



Infrastructure Capability Assessment

1-5 Railway St, Gulgong

Prepared For
Mid-Western Regional Council

Project No.
TEL2021184

Issue A February 2022

Telford Consulting Pty Ltd
Sydney + Brisbane



Document Information

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Issue A		Position	Date	Comments
Prepared By	Mounir Mesbah	Civil Engineer	14 February 2022	Nil
Reviewed By	Michel Chaaya	Principal Engineer	14 February 2022	Nil

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Disclaimer

The advice and information contained within this report relies on the quality of the records and other data provided by the Client and obtained from Council along with the time and budgetary constraints imposed.

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1 INTRODUCTION

Telford Consulting Pty Ltd have been commissioned to undertake a Infrastructure Capability Assessment for the Proposed Subdivision at 1-5 Railway Street, Gulgong.

The aim of this report is to assess:

1. Review of existing services;
2. Concept Water Supply and Sewer Plan;

The limitations of this report are:

1. Existing services location and size have been derived from Dial Before You Dig inquiries, search records which have been made available and the provided site survey;
2. No field sampling or testing has been undertaken;
3. No analysis or calculations as to the capacity of the existing services have been undertaken;
4. No geotechnical investigations have been undertaken;

2 SITE DETAILS

2.1 Site Details Summary

Table 2-1 provides a summary of development details for the subject site.

Table 2-1 – Site Details / Development Summary

Development Details	Comments
Applicant's Name	Mr. Roy Amery
Street Address	1-5 Railway Street
Suburb	Gulgong
State / Postcode	NSW / 2852
Local Government Area	Mid-Western Regional Council
Development Type	Subdivision
Number of Proposed Lots	39 lots + 2 open spaces
Current Site Area	3.928 hectares
Real Property Description	Lot 2 in DP 61342+

2.2 Location / Existing Development Details

The subject site is located at 1-5 Railway Street, Gulgong and has a total site area of approximately 4.19 hectares.

The subject site is bounded by residential development to the South and West, Railway Street to the North and Homer Street to the East.

There is currently a dwelling and few sheds situated on the site. The site is covered by average grass and minimal vegetation.

The site will be accessed from Sixth Avenue to the south and Haybale Street to the North.

See **Figure 2.1** below for a locality map of the site.



Figure 2.1 - Locality Map, Source: Sixmaps

2.3 Existing Topography and Drainage Patterns

The topography and drainage patterns of the subject site are generally as follows:

1. The site has a gentle slope and falls from South to North, with the lowest point occurring at the North-Eastern Boundary;
2. The highest point of the site is at approximately RL 461.0m AHD, whilst the lowest point as at RL 453.2m AHD;
3. External catchment currently exists for the site from the South;
4. The site falls towards the North at an average grade of approximately 3%.

2.4 Current Land Zoning

The area classification designated by the Mid-Western Regional Local Environmental Plan 2021 is R1 (General Residential).

2.5 Site Ingress/Egress During Construction

The site is accessed via Railway Street to the North.

3 FILLING AND EXCAVATION

Earthworks design shall be in accordance with the following standards:

1. AS (Australian Standard) 3798-2007: Guidelines on earthworks for commercial and residential developments;
2. Mid-Western Regional Council's DCP (Development Control Plan) 2013.

All proposed lots will have adequate freeboard above the top water levels of the bio-retention and detention basins. Final levels will be confirmed during CC Stage.

Refer to **Appendix F** for concept filling and excavation plan.

4 ROADWAYS AND CORRIDORS

The proposed subdivision shall be accessed from Railway Street. An internal road has been proposed intersecting Railway Street to service the internal lots. The development shall have a residential road in accordance with Mid-Western Regional Council DCP (Refer **Figure 4.1** below).

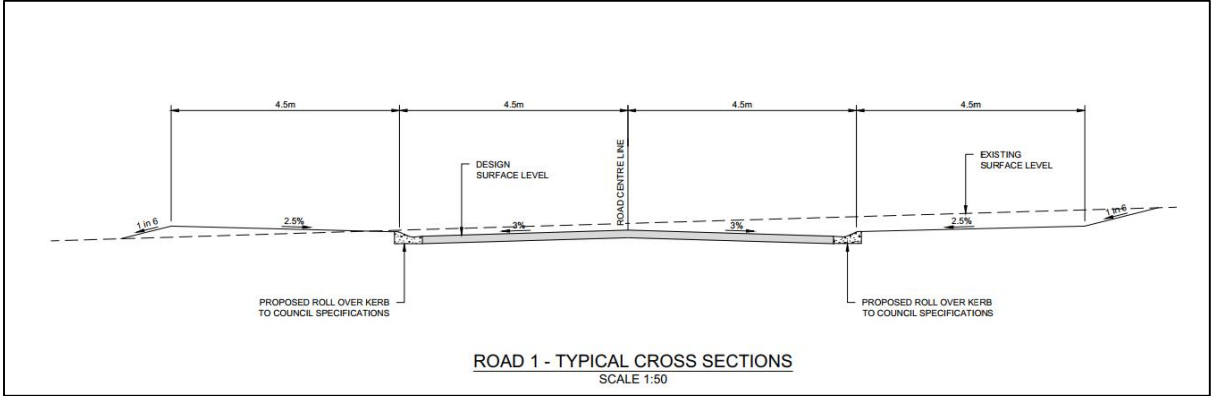


Figure 4.1 - Residential Road Typical Cross-Section

5 WATER SUPPLY

5.1 Design Standards

Water shall be designed in accordance with WSA03-2011 Water Supply Code of Australia – Sydney Water edition 2014.

5.2 Existing Water Reticulation

A review of Council's records and site survey indicates there are existing water mains installed along the Southern side of Railway Street.

The water reticulation infrastructure recorded along Railway Street is a 100mm DICL (Ductile Iron Clad) pipe.

Refer to **Figure 5.1** for existing water main location.

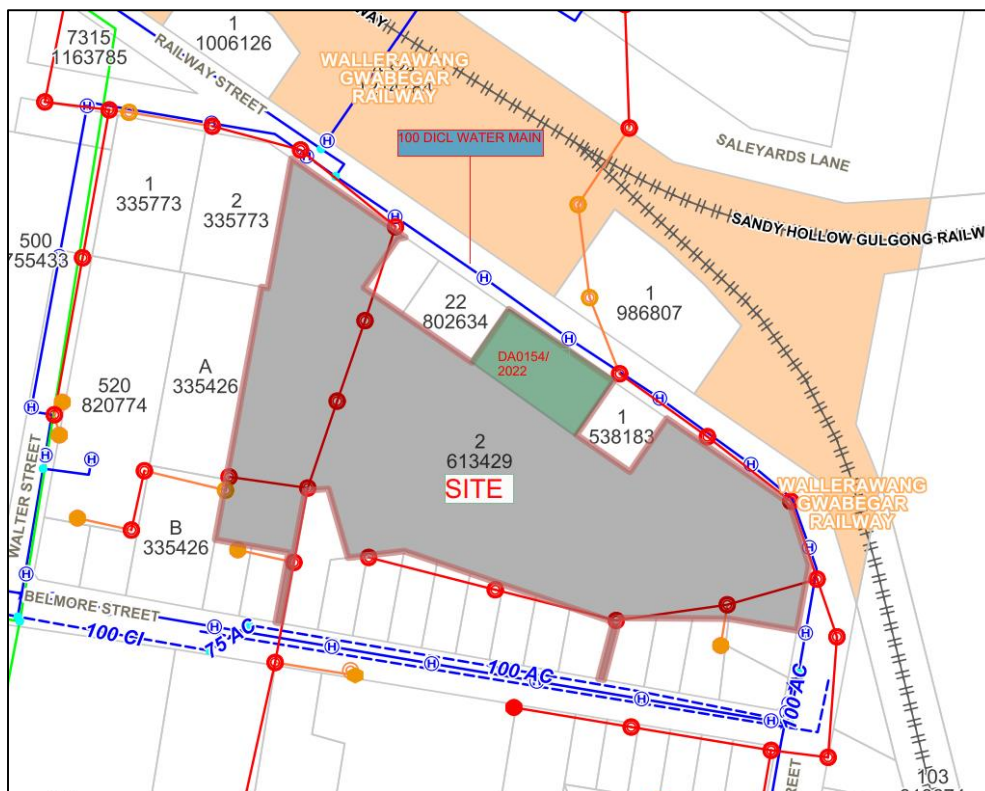


Figure 5.1 - Council Water Main Infrastructure Map

5.3 Concept Water Reticulation

The Water Development Servicing Plan (DSP) covers the water supply developer charges (DC) for the Mid-Western Regional Council. The DSP aims to:

- Allow Council to require an equitable monetary contribution for the provision of water supply infrastructure to meet the demands generated by development;

- Facilitate the future provision of a water supply to the Mid-Western Regional Council area which meets the required levels of service with regard to flows, pressure, water quantity and the frequency of restrictions;
- Set out the schedule and programme of proposed works to meet increasing town water supply demands generated by development;
- Detail the contribution rates and Mid-Western Regional Council's payment policies.

For details of the proposed reticulation envisaged, a concept water reticulation plan has been prepared (Refer **Appendix E**)

6 SEWERAGE SUPPLY

6.1 Design Standards

Sewer shall be designed in accordance with WSA 02-2002-2.2 Sewerage Code of Australia – Sydney Water edition version 4 2017.

6.2 Existing Water Reticulation

A review of Council's records and site survey indicates there are existing sewer mains installed within the subject site to the West and on the Southern side of Railway Street.

The sewer reticulation infrastructure recorded along Railway Street is a 150mm VC (Vitreous Clay) pipe. DICL (Ductile Iron Clad) pipe.

Refer to **Figure 6.1** for existing sewer location.

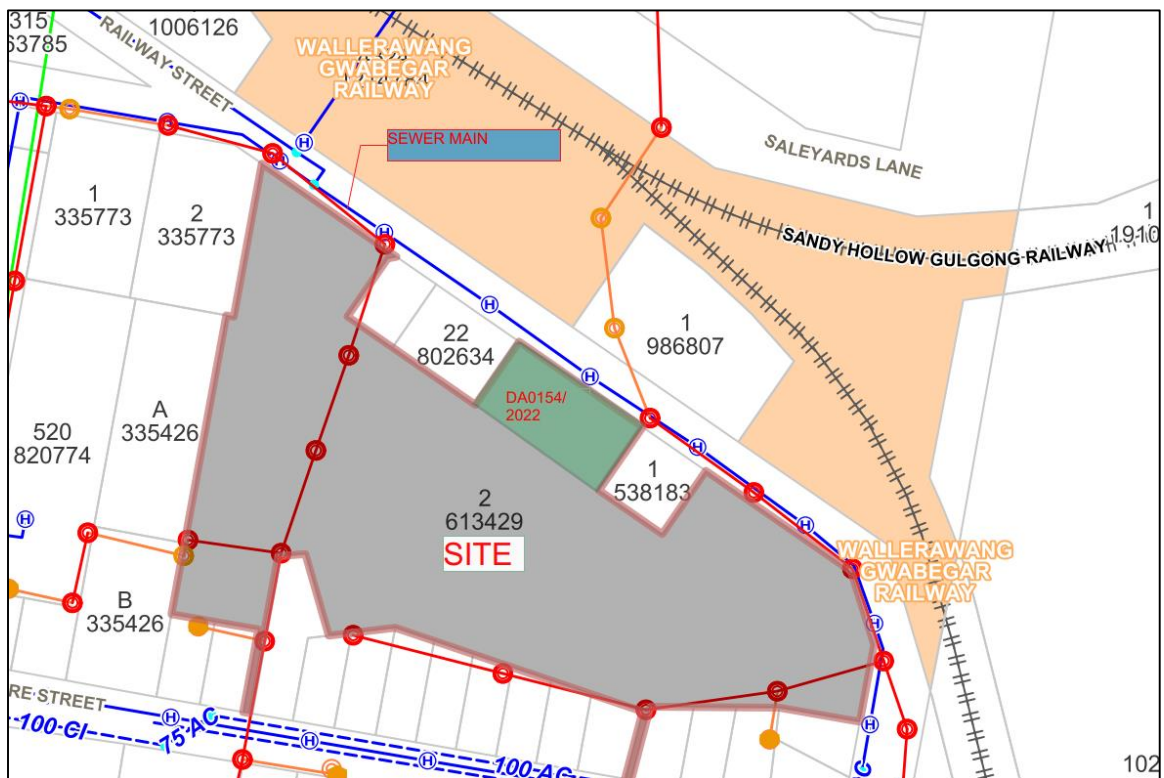


Figure 6.1 - Council Sewer Main Infrastructure Map

6.3 Concept Water Reticulation

The Development Servicing Plan (DSP) covers the sewerage developer charges (DC) for the Mid-Western Regional Council. The DSP aims to:

- Allow Council to require an equitable monetary contribution for the provision of sewerage infrastructure to meet the loading generated by development;
- Facilitate the future provision of sewerage services to the Mid-Western Regional Council area which meets the required levels of service with regard to pump station capacity, collector main capacity and treated effluent quality;
- Set out the schedule and programme of proposed works to meet increasing sewerage loads generated by development;
- Detail the contribution charges and Mid-Western Regional Council's payment policies.

For details of the proposed reticulation envisaged, a concept water reticulation plan has been prepared (Refer **Appendix E**)

7 STORMWATER MANAGEMENT

Refer to the Site Based Stormwater Management Plan which has been prepared for the proposal (Refer TEL2021184.SW.DA - SBSMP - 1 - 5 Railway St, Gulgong Rev A dated February 2022).

8 ELECTRICITY, COMMUNICATIONS AND GAS

8.1 Electrical

DBYD records show existing underground and overhead electrical services along the Southern side of Railway Street.

Electrical services to the proposed subdivision will be provided from the existing supply and upgraded where required.

8.2 Communications

DBYD and Council records returned no data regarding underground communication conduits. A communications design will need to be produced during the CC process.

8.3 Gas

DBYD and Council records returned no data regarding underground gas conduits. Gas is an optional service. Should the developer require gas as part of this development, a design can be sought during the CC Stage.

9 STAGING OF SUBDIVISION

The proposed subdivision has been divided into 4 stages to enable economic delivery and staged land sales if required (Refer **Appendix B**).

This report does not address the servicing requirements for each stage but does detail the overall servicing concepts. Servicing requirements for each stage will be assessed upon submission of Construction Certificate Applications or each stage or each series of stages. The sequential numbering noted on the proposed plan of subdivision does not necessarily indicate the delivery sequence number.

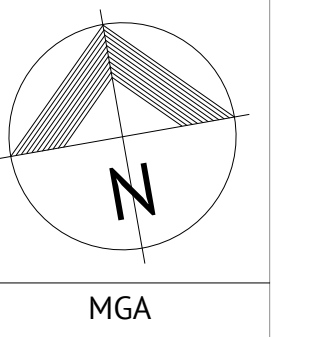
10 CONCLUSION

This Engineering Services report has assessed Council's requirements and possible development restrictions which may apply to filling and excavation, roadways and corridors, water and sewer reticulation, electrical and communication.

The report concludes that there are no constraints preventing an orderly development of the subject site from occurring as planned and in accordance with Council's guidelines for development

APPENDICES

Appendix A SURVEY PLAN



MARK	MGA COORDINATES		RL
	EASTING	NORTHING	
PM 75042	739279.432	6417018.429	452.817
PM 6267	739155.311	6416697.248	463.897
PM 78145	739701.104	6416733.273	452.96
PM 6266	739128.303	6416528.726	481.096

PLAN IS ON MGA 2020 GROUND
ORIGIN IS PM 75042

- NOTES**
- THESE PLANS ARE PREPARED FROM A FIELD SURVEY FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS ON THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
 - ALL UNDERGROUND SERVICES SHOWN ARE BASED ON A COMBINATION OF PREVIOUS RECORDS, VERBAL INSTRUCTIONS AND SURFACE INDICATORS LOCATED AT TIME OF SURVEY.
 - CONTOUR INTERVAL OF 0.5m.
 - THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.

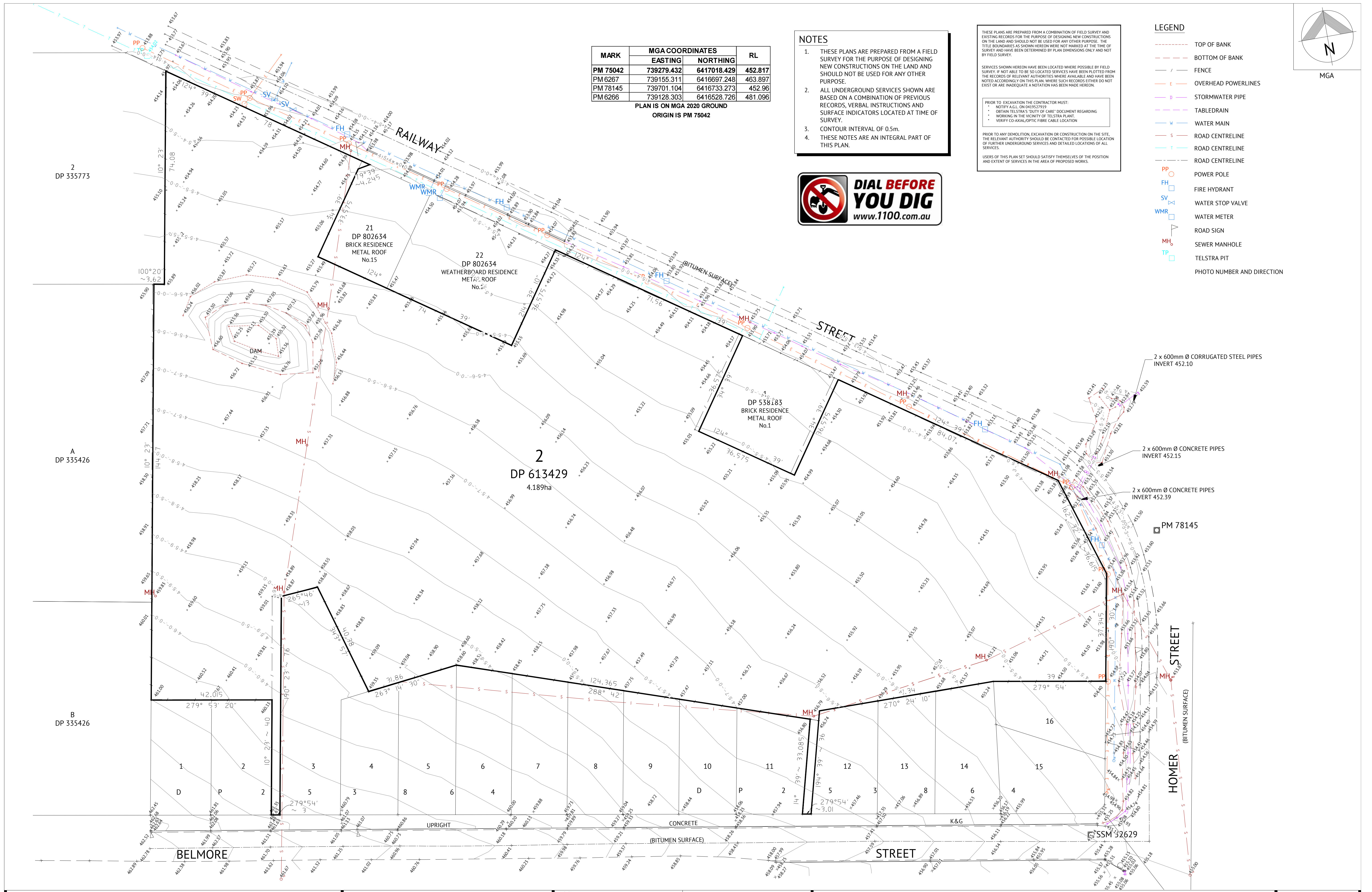
THESE PLANS ARE PREPARED FROM A COMBINATION OF FIELD SURVEY AND EXISTING RECORDS FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS ON THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE. THE TITLE BOUNDARIES AS SHOWN HEREON WERE NOT MARKED AT THE TIME OF SURVEY AND HAVE BEEN DETERMINED BY PLAN DIMENSIONS ONLY AND NOT BY FIELD SURVEY.

SERVICES SHOWN HEREON HAVE BEEN LOCATED WHERE POSSIBLE BY FIELD SURVEY. IF NOT ABLE TO BE SO LOCATED SERVICES HAVE BEEN PLOTTED FROM THE RECORDS OF RELEVANT AUTHORITIES WHERE AVAILABLE AND HAVE BEEN NOTED ACCORDINGLY ON THIS PLAN. WHERE SUCH RECORDS EITHER DO NOT EXIST OR ARE INADEQUATE A NOTATION HAS BEEN MADE HEREON.

PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

USERS OF THIS PLAN SET SHOULD SATISFY THEMSELVES OF THE POSITION AND EXTENT OF SERVICES IN THE AREA OF PROPOSED WORKS.

- LEGEND**
- TOP OF BANK
 - BOTTOM OF BANK
 - FENCE
 - OVERHEAD POWERLINES
 - STORMWATER PIPE
 - TABLEDRAIN
 - WATER MAIN
 - ROAD CENTRELINE
 - ROAD CENTRELINE
 - ROAD CENTRELINE
 - POWER POLE
 - FIRE HYDRANT
 - WATER STOP VALVE
 - WATER METER
 - ROAD SIGN
 - SEWER MANHOLE
 - TELSTRA PIT
 - PHOTO NUMBER AND DIRECTION



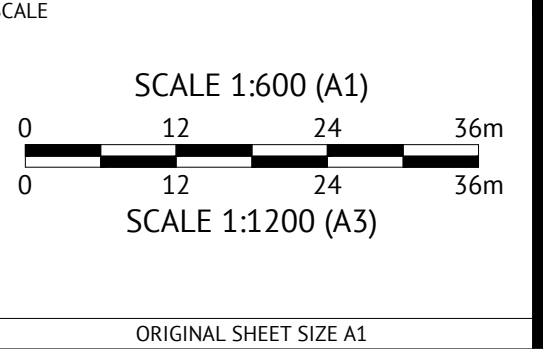
ISSUED FOR APPROVAL

DATE	REV	DESCRIPTION	REVISIONS
21/10/2021	B	DETAIL IN BELMORE ST - SEWER UPDATED	NZ WS
10/09/2021	A	ISSUED FOR APPROVAL	JE CH
			REC APP

Premise

DUBBO OFFICE
1ST FLOOR
62 WINGEWARRA STREET
DUBBO, NSW 2830
PH: (02) 6887 4500
WEB: www.premise.com.au

DESIGNED CH/NM
CHECKED WARREN SAUNDERS
PROJECT MANAGER WARREN SAUNDERS
REGISTERED SURVEYOR



CLIENT **GULGONG HOLDINGS PTY LTD**

PROJECT **CONTOUR AND FEATURE SURVEY**

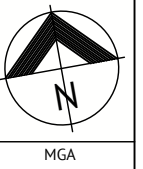
LOCATION **1 RAILWAY STREET, GULGONG - LOT 2 IN DP 613429**

SHEET TITLE **EXISTING SITE PLAN**

JOB CODE **322037_01**

SHEET NUMBER	REV
DS01	B

Appendix B PROPOSED SUBDIVISION PLAN



RESIDENTIAL SUBDIVISION LOTS 03/03/2022

LOT TYPE (AREA)	STAGE 1	STAGE 2	STAGE 3	STAGE 4	TOTAL LOTS
≥ 601 - 699m ²	8		-	3	11
≥ 700 - 799m ²	3		7	8	18
≥ 800 - 999m ²	-		1	1	2
≥ 1000m ²	1	ROAD	3	1	5
≥ 850m ² DUAL LOT	2		1	-	3
RESIDENTIAL LOTS	14		12	13	39
OPEN SPACE	1	1	-	-	-

NOTE: 'A'-'B' DIRECT ACCESS TO RAILWAY STREET DENIED

- LEGEND**
- TOP OF BANK
 - BOTTOM OF BANK
 - - - FENCE
 - - - OVERHEAD POWERLINES
 - - - STORMWATER PIPE
 - - - TABLEDRAIN
 - - - WATER MAIN
 - - - ROAD CENTRELINE
 - - - ROAD CENTRELINE
 - - - ROAD CENTRELINE
 - PP ○ POWER POLE
 - FH □ FIRE HYDRANT
 - SV □ WATER STOP VALVE
 - WMR □ WATER METER
 - ROAD SIGN
 - MH ○ SEWER MANHOLE
 - TP □ TELSTRA PIT

DISCLAIMER:
 THIS PLAN WAS PREPARED FOR GULGONG HOLDINGS PTY LTD FOR DEVELOPMENT APPLICATION PURPOSES ONLY.
 DIMENSIONS AREAS AND TOTAL NUMBER OF LOTS SHOWN HEREON ARE APPROXIMATE ONLY AND SUBJECT TO FIELD SURVEY AND FINAL ENGINEERING DESIGN AND ALSO TO THE REQUIREMENTS OF COUNCIL AND OTHER AUTHORITIES WHICH MAY HAVE REQUIREMENTS UNDER ANY RELEVANT LEGISLATION.
 NO RELIANCE SHOULD BE PLACED ON THE INFORMATION CONTAINED IN THIS PLAN FOR ANY FINANCIAL DEALING INVOLVING THE LAND. THIS NOTE IS AN INTEGRAL PART OF THIS PLAN.



2 x 600mm Ø CORRUGATED S1 INVERT 452.10
 2 x 600mm Ø CONCRETE PIPES INVERT 452.15
 2 x 600mm Ø CONCRETE PIPES INVERT 452.39
 PM 78145
 SSM 52629

ISSUED FOR APPROVAL

DATE	REV	DESCRIPTION	REVISIONS	REC	APP
03/03/22	F	ISSUED FOR APPROVAL - REVISED FOOTPATH LOT 200, EASEMENTS & LOT 311 ACCESS TO RAILWAY ST		PS	WRS
21/12/21	E	ISSUED FOR APPROVAL - REVISED STAGINGS AND EASEMENTS ADDED		PS	WRS
10/12/21	D	ISSUED FOR APPROVAL - AMENDED AS PER RPS & ADJUSTED LOTS 207 - 210 & LOTS 300, 311 - 314		PS	WRS
08/12/21	C	ISSUED FOR APPROVAL - REVISED CLK-DE-SAC HEAD TO R-10, ADJUSTED LOTS 207-210 & LOTS 300, 311-314		PS	WRS
18/11/21	B	ISSUED FOR REVIEW - TOTAL 43 LOTS		PS	WRS
16/09/21	A	ISSUED FOR REVIEW - TOTAL 48 LOTS		PS	WRS

DUBBO OFFICE
 1ST FLOOR
 62 WINGEWARRA STREET
 DUBBO, NSW 2830
 PH: (02) 6887 4500
 WEB: www.premise.com.au

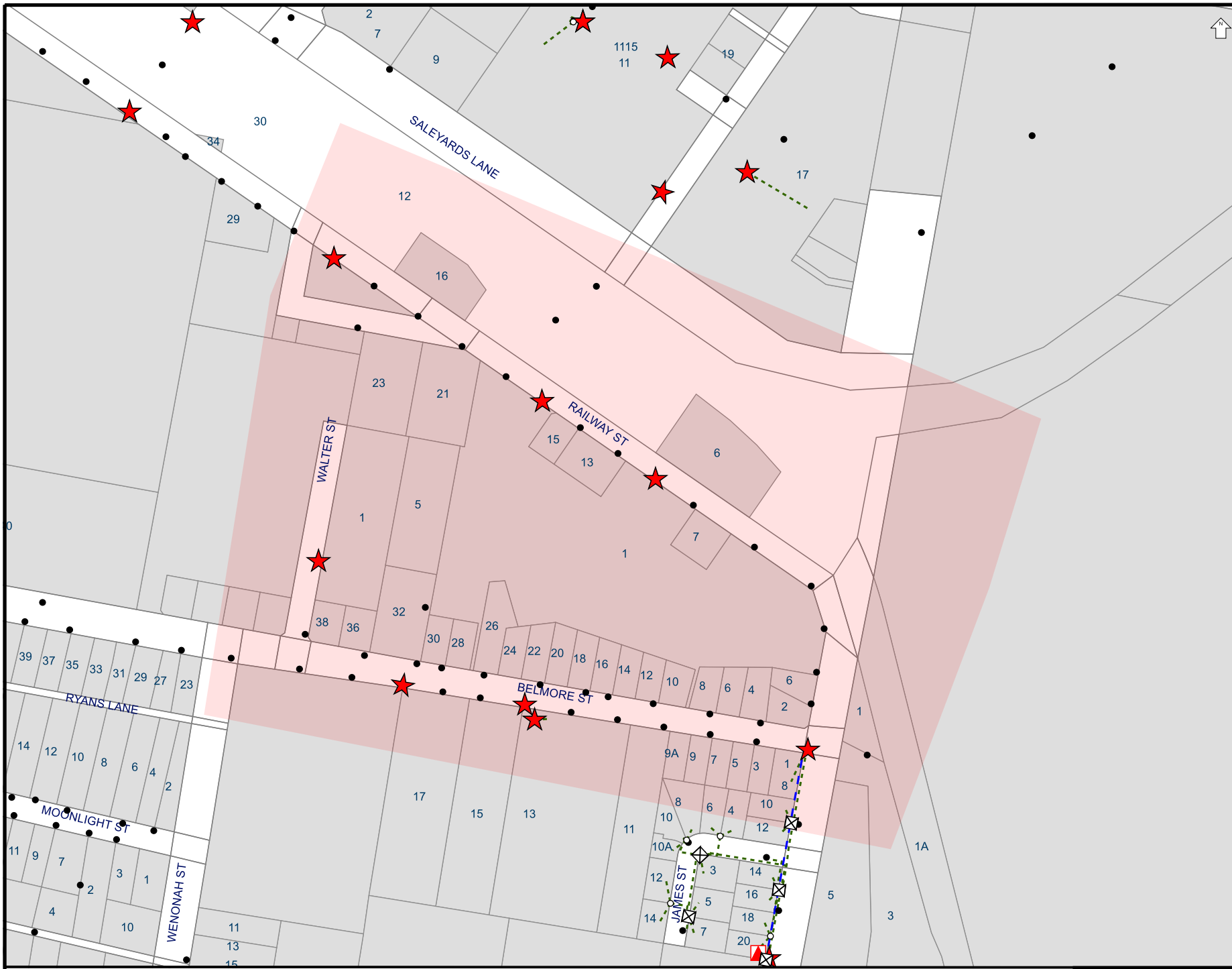
DESIGNED
P. SITHIRAJVONGSA
 CHECKED
W. SAUNDERS
 PROJECT MANAGER
W. SAUNDERS
 REGISTERED SURVEYOR

SCALE
 SCALE 1:600 (A1)
 0 12 24 36m
 SCALE 1:1200 (A3)
 0 12 24 36m
 ORIGINAL SHEET SIZE A1

CLIENT
GULGONG HOLDINGS PTY LTD
 PROJECT
SUBDIVISION OF LOT 5 BEING SUB. OF LOT 2 IN DP 613429
 LOCATION
1 RAILWAY STREET, GULGONG
 SHEET TITLE
PROPOSED SUBDIVISION PLAN - OVERALL PLAN

JOB CODE
322037_02
 SHEET NUMBER
TP01
 REV
F

Appendix C DIAL BEFORE YOU DIG (DBYD) RECORD



Overhead wires not shown
LOOK UP & LIVE!

LEGEND

- LV Underground Cable
- HV Underground Cable
- Underground Pipe
- ★ Underground Earth or Wires
- ▲ Ground Substation
- Pole
- X Cubicle
- Pit
- Area of Interest

Critical Assets

Contact Essential Energy
on 13 23 91

- Zone Substation
- Underground Cable
- · - · - Underground Fibre

Proposed Works

- Area of proposed works

Proposed assets are shown as orange symbols

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.
If details are incorrect, please notify
Essential Energy on 13 23 91
(or fax 1800 354 636)

ISSUE DATE: 09/10/2021

You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above

A4 SCALE: 1:4280



Appendix D Council Land Zoning Map



Mid-Western Regional Local Environmental Plan 2012

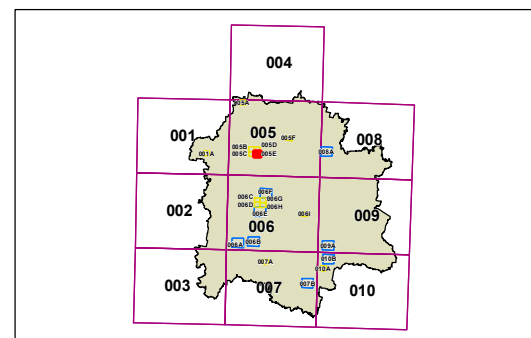
Land Zoning Map - Sheet LZN_005E

Zone

- B1 Neighbourhood Centre
- B2 Local Centre
- B3 Commercial Core
- B4 Mixed Use
- B5 Business Development
- E1 National Parks and Nature Reserves
- E3 Environmental Management
- IN1 General Industrial
- IN2 Light Industrial
- IN3 Heavy Industrial
- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU1 Primary Production
- RU3 Forestry
- RU4 Primary Production Small Lots
- RU5 Village
- SP1 Special Activities
- SP2 Infrastructure
- SP3 Tourist

Cadastre

- Cadastre 15/12/2010 Land and Property Information (LPI)

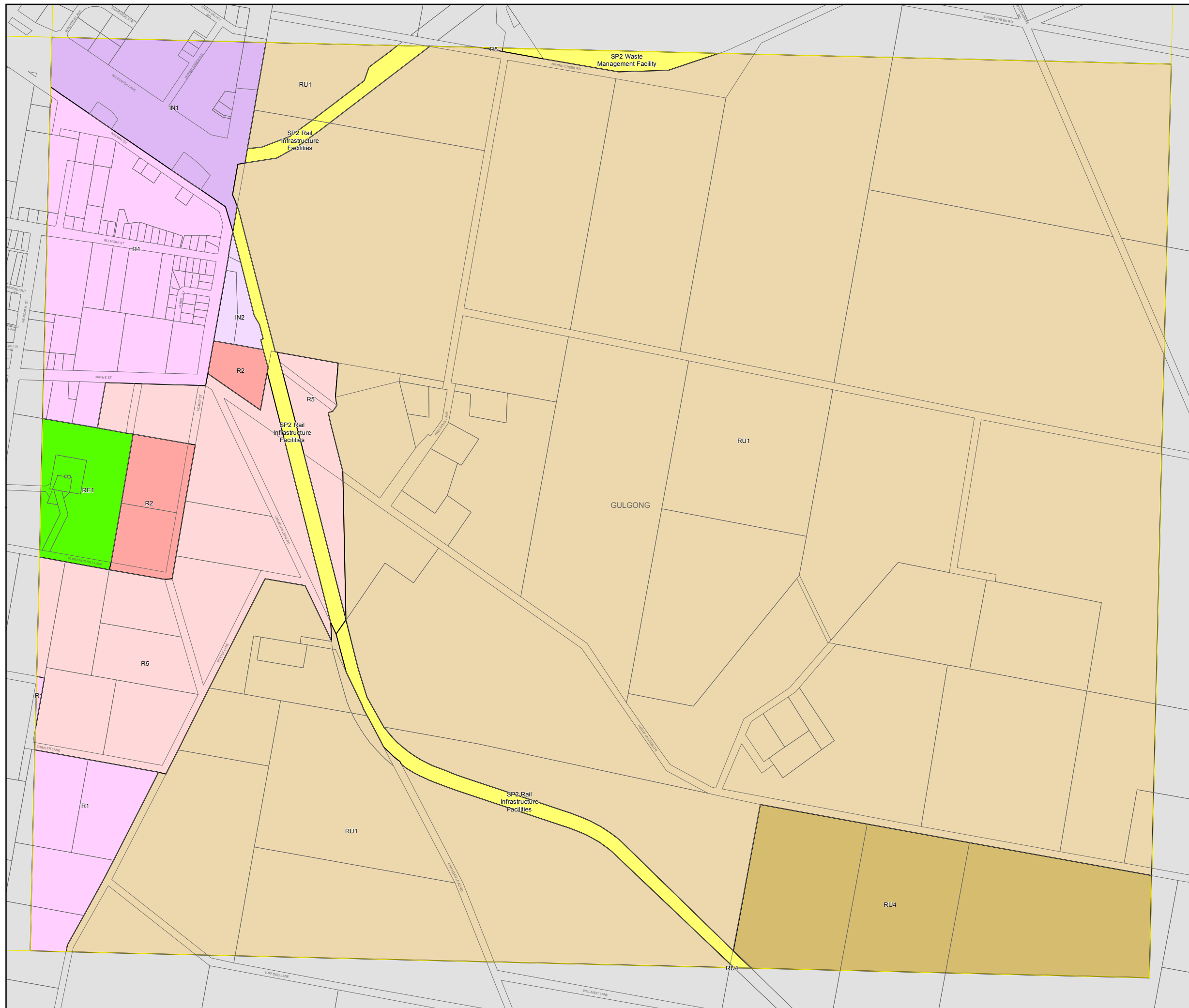


0 200 400 Metres

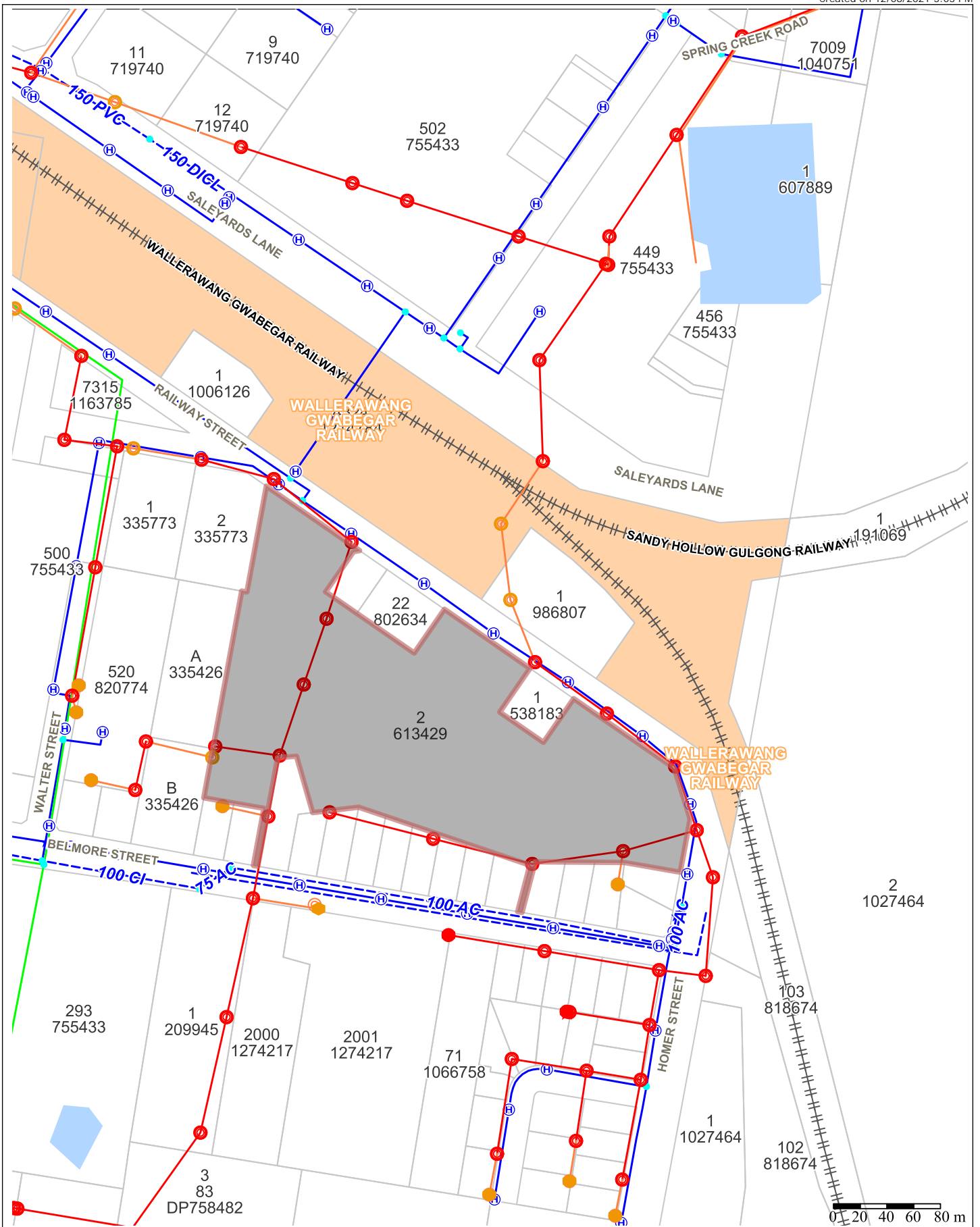
Scale: 1:10,000 @ A3

Projection: GDA 1994
MGA Zone 55

Map identification number: 5270_COM_LZN_005E_010_20150501



Appendix E **SEWER & WATER COUNCIL**
INFRASTRUCTURE PLAN



Mid-Western Regional Council
 PO Box 156
 86 Market Street
 MUDGEES NSW 2850
 Telephone: 02 6378 2850
 Fax: 02 6378 2815
 Email: council@midwestern.nsw.gov.au

Important Notice!

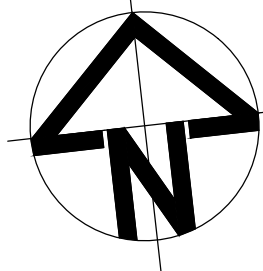
This map is not a precise survey document. Accurate locations can only be determined by a survey on the ground. This information has been prepared for Council's internal purposes and for no other purpose. No statement is made about the accuracy or suitability of the information for use for any purpose (whether the purpose has been notified to Council or not). While every care is taken to ensure the accuracy of this data, neither the Mid-Western Regional Council nor the SS makes any representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.
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Date: 12/08/2021 3:03 PM

Map Scale: 1:3514 at A4

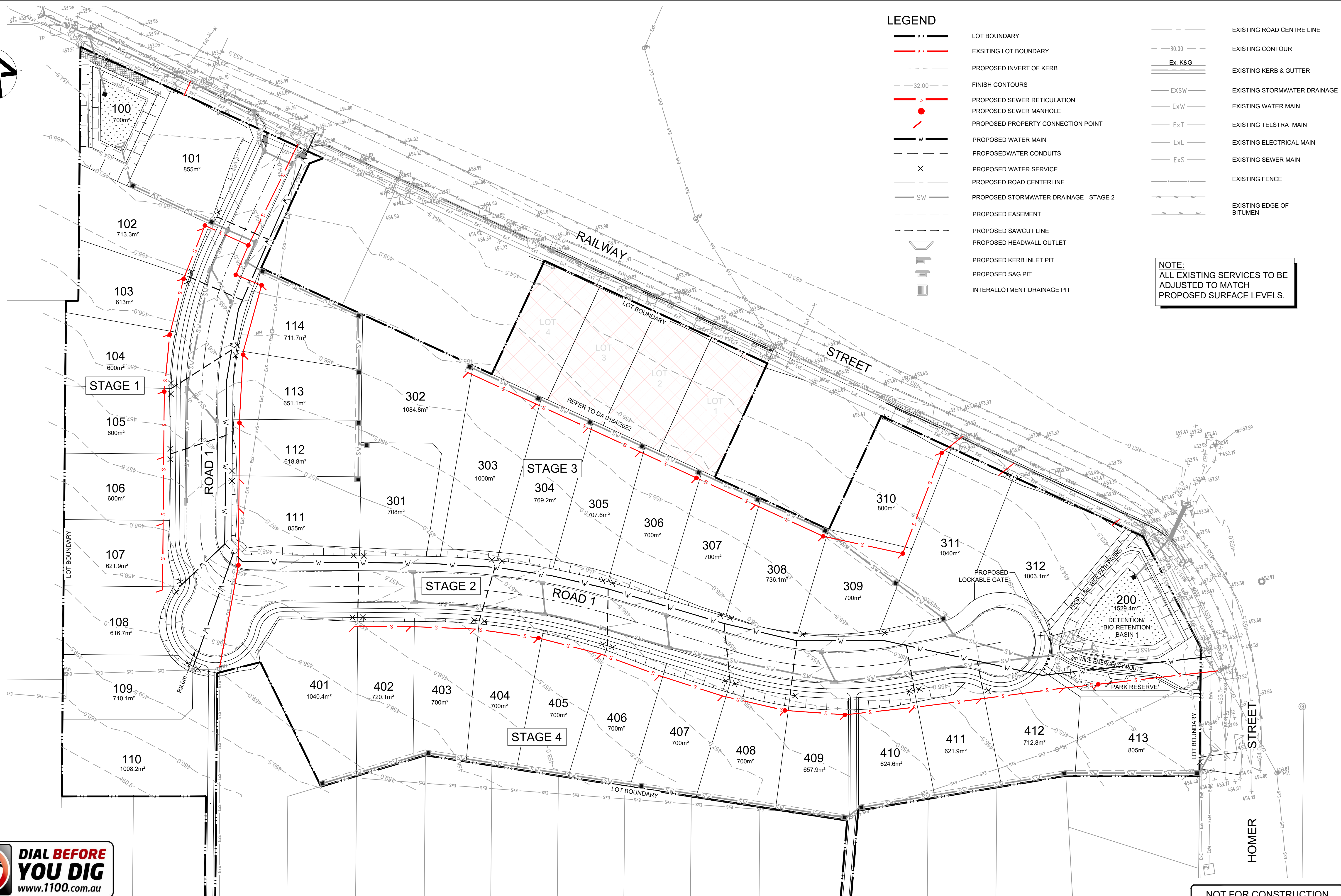
Appendix F CONCEPT WATER & SEWER PLANS



LEGEND

- LOT BOUNDARY
- EXISTING LOT BOUNDARY
- PROPOSED INVERT OF KERB
- FINISH CONTOURS
- PROPOSED SEWER RETICULATION
- PROPOSED SEWER MANHOLE
- PROPOSED PROPERTY CONNECTION POINT
- PROPOSED WATER MAIN
- PROPOSED WATER CONDUITS
- PROPOSED WATER SERVICE
- PROPOSED ROAD CENTERLINE
- PROPOSED STORMWATER DRAINAGE - STAGE 2
- PROPOSED EASEMENT
- PROPOSED SAWCUT LINE
- PROPOSED HEADWALL OUTLET
- PROPOSED KERB INLET PIT
- PROPOSED SAG PIT
- INTERALLOTMENT DRAINAGE PIT
- EXISTING ROAD CENTRE LINE
- EXISTING CONTOUR
- Ex. K&G
- EXISTING KERB & GUTTER
- EXSW
- EXW
- EXT
- EXE
- EXS
- EXISTING STORMWATER DRAINAGE
- EXISTING WATER MAIN
- EXISTING TELSTRA MAIN
- EXISTING ELECTRICAL MAIN
- EXISTING SEWER MAIN
- EXISTING FENCE
- EXISTING EDGE OF BITUMEN

NOTE:
ALL EXISTING SERVICES TO BE ADJUSTED TO MATCH PROPOSED SURFACE LEVELS.



NOT FOR CONSTRUCTION

A		ISSUE FOR DEVELOPMENT APPLICATION		28/02/2022	M.M.	J.A.B.
Issue	Description	Date	Design	Checked		
10m at full size		10cm		20cm		

Certification By Dr. Michel Chaaya in affiliation with Joe Bacha (formerly Australian Consulting Engineers)

Client
MR. ROY AMERY

Council
MID-WESTERN REGIONAL COUNCIL

Surveyor

Premise

DUBBO OFFICE
1ST FLOOR
62 WINGWARRA STREET
DUBBO, NSW 2830
PH: (02) 6887 4500
WEB: www.premise.com.au

Scale

0 10 20 30 m

SCALE 1:500 @ A1

TELFORD CIVIL
DESIGN & CONSTRUCTION EXCELLENCE

Level 4, 470 Church Street, Parramatta NSW 2150
PO BOX 3579 Parramatta 2124

Email : info@telfordcivil.com.au
Phone : 02 7809 4931
Company : Telford Consulting Pty Ltd

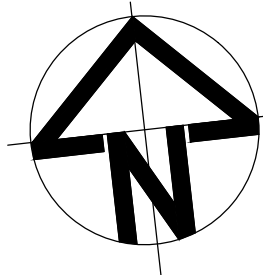
Project

**1 RAILWAY STREET, GULGONG
PROPOSED RESIDENTIAL SUBDIVISION
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

Drawing Title

**SEWERAGE RETICULATION
LAYOUT PLAN**

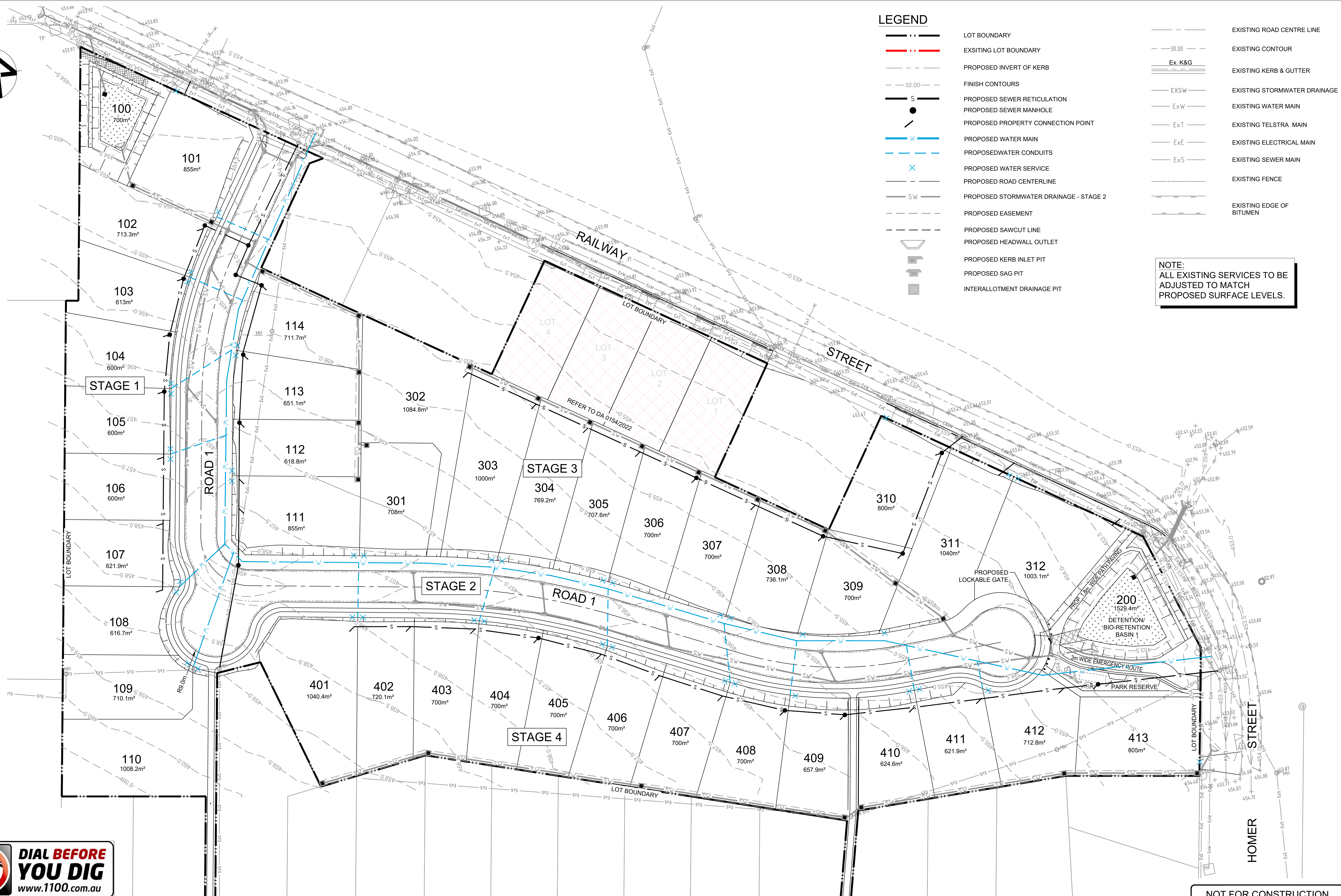
Scale 1:500 A1 Project No. 2021184 Dwg. No. 500 Issue A



LEGEND

- LOT BOUNDARY
- EXSITING LOT BOUNDARY
- PROPOSED INVERT OF KERB
- FINISH CONTOURS
- PROPOSED SEWER RETICULATION
- PROPOSED SEWER MANHOLE
- PROPOSED PROPERTY CONNECTION POINT
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- PROPOSED WATER CONDUITS
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- PROPOSED STORMWATER DRAINAGE - STAGE 2
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- PROPOSED SAWCUT LINE
- PROPOSED HEADWALL OUTLET
- PROPOSED KERB INLET PIT
- PROPOSED SAG PIT
- INTERALLOTMENT DRAINAGE PIT
- EXISTING ROAD CENTRE LINE
- EXISTING CONTOUR
- EXISTING KERB & GUTTER
- EXISTING STORMWATER DRAINAGE
- EXISTING WATER MAIN
- EXISTING TELSTRA MAIN
- EXISTING ELECTRICAL MAIN
- EXISTING SEWER MAIN
- EXISTING FENCE
- EXISTING EDGE OF BITUMEN

NOTE:
ALL EXISTING SERVICES TO BE ADJUSTED TO MATCH PROPOSED SURFACE LEVELS.



NOT FOR CONSTRUCTION

A ISSUE FOR DEVELOPMENT APPLICATION		28/02/2022	M.M.	J.A.B.
Issue	Description	Date	Design	Checked
1	10m at full size			

Certification By Dr. Michel Chaaya
in affiliation with Joe Bacha (formerly
Australian Consulting Engineers)

Client
MR. ROY AMERY

Council
MID-WESTERN REGIONAL COUNCIL

Surveyor
Premise

DUBBO OFFICE
1ST FLOOR
62 WINGWARRA STREET
DUBBO, NSW 2830
PH: (02) 6887 4500
WEB: www.premise.com.au

Scale
0 10 20 30 m
SCALE 1:500 @ A1

TELFORD CIVIL
DESIGN & CONSTRUCTION EXCELLENCE

Level 4, 470 Church Street,
Parramatta NSW 2150
PO BOX 3579 Parramatta 2124

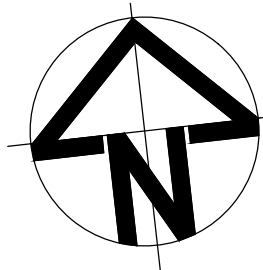
Email : info@telfordcivil.com.au
Phone : 02 7809 4931
Company : Telford Consulting Pty Ltd

Project
**1 RAILWAY STREET, GULGONG
PROPOSED RESIDENTIAL SUBDIVISION
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

Drawing Title
**WATER RETICULATION
LAYOUT PLAN**

Scale 1:500 A1 Project No. 2021184 Dwg. No. 600 Issue A

Appendix G BULK EARTHWORK PLANS



LEGEND

- LOT BOUNDARY
- DESIGN CONTOURS
- EXISTING CONTOURS
- FLOW ARROWS
- DESIGN SURFACE LEVEL
- DA 0154/2022
- DENOTE -4.50 ; -4 (CUT)
- DENOTE -4 ; -3.50 (CUT)
- DENOTE -3.50 ; -3.0 (CUT)
- DENOTE -3.0 ; -2.50 (CUT)
- DENOTE -2.50 ; -2.00 (CUT)
- DENOTE -2.00 ; -1.50 (CUT)
- DENOTE -1.50 ; 1.00 (CUT)
- DENOTE -1.00 ; 0.50 (CUT)
- DENOTE -0.50 ; 0 (CUT)
- DENOTE 0.5 ; 1.0 (FILL)
- DENOTE 1.0 ; 1.5 (FILL)
- DENOTE 1.5 ; 2.0 (FILL)
- DENOTE 2.0 ; 2.5 (FILL)
- DENOTE 2.5 ; 3.0 (FILL)
- DENOTE 3.0 ; 3.5 (FILL)
- DENOTE 3.5 ; 4.0 (FILL)
- DENOTE 4.0 ; 4.5 (FILL)

BULK EARTHWORKS VOLUMES
 EXCLUDING TRIMMING WORKS, BOXING,
 AND TRENCHES
 TOTAL CUT = -3029.366m³
 TOTAL FILL = 772.089m³
 BALANCE = -2257.277m³(EXCESS)



NOTE:
 ALL EXISTING SERVICES TO BE
 ADJUSTED TO MATCH
 PROPOSED SURFACE LEVELS.



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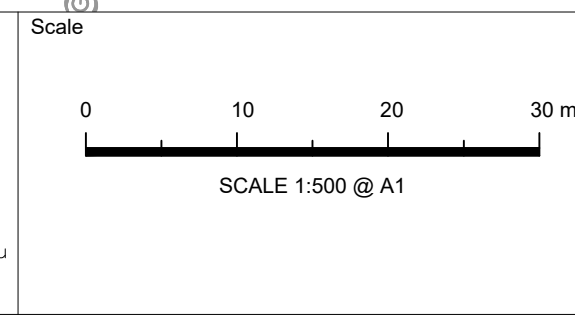
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Issue	Description	Date	Design	Checked		
10m at full size		10cm		20cm		

Certification By Dr. Michel Chaya
 in affiliation with Joe Bacha (formerly
 Australian Consulting Engineers)

Client
MR. ROY AMERY
 Council
MID-WESTERN REGIONAL COUNCIL

Surveyor

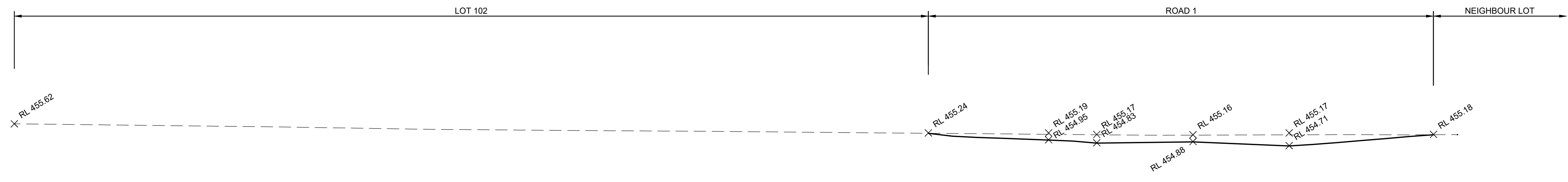
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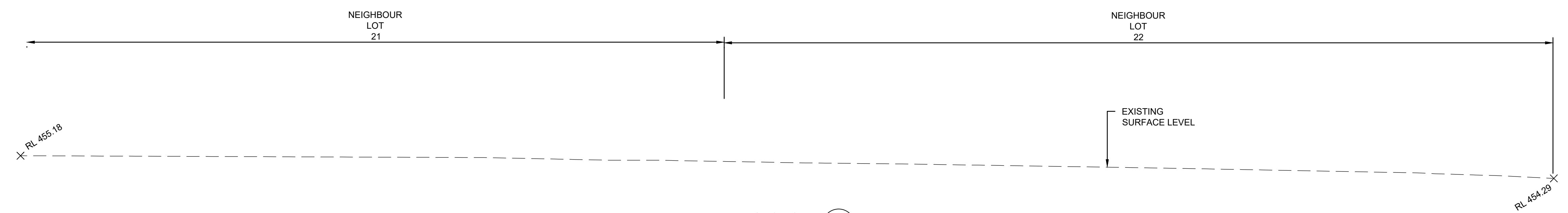
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Project
**1 RAILWAY STREET, GULGONG
 PROPOSED RESIDENTIAL SUBDIVISION
 CIVIL ENGINEERING PLANS
 DEVELOPMENT APPLICATION**

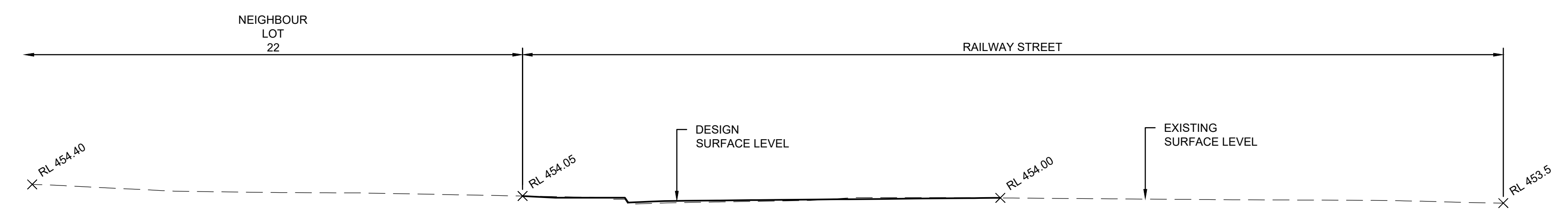
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**BULK EARTHWORKS
 LAYOUT PLAN**
 Scale 1:500 A1 Project No. 2021184 Dwg. No. 200 Issue A



SECTION A
SCALE 1:100 @ 200



SECTION A
SCALE 1:100 @ 200



SECTION A
SCALE 1:100 @ 200

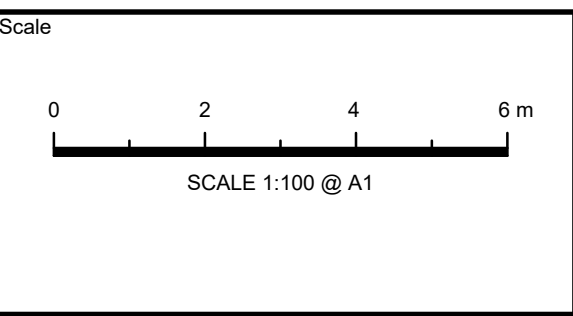
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Issue	Description	Date	Design	Checked
A	ISSUE FOR DEVELOPMENT APPLICATION	14/02/2022	P.B.T.	J.A.B.

Certification by Dr. Michel Ghasya in affiliation with Joe Bacha (formerly Australian Consulting Engineers)

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Council
MID-WESTERN REGIONAL COUNCIL

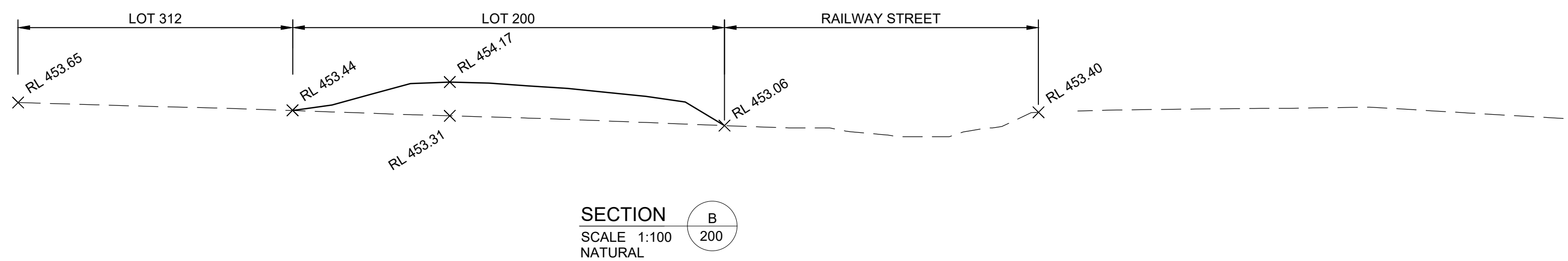
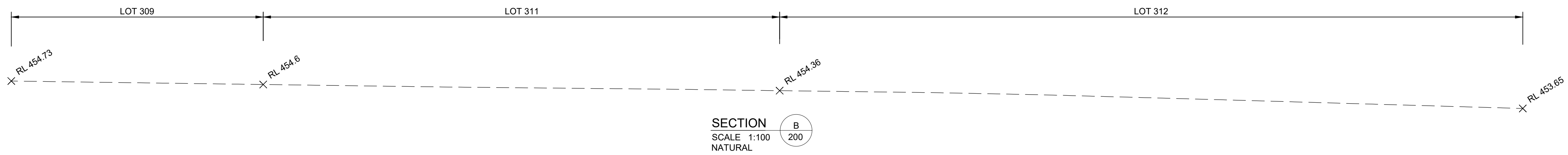
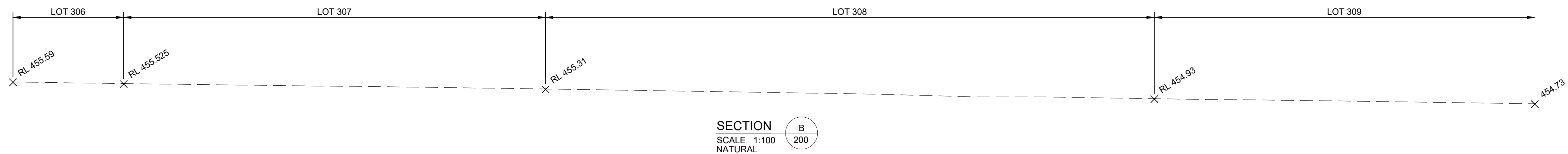
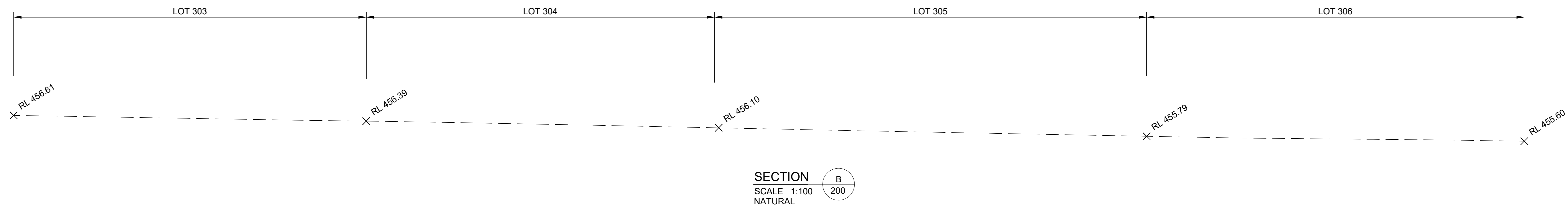
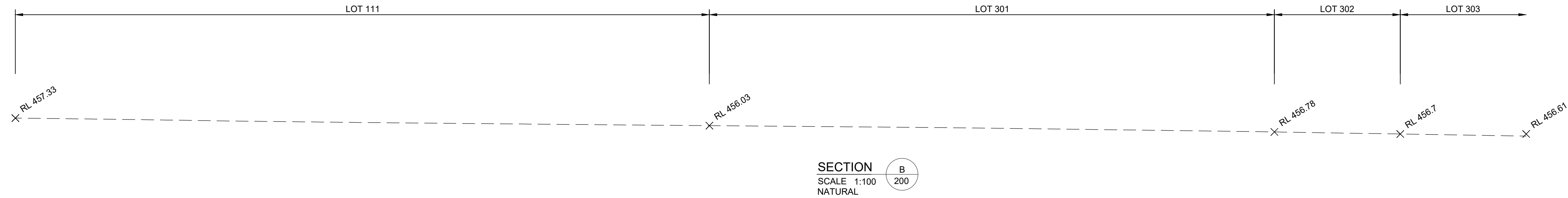
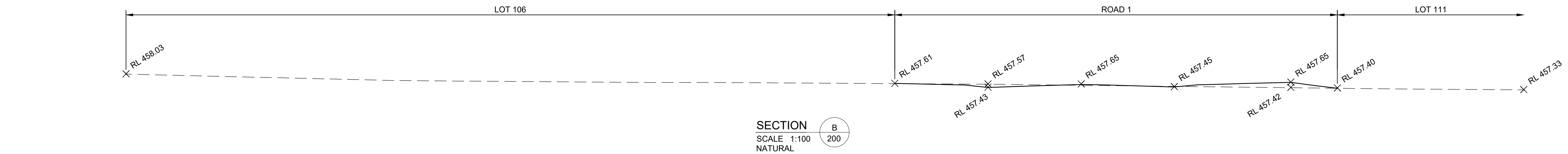
Surveyor
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Project
**1 RAILWAY STREET, GULGONG
PROPOSED RESIDENTIAL SUBDIVISION
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

Drawing Title EARTHWORKS TYPICAL CROSS SECTIONS SHEET 1 OF 4		Scale 1:100	Project No. 2021184	Dwg. No. 201	Issue A
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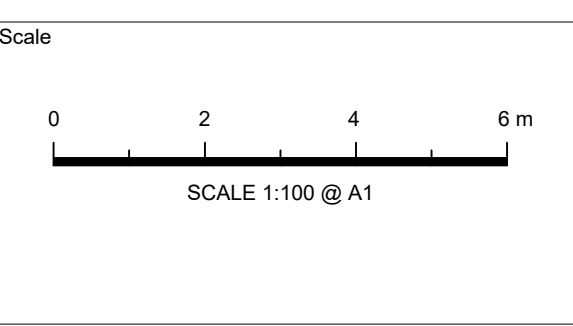
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Issue	Description	Date	Design	Checked
A	ISSUE FOR DEVELOPMENT APPLICATION	14/02/2022	P.B.T.	J.A.B.

Certification By Dr. Michel Chaaya
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Council
MID-WESTERN REGIONAL COUNCIL

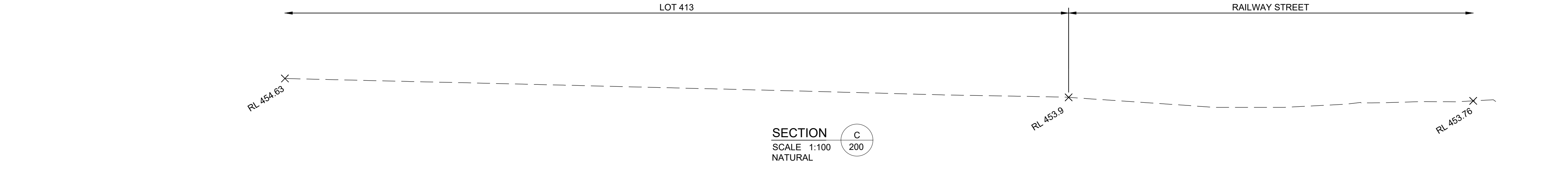
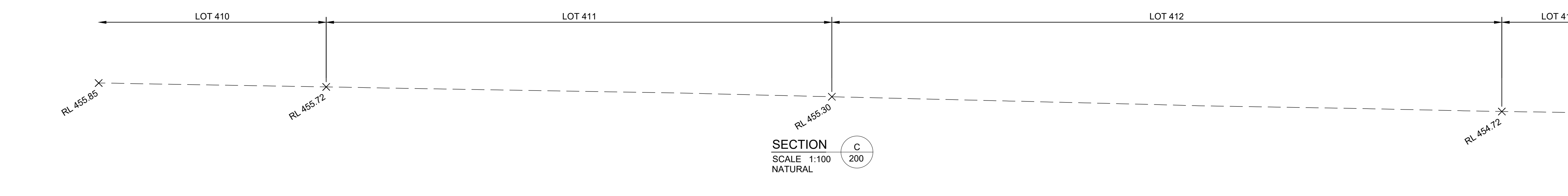
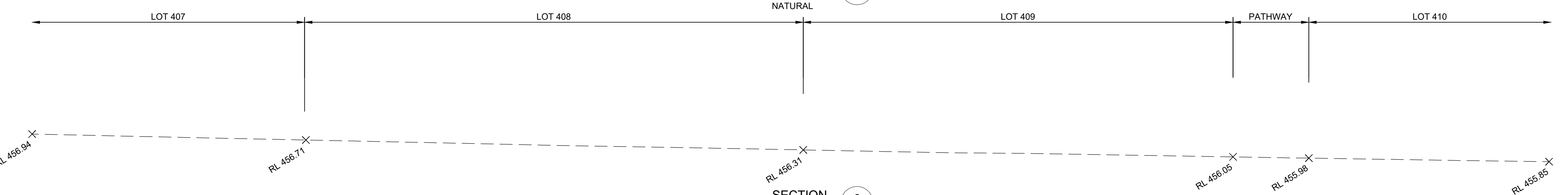
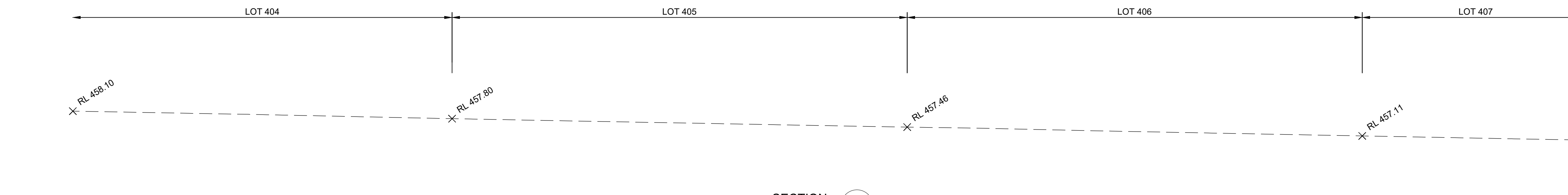
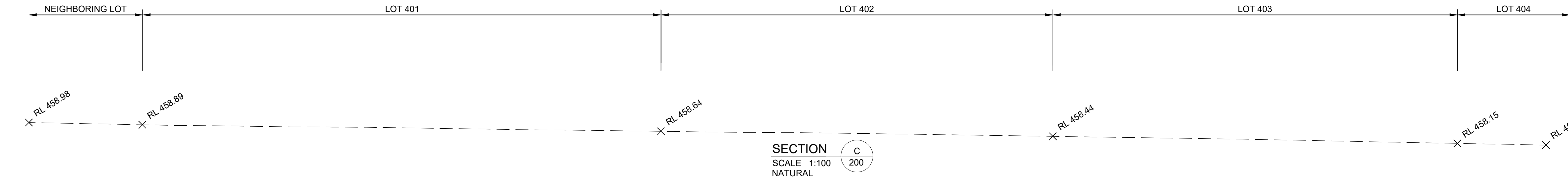
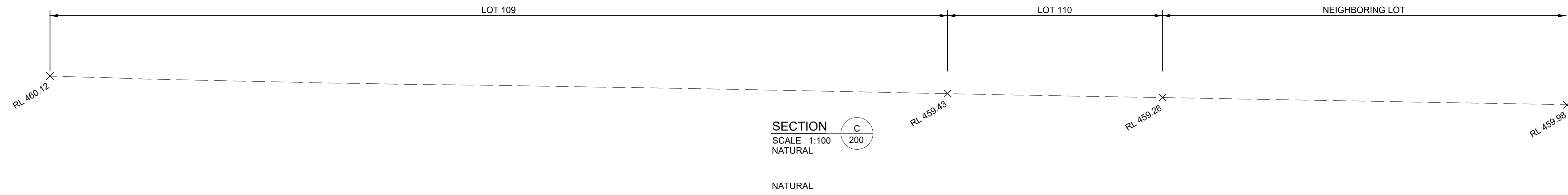
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Company : Telford Consulting Pty Ltd

Project
**1 RAILWAY STREET, GULGONG
PROPOSED RESIDENTIAL SUBDIVISION
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

Drawing Title	EARTHWORKS TYPICAL CROSS SECTIONS SHEET 2 OF 4		
Scale	A1 1:100	Project No. 2021184	Dwg. No. 202 Issue A



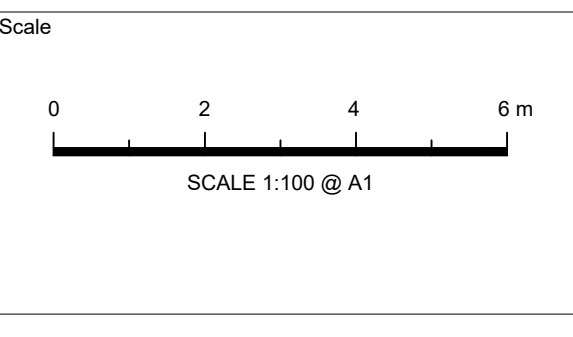
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A		ISSUE FOR DEVELOPMENT APPLICATION		14/02/2022	P.B.T.	J.A.B.
Issue	Description	Date	Design	Checked		

Certification By Dr. Michel Chaaya in affiliation with Joe Bacha (formerly Australian Consulting Engineers):

Client
MR. ROY AMERY
Council
MID-WESTERN REGIONAL COUNCIL

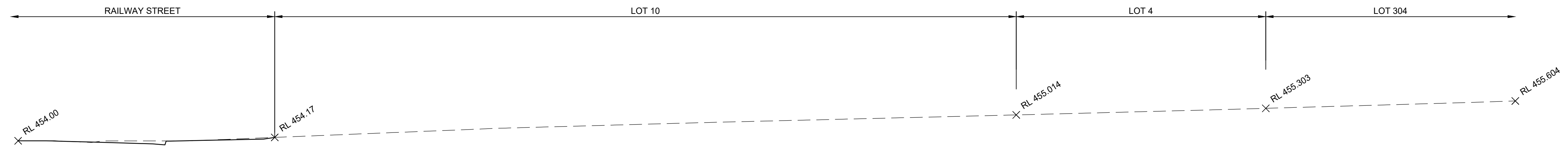
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DUBBO, NSW 2830
PH: (02) 6887 4500
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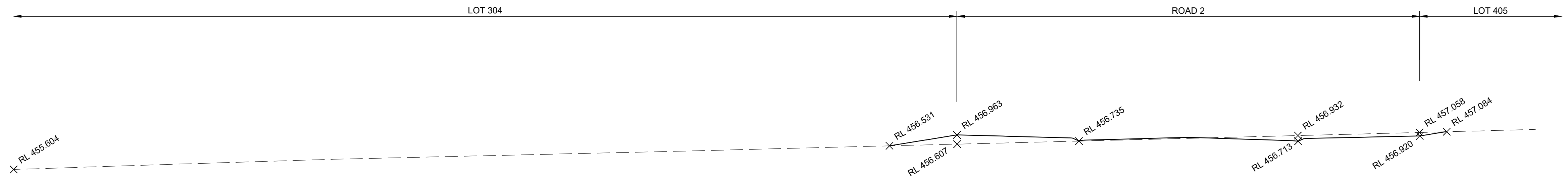
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Email : info@telfordcivil.com.au
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Company : Telford Consulting Pty Ltd

Project
1 RAILWAY STREET, GULGONG PROPOSED RESIDENTIAL SUBDIVISION CIVIL ENGINEERING PLANS DEVELOPMENT APPLICATION

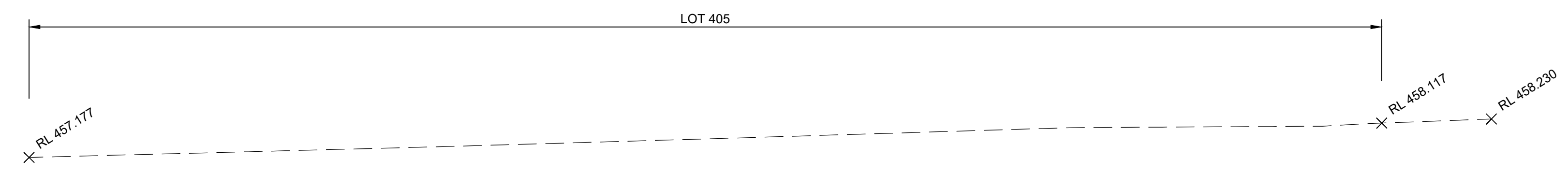
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Scale 1:100	A1	Project No. 2021184	Dwg. No. 203
			Issue A



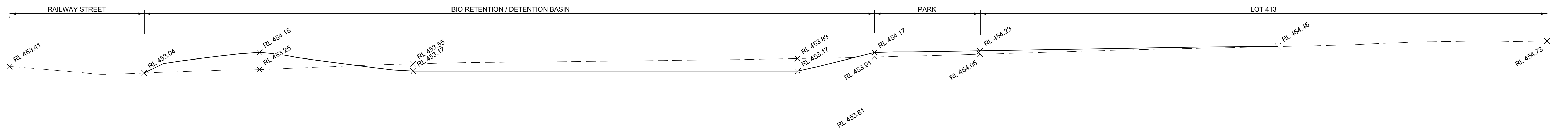
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SCALE 1:100
NATURAL



SECTION D
SCALE 1:100
NATURAL



SECTION D
SCALE 1:100
NATURAL



SECTION E
SCALE 1:500
NATURAL

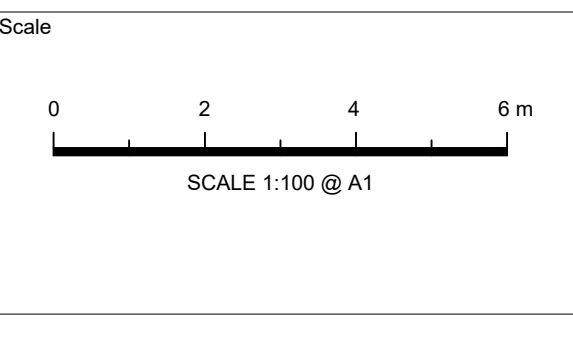
NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
A	ISSUE FOR DEVELOPMENT APPLICATION	14/02/2022	P.B.T.	J.A.B.

Certification By Dr. Michel Chaaya
in affiliation with Joe Bacha (formerly
Australian Consulting Engineers)

Client
MR. ROY AMERY
Council
MID-WESTERN REGIONAL COUNCIL

Surveyor
Premise
DUBBO OFFICE
1ST FLOOR
62 WINGEWARRA STREET
DUBBO, NSW 2830
PH: (02) 6887 4500
WEB: www.premise.com.au

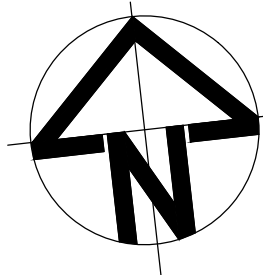


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Email : info@telfordcivil.com.au
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Company : Telford Consulting Pty Ltd

Project
**1 RAILWAY STREET, GULGONG
PROPOSED RESIDENTIAL SUBDIVISION
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

Drawing Title	EARTHWORKS TYPICAL CROSS SECTIONS SHEET 4 OF 4		
Scale	A1	Project No.	Dwg. No.
1:100		2021184	204
Issue	A		

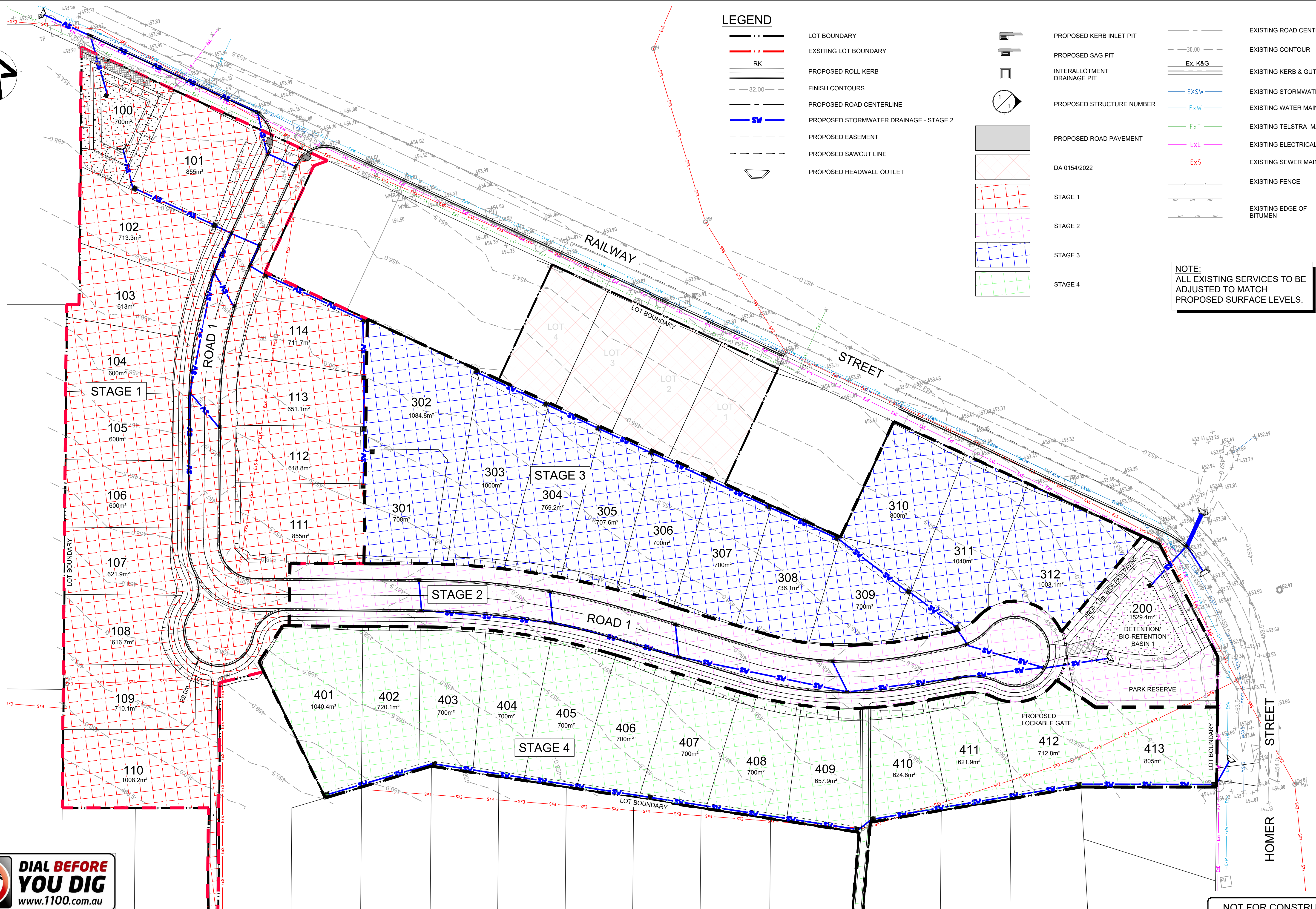
Appendix H CIVIL PLANS



LEGEND

- LOT BOUNDARY
- EXISTING LOT BOUNDARY
- RK
- PROPOSED ROLL KERB
- FINISH CONTOURS
- PROPOSED ROAD CENTERLINE
- PROPOSED STORMWATER DRAINAGE - STAGE 2
- PROPOSED EASEMENT
- PROPOSED SAWCUT LINE
- PROPOSED HEADWALL OUTLET
- PROPOSED KERB INLET PIT
- PROPOSED SAG PIT
- INTERALLOTMENT DRAINAGE PIT
- PROPOSED STRUCTURE NUMBER
- PROPOSED ROAD PAVEMENT
- DA 0154/2022
- STAGE 1
- STAGE 2
- STAGE 3
- STAGE 4
- EXISTING ROAD CENTRE LINE
- EXISTING CONTOUR
- Ex. K&G
- EXISTING KERB & GUTTER
- EXSW
- EXW
- ExT
- ExE
- ExS
- EXISTING STORMWATER DRAINAGE
- EXISTING WATER MAIN
- EXISTING TELSTRA MAIN
- EXISTING ELECTRICAL MAIN
- EXISTING SEWER MAIN
- EXISTING FENCE
- EXISTING EDGE OF BITUMEN

NOTE:
ALL EXISTING SERVICES TO BE ADJUSTED TO MATCH PROPOSED SURFACE LEVELS.



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A ISSUE FOR DEVELOPMENT APPLICATION		14/02/2022	P.B.T.	J.A.B.
Issue	Description	Date	Design	Checked
1	10m at full size			

Certification By Dr. Michel Chaaya
in affiliation with Joe Bacha (formerly
Australian Consulting Engineers)

Client
MR. ROY AMERY

Council
MID-WESTERN REGIONAL COUNCIL

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DUBBO, NSW 2830
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Scale
0 10 20 30 m
SCALE 1:500 @ A1

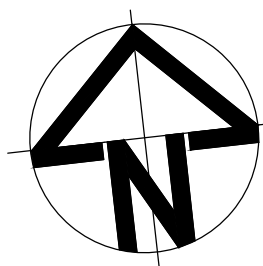
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Project
**1 RAILWAY STREET, GULGONG
PROPOSED RESIDENTIAL SUBDIVISION
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

Drawing Title
STAGE LAYOUT PLAN

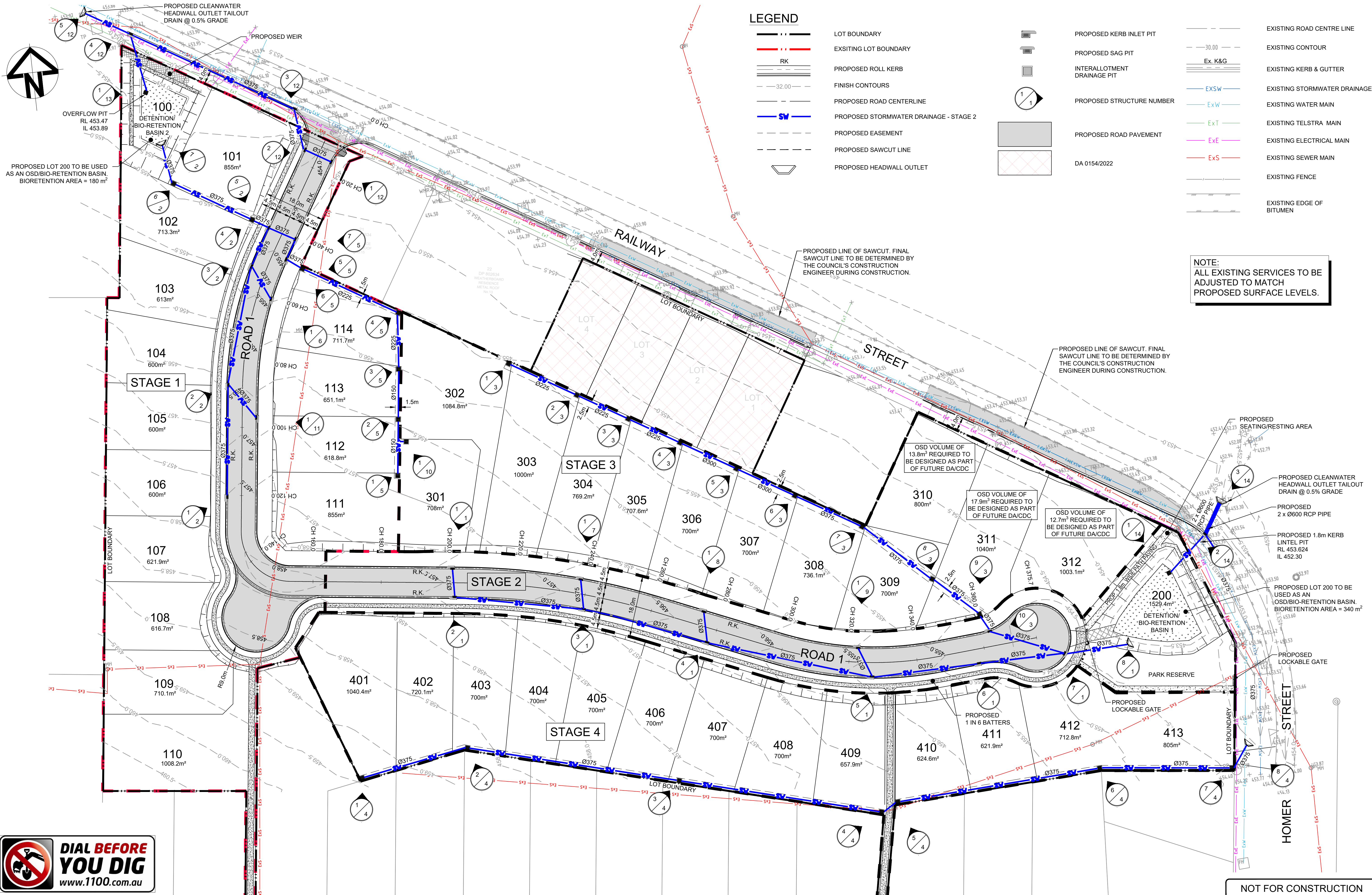
Scale A1 Project No. 2021184 Dwg. No. 300 Issue A



LEGEND

- LOT BOUNDARY
- EXISTING LOT BOUNDARY
- RK
- PROPOSED ROLL KERB
- FINISH CONTOURS
- PROPOSED ROAD CENTERLINE
- PROPOSED STORMWATER DRAINAGE - STAGE 2
- PROPOSED EASEMENT
- PROPOSED SAWCUT LINE
- PROPOSED HEADWALL OUTLET
- PROPOSED KERB INLET PIT
- PROPOSED SAG PIT
- INTERLOTMENT DRAINAGE PIT
- PROPOSED STRUCTURE NUMBER
- PROPOSED ROAD PAVEMENT
- DA 0154/2022
- EXISTING ROAD CENTRE LINE
- EXISTING CONTOUR
- EX. K&G
- EXISTING STORMWATER DRAINAGE
- EXISTING WATER MAIN
- EXISTING TELSTRA MAIN
- EXISTING ELECTRICAL MAIN
- EXISTING SEWER MAIN
- EXISTING FENCE
- EXISTING EDGE OF BITUMEN

NOTE:
ALL EXISTING SERVICES TO BE ADJUSTED TO MATCH PROPOSED SURFACE LEVELS.



NOT FOR CONSTRUCTION

A ISSUE FOR DEVELOPMENT APPLICATION		14/02/2022	P.B.T.	J.A.B.
Issue	Description	Date	Design	Checked
1	10m at full size	16m	20m	

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Scale
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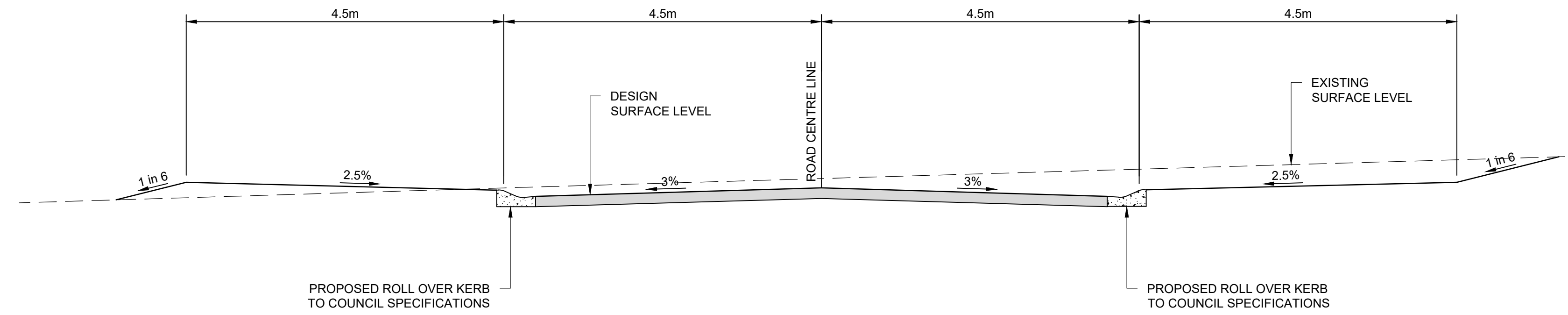
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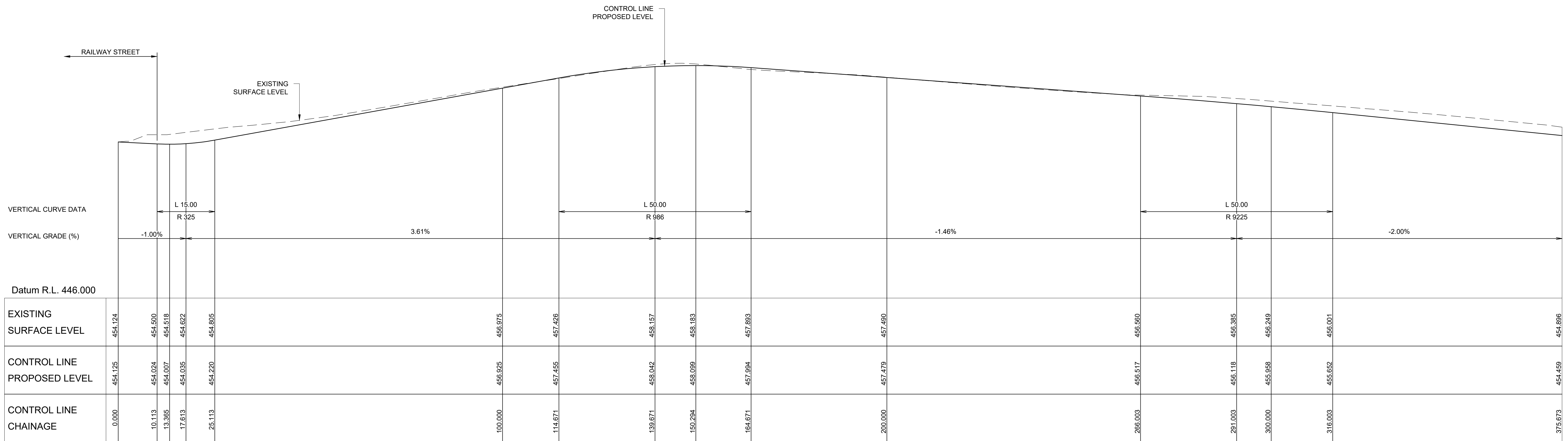
Project
**1 RAILWAY STREET, GULGONG
PROPOSED RESIDENTIAL SUBDIVISION
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

Drawing Title
**ROADWORKS AND DRAINAGE
LAYOUT PLAN**

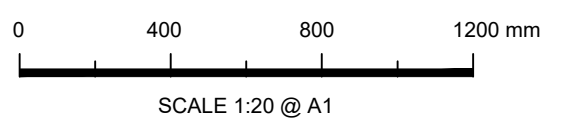
Scale: A1 Project No. 2021184 Dwg. No. 301 Issue A



ROAD 1 - TYPICAL CROSS SECTIONS
SCALE 1:50



ROAD 1 - LONGITUDINAL SECTION
SCALE (H) 1:500
(V) 1:100



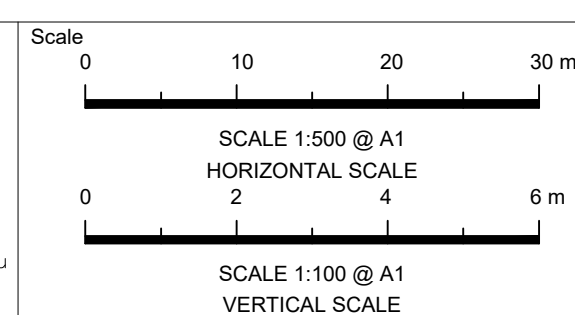
NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
A	ISSUE FOR DEVELOPMENT APPLICATION	14/02/2022	P.B.T.	J.A.B.

Certification By Dr. Michel Chaaya
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Client
MR. ROY AMERY
Council
MID-WESTERN REGIONAL COUNCIL

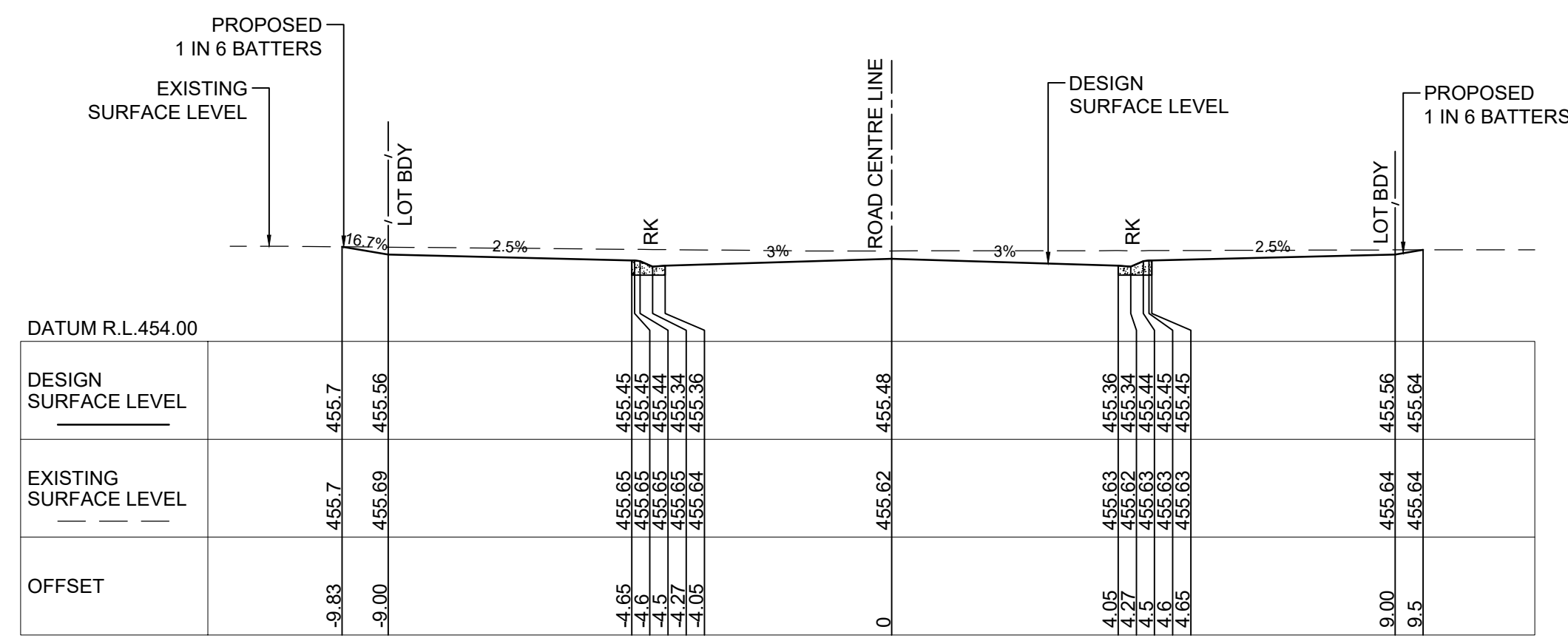
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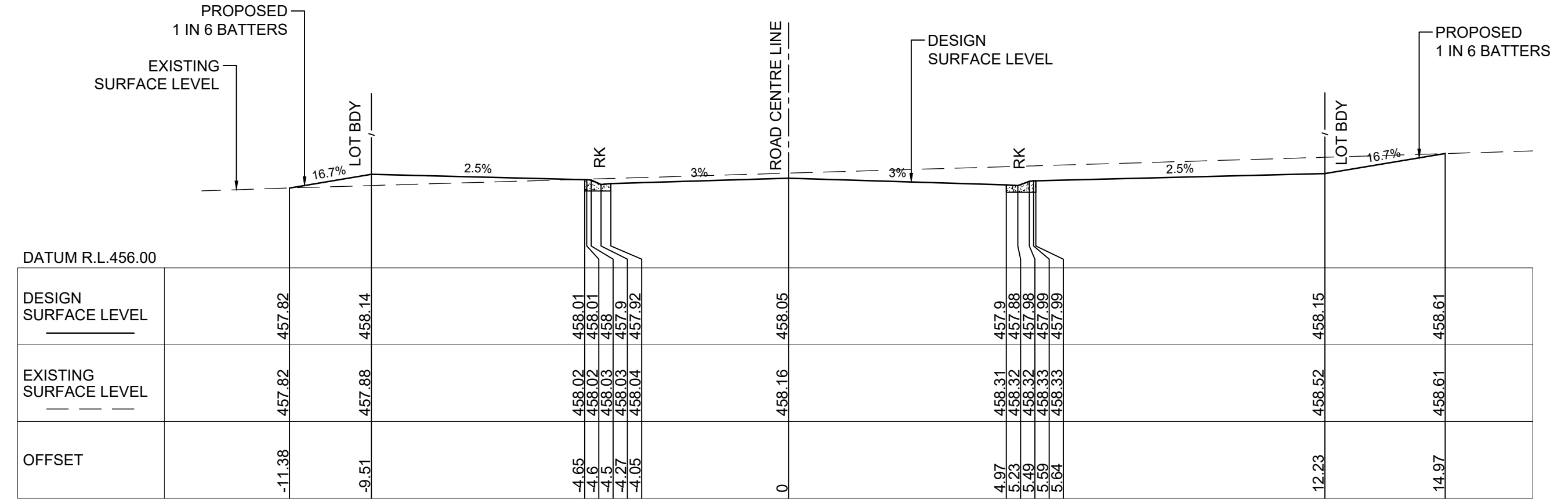
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PROPOSED RESIDENTIAL SUBDIVISION
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

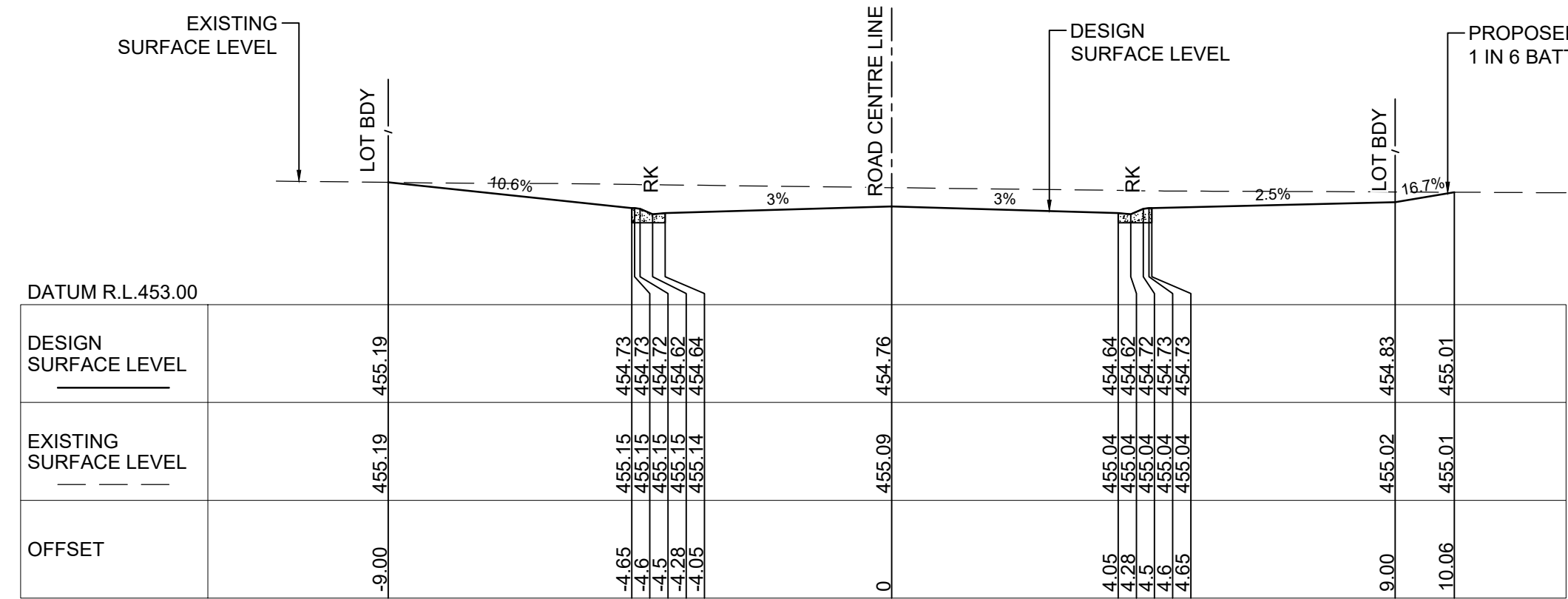
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LONGITUDINAL SECTION**
Scale A1 AS SHOWN Project No. 2021184 Dwg. No. 302 Issue A



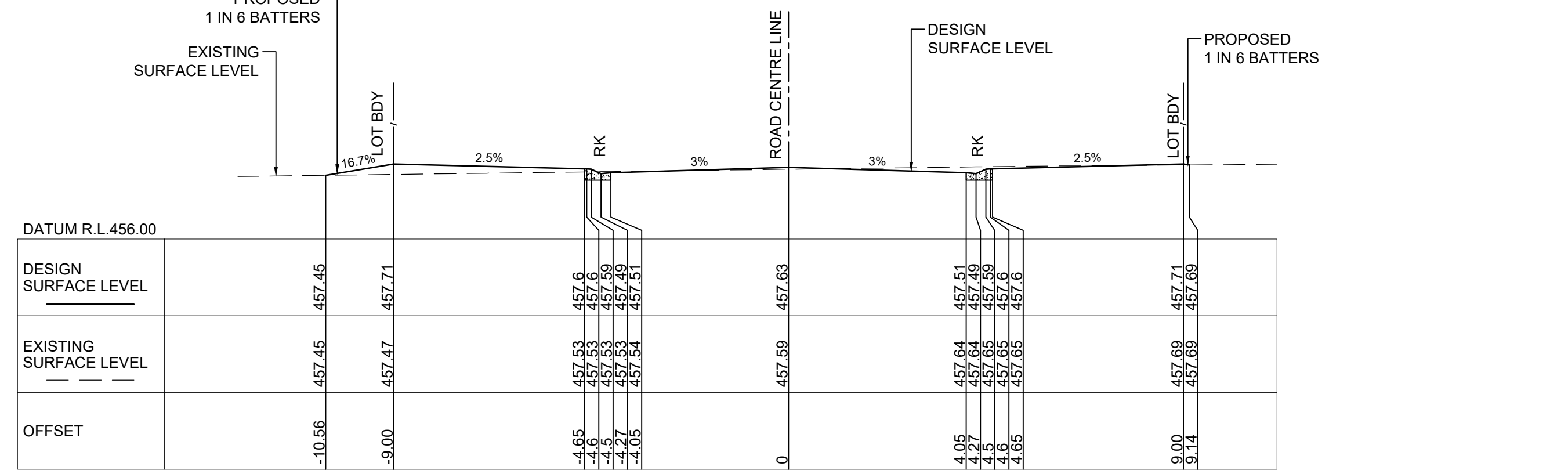
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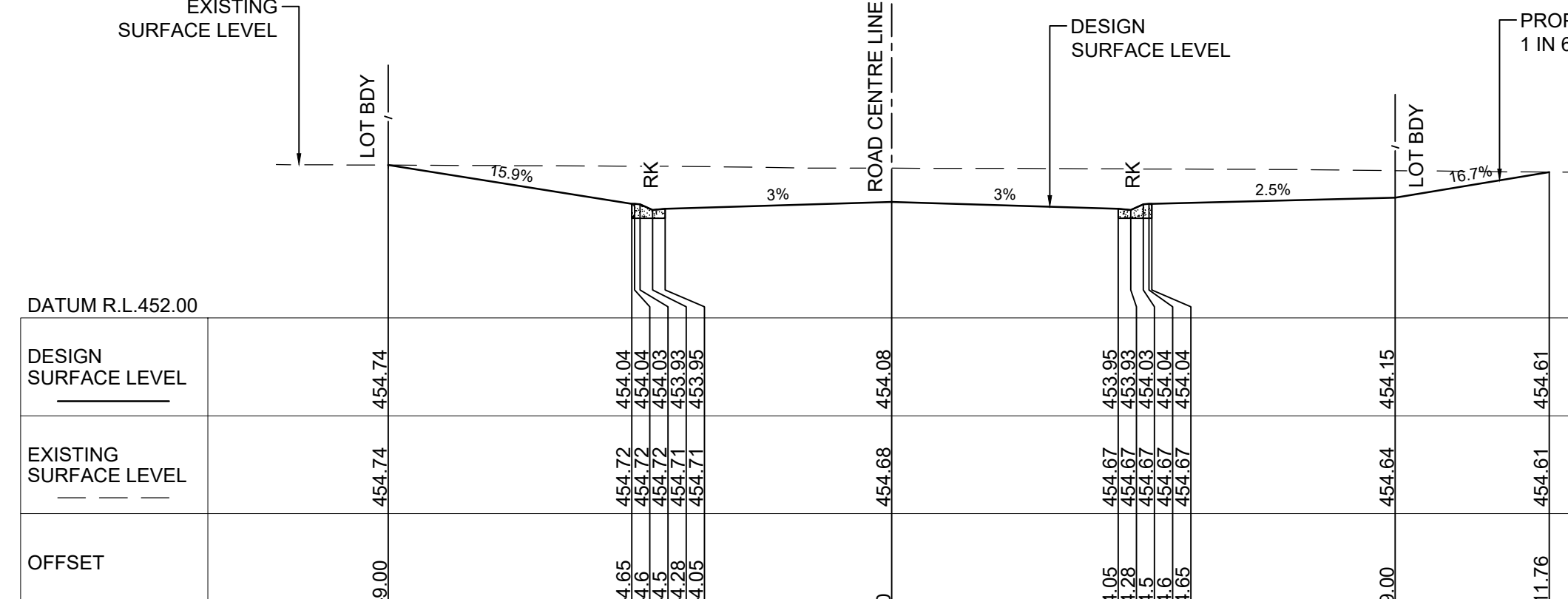
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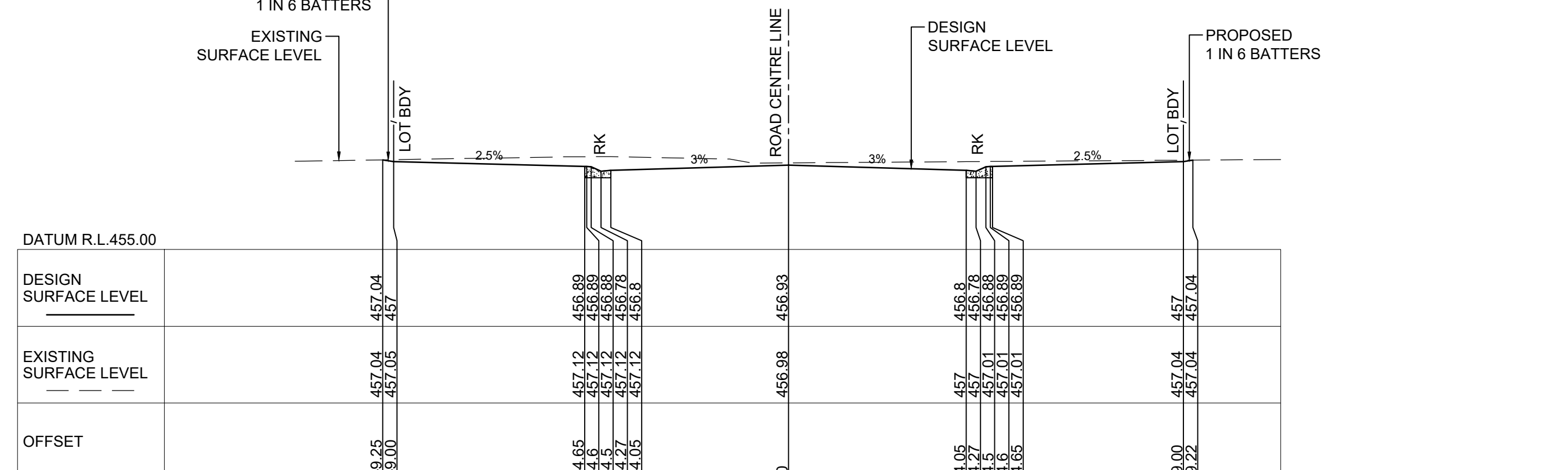
CH. 40



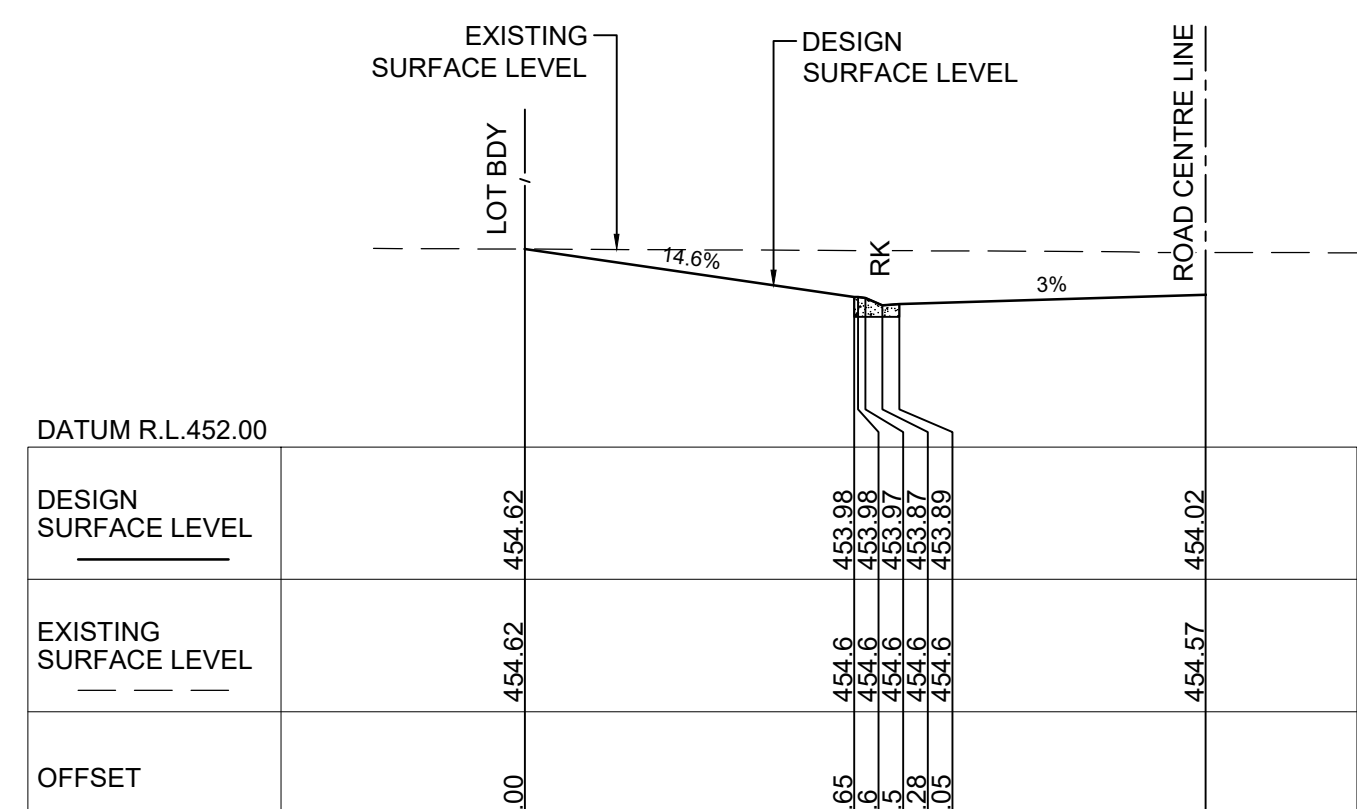
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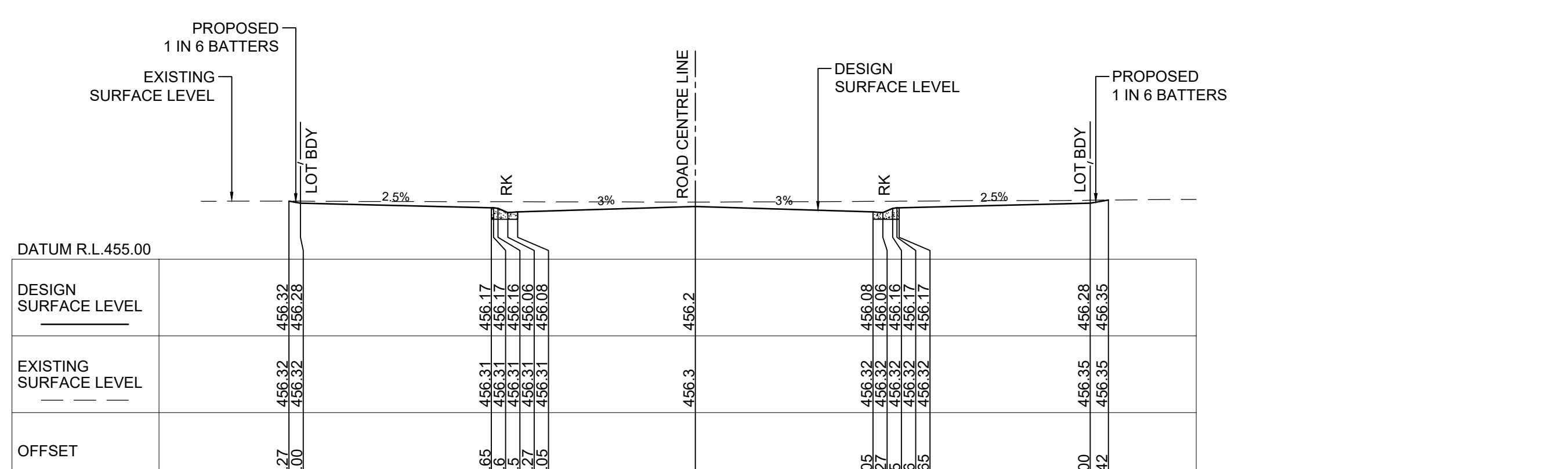
CH. 20



CH. 100



CH. 15.67



CH. 80

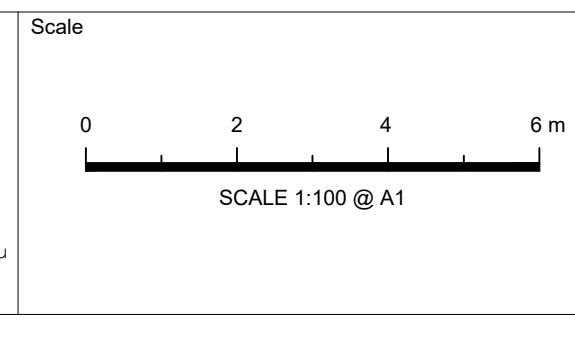
NOT FOR CONSTRUCTION

A ISSUE FOR DEVELOPMENT APPLICATION		14/02/2022	P.B.T.	J.A.B.
Issue	Description	Date	Design	Checked
10m at full size				

Certification By Dr. Michel Chaaya
in affiliation with Joe Bacha (formerly)

Client
MR. ROY AMERY
Council
MID-WESTERN REGIONAL COUNCIL

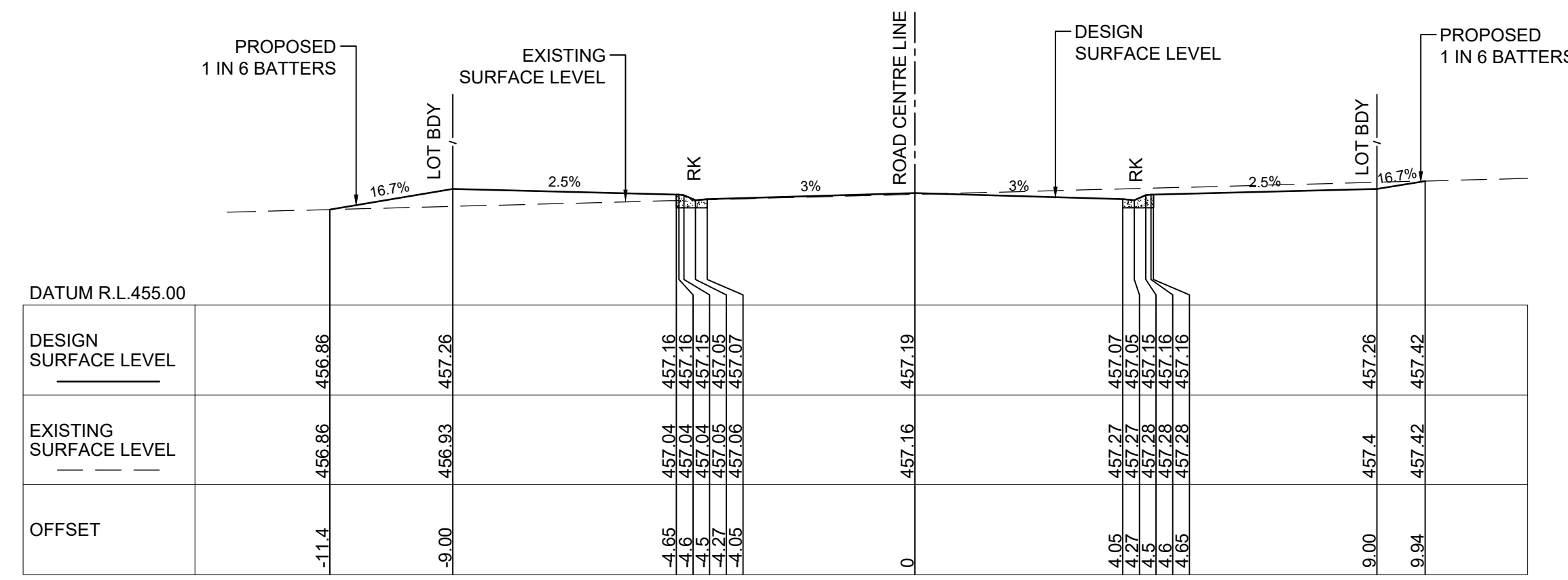
Surveyor
Premise
DUBBO OFFICE
1ST FLOOR
62 WINGWARRA STREET
DUBBO, NSW 2830
PH: (02) 6887 4500
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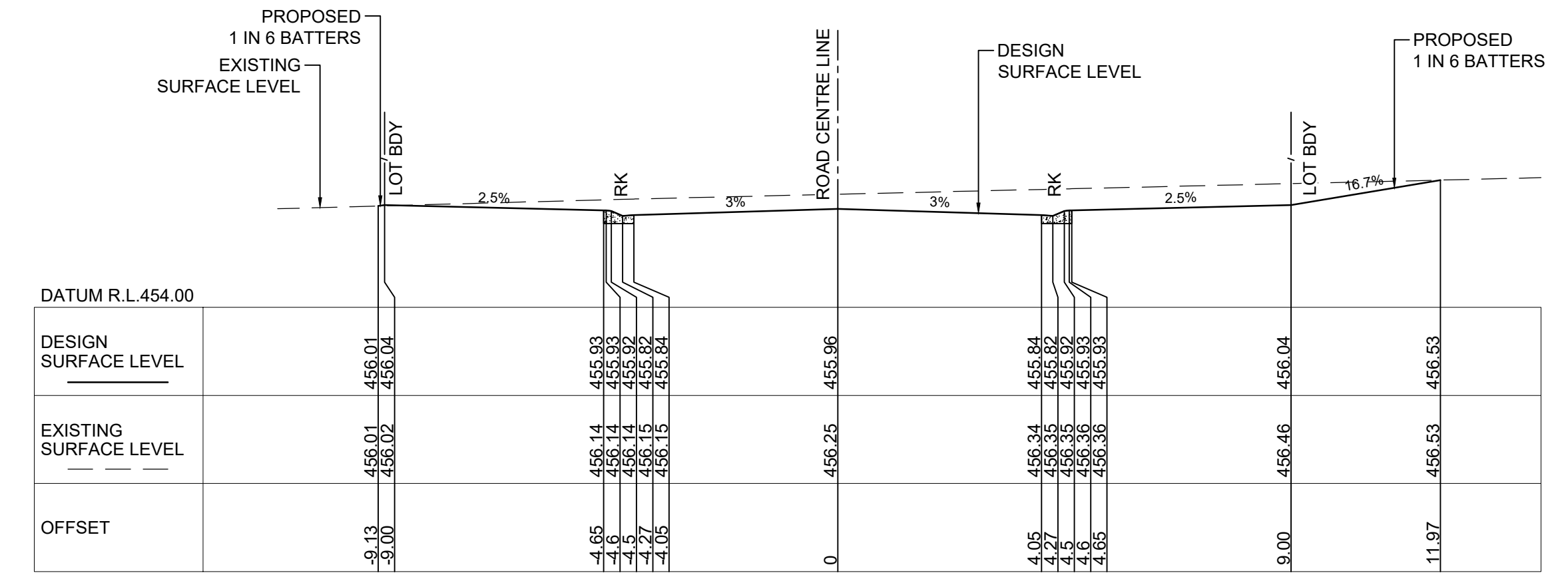
TELFORD CIVIL
DESIGN & CONSTRUCTION EXCELLENCE
Level 4, 470 Church Street, Email : info@telfordcivil.com.au
Parramatta NSW 2150 Phone : 02 7809 4931
PO BOX 3579 Parramatta 2124 Company : Telford Consulting Pty Ltd

Project
**1 RAILWAY STREET, GULGONG
PROPOSED RESIDENTIAL SUBDIVISION
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

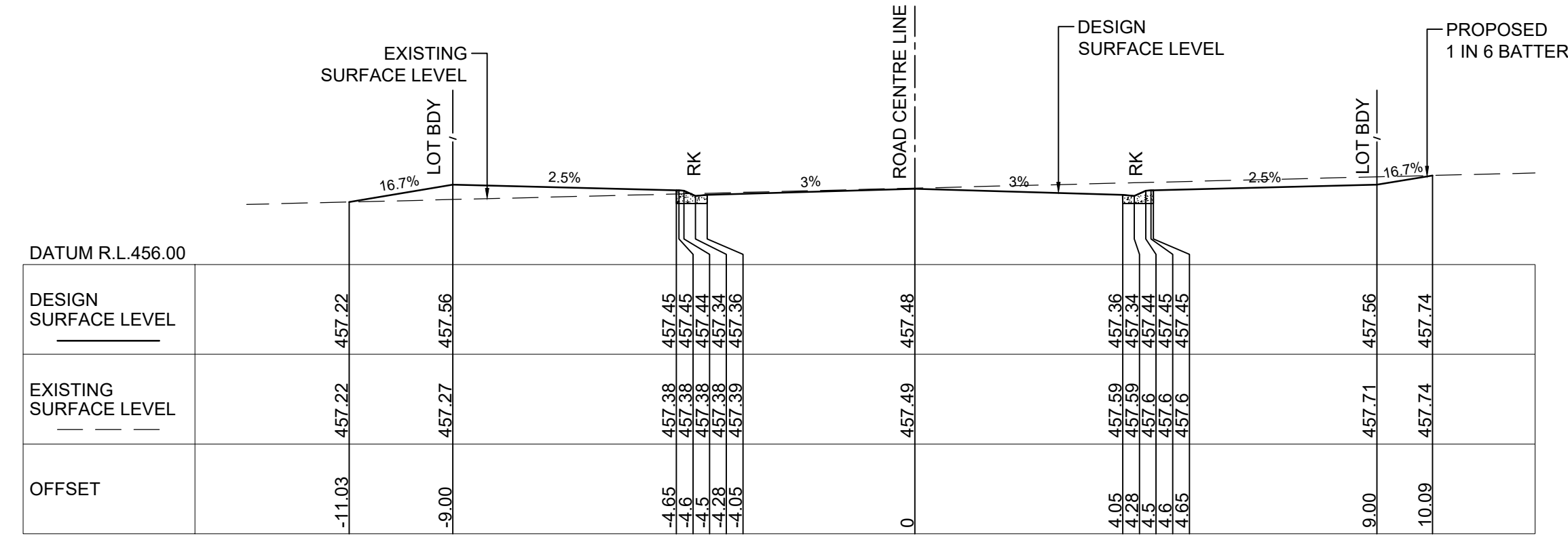
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**ROAD 1
CROSS SECTIONS
SHEET 1 OF 3**
Scale A1 Project No. 2021184 Dwg. No. 303 Issue A



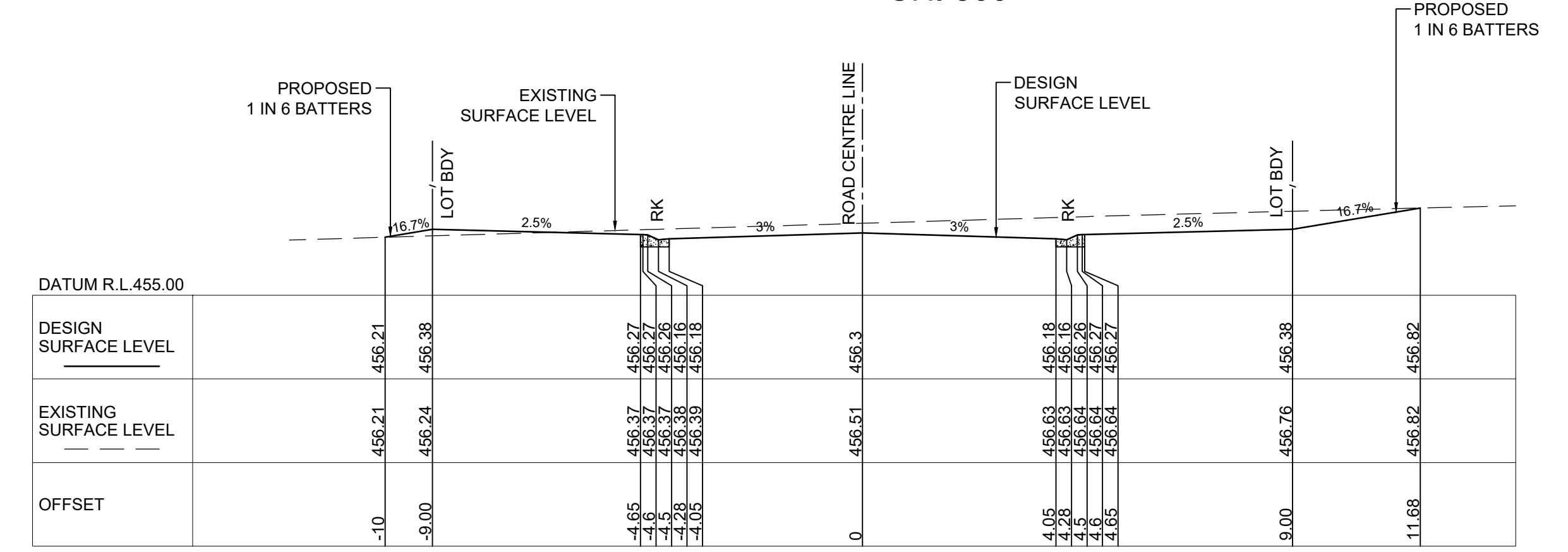
CH. 220



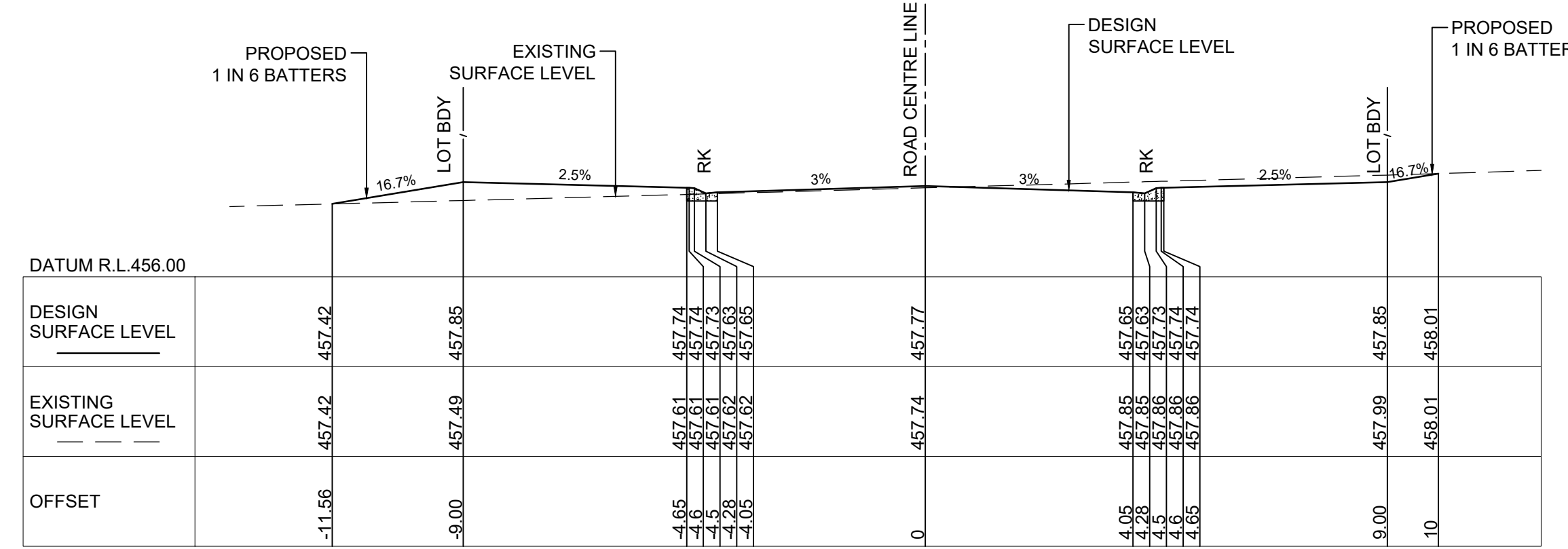
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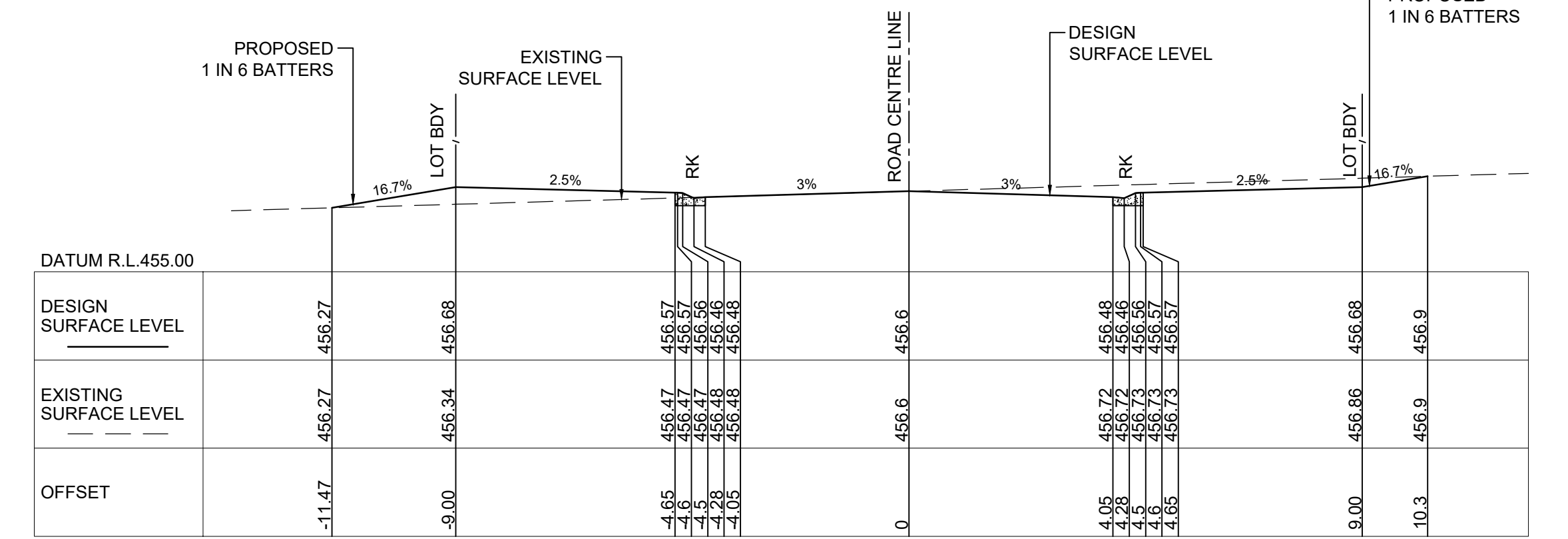
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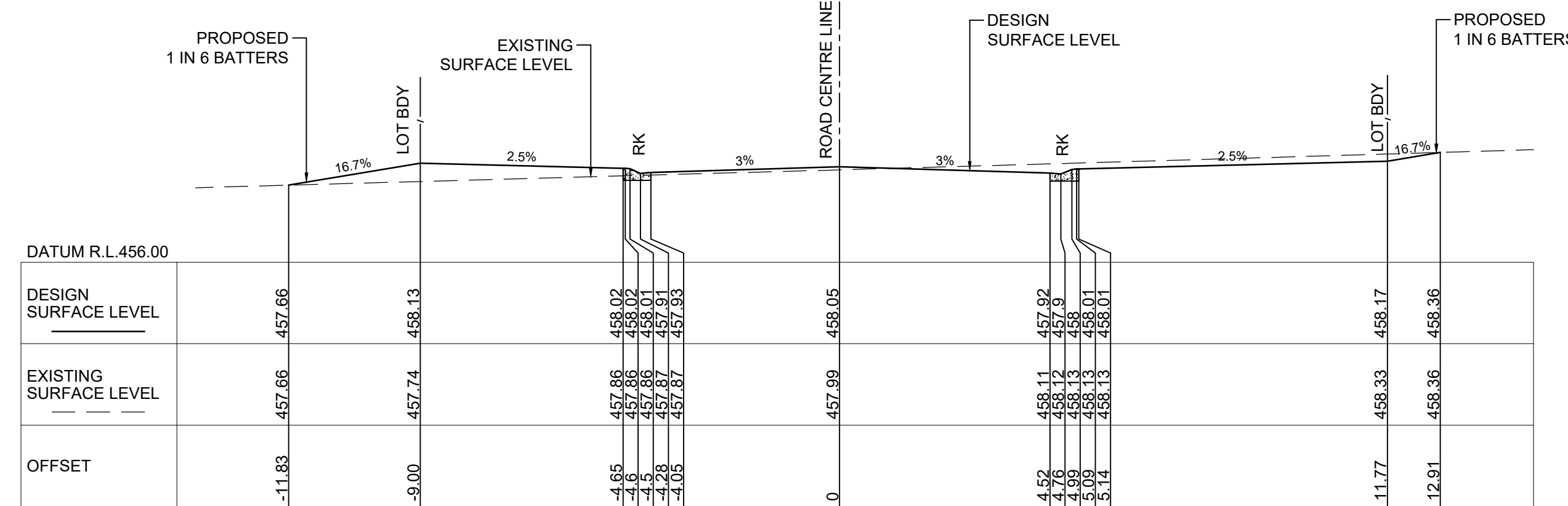
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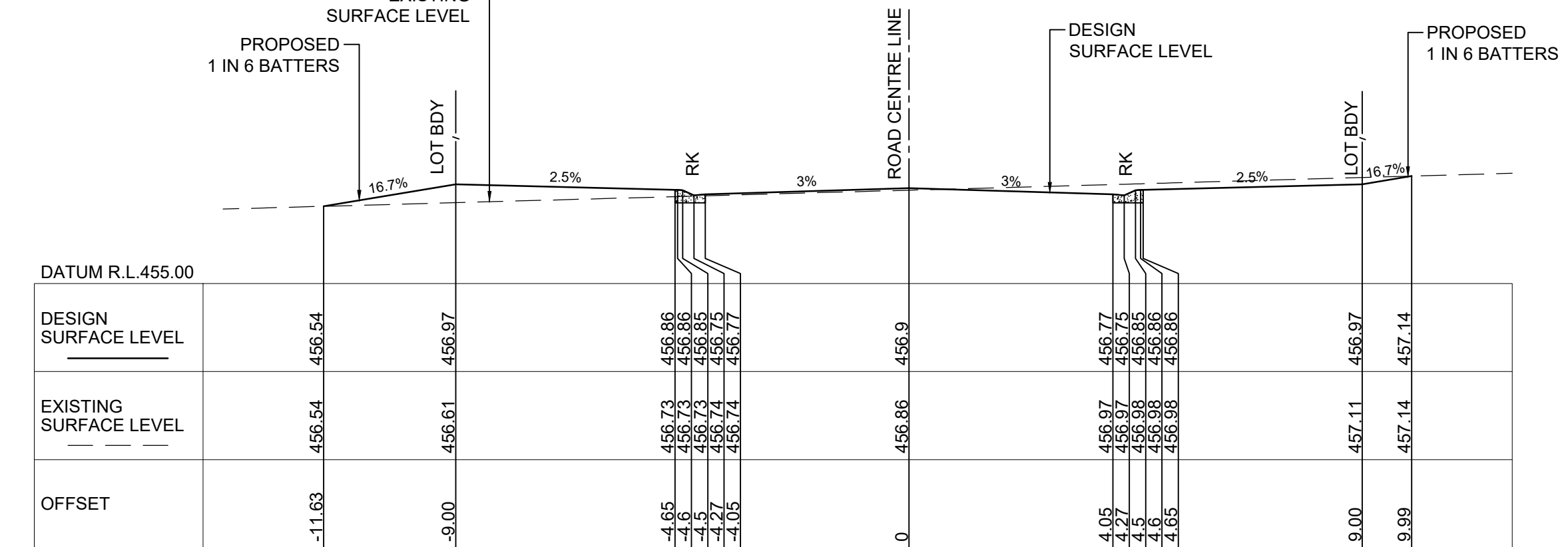
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CH. 260



CH. 160



CH. 240

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A ISSUE FOR DEVELOPMENT APPLICATION		14/02/2022	P.B.T.	J.A.B.
Issue	Description	Date	Design	Checked
1	From full size			20mm

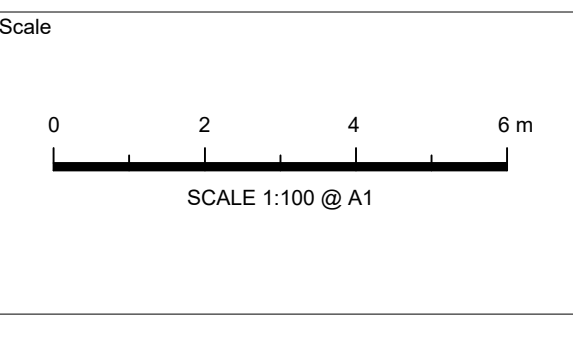
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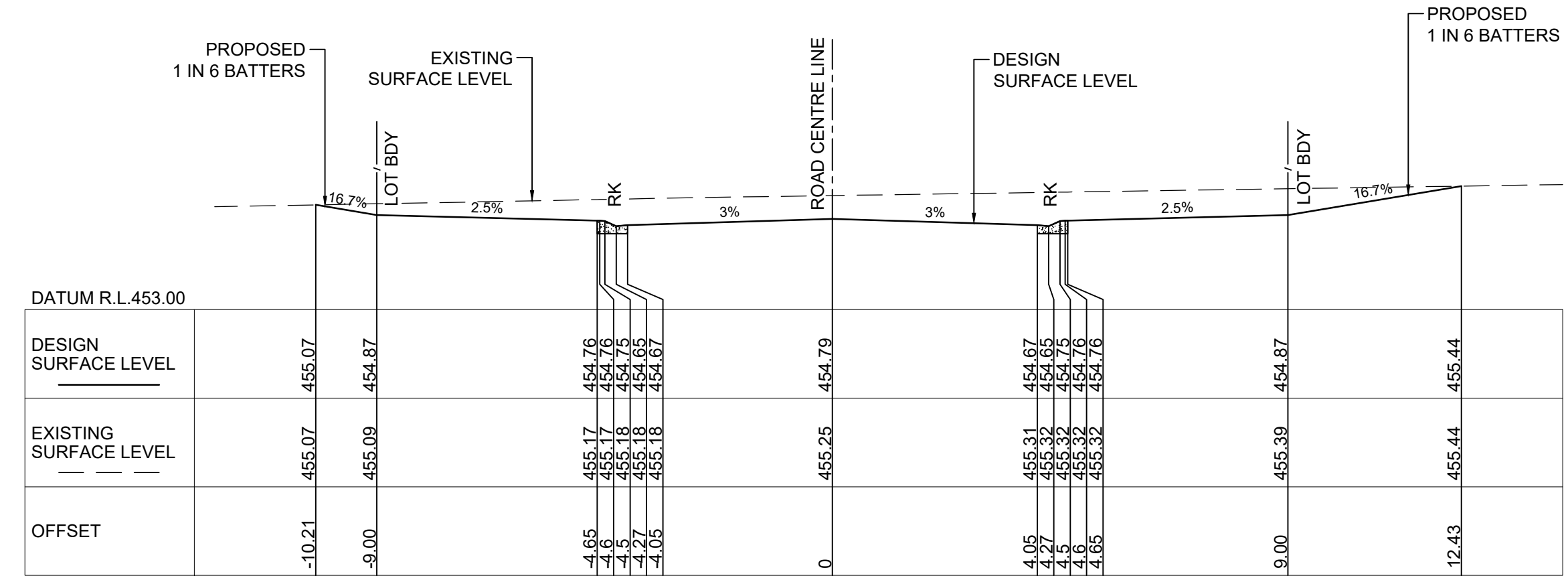
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DESIGN & CONSTRUCTION EXCELLENCE

Level 4, 470 Church Street, Parramatta NSW 2150
PO BOX 3579 Parramatta 2124

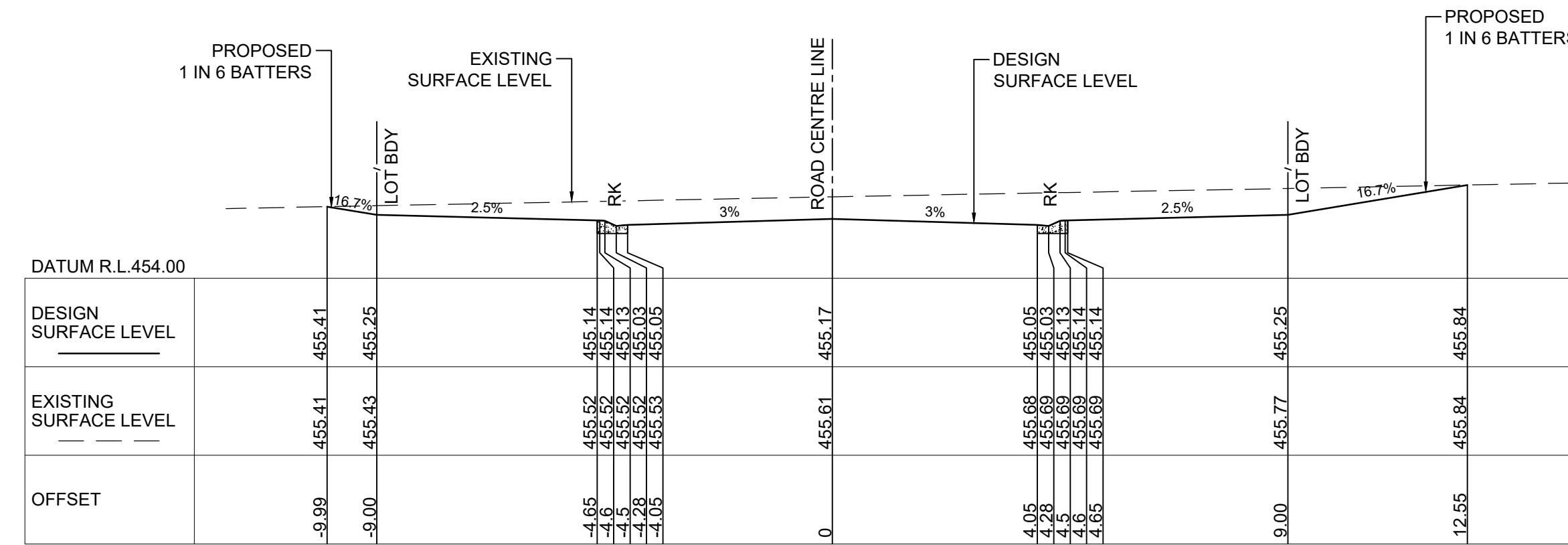
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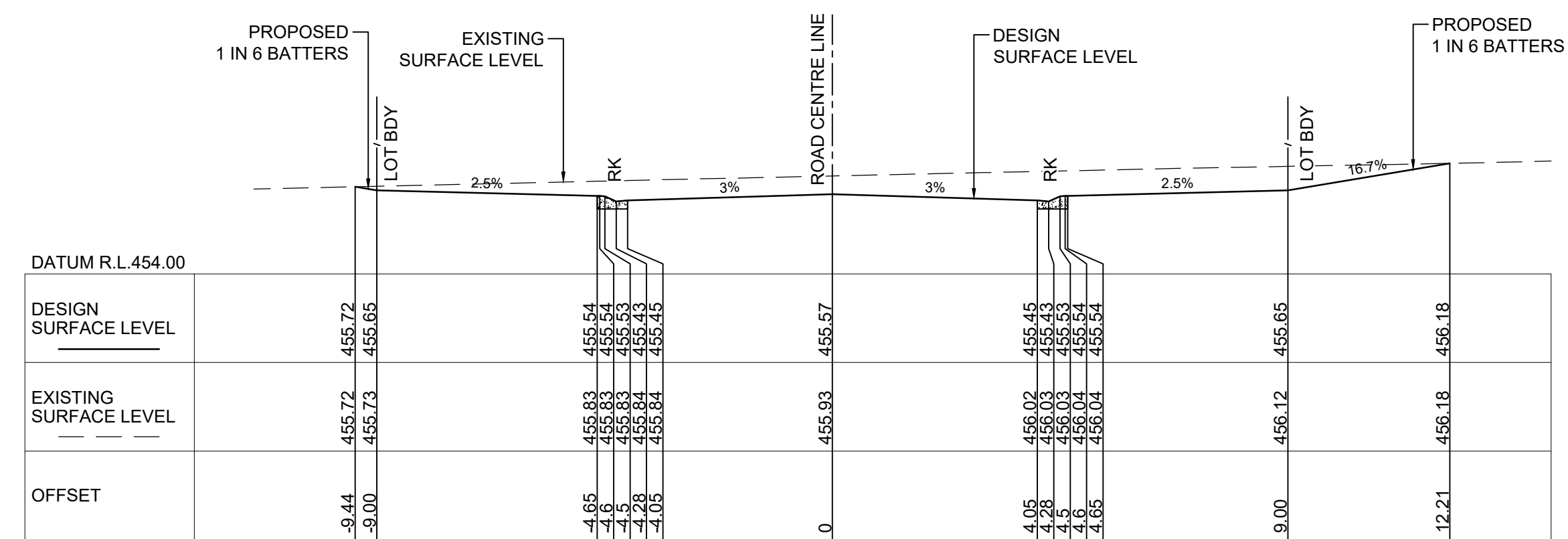
Drawing Title ROAD 1 CROSS SECTIONS SHEET 2 OF 3	Scale 1:100	A1	Project No. 2021184	Dwg. No. 304	Issue A
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CH. 359.16



CH. 340



CH. 320

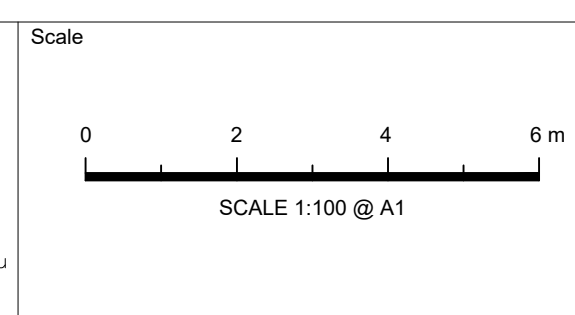
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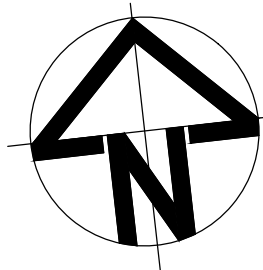
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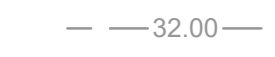


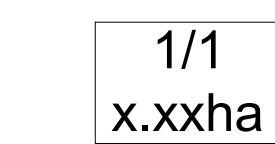




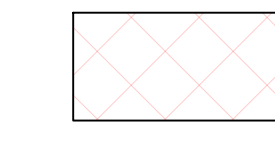

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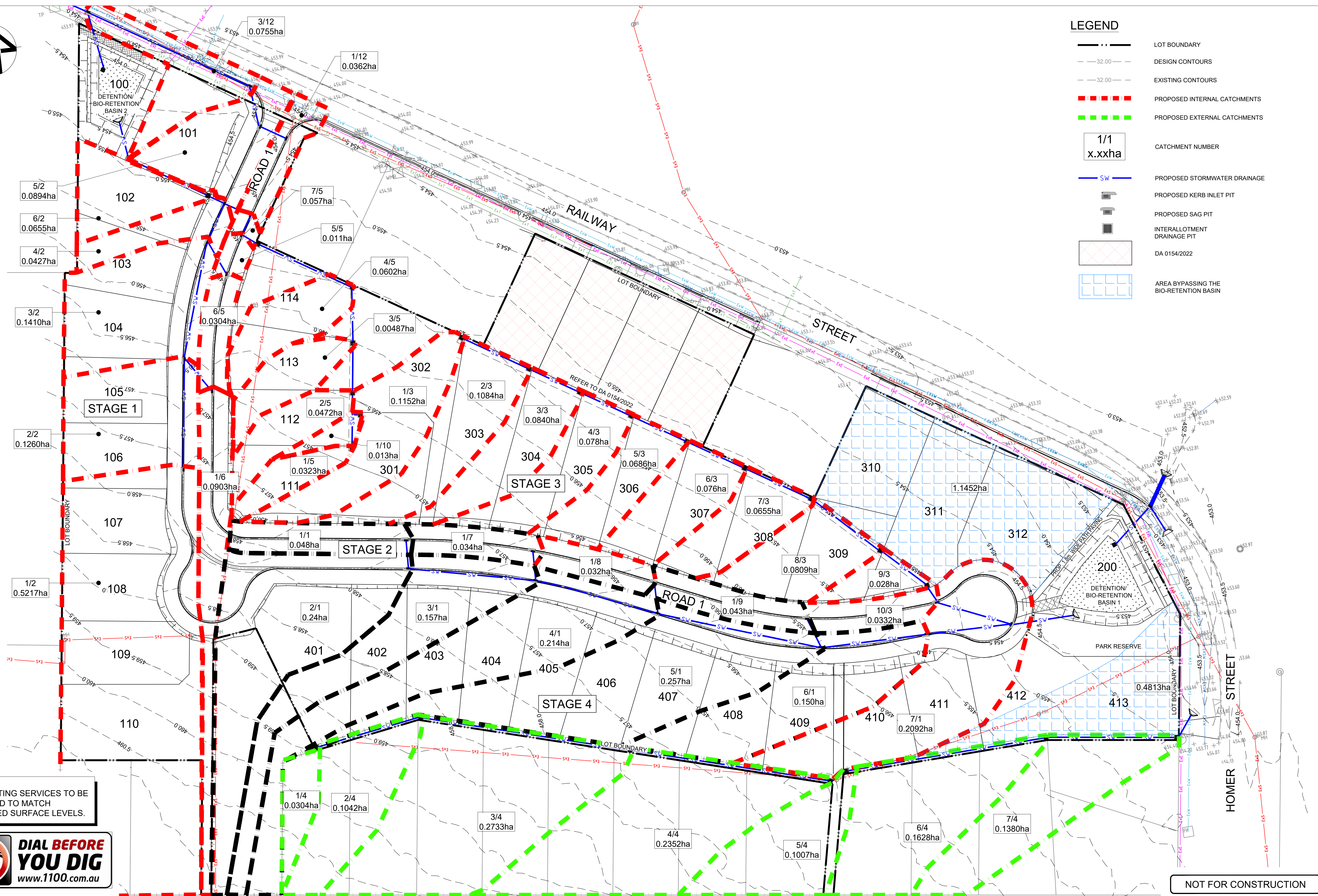
Project
**1 RAILWAY STREET, GULGONG
PROPOSED RESIDENTIAL SUBDIVISION
CIVIL ENGINEERING PLANS
DEVELOPMENT APPLICATION**

Drawing Title
**ROAD 1
CROSS SECTIONS
SHEET 3 OF 3**
Scale A1
1:100
Project No.
2021184
Dwg. No.
305
Issue
A



LEGEND

-  LOT BOUNDARY
-  DESIGN CONTOURS
-  EXISTING CONTOURS
-  PROPOSED INTERNAL CATCHMENTS
-  PROPOSED EXTERNAL CATCHMENTS
-  CATCHMENT NUMBER
-  PROPOSED STORMWATER DRAINAGE
-  PROPOSED KERB INLET PIT
-  PROPOSED SAG PIT
-  INTERLOTMENT DRAINAGE PIT
-  DA 0154/2022
-  AREA BYPASSING THE BIO-RETENTION BASIN



NOTE:
ALL EXISTING SERVICES TO BE
ADJUSTED TO MATCH
PROPOSED SURFACE LEVELS.



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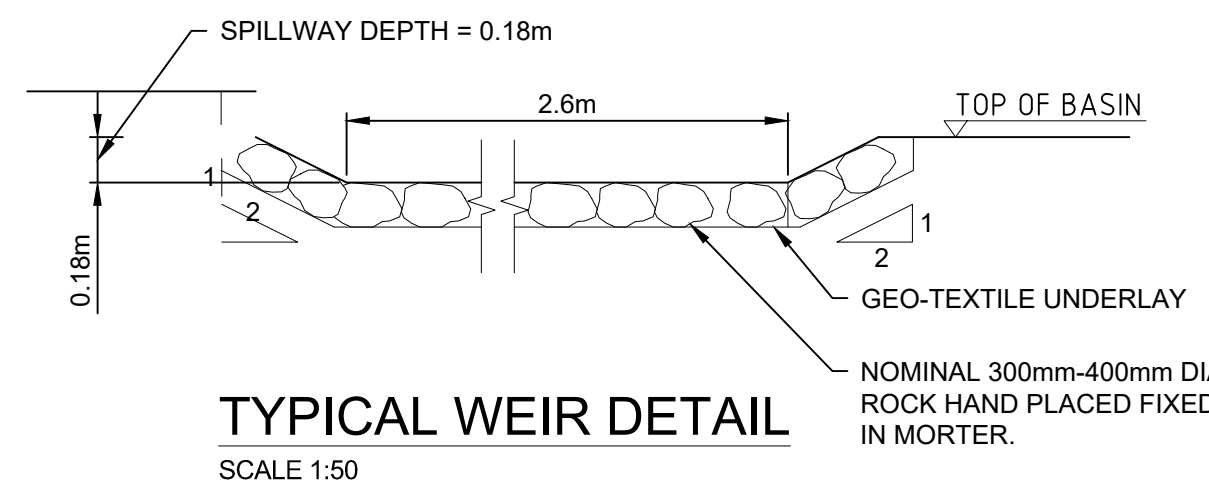
<p>Client MR. ROY AMERY</p> <p>Council MID-WESTERN REGIONAL COUNCIL</p>	<p>Surveyor Premise</p> <p>DUBBO OFFICE 1ST FLOOR 62 WINGWARRA STREET DUBBO, NSW 2830 PH: (02) 6887 4500 WEB: www.premise.com.au</p>	<p>Scale 0 20 40 60 80 m SCALE 1:1500 @ A1</p>	<p>TELFORD CIVIL DESIGN & CONSTRUCTION EXCELLENCE</p> <p>Level 4, 470 Church Street, Parramatta NSW 2150 PO BOX 3579 Parramatta 2124</p> <p>Email : info@telfordcivil.com.au Phone : 02 7809 4931 Company : Telford Consulting Pty Ltd</p>	<p>Project 1 RAILWAY STREET, GULGONG PROPOSED RESIDENTIAL SUBDIVISION CIVIL ENGINEERING PLANS DEVELOPMENT APPLICATION</p>	<p>Drawing Title STORMWATER CATCHMENT PLAN</p> <p>Scale 1:500</p> <p>Project No. 2021184</p> <p>Dwg. No. 400</p> <p>Issue A</p>										
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Issue	Description	Date	Design	Checked											

BIO-RETENTION BASIN NOTES:

- AN IMPERMEABLE LINER SHALL BE INSTALLED TO FULLY CONTAIN INFILTRATED WATER AND PREVENT INFILTRATION TO GROUNDWATER. LINER SUBGRADE SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY AND TO FORM CONTINUOUS BED FREE OF VOIDS AND FREE OF SHARP OBJECTS TO PREVENT TEARING. SUBGRADE SHALL BE GRADED AS SHOWN ON THE DRAWINGS TO FORM ROUNDED BASE. LINER TO HAVE ALL WELDED JOINTS SEALED IN ACCORDANCE WITH THE PRODUCTS SPECIFICATIONS TO ENSURE THE SYSTEM IS WATER TIGHT. LINER NEEDS TO BE APPROPRIATELY KEPT INTO THE BATTERS AND EMBANKMENTS AND WRAPPED UP AGAINST DRAINAGE PITS TO TOP OF SOIL LAYER WITH CONSIDERATION TO PROTRUSIONS THROUGH THE LINERS SUCH AS OUTLET PIPES..
- UNDERDRAINS SHALL BE LAID IN A MINIMUM OF 200MM DRAINAGE LAYER COMPRISED OF FINE GRAVEL (2-5MM, WITH <2% FINES AND HYDRAULIC CONDUCTIVITY OF 400MM/HR. THE DRAINAGE LAYER DEPTH MUST ENSURE AT LEAST 50MM COVER OVER THE UNDERDRAIN. BRIDGING CRITERIA SHALL BE APPLIED TO AVOID MIGRATION OF THE ON-TOP LAYER INTO THE DRAINAGE LAYER. D15 (DRAINAGE LAYER) Ø5xD85 (ON-TOP LAYER).
- WHERE INDICATED ON THE DESIGN DRAWINGS A TRANSITION LAYER SHALL BE INCLUDED. THE TRANSITION LAYER MATERIAL SHALL BE CLEAN, WELL GRADED SAND MATERIAL (TYPICALLY 1MM) CONTAINING <2% FINES. THE PARTICLE SIZE DISTRIBUTION OF THE SAND SHALL BE ASSESSED TO MEET BRIDGING CRITERIA THAT THE SMALLEST 15% OF THE SAND PARTICLES BRIDGE WITH THE LARGEST 15% OF THE FILTER MEDIA. D15 (TRANSITION LAYER) Ø5xD85 (FILTER MEDIA).
- BIO-RETENTION FILTER MEDIA SHALL COMPLY WITH THE FOLLOWING:
 - HAVE A MINIMUM HYDRAULIC CONDUCTIVITY OF 200MM/HR. THIS SHOULD BE MEASURED ACCORDING TO ASTM F1815-06 STANDARD TEST METHODS FOR SATURATED HYDRAULIC CONDUCTIVITY, WATER RETENTION, POROSITY, AND BULK DENSITY OF PUTTING GREEN AND SPORTS TURF ROOT ZONES METHOD.
 - HAVE TOTAL CLAY AND SILT MIX LESS THAN 3% (W/W) TO REDUCE THE LIKELIHOOD OF STRUCTURAL COLLAPSE OF SUCH SOILS.
 - THE FILTER MEDIA SHALL BE GRADED LOAMY SAND WITHOUT GAP IN THE PARTICLE SIZE GRADING AND THE COMPOSITION SHALL NOT BE DOMINATED BY A SMALL PARTICLE SIZE RANGE. THE FOLLOWING IS A GUIDE FOR THE FILTER MEDIA PARTICLE SIZE DISTRIBUTION:
 - CLAY AND SILT <3% (0.05MM)
 - VERY FINE SAND 5-30% (0.05-0.15MM)
 - FINE SAND 10-30% (0.25-1.0MM)
 - MEDIUM TO COARSE SAND 40-60% (0.25-1.0MM)
 - COARSE SAND 7-10% (1.0-2.0MM)
 - FINE GRAVEL <3% (2.0-3.4MM)
 - FILTER MEDIA SHALL BE TESTED (ACCORDING TO AS4419-2003) TO COMPLY WITH THE FOLLOWING:
 - TOTAL NITROGEN (TN) CONTENT < 80MG/KG
 - ORTHOPHOSPHATE (PO4) CONTENT < 40MG/KG
 - ORGANIC MATTER AT LEAST 3% (W/W)
 - PH 5.5-7.5 (PH 1:5 IN WATER)
 - ELECTRICAL CONDUCTIVITY (EC) <1.2DS/M
 - DISPERSIBILITY
- AN ALTERNATIVE OPTION FOR BIORETENTION FILTER MEDIA IS AN ENGINEERED FILTER MEDIA. THIS IS A WASHED, WELL GRADED SAND WITH APPROPRIATE HYDRAULIC CONDUCTIVITY (SUCH AS MATERIALS USED FOR CONSTRUCTION OF GOLF GREENS). THE TOP 100MM OF THE FILTER MEDIA SHALL THAN BE AMELIORATED WITH APPROPRIATE ORGANIC MATTER, FERTILISER AND TRACE ELEMENTS AS SHOWN BELOW:

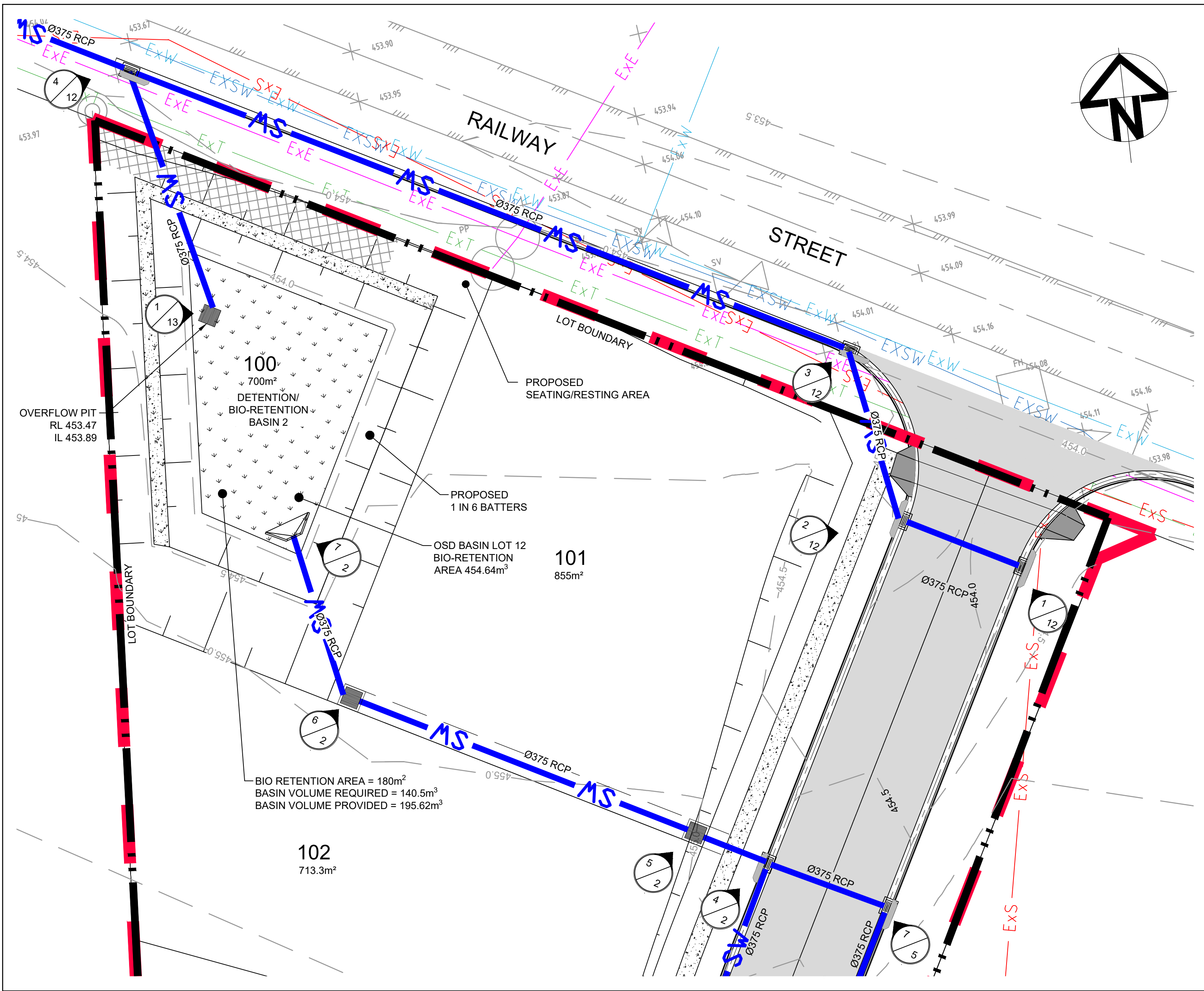
LEGEND

- LOT BOUNDARY
- PROPOSED STORMWATER
- 1000 SLOTTED uPVC PIPE @ 2m CRS WITH FLUSH POINT @ 30m CRS.
- FINISHED CONTOURS
- PROPOSED FILTER MEDIA
- PROPOSED SCOUR PROTECTION
- BASIN MAINTENANCE DRIVEWAY @ 1 in 6 MAX
- PROPOSED KERB INLET PIT
- PROPOSED SAG PIT
- INTERALLOTMENT DRAINAGE PIT



CONSTITUENT	QUANTITY (KG/100 M2 FILTER AREA)
GRANULATED POULTRY MANURE FINES	50
SUPERPHOSPHATE	2
MAGNESIUM SULPHATE	3
POTASSIUM SULPHATE	2
TRACE ELEMENT MIX	1
FERTILISER NPK (16.4.14)	4
LIME	20

- POTENTIAL FILTER MEDIA SHALL BE ASSESSED BY A HORTICULTURALIST TO ENSURE THAT THEY ARE CAPABLE OF SUPPORTING A HEALTHY VEGETATION COMMUNITY.
- THE BIO-RETENTION FILTER MEDIA SHALL BE TESTED TO DEMONSTRATE THE COMPLIANCE WITH THE ABOVE MENTIONED REQUIREMENTS AT THE FOLLOWING FREQUENCIES:
 - FOR BIO-RETENTION SYSTEMS <500M2, ONE SAMPLE PER 500M3 OF FILTER MEDIA.
 - FOR BIO-RETENTION SYSTEMS >500M2, ONE SAMPLE PER 500M3 OF FILTER MEDIA
 - FOR THE HYDRAULIC CONDUCTIVITY TEST PLUS ONE SAMPLE PER 2000M3 OF FILTER MEDIA FOR ALL OTHER REQUIRED TESTS.
- TESTING SHALL BE UNDERTAKEN ON THE ACTUAL MATERIAL TO BE DELIVERED TO THE SITE. THE SUPPLIER AND CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING THE FILTER MEDIA MEETS THE SPECIFICATIONS AND THE CORRECT MATERIAL IS DELIVERED TO THE SITE PRIOR TO INSTALLATION. THE SUPPLIER SHALL ARRANGE FOR THE FILTER MEDIA TO BE TESTED BY A CERTIFIED LABORATORY IN ACCORDANCE WITH THE ABOVE SPECIFICATIONS. ON THE BASIS OF THE TESTING, THE SOIL LABORATORY AND SUPPLIER SHALL CERTIFY THAT THE MATERIAL MEETS THESE SPECIFICATIONS. THE CONTRACTOR SHALL PROVIDE A COPY OF THE SUPPLIER'S CERTIFICATION, TEST RESULTS, AND SUPPLY DOCKETS TO THE DESIGNER (THROUGH THE SITE SUPERINTENDENT) FOR REVIEW AND APPROVAL.
- AN IN-SITU MEASUREMENT OF HYDRAULIC CONDUCTIVITY SHALL BE UNDERTAKEN FOLLOWING COMPLETING THE CONSTRUCTION OF THE BIO-RETENTION SYSTEM AND PRIOR TO HAND OVER OF THE SYSTEM. THIS TESTING SHALL BE ACCORDING TO PRACTICE NOTE 1: IN-SITU MEASUREMENT OF HYDRAULIC CONDUCTIVITY (HATT AND LE COSTUMER, 2008), WHICH CAN BE FOUND IN WWW.MONASH.EDU.AU/FAWB/PUBLICATIONS/INDEX.HTML
- THE FILTER MEDIA SHALL BE LIGHTLY COMPACTED DURING INSTALLATION TO PREVENT MIGRATION OF FINE PARTICLES. A SINGLE PASS OF COMPACTING MACHINERY (VIBRATING PLATE FOR SMALL SYSTEMS AND DRUM LAWN ROLLER FOR LARGER SYSTEMS) SHALL BE USED. NO HEAVY COMPACTION OR MULTI-PASS SHALL BE MADE.
- FILTER MEDIA SHALL BE INSTALLED IN TWO LIFTS FOR DEPTHS OF OVER 500MM

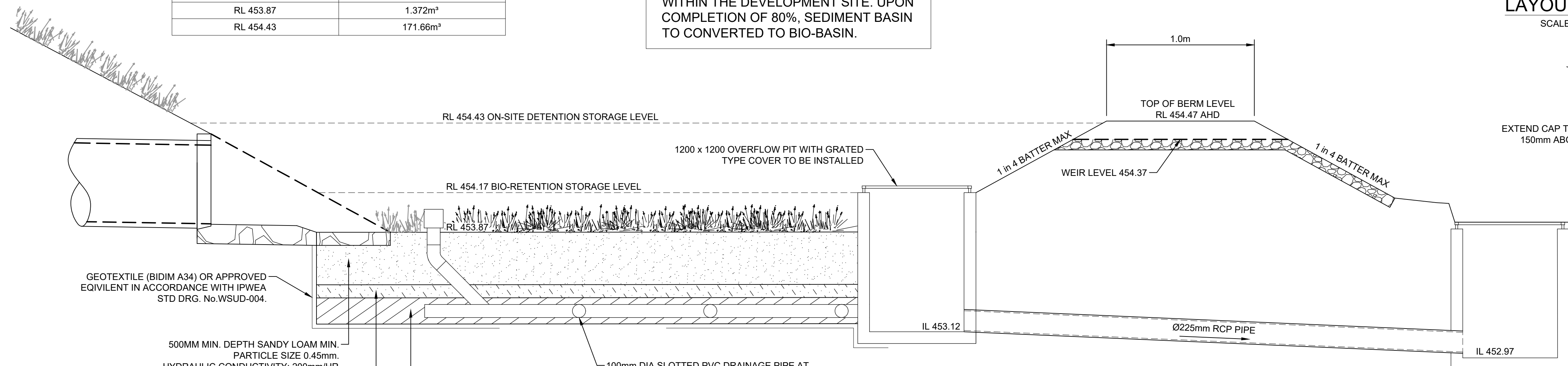


BIO-RETENTION / DETENTION BASIN 1 LAYOUT PLAN
SCALE 1:200

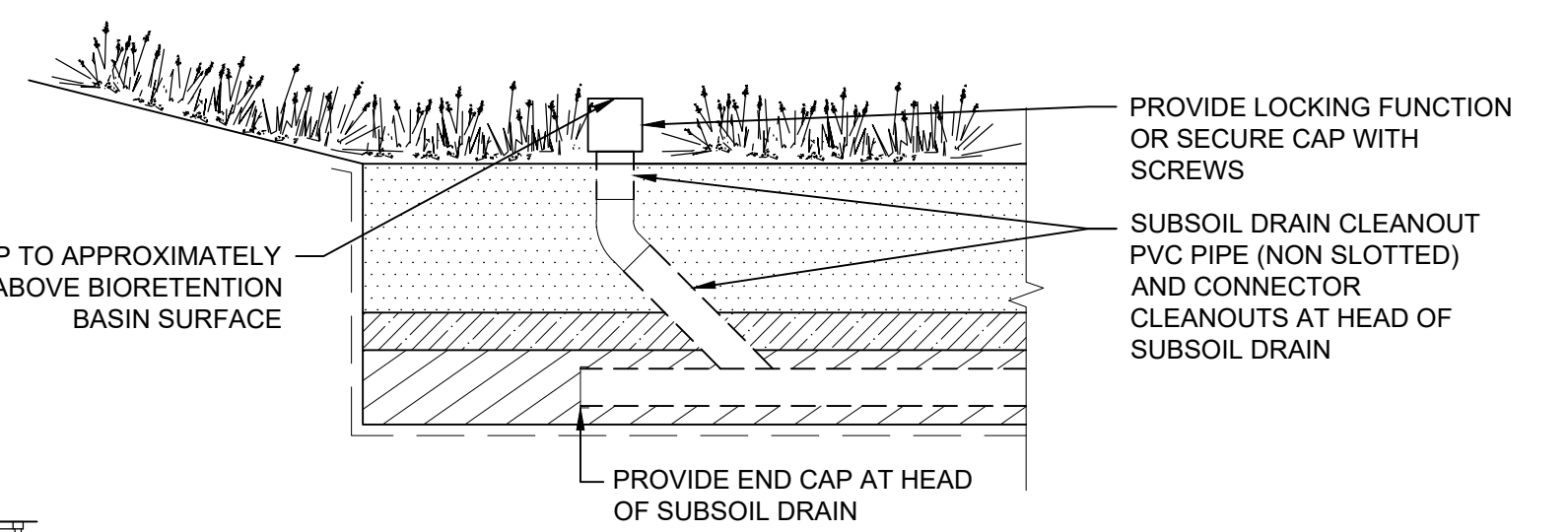
BASIN SETOUT TABLE

LEVEL (m)	STAGED VOLUME (m³)
RL 453.12	0
RL 453.87	1.372m³
RL 454.43	171.66m³

SEDIMENT BASIN NOTE :
SEDIMENT BASIN TO REMAIN UNTIL 80% OF ALL HOUSES ARE CONSTRUCTED WITHIN THE DEVELOPMENT SITE. UPON COMPLETION OF 80%, SEDIMENT BASIN TO CONVERTED TO BIO-BASIN.



TYPICAL BASIN DETAIL
N.T.S



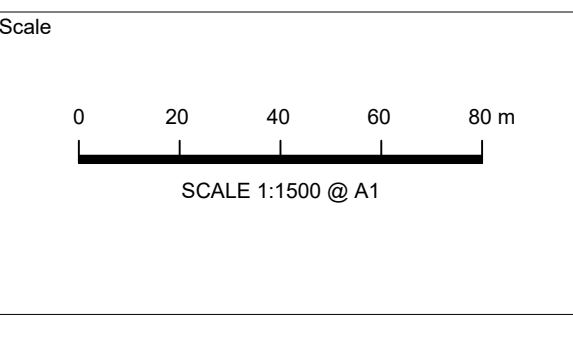
TYPICAL FLUSH POINT DETAIL IN BIORETENTION
SCALE 1:20

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Issue	Description	Date	Design	Checked
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Project: **1 RAILWAY STREET, GULGONG PROPOSED RESIDENTIAL SUBDIVISION CIVIL ENGINEERING PLANS DEVELOPMENT APPLICATION**

Drawing Title: **BIO-RETENTION BASIN 1 LAYOUT PLAN AND DETAILS SHEET 1 OF 2**

Scale: 1:500	Project No: 2021184	Dwg. No: 500	Issue: A
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BIO-RETENTION BASIN NOTES:

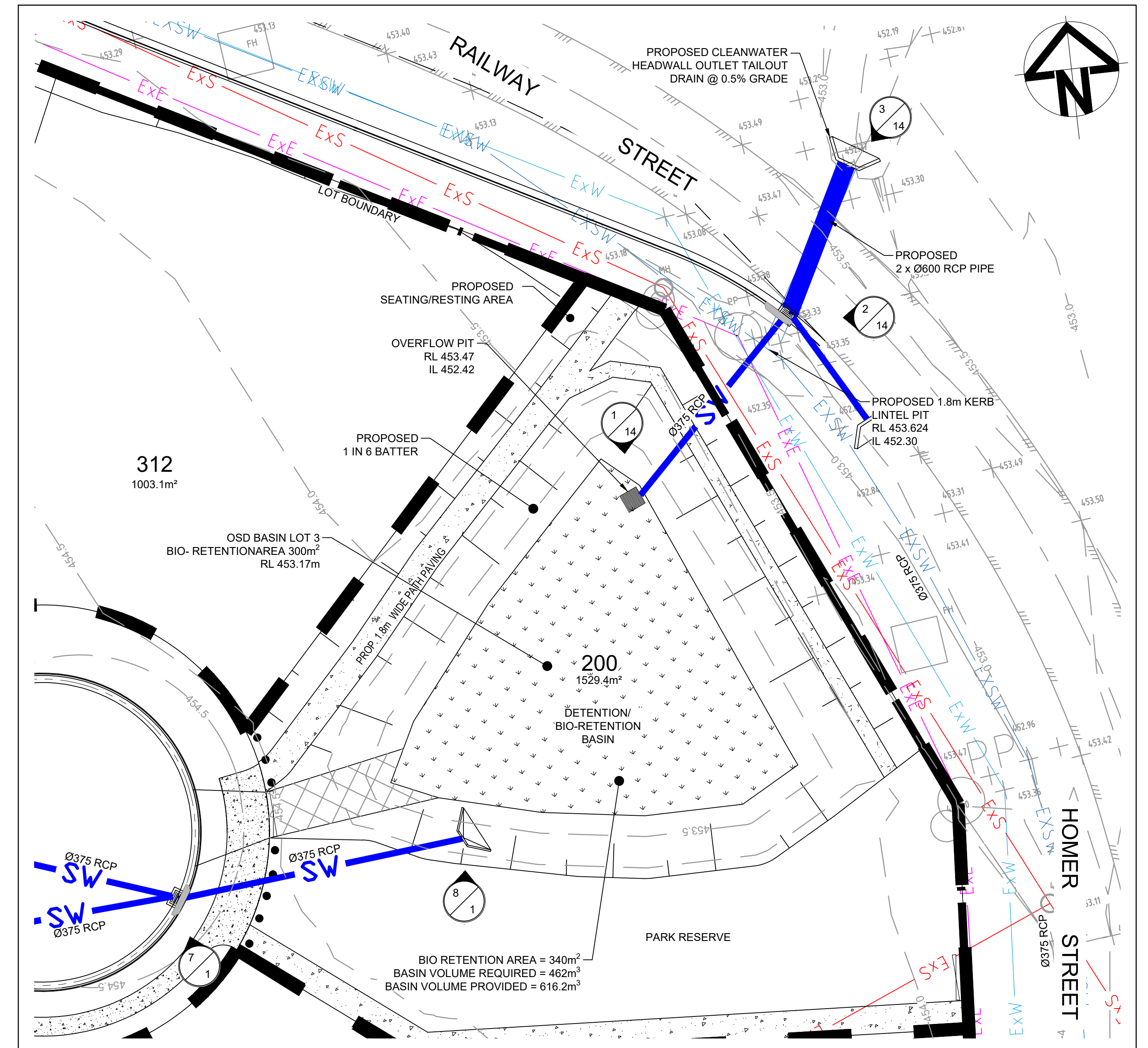
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 - FOR THE HYDRAULIC CONDUCTIVITY TEST PLUS ONE SAMPLE PER 2000M3 OF FILTER
 - MEDIA FOR ALL OTHER REQUIRED TESTS.
- TESTING SHALL BE UNDERTAKEN ON THE ACTUAL MATERIAL TO BE DELIVERED TO THE SITE. THE SUPPLIER AND CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING THE FILTER MEDIA MEETS THE SPECIFICATIONS AND THE CORRECT MATERIAL IS DELIVERED TO THE SITE PRIOR TO INSTALLATION. THE SUPPLIER SHALL ARRANGE FOR THE FILTER MEDIA TO BE TESTED BY A CERTIFIED LABORATORY IN ACCORDANCE WITH THE ABOVE SPECIFICATIONS. ON THE BASIS OF THE TESTING, THE SOIL LABORATORY AND SUPPLIER SHALL CERTIFY THAT THE MATERIAL MEETS THESE SPECIFICATIONS. THE CONTRACTOR SHALL PROVIDE A COPY OF THE SUPPLIER'S CERTIFICATION, TEST RESULTS, AND SUPPLY DOCKETS TO THE DESIGNER (THROUGH THE SITE SUPERINTENDENT) FOR REVIEW AND APPROVAL.
- AN IN-SITU MEASUREMENT OF HYDRAULIC CONDUCTIVITY SHALL BE UNDERTAKEN FOLLOWING COMPLETING THE CONSTRUCTION OF THE BIO-RETENTION SYSTEM AND PRIOR TO HAND OVER OF THE SYSTEM. THIS TESTING SHALL BE ACCORDING TO PRACTICE NOTE 1: IN-SITU MEASUREMENT OF HYDRAULIC CONDUCTIVITY (HATT AND LE COSTUMER, 2008), WHICH CAN BE FOUND IN WWW.MONASH.EDU.AU/FAWB/PUBLICATIONS/INDEX.HTML
- THE FILTER MEDIA SHALL BE LIGHTLY COMPACTED DURING INSTALLATION TO PREVENT MIGRATION OF FINE PARTICLES. A SINGLE PASS OF COMPACTING MACHINERY (VIBRATING PLATE FOR SMALL SYSTEMS AND DRUM LAWN ROLLER FOR LARGER SYSTEMS) SHALL BE USED. NO HEAVY COMPACTION OR MULTI-PASS SHALL BE MADE.
- FILTER MEDIA SHALL BE INSTALLED IN TWO LIFTS FOR DEPTHS OF OVER 500MM

LEGEND

- LOT BOUNDARY
- PROPOSED STORMWATER DRAINAGE
- 100Ø SLOTTED uPVC PIPE @ 2m CRS WITH FLUSH POINT @ 30m CRS.
- FINISHED CONTOURS
- PROPOSED FILTER MEDIA
- PROPOSED SCOUR PROTECTION
- BASIN MAINTENANCE DRIVEWAY @ 1 in 6 MAX
- PROPOSED KERB INLET PIT
- PROPOSED SAG PIT
- INTERALLOTMENT DRAINAGE PIT

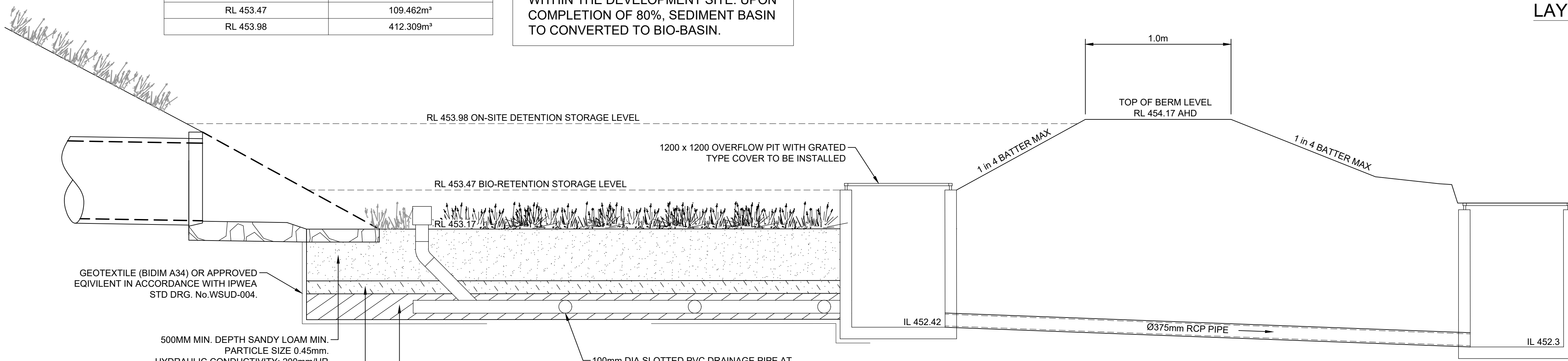


BIO-RETENTION / DETENTION BASIN 2 LAYOUT PLAN
SCALE 1:200

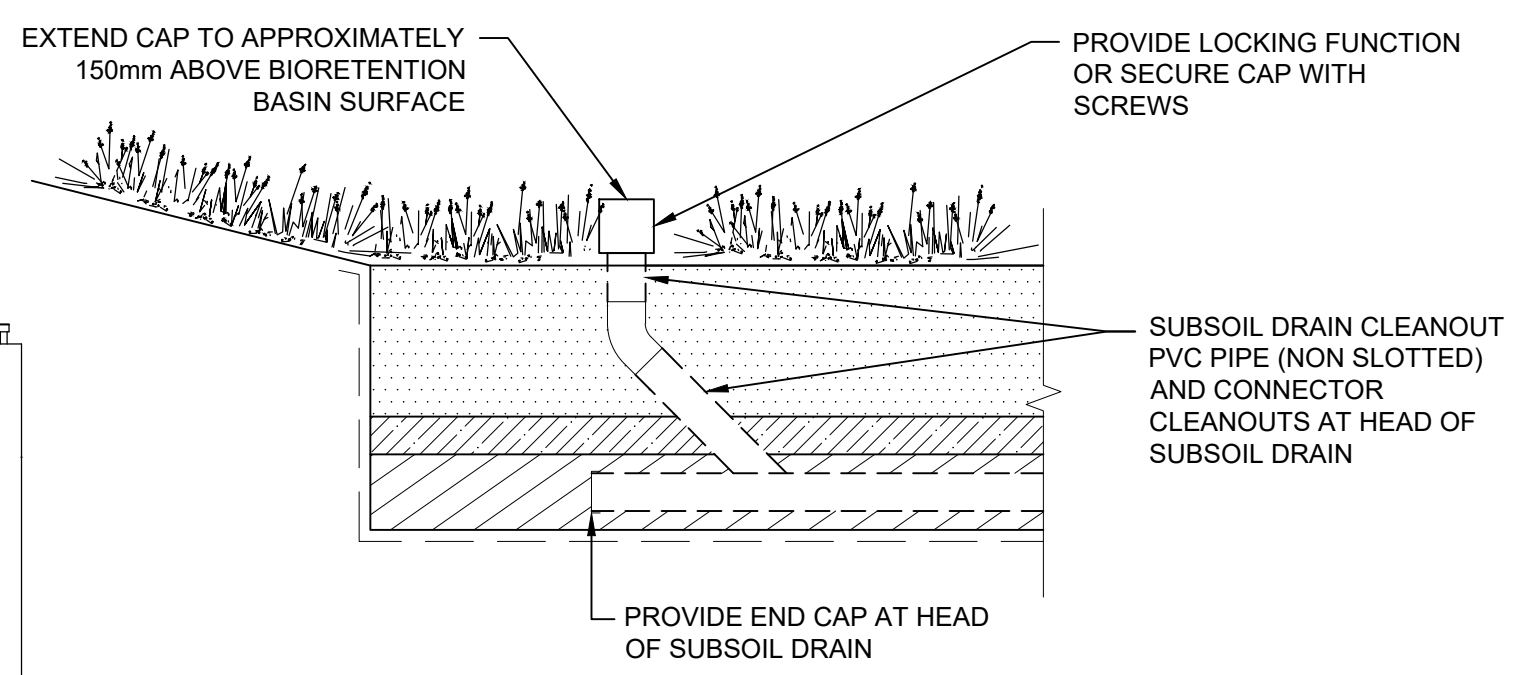
BASIN SETOUT TABLE

LEVEL (m)	STAGED VOLUME (m³)
RL 452.42	0
RL 453.47	109.462m³
RL 453.98	412.309m³

SEDIMENT BASIN NOTE :
SEDIMENT BASIN TO REMAIN UNTIL 80% OF ALL HOUSES ARE CONSTRUCTED WITHIN THE DEVELOPMENT SITE. UPON COMPLETION OF 80%, SEDIMENT BASIN TO CONVERTED TO BIO-BASIN.



TYPICAL BASIN DETAIL
N.T.S.



TYPICAL FLUSH POINT DETAIL IN BIORETENTION
SCALE N.T.S.

NOT FOR CONSTRUCTION

Issue	Description	Date	Design	Checked
A	ISSUE FOR DEVELOPMENT APPLICATION	14/02/2022	P.B.T.	J.A.B.

Certification By Dr. Michel Chaaya in affiliation with Joe Bacha (formerly Australian Consulting Engineers)

Client
MR. ROY AMERY
Council
MID-WESTERN REGIONAL COUNCIL

Surveyor
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Scale
0 4 8 12 m
SCALE 1:200 @ A1

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Project
1 RAILWAY STREET, GULGONG PROPOSED RESIDENTIAL SUBDIVISION CIVIL ENGINEERING PLANS DEVELOPMENT APPLICATION

Drawing Title
BIO-RETENTION BASIN 2 LAYOUT PLAN AND DETAILS SHEET 2 OF 2
Scale A1 Project No. 2021184 Dwg. No. 501 Issue A