198 & 202 Gardner Road, Rochedale

Flood Impact Assessment

Gardner Rd Developments Pty Ltd

20 May 2026

Document Verification

Job Title 198 & 202 Gardner Road, Rochedale

Job Number 25015.004

Document Title Flood Impact Assessment

Document Control

Date	Document	Revision No.	Author	Reviewer
28.04.2025	Flood Impact Assessment	01	JM	ML
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20.05.2026	Flood Impact Assessment	03	JM	ML

Approval for Issue

Name	Signature	Date
Michael Lepelaar		20.05.2026

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1 Introduction

ADG Engineers Pty Ltd (Aust) has previously been engaged to undertake an assessment of the overland flow extents and the impacts of the proposed reconfiguration of 198 Gardner Road and 56 Farley Road, Rochedale (ADG Ref 25015_FIA_Rev 02 dated 22.11.22). The previous assessment was prepared in support of BCC approval (BCC Ref: A005747839) which proposed a new district road crossing a waterway and overland flow path located within 198 Gardner Rd. As part of the previous approval, lot 901 was approved which is part of the site area subject to this assessment. A separate application is currently being assessed by Council over 202 Gardner Rd (BCC Ref: A006768631) which will create further district road and bisect the existing Lot 4 RP114765 into two parts. The eastern part of the bisected Lot 4 also forms part of the site subject to this assessment.

The area directly to the west of proposed lots 13 and 14 is subject to overland flooding and is a mapped waterway. As part of the previous approval (BCC Ref A005747839), ADG prepared a Flood Impact Assessment (ADG Ref: 25015_FIA_Rev02) which provided details of the flood extent for events up to the 0.2% AEP. At the time of preparation of that report, no works were proposed in the area of lot 13 and 14 and as such the flood modelling prepared at that time indicated some shallow surface flooding extending into lot 13 and 14. As part of the development application for lot 13 and 14 (subject to this report), further assessment has been undertaken to demonstrate the proposed lots can comply with Council's Flood Code requirements.

1.1 Scope

The general approach and methodology employed to achieve the study objectives involved:

- Site inspection, compilation and review of available information;
- Sourcing LiDAR data to create a DTM of the catchment;
- Incorporation of site-specific survey information;
- Creation of a 2D hydraulic model;
- Hydraulic modelling and presentation of pre and post-development flood extents;
- Assess impacts of proposed development to flood levels and velocities;
- Assess the proposed development in regard to the flood overlay code; and
- Prepare a report.

1.2 Site Location & Land Titles

Table 1: Summary of Existing Land Titles

Street Address	198 & 202 Gardner Road, Rochedale
Title Details	Lot 3 on RP114765 (Proposed Lot 901 BCC Ref: A005747839) Lot 4 on RP114765 (Proposed Part Lot 4 BCC Ref: A006768631)
Site Area	7.355 ha
Development Area	1.470 ha

The site location map is shown in **Figure 1**.

Figure 1: Location Map

1.3 Existing Site Conditions

There are two mapped flowpaths which cross the subject site. The southern portion of the site contains a flowpath which drains a catchment from the south-east towards a waterway to the west of the site. This waterway then crosses the site where a road crossing is proposed. **Figure 2** shows the extent of the BCC overland flow flood planning area and **Figure 3** shows the upstream catchment extent.

Figure 2: BCC Overland Flow Flood Planning Overlay

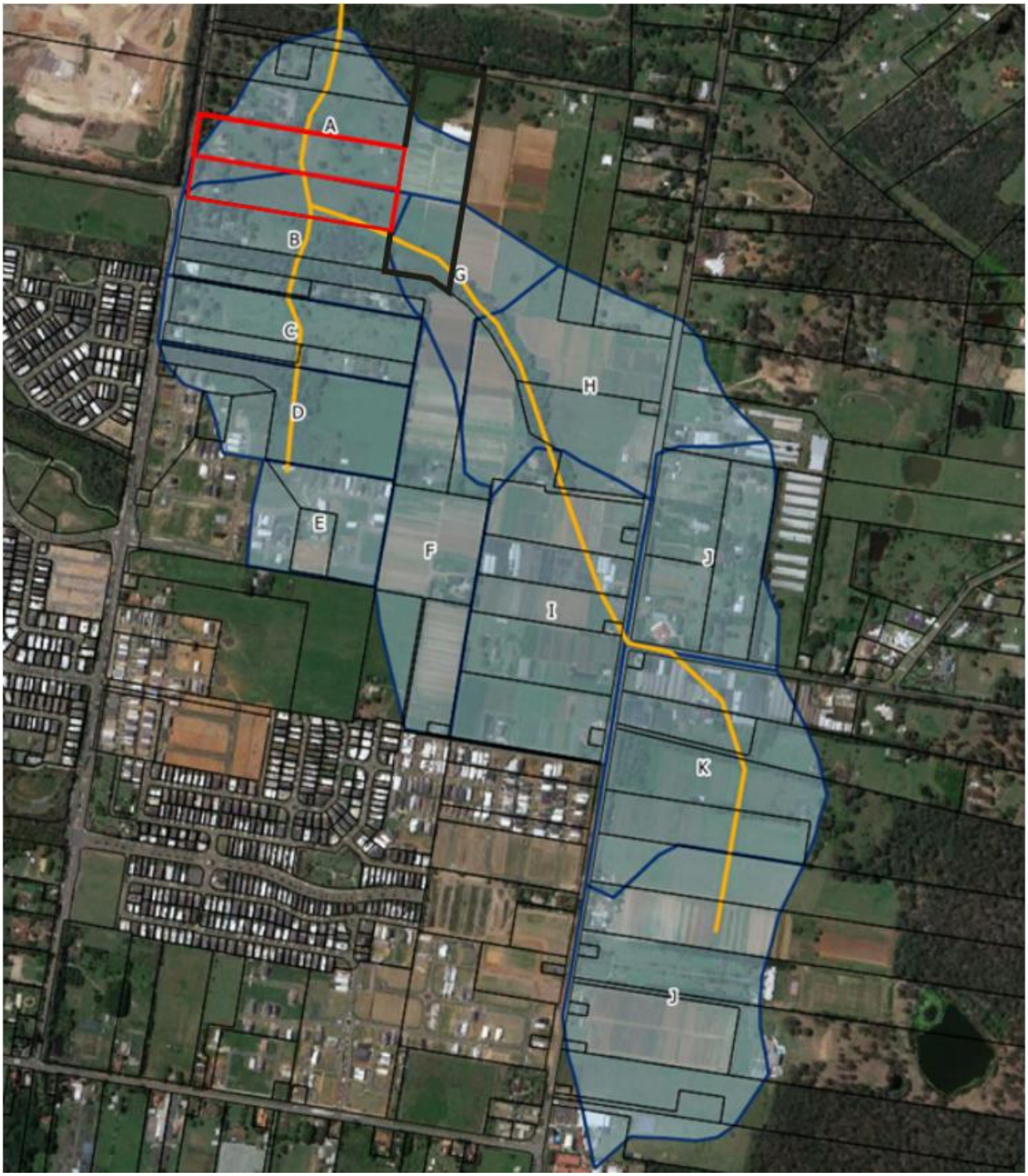


Figure 3: Catchment Extent

1.4 Proposed Development

The proposed development as described in the Plan of Reconfiguration as shown in **Appendix A** proposes to create two (2) new developable lots (Lot 13, Lot 14). An access easement to facilitate access to Lot 14 has been approved as a part of a previous development approval (A005747839). Refer to the Plan of Reconfiguration in **Figure 4** and **Appendix A** for further details.

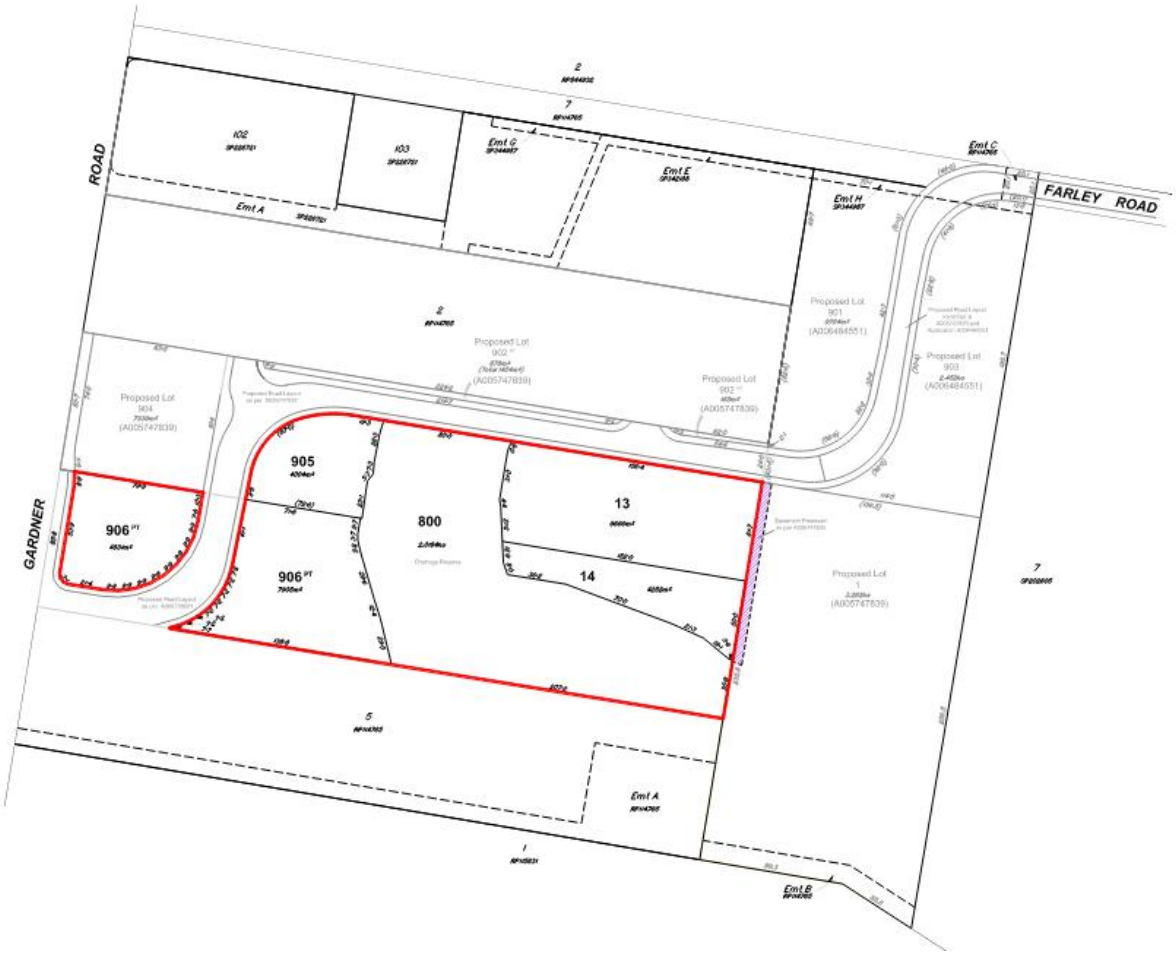


Figure 4: Proposed Layout

2 Data Collection

A variety of data was collected and used as part of this FIA. The data and sources included:

- Design rainfall data for the site based on latest Bureau of Meteorology data;
- Temporal patterns based on Australian Rainfall and Runoff;
- Existing topography for the catchment based on DNR LiDAR;
- Site specific survey provided by Wolter Consulting (**Appendix B**); and
- Preliminary layout plans provided by Therefor Group (**Appendix A**).

3 Modelling Procedure

Investigation of flood behaviour through and around the subject site required analysis and modelling of the catchment and flow path behaviour. This involved:

- Hydrologic (Catchment) Analysis, to determine the catchment rainfall-runoff processes to produce peak flood flows and levels. Hydrologic analysis was completed using WBNM software;
- Hydraulic Modelling Analysis, which is used to simulate the flood behaviour of the subject site to produce peak flood levels and depths. Hydraulic modelling was completed using 2D TUFLOW software.

The steps used in each of these models for flood event simulation are described in the following sections below.

4 Hydrologic Modelling

4.1.1 Modelling Assumptions and Methodology

Hydrologic modelling of the contributing catchment was undertaken using WBNM software. The watercourse to the west of the site has also been included in the hydraulic modelling. The upstream catchment has been assumed to be fully developed. The upstream catchment was delineated using DNR supplied LiDAR data in conjunction with a site visit for confirmation. The extent of the catchment is shown in **Figure 3**.

Rainfall data has been obtained from Brisbane Council's specific LIMB2020 rainfall data. Rainfall intensities have been increased to reflect climate change scenario SSP2-4.5 (2100).

Initial and continuing losses within the catchment for pervious surface have been sourced from the AR&R data hub, with pre-burst median rainfall subtracted from initial loss values to simulate wetting of the catchment prior to the design storm burst. Initial and continuing losses for impervious surface have been set to 0mm and 0mm/hr.

The 2D model has been run for storm durations from 10 minutes to 3 hours for each nominated AEP. An ensemble of 10 temporal patterns for each duration has been analysed. The following storm events were found to be critical for peak flow within the flowpath.

Table 2: Summary of Critical Storms

AEP	Critical Duration	Critical Temporal Pattern
39.3%	60 minutes	TP07
18.1%	60 minutes	TP04
9.5%	60 minutes	TP06
2%	60 minutes	TP06
1%	45 minutes	TP02
0.2%	45 minutes	TP02

5 2D Hydraulic Modelling

To assess flooding characteristics through the site, a 1D/2D TUFLOW model was set up. TUFLOW is capable of simulating flow for both small and large study areas using both 2-dimensional and 1-dimensional flow based on the topographic conditions within the study area. An advantage of using a TUFLOW model is that flood water can be simulated in any direction within an x-y plane.

5.1 Model Setup

The hydraulic model simulates the dynamic flooding behaviour within pipe infrastructure, road reserves, and natural overland flowpaths. Setting up the hydraulic model involved:

- Creation of DTM incorporating LiDAR and survey information;
- Allocation of model inflow and outflow boundaries; and
- Application of appropriate flow resistance (Manning “n”).

Topography data of the site and surrounding area provided by DNR was utilised to create the Digital Terrain Model (DTM) required for TUFLOW modelling of the existing scenario. Site specific survey supersedes this data where available.

A grid size of 0.5m was used for modelling to best simulate the topographical condition of the site and increase the accuracy of the model results.

A post-development DTM was generated from the proposed civil design.

5.1.1 Manning’s Coefficient

Based on recommendations from, Chow (1959) Open Channel Hydraulics, Main Roads Drainage Design Manual (1999), orthographic photos and a site inspection, a Manning’s “n” of 0.015 was applied to road surfaces, 0.15 to waterway corridors and 0.15 was applied to urban blocks.

5.1.2 Downstream Boundary Condition

A QH (flow vs height) relationship was applied to simulate a free-flowing boundary well downstream of the subject site. The downstream boundary condition for the site was calculated internally by the model based on the ground slope and roughness at the downstream boundary location. The boundary has been located far enough downstream as to not effect results at the site.

Figure 5 below depicts the pre-development 2D model.

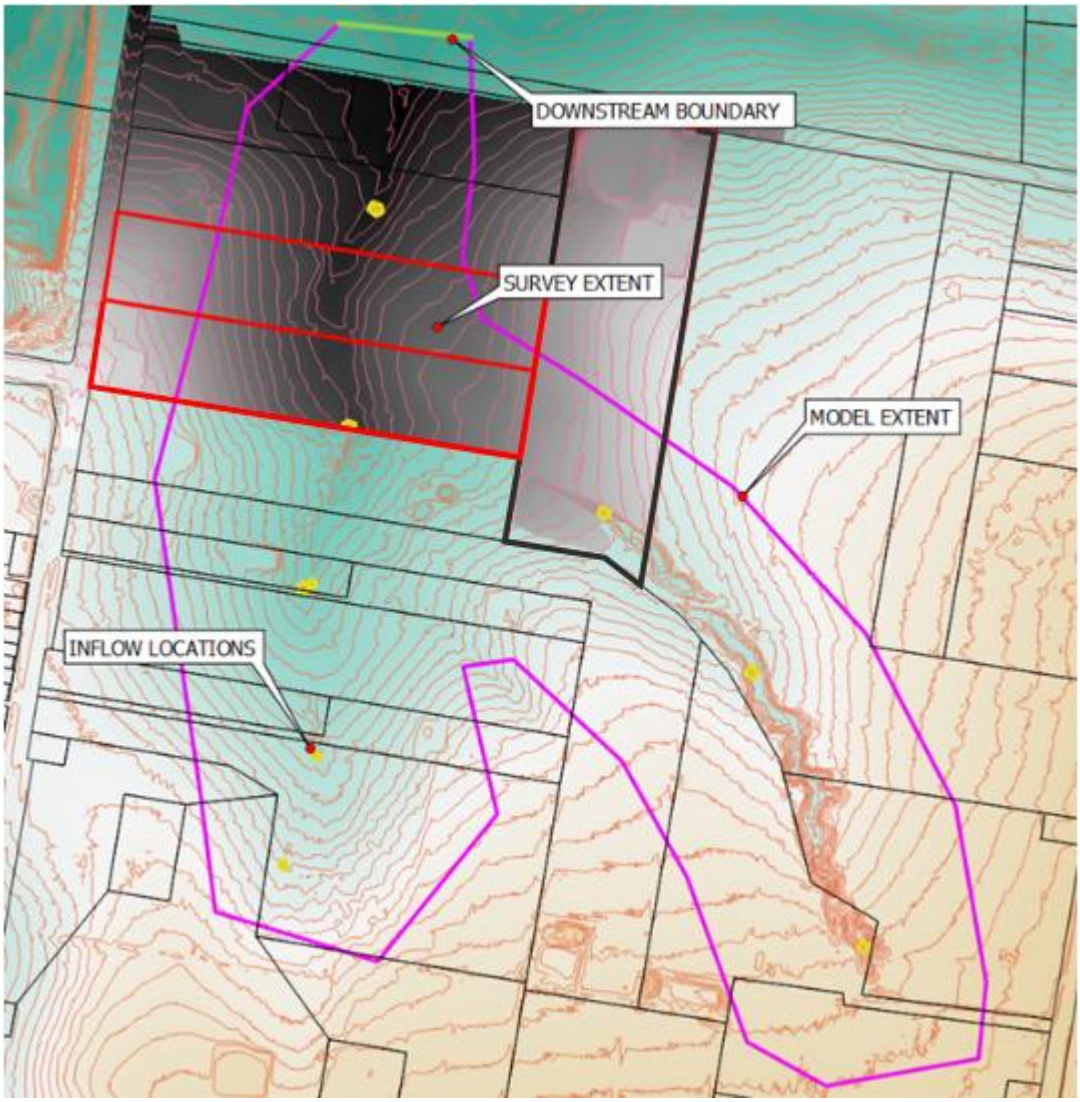


Figure 5: Pre-Development Model Layout

5.2 Existing Scenario

The existing scenario for the subject site was analysed for a range of events including the 39.3%, 18.1%, 9.5%, 2%, 1% and 0.2% AEP's. The hydrology used for the existing scenario is as described in section 4 of this report. As the site is mapped by BCC as subject to overland flow, the design storm is the 2% AEP (Q50) as identified in Table 7.7.1-A of the BCC Infrastructure Design Planning Scheme Policy. As requested by Council, this assessment has also considered scenarios above the design storm including the 1% and 0.5% AEP's.

5.2.1 Existing Scenario Results

Hydraulic analysis of the site in its existing condition was undertaken to establish and quantify existing flooding patterns and behaviour. Modelling results for the existing site are as follows:

- Flow enters the site near the south-eastern corner and crosses through to the western boundary. This flowpath then merges with a south-north waterway which crosses the site again at the location of the proposed crossing;
- The eastern flowpath breaks across the existing grassed area in a wide shallow flowpath (<100 mm deep);
- Peak depth of flow is up to 2.4 m within the existing flowpath in the 2% AEP event, and 1.4 m at the location of the proposed crossing;
- Peak 2% AEP velocity within this channel is 1.65 m/s;
- Figures 6 and 7 depict the pre-development peak 2% AEP depth and velocity plots respectively.
- Figures 8 and 9 depict the pre-development peak 1% AEP depth and velocity plots respectively.
- Figures 10 and 11 depict the pre-development peak 0.2% AEP depth and velocity plots respectively.

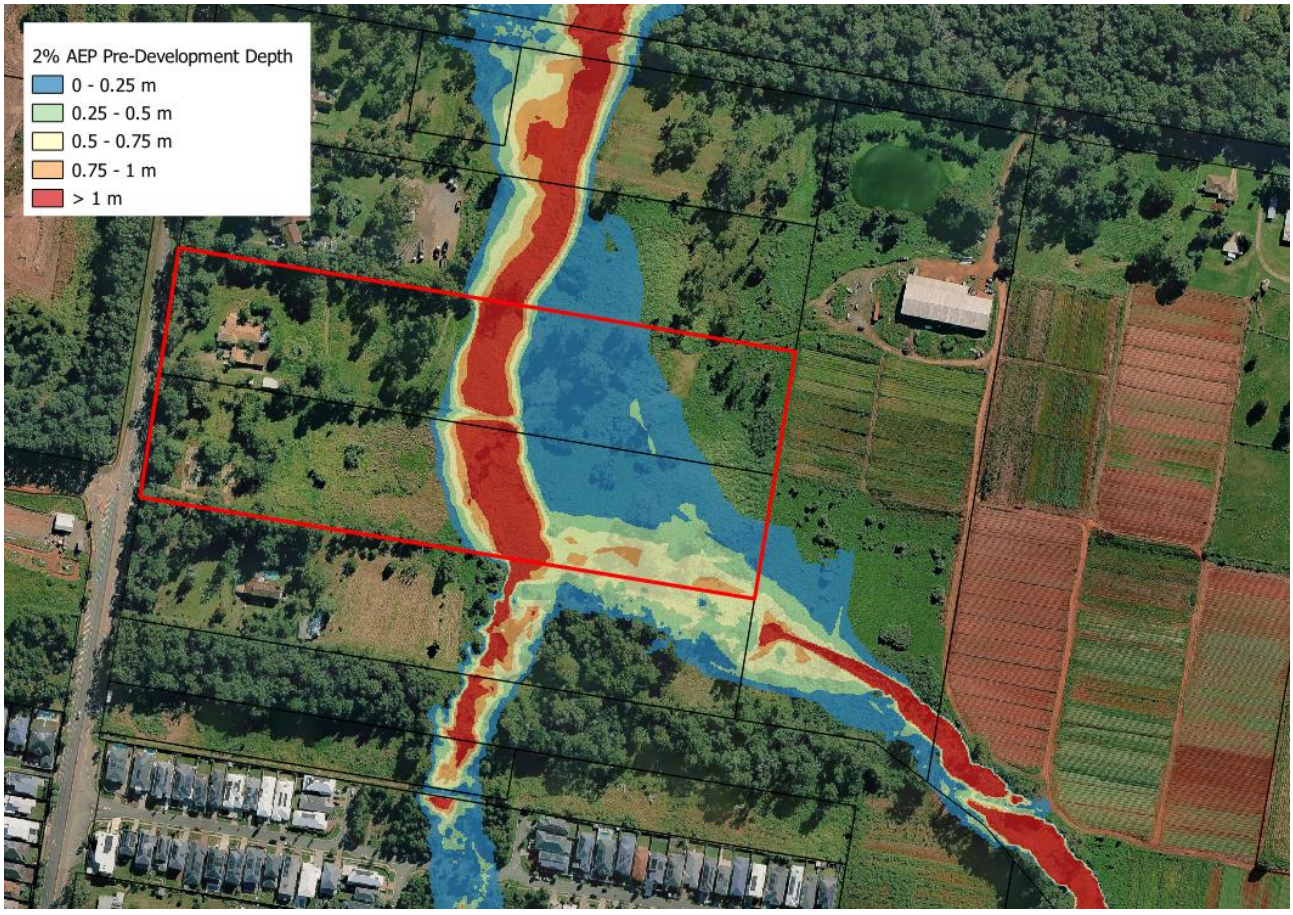


Figure 6: 2% AEP Pre-Development Depth

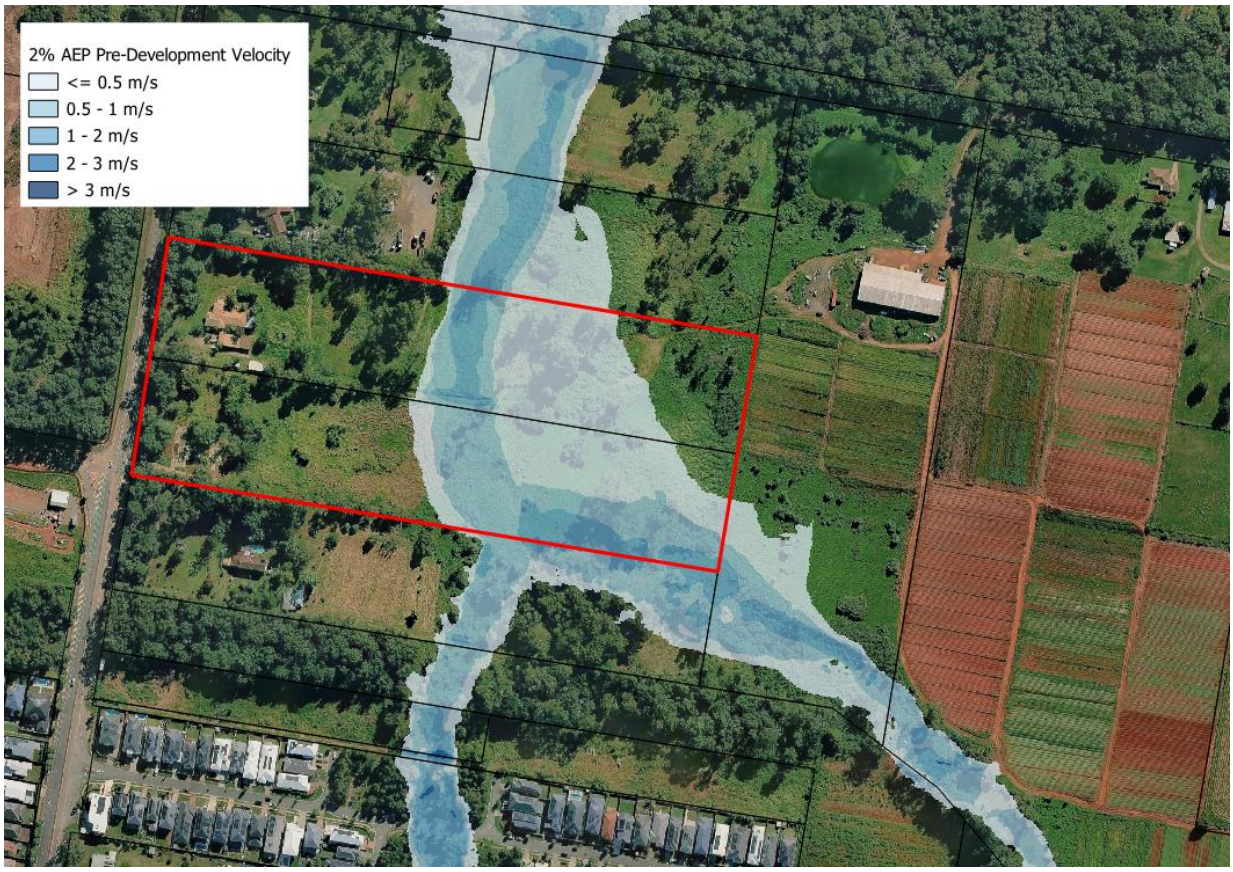


Figure 7: 2% AEP Pre-Development Velocity

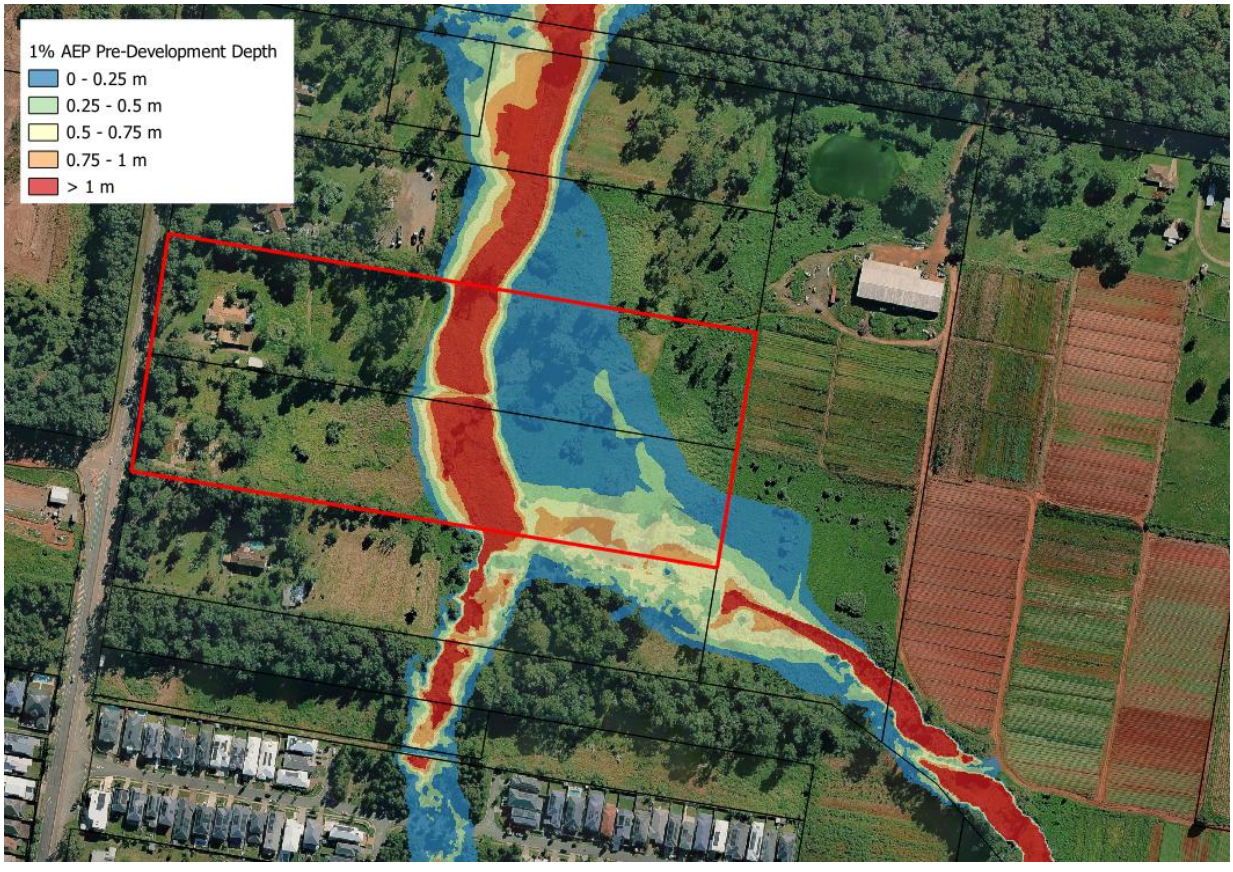


Figure 8: 1% AEP Pre-Development Depth

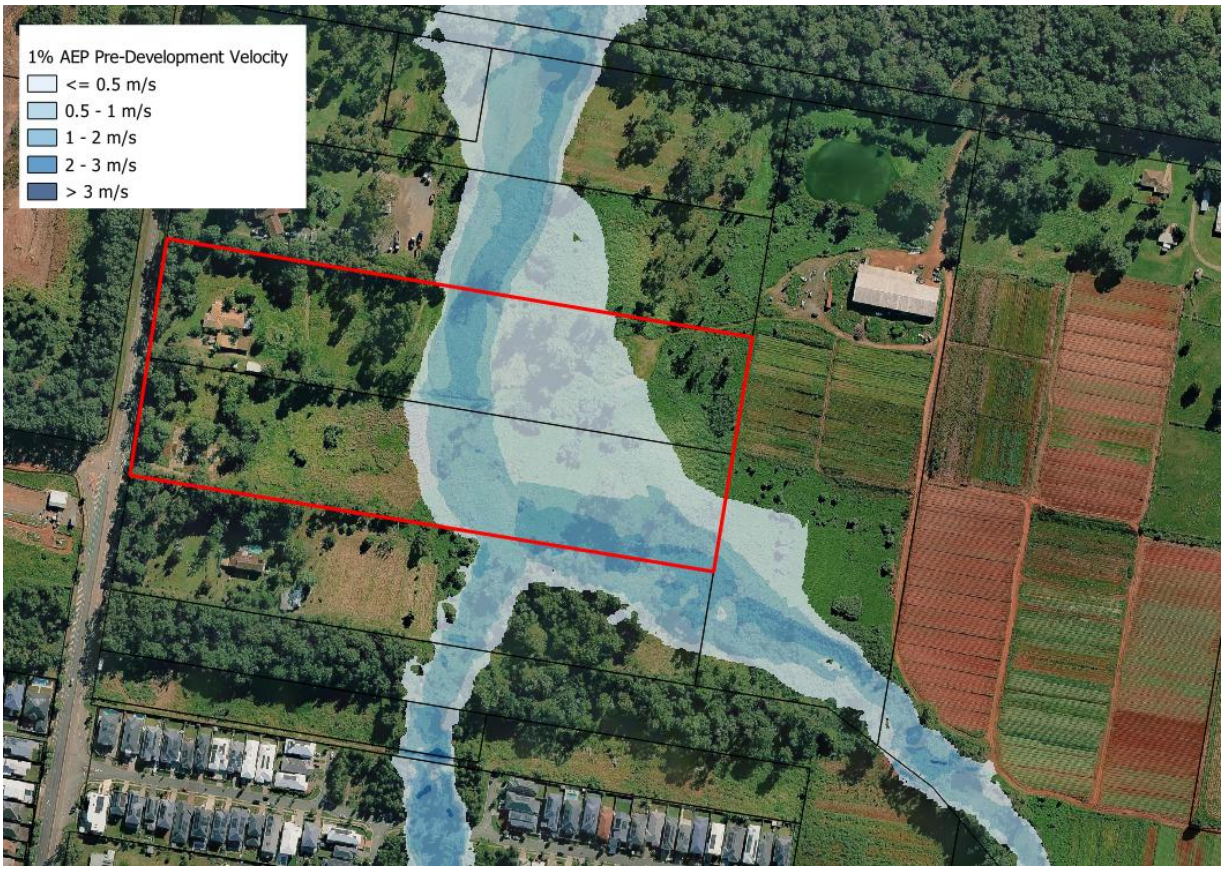


Figure 9: 1% AEP Pre-Development Velocity

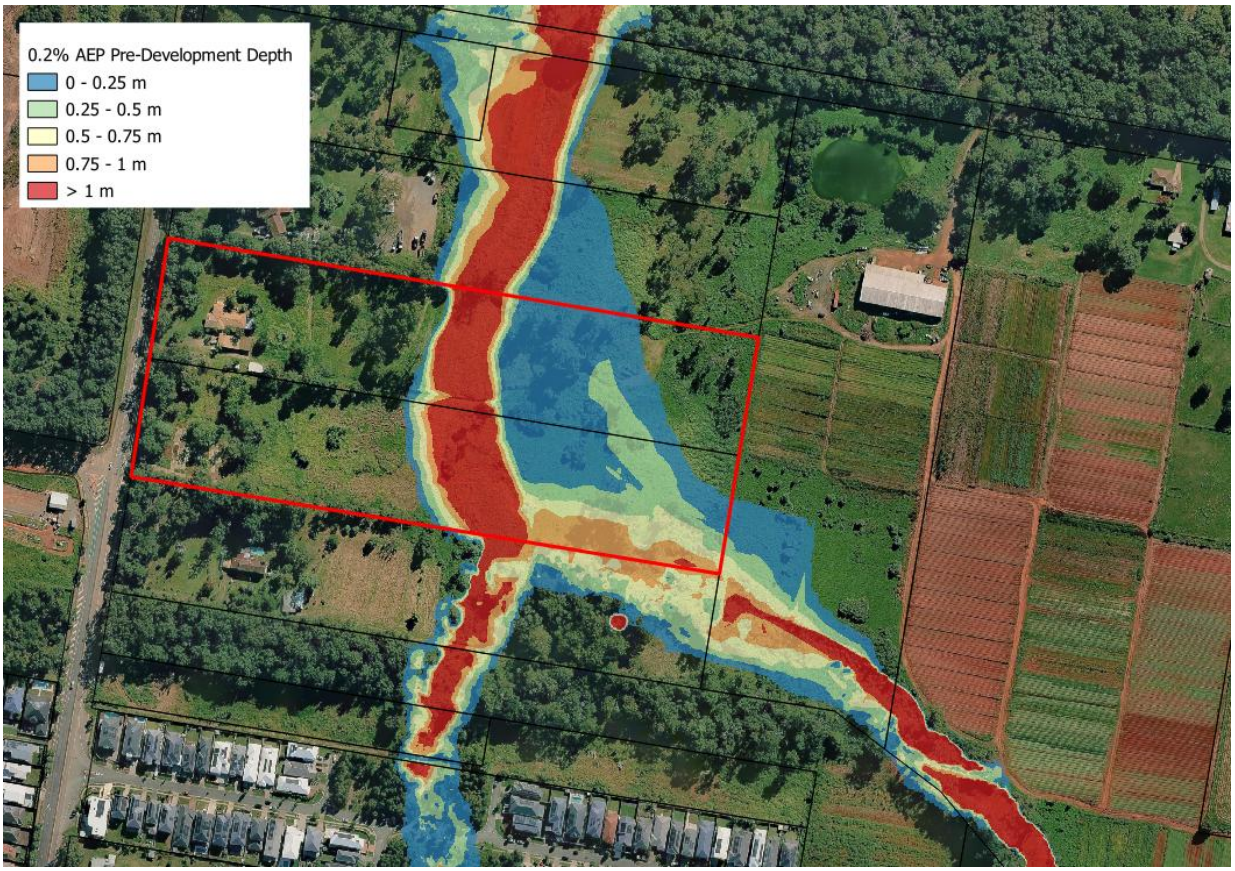


Figure 10: 0.2% AEP Pre-Development Depth

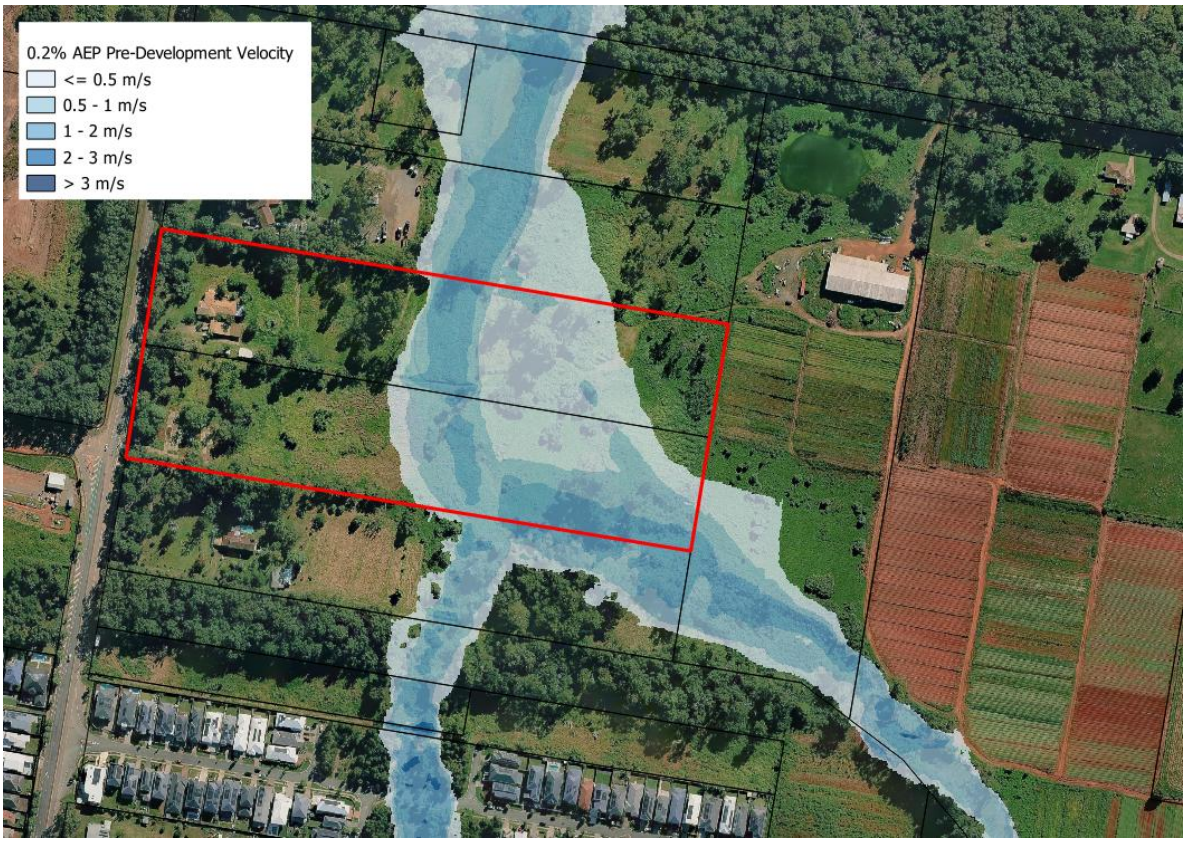


Figure 11: 0.2% AEP Pre-Development Velocity

5.3 Post-Developed Scenario

To determine the impacts of the proposed development works on the hydraulics of the catchment, the post development hydraulic model was modified using the design surface of the district road from Gardner Road approved by BCC (BCC Ref A005747839) with the sag in the road modified as identified on drawing DA303 within **Appendix C** and for proposed filling to occur on lot 13 and 14 as shown on the preliminary earthworks plan (**Appendix C)** overlaid on the pre-development surface. The hydrology used for the existing scenario is as described in section 4 of this report and considers a fully developed catchment. The design incorporates 6 x 3600W x 1500H & 2 x 3600W x 2100H box culverts under the district road to convey flows up to and including the 0.2% AEP flow under the road. These culverts have been modelled with a 50% blockage factor (as previously agreed with Council as part of BCC Ref A005747839). In accordance with Table 10.4.1 of QUDM, suggested blockage factors for culverts with debris control features can be as low as 10% for the design storm and 25% for the severe storm assessment. As such the 50% blockage factor applied provides further redundancy to the culvert capacity. We further note the upstream catchment is currently either cleared rural land or medium to high density residential land. The rural land is zoned emerging communities and anticipated for development in the near future. The characteristics of the upstream catchment mean the risk of blockage to the culverts is minimal. The flow through the culverts in each modelled event is summarised in **Table 3** below.

Table 3: Culvert Flow

AEP	Flow (m^3/s)
39.3%	21.2
18.1%	27.9
9.5%	35.2
2%	52.0
1%	59.0
0.2%	80.1

5.3.1 Post-Development Scenario Results

The flooding characteristics of the post-development scenario are largely similar to the pre-development scenario.

- The proposed culvert crossing conveys all flows up to the 1% AEP without overtopping the road (including 50% blockage). The surface flows from the upstream catchment on the east side of the channel will be diverted to the culvert through the proposed filling to occur on lot 13 and 14 on the southern side of the proposed road verge as indicated on ADG Preliminary Drawings within **Appendix C**;
- The peak 1% AEP flood level upstream of the culverts is RL 34.16 m AHD. The minimum pad level of lot 13 at this location is RL 36.50 m AHD and hence achieves freeboard requirements;
- Peak depths and velocities upstream and downstream of the subject site are largely the same as the pre-development scenario;
- **Figures 12 and 13** depict the post-development peak 2% AEP depth and velocity plots respectively;
- **Figures 14, 15 and 16** depict the post-development peak 1% AEP depth, velocity, and hazard plots respectively; and
- **Figures 17 and 18** depict the post-development peak 0.2% AEP depth and velocity plots respectively;
- The 1% AEP Post development flood line is shown on the preliminary drawings within Appendix C and further demonstrates adequate freeboard has been achieved to the finished lot levels.

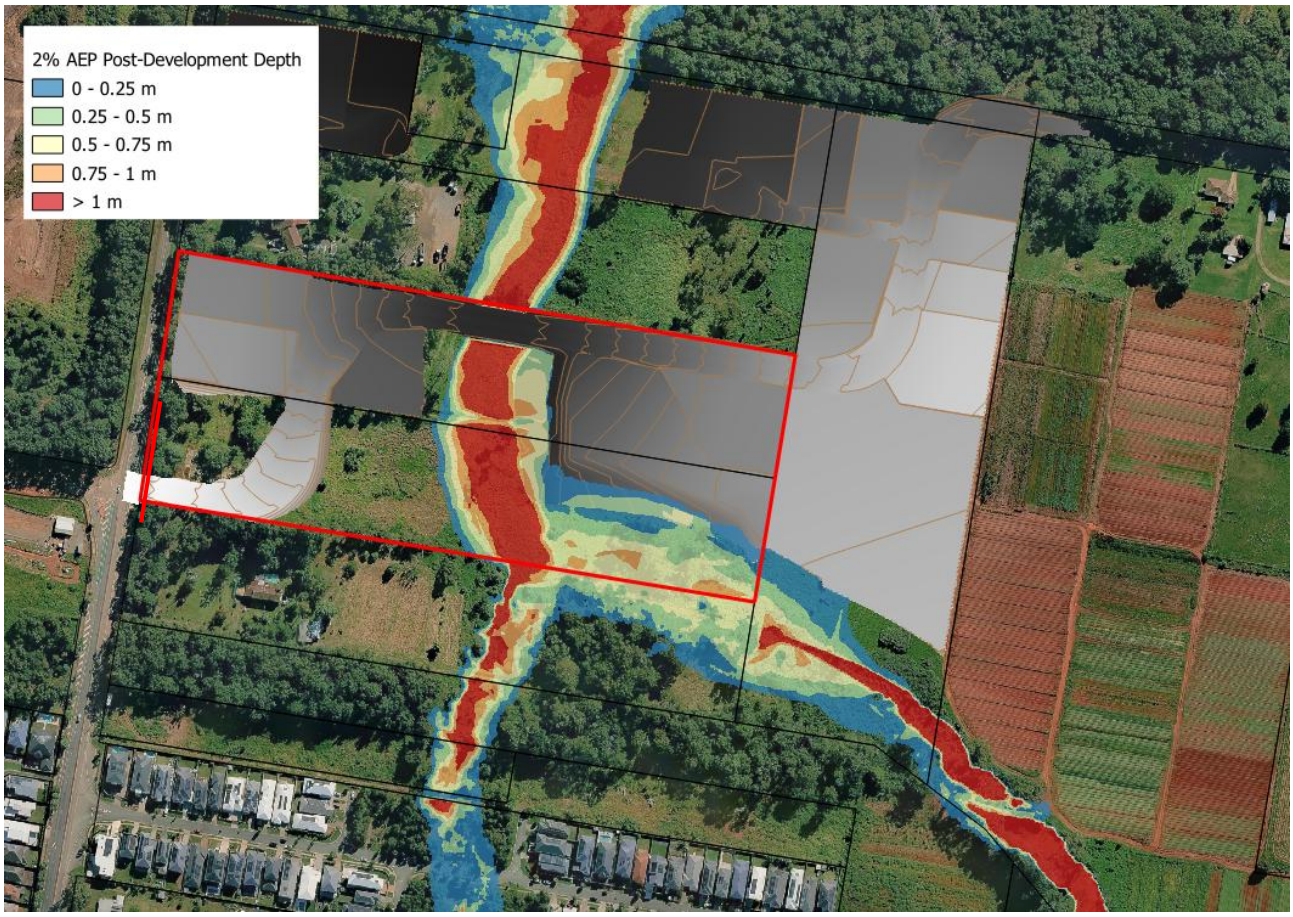


Figure 12: 2% AEP Post-Development Depth

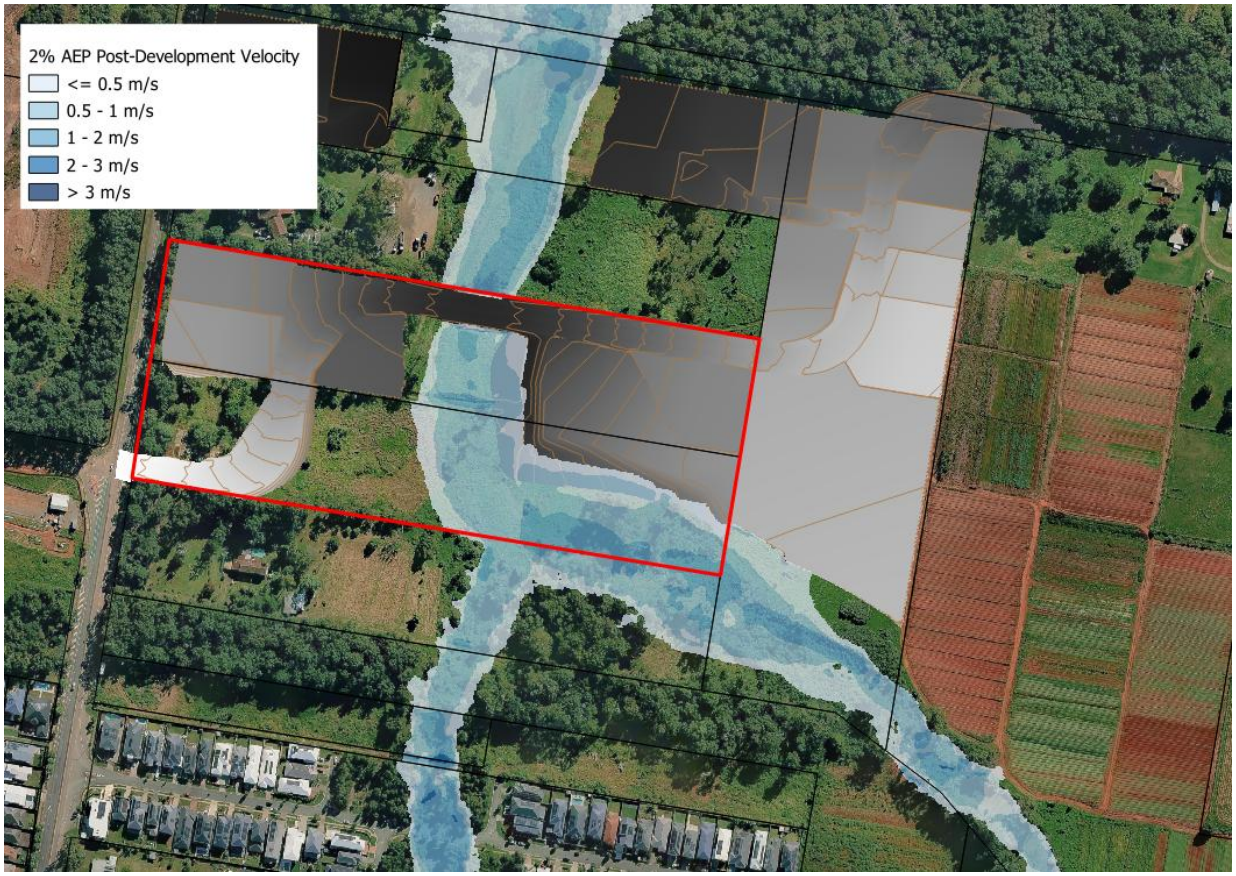


Figure 13: 2% AEP Post-Development Velocity

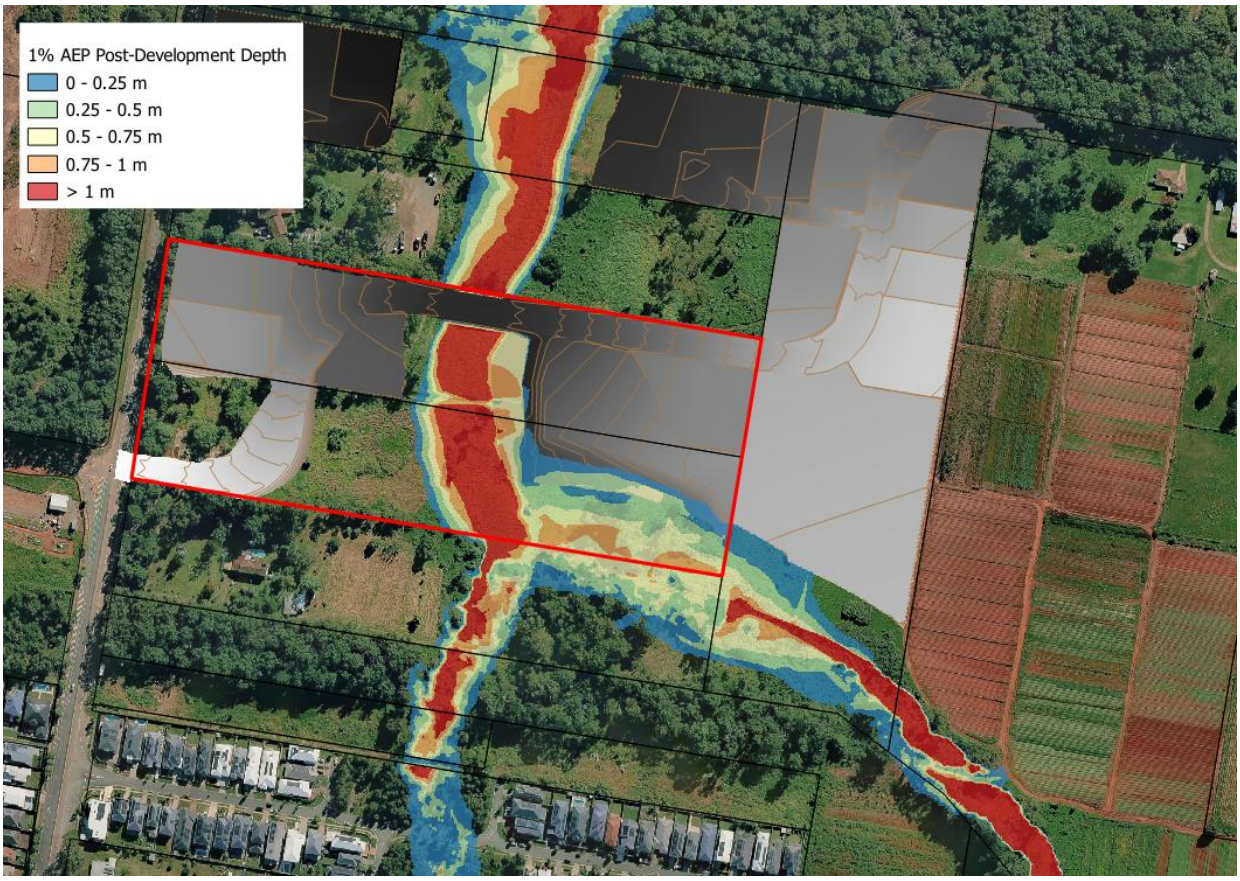


Figure 14: 1% AEP Post-Development Depth

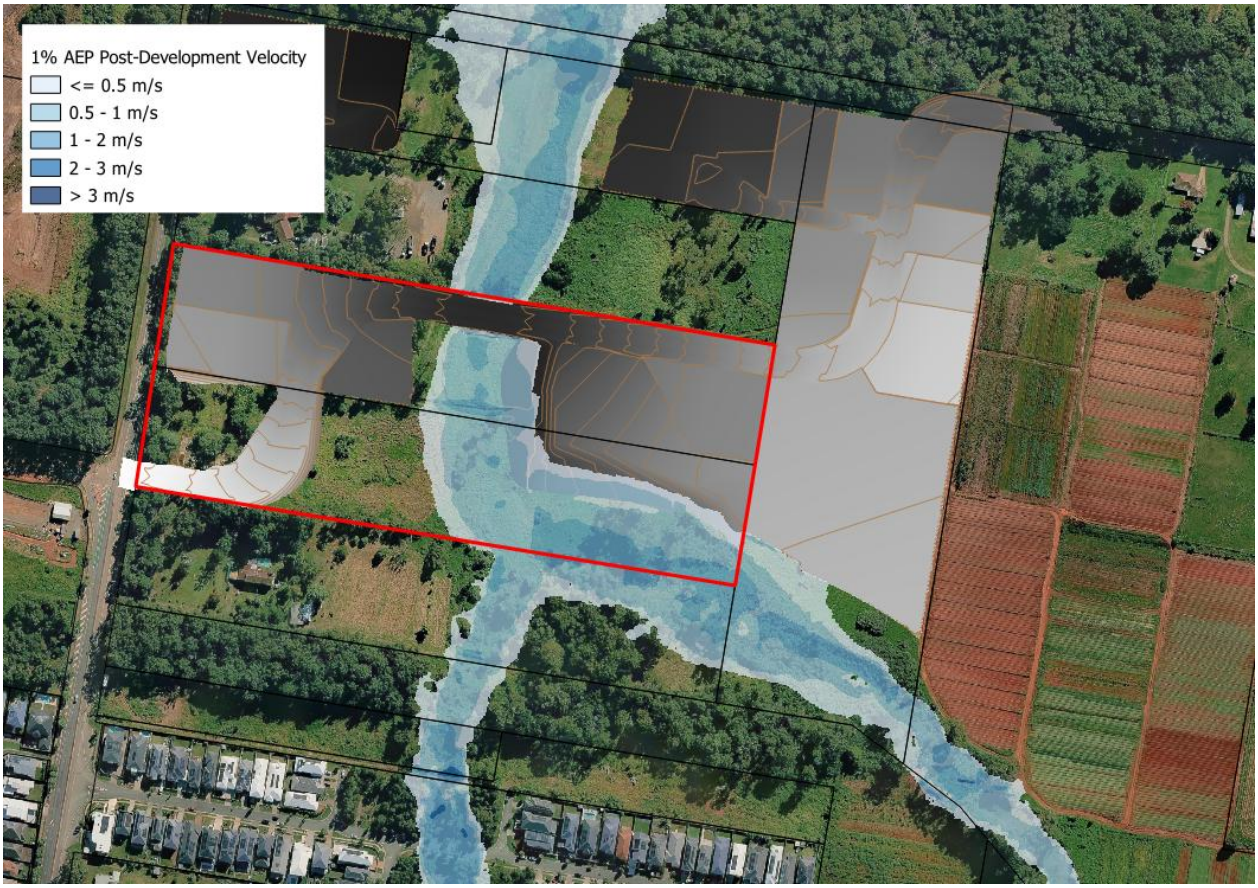


Figure 15: 1% AEP Post-Development Velocity

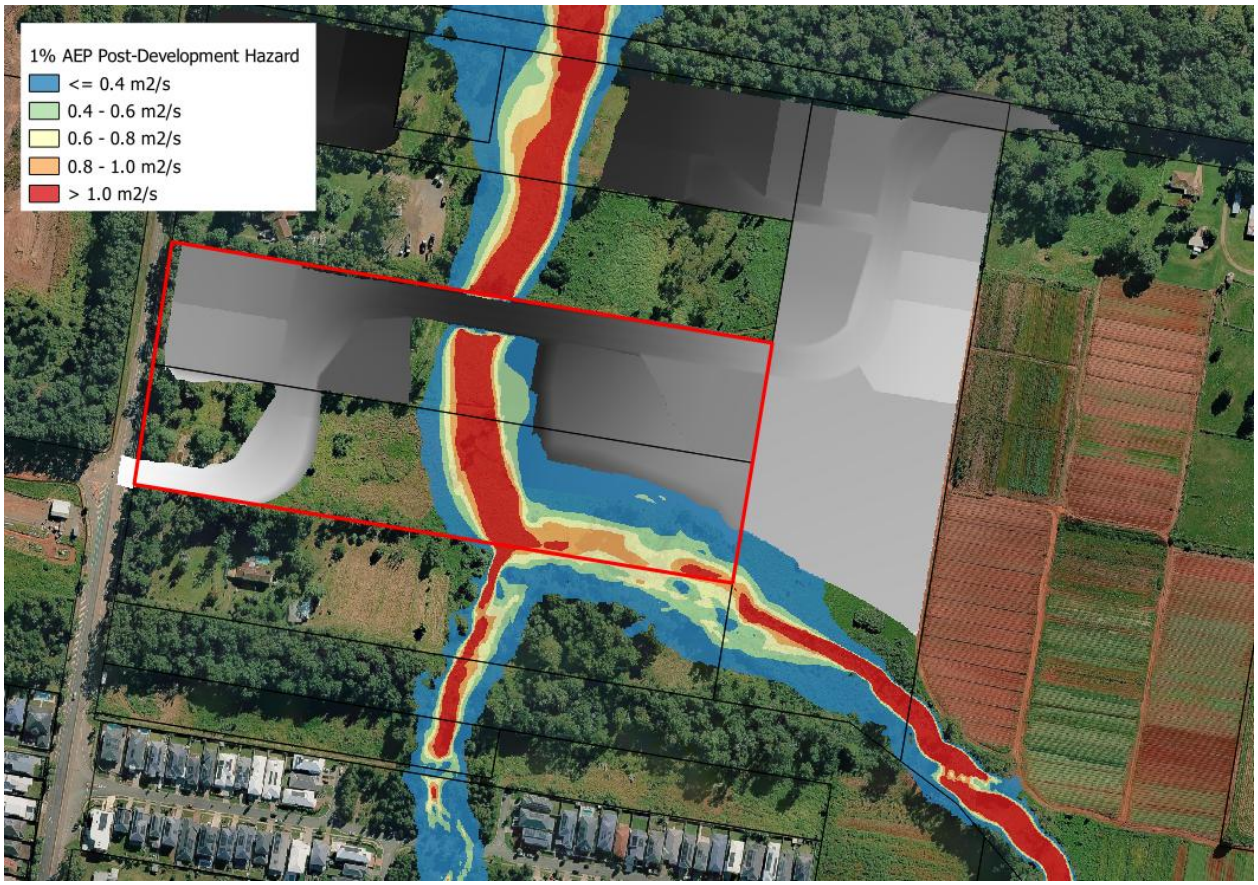


Figure 16: 1% AEP Post-Development Hazard

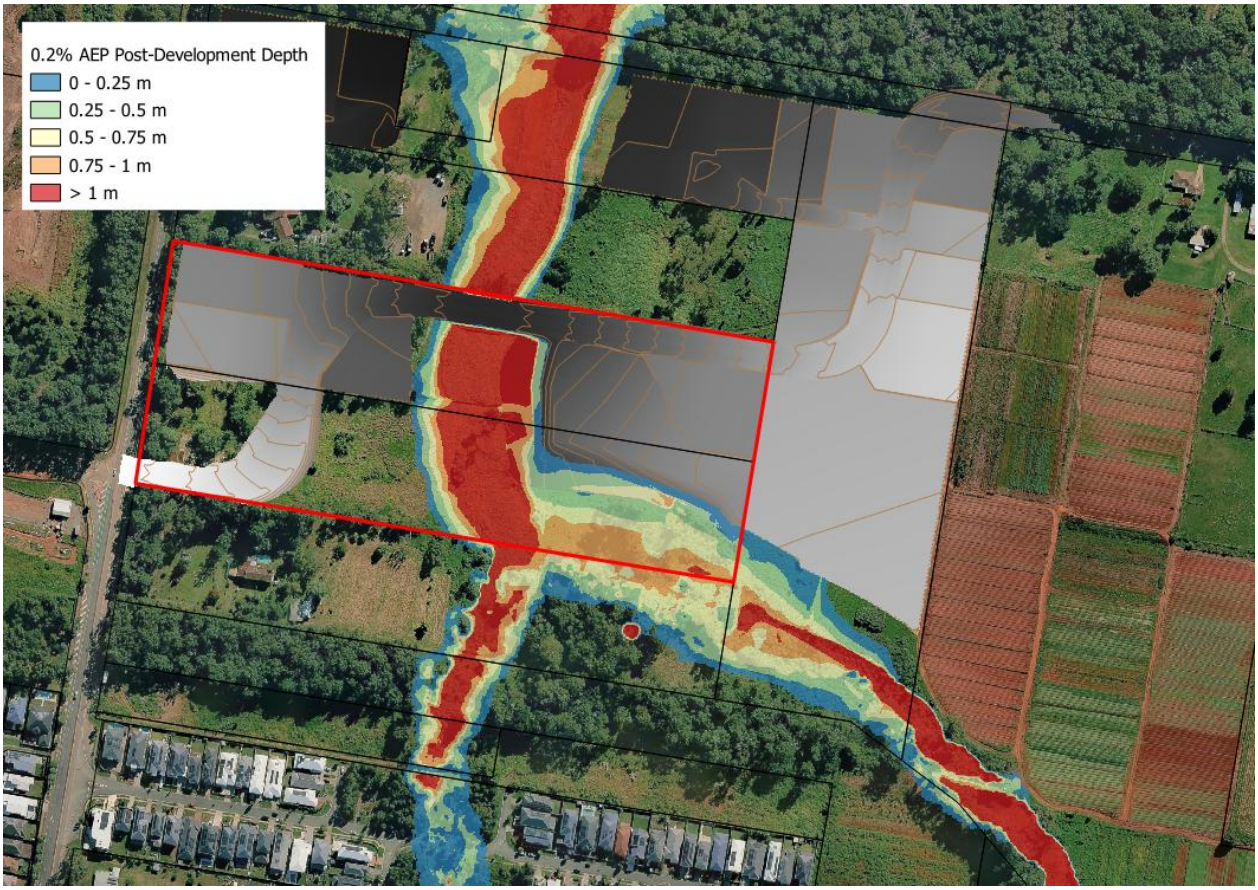


Figure 17: 0.2% AEP Post-Development Depth

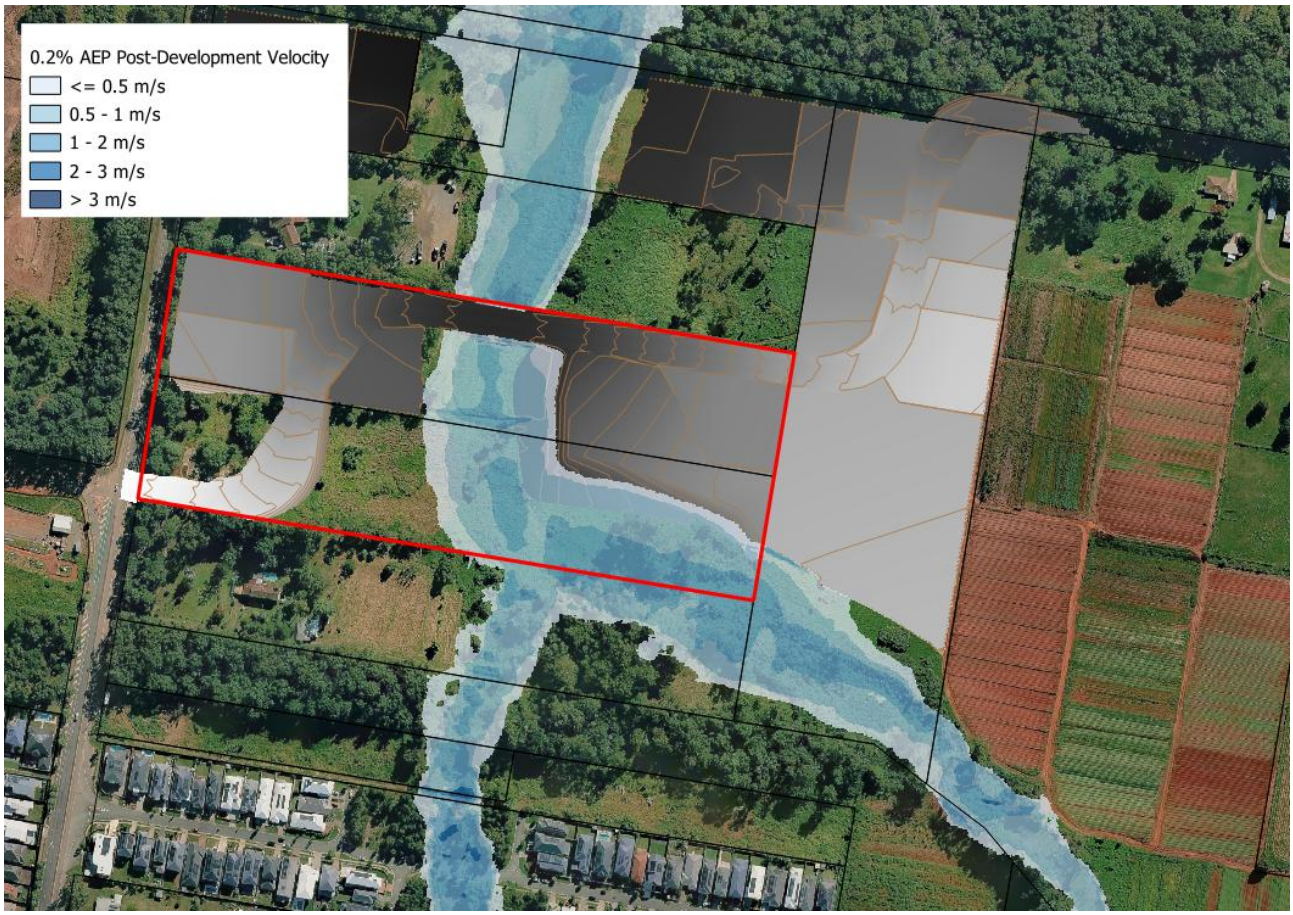


Figure 18: 0.2% AEP Post-Development Velocity

6 Impact Assessment

Results for the pre and post-development scenarios have been compared to ensure that non-worsening of peak levels and velocities can be achieved. **Figure 19, 21 and 23** compare the 2%, 1% and 0.2% pre and post-development peak flood levels and **Figure 10, 22 and 24** compares the 2%, 1% and 0.2% pre and post-development velocities. There are isolated impacts downstream of the culvert crossing related to the slight redirection of flow from the culvert outlet. These impacts are limited to an area already subject to flooding within the core (30m) waterway corridor.

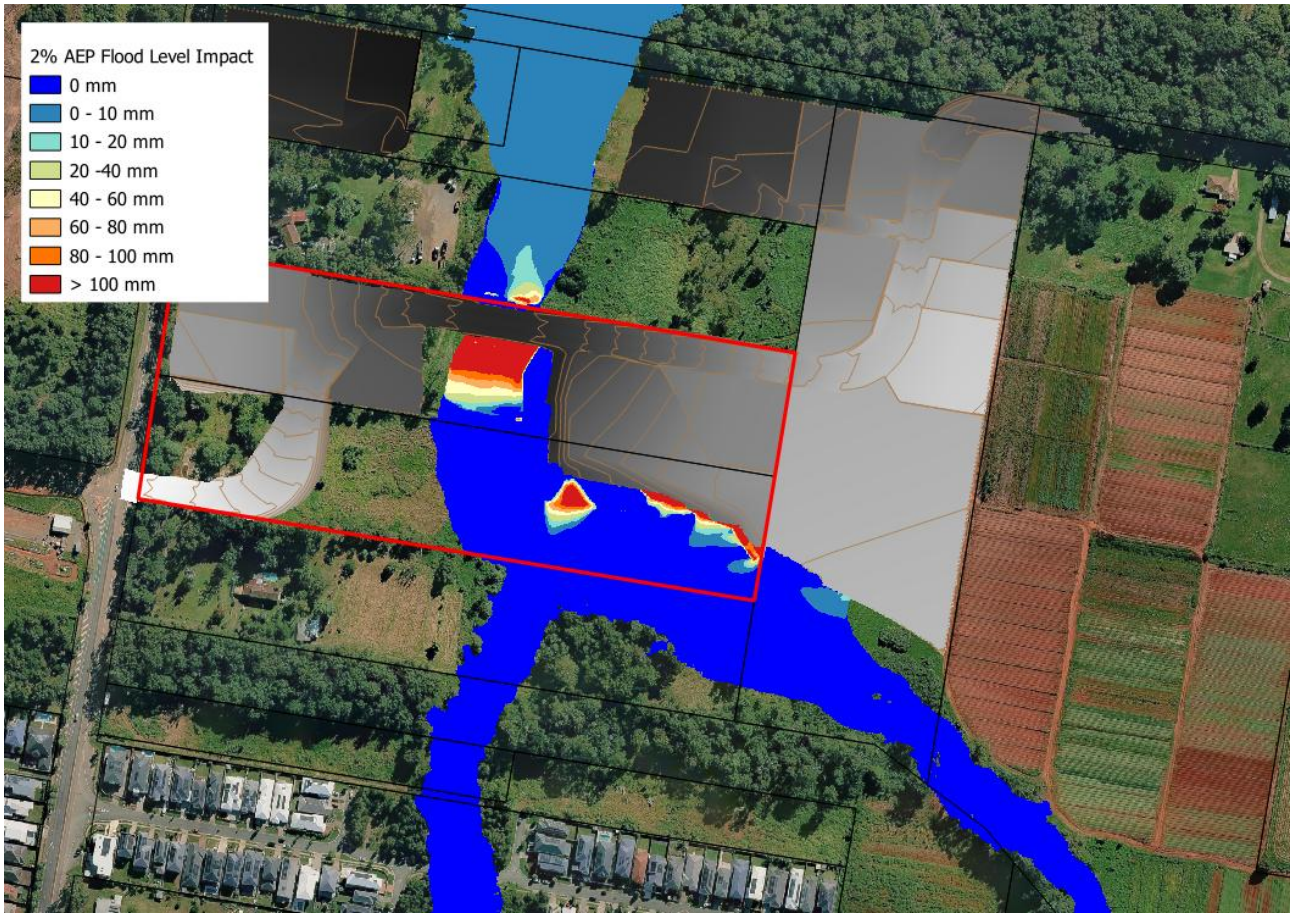


Figure 19: 2% AEP Flood Level Impact

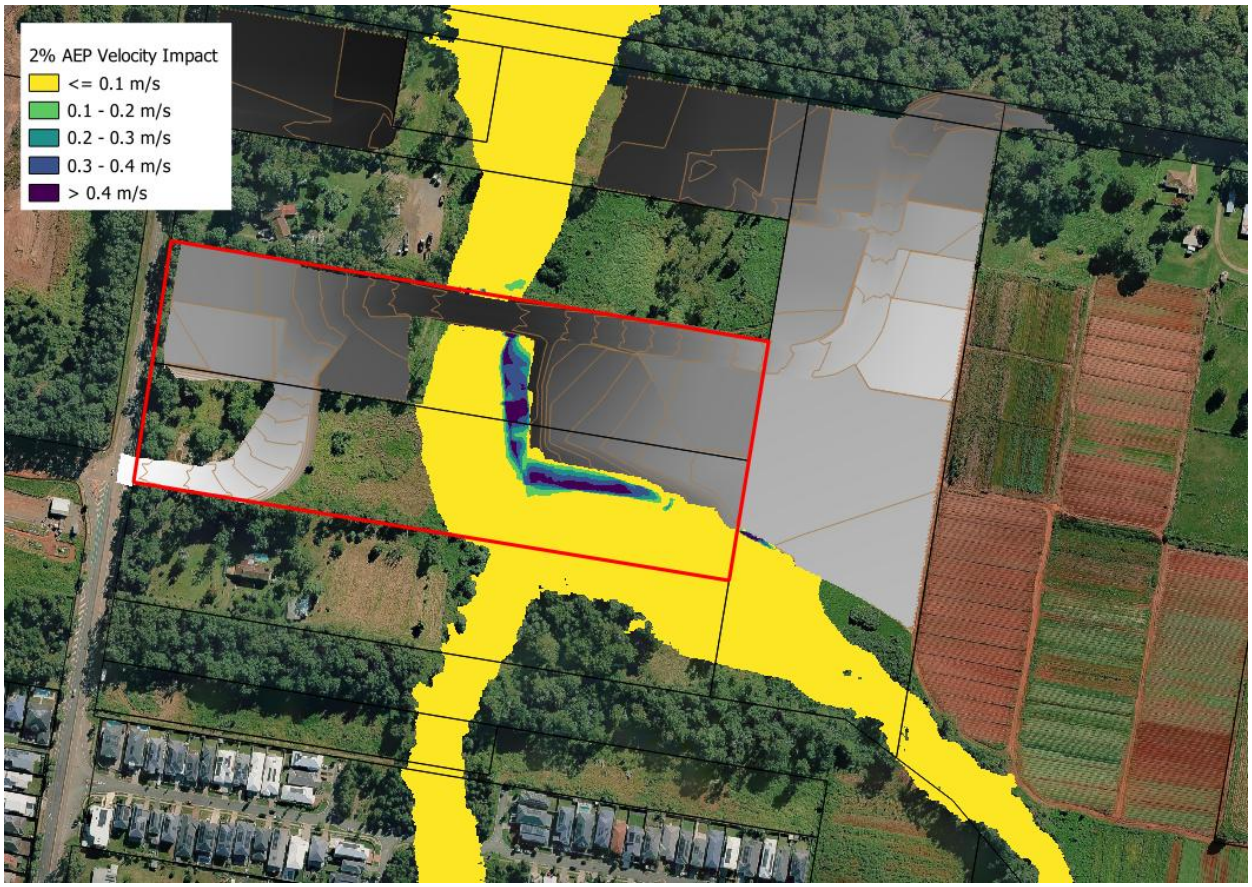


Figure 20: 2% AEP Velocity Impact

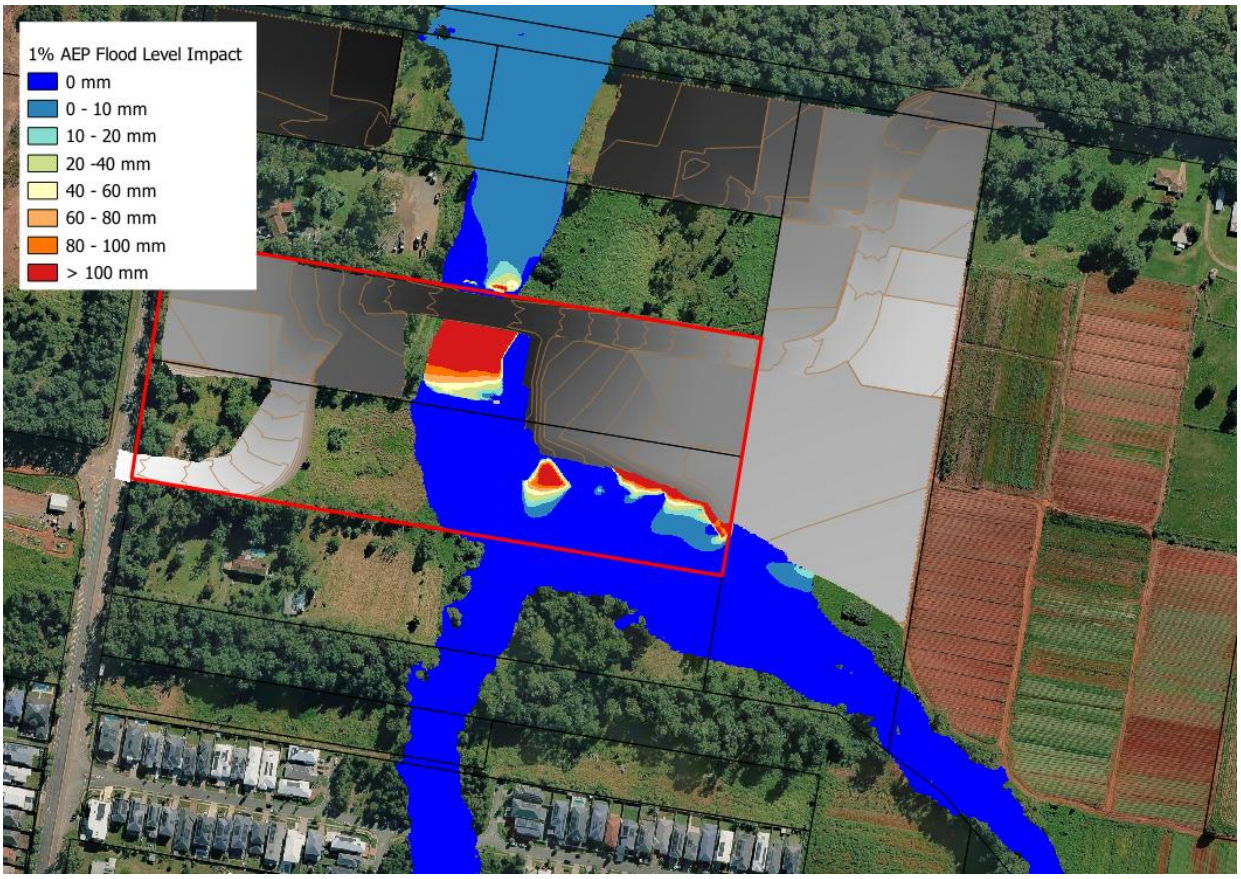


Figure 21: 1% AEP Flood Level Impact

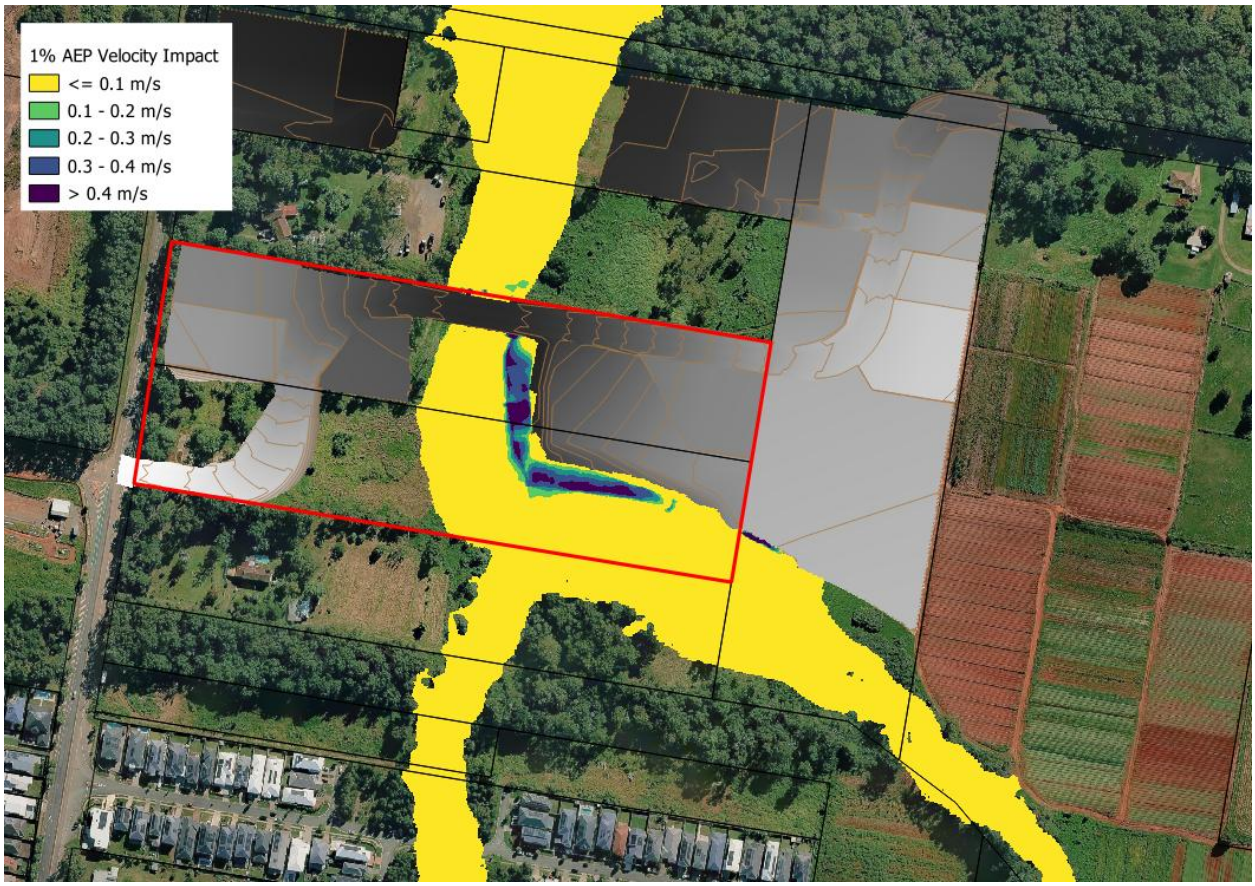


Figure 22: 1% AEP Velocity Impact

Figure 23: 0.2% AEP Flood Level Impact

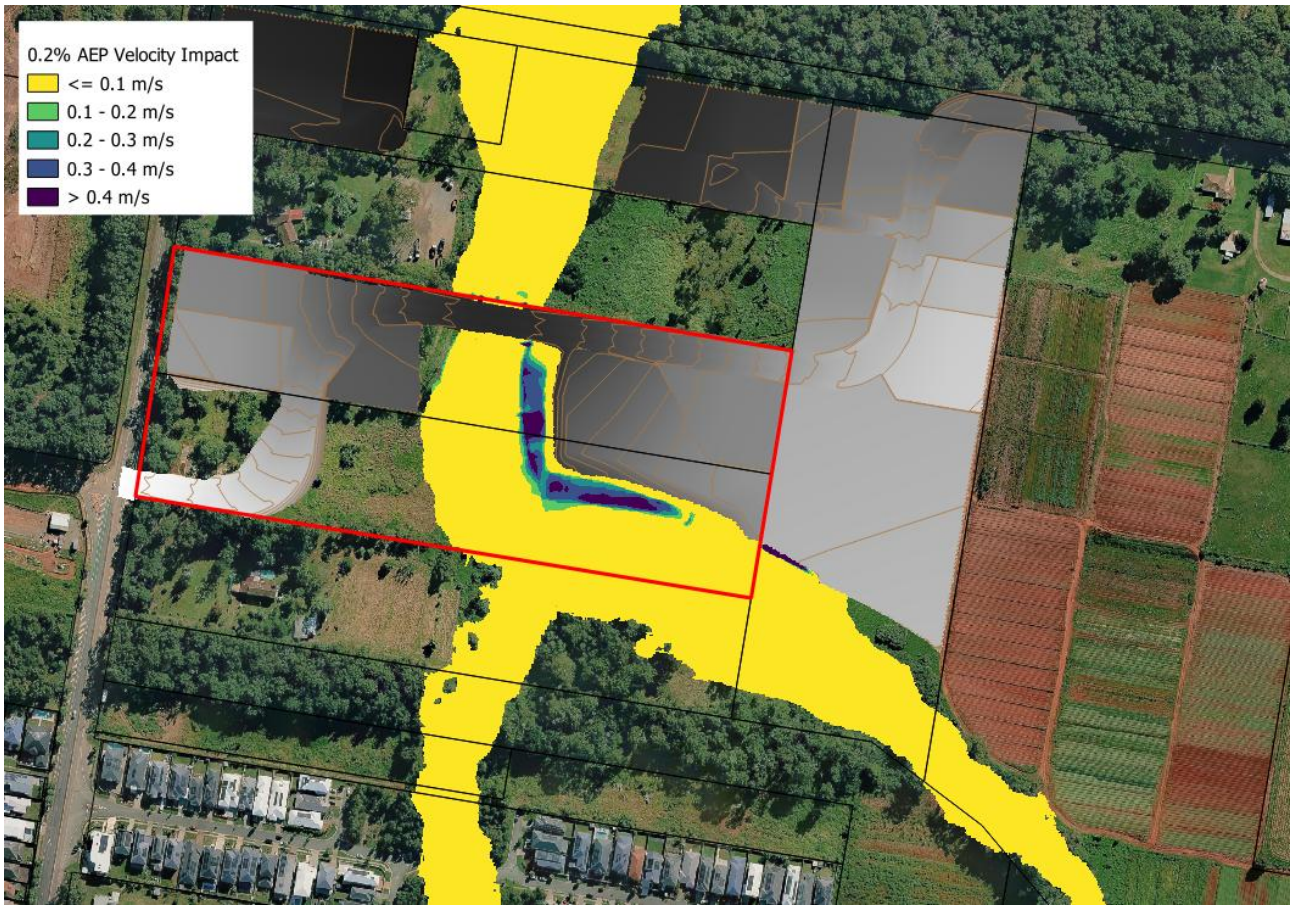


Figure 24: 0.2% AEP Velocity Impact

7 Conclusions

This study has reviewed the hydrology and hydraulics of the catchment for pre and post-development scenarios and investigated the impact of the proposed access road on upstream and downstream properties. The post development scenario considers the previous district road design approved by Council (BCC Ref A005747839) with modification to the sag in the road as indicated on drawing DA303 and additional earthworks proposed on lot 13 and 14 subject to this report.

Based on this study the following conclusions have been drawn:

- Flow enters the site near the south-eastern corner and crosses through to the western boundary. This flowpath then merges with a south-north waterway which travels north through the proposed access road crossing;
- The district road includes 6 x 3600W x 1500H & 2 x 3600W x 2100H culverts which have been modelled with a 50% blockage;
- The proposed culverts can convey flows up to the 0.2% AEP flow without overtopping;
- Impacts to peak flood levels and velocities are isolated to two small areas downstream of the culverts; and are limited to already flooded land within the core (30m) waterway corridor;
- The BCC Flood Overlay requirements have been met as shown in **Appendix D**.

Appendix A
Proposed Plan of Development

0 25 50 75 100 125m

SCALE 1:1250 @A1

Legend

- Site Boundary
- 6m Wide Easement Benefitting Council & 202 Gardner Road for Access Purposes

Notes

1. Any licence, express or implied, to use this document for any purpose whatsoever is restricted to the terms of the agreement or implied agreement between Therefor Group Pty Ltd and the instructing party.

2. Design subject to local authority approval & detailed engineering requirements , areas and dimensions are approximate only and are subject to survey. Therefore this drawing is not to be used for engineering design.

3. Indicative road pavement design subject to engineering review.

5. This note is an integral part of this plan. This plan may not be reproduced without this notation being included.

Table of Development

Gross area of subject land	5.087ha
Area of proposed drainage reserve	2.026ha
Net area of subject land (Excluding drainage reserve)	3.116ha
Number of proposed lots	5
Number of existing lots	2 & Proposed Easement in Lot 1 Approval (A005747839)

Final intended use of new lots:

Proposed Lots 13 & 14 are for future development.
Proposed Lot 800 is for drainage.
Proposed Lots 905 & 906 are balance lots.

therefor GROUP

CLIENT
Rochedale Development Partners

PROJECT
198 & 202 Gardner Road Rochedale

PROJECT NO.
23-0329P

DRAWING NAME
Plan of Reconfiguration

LOT DESCRIPTION
Part of Lots 3 & 4 on RP114765

LOCAL GOVERNMENT
Brisbane City

REVISION TABLE

REV	DESCRIPTION	DRAWN	APPROVED	DATE
D	Updated Lot Boundaries	JC	MW	27-11-2025
E	Updated Lot Boundaries	JC	MW	28-11-2025
F	Updated Boundary 906 part Lot	JC	GT	03-12-2025
G	Updated Lot Boundaries 13, 14, 500 & 905 with received dwg	KB	MW	01-05-2026
H	Updated Lot Boundaries 14 & 905 with received dwg	JC	MW	14-05-2026
I	Updated Lot Boundaries 14, 800 & 905	JC	MW	19-05-2026

DRAWING NO.
23-0329P-03

SHEET NO.
1 of 1

REVISION
I

NORTH

Appendix B
Site Survey

Notes

(1) This plan was prepared for the purpose and the exclusive use of Partners in Property Queensland Pty Ltd, to be used for design work. This plan is not to be used without the supplied digital information. This information is not to be used for any other purpose or by any other person or corporation.

(2) The contours shown on this plan may not be "natural surface" or "ground level" as defined by some local councils and should not be used as the reference surface when determining building height limits. The contour interval shown hereon is 0.5 metres.

(3) Property Boundaries
The subject lot boundaries and dimensions shown on this plan have been reinstated by cadastral survey and are suiotable for detaied design.

(4) Only visible features of underground services were located. Positions of stormwater mains, sewer mains & water mains that have been plotted are indicative only and as such should not be relied upon for detailed engineering design and construction. Contact relevant authorities before any excavation.

(5) UNDERGROUND SERVICES

This plan generally complies with Australian Standard 5488: Classification of Subsurface Utility Information (SUI).

Definitions:
Quality Level C (QL-C): Alignments are service provider's records with their positioning enhanced by QL-A or QL-B points.
All alignments in this data should be considered QL-C unless otherwise noted.
Quality Level D (QL-D): Alignments that have been scaled or digitized from service provider's records.

Only information with Quality Level A should be relied upon for detailed design. For more information
see AS5488—2013.

(6) MAP GRID OF AUSTRALIA
This plan is on GDA2020, MGA Zone 56 with ground distances. For true MGA Zone 56 Coordinates, scale all data from PSM 21911 by 0.9996.

(7) This plan may not be copied unless this note is included.

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Scale 1:2000 @ A1 – Lengths are in metres.

20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

Contour and Detail Survey

32 & 56 Farley Road & 182, 184, 190, 198, 202 & 210 Gardner Road, Rochedale

Local Authority: Brisbane City
Level Datum: AHD(d) vide PSM125324 (RL 41.322)
Co-ord System: MGA2020 (Localised)

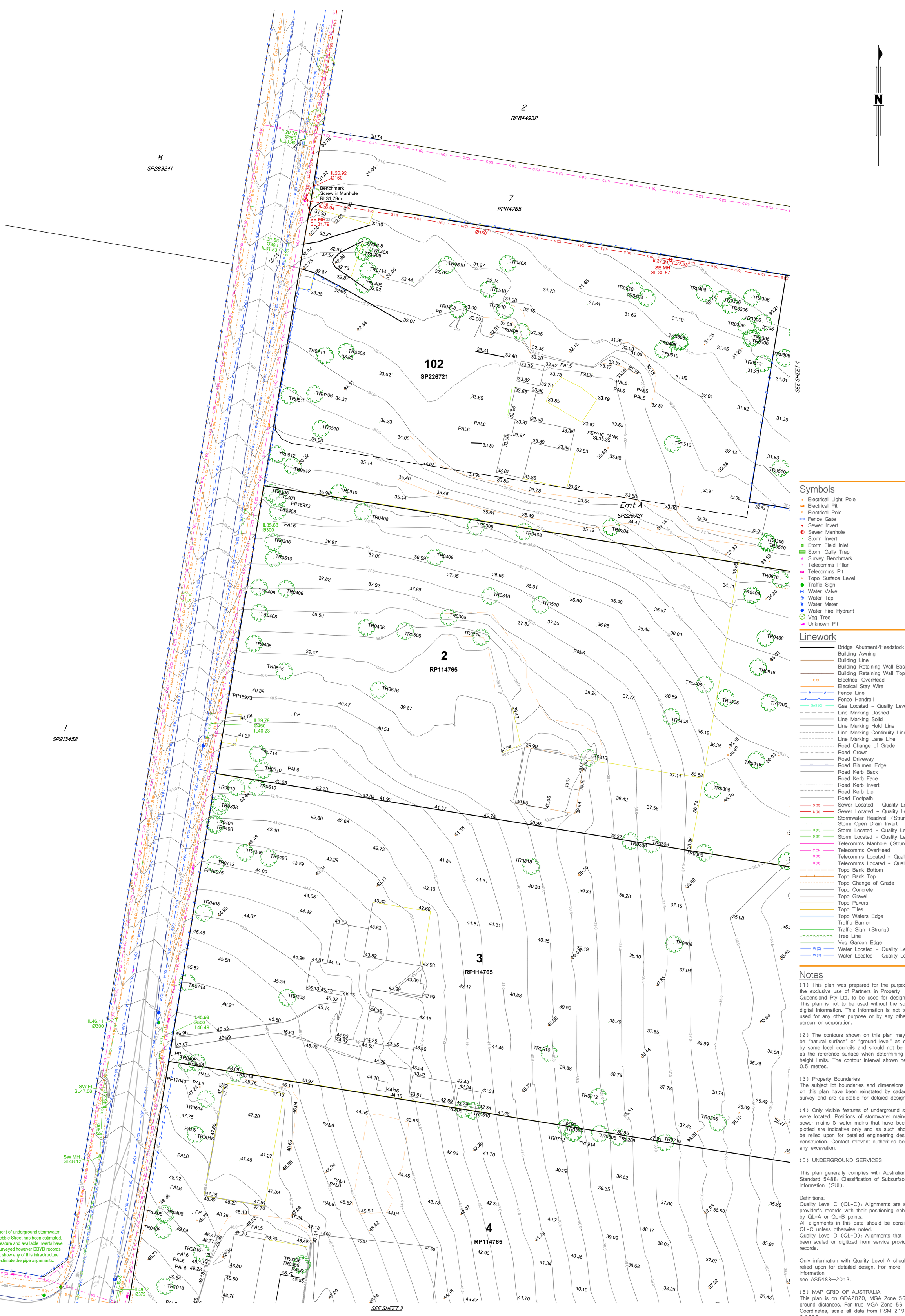
Description: Lots 2 on RP59061, 6 on RP114765, 102 & 103 on SP226721, 2-5 on RP114765
Origin: PSM21911

Rev.	Reason for Issue or Amendment	Date	Surveyed	Drawn	Approved
A	Original Issue	22.08.2023	J Townend	J Cowell	G Hanton

DRAWING NO.
21-0260S-01

SHEET NO. 1 of 11

VERSION A



Symbols

- Electrical Light Pole
- Electrical Pit
- Electrical Pole
- Fence Gate
- Sewer Invert
- Sewer Manhole
- Storm Invert
- Storm Field Inlet
- Storm Gully Trap
- Survey Benchmark
- Telecomms Pillar
- Telecomms Pit
- Topo Surface Level
- Traffic Sign
- Water Valve
- Water Tap
- Water Meter
- Water Fire Hydrant
- Veg Tree
- Unknown Pit

Linework

- Bridge Abutment/Headstock
- Building Awning
- Building Line
- Building Retaining Wall Base
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- Electical Stay Wire
- Fence Line
- Fence Handrail
- GAS (C) — Gas Located – Quality Level 'C'
- Line Marking Dashed
- Line Marking Solid
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- Line Marking Lane Line
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- Road Kerb Face
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- Road Footpath
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- S (D) — Sewer Located – Quality Level 'D'
- Stormwater Headwall (Strung)
- Storm Open Drain Invert
- D (C) — Storm Located – Quality Level 'C'
- D (D) — Storm Located – Quality Level 'D'
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- C (C) — Telecomms Located – Quality Level 'C'
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Planning Urban Design Landscape Environment Surveying

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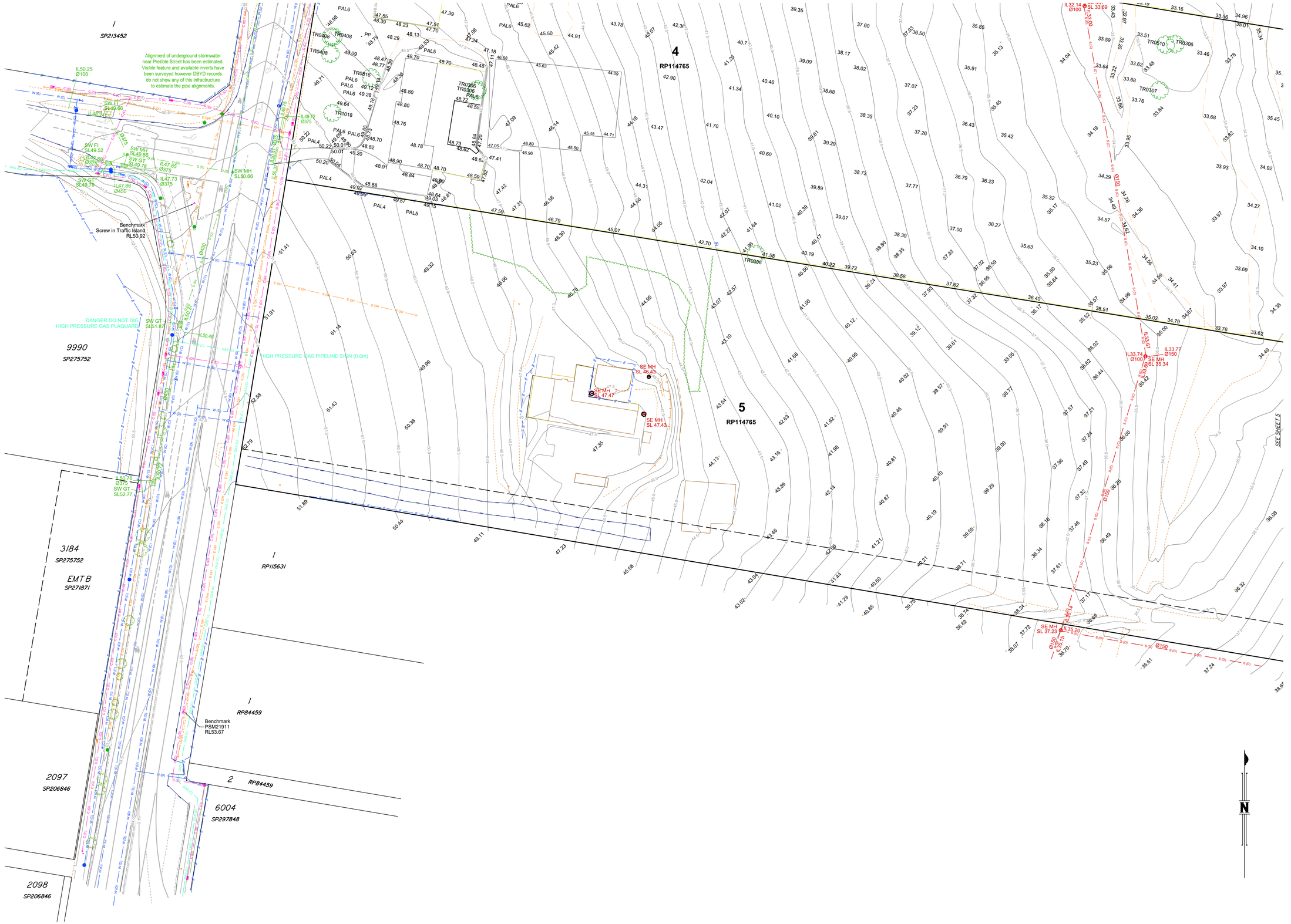
Rev.	Reason for Issue or Amendment	Date	Surveyed	Drawn	Approved
A	Original Issue	22.08.2023	J Townend	J Cowell	G Hanton

DRAWING NO.
21-0260S-01

SHEET NO. 2 of 11

VERSION A

SEE SHEET 2



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- Electrical Pole
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Planning Urban Design Landscape Environment Surveying

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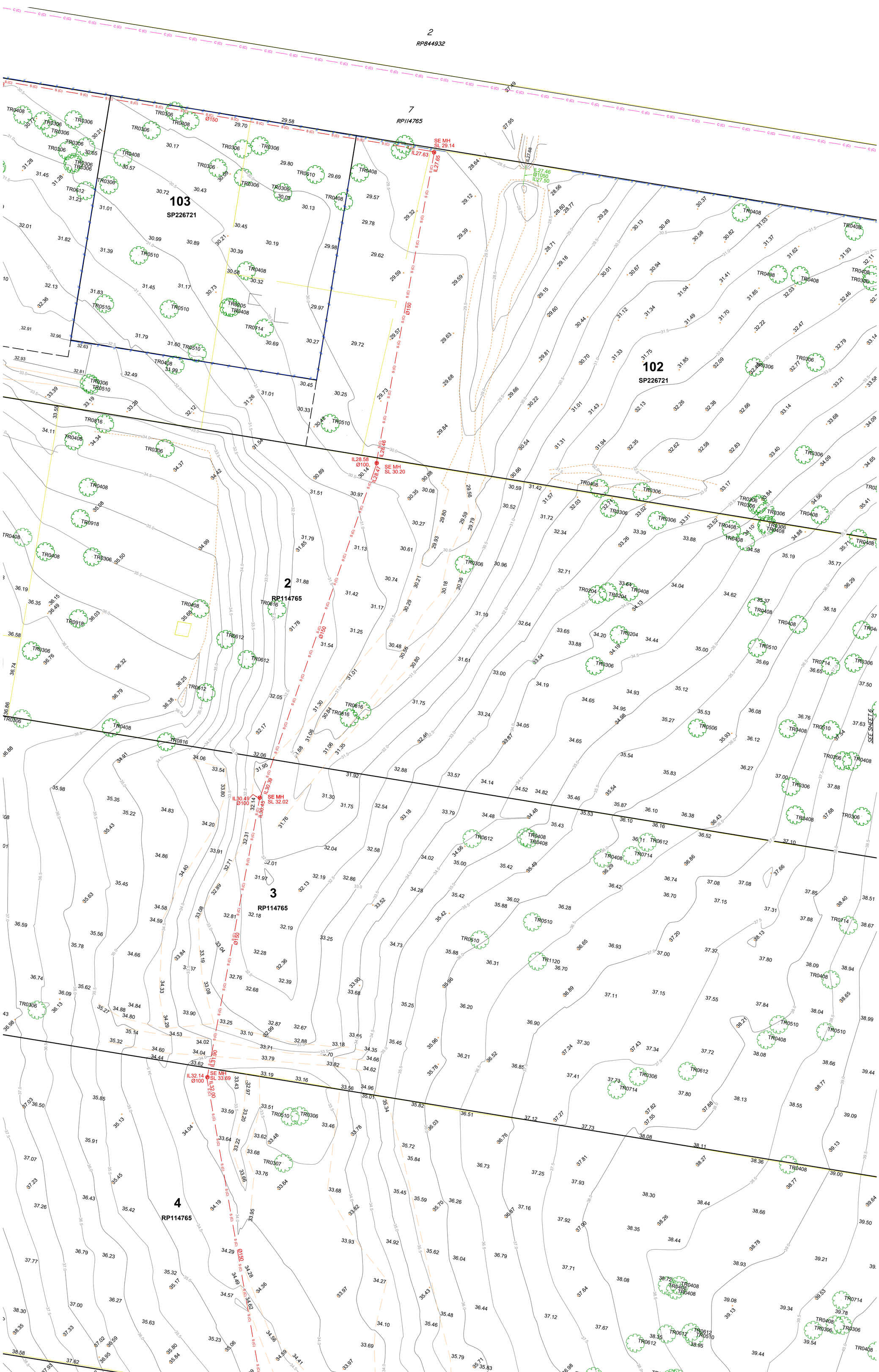
A	Original Issue	22.08.2023	J Townend	J Cowell	G Hanton

DRAWING NO.
21-0260S-01

SHEET NO.
3 of 11

VERSION
A



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Planning Urban Design Landscape Environment Surveying

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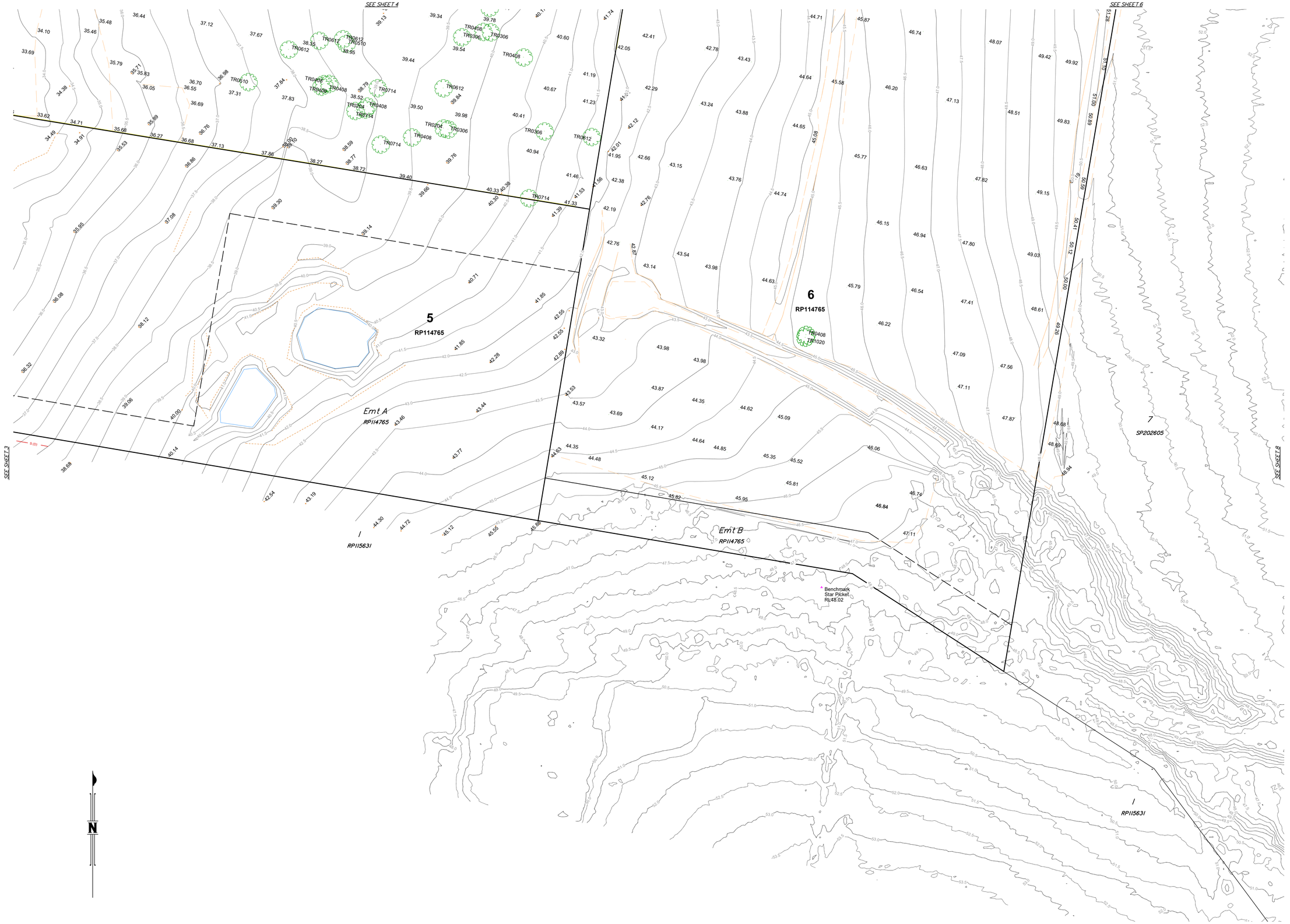
Origin: PSM21911

Rev.	Reason for Issue or Amendment	Date	Surveyed	Drawn	Approved
A	Original Issue	22.08.2023	J Townend	J Cowell	G Hanton

DRAWING NO.
21-0260S-01

SHEET NO. 4 of 11

VERSION A



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DRAWING NO.
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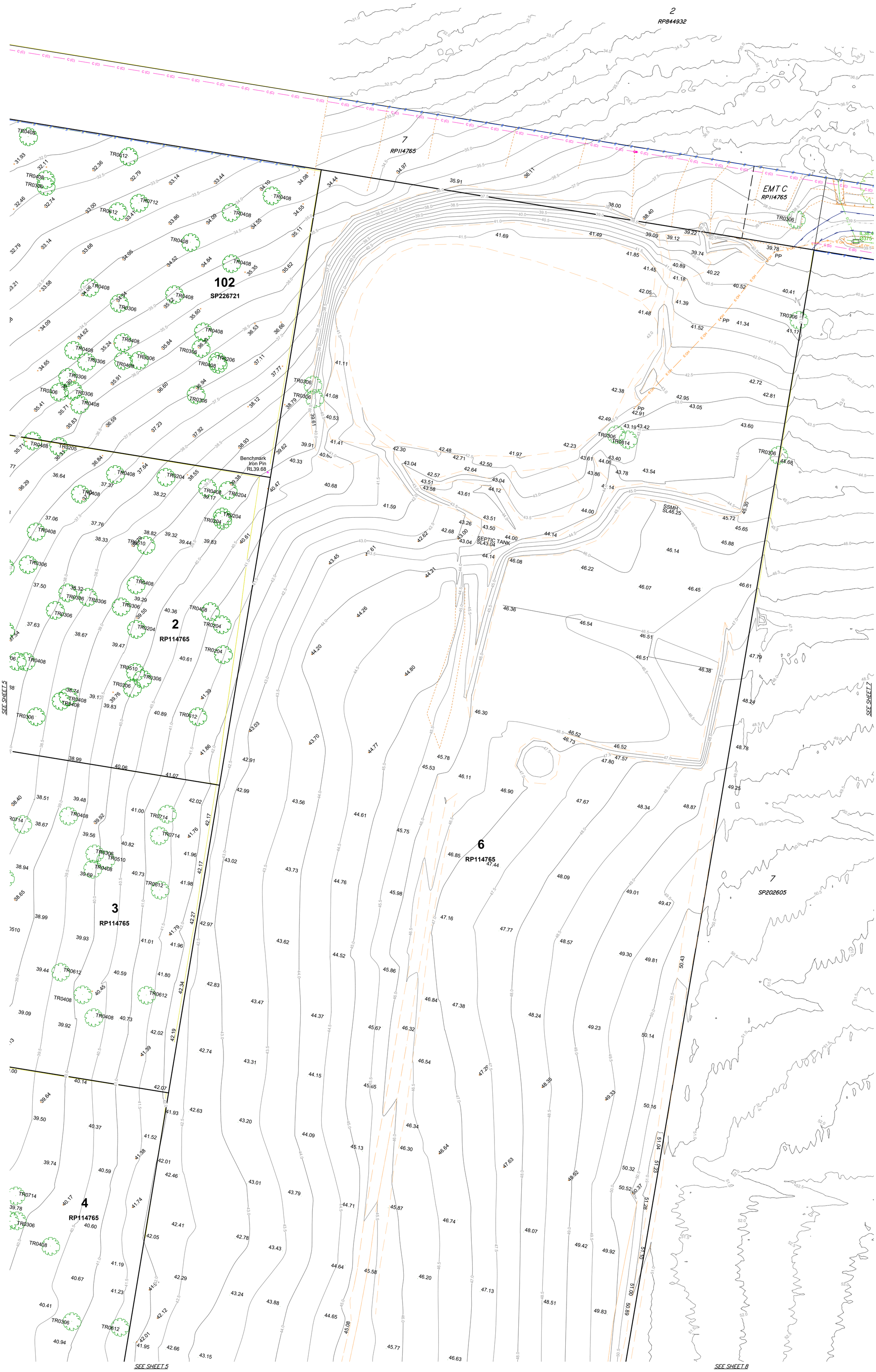
SHEET NO.
5 of 11

VERSION
A



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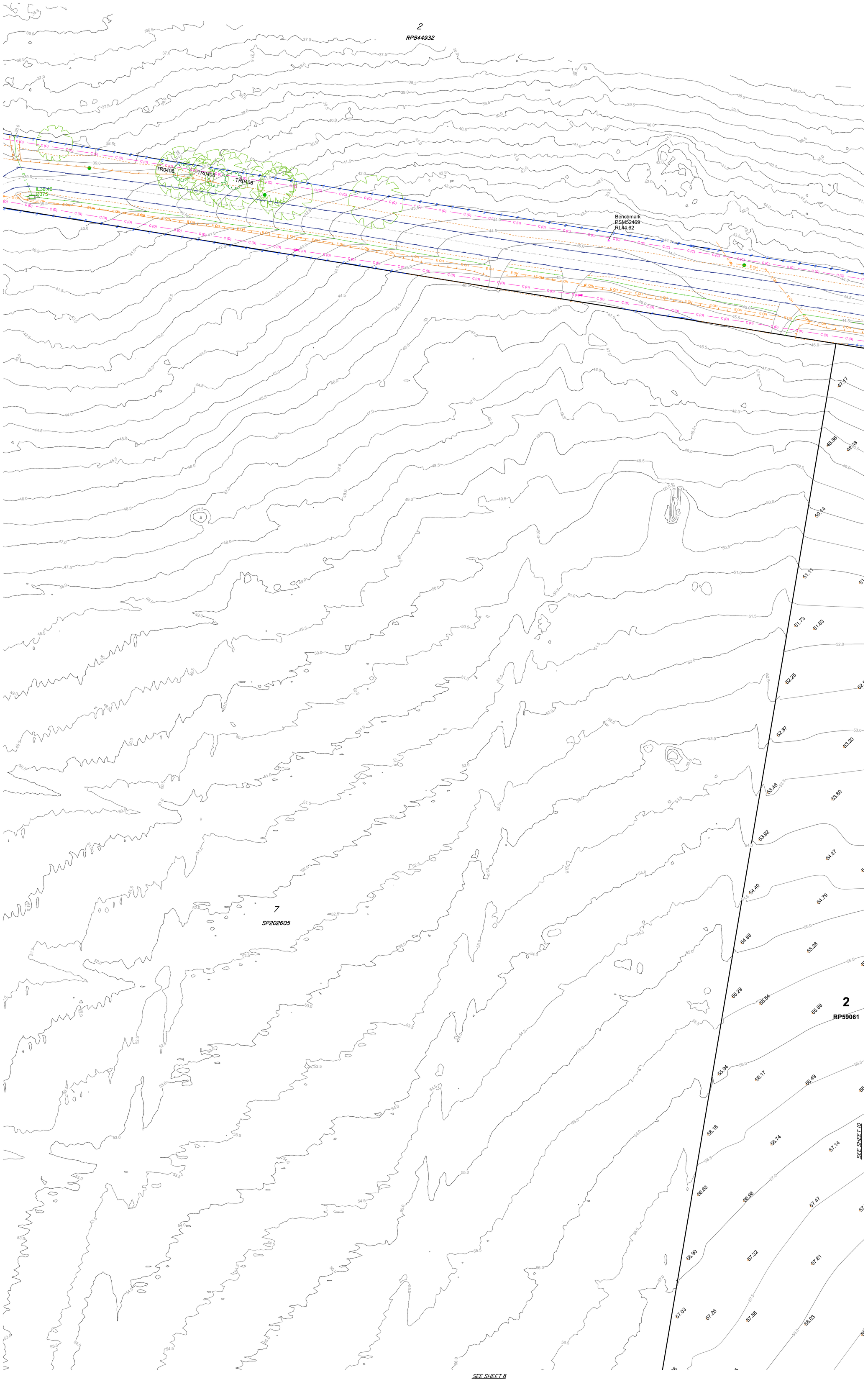
DRAWING NO.
21-0260S-01

SHEET NO. 6 of 11

VERSION A



N

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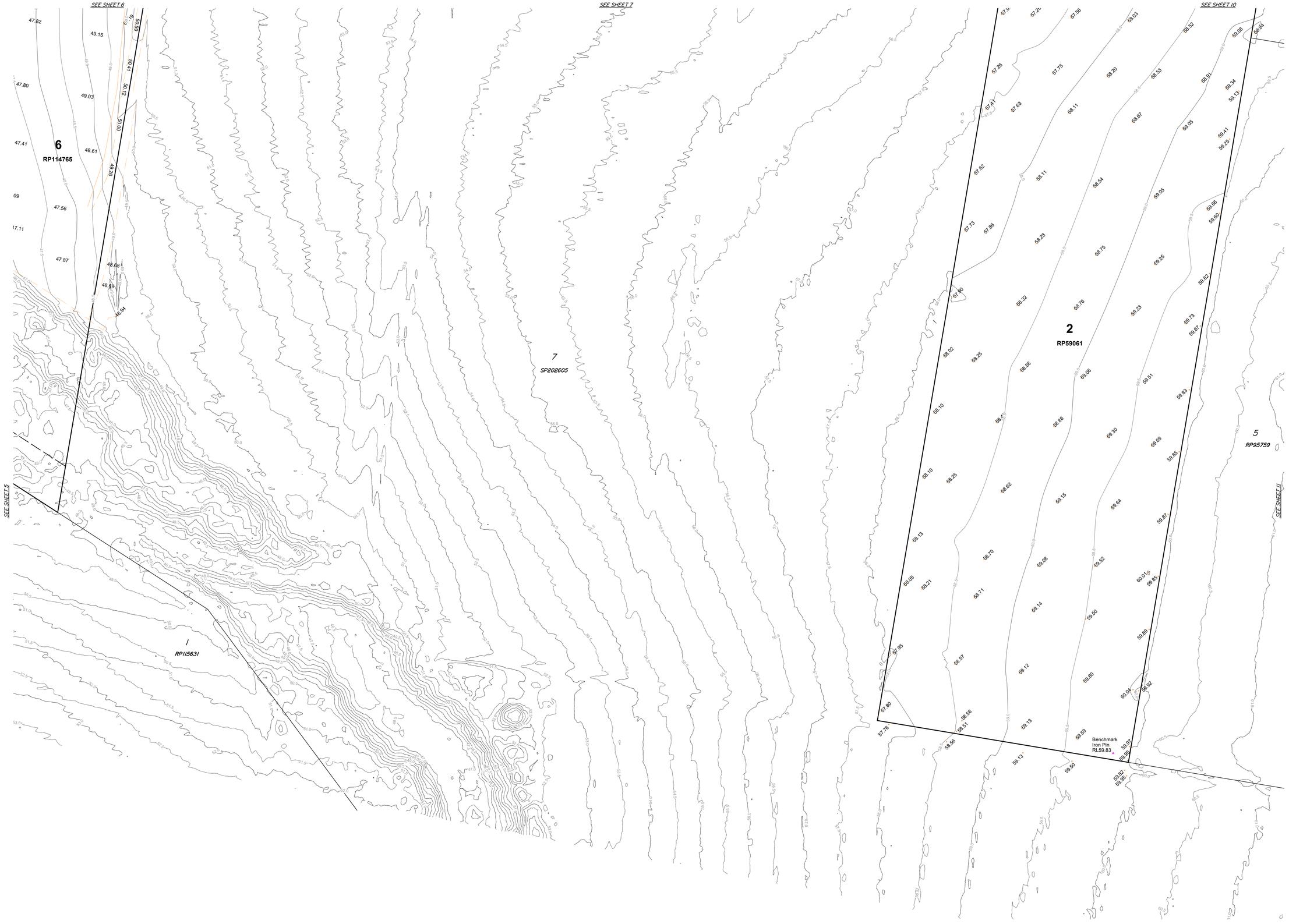
SHEET NO. 7 of 11

VERSION A



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- Electrical Pit
- Electrical Pole
- Fence Gate
- Sewer Invert
- Sewer Manhole
- Storm Invert
- Storm Field Inlet
- Storm Gully Trap
- Survey Benchmark
- Telecomms Pillar
- Telecomms Pit
- Topo Surface Level
- Traffic Sign
- Water Valve
- Water Tap
- Water Meter
- Water Fire Hydrant
- Veg Tree
- Unknown Pit

Linework

- Bridge Abutment/Headstock
- Building Awning
- Building Line
- Building Retaining Wall Base
- Building Retaining Wall Top
- Electrical OverHead
- Electical Stay Wire
- Fence Line
- Fence Handrail
- Gas Located - Quality Level 'C'
- Line Marking Dashed
- Line Marking Solid
- Line Marking Hold Line
- Line Marking Continuity Line
- Line Marking Lane Line
- Road Change of Grade
- Road Crown
- Road Driveway
- Road Bitumen Edge
- Road Kerb Back
- Road Kerb Face
- Road Kerb Invert
- Road Kerb Lip
- Road Footpath
- Sewer Located - Quality Level 'C'
- Sewer Located - Quality Level 'D'
- Stormwater Headwall (Strung)
- Storm Open Drain Invert
- Storm Located - Quality Level 'C'
- Storm Located - Quality Level 'D'
- Telecomms Manhole (Strung)
- Telecomms OverHead
- Telecomms Located - Quality Level 'C'
- Telecomms Located - Quality Level 'D'
- Topo Bank Bottom
- Topo Bank Top
- Topo Change of Grade
- Topo Concrete
- Topo Gravel
- Topo Pavers
- Topo Tiles
- Topo Waters Edge
- Traffic Barrier
- Traffic Sign (Strung)
- Tree Line
- Veg Garden Edge
- Water Located - Quality Level 'C'
- Water Located - Quality Level 'D'

Notes

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(5) UNDERGROUND SERVICES

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Definitions:
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Quality Level D (QL-D): Alignments that have been scaled or digitized from service provider's records.

Only information with Quality Level A should be relied upon for detailed design. For more information
see AS5488—2013.

(6) MAP GRID OF AUSTRALIA
This plan is on GDA2020, MGA Zone 56 with ground distances. For true MGA Zone 56 Coordinates, scale all data from PSM 21911 by 0.9996.

WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Scale 1:500 @ A1 - Lengths are in metres.

5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70

Contour and Detail Survey

32 & 56 Farley Road & 182, 184, 190, 198, 202 & 210 Gardner Road, Rochedale

Local Authority: Brisbane City
Level Datum: AHD(d) vide PSM125324 (RL 41.322)
Co-ord System: MGA2020 (Localised)

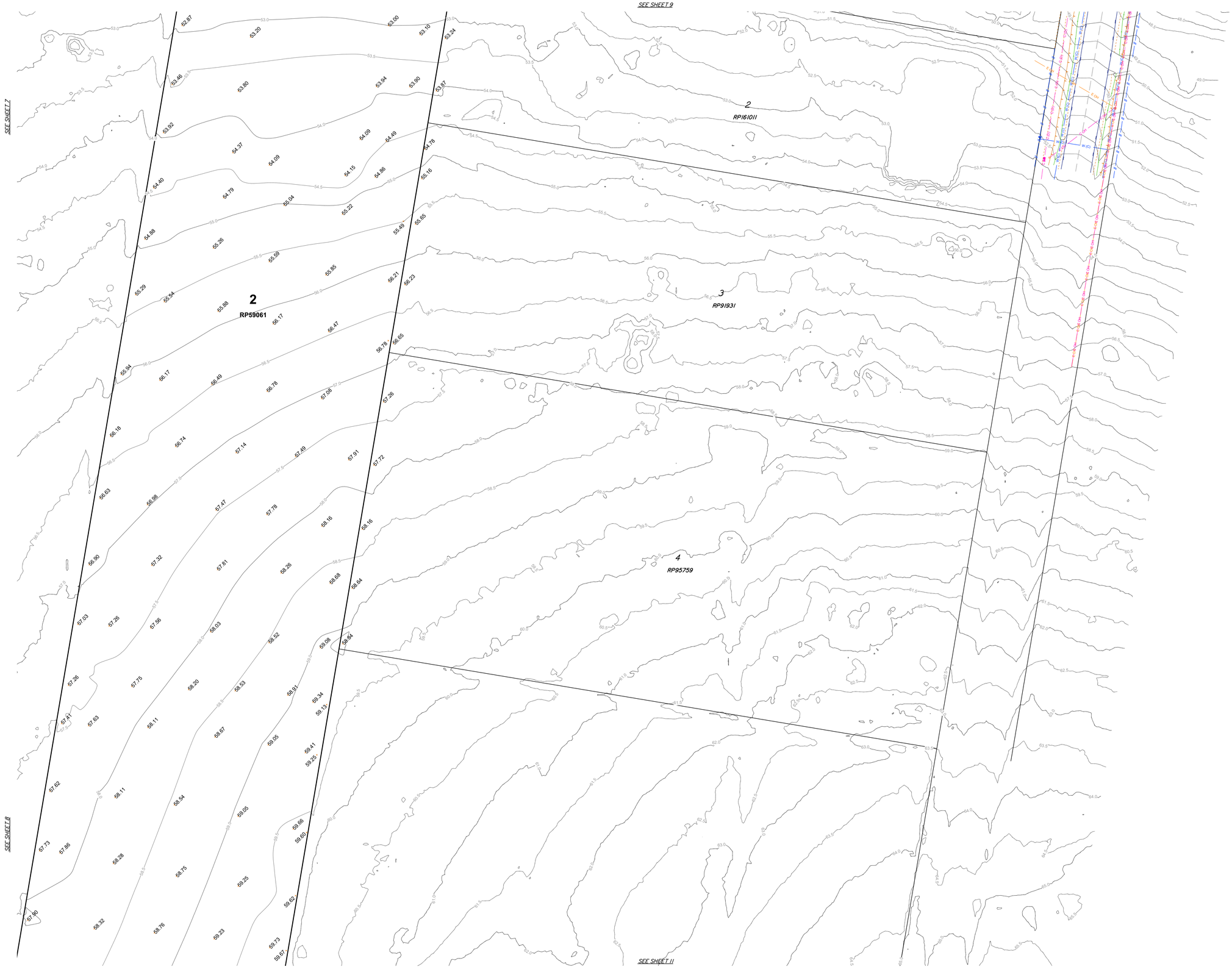
Description: Lots 2 on RP59061, 6 on RP114765, 102 & 103 on SP226721, 2-5 on RP114765
Origin: PSM21911

Rev.	Reason for Issue or Amendment	Date	Surveyed	Drawn	Approved
A	Original Issue	22.08.2023	J Townend	J Cowell	G Hanton

DRAWING NO.
21-0260S-01

SHEET NO. 8 of 11

VERSION A



Symbols

- Electrical Light Pole
- Electrical Pit
- Electrical Pole
- Fence Gate
- Sewer Invert
- Sewer Manhole
- Storm Invert
- Storm Field Inlet
- Storm Gully Trap
- Survey Benchmark
- Telecomms Pillar
- Telecomms Pit
- Topo Surface Level
- Traffic Sign
- Water Valve
- Water Tap
- Water Meter
- Water Fire Hydrant
- Veg Tree
- Unknown Pit

Linework

- Bridge Abutment/Headstock
- Building Awning
- Building Line
- Building Retaining Wall Base
- Building Retaining Wall Top
- Electrical OverHead
- Electical Stay Wire
- Fence Line
- Fence Handrail
- Gas Located - Quality Level 'C'
- Line Marking Dashed
- Line Marking Solid
- Line Marking Hold Line
- Line Marking Continuity Line
- Line Marking Lane Line
- Road Change of Grade
- Road Crown
- Road Driveway
- Road Bitumen Edge
- Road Kerb Back
- Road Kerb Face
- Road Kerb Invert
- Road Kerb Lip
- Road Footpath
- Sewer Located - Quality Level 'C'
- Sewer Located - Quality Level 'D'
- Stormwater Headwall (Strung)
- Storm Open Drain Invert
- Storm Located - Quality Level 'C'
- Storm Located - Quality Level 'D'
- Telecomms Manhole (Strung)
- Telecomms OverHead
- Telecomms Located - Quality Level 'C'
- Telecomms Located - Quality Level 'D'
- Topo Bank Bottom
- Topo Bank Top
- Topo Change of Grade
- Topo Concrete
- Topo Gravel
- Topo Pavers
- Topo Tiles
- Topo Waters Edge
- Traffic Barrier
- Traffic Sign (Strung)
- Tree Line
- Veg Garden Edge
- Water Located - Quality Level 'C'
- Water Located - Quality Level 'D'

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WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

Scale 1:500 @ A1 - Lengths are in metres.

5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70

Contour and Detail Survey

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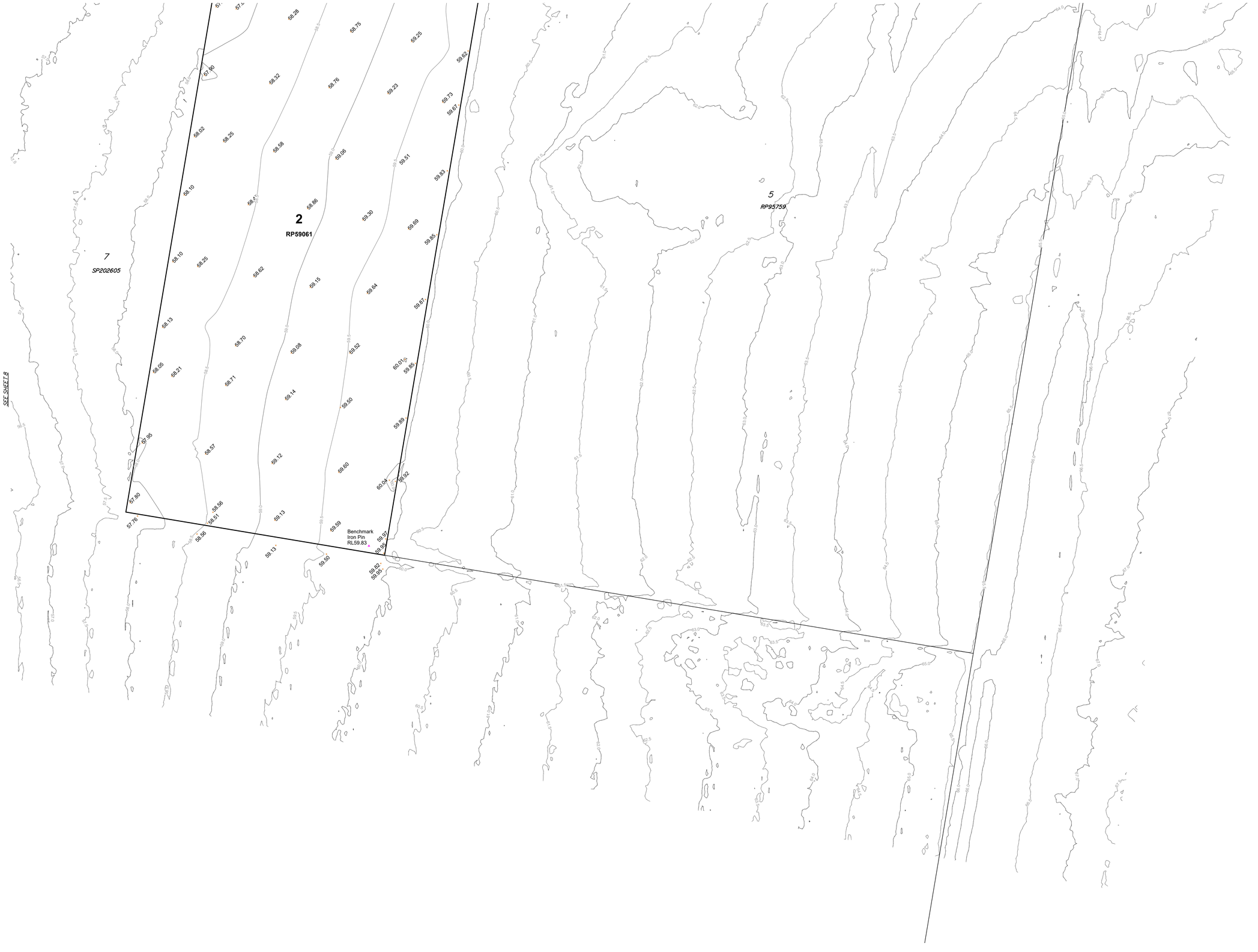
Rev.	Reason for Issue or Amendment	Date	Surveyed	Drawn	Approved
A	Original Issue	22.08.2023	J Townend	J Cowell	G Hanton

DRAWING NO.
21-0260S-01

SHEET NO.
10 of 11

VERSION
A

SEE SHEET 10



Symbols

- Electrical Light Pole
- Electrical Pit
- Electrical Pole
- Fence Gate
- Sewer Invert
- Sewer Manhole
- Storm Invert
- Storm Field Inlet
- Storm Gully Trap
- Survey Benchmark
- Telecomms Pillar
- Telecomms Pit
- Topo Surface Level
- Traffic Sign
- Water Valve
- Water Tap
- Water Meter
- Water Fire Hydrant
- Veg Tree
- Unknown Pit

Linework

- Bridge Abutment/Headstock
- Building Awning
- Building Line
- Building Retaining Wall Base
- Building Retaining Wall Top
- E OH — Electrical OverHead
- Electical Stay Wire
- ff — ff — Fence Line
- Fence Handrail
- GAS (C) — Gas Located - Quality Level 'C'
- Line Marking Dashed
- Line Marking Solid
- Line Marking Hold Line
- Line Marking Continuity Line
- Line Marking Lane Line
- Road Change of Grade
- Road Crown
- Road Driveway
- Road Bitumen Edge
- Road Kerb Back
- Road Kerb Face
- Road Kerb Invert
- Road Kerb Lip
- Road Footpath
- S (C) — Sewer Located - Quality Level 'C'
- S (D) — Sewer Located - Quality Level 'D'
- Stormwater Headwall (Strung)
- Storm Open Drain Invert
- D (C) — Storm Located - Quality Level 'C'
- D (D) — Storm Located - Quality Level 'D'
- Telecomms Manhole (Strung)
- C OH — Telecomms OverHead
- C (C) — Telecomms Located - Quality Level 'C'
- C (D) — Telecomms Located - Quality Level 'D'
- Topo Bank Bottom
- Topo Bank Top
- Topo Change of Grade
- Topo Concrete
- Topo Gravel
- Topo Pavers
- Topo Tiles
- Topo Waters Edge
- Traffic Barrier
- Traffic Sign (Strung)
- Tree Line
- Veg Garden Edge
- W (C) — Water Located - Quality Level 'C'
- W (D) — Water Located - Quality Level 'D'

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WOLTER consulting group

Planning Urban Design Landscape Environment Surveying

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5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70

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Origin: PSM21911

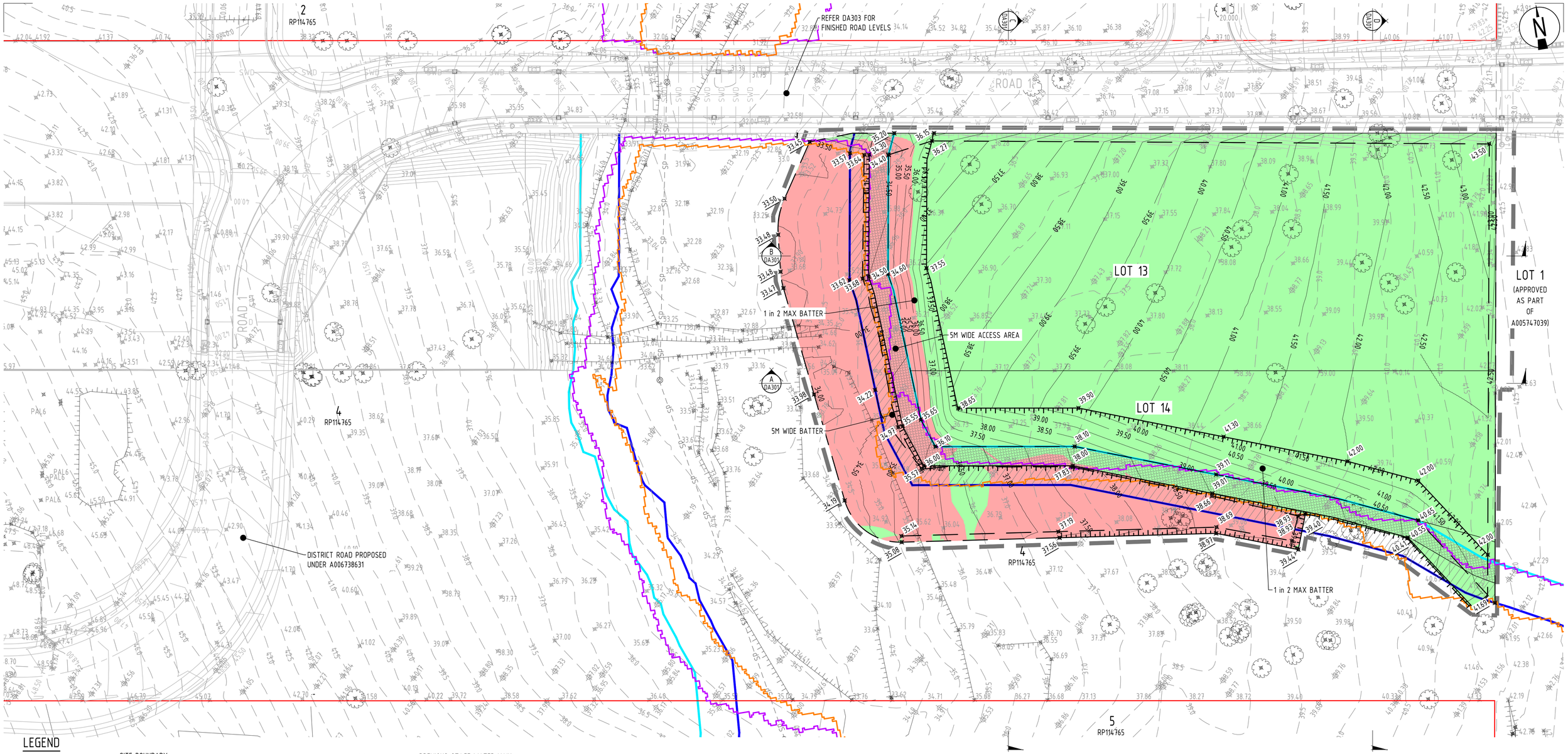
Rev.	Reason for Issue or Amendment	Date	Surveyed	Drawn	Approved
A	Original Issue	22.08.2023	J Townend	J Cowell	G Hanton

DRAWING NO.
21-0260S-01

SHEET NO.
11 of 11

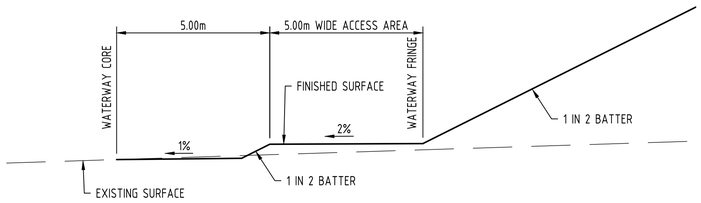
VERSION
A

Appendix C
Preliminary Civil Drawings



LEGEND

- SITE BOUNDARY
- EXISTING PROPERTY BOUNDARY
- EXISTING SURFACE CONTOURS
- FINISHED SURFACE CONTOURS
- EXISTING SURFACE LEVEL
- FINISHED SURFACE LEVEL
- EXISTING NOMINAL KERB LINE
- EXISTING EDGE OF BITUMEN LINE
- EXISTING ROAD CENTERLINE
- EXISTING EDGE OF BUILDING
- EXISTING STORMWATER DRAINAGE
- EXISTING SEWER (RECORDS)
- EXISTING WATER (RECORDS)
- EXISTING OVERHEAD ELECTRICITY
- EXISTING TELECOMMUNICATIONS (RECORDS)
- PREVIOUS STAGE STORMWATER DRAINAGE
- PREVIOUS STAGE WATER MAIN
- PREVIOUS STAGE NOMINAL KERB LINE
- PREVIOUS STAGE ROAD CENTRE LINE
- EXISTING BATTER
- EXISTING FENCE
- PROPOSED ACCESS AREA
- PROPOSED BATTER
- LIMIT OF WORKS
- PROPOSED EARTHWORKS PAD
- PROPOSED EARTHWORKS CUT
- PROPOSED EARTHWORKS FILL
- POST DEVELOPMENT 39% AEP FLOOD LINE
- POST DEVELOPMENT 1% AEP FLOOD LINE
- PROPOSED WATERWAY CORRIDOR (SLR) FRINGE (10m)
- PROPOSED WATERWAY CORRIDOR (SLR) CORE (30m MINIMUM)



TYPICAL WATERWAY FOOTPATH SECTION
1:100

ALL DETAILS SHOWN ARE SUBJECT TO FURTHER DETAILED DESIGN

PRELIMINARY
NOT FOR CONSTRUCTION

Rev	Date	Description	By	Chk
04	15.05.26	PRELIMINARY - ISSUED FOR INFORMATION	LDV	ML
03	03.03.26	PRELIMINARY - ISSUED FOR INFORMATION	CM	ML
02	10.12.25	PRELIMINARY - ISSUED FOR INFORMATION	LDV	ML
01	28.04.25	PRELIMINARY - ISSUED FOR INFORMATION	CM	ML

0 1 2 3 4 5m
SCALE 1:100
AT ORIGINAL SIZE (A1)

0 10 20 30m
SCALE 1:500
AT ORIGINAL SIZE (A1)

ADG
T:1300 657 402 E: info@adgce.com W: www.adgce.com
Quality Assurance ISO 9001:2015 | Work Health Safety ISO 45001:2018
Environmental Management ISO 14001:2015

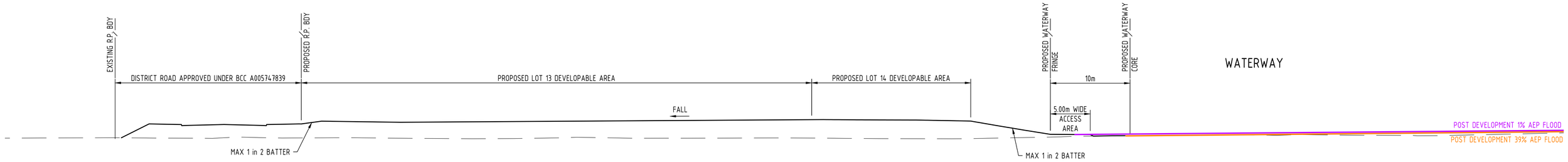
Client: GARDNER RD DEVELOPMENTS PTY LTD
Project Name: 198 & 202 GARDNER ROAD ROCHEDALE, QLD, 4123

Discipline: CIVIL
Status: PRELIMINARY
Designed By: LDV
Checked By: ML
Approved By: ML
Project No.: 25015
Drawn By: LDV
Scale at A1: 1:500

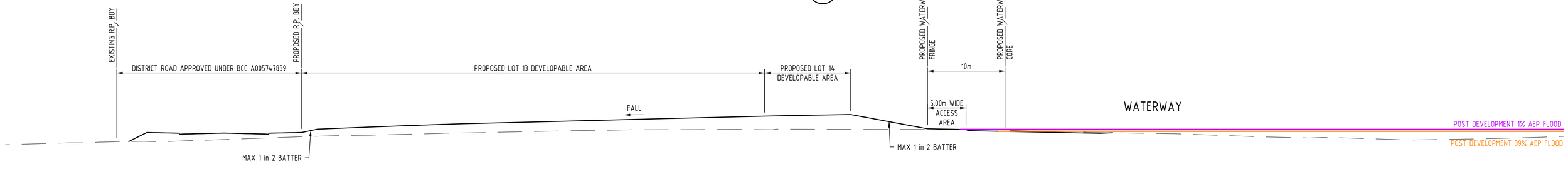
Title: PRELIMINARY EARTHWORKS LAYOUT PLAN
Drawing No.: DA300
Revision: 04

PLOT DATE: 5/20/2026 9:30 AM FILENAME: P:\25000\25015\CVL\DWG\DA DWGS\25015_DA300_PRELIMINARY EARTHWORKS LAYOUT PLAN.DWG

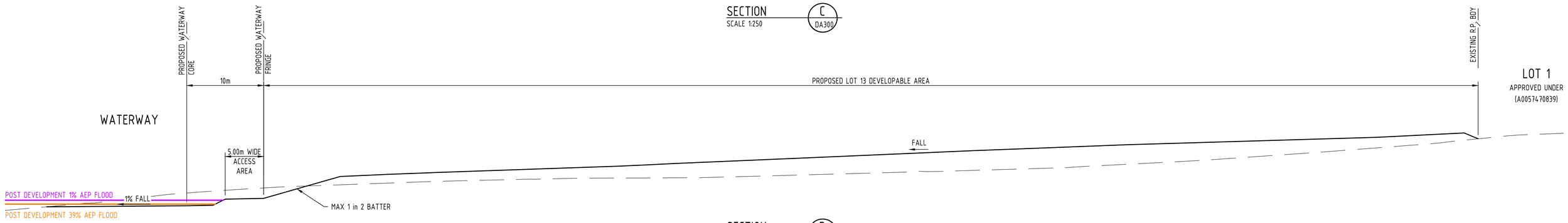
FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100mm



SECTION D
SCALE 1:250
DA300



SECTION C
SCALE 1:250
DA300



SECTION B
SCALE 1:250
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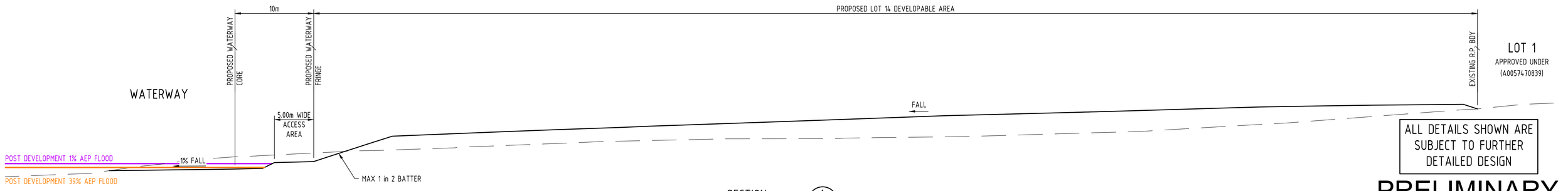

SECTION A
SCALE 1:250
DA300

ALL DETAILS SHOWN ARE SUBJECT TO FURTHER DETAILED DESIGN

PRELIMINARY
NOT FOR CONSTRUCTION

Rev	Date	Description	By	Chk
04	15.05.26	PRELIMINARY - ISSUED FOR INFORMATION	LDV	ML
03	03.03.26	PRELIMINARY - ISSUED FOR INFORMATION	CM	ML
02	10.12.25	PRELIMINARY - ISSUED FOR INFORMATION	LDV	ML
01	28.04.25	PRELIMINARY - ISSUED FOR INFORMATION	CM	ML

0 5 10 15m
SCALE 1:250
AT ORIGINAL SIZE (A1)

ADG
T:1300 657 402 E: info@adgce.com W: www.adgce.com
Quality Assurance ISO 9001:2015 | Work Health Safety ISO 45001:2018
Environmental Management ISO 14001:2015

Client: GARDNER RD DEVELOPMENTS PTY LTD
Project Name: 198 & 202 GARDNER ROAD ROCHEDALE, QLD, 4123

Discipline: CIVIL
Status: PRELIMINARY
Designed By: LDV
Checked By: ML
Approved By: ML
Project No.: 25015
Drawn By: LDV
Scale at A1: 1:250

Title: PRELIMINARY EARTHWORKS SITE SECTIONS
Drawing No.: DA301
Revision: 04

PLOT DATE: 5/18/2026 1:58 PM FILENAME: P:\25000\25015\CVL\DWG\DA DWGS\25015_DA301_PRELIMINARY EARTHWORKS SITE SECTIONS.DWG

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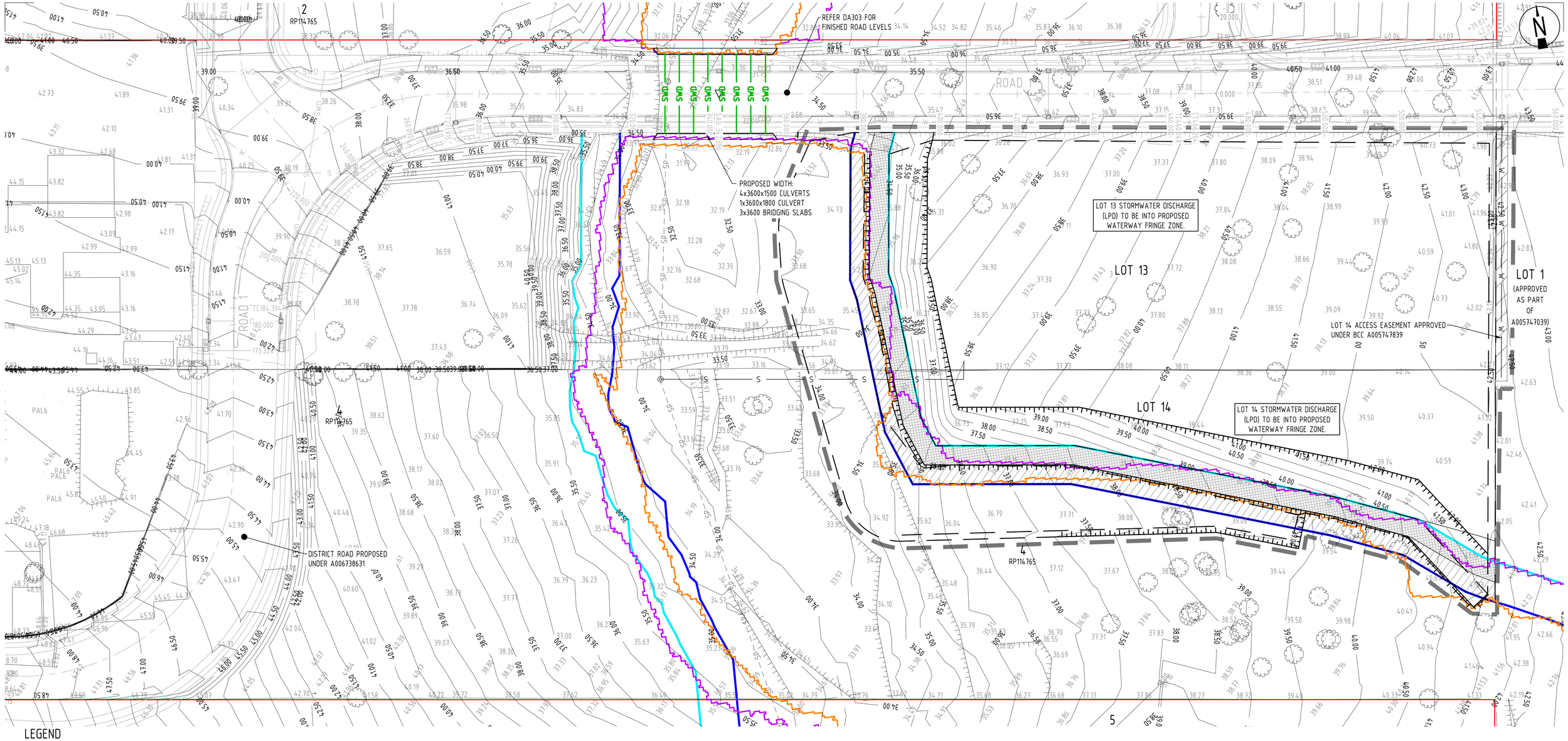

LEGEND

- FINISHED SURFACE CONTOURS
- SITE BOUNDARY
- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- EXISTING NOMINAL KERB LINE
- EXISTING EDGE OF BITUMEN LINE
- EXISTING ROAD CENTERLINE
- EXISTING EDGE OF BUILDING
- EXISTING STORMWATER DRAINAGE
- EXISTING SEWER (RECORDS)
- EXISTING WATER (RECORDS)
- EXISTING OVERHEAD ELECTRICITY
- EXISTING TELECOMMUNICATIONS (RECORDS)
- PREVIOUS STAGE STORMWATER DRAINAGE
- PREVIOUS STAGE WATER MAIN
- PREVIOUS STAGE NOMINAL KERB LINE
- PREVIOUS STAGE ROAD CENTRE LINE
- EXISTING BATTER
- EXISTING FENCE
- PROPOSED ACCESS AREA
- PROPOSED BATTER
- LIMIT OF WORKS
- PROPOSED STORMWATER DRAINAGE
- PROPOSED SEWER MAIN
- PREVIOUS STAGE SEWER MAIN
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- POST DEVELOPMENT 1% AEP FLOOD LINE
- PROPOSED WATERWAY CORRIDOR (SLR) FRINGE (10m)
- PROPOSED WATERWAY CORRIDOR (SLR) CORE (30m MINIMUM)
- PROPOSED EASEMENTS

NOTES

1. FOR ROADWORKS LONGITUDINAL SECTIONS REFER DRG No. DA303
2. FOR ROADWORKS AND DRAINAGE TYPICAL CROSS SECTION REFER DRG No. DA303

ALL DETAILS SHOWN ARE SUBJECT TO FURTHER DETAILED DESIGN

PRELIMINARY
NOT FOR CONSTRUCTION

Rev	Date	Description	By	Chk
04	15.05.26	PRELIMINARY - ISSUED FOR INFORMATION	LDV	ML
03	03.03.26	PRELIMINARY - ISSUED FOR INFORMATION	CM	ML
02	10.12.25	PRELIMINARY - ISSUED FOR INFORMATION	LDV	ML
01	28.04.25	PRELIMINARY - ISSUED FOR INFORMATION	CM	ML

0 10 20 30m
SCALE 1:500
AT ORIGINAL SIZE (A1)

T:1300 657 402 E: info@adgce.com W: www.adgce.com
Quality Assurance ISO 9001:2015 | Work Health Safety ISO 45001:2018
Environmental Management ISO 14001:2015

Client: GARDNER RD DEVELOPMENTS PTY LTD
Project Name: 198 & 202 GARDNER ROAD ROCHEDALE, QLD, 4123

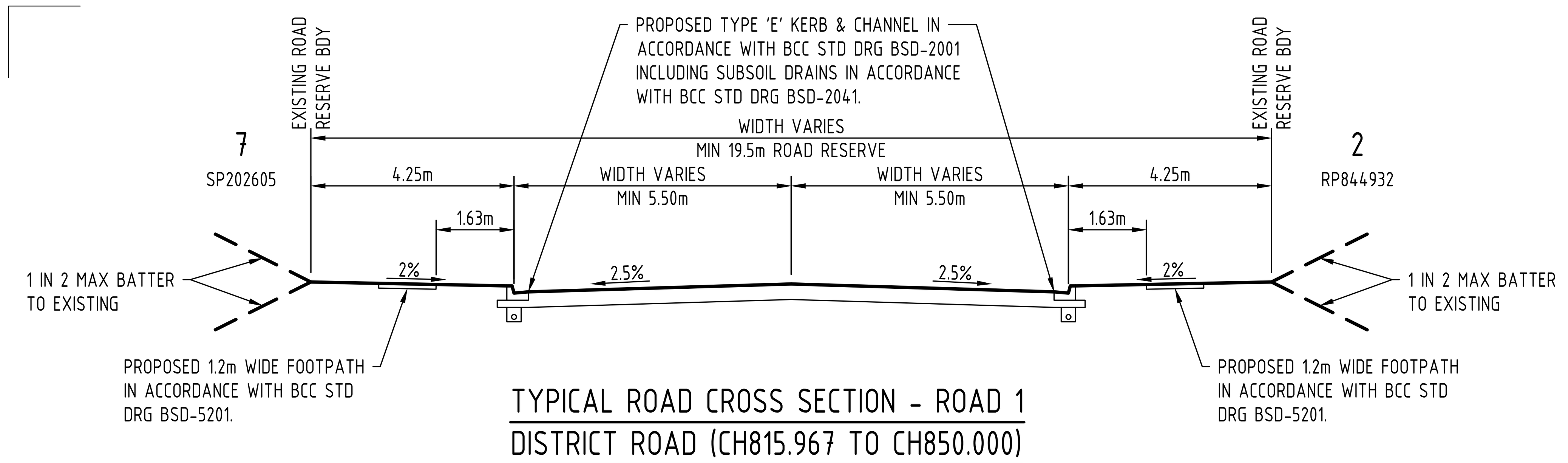
Discipline		Status
CIVIL		PRELIMINARY
Designed By	Checked By	Approved By
LDV	ML	ML
Project No.	Drawn By	Scale at A1
25015	LDV	1:500

Title: PRELIMINARY ROADWORK LAYOUT PLAN

Drawing No.: DA302
Revision: 04

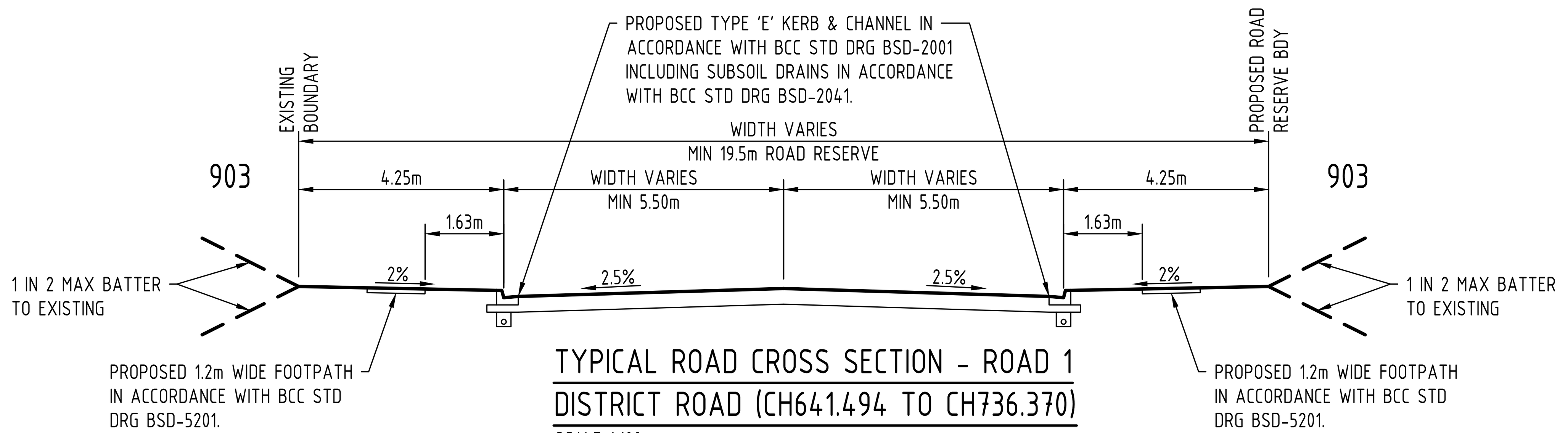
FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100mm

PLOT DATE: 5/20/2026 9:55 AM FILENAME: P:\25000\25015\CIVIL\DWG\DA DWGS\25015_DA302_PRELIMINARY ROADWORK LAYOUT PLAN.DWG



TYPICAL ROAD CROSS SECTION - ROAD 1
DISTRICT ROAD (CH815.967 TO CH850.000)

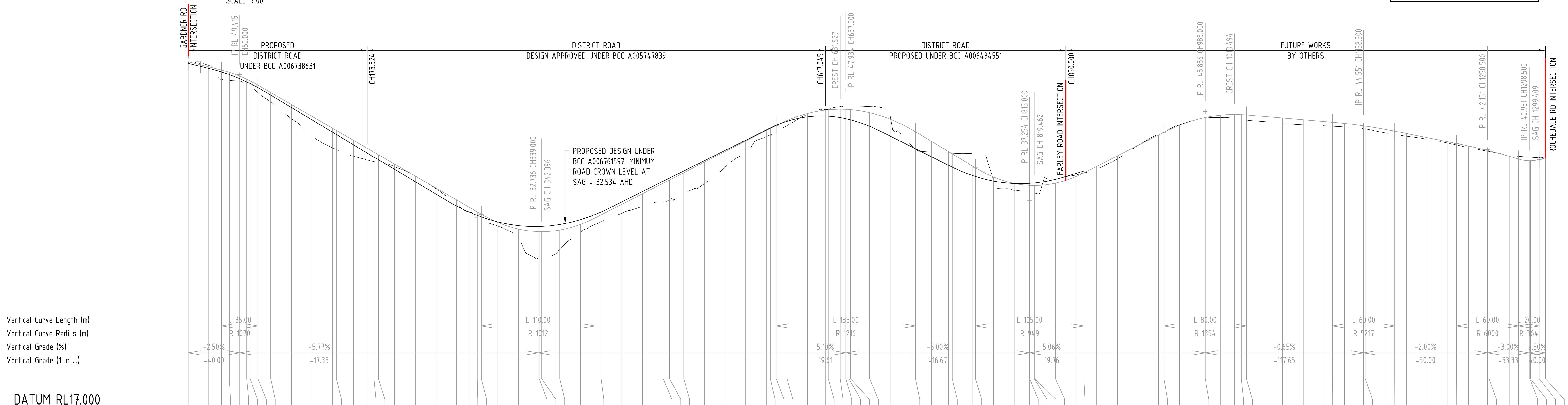
SCALE 1:100



TYPICAL ROAD CROSS SECTION - ROAD 1
DISTRICT ROAD (CH641.494 TO CH736.370)

SCALE 1:100

ALL DETAILS SHOWN ARE SUBJECT TO FURTHER DETAILED DESIGN



DATUM RL17.000

CHAINAGE	CUT / FILL DEPTH	DESIGN LEVELS ON ROAD CL	EXISTING SURFACE ON ROAD CL
0.000	0.079	50.665	50.585
20.000	-0.148	50.165	50.313
32.500	0.885	49.852	48.968
40.000	0.768	49.639	48.871
50.000	0.478	49.272	48.793
56.774	0.592	48.970	48.378
60.000	0.619	48.811	48.193
67.500	0.730	48.405	47.675
80.000	0.893	47.683	46.790
100.000	1.376	46.529	45.153
120.000	1.917	45.375	43.458
140.000	1.896	44.221	42.325
143.477	1.843	44.020	42.177
160.000	1.547	43.066	41.519
173.324	1.139	42.297	41.158
180.000	0.913	41.912	40.999
184.394	0.714	41.658	40.944
200.000	0.241	40.758	40.517
220.000	0.040	39.604	39.564
240.000	0.063	38.449	38.387
260.000	0.421	37.295	36.874
271.915	0.480	36.607	36.127
280.000	0.607	36.141	35.534
284.000	0.547	35.910	35.363
300.000	0.352	35.113	34.760
320.000	0.750	34.473	33.722
339.000	2.646	34.230	31.585
340.000	2.640	34.228	31.587
342.396	2.627	34.225	31.598
360.000	1.818	34.378	32.560
380.000	0.747	34.923	34.177
394.000	0.626	35.541	34.914
400.000	0.672	35.847	35.175
420.000	0.881	36.867	35.985
440.000	1.223	37.887	36.663
460.000	1.817	38.907	37.089
460.048	1.820	38.909	37.090
466.264	1.916	39.226	37.310
480.000	2.081	39.927	37.846
500.000	2.085	40.947	38.861
520.000	1.511	41.967	40.455
540.000	1.083	42.987	41.904
560.000	0.581	44.007	43.425
563.791	0.614	44.200	43.586
569.500	0.595	44.491	43.896
580.000	0.495	44.981	44.487
600.000	0.083	45.664	45.581
617.045	-0.039	45.987	46.026
620.000	-0.035	46.018	46.053
631.527	-0.255	46.073	46.328
637.000	-0.243	46.060	46.303
640.000	-0.231	46.043	46.274
641.494	-0.247	46.032	46.279
660.000	-0.608	45.739	46.348
680.000	-0.334	45.107	45.441
700.000	1.533	44.145	42.612
704.500	1.652	43.884	42.231
720.000	1.030	42.954	41.924
736.370	0.142	41.971	41.829
740.000	-0.060	41.754	41.813
760.000	-1.244	40.554	41.797
762.500	-1.336	40.404	41.740
780.000	0.331	39.515	39.184
800.000	0.700	38.894	38.194
814.705	0.669	38.707	38.038
815.000	0.658	38.705	38.047
819.462	0.733	38.695	37.962
820.000	0.745	38.695	37.950
840.000	-0.523	38.917	39.440
860.000	-0.147	39.560	39.707
867.500	0.013	39.910	39.897
880.000	0.260	40.543	40.282
900.000	0.288	41.555	41.267
920.000	0.006	42.567	42.560
940.000	-0.112	43.579	43.690
945.000	-0.109	43.832	43.941
960.000	-0.042	44.507	44.550
980.000	0.029	45.150	45.121
985.000	0.067	45.265	45.197
1000.000	0.234	45.497	45.263
1013.494	0.394	45.564	45.170
1020.000	0.465	45.549	45.083
1025.000	0.499	45.516	45.016
1040.000	0.501	45.388	44.887
1060.000	0.532	45.218	44.686
1080.000	0.489	45.048	44.559
1100.000	0.406	44.878	44.472
1108.500	0.379	44.806	44.426
1120.000	0.339	44.695	44.356
1138.500	0.278	44.465	44.186
1140.000	0.279	44.443	44.164
1160.000	0.347	44.114	43.767
1168.500	0.328	43.951	43.623
1180.000	0.260	43.721	43.461
1200.000	0.154	43.321	43.167
1220.000	0.121	42.921	42.800
1228.500	0.139	42.751	42.612
1240.000	0.159	42.510	42.351
1258.500	0.067	42.076	42.008
1260.000	0.057	42.038	41.981
1280.000	-0.120	41.500	41.620
1288.500	-0.262	41.251	41.513
1298.500	-0.353	41.088	41.441
1299.409	-0.347	41.087	41.434
1300.000	-0.341	41.088	41.429
1308.500	-0.178	41.201	41.378
1314.530		41.352	

ROAD 1 - LONGITUDINAL SECTION

SCALE HORIZONTAL 1 : 2000
VERTICAL 1 : 200

PRELIMINARY
NOT FOR CONSTRUCTION

Rev	Date	Description	By	Chk
03	15.05.26	PRELIMINARY - ISSUED FOR INFORMATION	LDV	ML
02	10.12.25	PRELIMINARY - ISSUED FOR INFORMATION	LDV	ML
01	28.04.25	PRELIMINARY - ISSUED FOR INFORMATION	CM	ML

SCALE 1:100 (0 1 2 3 4 5m)
AT ORIGINAL SIZE (A1)
SCALE 1:200 VERTICAL (0 50 100m)
(0 2 4 6 8 10m) SCALE 1:2000 HORIZONTAL
AT ORIGINAL SIZE (A1)

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T:1300 657 402 E: info@adgce.com W: www.adgce.com
Quality Assurance ISO 9001:2015 | Work Health Safety ISO 45001:2018
Environmental Management ISO 14001:2015

Client: GARDNER RD DEVELOPMENTS PTY LTD	Discipline: CIVIL		Status: PRELIMINARY
Project Name: 198 & 202 GARDNER ROAD ROCHEDALE, QLD, 4123	Designed By: LDV	Checked By: ML	Approved By: ML
	Project No.: 25015	Drawn By: LDV	Scale at A1: AS SHOWN

Title: PRELIMINARY ROAD 1 LONGITUDINAL AND TYPICAL CROSS SECTION

Drawing No.: DA303 | Revision: 03

FULL SIZE ON ORIGINAL 0 10 20 30 40 50 60 70 80 90 100mm

PLOT DATE: 5/18/2026 1:59 PM FILENAME: P:\25000\25015\CVL\DWG\DA DWGS\25015_DA303_PRELIMINARY ROAD 1 LONGITUDINAL AND TYPICAL CROSS SECTION.DWG

Appendix D
BCC Flood Code Response

Performance outcomes	Acceptable outcomes	Provided Outcome
Section B—If accepted development subject to compliance with identified requirements (acceptable outcomes only) or assessable development other than for a dwelling house or reconfiguring a lot **Note—If development that is accepted development subject to compliance with identified requirements complies with the acceptable outcomes of this part, no further assessment against this code is required.**		
PO3 Development: (a) is compatible with flood hazard in a defined flood event; (b) minimises the risk to people from flood hazard; (c) does not reduce the ability of evacuation resources including emergency services to access and evacuate the site in a flood emergency, with consideration to the scale of the development; (d) minimises impacts on property from flooding; (e) minimises disruption to residents, business or site operations and recovery time due to flooding; (f) minimises the need to rebuild structures after a flood event greater than the defined flood event. Note—Where Table 8.2.11.3.C identifies that a flood risk assessment is required, compliance with this performance outcome can be achieved by submitting a flood risk assessment, which may be included within a flood study, addressing the criteria within this performance solution. Preparing flood risk assessments and flood studies is required to be in accordance with the Flood planning scheme policy. Note—An emergency management plan prepared in	**AO3** Development for a material change of use is identified in Table 8.2.11.3.C as compatible with the flood hazard in the relevant flood planning area.	**The proposed development land use is listed as compatible in accordance with Table 8.2.11.3.C. A further MCU application will be provided for each lot subsequent to the creation of lot 13 and 14.**

accordance with the Flood planning scheme policy, which sets out procedures for evacuation due to flooding may be used to demonstrate compliance with this performance outcome.		
PO4 Development for a park ensures that the design of a park and location of structures and facilities responds to the flood hazard and balances the safety of intended users with: (a) maintaining continuity of operations; (b) impacts of flooding on asset life and ongoing maintenance costs; (c) efficient recovery after flood events; (d) recreational benefits to the city; (e) availability of suitable land within the park.	**AO4.1** Development involving a building or structure in a park complies with the flood planning levels specified in Table 8.2.11.3.D.	**N/A**
	AO4.2 Development involving a building or structure in a park where Table 8.2.11.3.D does not apply: (a) is not located within the 20% AEP flood extent of any creek/waterway or overland flow path; or (b) is located above the 20% AEP flood level of any creek/waterway or overland flow path.	**N/A**
Section C—If for assessable development other than for a dwelling house		
PO5 Development is located and designed to: (a) minimise the risk to people from flood hazard on the site; (b) minimise flood damage to the development and contents of buildings up to the defined flood event; (c) provide suitable amenity; (d) minimise disruption to residents, recovery time and the need to rebuild structures after a flood event up to and including the defined flood event.	**AO5.1** Development complies with the flood planning levels specified in Table 8.2.11.3.D. Note—If located in an area with no Council-derived flood levels such as an overland flow path, a Registered Professional Engineer Queensland with expertise in undertaking flood studies is to derive the applicable flood level and certify that the development meets the required flood planning levels in Table 8.2.11.3.D. The study is to demonstrate that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy.	**The district road approved by BCC Ref A005747839 (with modified sag levels) and proposed lot 13 and 14 comply with the flood planning levels.**

	AO5.2 Development is: (a) not located in the: (i) Brisbane River flood planning area 1, 2a, or 2b sub-categories; (ii) Creek/waterway flood planning area 1 or 2 sub-categories; (iii) Overland flow flood planning area sub-category; or (b) only located in these sub-categories if a Registered Professional Engineer Queensland with expertise in undertaking flood studies certifies that: (i) the development design, siting and any mitigation measures will ensure the development is structurally adequate to resist hydrostatic, hydrodynamic and debris impact loads associated with flooding up to the defined flood event; and (ii) the risk to people is managed to an acceptable level.	**The access road crosses a mapped overland flow path. This report has demonstrated how immunity will be achieved up to and including the 0.2% AEP event.**
PO6 Development involving essential electrical services or a basement storage area is suitably located and designed to ensure public safety and minimise flood recovery and economic consequences of damage during a flood.	**AO6.1** Development ensures that: (a) all areas containing essential electrical services comply with the flood planning levels in Table 8.2.11.3.D; or (b) if a basement contains essential electrical services or a private basement storage area, the basement is a waterproof structure with walls and floors impermeable to the passage of water with all entry points and services located at or above the relevant flood planning level in Table 8.2.11.3.D. Note—A basement storage area does not include a	**N/A**

	bike storage room, change room, building maintenance storage and non-critical electrical services.	
	AO6.2 Development involving a basement that relies on a pumping solution to manage floodwater ingress or for dewatering after a flood provides a secondary pump system with a backup power source for the pump.	**N/A**
PO7 Development does not directly or indirectly create a material adverse impact on flood behaviour or drainage on properties that are upstream, downstream or adjacent to the development.	**AO7.1** Development: (a) does not block, or divert floodwaters for any area affected by creek/waterway or overland flow flooding, excluding storm-tide flooding and Brisbane River flooding sources; or (b) does not result in a material increase in flood level or hydraulic hazard on upstream, downstream or adjacent properties. Note—Compliance with this acceptable solution can be demonstrated by the submission of a flood study by a Registered Professional Engineer of Queensland with expertise in undertaking flood studies demonstrating that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy.	**This flood study demonstrates that the development will not cause unreasonable adverse impacts on flood behaviour or external properties up to and including the 0.2% AEP event. Impacts are limited to an isolated area within an existing local waterway corridor.**
	AO7.2 Development retains existing overland flow paths and does not rely wholly on piped solutions to manage major flows.	**The existing overland flow path has been retained apart from the required culvert crossing.**
	AO7.3 Development which creates a new overland flow path or significantly modifies an existing overland flow path via earthworks does not materially worsen hydraulic hazard on the	**This flood study demonstrates that the development will not cause unreasonable adverse impacts on flood behaviour or external properties up to and including the 0.2% AEP event.**

	site from existing conditions. Note—Compliance with this acceptable solution can be demonstrated by the submission of a flood study by a Registered Professional Engineer of Queensland with expertise in undertaking flood studies demonstrating that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy.	**Impacts are limited to an isolated area within an existing local waterway corridor.**
PO8 Development for filling or excavation in an area affected by creek/waterway flooding does not directly, indirectly or cumulatively cause any material increase in flooding or hydraulic hazard or involve significant redistribution of flood storage from high to lower areas in the floodplain. Note—This can be demonstrated by undertaking earthworks in compliance with the Compensatory earthworks planning scheme policy. Note—This part of the code applies to all development other than a dwelling house and any secondary dwelling which involves filling or excavation, whether or not the development application comprises a separate development application for operational work involving filling or excavation.	**AO8** Development ensures that no filling or excavation greater than 100mm is located in the Creek/waterway flood planning area 1, 2 or 3 sub-categories if contained in the 5% AEP flood extent of any Creek/waterway flood planning area sub-category for which no waterway corridor has been mapped in the Waterway corridors overlay.	**The site is not affected by creek/waterway flooding overlay.**
PO9 Development ensures that the building and site design: (a) maintains the conveyance capacity of existing overland flow paths and creek/waterways; (b) ensures floodwaters and flood debris can pass predominantly unimpeded under a structure or building to minimise property or building damage, including for a flood larger than the defined flood	**AO9.1** Development involving a building undercroft in the Creek/waterway flood planning area sub-categories or the Overland flow flood planning area sub-category: (a) complies with the minimum building undercroft clearance requirements in Table 8.2.11.3.E; (b) not located directly above any part of a waterway corridor as mapped in the Waterway corridors overlay.	**N/A**

event; (c) mitigates flood impacts by ensuring that filling, excavation and location of services are designed to allow for the conveyance of floodwater across the site. Note—The Flood planning scheme policy provides guidance on relevant considerations in determining minimum undercroft clearances and treatment of ground level in undercroft areas where floodwater conveyance is required underneath development.	**AO9.2** Development involving a building undercroft in the Creek/waterway flood planning area sub-categories or the Overland flow flood planning area sub category: (a) has a ground level within the undercroft area that is free draining; (b) does not involve excavation below ground level of more than 300mm within the undercroft area.	**N/A**
PO10 Development for vulnerable uses, difficult to evacuate uses or assembly uses optimises vehicular access and efficient evacuation from the development to parts of the road network unaffected by flood hazard, in order to: (a) protect safety of users and emergency services personnel; (b) support efficient emergency services access and site evacuation with consideration to the scale of development. Note—A flood risk assessment may be required to address the performance outcomes or acceptable solutions which deal with evacuation and isolation arrangements, and the ability to take refuge. The Flood planning scheme policy provides information for undertaking flood risk assessments.	**AO10** Development for vulnerable uses, difficult to evacuate uses or assembly uses: (a) is not isolated in any event up to the relevant flood planning level specified in Table 8.2.11.3.L; or (b) has direct vehicle access to a critical route or interim critical route in the Critical infrastructure and movement network overlay for evacuation in a flood; or (c) can achieve vehicular evacuation to a suitable flood-free location. Note—A suitable flood-free location is of a size and nature sufficient to provide for the size and characteristics of the population likely to need evacuation to that area.	**Flood free access from the site is available to Gardner Road via the new district road approved under BCC Ref A005747839.**
PO11 Development has access which, having regard to hydraulic hazard, provides for safe vehicular and pedestrian movement and emergency services access to adjoining roads.	**AO11.1** Development provides an access or driveway into the site which is: (a) trafficable during the defined flood event; (b) not located in the Creek/waterway flood planning area 1 sub-category; (c) not located in the Overland flow flood	**Flood free access from the site is available to Gardner Road via the new district road approved under BCC Ref A005747839.**

	planning area sub-category if the hydraulic hazard is unsafe in the defined flood event; (d) the access or driveway is not inundated by a 10% AEP flood.	
	AO11.2 Development located in the Creek/waterway flood planning area 1, 2, 3 or 4 sub-categories locates any disabled access in the highest part of the site. Note—explanation of hydraulic hazard provided in the Flood planning scheme policy.	**The site is not affected by creek/waterway flooding overlay.**
PO12 Development involving a new road, a bridge or culvert is designed to minimise impacts to flood behaviour, minimise disruption to traffic during a flood and allow for emergency access.	**AO12** Development involving a new road complies with the flood planning levels in Table 8.2.11.3.F.	**The proposed roads within the development have been designed to be above the 2% AEP flood level.**
PO13 Development for pedestrian and cyclist paths: (a) provides a suitable level of trafficability; (b) manages the impacts of flooding on asset life and ongoing maintenance costs; (c) balances route availability with recreational and transport connectivity benefits to the city.	**AO13.1** Development for cyclist and pedestrian facilities other than on public roads, including those traversing through a park and adjacent to a watercourse and overland flow path, are located above the 39% AEP (2 year ARI) flood immunity from all flooding sources. Note—If the site is subject to more than one type of flooding, the requirement that affords the greatest level of protection will apply.	**N/A**
	AO13.2 All new on-road cyclist and pedestrian facilities comply with the flood planning levels and trafficability standards for the applicable category of road in Table 8.2.11.3.F or Table 8.2.11.3.K.	**N/A**

PO14 Development which increases the residential population within the Brisbane River flood planning area sub-categories minimises the risk to people in all flood events with consideration to flood hazard, including warning time.	**AO14** Development in the Brisbane River flood planning area sub-categories in areas where the residential flood level is greater than 12.8m AHD involving: (a) an increase in the number of residential dwellings; or (b) additional residential lots is not subject to an unsafe hydraulic hazard in the 0.2% AEP flood event. Note—Explanation of a hydraulic hazard is provided in the Flood planning scheme policy.	**N/A**
	AO18.3 Development protects the conveyance of flood hazard area by providing an easement over the: a. 2% AEP flood extent for overland flow flooding; b. 1% AEP flood extent for creek/waterway flooding.	

Brisbane
584 Milton Road, Cnr Sylvan Rd
Toowong, QLD 4066
PO Box 1492
Toowong BC, QLD 4066
Phone: +61 07 3300 8800
Fax: +61 07 3871 2266
Email: bris@adgce.com

Sunshine Coast
Level 3, 2 Emporio Place
Maroochydore QLD 4558
PO Box 5014
Maroochydore BC, QLD 4558
Phone: +61 07 5444 0400
Fax: +61 07 5444 0536
Email: info@adgce.com

Gold Coast
Suite 201, Lvl 1, 1 Short Street
Southport, QLD 4215
PO Box 208
Southport, QLD 4215
Phone: +61 07 5552 4700
Fax: +61 07 5528 4723
Email: info@adgce.com

Melbourne
22 - 204/218 Dryburgh Street
North Melbourne, Vic 3051
Phone: +61 03 9269 6300
Fax: +61 03 9328 4599
Email: info@adgce.com

Perth
51 Forrest Street
Subiaco WA 6008
PO Box 443
Subiaco WA 6904
Phone: +61 08 9217 0900
Email: info@adgce.com

Darwin
Suite 4, Lvl 1, 5 Edmunds Street
Darwin, NT 0800
GPO Box 2422
Darwin, NT 0801
Phone: +61 08 8944 6300
Fax: +61 08 8981 9887
Email: info@adgce.com

Sydney
Suite 401, 161 Walker Street,
North Sydney NSW 2060
Phone: +61 02 8908 5400
Email: info@adgce.com