0	-	22
	Clayey SAND / SAND - Medium Dense	18	30	30	0	-	23
	Clayey SAND / SAND - Dense	19	36	36	0	-	29
	Clayey SAND / SAND - Very Dense	20	40	40	0	-	32

Table 12: Bearing Pressure – Shallow Foundations

Depth (m)	Soil Description	Allowable Bearing Pressure (KPa)	Ultimate Bearing Pressure (KPa)	Modulus of Subgrade Reaction (MN/m3)
Varying Depth	Silty CLAY, Sandy CLAY, CLAY - Firm	40	120	5
	Silty CLAY, Sandy CLAY, CLAY - Stiff	85	255	10
	Silty CLAY, Sandy CLAY, CLAY - Very Stiff	170	510	20
	Silty CLAY, Sandy CLAY - Hard	340	1020	40
	Clayey SAND / SAND - Loose	50	150	6
	Clayey SAND / SAND - Medium Dense	100	300	12
	Clayey SAND / SAND - Dense	300	900	36
	Clayey SAND / SAND - Very Dense	500	1500	60

Note: Preliminary design parameters to be confirmed by a detailed design analysis.

5.3 Foundation Settlements

For both shallow foundations bearing on the alluvial soils, total and differential settlements are expected to be less than 25mm provided that the allowable bearing capacities are not exceeded.

6 EXCAVATION AND STABILITY

6.1 Soil

The soils at the site comprise predominately fill material overlying alluvial soils and should present no excavation difficulty. For temporary work conditions above groundwater level, benching or slope angles of 1V:1H is considered appropriate for the materials. For temporary work conditions below groundwater level excavation support will be required. For permanent conditions, slope angles of 1V:2H is considered appropriate.

6.2 Rock

Bedrock was not encountered in the boreholes.

6.3 Drainage

Drainage should be installed at the top of the cuttings to divert surface water runoff from above the cutting during rainfall events. It is also recommended that topsoil is placed on exposed cut soil surfaces and the area re-seeded with grass.

7 EARTHWORKS

7.1 Site Preparation

The following scope of work is required as a minimum to prepare the site prior to filling:

- Prior to construction and placement of any fill, the proposed areas should be stripped to remove all vegetation, topsoil, uncontrolled fill, organic, root affected or other potentially deleterious material.
- Boxed-out excavations should be drained permanently to allow any infiltration from subsequent fill to escape the excavation profile.
- Where the ground slopes at more than 1V:10H (6°), the ground profile should be benched in 300mm vertical steps to create near-level platforms for filling. The platforms should be graded with a cross fall no steeper than 2% downslope to allow drainage of any infiltration to the fill and to prevent pooling of subsurface moisture.
- Following stripping, the exposed subgrade materials should be proof rolled in the presence of a suitably qualified and experienced Geotechnical Engineer to identify any wet or excessively deflecting material.
- Proof rolling should involve compacting the site with an 8-ton roller, trimming the rolled surface to level and clean finish. Where there are areas indicating excessive deflection then these may require over-excavation and backfilling with an approved select material.

7.2 Re-use of Site Material

Careful extraction and stockpile management will be required to optimise the potential volume of site won materials. Where feasible, material should be trucked directly to the placement site to avoid double handling and associated time and cost implications.

The majority of the site won soil material from the cuttings is considered suitable for use as general fill material. If the material is proposed to be used as engineered fill within the permanent works then some blending of the material with coarser particle sizes may be required to comply with Specification grading requirements. Further testing of the excavated material would be required during construction to confirm specification and design acceptability requirements.

7.3 Bulk Earthworks

Subgrade preparation will generally only require removal of topsoil and compaction to 98% relative to standard compaction of the excavated subgrade material.

Slope angles of 1V:1H and 1V:2H is considered appropriate for compacted embankment fill materials in the temporary and permanent conditions respectively.

7.4 Trafficability

The clay subgrades at the site have a low wet strength and poor subgrade strength. The site soils would be trafficable during dry periods. Some desiccation of exposed surfaces can be expected and large quantities of dust will be generated during dry periods under traffic. The soils will be soft and difficult to traverse following wet weather or inundation. Drying out of these soils could take several days or weeks before being able to accommodate construction traffic.

8 PAVEMENT DESIGN

8.1 Pavement Traffic

Based on 20 year design life with 2% growth rate, the estimated design traffic of 6.0 X 10^5 Equivalent Standard Axles (ESA's) has been adopted. Traffic data to be confirmed with council prior to construction.

8.2 Design Subgrade CBR

From the results of the testing undertaken, design CBR was determined following Austroads Guide to Pavement Technology Part 2 Pavement Structural Design. A design subgrade CBR value of 2.0% and 2.5% has been adopted for the design of Gulargambone Road and Box Ridge Road respectively.

8.3 Pavement Design

The design pavement thicknesses have been determined using the above design subgrade CBR and Traffic Volumes.

Table 13: Pavement Design Gulargambone Road

Depth (m)	Descriptions
-	Two coat spray seal (Design by others)
0.00 – 0.12	120 mm thick Base Course Unbound layer (reference to TfNSW Specification 3051 Base DGB20)
0.12 – 0.32	200 mm thick Subbase Unbound layer (reference to TfNSW Specification 3051 Subbase DGS20/40)
0.32 – 0.60	280 mm select material (min. CBR 7%)
Subgrade	Design CBR = 2.0%

Table 14: Pavement Design Box Ridge Road

Depth (m)	Descriptions
-	Two coat spray seal (Design by others)
0.00 – 0.12	120 mm thick Base Course Unbound layer (reference to TfNSW Specification 3051 Base DGB20)
0.12 – 0.32	200 mm thick Subbase Unbound layer (reference to TfNSW Specification 3051 Subbase DGS20/40)
0.32 – 0.54	220 mm select material (min. CBR 7%)
Subgrade	Design CBR = 2.5%

8.4 Pavement Material and Construction Requirements

The pavement base, sub-base and select materials should be compacted to a minimum dry density ratio of 102% relative to standard compaction at a moisture ratio of 60-90% of the optimum moisture content.

The subgrade (or proposed fill areas) should be stripped of all soft, organic or moisture affected materials and rolled and compacted to a minimum dry density ratio of 98% relative to standard compaction at a moisture ratio of 60-90% of the optimum moisture content. Prepared subgrade shall then be proof rolled to identify any soft spots to remedy it. General fill should be placed and compacted in maximum 250mm loose thickness layers and compacted to a minimum dry density ratio of 98% relative to standard compaction at a moisture ratio of 60-90% of the optimum moisture content.

9 CONCLUSION

The findings of our report were based on our fieldwork, in-situ testing, laboratory testing and technical assessment for this site.

We trust the foregoing is sufficient for your present purposes, and if you have any questions please contact the undersigned.

David Clarkson
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BEng MSc MIEAust

John Boyle
Geotechnical Manager
BSc (Hons) MEngSc (Geotechnical) Affil MIE Aust

Attached: Limitations of Geotechnical Site Investigation
References: Australian Standard 1726 – 2017 Geotechnical Site Investigations

LIMITATIONS OF GEOTECHNICAL SITE INVESTIGATION

Scope of Services

This report has been prepared for the Client in accordance with the Services Engagement Form (SEF), between the Client and Macquarie Geotechnical.

Reliance on Data

Macquarie Geotechnical has relied upon data and other information provided by the Client and other individuals. Macquarie Geotechnical has not verified the accuracy or completeness of the data, except as otherwise stated in the report. Recommendations in the report are based on the data.

Macquarie Geotechnical will not be liable in relation to incorrect recommendations should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed.

Geotechnical Investigation

Findings of Geotechnical Investigations are based extensively on judgment and experience. Geotechnical reports are prepared to meet the specific needs of individual clients. This report was prepared expressly for the Client and expressly for the Clients purposes.

This report is based on a subsurface investigation, which was designed for project-specific factors. Unless further geotechnical advice is obtained this report cannot be applied to an adjacent site nor can it be used when the nature of any proposed development is changed.

Limitations of Site investigation

As a result of the limited number of sub-surface excavations or boreholes there is the possibility that variations may occur between test locations. The investigation undertaken is an estimate of the general profile of the subsurface conditions. The data derived from the investigation and laboratory testing are extrapolated across the site to form a geological model. This geological model infers the subsurface conditions and their likely behavior with regard to the proposed development.

The actual conditions at the site might differ from those inferred to exist.

No subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies.

Time Dependence

This report is based on conditions which existed at the time of subsurface exploration. Construction operations at or adjacent to the site, and natural events such as floods, or groundwater fluctuations, may also affect subsurface conditions, and thus the continuing adequacy of a geotechnical report.

Macquarie Geotechnical should be kept appraised of any such events, and should be consulted for further geotechnical advice if any changes are noted.

Avoid Misinterpretation

A geotechnical engineer or engineering geologist should be retained to work with other design professionals explaining relevant geotechnical findings and in reviewing the adequacy of their plans and specifications relative to geotechnical issues.

No part of this report should be separated from the Final Report.

Sub-surface Logs

Sub-surface logs are developed by geoscientific professionals based upon their interpretation of field logs and laboratory evaluation of field samples. These logs should not under any circumstances be redrawn for inclusion in any drawings.

Geotechnical Involvement During Construction

During construction, excavation frequently exposes subsurface conditions. Geotechnical consultants should be retained through the construction stage, to identify variations if they are exposed.

Report for Benefit of Client

The report has been prepared for the benefit of the Client and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendations and should make their own enquiries and obtain independent advice in relation to such matters

Macquarie Geotechnical assumes no responsibility and will not be liable to any other person or organisations for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisations arising from matters dealt with or conclusions expressed in the report.

Other limitations

Macquarie Geotechnical will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

Other Information

For further information reference should be made to "Guidelines for the Provision of Geotechnical Information in Construction Contracts" published by the Institution of Engineers Australia, 1987.

Appendix A – Geotechnical Explanatory Notes

MACQUARIE GEOTECH

Geotechnical Explanatory Notes

Soil Description

In engineering terms soil includes every type of uncemented or partially cemented inorganic material found in the ground. In practice, if the material can be remoulded by hand in its field condition or in water it is described as a soil. The dominant soil constituent is given in capital letters, with secondary textures in lower case. The dominant feature is assessed from the Unified Soil Classification system and a soil symbol is used to define a soil layer as follows:

UNIFIED SOIL CLASSIFICATION

The appropriate symbols are selected on the result of visual examination, field tests and available laboratory tests, such as, sieve analysis, liquid limit and plasticity index.

USC Symbol	Description
GW	Well graded gravel
GP	Poorly graded gravel
GM	Silty gravel
GC	Clayey gravel
SW	Well graded sand
SP	Poorly graded sand
SM	Silty sand
SC	Clayey sand
ML	Silt of low plasticity
CL	Clay of low plasticity
OL	Organic soil of low plasticity
MH	Silt of high plasticity
CH	Clay of high plasticity
OH	Organic soil of high plasticity
Pt	Peaty Soil

MOISTURE CONDITION

Dry – Cohesive soils are friable or powdery
Cohesionless soil grains are free-running

Moist – Soil feels cool, darkened in colour
Cohesive soils can be moulded
Cohesionless soil grains tend to adhere

Wet – Cohesive soils usually weakened
Free water forms on hands when handling

For cohesive soils the following codes may also be used:

MC>PL Moisture Content greater than the Plastic Limit.
MC~PL Moisture Content near the Plastic Limit.
MC<PL Moisture Content less than the Plastic Limit.

PLASTICITY

The potential for soil to undergo change in volume with moisture change is assessed from its degree of plasticity. The classification of the degree of plasticity in terms of the Liquid Limit (LL) is as follows:

Description of Plasticity	LL (%)
Low	<35
Medium	35 to 50
High	>50

COHESIVE SOILS – CONSISTENCY

The consistency of a cohesive soil is defined by descriptive terminology such as very soft, soft, firm, stiff, very stiff and hard. These terms are assessed by the shear strength of the soil as observed visually, by the pocket penetrometer values and by resistance to deformation to hand moulding.

A Pocket Penetrometer may be used in the field or the laboratory to provide approximate assessment of unconfined compressive strength of cohesive soils. The values are recorded in kPa, as follows:

Strength	Symbol	Pocket Penetrometer Reading (kPa)
Very Soft	VS	< 25
Soft	S	20 to 50
Firm	F	50 to 100
Stiff	St	100 to 200
Very Stiff	VSt	200 to 400
Hard	H	> 400

MACQUARIE GEOTECH

COHESIONLESS SOILS – RELATIVE DENSITY

Relative density terms such as very loose, loose, medium, dense and very dense are used to describe silty and sandy material, and these are usually based on resistance to drilling penetration or the Standard Penetration Test (SPT) 'N' values. Other condition terms, such as friable, powdery or crumbly may also be used.

The Standard Penetration Test (SPT) is carried out in accordance with AS 1289, 6.3.1. For completed tests the number of blows required to drive the split spoon sampler 300 mm are recorded as the N value. For incomplete tests the number of blows and the penetration beyond the seating depth of 150 mm are recorded. If the 150 mm seating penetration is not achieved the number of blows to achieve the measured penetration is recorded. SPT correlations may be subject to corrections for overburden pressure and equipment type.

Term	Symbol	Density Index	N Value (blows/0.3 m)
Very Loose	VL	0 to 15	0 to 4
Loose	L	15 to 35	4 to 10
Medium Dense	MD	35 to 65	10 to 30
Dense	D	65 to 85	30 to 50
Very Dense	VD	>85	>50

COHESIONLESS SOILS PARTICLE SIZE DESCRIPTIVE TERMS

Name	Subdivision	Size
Boulders		>200 mm
Cobbles		63 mm to 200 mm
Gravel	coarse	19 mm to 63 mm
	medium	6.7 mm to 19 mm
	fine	2.36 mm to 6.7 mm
Sand	coarse	600 μm to 2.36 mm
	medium	210 μm to 600 μm
	fine	75 μm to 210 μm

Rock Description

The rock is described with strength and weathering symbols as shown below. Other features such as bedding and dip angle are given.

ROCK QUALITY

The fracture spacing is shown where applicable and the Rock Quality Designation (RQD) or Total Core Recovery (TCR) is given where:

$$\text{RQD (\%)} = \frac{\text{Sum of Axial lengths of core > 100mm long}}{\text{total length considered}}$$

$$\text{TCR (\%)} = \frac{\text{length of core recovered}}{\text{length of core run}}$$

ROCK STRENGTH

Rock strength is described using AS1726 and ISRM – Commission on Standardisation of Laboratory and Field Tests, "Suggested method of determining the Uniaxial Compressive Strength of Rock materials and the Point Load Index", as follows:

Term	Symbol	Point Load Index $I_{s(50)}$ (MPa)
Very Low	VL	0.03 to 0.1
Low	L	0.1 to 0.3
Medium	M	0.3 to 1
High	H	1 to 3
Very High	VH	3 to 10
Extremely High	EH	>10

ROCK MATERIAL WEATHERING

Rock weathering is described using the following abbreviation and definitions used in AS1726:

Abbreviation	Term
RS	Residual soil
XW	Extremely weathered
DW	Distinctly weathered
HW	Highly weathered
MW	Moderately weathered
SW	Slightly weathered
FR	Fresh

MACQUARIE GEOTECH

DEFECT SPACING/BEDDING THICKNESS

Measured at right angles to defects of same set or bedding.

Term	Defect Spacing	Bedding
Extremely closely spaced	<6 mm	Thinly Laminated
	6 to 20 mm	Laminated
Very closely spaced	20 to 60 mm	Very Thin
Closely spaced	0.06 to 0.2 m	Thin
Moderately widely spaced	0.2 to 0.6 m	Medium
Widely spaced	0.6 to 2 m	Thick
Very widely spaced	>2 m	Very Thick

DEFECT DESCRIPTION

Type:	Description
B	Bedding
F	Fault
C	Cleavage
J	Joint
S	Shear Zone
D	Drill break

Planarity/Roughness:

Class	Description
I	rough or irregular, stepped
II	smooth, stepped
III	slickensided, stepped
IV	rough or irregular, undulating
V	smooth, undulating
VI	slickensided, undulating
VII	rough or irregular, planar
VIII	smooth, planar
IX	slickensided, planar

The inclination if defects are measured from perpendicular to the core axis.

WATER


Water level at date shown


Partial water loss


Water inflow


Complete water loss

Groundwater not observed: The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.

Groundwater not encountered: The borehole/test pit was dry soon after excavation, however groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/test pit been left open for a longer period.

MACQUARIE GEOTECH

Graphic Symbols for Soils and Rocks

Typical symbols for soils and rocks are as follows. Combinations of these symbols may be used to indicated mixed materials such as clayey sand.

Soil Symbols

Main components


CLAY - CL


CLAY - CH


SAND


GRAVEL


BOULDERS / COBBLES


TOPSOIL


SILT

Minor Components


Clayey


Silty


Sandy


Gravelly

Other


FILL


BITUMEN


CONCRETE

Rock Symbols

Sedimentary Rocks


SANDSTONE


SILTSTONE


CLAYSTONE, MUDSTONE


SHALE


LAMINITE


ASPHALT


LIMESTONE


CONGLOMERATE

Igneous Rocks


GRANITE


BASALT


UNDIFFERENTIATED IGNEOUS

Metamorphic Rocks


SLATE, PHYLLITE, SCHIST


GNEISS

QUARTZITE

MACQUARIE GEOTECH

Engineering Classification of Shales and Sandstones in the Sydney Region – A Summary Guide

The Sydney Rock Class classification system is based on rock strength, defect spacing and allowable seams as set out below. All three factors must be satisfied.

CLASSIFICATION FOR SANDSTONE

Class	Uniaxial Compressive Strength (MPa)	Defect Spacing (mm)	Allowable Seams (%)
I	>24	>600	<1.5
II	>12	>600	<3
III	>7	>200	<5
IV	>2	>60	<10
V	>1	N.A.	N.A.

CLASSIFICATION FOR SHALE

Class	Uniaxial Compressive Strength (MPa)	Defect Spacing (mm)	Allowable Seams (%)
I	>16	>600	<2
II	>7	>200	<4
III	>2	>60	<8
IV	>1	>20	<25
V	>1	N.A.	N.A.

MACQUARIE GEOTECH

UNIAXIAL COMPRESSIVE STRENGTH (UCS)

For expedience in field/construction situations the uniaxial (unconfined) compressive strength of the rock is often inferred, or assessed using the point load strength index (Is_{50}) test (AS 4133.4.1 – 1993). For Sydney Basin sedimentary rocks the uniaxial compressive strength is typically about 20 x (Is_{50}) but the multiplier may range from about 10 to 30 depending on the rock type and characteristics. In the absence of UCS tests, the assigned Sydney Rock Class classification may therefore include rock strengths outside the nominated UCS range.

DEFECT SPACING

The terms relate to spacing of natural fractures in NMLC, NQ and HQ diamond drill cores and have the following definitions:

Defect Spacing (mm)	Terms Used to Describe Defect Spacing[1]
>2000	Very widely spaced
600 – 2000	Widely spaced
200 – 600	Moderately spaced
60 – 200	Closely spaced
20 – 60	Very closely spaced
<20	Extremely closely spaced

[1]After ISO/CD14689 and ISRM.

ALLOWABLE SEAMS

Seams include clay, fragmented, highly weathered or similar zones, usually sub-parallel to the loaded surface. The limits suggested in the tables relate to a defined zone of influence. For pad footings, the zone of influence is defined as 1.5 times the least footing dimension. For socketed footings, the zone includes the length of the socket plus a further depth equal to the width of the footing. For tunnel or excavation assessment purposes the defects are assessed over a length of core of similar characteristics.

Source: Based on Pells et al (1978), as revised by Pells et al (1998).
Pells, P.J.N, Mostyn, G. and Walker, B.F. – Foundations on Sandstone and Shale in the Sydney Region. Australian Geomechanics Journal, No 33 Part 3, December 1998.

MACQUARIE GEOTECH

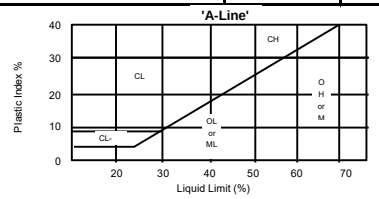
Summary of Soil Logging Procedures

Coarse Material: grain size - colour - particle shape - secondary components - minor constituents - moisture condition - relative density - origin - additional observations.

Fine Material: plasticity - colour - secondary components - minor constituents - moisture w.r.t. plasticity - consistency - origin - additional observations.

Guide to the Description, Identification and Classification of Soils

Major Divisions				SYMBOL	Typical Names
> 200mm	BOULDERS				
60 to 200mm	COBBLES				
COARSE GRAINED SOILS	More than 65% by dry mass less than 63mm is greater that 0.075mm	GRAVEL	More than 50% of coarse fraction > 2.36mm	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
				GP	Poorly graded gravels and gravel-sand mixtures, little or no fines, uniform gravels.
		Gravelly Soils		GM	Silty gravels, gravel-sand-silt mixtures.
				GC	Clayey gravels, gravel-sand-clay mixtures
		SANDS	More than 50% of coarse fraction < 2.36mm	SW	Well-graded sands, gravelly sands, little or no fines.
				SP	Poorly graded sands and gravelly sands; little or no fines, uniform sands.
		Sandy Soils		SM	Silty sands, sand-silt mixtures.
				SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS	More than 35% by dry mass less than 60mm is less than 0.076mm	Liquid Limit < 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
				OL	Organic silts and organic silty clays of low plasticity.
		Liquid Limit > 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
				CH	Inorganic clays of high plasticity, fat clays.
				OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS				Pt	Peat and other highly organic soils.



Grain sizes			
Gravel		Sand	
Coarse -	63 to 19mm	Coarse -	2.36 to 0.6mm
Medium -	19 to 6.7 mm	Medium -	0.6 to 0.21mm
Fine -	6.7 to 2.36mm	Fine -	0.21 to 0.075mm

GEOLOGICAL ORIGIN:-

Fill - artificial soils / deposits
Alluvial - soils deposited by the action of water
Aeolian - soils deposited by the action of wind
Topsoil - soils supporting plant life containing significant organic content
Residual - soils derived from insitu weathering of parent rock.
Colluvial - transported debris usually unsorted, loose and deposited

Field Identification of Fine Grained Soils - Silt or Clay?

Dry Strength - Allow the soil to dry completely and then test its strength by breaking and crumbling between the fingers.
High dry strength - Clays; Very slight dry strength - Silts.

Toughness Test - the soil is rolled by hand into a thread about 3mm in diameter. The thread is then folded and re-rolled repeatedly until it has dried sufficiently to break into lumps. In this condition inorganic clays are fairly stiff and tough while inorganic silts produce a weak and often soft thread which may be difficult to form and readily breaks and crumbles.

Dilatancy Test - Add sufficient water to the soil, held in the palm of the hand, to make it soft but not sticky. Shake horizontally, striking vigorously against the other hand several times. Dilatancy is indicated by the appearance of a shiny film on the surface of the soil. If the soil is then squeezed or pressed with the fingers, the surface becomes dull as the soil stiffens and eventually crumbles. These reactions are pronounced only for predominantly silt size material. Plastic clays give no reaction.

Descriptive Terms for Material Portions

COARSE GRAINED SOILS		FINE GRAINED SOILS	
% Fines	*Term/Modifier*	*% Coarse*	*Term/Modifier*
≤ 5	Omit, or use "trace"	≤ 15	Omit, or use "trace"
> 5, ≤ 12	"with clay/silt" as applicable	> 15, ≤ 30	"with sand/gravel" as applicable
> 12	Prefix soil as "silty/clayey"	> 30	Prefix as "sandy/gravelly"

Moisture Condition

for non-cohesive soils:

Dry -	runs freely through fingers.
Moist -	does not run freely but no free water visible on soil surface.
Wet -	free water visible on soil surface.

for cohesive soils:

MC > PL	Moisture content estimated to be greater than the plastic limit.
MC ~ PL	Moisture content estimated to be approximately equal to the plastic limit. The soil can be moulded
MC < PL	Moisture content estimated to be less than the plastic limit. The soil is hard and friable, or powdery.

The plastic limit (PL) is defined as the moisture content (percentage) at which the soil crumbles when rolled into threads of 3mm dia.

Consistency - For Clays & Silts

Description	*UCS(kPa)*	*Field guide to consistency*
Very soft	< 25	Exudes between the fingers when squeezed in hand
Soft	25 - 50	Can be moulded by light finger pressure
Firm	50 - 100	Can be moulded by strong finger pressure
Stiff	100 - 200	Cannot be moulded by fingers. Can be indented by thumb.
Very stiff	200 - 400	Can be indented by thumb nail
Hard	> 400	Can be indented with difficulty by thumb nail
Friable	-	Crumbles or powders when scraped by thumbnail

Relative Density for Gravels and Sands

Description	*SPT "N" Value*	*Density Index (ID) Range %*
Very loose	0 - 4	< 15
Loose	4 - 10	15 - 35
Medium dense	10 - 30	35 - 65
Dense	30 - 50	65 - 85
Very dense	> 50	> 85

MACQUARIE GEOTECH

Summary of Rock Logging Procedures

Description order: constituents - rock name - grain size - colour - weathering - strength - minor constituents - additional observations.
· minor constituents - moisture w.r.t. plasticity - consistency - origin - additional observations.

Definition - Sedimentary Rock

Conglomerate	more than 50% of the rock consists of gravel (>2mm) sized fragments
Sandstone	more than 50% of the rock consists of sand (0.06 to 2mm) sized grains
Siltstone	more than 50% of the rock consists of silt sized granular particles and the rock is not laminated
Claystone	more than 50% of the rock consists of clay or mica material and the rock is not laminated
Shale	more than 50% of the rock consists of clay or silt sized particles and the rock is laminated

Weathering

Residual Soil	RS	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a change in volume but the soil has not significantly transported.
Extremely Weathered	EW	Rock is weathered to such an extent that it has 'soil' properties; ie. it either disintegrates or can be remoulded, in water.
Distinctly Weathered	DW	**Highly Weathered (HW)** - Rock is wholly discoloured and rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals **Moderately Weathered (MW)** - The whole of the rock is discoloured, usually by iron staining and bleaching. Shows little or no change in rock strength.
Slightly Weathered	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh	FR	Rock shows no sign of decomposition or staining.

Stratification

thinly laminated	<6mm	medium bedded	0.2 - 0.6m
laminated	6 - 20mm	thickly bedded	0.6 - 2m
very thinly bedded	20 - 60mm	very thickly bedded	>2m
thinly bedded	60mm - 0.2m		

Discontinuities

order of description: depth - type - orientation - spacing - roughness / planarity - thickness - coating

	Type	Class	Roughness/Planarity	Class	Roughness/Planarity
B	Bedding	I	rough or irregular, stepped	VI	slickensided, undulating
F	Fault	II	smooth, stepped	VII	rough or irregular, planar
C	Cleavage	III	slickensided, stepped	VIII	smooth, planar
J	Joint	IV	rough or irregular, undulating	IX	slickensided, planar
S	Shear Zone	V	smooth, undulating		
D	Drill break				

Rock Strength

Term		Is (50)	Field Guide
		0.03	
Very low	VL		Material crumbles under firm blows with sharp end of pick; can be peeled with knive. Pieces up to 30mm thick can be broken by finger pressure.
		0.1	
Low	L		A piece of core 150 mm long x 50 mm dia. may be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.
		0.3	
Medium	M		A piece of core 150 mm long x 50 mm dia. can be broken by hand with considerable difficulty. Readily scored with knife.
		1	
High	H		A piece of core 150 mm long x 50 mm dia. core cannot be broken by unaided hands, can be slightly scratched or scored with knife.
		3	
Very High	VH		A piece of core 150 mm long x 50 mm dia. May be broken readily with hand held hammer. Cannot be scratched with pen knife.
		10	
Extremely High	EH		A piece of core 150 mm long x 50 mm dia. Is difficult to break with hand held hammer. Rings when struck with a hammer.

* - rock strength defined by point load strength (Is 50) in direction normal to bedding

Degree of fracturing

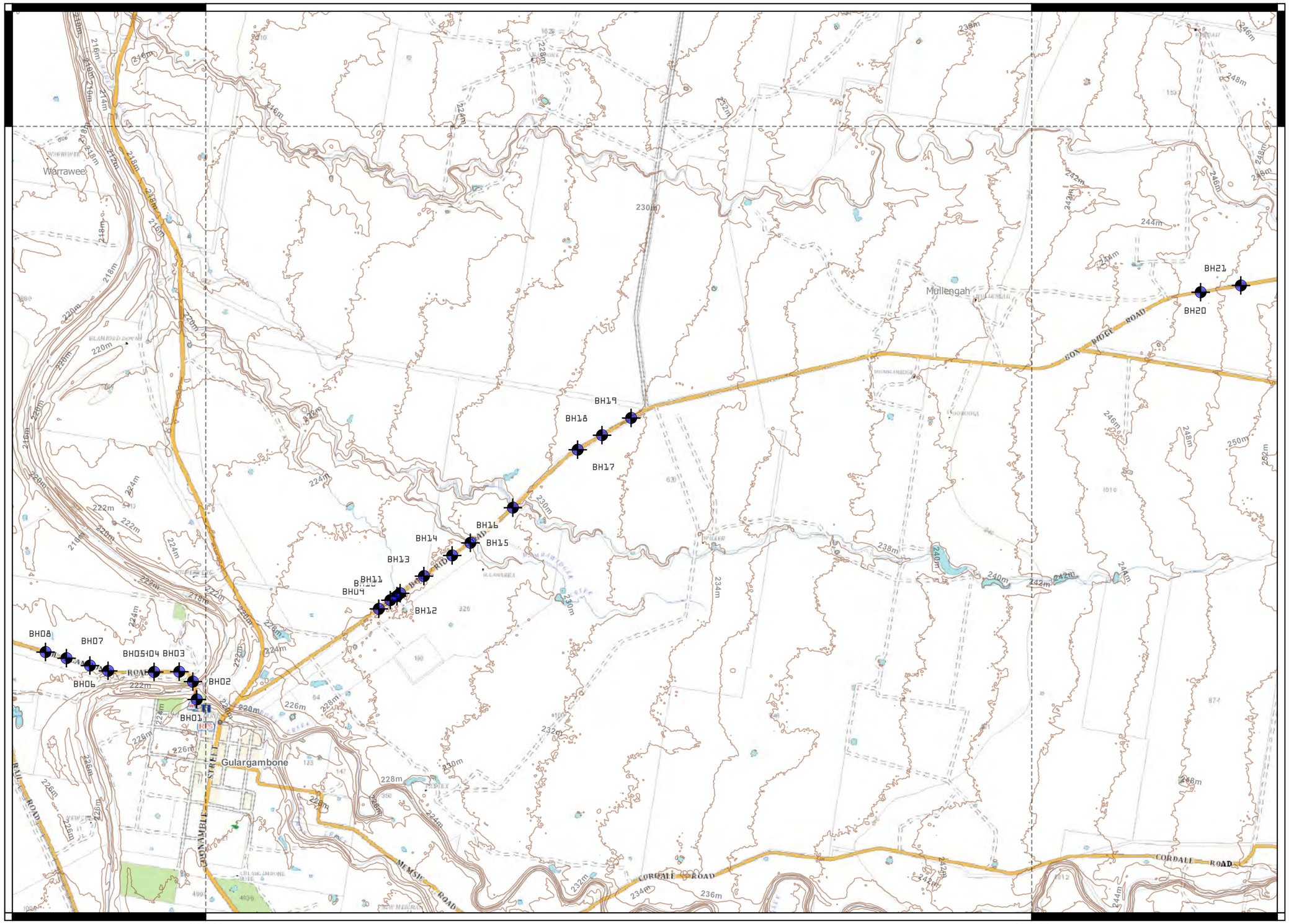
fragmented	The core is comprised primarily of fragments of length less than 20mm, and mostly of width less than the core diameter
highly fractured	Core lengths are generally less than 20mm - 40mm with occasional fragments.
fractured	Core lengths are mainly 30mm - 100mm with occasional shorter and longer lengths
slightly fractured	Core lengths are generally 300mm - 1000mm with occasional longer sections and shorter sections of 100mm -- 300mm.
unbroken	The core does not contain any fracture.

- spacing of all types of natural fractures, but not artificial breaks, in cored bores.

The fracture spacing is shown where applicable and the Rock Quality Designation is given by: RQD (%) = sum of unbroken core pieces 100 mm or longer

MACQUARIE GEOTECH

Appendix B – Site Plan



MACQUARIE GEOTECH	Client: Ardill Payne & Partners			0 1 2 3 km Metres - Scale 1:40000	**JOB NO** B21674
	Project: Gulargambone Rd & Box Ridge Rd				
	Location: Gulargambone, NSW			Vertical to Horizontal Scale 1 : 1 Co-ordinate Reference System - EPSG: 4326 WGS: 84	Macquarie Geotechnical Ltd Geotechnical Investigation Locality Map
3 Watt Drive, Bathurst NSW 2795 P: 02 6332 2011 F: 02 6334 4213 E: macgeo@macgeo.com.au	Drawn: D.O'Donnell	Checked: J.Boyle	05-01-2023		Drawing Number: B21674 - Rev0

Appendix C – Borehole Logs

MACQUARIE GEOTECH

Borehole No.
BH01
Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	14/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	14/11/2022
Hole Location:	Gulargambone Road	Logged By:	L.Diluka
Hole Position:	639889.0 m E 6533064.2 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	228.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information								Soil Description							Observations
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed				0.30m		NA	FILL Sandy Gravelly CLAY: low plasticity, dark brown; gravel fine to coarse grained, sub-angular to angular; sand fine to coarse grained.	NA	NA			FILL
				B 0.30-0.50 m x2		227.5	0.50m 0.5		CL	Silty CLAY with sand trace gravel: low plasticity, dark brown, mottled orange; sand fine grained; gravel medium to coarse grained, sub-angular to angular; trace rootlets.	w~PL to w<PL	St			ALLUVIAL SOIL
				B 0.80-1.00 m x2		227.0	1.00m 1.0		CI-CH	CLAY with sand: medium to high plasticity, dark brown, mottled orange and grey; sand fine grained.	w<PL	St / VSt			
						226.5	1.5			Hole Terminated at 1.00 m Target depth					
						226.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH02

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	14/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	14/11/2022
Hole Location:	Gulargambone Road	Logged By:	L.Diluka
Hole Position:	639842.7 m E 6533280.1 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	227.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information									***Soil Description***			***Observations***	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.30-0.50 m x2		226.5	0.30m		NA	FILL Clayey Gravelly SAND: fine to coarse grained, dark brown; gravel fine to medium grained, sub-angular to angular; clay low plasticity.	NA	NA			FILL
							0.5		CL-Cl	Silty CLAY trace sand trace gravel: low to medium plasticity, dark brown, mottled brown; sand fine grained; gravel medium to coarse grained, sub-angular to angular.	w<PL	F to St VSt			ALLUVIAL SOIL
				B 0.80-1.00 m x2		226.0	1.00m 1.0			Hole Terminated at 1.00 m Target depth					
						225.5	1.5								
						225.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH03

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	14/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	14/11/2022
Hole Location:	Gulargambone Road	Logged By:	L.Diluka
Hole Position:	639677.2 m E 6533400.1 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	225.00 m		
Hole Diameter:	300 mm	Bearing:		Datum:		Operator:	K.Christiansen

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.30-0.50 m x2		224.5	0.10m		NA	FILL Sandy SILT with gravel: low plasticity, dark brown; sand fine grained; gravel medium to coarse grained, sub-rounded to sub-angular.	NA	NA			FILL
									ML	Clayey SILT trace sand: low plasticity, dark brown, mottled brown; clay low plasticity; sand fine grained.	w<PL	VSt			ALLUVIAL SOIL
							0.50m 0.5		CL-CI	Silty CLAY trace sand: low plasticity, dark brown, mottled brown; sand fine grained.		F to St			
				B 0.80-1.00 m x2		224.0	1.00m 1.0				w~PL to w<PL	VSt			
										Hole Terminated at 1.00 m Target depth					
						223.5	1.5								
						223.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH04

Engineering Log - Borehole

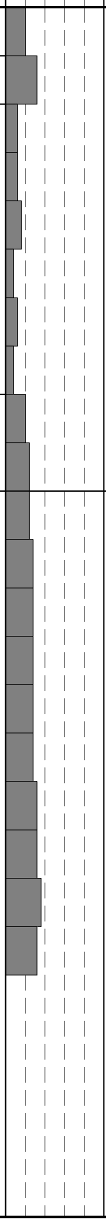
Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	14/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	14/11/2022
Hole Location:	Gulargambone Road	Logged By:	L.Diluka
Hole Position:	639373.5 m E 6533397.1 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	229.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed				0.10m		NA	FILL Silty CLAY trace sand trace gravel: low plasticity, dark brown, mottled dark grey; sand fine to medium grained; gravel fine to medium grained, sub-rounded to sub-angular.	NA	NA			FILL
				B 0.30-0.50 m x2		228.5	0.5 / 0.60m		CL	Silty CLAY trace sand with gravel: low plasticity, dark brown; sand fine grained; gravel fine to medium grained, rounded to sub-rounded.	w<PL	VSt / F to St			ALLUVIAL SOIL
				B 0.80-1.00 m x2		228.0	1.00m / 1.0		CL-CI	Sandy CLAY: low to medium plasticity, brown, mottled pale brown and dark brown; sand fine grained.		VSt			
						227.5	1.5			Hole Terminated at 1.00 m Target depth					
						227.0	2.0								



Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH05

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	14/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	14/11/2022
Hole Location:	Gulargambone Road	Logged By:	L.Diluka
Hole Position:	638816.7 m E 6533410.2 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	232.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.30-0.50 m x2		231.5	0.30m		NA	FILL Silty Gravelly SAND: fine grained, dark brown; gravel fine to medium grained, sub-angular to angular.	NA	NA			FILL
							0.5		CL-CI	CLAY with sand: low to medium plasticity, dark brown; sand fine grained.					ALLUVIAL SOIL
							0.60m		CH	CLAY with sand: high plasticity, brown; sand fine grained.	w<PL	St to VSt			RESIDUAL SOIL
				B 0.80-1.00 m x2		231.0	1.00m 1.0					H			
						230.5	1.5			Hole Terminated at 1.00 m Target depth					
						230.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.
BH06
Page 1 of 1

Engineering Log - Borehole

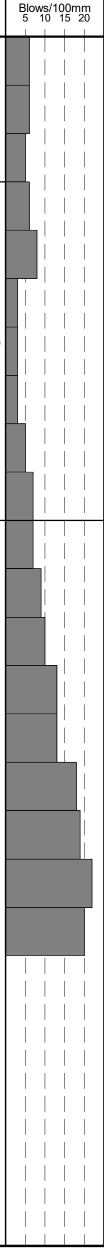
Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	14/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	14/11/2022
Hole Location:	Gulargambone Road	Logged By:	L.Diluka
Hole Position:	638596.8 m E 6533474.3 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	227.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm	Pocket Penetrometer UCS (kPa)	Structure and Additional Observations
AD/T			Not Observed						NA	FILL Gravelly Sandy SILT trace clay: low plasticity, dark brown; sand fine grained; gravel fine to medium grained, sub-rounded to angular; clay low plasticity.	NA	NA			FILL
				B 0.30-0.40 m x1			0.30m		ML	Clayey SILT trace gravel: low plasticity, dark brown; clay low plasticity; gravel fine to medium grained, sub-rounded to angular.	w<PL	St to VSt			ALLUVIAL SOIL
				B 0.40-0.50 m x2			0.40m		CI-CH	Silty CLAY: medium to high plasticity, dark brown.					
				B 0.50-0.70 m x3		226.5	0.50m 0.5		CH	CLAY with sand: high plasticity, dark brown; sand fine grained.					
				B 0.80-1.00 m x4			0.80m		CH	CLAY trace sand: high plasticity, brown, mottled dark brown; sand fine grained.					
						226.0	1.00m 1.0			Hole Terminated at 1.00 m Target depth					
						225.5	1.5								
						225.0	2.0								



Method
AS - Auger Screwing
RR - Rock Roller
WB - Washbore

Support
C - Casing

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

MACQUARIE GEOTECH

Borehole No.
BH07
Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	14/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	14/11/2022
Hole Location:	Gulargambone Road	Logged By:	L.Diluka
Hole Position:	638312.4 m E 6533563.4 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	226.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information | **Soil Description** | **Observations**

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed						NA	FILL Silty Gravelly SAND with clay: fine to coarse grained, dark brown; gravel fine to medium grained, sub-angular to angular; clay low plasticity. decreasing gravel fraction	NA	NA			FILL
							0.30m								
				B 0.30-0.50 m x2		225.5	0.5		CH	CLAY with sand trace gravel: high plasticity, dark brown, mottled grey; sand fine grained; gravel medium grained, sub-angular to angular.	w<PL	F			ALLUVIAL SOIL
				B 0.80-1.00 m x2						brown, dark brown, mottled dark grey		St to VSt			
						225.0	1.00m 1.0			Hole Terminated at 1.00 m Target depth					
						224.5	1.5								
						224.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH08

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	14/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	14/11/2022
Hole Location:	Gulargambone Road	Logged By:	L.Diluka
Hole Position:	638059.1 m E 6533637.9 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	226.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information									***Soil Description***				***Observations***
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.30-0.50 m x2		225.5	0.30m		NA	FILL Silty Gravelly SAND trace clay: fine to coarse grained, dark brown; gravel fine to coarse grained, sub-rounded to angular; clay low plasticity.	NA	NA			FILL
							0.50m		CI-CH	CLAY with gravel trace sand: medium to high plasticity, dark brown; gravel fine to coarse grained, sub-angular to angular; sand fine grained.	w<PL	F to St			ALLUVIAL SOIL
				B 0.80-1.00 m x2			0.5		CH	CLAY with gravel: high plasticity, dark brown; gravel medium to coarse grained, sub-angular to angular.					
						225.0	1.00m 1.0			Hole Terminated at 1.00 m Target depth		VSt			
						224.5	1.5								
						224.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH09

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	16/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	16/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	642093.5 m E 6534161.1 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	230.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information									***Soil Description***			***Observations***	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.30-0.50 m x1		229.5	0.25m		NA	FILL Gravelly Clayey SAND: fine to coarse grained, dark brown; clay low plasticity; gravel fine to coarse grained, sub-angular to angular; trace rootlets.	NA	NA			FILL
							0.50m 0.5		CL-CI	Sandy CLAY with gravel: low to medium plasticity, dark brown; sand fine to coarse grained; gravel fine to coarse grained, sub-angular to angular; trace rootlets.					ALLUVIAL SOIL
				B 0.80-1.00 m x1					CH	CLAY trace gravel trace sand: high plasticity, grey, mottled dark grey and pale grey; gravel medium to coarse grained, sub-angular to angular; sand fine grained; trace rootlets.	w<PL	St to VSt			
						229.0	1.00m 1.0			Hole Terminated at 1.00 m Target depth			27		
						228.5	1.5								
						228.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH10

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	16/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	16/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	642233.0 m E 6534265.7 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	228.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information									***Soil Description***			***Observations***	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.20-0.40 m x1		227.5	0.20m		NA	FILL Gravelly Sandy CLAY: low plasticity, dark brown; sand fine to coarse grained; gravel fine to coarse grained, sub-angular to angular; trace rootlets.	NA	NA			FILL
							0.5		CL-CI	Sandy CLAY trace gravel: low to medium plasticity, dark brown, mottled black; sand fine to coarse grained; gravel fine to coarse grained, sub-angular to angular; trace rootlets.		VSt			ALLUVIAL SOIL
							0.60m		CH	CLAY trace sand: high plasticity, grey, dark grey brown; sand fine grained.	w<PL	St			
				B 0.80-1.00 m x1		227.0	1.00m 1.0								
						226.5	1.5			Hole Terminated at 1.00 m Target depth			28		
						226.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Borehole No.
BH11

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	16/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	16/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	642313.8 m E 6534314.4 m N	Checked By:	D.O'Donnell

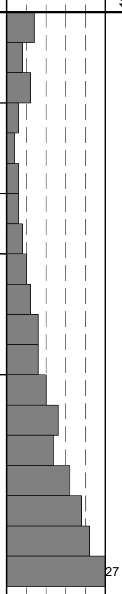
Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	228.00 m
Hole Diameter:	115 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information / Soil Description / Observations

Method: AD/T. Penetration: No resistance ranging to refusal to 3.00 m. Water: Not Observed.

Samples Tests Remarks	RL (m)	Depth (m)	Classification Symbol	Material Description (Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional)	Moisture Condition	Consistency Relative Density	Structure and Additional Observations
		0.30m	NA	FILL Gravelly SAND trace clay: fine to medium grained, dark brown; gravel fine to coarse grained, sub-angular to angular; clay low plasticity.	NA	NA	FILL
D 0.30-0.50 m x1	227.5	0.5 / 0.60m	SP	Clayey SAND: fine to medium grained, brown, mottled grey; clay low to medium plasticity.	W	L to MD	ALLUVIAL SOIL
D 0.80-1.00 m x1	227.0	1.00m	CI-CH	CLAY with sand trace gravel: medium to high plasticity, grey brown, mottled dark grey and grey; sand fine grained; gravel fine grained sub-angular.	w<PL	St / VSt	
D 1.30-1.50 m x1; D 1.80-2.00 m x1; D 2.30-2.50 m x1; D 2.80-3.00 m x1	226.5; 226.0; 225.5	1.5; 2.0; 2.5; 3.00m	CH	CLAY with sand: high plasticity, grey, mottled dark grey and pale grey; sand fine grained; trace mica.	w<PL	VSt / H	
	225.0; 224.5	3.0; 3.5		Hole Terminated at 3.00 m Target depth			

DCP Blows/100mm (5 10 15 20)



Pocket Penetrometer UCS (kPa): 100 200 300 400 500

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Support
C - Casing

Penetration
No resistance ranging to refusal

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

MACQUARIE GEOTECH

Borehole No.

BH12

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	16/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	16/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	642351.9 m E 6534349.7 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	227.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information									***Soil Description***			***Observations***		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.30-0.50 m x1		226.5	0.30m		NA	FILL SAND trace clay with gravel: fine to medium grained, brown, grey brown; clay low plasticity; gravel medium to coarse grained, rounded to sub-angular.	NA	NA			FILL
							0.50m		CI-CH	Sandy CLAY trace gravel: medium to high plasticity, brown, mottled grey and dark grey; sand fine to medium grained; gravel medium to coarse grained, rounded to sub-angular.					ALLUVIAL SOIL
				B 0.80-1.00 m x1			0.5		CL	CLAY trace sand: low plasticity, grey, mottled pale grey and black; sand fine to coarse grained.	w<PL	St to VSt			
						226.0	1.00m 1.0			Hole Terminated at 1.00 m Target depth					
						225.5	1.5								
						225.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH13

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	15/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	15/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	642639.8 m E 6534557.3 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	230.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information									***Soil Description***			***Observations***	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.30-0.50 m x1		229.5	0.5		NA	FILL Sandy CLAY trace gravel: low plasticity, brown, mottled dark grey and orange; sand fine to medium grained; gravel fine to coarse grained, sub-rounded to sub-angular.	NA	NA			FILL
							0.30m		CH	CLAY trace sand: high plasticity, grey brown, mottled pale grey; sand fine grained.	w<PL	F to St			ALLUVIAL SOIL
				B 0.80-1.00 m x1		229.0	1.00m 1.0					VSt			
												H			
						228.5	1.5			Hole Terminated at 1.00 m Target depth			30		
						228.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH14

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	15/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	15/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	642981.5 m E 6534807.2 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	226.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information										***Soil Description***			***Observations***	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.30-0.50 m x1		225.5	0.5		NA	FILL Clayey SAND with gravel: fine to coarse grained, brown, mottled grey and orange; clay low plasticity; gravel fine to coarse grained, sub-rounded to sub-angular; trace rootlets.	NA	NA			FILL
							0.20m		CH	CLAY trace sand: high plasticity, grey brown, mottled orange and pale grey; sand fine grained; trace rootlets.	w<PL	F to St			ALLUVIAL SOIL
				B 0.80-1.00 m x1		225.0	1.00m 1.0			Hole Terminated at 1.00 m Target depth					
						224.5	1.5						26		
						224.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	15/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	15/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	643202.6 m E 6534959.8 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	229.00 m
Hole Diameter:	115 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information | **Soil Description** | **Observations**

Method	Samples Tests Remarks	RL (m)	Depth (m)	Classification Symbol	Material Description (Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional)	Moisture Condition	Consistency Relative Density	Structure and Additional Observations
AD/T		229.0–228.7	0.00–0.30	NA	FILL SAND with clay: fine to coarse grained, grey brown; clay low plasticity.	NA	NA	FILL
	D 0.30-0.50 m x1; D 0.80-1.00 m x1; D 1.30-1.50 m x1	228.7–227.5	0.30–1.50	SP	Clayey SAND trace gravel: fine to coarse grained, grey brown; clay low plasticity; gravel fine to coarse grained, rounded to sub-angular.	D (to 0.80), M (0.80–1.30), W	VD, D, D to VD	ALLUVIAL SOIL
	D 1.80-2.00 m x1	227.5–227.0	1.50–2.00	SP	SAND with clay: fine to coarse grained, grey brown; clay low plasticity.	W	D to VD	
	D 2.30-2.50 m x1; D 2.80-3.00 m x1	227.0–226.0	2.00–3.00	CL	Silty Sandy CLAY: low plasticity, dark grey, mottled black; sand fine to coarse grained.	w~PL, w>PL	VSt to H	
		226.0	3.00		Hole Terminated at 3.00 m Target depth			

Water: groundwater level 15/11/22 11:00 at approx. 1.25 m

DCP (Blows/100mm, scale 5, 10, 15, 20); Pocket Penetrometer UCS (kPa, scale 100, 200, 300, 400, 500)

MACQUARIE GEOTECH

Borehole No.
BH16
Page 1 of 1

Engineering Log - Borehole

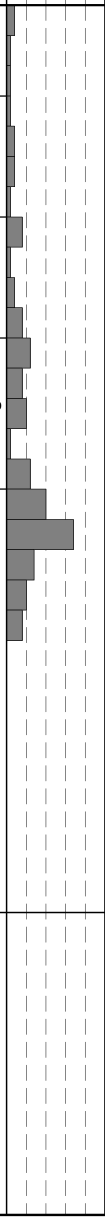
Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	15/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	15/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	643716.1 m E 6535384.9 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	230.00 m
Hole Diameter:	115 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T							0.30m		NA	FILL Sandy CLAY: low to medium plasticity, dark brown; sand fine to coarse grained; trace rootlets.	NA	NA			FILL
				D 0.30-0.50 m x1		229.5	0.50m 0.5		CL-CI	Sandy CLAY: low to medium plasticity, brown, mottled black and grey; sand fine to medium grained; trace rootlets.		F			ALLUVIAL SOIL
				D 0.50-1.00 m x1; D 1.00-1.50 m x1		229.0; 228.5	1.0; 1.5; 1.80m		CI	Sandy CLAY trace gravel: medium plasticity, brown, mottled black, orange and grey; sand fine to coarse grained; gravel fine to medium grained.	w<PL	F to St; St to VSt			
			15/11/22 12:00 (Level)	D 1.80-2.00 m x1		228.0	2.0; 2.30m		CL	Sandy CLAY trace gravel: low plasticity, brown, mottled grey and dark grey; sand fine to coarse grained; gravel fine to medium grained.		VSt to H			
				D 2.30-2.50 m x1		227.5	2.5; 2.80m		CI	Sandy CLAY: medium plasticity, dark brown, grey, mottled dark grey; sand fine to medium grained.	w~PL				
				D 2.80-3.00 m x1		227.0	3.00m 3.0		CH	CLAY trace sand: high plasticity, brown; sand fine grained.					
						226.5	3.5			Hole Terminated at 3.00 m Target depth					



Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Support
C - Casing

Penetration
No resistance ranging to refusal

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Moisture Condition
D - Dry
M - Moist
W - Wet

Plastic Limit
< PL
= PL
< PL

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

MACQUARIE GEOTECH

Borehole No.

BH17

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	15/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	15/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	644500.5 m E 6536087.0 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	232.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information | ***Soil Description*** | ***Observations***

Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.30-0.50 m x1		231.5	0.30m		NA	FILL Sandy CLAY with gravel: low plasticity, brown; sand fine to medium grained; gravel fine grained, sub-angular to angular.	NA	NA			FILL
							0.5 0.55m		CH	CLAY trace sand: high plasticity, brown, grey, dark grey; sand fine grained.	w<PL	St to VSt			ALLUVIAL SOIL
				B 0.80-1.00 m x1		231.0	1.00m 1.0		CH	CLAY with sand: high plasticity, grey, dark grey, mottled pale grey; sand fine to coarse grained.		H			
						230.5	1.5			Hole Terminated at 1.00 m Target depth					
						230.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH18

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	15/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	15/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	644795.5 m E 6536262.9 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	232.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information									***Soil Description***				***Observations***	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.20-0.40 m x2		231.5	0.20m		NA	FILL Gravelly Sandy CLAY: low plasticity, brown, dark brown; sand fine to medium grained; gravel medium to coarse grained, sub-angular to angular.	NA	NA			FILL
									CL-CI	Sandy CLAY: low to medium plasticity, brown, dark brown; sand fine to medium grained.					ALLUVIAL SOIL
							0.50m 0.5		CH	CLAY trace sand: high plasticity, grey, dark grey; sand fine grained.	w<PL	F to St			
				B 0.80-1.00 m x2		231.0	1.00m 1.0			Hole Terminated at 1.00 m Target depth					
						230.5	1.5								
						230.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH19

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	15/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	15/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	645148.1 m E 6536471.1 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	231.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information									***Soil Description***				***Observations***		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T		Not Observed		B 0.20-0.40 m x2		230.5	0.20m		NA	FILL Gravelly Sandy CLAY: low plasticity, brown; sand fine to coarse grained; gravel fine to medium grained, sub-angular to angular.	NA	NA			FILL
							0.45m		CI-CH	CLAY with sand trace gravel: medium to high plasticity, dark brown, mottled dark grey; sand fine to medium grained; gravel medium grained, rounded sub-rounded.					ALLUVIAL SOIL
							0.5		CH	CLAY with sand trace gravel: high plasticity, dark grey, grey, mottled brown and dark brown; sand fine to coarse grained; gravel fine to medium grained.	w<PL	St to VSt			
				B 0.80-1.00 m x2		230.0	1.00m 1.0			Hole Terminated at 1.00 m Target depth					
						229.5	1.5								
						229.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH20

Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	15/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	15/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	652042.2 m E 6537993.3 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	252.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen

Drilling Information									***Soil Description***				***Observations***	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description Fraction, Colour, Structure, Bedding, Plasticity, Sensitivity, Additional	Moisture Condition	Consistency Relative Density	DCP Blows/100mm 5 10 15 20	Pocket Penetrometer UCS (kPa) 100 200 300 400 500	Structure and Additional Observations
AD/T			Not Observed	B 0.20-0.40 m x2		251.5	0.20m		NA	FILL Sandy CLAY with gravel: low plasticity, dark brown; sand fine to medium grained; gravel medium grained, sub-angular to angular.	NA	NA			FILL
							0.45m		CL	Sandy CLAY: low plasticity, dark brown; sand fine to medium grained.		VSt to H			ALLUVIAL SOIL
							0.5		CH	CLAY trace sand: high plasticity, brown, pale brown, mottled dark brown; sand fine grained.	w<PL	F to St			
				B 0.80-1.00 m x2		251.0	1.00m 1.0			Hole Terminated at 1.00 m Target depth					
						250.5	1.5								
						250.0	2.0								

Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

MACQUARIE GEOTECH

Borehole No.

BH21

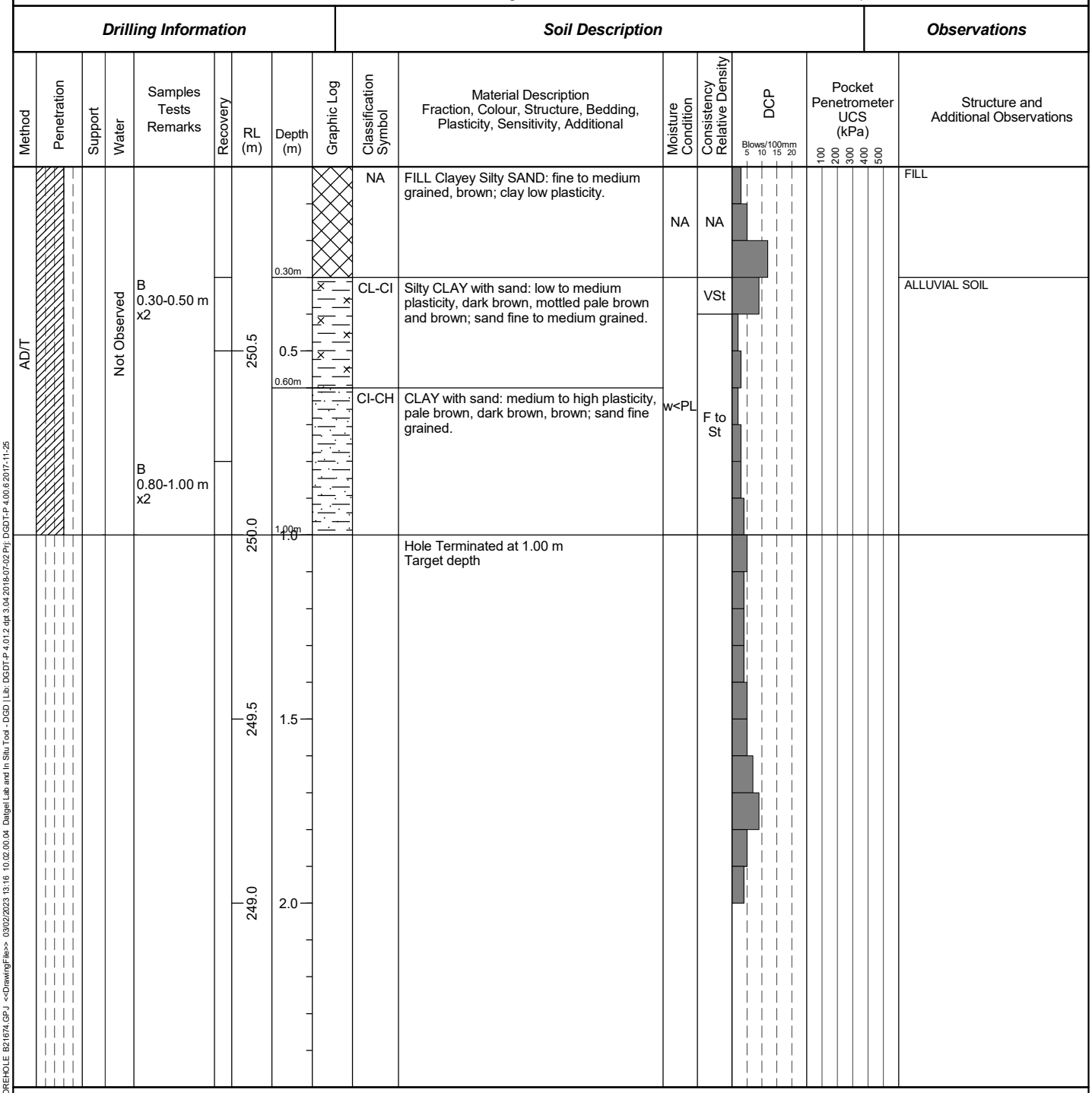
Page 1 of 1

Engineering Log - Borehole

Project No.: B21674

Client:	Ardill Payne and Partners	Commenced:	15/11/2022
Project Name:	Box Ridge Rd and Gulargambone Rd	Completed:	15/11/2022
Hole Location:	Box Ridge Road	Logged By:	L.Diluka
Hole Position:	652528.8 m E 6538074.5 m N	Checked By:	D.O'Donnell

Drill Model and Mounting:	Innovative sampla 24LT	Inclination:	-90°	RL Surface:	251.00 m
Hole Diameter:	300 mm	Bearing:		Datum:	Operator: K.Christiansen



Method
AS - Auger Screwing
RR - Rock Roller
WB- Washbore

Penetration
No resistance ranging to refusal

Water
Level (Date)
Inflow
Partial Loss
Complete Loss

Samples and Tests
U - Undisturbed Sample
D - Disturbed Sample
SPT - Standard Penetration Test

Moisture Condition
D - Dry
M - Moist
W - Wet

Consistency/Relative Density
VS - Very Soft
S - Soft
F - Firm
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Support
C - Casing

Graphic Log/Core Loss
Core recovered (hatching indicates material)
Core loss

Classification Symbols and Soil Descriptions
Based on Unified Soil Classification System

Plastic Limit
< PL
= PL
< PL

Appendix D – Laboratory Test Results

Material Test Report

Macquarie Geotechnical Pty Ltd
Dubbo Laboratory
6 Johnson Street Dubbo NSW 2830
Phone: (02) 6332 2011
Email: apile@macgeo.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833A
Date Sampled:	14/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH1 0.3-0.5m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**3.0**		
Method of Compactive Effort	Standard		
Method used to Determine MDD			
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.99		
Optimum Moisture Content (%)	10.5		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	100.0		
Dry Density after Soaking (t/m^3)	1.95		
Field Moisture Content (%)	13.9		
Moisture Content at Placement (%)	10.5		
Moisture Content Top 30mm (%)	13.3		
Moisture Content Rest of Sample (%)	12.8		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	244.2		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	2.2		
Method used to Determine MDD; AS 1289 5.1.1 & 2.1.1			

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833B
Date Sampled:	14/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH2 0.8-1.0m**

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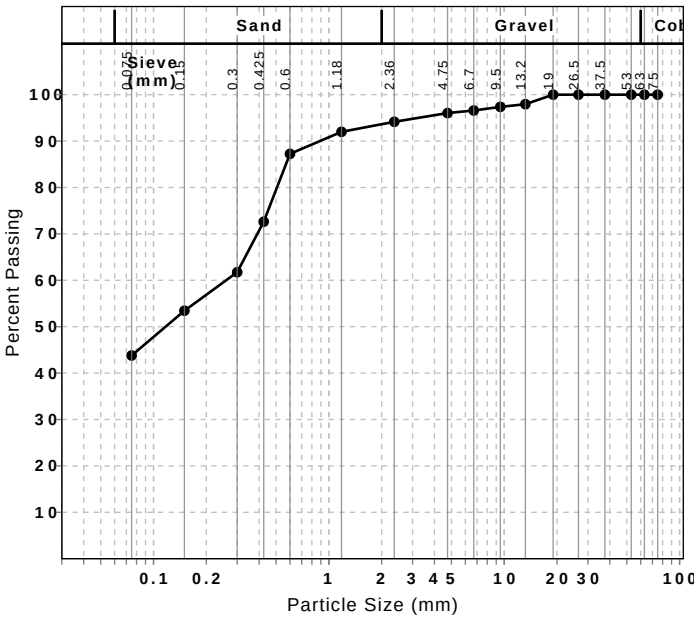
Particle Size Distribution (AS1289 3.6.1)			
Sieve	Passed %	Passing Limits	
75 mm	**100**		
63 mm	**100**		
53 mm	**100**		
37.5 mm	**100**		
26.5 mm	**100**		
19 mm	**100**		
13.2 mm	**98**		
9.5 mm	**97**		
6.7 mm	**97**		
4.75 mm	**96**		
2.36 mm	**94**		
1.18 mm	**92**		
0.6 mm	**87**		
0.425 mm	**73**		
0.3 mm	**62**		
0.15 mm	**53**		
0.075 mm	**44**		

Particle Size Distribution



Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	25		
Plastic Limit (%)	14		
Plasticity Index (%)	**11**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**7.5**		
Cracking Crumbling Curling	Cracking		

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**7**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.94		
Optimum Moisture Content (%)	11.5		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	99.5		
Dry Density after Soaking (t/m^3)	1.90		
Field Moisture Content (%)	13.6		
Moisture Content at Placement (%)	11.5		
Moisture Content Top 30mm (%)	13.5		
Moisture Content Rest of Sample (%)	12.9		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	237.6		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833C
Date Sampled:	14/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH3 0.3-0.5m**

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Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**3.0**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	2.00		
Optimum Moisture Content (%)	10.0		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	100.0		
Dry Density after Soaking (t/m^3)	1.96		
Field Moisture Content (%)	13.4		
Moisture Content at Placement (%)	10.0		
Moisture Content Top 30mm (%)	12.5		
Moisture Content Rest of Sample (%)	12.3		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	239.9		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833D
Date Sampled:	14/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH4 0.8-1.0m**

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Laboratory Manager
NATA Accredited Laboratory Number: 14874

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**8**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	2.10		
Optimum Moisture Content (%)	8.5		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	99.0		
Dry Density after Soaking (t/m^3)	2.06		
Field Moisture Content (%)	6.8		
Moisture Content at Placement (%)	8.6		
Moisture Content Top 30mm (%)	9.3		
Moisture Content Rest of Sample (%)	8.9		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	283.1		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833E
Date Sampled:	14/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH5 0.3-0.5m**

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NATA Accredited Laboratory Number: 14874

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**2.5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.82		
Optimum Moisture Content (%)	14.5		
Laboratory Density Ratio (%)	98.5		
Laboratory Moisture Ratio (%)	99.0		
Dry Density after Soaking (t/m^3)	1.78		
Field Moisture Content (%)	15.9		
Moisture Content at Placement (%)	14.5		
Moisture Content Top 30mm (%)	16.7		
Moisture Content Rest of Sample (%)	16.4		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	283.5		
Swell (%)	1.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

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Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833F
Date Sampled:	14/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH6 0.8-1.0m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**4.0**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.69		
Optimum Moisture Content (%)	18.0		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	100.5		
Dry Density after Soaking (t/m^3)	1.63		
Field Moisture Content (%)	23.7		
Moisture Content at Placement (%)	18.2		
Moisture Content Top 30mm (%)	21.7		
Moisture Content Rest of Sample (%)	20.1		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	234.6		
Swell (%)	2.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

Macquarie Geotechnical Pty Ltd
Dubbo Laboratory
6 Johnson Street Dubbo NSW 2830
Phone: (02) 6332 2011
Email: apile@macgeo.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833G
Date Sampled:	14/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH7 0.3-0.5m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**4.5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.79		
Optimum Moisture Content (%)	16.5		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	100.0		
Dry Density after Soaking (t/m^3)	1.74		
Field Moisture Content (%)	26.0		
Moisture Content at Placement (%)	16.4		
Moisture Content Top 30mm (%)	19.4		
Moisture Content Rest of Sample (%)	18.3		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	234.8		
Swell (%)	1.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833S
Date Sampled:	14/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH7 0.8-1.0m**

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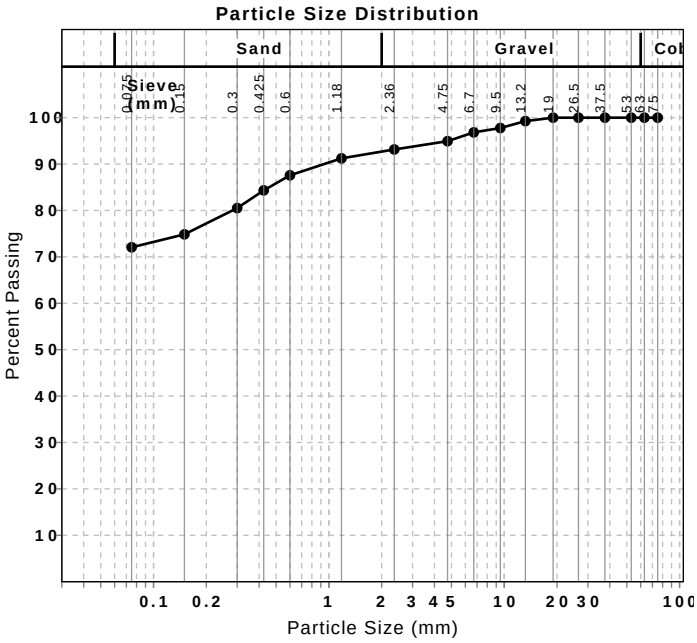
Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Particle Size Distribution (AS1289 3.6.1)			
Sieve	Passed %	Passing Limits	
75 mm	**100**		
63 mm	**100**		
53 mm	**100**		
37.5 mm	**100**		
26.5 mm	**100**		
19 mm	**100**		
13.2 mm	**99**		
9.5 mm	**98**		
6.7 mm	**97**		
4.75 mm	**95**		
2.36 mm	**93**		
1.18 mm	**91**		
0.6 mm	**88**		
0.425 mm	**84**		
0.3 mm	**81**		
0.15 mm	**75**		
0.075 mm	**72**		



Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	60		
Plastic Limit (%)	16		
Plasticity Index (%)	**44**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**15.0**		
Cracking Crumbling Curling	Cracking & Curling		

Material Test Report

Macquarie Geotechnical Pty Ltd
Dubbo Laboratory
6 Johnson Street Dubbo NSW 2830
Phone: (02) 6332 2011
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833H
Date Sampled:	14/11/2022
Dates Tested:	17/11/2022 - 14/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH8 0.8-1.0m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**2.0**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.71		
Optimum Moisture Content (%)	19.5		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	99.5		
Dry Density after Soaking (t/m^3)	1.64		
Field Moisture Content (%)	22.6		
Moisture Content at Placement (%)	19.4		
Moisture Content Top 30mm (%)	29.9		
Moisture Content Rest of Sample (%)	24.4		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	237.0		
Swell (%)	2.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

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Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833I
Date Sampled:	16/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH9 0.3-0.5m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**4.5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.98		
Optimum Moisture Content (%)	11.0		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	99.5		
Dry Density after Soaking (t/m^3)	1.92		
Field Moisture Content (%)	13.0		
Moisture Content at Placement (%)	11.2		
Moisture Content Top 30mm (%)	16.8		
Moisture Content Rest of Sample (%)	12.2		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	256.4		
Swell (%)	1.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

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Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833J
Date Sampled:	16/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH10 0.8-1.0m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**3.0**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.73		
Optimum Moisture Content (%)	18.5		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	99.5		
Dry Density after Soaking (t/m^3)	1.66		
Field Moisture Content (%)	22.1		
Moisture Content at Placement (%)	18.4		
Moisture Content Top 30mm (%)	24.9		
Moisture Content Rest of Sample (%)	21.0		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	187.3		
Swell (%)	2.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833T
Date Sampled:	16/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH11 0.8-1.0m**

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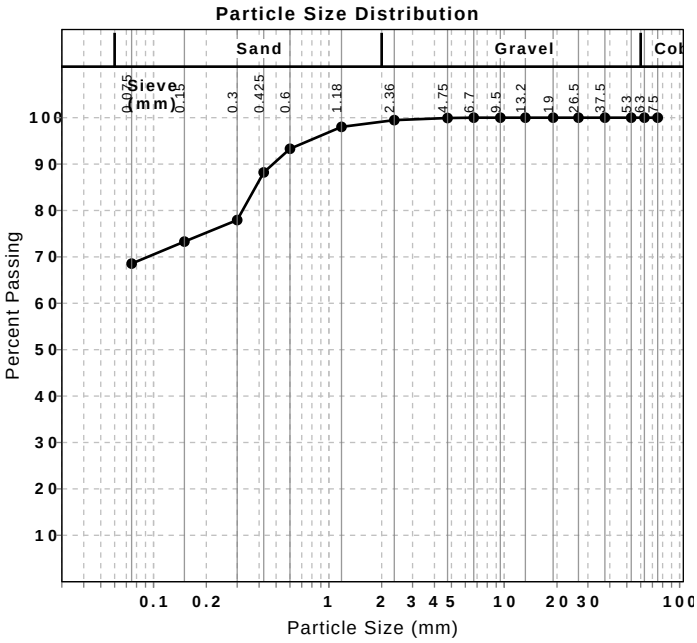
Particle Size Distribution (AS1289 3.6.1)			
Sieve	Passed %	Passing Limits	
75 mm	**100**		
63 mm	**100**		
53 mm	**100**		
37.5 mm	**100**		
26.5 mm	**100**		
19 mm	**100**		
13.2 mm	**100**		
9.5 mm	**100**		
6.7 mm	**100**		
4.75 mm	**100**		
2.36 mm	**99**		
1.18 mm	**98**		
0.6 mm	**93**		
0.425 mm	**88**		
0.3 mm	**78**		
0.15 mm	**73**		
0.075 mm	**69**		



Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	52		
Plastic Limit (%)	17		
Plasticity Index (%)	**35**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**16.5**		
Cracking Crumbling Curling	Cracking		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833U
Date Sampled:	16/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH11 1.8-2.0m**

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Approved Signatory: Alan Pile
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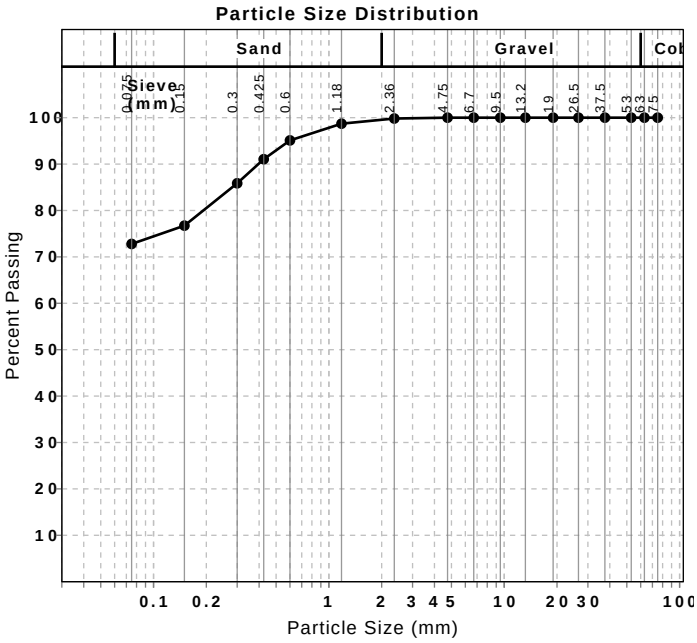
NATA Accredited Laboratory Number: 14874

Particle Size Distribution (AS1289 3.6.1)			
Sieve	Passed %	Passing Limits	
75 mm	**100**		
63 mm	**100**		
53 mm	**100**		
37.5 mm	**100**		
26.5 mm	**100**		
19 mm	**100**		
13.2 mm	**100**		
9.5 mm	**100**		
6.7 mm	**100**		
4.75 mm	**100**		
2.36 mm	**100**		
1.18 mm	**99**		
0.6 mm	**95**		
0.425 mm	**91**		
0.3 mm	**86**		
0.15 mm	**77**		
0.075 mm	**73**		



Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	52		
Plastic Limit (%)	17		
Plasticity Index (%)	**35**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**16.0**		
Cracking Crumbling Curling	Cracking & Curling		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833K
Date Sampled:	16/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH12 0.3-1.0m**

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Laboratory Manager
NATA Accredited Laboratory Number: 14874

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**6**		
Method of Compactive Effort	Standard		
Method used to Determine MDD			
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	2.01		
Optimum Moisture Content (%)	11.5		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	99.0		
Dry Density after Soaking (t/m^3)	1.97		
Field Moisture Content (%)	13.5		
Moisture Content at Placement (%)	11.4		
Moisture Content Top 30mm (%)	12.0		
Moisture Content Rest of Sample (%)	11.7		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	216.8		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0		
Method used to Determine MDD; AS 1289 5.1.1 & 2.1.1			

Material Test Report

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Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833L
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH13 0.8-1.0m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**2.5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD			
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.76		
Optimum Moisture Content (%)	17.0		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	100.0		
Dry Density after Soaking (t/m^3)	1.69		
Field Moisture Content (%)	19.7		
Moisture Content at Placement (%)	17.2		
Moisture Content Top 30mm (%)	23.4		
Moisture Content Rest of Sample (%)	19.7		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	207.0		
Swell (%)	2.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		
Method used to Determine MDD; AS 1289 5.1.1 & 2.1.1			

Material Test Report

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Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833M
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH14 0.3-0.5m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**3.0**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.71		
Optimum Moisture Content (%)	19.5		
Laboratory Density Ratio (%)	98.5		
Laboratory Moisture Ratio (%)	99.5		
Dry Density after Soaking (t/m^3)	1.63		
Field Moisture Content (%)	22.3		
Moisture Content at Placement (%)	19.2		
Moisture Content Top 30mm (%)	23.3		
Moisture Content Rest of Sample (%)	20.3		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	190.6		
Swell (%)	2.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833V
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH15 0.8-1.0m**

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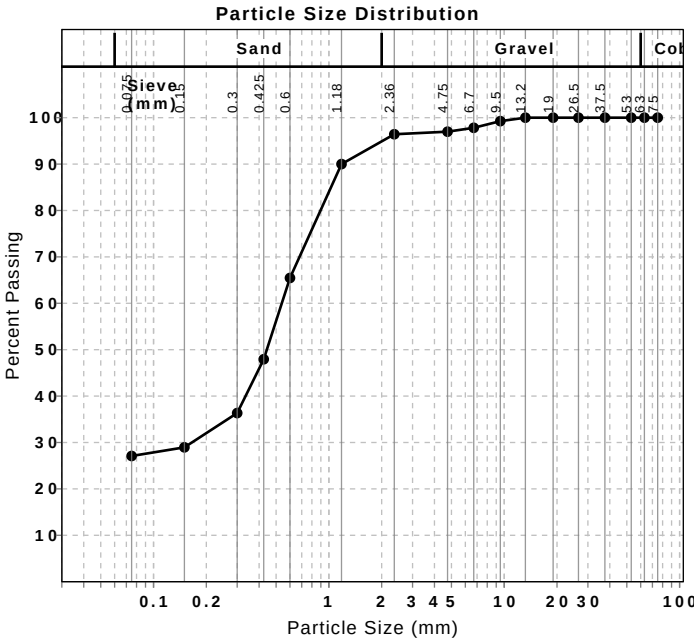
NATA Accredited Laboratory Number: 14874

Particle Size Distribution (AS1289 3.6.1)			
Sieve	Passed %	Passing Limits	
75 mm	**100**		
63 mm	**100**		
53 mm	**100**		
37.5 mm	**100**		
26.5 mm	**100**		
19 mm	**100**		
13.2 mm	**100**		
9.5 mm	**99**		
6.7 mm	**98**		
4.75 mm	**97**		
2.36 mm	**96**		
1.18 mm	**90**		
0.6 mm	**65**		
0.425 mm	**48**		
0.3 mm	**36**		
0.15 mm	**29**		
0.075 mm	**27**		



Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	15		
Plastic Limit (%)	11		
Plasticity Index (%)	**4**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**3.0**		
Cracking Crumbling Curling	Cracking		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833W
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH15 1.8-2.0m**

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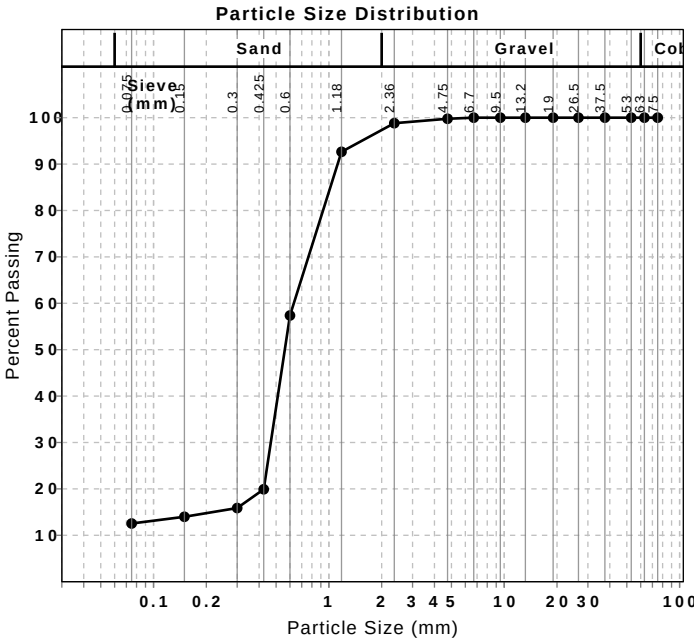
Particle Size Distribution (AS1289 3.6.1)			
Sieve	Passed %	Passing Limits	
75 mm	**100**		
63 mm	**100**		
53 mm	**100**		
37.5 mm	**100**		
26.5 mm	**100**		
19 mm	**100**		
13.2 mm	**100**		
9.5 mm	**100**		
6.7 mm	**100**		
4.75 mm	**100**		
2.36 mm	**99**		
1.18 mm	**93**		
0.6 mm	**57**		
0.425 mm	**20**		
0.3 mm	**16**		
0.15 mm	**14**		
0.075 mm	**13**		



Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	Not Obtainable		
Plastic Limit (%)	Not Obtainable		
Plasticity Index (%)	**Non Plastic**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1 / AS 1289.3.1.2 / AS 1289.3.9.1 / AS 1289.3.9.2		
Linear Shrinkage (%)			
Cracking Crumbling Curling			

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833X
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH16 0.5-1.0m**

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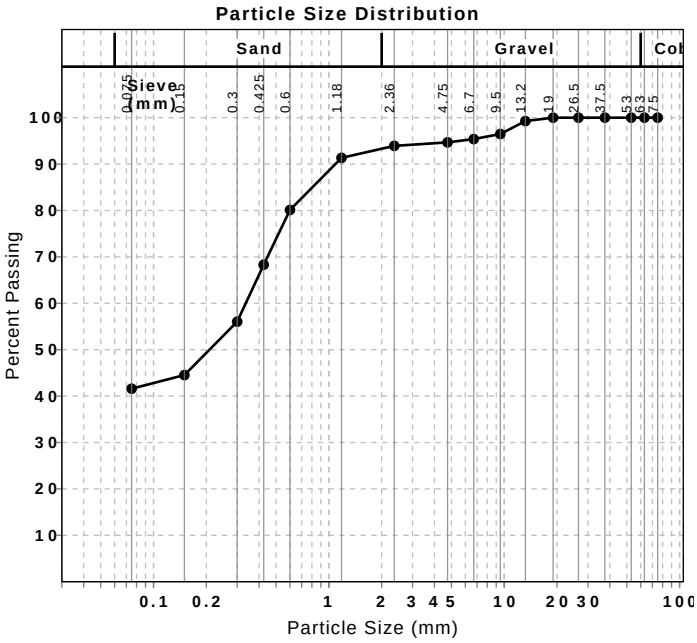
Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Particle Size Distribution (AS1289 3.6.1)			
Sieve	Passed %	Passing Limits	
75 mm	**100**		
63 mm	**100**		
53 mm	**100**		
37.5 mm	**100**		
26.5 mm	**100**		
19 mm	**100**		
13.2 mm	**99**		
9.5 mm	**96**		
6.7 mm	**95**		
4.75 mm	**95**		
2.36 mm	**94**		
1.18 mm	**91**		
0.6 mm	**80**		
0.425 mm	**68**		
0.3 mm	**56**		
0.15 mm	**45**		
0.075 mm	**42**		



Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	40		
Plastic Limit (%)	13		
Plasticity Index (%)	**27**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**11.0**		
Cracking Crumbling Curling	Cracking		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833Y
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH16 1.8-2.0m**

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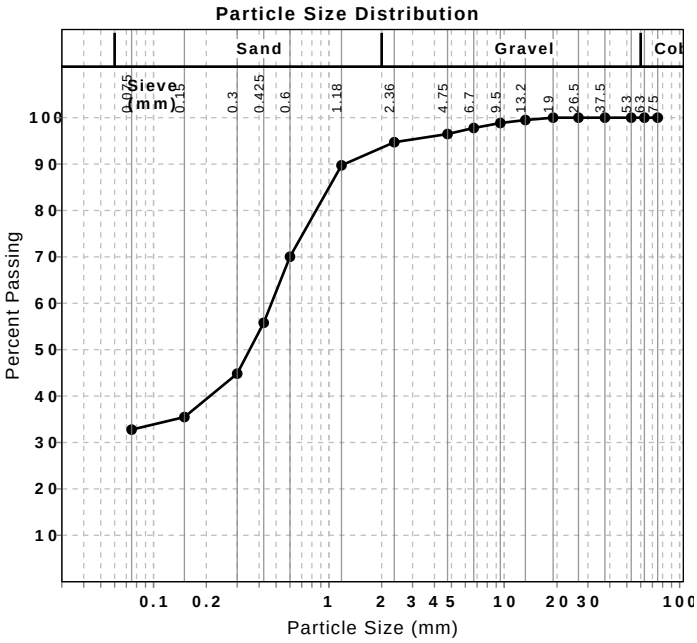
Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Particle Size Distribution (AS1289 3.6.1)			
Sieve	Passed %	Passing Limits	
75 mm	**100**		
63 mm	**100**		
53 mm	**100**		
37.5 mm	**100**		
26.5 mm	**100**		
19 mm	**100**		
13.2 mm	**99**		
9.5 mm	**99**		
6.7 mm	**98**		
4.75 mm	**96**		
2.36 mm	**95**		
1.18 mm	**90**		
0.6 mm	**70**		
0.425 mm	**56**		
0.3 mm	**45**		
0.15 mm	**35**		
0.075 mm	**33**		



Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	30		
Plastic Limit (%)	11		
Plasticity Index (%)	**19**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**10.5**		
Cracking Crumbling Curling	Cracking		

Material Test Report

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Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833N
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH17 0.8-1.0m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**2.5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.60		
Optimum Moisture Content (%)	20.5		
Laboratory Density Ratio (%)	98.5		
Laboratory Moisture Ratio (%)	99.0		
Dry Density after Soaking (t/m^3)	1.54		
Field Moisture Content (%)	15.2		
Moisture Content at Placement (%)	20.4		
Moisture Content Top 30mm (%)	28.1		
Moisture Content Rest of Sample (%)	25.7		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	211.8		
Swell (%)	2.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

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Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833O
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH18 0.3-0.5m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.97		
Optimum Moisture Content (%)	10.0		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	101.5		
Dry Density after Soaking (t/m^3)	1.93		
Field Moisture Content (%)	12.4		
Moisture Content at Placement (%)	10.2		
Moisture Content Top 30mm (%)	13.1		
Moisture Content Rest of Sample (%)	12.9		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	241.6		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833P
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH19 0.8-1.0m**

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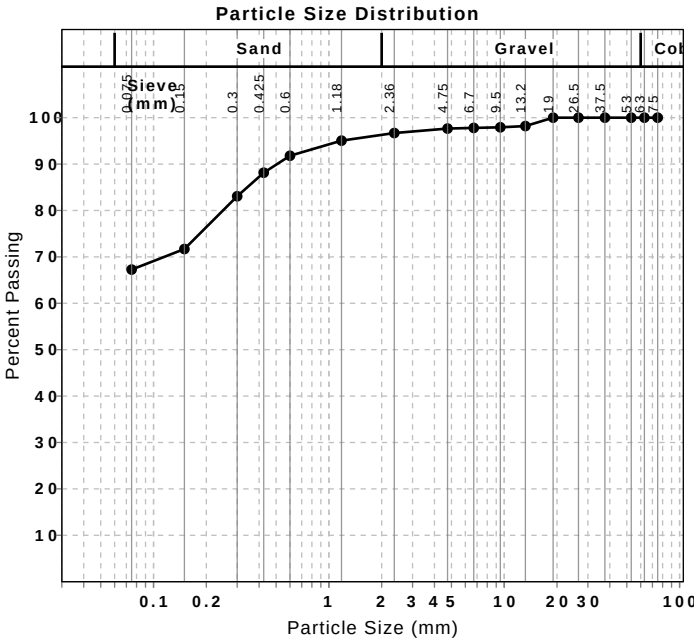
Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Particle Size Distribution (AS1289 3.6.1)			
Sieve	Passed %	Passing Limits	
75 mm	**100**		
63 mm	**100**		
53 mm	**100**		
37.5 mm	**100**		
26.5 mm	**100**		
19 mm	**100**		
13.2 mm	**98**		
9.5 mm	**98**		
6.7 mm	**98**		
4.75 mm	**98**		
2.36 mm	**97**		
1.18 mm	**95**		
0.6 mm	**92**		
0.425 mm	**88**		
0.3 mm	**83**		
0.15 mm	**72**		
0.075 mm	**67**		

Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	51		
Plastic Limit (%)	15		
Plasticity Index (%)	**36**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**15.0**		
Cracking Crumbling Curling	Cracking & Curling		



California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**4.5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.73		
Optimum Moisture Content (%)	17.5		
Laboratory Density Ratio (%)	98.5		
Laboratory Moisture Ratio (%)	99.0		
Dry Density after Soaking (t/m^3)	1.67		
Field Moisture Content (%)	21.1		
Moisture Content at Placement (%)	17.4		
Moisture Content Top 30mm (%)	23.8		
Moisture Content Rest of Sample (%)	19.9		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	192.1		
Swell (%)	1.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

Material Test Report

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Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833Q
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH20 0.3-0.5m**

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**3.0**		
Method of Compactive Effort	Standard		
Method used to Determine MDD			
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.97		
Optimum Moisture Content (%)	11.5		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	101.5		
Dry Density after Soaking (t/m^3)	1.92		
Field Moisture Content (%)	7.7		
Moisture Content at Placement (%)	11.5		
Moisture Content Top 30mm (%)	13.6		
Moisture Content Rest of Sample (%)	12.2		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	244.6		
Swell (%)	0.5		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		
Method used to Determine MDD; AS 1289 5.1.1 & 2.1.1			

Material Test Report

Report Number:	**D22037-44**
Issue Number:	1
Date Issued:	21/12/2022
Client:	Macquarie Geotechnical 6 Johnson Street, Dubbo NSW 2830
Contact:	John Boyle
Project Number:	D22037
Project Name:	Dubbo Laboratory Testing
Project Location:	6 Johnson Street, Dubbo, NSW, 2830
Work Request:	833
Sample Number:	DBO-833R
Date Sampled:	15/11/2022
Dates Tested:	17/11/2022 - 20/12/2022
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Preparation Method:	In accordance with the test method
Sample Location:	**Ardill Payne and Partners-Box Ridge Road and Gulargambone Rd Culverts**
Lot No:	**BH21 0.8-1.0m**

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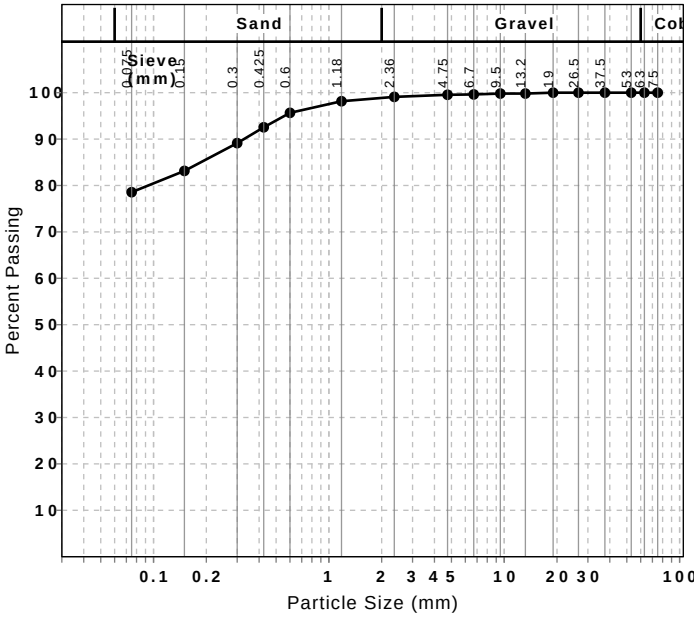
Approved Signatory: Alan Pile
Laboratory Manager
NATA Accredited Laboratory Number: 14874

Particle Size Distribution (AS1289 3.6.1)			
Sieve	Passed %	Passing Limits	
75 mm	**100**		
63 mm	**100**		
53 mm	**100**		
37.5 mm	**100**		
26.5 mm	**100**		
19 mm	**100**		
13.2 mm	**100**		
9.5 mm	**100**		
6.7 mm	**100**		
4.75 mm	**100**		
2.36 mm	**99**		
1.18 mm	**98**		
0.6 mm	**96**		
0.425 mm	**93**		
0.3 mm	**89**		
0.15 mm	**83**		
0.075 mm	**79**		

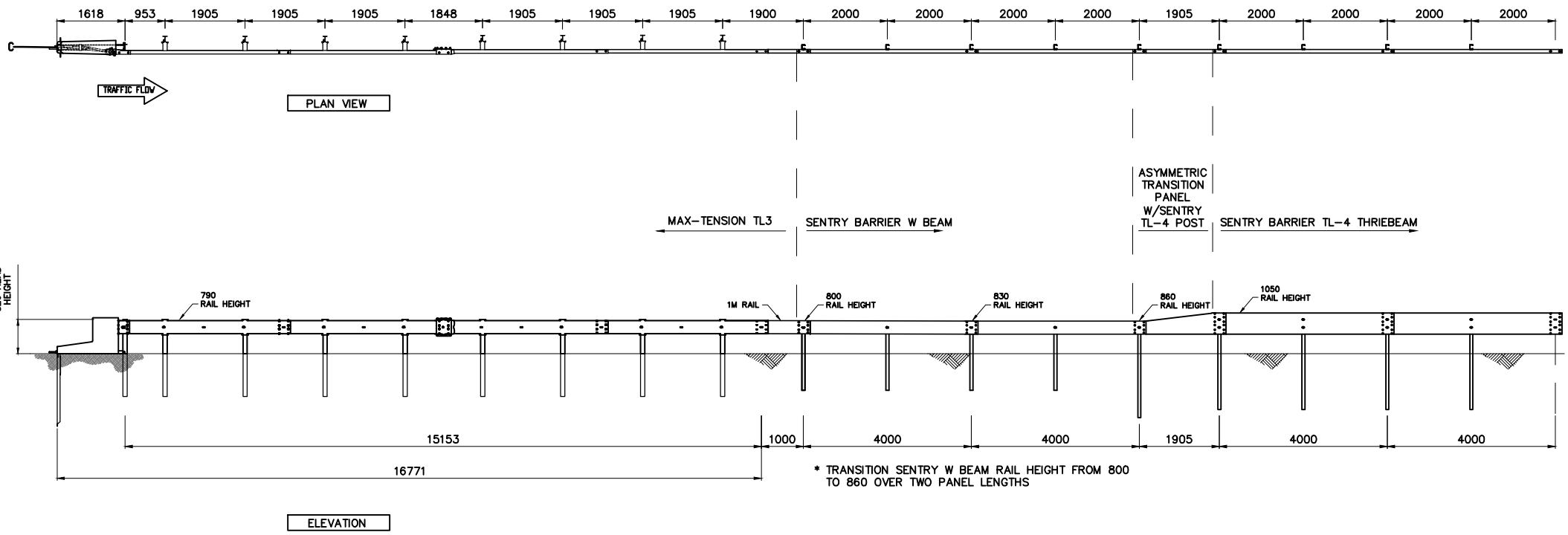
Particle Size Distribution



Atterberg Limit (AS1289 3.1.1 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	49		
Plastic Limit (%)	16		
Plasticity Index (%)	**33**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1		
Linear Shrinkage (%)	**15.0**		
Cracking Crumbling Curling	Cracking		

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	**3.5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Technician Assessment		
Maximum Dry Density (t/m^3)	1.73		
Optimum Moisture Content (%)	16.5		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	101.0		
Dry Density after Soaking (t/m^3)	1.66		
Field Moisture Content (%)	16.7		
Moisture Content at Placement (%)	16.4		
Moisture Content Top 30mm (%)	24.4		
Moisture Content Rest of Sample (%)	21.3		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours	214.6		
Swell (%)	2.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		



REV.	DESCRIPTION	APPD	DATE
B	MOTORCYCLIST PROT. COVER AMENDED	W.R.	23.08.21
A	ORIGINAL ISSUE	W.R.	05.02.20

ACP
AUSTRALIAN CONSTRUCTION PRODUCTS
Australian Construction Products Pty Ltd
339 Horsley Road Milperra NSW 2214
P.O. Box 565 Panania NSW 2213
Tel: +61 2 9772 4172 Fax: +61 2 9792 6272

TOLERANCES
Whole Numbers ±2
One Decimal Place :±0.05
Bend Angle : ±2
Straightness : 1.5per1500

Scale: N.T.S.

CLIENT

MATERIAL

FINISH

ITEM
SENTRY BARRIER TL-4 THRIEBEAM
TRANSITION TO MAX-TENSION TL-3 TERMINAL

DRAWING NUMBER
GA-TR21

DRAWN	CHECKED	APPROVED
W.R.		