NORTHROP



CIVIL ENGINEERING REPORT: ENGINEERING SERVICES REPORT

391-397 Park Ridge Road

391-397 Park Ridge Road, Park Ridge QLD 4125

PREPARED FOR
Park Ridge Unit Trust

Ref: BN213636
Rev: B
Date: 28/07/2023

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Document Control

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Approved By:	Graham Coles - 8050
Approver Signature:	

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B	28.07.2023	Issue for Approval	R.Huang	R.Huang	G.Coles
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Glossary

Term	Definition
ADP	Area Development Plan
ARI	Average Recurrence Interval
EP	Equivalent Persons
ESCP	Erosions and Sediment Control Plan
ESR	Engineering Services Report
ET	Equivalent Tenants
LCC	Logan City Council
QUDM	Queensland Urban Drainage Manual
SBSMP	Site Based Stormwater Management Plan
SQID	Stormwater Quality Improvement Device
WBD	Water By Design

Code Response Tables

The site is subject to several property constrains as identified in Councils overlay zoning (Refer to Appendix F). Below is a summary of the overlay constraints identified for the site relevant to this report. Code response table is included in Appendix E.

Overlay Maps Category	Comment
Filling and Excavation Code	Refer to Section 4.1.
Infrastructure Design Code	Refer to Section 5, 6, 7, 8, 9, 10 and 11.
Reconfiguring a Lot	Refer to Appendix E

Executive Summary

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Park Ridge Unit Trust to prepare an Engineering Services Report (ESR) for a Development Application submission to Logan City Council and any nominated referral agency for the residential subdivision located at 391-397 Park Ridge Road, Park Ridge QLD 4125 (the site). The proposed development will deliver 59 residential lots with associated road infrastructure and open space.

This ESR provides advice on engineering services strategy for the proposed residential subdivision and the engineering planning issues associated with the development application. This report demonstrates that the proposed development can connect to local stormwater, potable water, sewerage reticulation, electricity, telecommunications and transport infrastructure. The servicing strategy for the development is summarised below:

- **Site Access** – Road connections to future development parcels have been allowed for with the future development along the east and west assumed to ultimately connect to Lindenthal Road and Weedbrook Street, respectively. The internal driveways and access roads to the site have been designed in accordance with Logan City Council Land Development Guidelines.
- **Stormwater Management** – The existing site has a peak running through the centre which splits the site into north and south catchments. The existing northern catchment overland flows to the roadside swale drain running along Park Ridge Road. The existing southern catchment overland flows to the adjacent waterway running along the southern boundary. The proposed development will connect to the external stormwater infrastructure located on Park Ridge Road to the north. The southern portion of the site will discharge to the southern waterway via the stormwater management infrastructure. Stormwater quantity and quality for the development will be managed through two separate bioretention basins. An SBSMP for the development has been prepared by Northrop (BN213636_SBSMP001_B) that demonstrates non-worsening within the external stormwater system by attenuating flows using an onsite detention (OSD) basin. Stormwater quality is addressed by introducing bioretention components to the base of each basin.
- **Water Supply** – The development lot is in a high-level zone which require constructing a new truck main from Lindenthal Road intersection to the site along Park Ridge Road. The proposed water connection point will be directly from the trunk water with an PRV to be built on site. It is expected that the proposed development loads have been included in the regional model.
- **Sewer Reticulation** – The development internal sewer networking will extend the existing sewer main located within Park Ridge Road to the proposed development to service the northern sewer catchment. Provision has been made for the internal sewer network within adjacent developments to service the southern sewer catchments. Refer C402 demonstrates the proposed sewer main provides controls for the future upstream catchment. It is expected that the proposed development loads will not increase from the projected loads for the site.
- **Electrical Supply –** Connection to Energex's existing electrical infrastructure surrounding the site at multiple points will be made via underground cables
- **Gas Supply –** Existing gas infrastructure in the vicinity of the site was not encountered in the preliminary investigations informing this report.
- **Telecommunications –** Connection to existing NBN Telecommunications infrastructure surrounding the site will be made via underground cables.

1. Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Park Ridge Unit Trust to develop an Engineering Services Report (ESR) in support of a Development Application submission to Logan City Council and any nominated referral agencies. The proposed residential subdivision is located at 391-397 Park Ridge Road, Park Ridge QLD 4125 , the full site details are located in Table 1-1 below. The development proposes to reconfigure the existing lot into a subdivision of 59 residential lots with associated road infrastructure and open space.

The purpose of this ESR is to provide advice on the engineering servicing strategy for the proposed development regarding earthworks, roadworks, stormwater management (quality, quantity and flooding), sewerage, water supply, electricity and communications. The required infrastructure will be subject to the conditions attached to the Development Approval to be provided by Council and any nominated referral agencies.

Table 1-1 - Property Details

Category	Description
Site Address	391-397 Park Ridge Road, Park Ridge QLD 4125
Lot Title	Lot 20 RP94215
Total Site Area	4.5 Ha
Proposed Land Use	Residential Subdivision

1.1. Related Reports and Documents

This report is to be read in conjunction with the following supporting and reference documents:

- Site Based Stormwater Management Plan Report by Northrop. Report No: BN213636_SBSMP001_A

2. Site Context and Existing Characteristics

The subject site is located at 391-397 Park Ridge Road, Park Ridge QLD 4125 . The existing subject site comprises of one residential property. The site is currently bound by:

- Park Ridge Road along the northern boundary
- Lot 2 RP164124 to the West
- Lot 19 RP94215 to the East

In its current state the subject site is undeveloped with medium vegetated land and trees cover. Figure 2-1 below illustrates the site location and existing site characteristics.

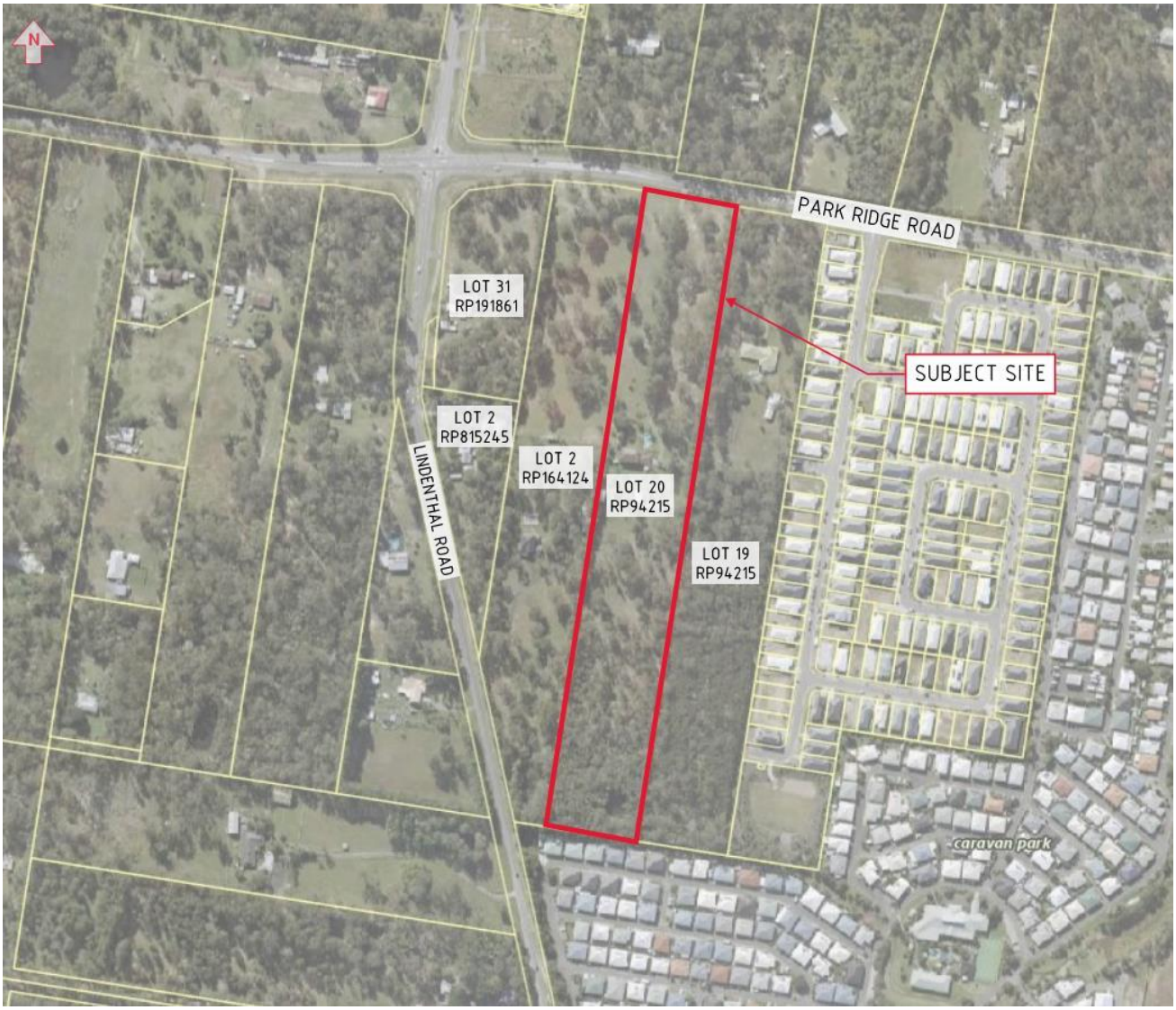


Figure 2-1 - Site Locality (QLD Globe, 2022)

3. Lot Configuration

The proposed residential subdivision involves the construction of 59 residential lots with associated road infrastructure and open space. The proposed architectural layout of the development prepared by Steve Cooper & Associates Pty Ltd is shown below in Figure 3-1. Architectural drawings are included in Appendix D.

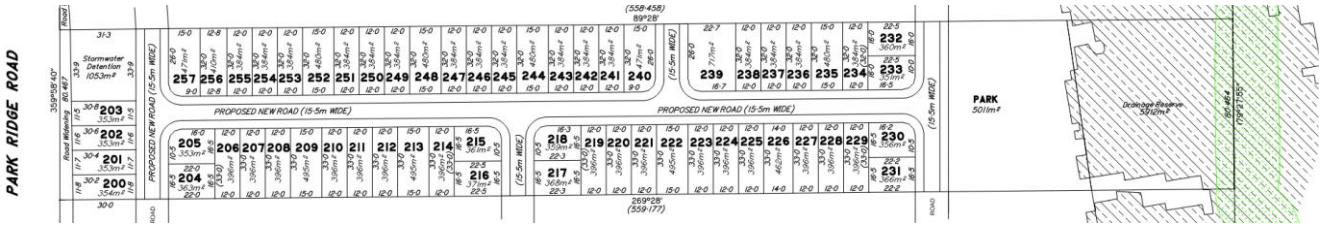


Figure 3-1 - Proposed Development (Steve Cooper & Associates Pty Ltd, 2022)

4. Earthworks

4.1. Bulk Earthworks

The development will require bulk earthworks cut/fill operations to achieve the desired surface levels to accommodate for the development and ensure it interfaces with the existing road reserves.

Preliminary Bulk Earthworks Plans have been included in Appendix A. Detailed bulk earthwork modelling will be undertaken as part of Operational Works (OPW) applications.

4.2. Acid Sulfate Soil Assessment

Figure 4-1 below illustrates the Acid Sulfate Soil (ASS) overlay accessed from the LCC's PD Hub Interactive Mapping. Figure 4-1 indicates no Acid Sulphate Soil mapping is present within the site boundary. Geotechnical testing at the site will likely be conducted in the future to confirm this assessment.



Figure 4-1 – LCC Acid Sulfate Soils Overlay (Source: LCC Pd Hub Interactive Map,

5. Roads and Access

Several vehicular access points are proposed for the development. The development will be accessed via a network of urban access streets (UAS) that traverse the development and link with the surrounding collector network. The main vehicle access points from the precinct will be from road connections to future development parcels to the east and to the west have been allowed for with future development in the east and west assumed to ultimately connect to Weedbrook Street and Lindenthal Road.

All road reserves and pedestrian access areas will be designed in accordance with Logan City Council Land Development Guideline requirements.

The access points to the site are illustrated below in Figure 5-1.

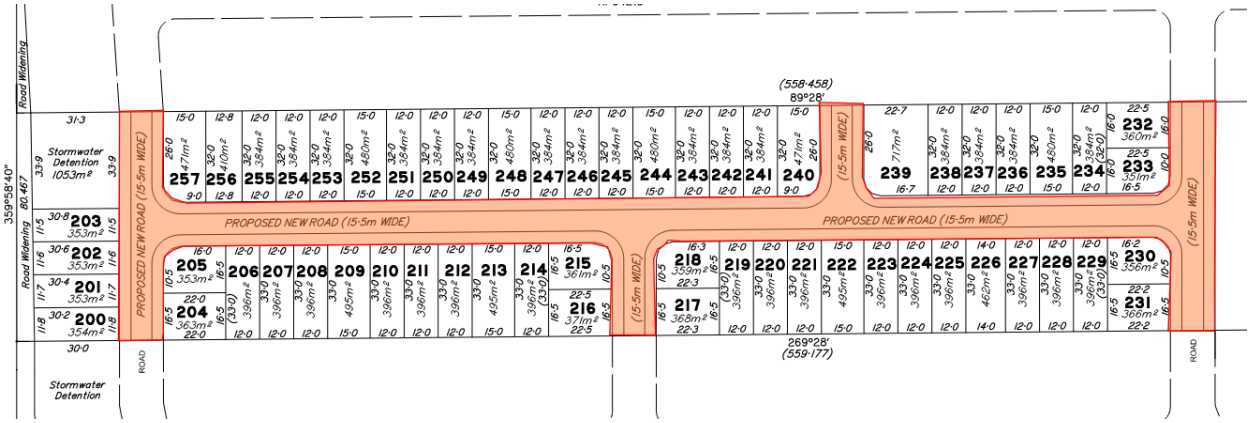


Figure 5-1 - Proposed Site Access

6. Stormwater Drainage

A SBSMP (BN213636_SBSMP001_B) has been prepared by Northrop Consulting Engineers. The report addresses the stormwater quality and quantity management scheme for the proposed development and should be referred to for full details of the stormwater management strategy. A brief summary of the proposed stormwater strategy is provided below.

6.1. Existing Stormwater Drainage Scheme

The existing lot is currently a rural residential lot comprising primarily of sparse to thick vegetation with internal drainage swales and a dam on the southern border. There is a peak running through the centre of the proposed site with the site grading to the north and south at grades between 3-5%. The northern portion of the site is captured by the roadside swale running along Park Ridge Road. The southern portion of the site flows to the watercourse running along the southern boundary.

The existing lawful point of discharge for the site is the roadside swale located on Park Ridge Road and the waterway running along the southern boundary. All flows generated from the site will overland flow towards each Lawful Point of Discharge.

6.2. Proposed Stormwater Management Objectives

The stormwater management objectives that apply to the site have been defined in accordance with QUDM and The Logan Planning Scheme 2015 Version 5.1. The stormwater objectives are:

- Avoid the creation of nuisance flow or hazard problems
- Protect the quality of surface and ground waters during construction and operation of new development
- Maintain the natural hydrologic behaviour of catchments
- Protect existing natural features and ecological processes
- Integrate stormwater management infrastructure carefully in the urban and natural landscape.

The achievement of these objectives is summarised in the following section of this report. Reference should also be made to the SBSMP prepared for the development.

6.3. Proposed Stormwater Drainage Infrastructure

The proposed development will introduce a new internal pit and pipe system sized to capture the minor 10-year ARI event. All other events above the minor event will be conveyed overland within the road reserve. Flows will discharge towards the bioretention basin located on the north and south boundaries of the subject site. Each bioretention will discharge to the existing LPODs mentioned above in Section 6.1.

Stormwater quantity and quality modelling has been prepared for the proposed development to demonstrate compliance with the objectives defined above in Section 6.2 using an above-ground bio-basin. The bio-basin has been sized to ensure the is no actionable nuisance in the external stormwater system as a result of the proposed development. Stormwater quality is implemented in the basins by adding a bioretention component to the base of the basin to ensure the stormwater quality objectives are achieved prior to discharge from the site.

Refer to Northrop Consulting Engineers SBSMP (BN213636_SBSMP001_B) for more details.

6.4. Flood Management

The southern portion of the proposed subject site falls within LCC's Flood Overlay, shown below in Figure 6-1. The proposed development does not propose any major works within the flood overlay (refer to Appendix A).

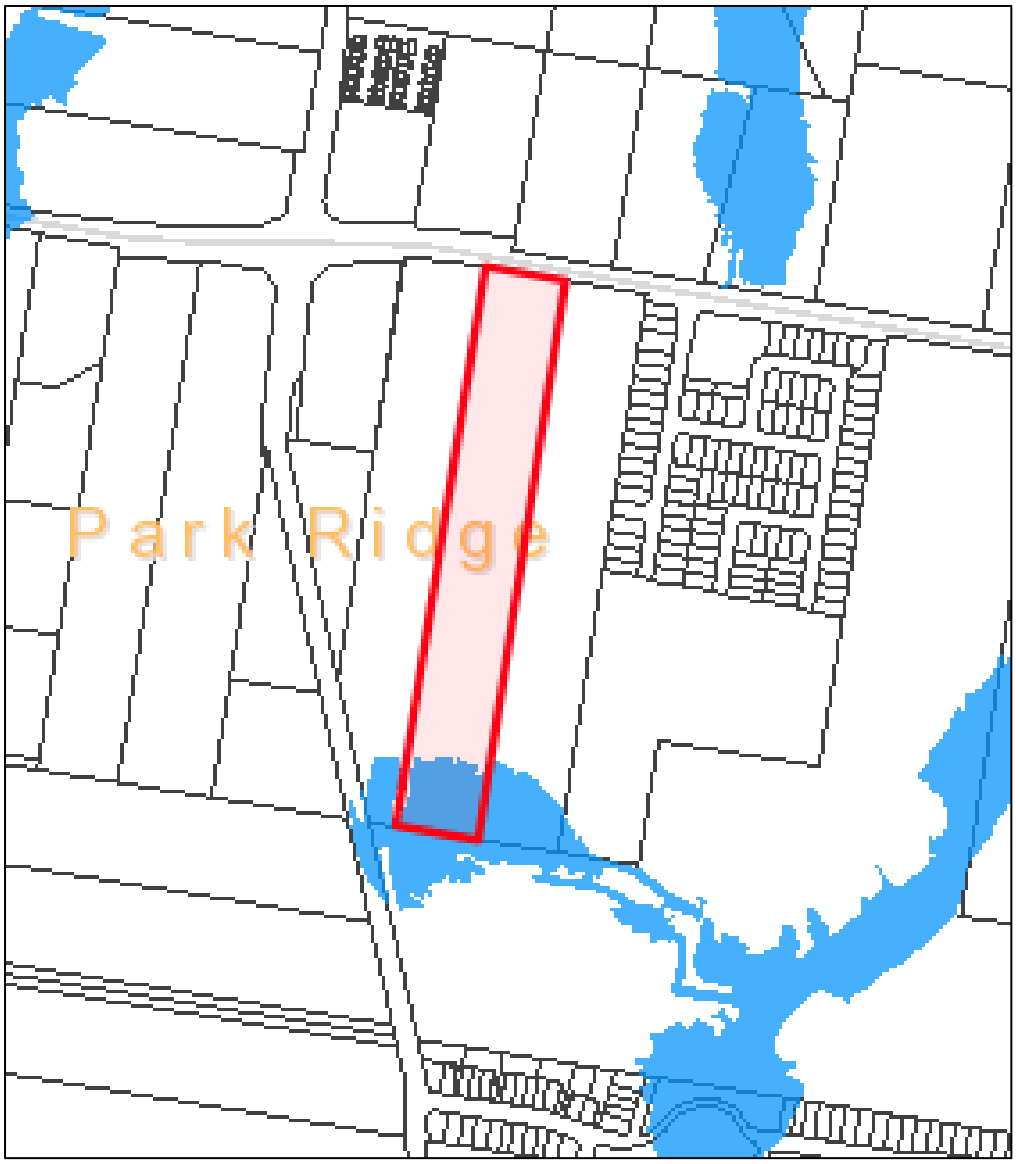


Figure 6-1-1 - Flood mapping overlay from LCC's Pd Hub Interactive Map, 2022

7. Water Supply

7.1. Existing Water Supply Infrastructure

The following existing water mains have been identified near the site based on detailed site survey (refer Appendix B), DBYD search (Refer to Appendix C):

- Existing Water main located on northern side of Park Ridge Road
- Existing Water Main located within Weedbrook Street to the east

7.2. Proposed Water Supply Infrastructure

The water supply strategy involves connecting all lots to council water reticulation via metered connection to an extension of Council Infrastructure through the proposed road reserve.

It is proposed that the existing water main located within Weedbrook Road will be extended into the proposed development site. It is possible that this extension will be triggered and delivered by other development within this locality prior to the subject development being progressed, so its timing is subject to the sequence of development east/west of the subject site.

Refer to Concept Servicing Plan as shown within Appendix A. The internal water reticulation network for the development will be designed as part of future Operational Works Applications for the site. At this stage it is envisaged that the internal works would include DN100/150 water mains within the internal network.

The proposed development connection locations are detailed on the engineering drawings included in Appendix A.

8. Sewerage Reticulation

8.1. Existing Sewer Reticulation

The following existing sewer mains have been identified near the site based on detailed site survey (refer Appendix B), DBYD search (Refer to Appendix C):

- Existing Sewer trunk main located on Park Ridge Road, running along the northern site boundary
- Existing Sewer Main located within Weedbrook Road east to the site

8.2. Proposed Sewer Reticulation

It is anticipated that the existing sewer main located within Park Ridge Road will be extended into the site to connect the proposed development to the existing sewer network.

The site will connect into this main in the north-east of the site. It is envisaged that a DN150 sewer network will be required within the development area to service the northern sewer catchment from the road reserve. Provision has been made for the internal sewer network to be extended to service the upstream development catchments. Refer C402 demonstrates the proposed sewer main provides controls for the future upstream catchment. It is expected that the proposed development loads will not increase from the projected loads for the site.

The connection locations are detailed on the engineering drawings included in Appendix A. The internal wastewater network will form part of the design required for the Building Application approval.

9. Electrical Supply

Existing underground and above-ground power lines have been located via a Dial Before You Dig (DBYD) search (Refer to Appendix C). Electrical cables of voltage <33kV have been located within all existing road reserves bounding the development site.

Connections for the proposed development will require an extension of the electrical cables of voltage <33kV located north of the site within the adjacent road reserves. The proposed development is required to incorporate low-voltage electricity supply to all facilities within the development to comply with Council and Energex legislation.

10. Gas Supply

The DBYD search information (Refer to Appendix C) did not return any existing gas services in the vicinity of the development site.

Should gas services be required for the development, connection and extension requirements shall be undertaken by a specialist consultant and will form part of the future building works applications to both APA and Council.

11. Telecommunications

Telecommunication services have been identified within all road reserves bounding the north and east of the subject site including NBN services within the existing site itself. It is proposed to utilise this existing surrounding infrastructure to provide telecommunication services to the proposed development.

Connection from the proposed development to the above-mentioned services will be undertaken by a specialist consultant and will form part of the future building works applications to both appropriate Telecommunications entity and LCC.

12. Conclusion

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Park Ridge Unit Trust to prepare an Engineering Services Report (ESR) for Development Application (DA) for Development Application submission to Logan City Council (Council) and any nominated referral agency for an residential subdivision located at 391-397 Park Ridge Road, Park Ridge QLD 4125 . The proposed development will deliver up 59 residential lots with associated road infrastructure and open space.

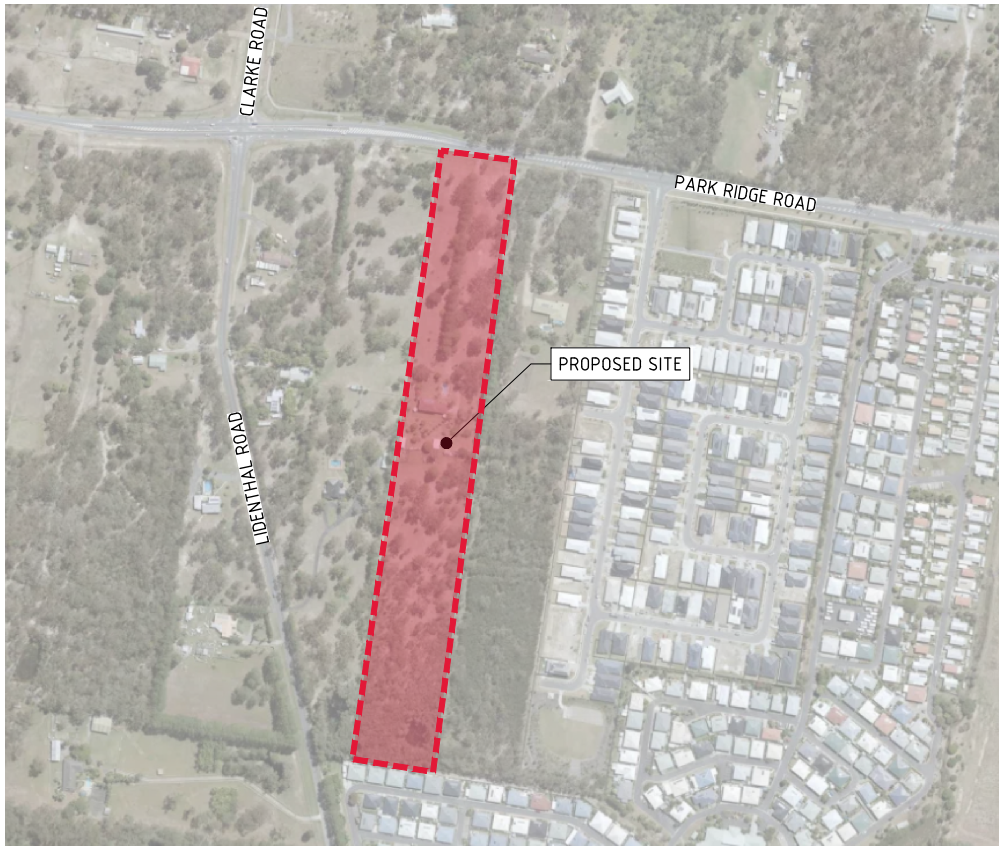
This report demonstrates that the proposed development can connect to local stormwater, potable water, sewerage reticulation, electrical, telecommunications and transport infrastructure. The proposed servicing strategy is summarised below:

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- **Sewer Reticulation** – The development internal sewer networking will extend the existing sewer main located within Park Ridge Road to the proposed development to service the northern sewer catchment. Provision has been made for the internal sewer network within adjacent developments to service the southern sewer catchments. Refer C402 demonstrates the proposed sewer main provides controls for the future upstream catchment. It is expected that the proposed development loads will not increase from the projected loads for the site.
- **Electrical Supply –** Connection to Energex's existing electrical infrastructure surrounding the site at multiple points will be made via underground cables
- **Gas Supply –** Existing gas infrastructure in the vicinity of the site was not encountered in the preliminary investigations informing this report.
- **Telecommunications –** Connection to existing NBN Telecommunications infrastructure surrounding the site will be made via underground cables.

Appendix A – Civil Engineering Plans

57 LOT RESIDENTIAL SUBDIVISION

391-397 PARK RIDGE RD, PARK RIDGE QLD 4125



SOURCE : NMETROMAP.COM.AU (©2021)

DRAWING SCHEDULE

DWG NUMBER	DWG TITLE
GENERAL	
C001	COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE
C005	EXISTING SURVEY
EARTHWORKS	
C101	PRELIMINARY BULK EARTHWORKS LAYOUT PLAN SHEET 1 OF 4
C102	PRELIMINARY BULK EARTHWORKS LAYOUT PLAN SHEET 2 OF 4
C103	PRELIMINARY BULK EARTHWORKS LAYOUT PLAN SHEET 3 OF 4
C104	PRELIMINARY BULK EARTHWORKS LAYOUT PLAN SHEET 4 OF 4
C111	PRELIMINARY BULK EARTHWORKS SECTION SHEET 1 OF 3
C112	PRELIMINARY BULK EARTHWORKS SECTION SHEET 2 OF 3
C113	PRELIMINARY BULK EARTHWORKS SECTION SHEET 3 OF 3
ROADWORKS AND DRAINAGE	
C211	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 1 OF 4
C212	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 2 OF 4
C213	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 3 OF 4
C214	ROADWORKS AND DRAINAGE LAYOUT PLAN SHEET 4 OF 4
C221	PRELIMINARY ROAD LONG SECTION SHEET 1 OF 2
C222	PRELIMINARY ROAD LONG SECTION SHEET 2 OF 2
C291	VEHICLE TURN PATH LAYOUT PLAN
C310	STORMWATER CATCHMENT KEY PLAN
C381	PRELIMINARY BIO-BASIN LAYOUT PLAN SHEET 1 OF 3
C382	PRELIMINARY BIO-BASIN LAYOUT PLAN SHEET 2 OF 3
C383	PRELIMINARY BIO-BASIN LAYOUT PLAN SHEET 3 OF 3
SEWER AND WATER	
C401	SEWER AND WATER RETICULATION LAYOUT PLAN SHEET 1 OF 2
C402	SEWER AND WATER RETICULATION LAYOUT PLAN SHEET 2 OF 2

DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ
JOB MANAGER: R.HUANG
VERIFIER:

FOR APPROVAL

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
2	ISSUED FOR APPROVAL	CL	GC	RH	01.08.23

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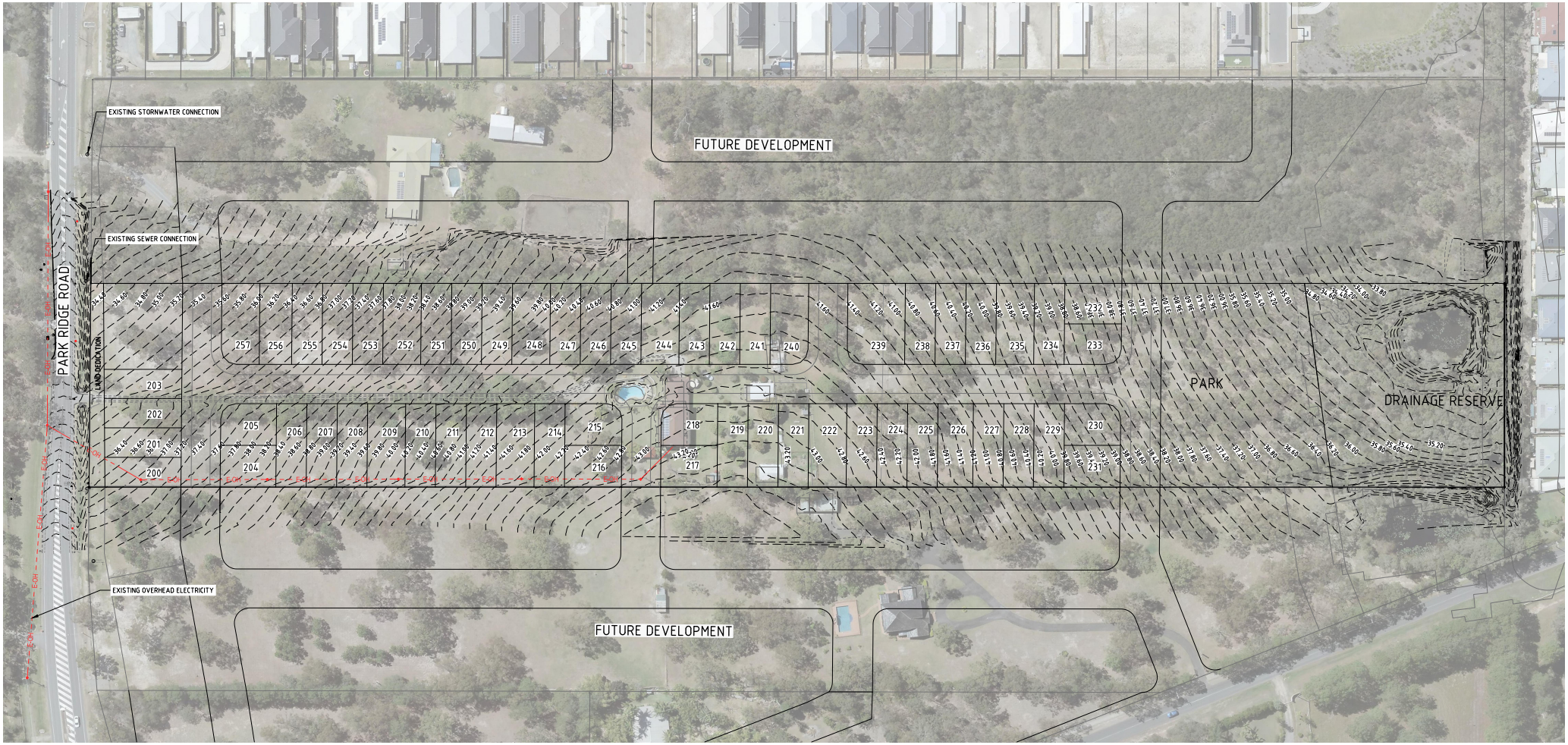
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ABN 81 094 433 100

PROJECT: 57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT 391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE

JOB NUMBER: BN213636
DRAWING NUMBER: C001
REVISION: 2
DRAWING SHEET SIZE = A1



NOTES

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4. NO WORK SHALL BE CARRIED OUT WITHIN 3 METRES OF ANY EXISTING SERVICES WITHOUT PRIOR RECORDED CONSULTATION WITH THE RELEVANT AUTHORITY.
5. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH & EXTENT OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
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7. ALL EXISTING SERVICES & STRUCTURES ARE TO BE MAINTAINED IN GOOD ORDER FOR THE DURATION OF THE CONTRACT & WHERE RELOCATION IS REQUIRED, REFER SPECIFICATION.

FOR APPROVAL

DRAWN: CLOPEZ
DESIGNED: R.MITCHELL
JOB MANAGER: R.HUANG
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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ABN 81 094 433 100

PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
EXISTING SURVEY

JOB NUMBER **BN213636**
DRAWING NUMBER **C005**
REVISION **2**
DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED BULK EARTHWORKS CONTOURS (0.2m)
- EXISTING SURFACE CONTOURS
- PROPOSED RETAINING WALL CONCRETE SLEEPER
- STAGE BOUNDARY
- EARTHWORKS CUT AREA
- EARTHWORKS FILL AREA



FIRE ANT TREATMENT ZONE

MOVEMENT OF MATERIAL SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF AGRICULTURE AND FISHERIES ACTS AND REGULATIONS. FOR MORE INFORMATION CALL BIOSECURITIES QUEENSLAND ON 13 25 23 OR VISIT WWW.DAF.QLD.GOV.AU FOR MORE INFORMATION.

FOR APPROVAL

DRAWN: C.LOPEZ
DESIGNED: R.MITCHELL
JOB MANAGER: R.HUANG
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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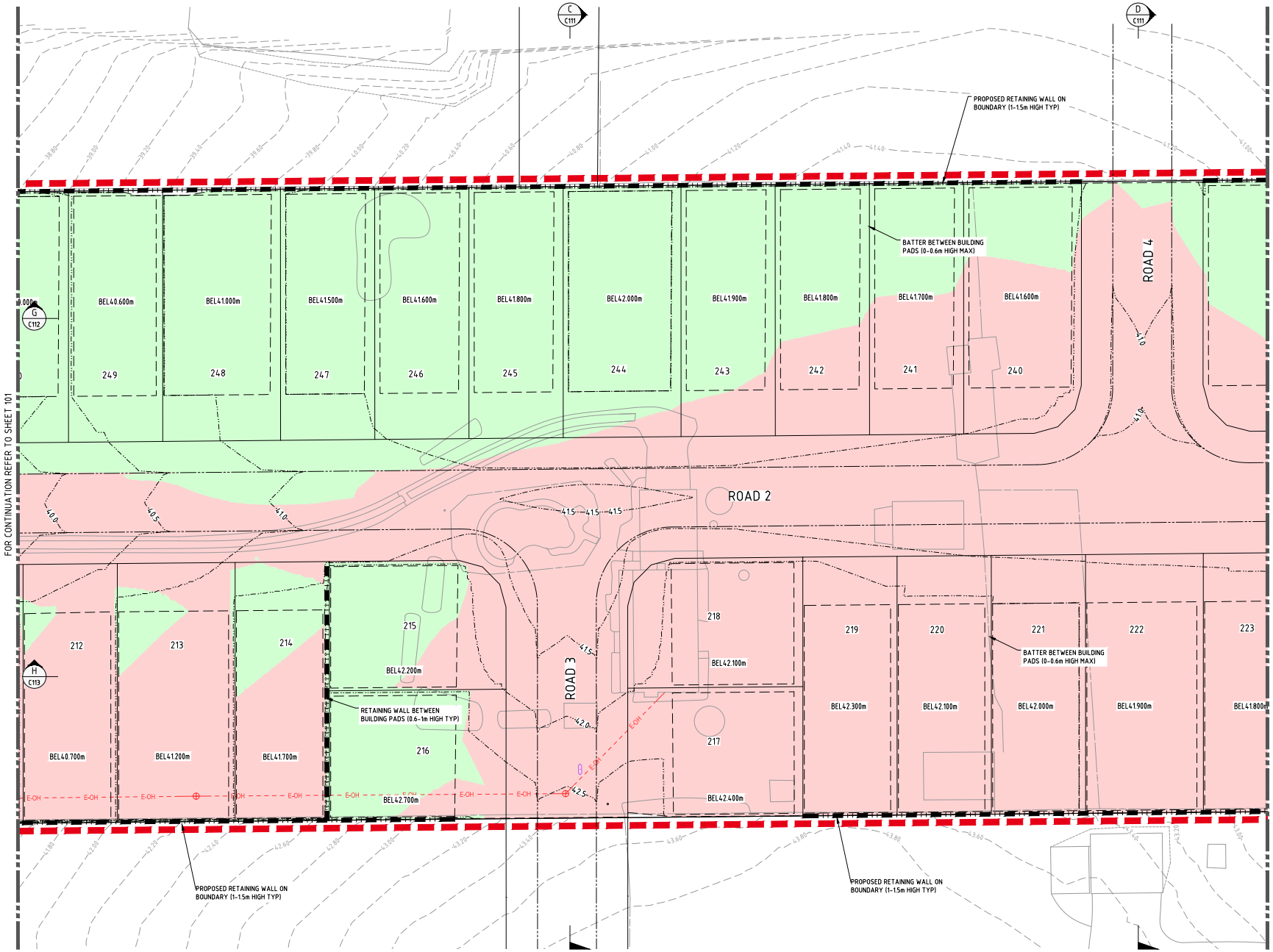
PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
PRELIMINARY BULK EARTHWORKS LAYOUT PLAN SHEET 1 OF 4

JOB NUMBER
BN213636

DRAWING NUMBER	REVISION
C101	2

DRAWING SHEET SIZE = A1





FIRE ANT TREATMENT ZONE

MOVEMENT OF MATERIAL SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF AGRICULTURE AND FISHERIES ACTS AND REGULATIONS. FOR MORE INFORMATION CALL BIOSECURITIES QUEENSLAND ON 13 25 23 OR VISIT WWW.DAF.QLD.GOV.AU FOR MORE INFORMATION.

FOR APPROVAL

DRAWN: C.LOPEZ
DESIGNED: R.MITCHELL
JOB MANAGER: R.HUANG
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
2	ISSUED FOR APPROVAL	CL	GC	RH	01.08.23

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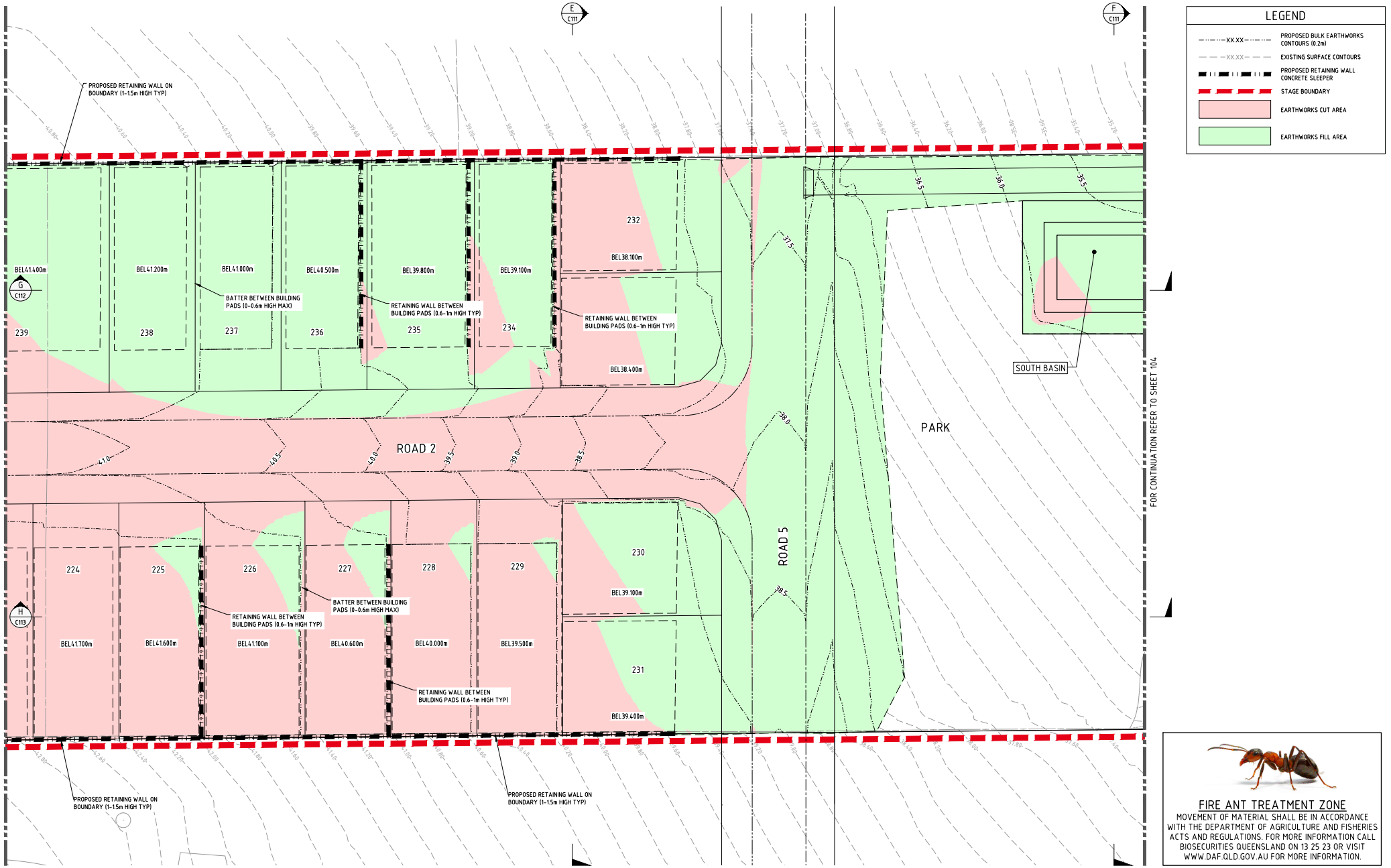
PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
PRELIMINARY BULK EARTHWORKS LAYOUT PLAN SHEET 2 OF 4

JOB NUMBER
BN213636

DRAWING NUMBER	REVISION
C102	2

DRAWING SHEET SIZE = A1



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FOR APPROVAL

DRAWN: C.LOPEZ
DESIGNED: R.MITCHELL
JOB MANAGER: R.HUANG
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
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PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
PRELIMINARY BULK EARTHWORKS LAYOUT PLAN SHEET 3 OF 4

JOB NUMBER **BN213636**
DRAWING NUMBER **C103**
REVISION **2**
DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED BULK EARTHWORKS CONTOURS (0.2m) — XX.XX
- EXISTING SURFACE CONTOURS — XX.XX
- PROPOSED RETAINING WALL CONCRETE SLEEPER
- STAGE BOUNDARY
- EARTHWORKS CUT AREA
- EARTHWORKS FILL AREA



FIRE ANT TREATMENT ZONE

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BULK EARTHWORKS VOLUME SUMMARY

DESCRIPTION	2D AREA (m^2)	CUT (m^3)	FILL (m^3)	NET (m^3)
Volume Topsoil 150Strip	36331.708	5449.756	0.000	5449.756<Cut>
Volume Earthworks Calculations	36331.708	9165.271	8867.930	297.341<Cut>

FOR APPROVAL

DRAWN: CLOPEZ
DESIGNED: R.MITCHELL
JOB MANAGER: R.HUANG
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
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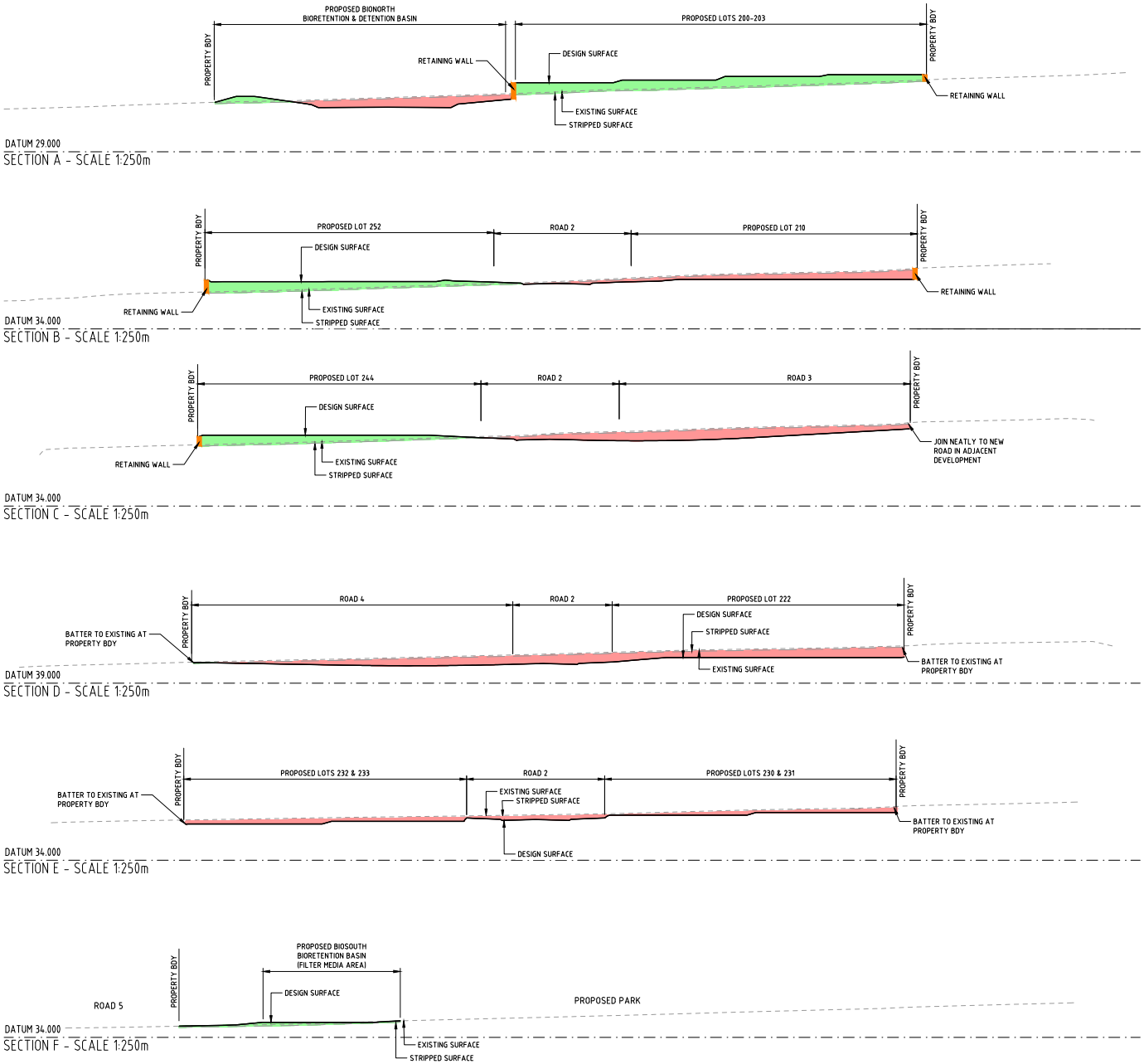
PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
PRELIMINARY BULK EARTHWORKS LAYOUT PLAN SHEET 4 OF 4

JOB NUMBER
BN213636

DRAWING NUMBER	REVISION
C104	2

DRAWING SHEET SIZE = A1



LEGEND - SECTIONS

- FINISHED SURFACE
- EXISTING SURFACE
- STRIPPED SURFACE
- EARTHWORK AREA OF CUT
- EARTHWORK AREA OF FILL
- PROPOSED RETAINING WALL (TYPE TBC) - BY OTHERS

LAYOUT & NOTES REFERENCE

FOR EARTHWORKS LAYOUT PLAN & REFERENCE NOTES REFER DWG No C-101

DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ
JOB MANAGER: R.HUANG
VERIFIER:

FOR APPROVAL

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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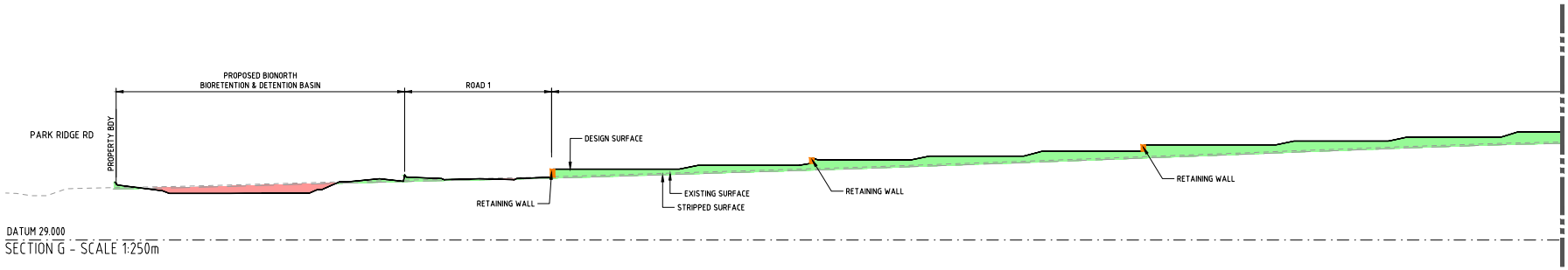
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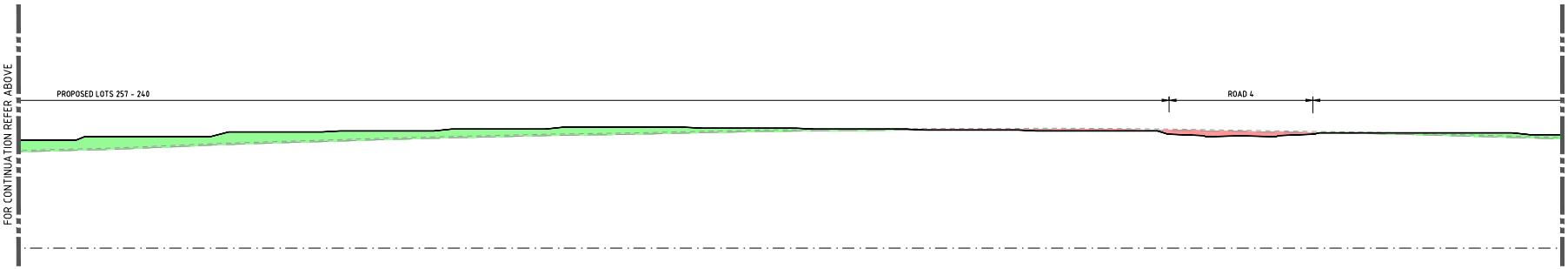
PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

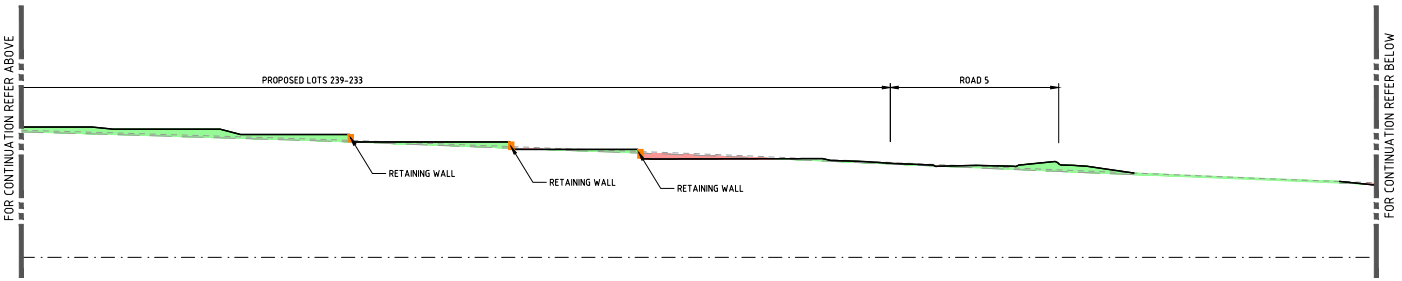
DRAWING TITLE
CIVIL ENGINEERING PACKAGE
PRELIMINARY BULK EARTHWORKS SECTION
SHEET 1 OF 3

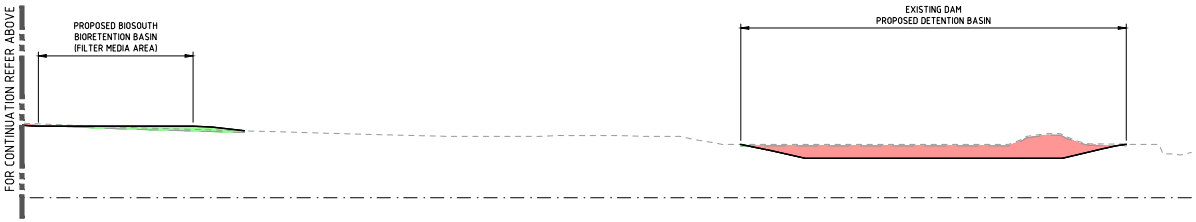
JOB NUMBER **BN213636**
DRAWING NUMBER **C111**
REVISION **2**
DRAWING SHEET SIZE = A1



SECTION G - SCALE 1:250m







LEGEND - SECTIONS

- FINISHED SURFACE
- EXISTING SURFACE
- STRIPPED SURFACE
- EARTHWORK AREA OF CUT
- EARTHWORK AREA OF FILL
- PROPOSED RETAINING WALL (TYPE TBC) - BY OTHERS

LAYOUT & NOTES REFERENCE

FOR EARTHWORKS LAYOUT PLAN & REFERENCE NOTES
REFER DWG No C-101

FOR APPROVAL

DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ
JOB MANAGER: R.HUANG
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
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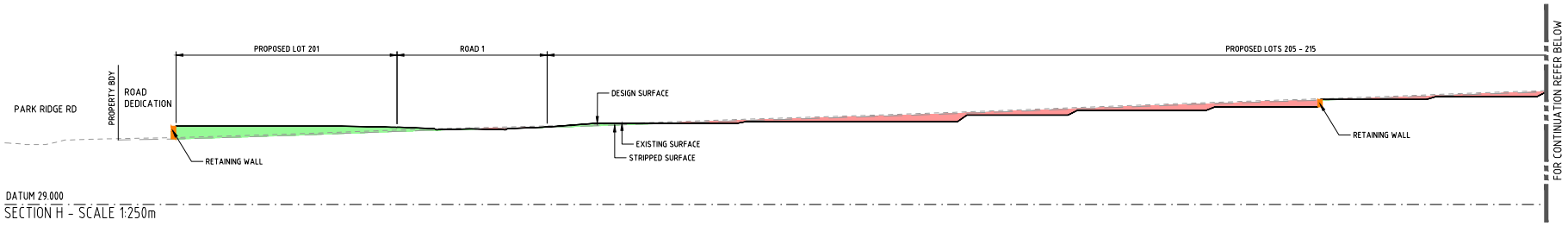
SCALE 1:250@A1
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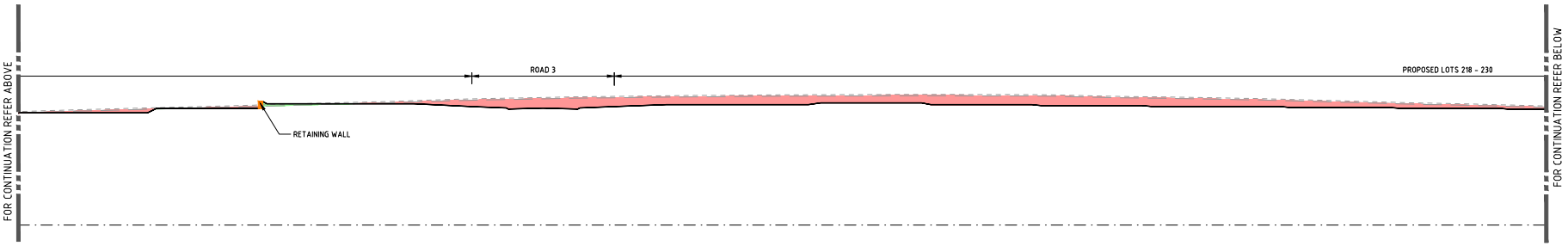
PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

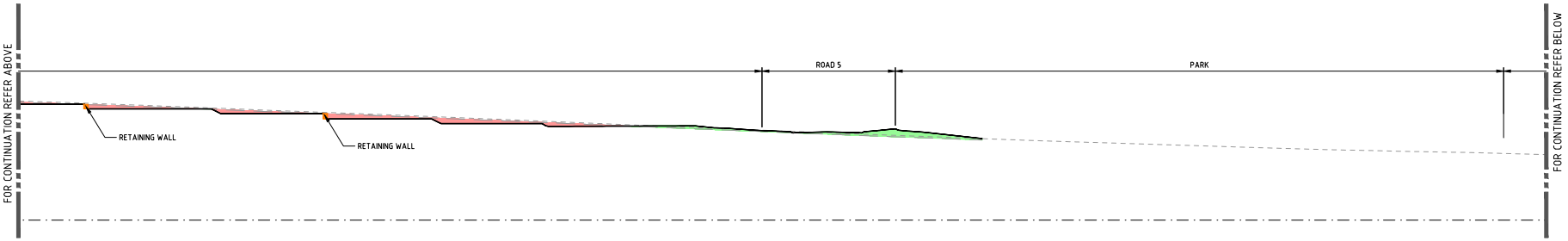
DRAWING TITLE
CIVIL ENGINEERING PACKAGE
PRELIMINARY BULK EARTHWORKS SECTION
SHEET 2 OF 3

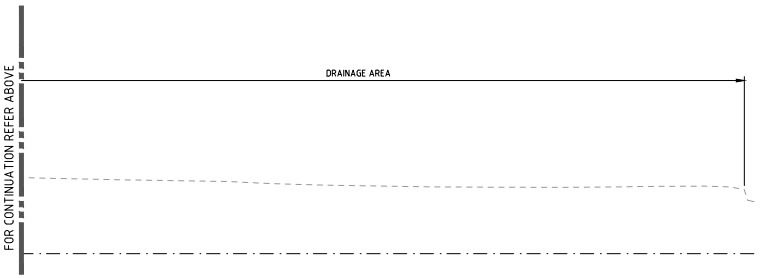
JOB NUMBER **BN213636**
DRAWING NUMBER **C112**
REVISION **2**
DRAWING SHEET SIZE = A1



SECTION H - SCALE 1:250m







VERIFIER:
JOB MANAGER: R.HUANG
DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ

LEGEND - SECTIONS

- FINISHED SURFACE
- EXISTING SURFACE
- STRIPPED SURFACE
- EARTHWORK AREA OF CUT
- EARTHWORK AREA OF FILL
- PROPOSED RETAINING WALL (TYPE TBC) - BY OTHERS

LAYOUT & NOTES REFERENCE

FOR EARTHWORKS LAYOUT PLAN & REFERENCE NOTES REFER DWG No C-101

FOR APPROVAL

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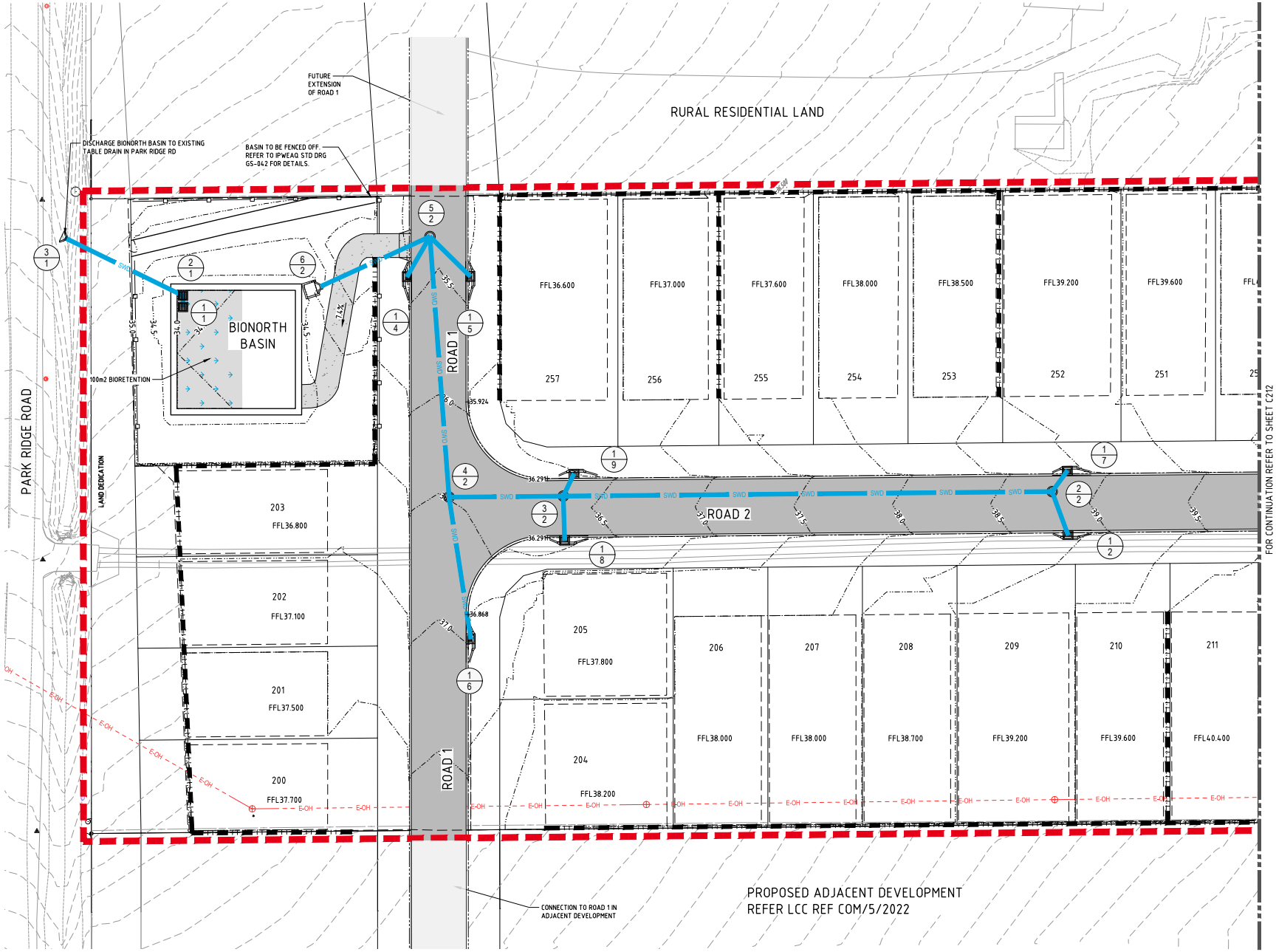
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ABN 81 094 433 100

PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
PRELIMINARY BULK EARTHWORKS SECTION
SHEET 3 OF 3

JOB NUMBER **BN213636**
DRAWING NUMBER **C113**
REVISION **2**
DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- PROPOSED MOUNTABLE KERB & CHANNEL
- EXISTING ELECTRICITY (OVERHEAD)
- PROPOSED RETAINING WALL CONCRETE SLEEP
- STAGE BOUNDARY
- PROPOSED NEW ASPHALT PAVEMENT REFER LONGITUDINAL & CROSS SECTIONS FOR PAVEMENT DETAILS
- PROPOSED STORMWATER BASIN
- PROPOSED ACCESS TRACK
- PROPOSED STORMWATER GULLY PIT
- PROPOSED STORMWATER MANHOLE
- PROPOSED FIELD INLET
- PROPOSED STORMWATER DRAINAGE

NOTES

1. ALL DIMENSIONS ON THE DRAWINGS ARE IN METRES UNLESS SHOWN OTHERWISE.
2. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RELEVANT LOGAN CITY COUNCIL SPECIFICATIONS & STANDARD DRAWINGS & NORTHROP SPECIFICATIONS & PROJECT DRAWINGS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION & RELATIVE LEVELS OF EXISTING SERVICES PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO TAKE ALL NECESSARY PRECAUTIONS REGARDING CONSTRUCTION ADJACENT TO EXISTING SERVICES. CONTRACTOR TO PROTECT IN PLACE EXISTING SERVICES. ANY DAMAGE TO EXISTING SERVICES TO BE REPAIRED AT CONTRACTORS EXPENSE.
4. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS PLANS, SPECIFICATIONS & OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED BY THE SUPERINTENDENT DURING THE COURSE OF THE CONTRACT.
5. THE CONTRACTOR SHALL ERECT TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE APPROVED TRAFFIC MANAGEMENT PLAN.
6. THE CONTRACTOR SHALL VERIFY OFFSET PEG LOCATIONS & BENCH MARK LEVELS & ADVISE THE SUPERINTENDENT OF ANY DISCREPANCY BEFORE COMMENCEMENT OF CONSTRUCTION.
7. THE ROAD PAVEMENT ADOPTED WILL BE DETERMINED BY THE ENGINEER & APPROVED BY LOGAN CITY COUNCIL. THIS PAVEMENT SHALL BE BASED ON SOIL TEST TAKEN AT SUBGRADE LEVEL. ANY VARIATIONS TO THE NOMINAL PAVEMENT THICKNESS WILL BE PAID AT THE RATES SHOWN IN THE PRICED SCHEDULE OF RATES.
8. SIDE DRAINS SHALL BE PROVIDED UNDER ALL KERBS AS PER LOGAN CITY COUNCIL STANDARDS.
9. MITRE DRAIN LOCATION & EXTENTS SHALL BE DETERMINED ON SITE BY THE SUPERINTENDENT.

DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ
JOB MANAGER: R.HUANG
VERIFIER:

FOR APPROVAL

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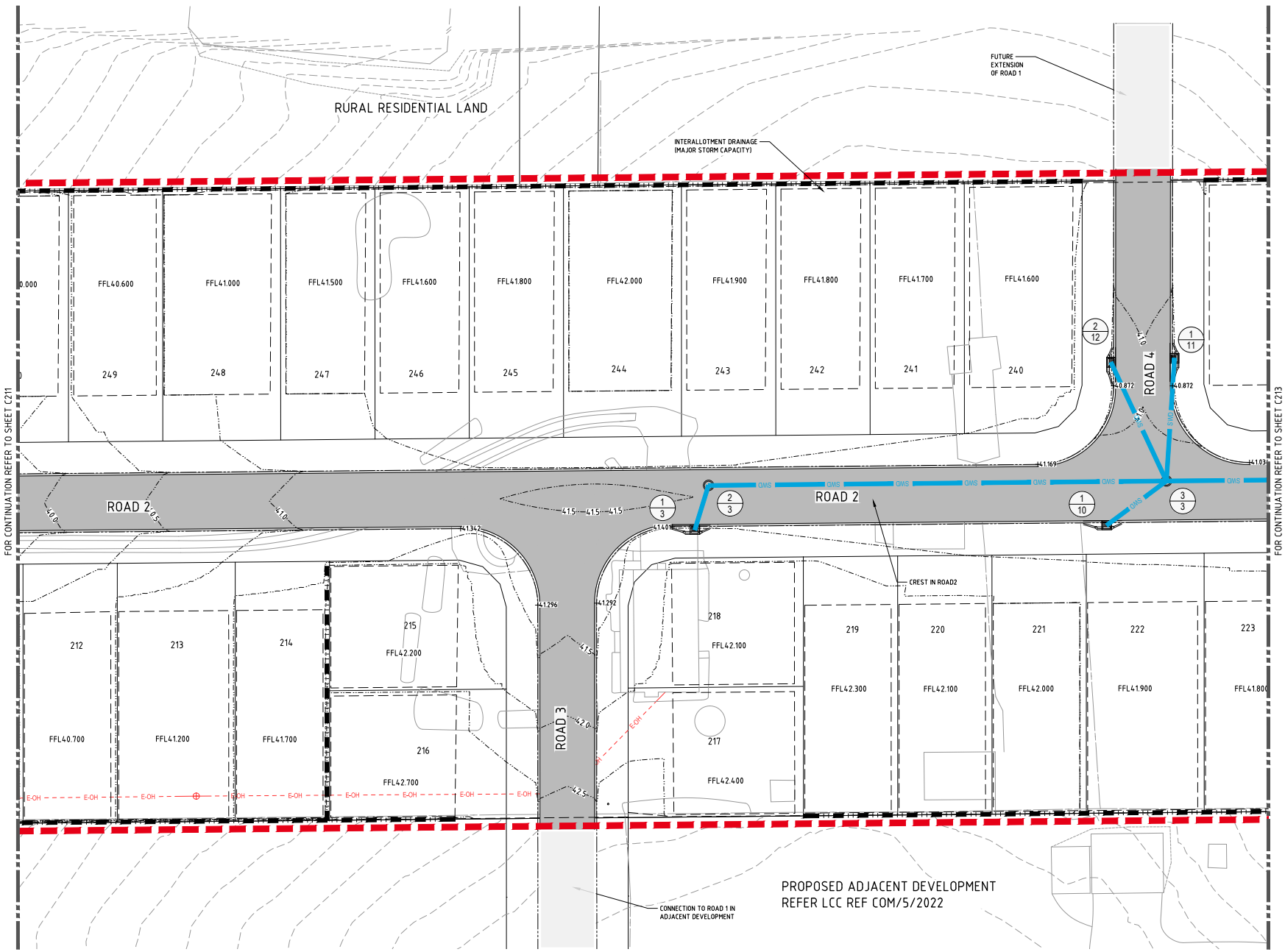
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ABN 81 094 433 100

PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
ROADWORKS AND DRAINAGE LAYOUT PLAN
SHEET 1 OF 4

JOB NUMBER **BN213636**
DRAWING NUMBER **C211**
REVISION **2**
DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- PROPOSED MOUNTABLE KERB & CHANNEL
- EXISTING ELECTRICITY (OVERHEAD)
- PROPOSED RETAINING WALL CONCRETE SLEEP
- STAGE BOUNDARY
- PROPOSED NEW ASPHALT PAVEMENT REFER LONGITUDINAL & CROSS SECTIONS FOR PAVEMENT DETAILS
- PROPOSED STORMWATER BASIN
- PROPOSED ACCESS TRACK
- PROPOSED STORMWATER GULLY PIT
- PROPOSED STORMWATER MANHOLE
- PROPOSED FIELD INLET
- PROPOSED STORMWATER DRAINAGE

NOTES

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3. THE CONTRACTOR SHALL VERIFY THE LOCATION & RELATIVE LEVELS OF EXISTING SERVICES PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO TAKE ALL NECESSARY PRECAUTIONS REGARDING CONSTRUCTION ADJACENT TO EXISTING SERVICES. CONTRACTOR TO PROTECT IN PLACE EXISTING SERVICES. ANY DAMAGE TO EXISTING SERVICES TO BE REPAIRED AT CONTRACTORS EXPENSE.
4. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS PLANS, SPECIFICATIONS & OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED BY THE SUPERINTENDENT DURING THE COURSE OF THE CONTRACT.
5. THE CONTRACTOR SHALL ERECT TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE APPROVED TRAFFIC MANAGEMENT PLAN.
6. THE CONTRACTOR SHALL VERIFY OFFSET PEG LOCATIONS & BENCH MARK LEVELS & ADVISE THE SUPERINTENDENT OF ANY DISCREPANCY BEFORE COMMENCEMENT OF CONSTRUCTION.
7. THE ROAD PAVEMENT ADOPTED WILL BE DETERMINED BY THE ENGINEER & APPROVED BY LOGAN CITY COUNCIL. THIS PAVEMENT SHALL BE BASED ON SOIL TEST TAKEN AT SUBGRADE LEVEL. ANY VARIATIONS TO THE NOMINAL PAVEMENT THICKNESS WILL BE PAID AT THE RATES SHOWN IN THE PRICED SCHEDULE OF RATES.
8. SIDE DRAINS SHALL BE PROVIDED UNDER ALL KERBS AS PER LOGAN CITY COUNCIL STANDARDS.
9. MITRE DRAIN LOCATION & EXTENTS SHALL BE DETERMINED ON SITE BY THE SUPERINTENDENT.

FOR APPROVAL

DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ
JOB MANAGER: R.HUANG
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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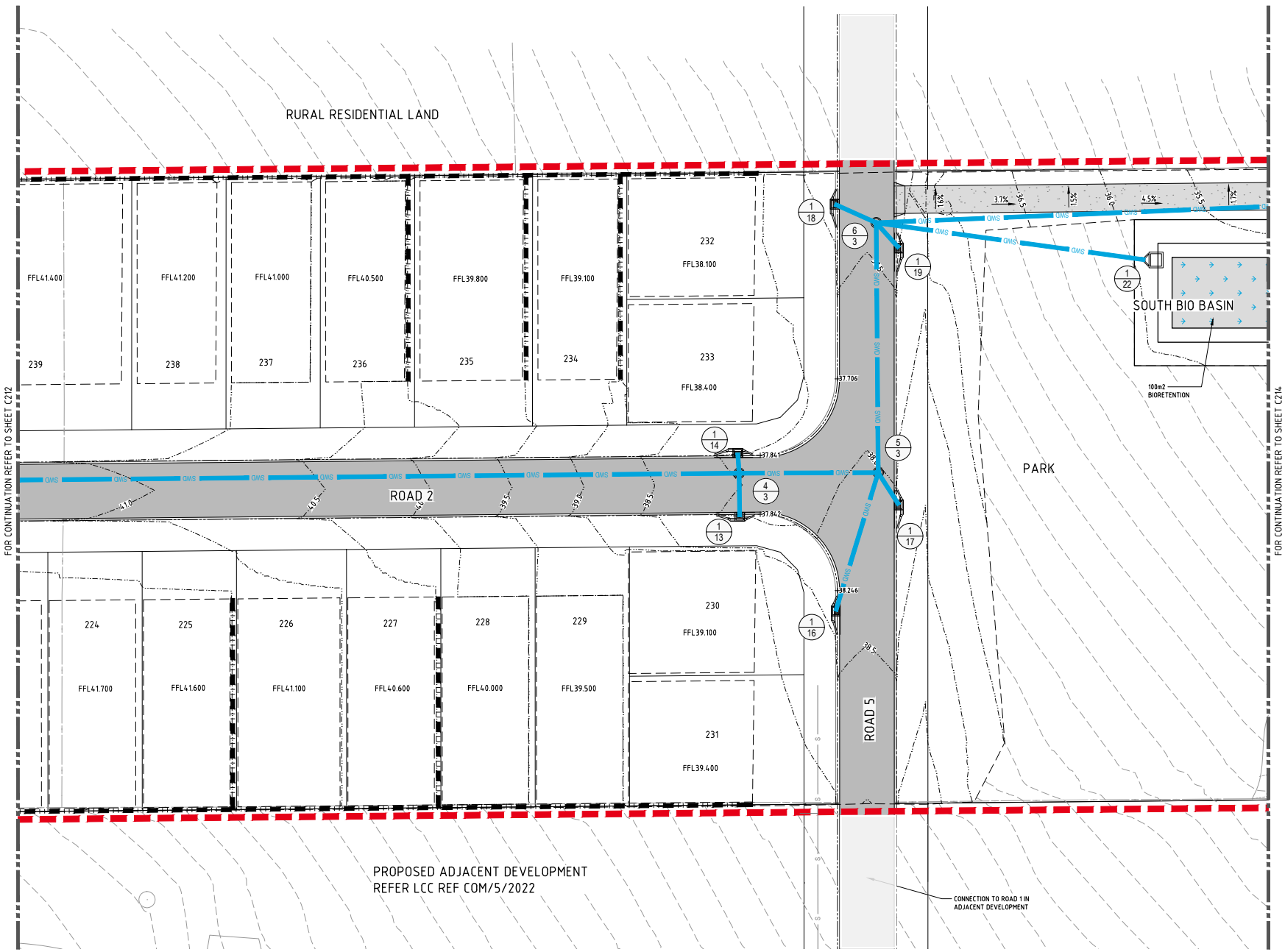
SCALE 1:250@A1
0 2 4 6 8 10 12m

NORTHROP
Brisbane
Level 9, 200 Mary Street, Brisbane QLD 4000
GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
ROADWORKS AND DRAINAGE LAYOUT PLAN
SHEET 2 OF 4

JOB NUMBER **BN213636**
DRAWING NUMBER **C212**
REVISION **2**
DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- PROPOSED MOUNTABLE KERB & CHANNEL
- EXISTING ELECTRICITY (OVERHEAD)
- PROPOSED RETAINING WALL CONCRETE SLEEP
- STAGE BOUNDARY
- PROPOSED NEW ASPHALT PAVEMENT REFER LONGITUDINAL & CROSS SECTIONS FOR PAVEMENT DETAILS
- PROPOSED STORMWATER BASIN
- PROPOSED ACCESS TRACK
- PROPOSED STORMWATER GULLY PIT
- PROPOSED STORMWATER MANHOLE
- PROPOSED FIELD INLET
- PROPOSED STORMWATER DRAINAGE

NOTES

1. ALL DIMENSIONS ON THE DRAWINGS ARE IN METRES UNLESS SHOWN OTHERWISE.
2. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RELEVANT LOGAN CITY COUNCIL SPECIFICATIONS & STANDARD DRAWINGS & NORTHROP SPECIFICATIONS & PROJECT DRAWINGS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION & RELATIVE LEVELS OF EXISTING SERVICES PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO TAKE ALL NECESSARY PRECAUTIONS REGARDING CONSTRUCTION ADJACENT TO EXISTING SERVICES. CONTRACTOR TO PROTECT IN PLACE EXISTING SERVICES. ANY DAMAGE TO EXISTING SERVICES TO BE REPAIRED AT CONTRACTORS EXPENSE.
4. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS PLANS, SPECIFICATIONS & OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED BY THE SUPERINTENDENT DURING THE COURSE OF THE CONTRACT.
5. THE CONTRACTOR SHALL ERECT TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE APPROVED TRAFFIC MANAGEMENT PLAN.
6. THE CONTRACTOR SHALL VERIFY OFFSET PEG LOCATIONS & BENCH MARK LEVELS & ADVISE THE SUPERINTENDENT OF ANY DISCREPANCY BEFORE COMMENCEMENT OF CONSTRUCTION.
7. THE ROAD PAVEMENT ADOPTED WILL BE DETERMINED BY THE ENGINEER & APPROVED BY LOGAN CITY COUNCIL. THIS PAVEMENT SHALL BE BASED ON SOIL TEST TAKEN AT SUBGRADE LEVEL. ANY VARIATIONS TO THE NOMINAL PAVEMENT THICKNESS WILL BE PAID AT THE RATES SHOWN IN THE PRICED SCHEDULE OR RATES.
8. SIDE DRAINS SHALL BE PROVIDED UNDER ALL KERBS AS PER LOGAN CITY COUNCIL STANDARDS.
9. MITRE DRAIN LOCATION & EXTENTS SHALL BE DETERMINED ON SITE BY THE SUPERINTENDENT.

DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ
JOB MANAGER: R.HUANG
VERIFIER:

FOR APPROVAL

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
2	ISSUED FOR APPROVAL	CL	GC	RH	01.08.23

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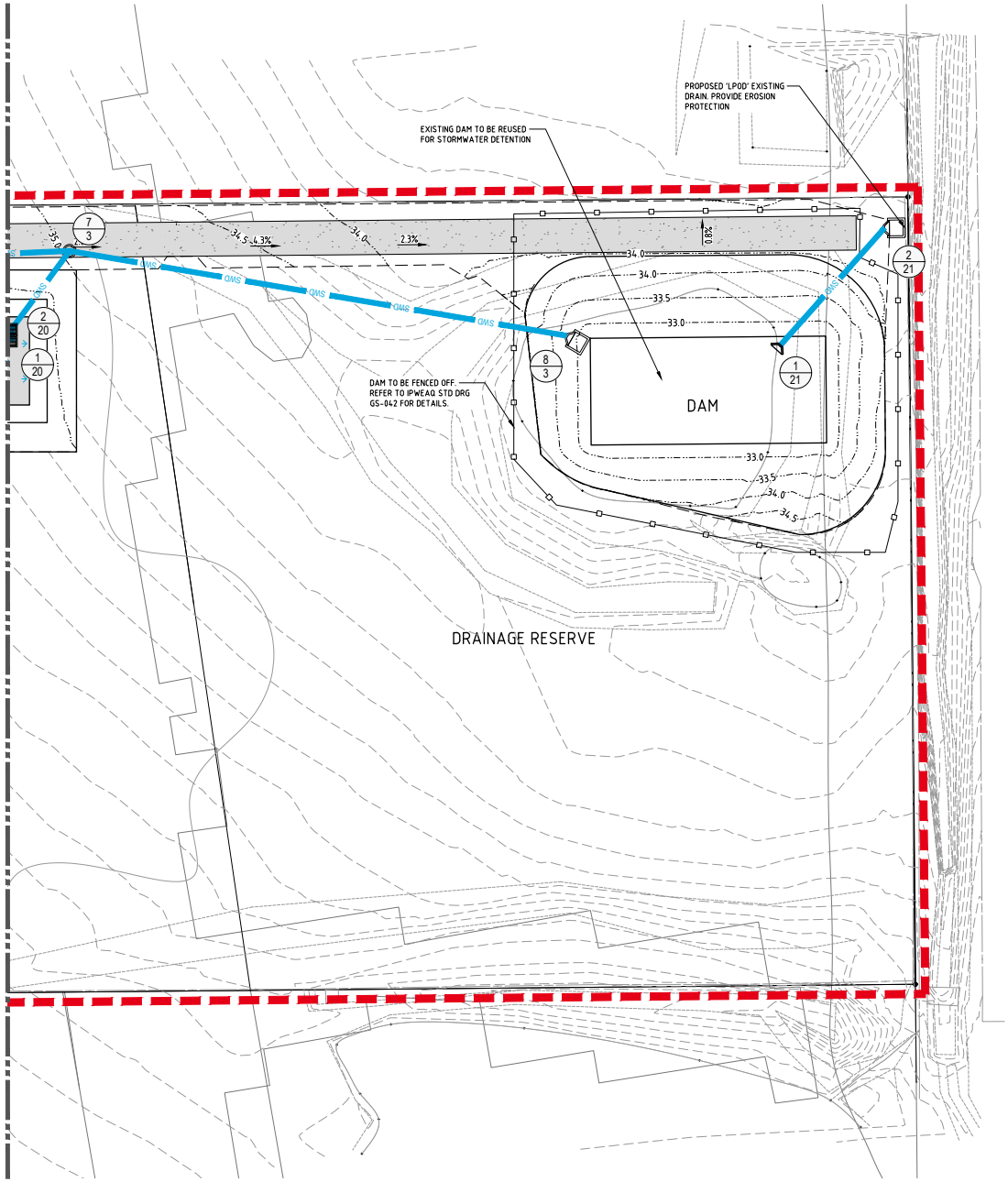
SCALE 1:250@A1 0 2 4 6 8 10 12m

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ABN 81 094 433 100

PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
ROADWORKS AND DRAINAGE LAYOUT PLAN
SHEET 3 OF 4

JOB NUMBER **BN213636**
DRAWING NUMBER **C213**
REVISION **2**
DRAWING SHEET SIZE = A1



LEGEND

- XX.XX — PROPOSED SURFACE CONTOURS
- XX.XX — EXISTING SURFACE CONTOURS
- PROPOSED MOUNTABLE KERB & CHANNEL
- E-OH — EXISTING ELECTRICITY (OVERHEAD)
- PROPOSED RETAINING WALL CONCRETE SLEEP
- STAGE BOUNDARY
- PROPOSED NEW ASPHALT PAVEMENT REFER LONGITUDINAL & CROSS SECTIONS FOR PAVEMENT DETAILS
- PROPOSED STORMWATER BASIN
- PROPOSED ACCESS TRACK
- PROPOSED STORMWATER GULLY PIT
- PROPOSED STORMWATER MANHOLE
- PROPOSED FIELD INLET
- SWD — PROPOSED STORMWATER DRAINAGE

NOTES

1. ALL DIMENSIONS ON THE DRAWINGS ARE IN METRES UNLESS SHOWN OTHERWISE.
2. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RELEVANT LOGAN CITY COUNCIL SPECIFICATIONS & STANDARD DRAWINGS & NORTHROP SPECIFICATIONS & PROJECT DRAWINGS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION & RELATIVE LEVELS OF EXISTING SERVICES PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO TAKE ALL NECESSARY PRECAUTIONS REGARDING CONSTRUCTION ADJACENT TO EXISTING SERVICES. CONTRACTOR TO PROTECT IN PLACE EXISTING SERVICES. ANY DAMAGE TO EXISTING SERVICES TO BE REPAIRED AT CONTRACTORS EXPENSE.
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5. THE CONTRACTOR SHALL ERECT TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE APPROVED TRAFFIC MANAGEMENT PLAN.
6. THE CONTRACTOR SHALL VERIFY OFFSET PEG LOCATIONS & BENCH MARK LEVELS & ADVISE THE SUPERINTENDENT OF ANY DISCREPANCY BEFORE COMMENCEMENT OF CONSTRUCTION.
7. THE ROAD PAVEMENT ADOPTED WILL BE DETERMINED BY THE ENGINEER & APPROVED BY LOGAN CITY COUNCIL. THIS PAVEMENT SHALL BE BASED ON SOIL TEST TAKEN AT SUBGRADE LEVEL. ANY VARIATIONS TO THE NOMINAL PAVEMENT THICKNESS WILL BE PAID AT THE RATES SHOWN IN THE PRICED SCHEDULE OF RATES.
8. SIDE DRAINS SHALL BE PROVIDED UNDER ALL KERBS AS PER LOGAN CITY COUNCIL STANDARDS.
9. MITRE DRAIN LOCATION & EXTENTS SHALL BE DETERMINED ON SITE BY THE SUPERINTENDENT.

FOR APPROVAL

DRAWN: CLOPEZ
DESIGNED: R.MITCHELL
JOB MANAGER: R.HUANG
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
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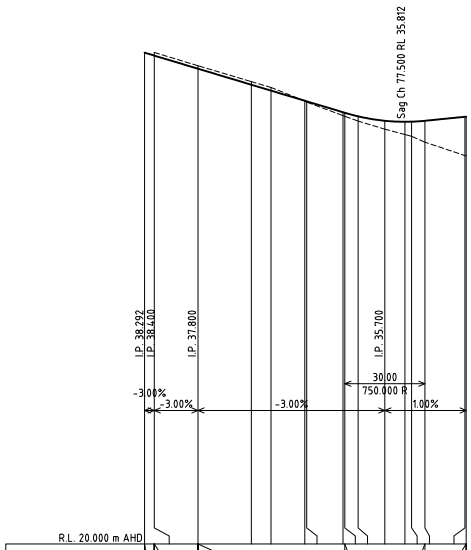
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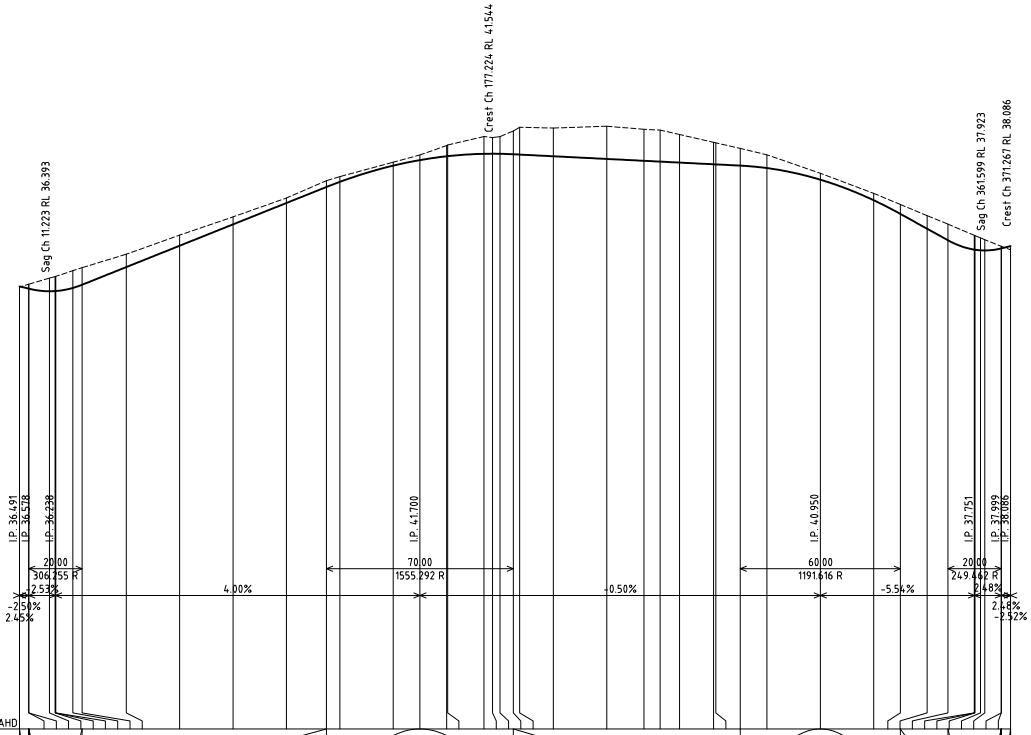
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GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
ROADWORKS AND DRAINAGE LAYOUT PLAN
SHEET 4 OF 4

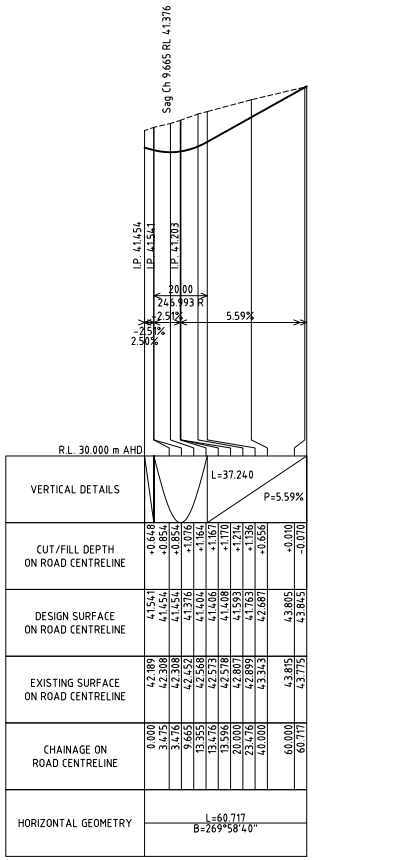
JOB NUMBER **BN213636**
DRAWING NUMBER **C214**
REVISION **2**
DRAWING SHEET SIZE = A1



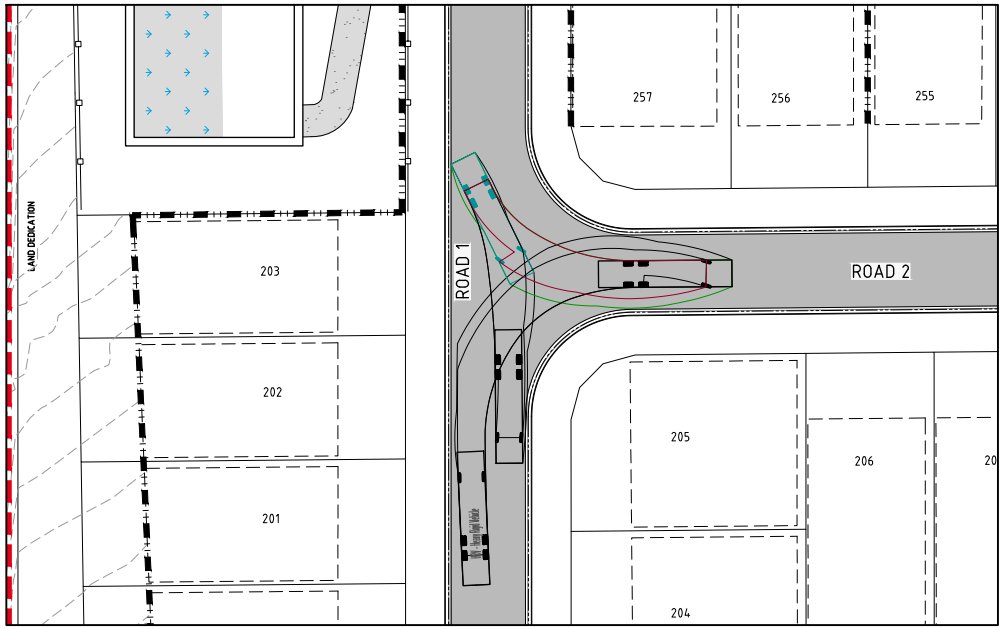


R.L. 20.000 m AHD

| VERTICAL DETAILS | | |

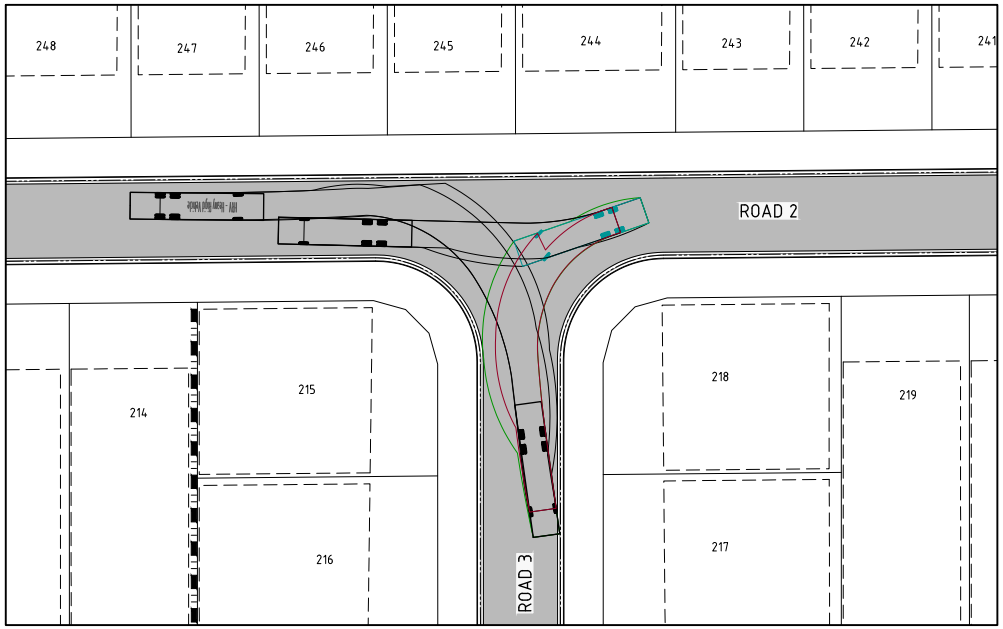

Sag Ch 9.665 RL 41.376
I.P. 41.454
I.P. 41.561
I.P. 41.703
20.000
246.993 R
2.51%
5.59%
-2.51%
2.50%

| | | |



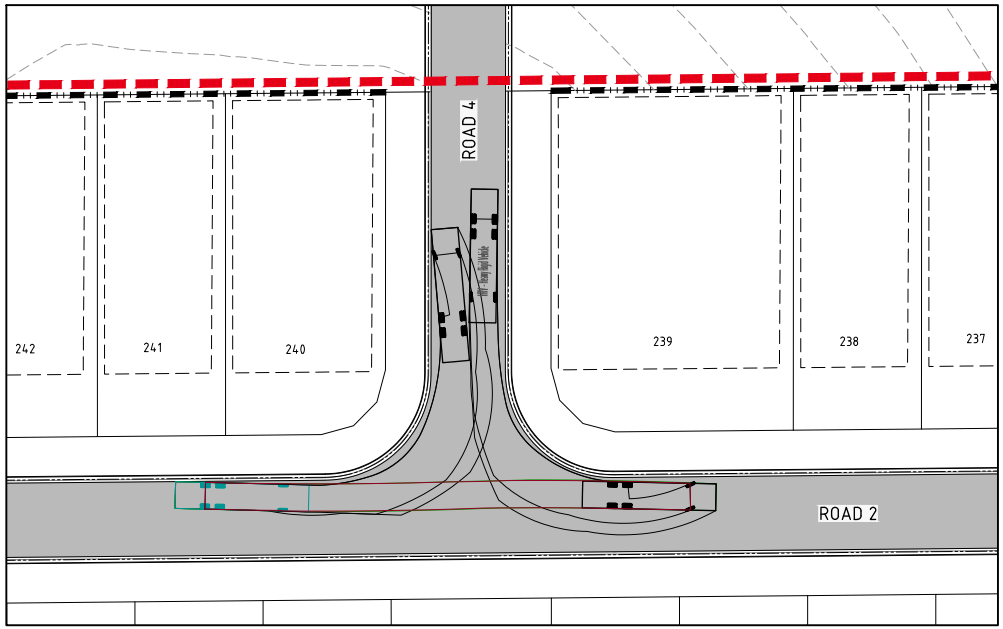
ROAD 1 & ROAD 2 TURNPATH FOR 12.5m HEAVY RIGID VEHICLE

SCALE 1:250



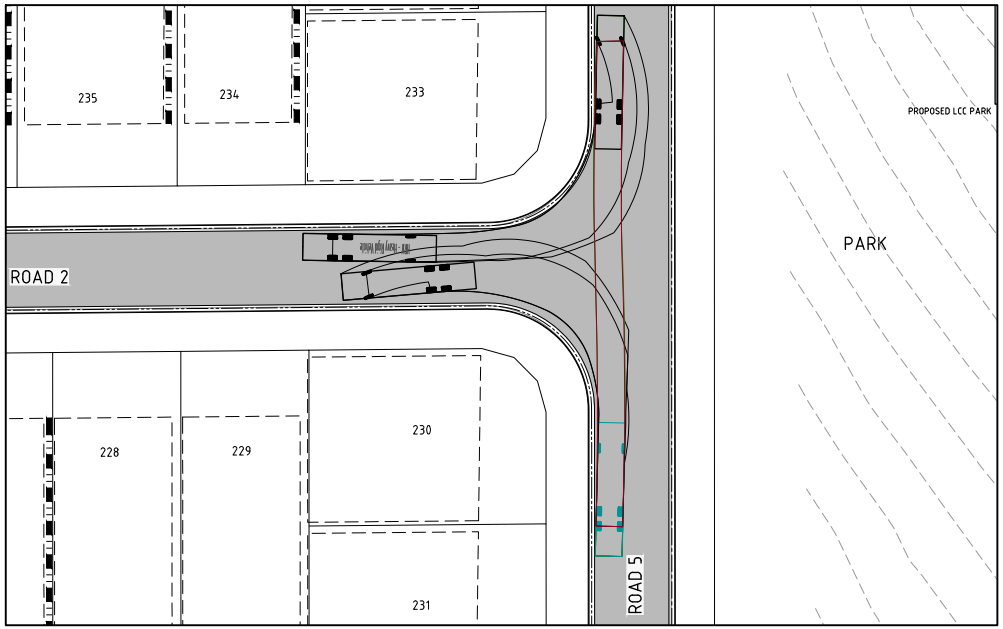
ROAD 2 & ROAD 3 TURNPATH FOR 12.5m HEAVY RIGID VEHICLE

SCALE 1:250



ROAD 2 & ROAD 4 TURNPATH FOR 12.5m HEAVY RIGID VEHICLE

SCALE 1:250



ROAD 2 & ROAD 3 TURNPATH FOR 12.5m HEAVY RIGID VEHICLE

SCALE 1:250

FOR APPROVAL

DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ
JOB MANAGER: R.HUANG
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
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SCALE 1:250@A1

0 2 4 6 8 10 12m

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GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

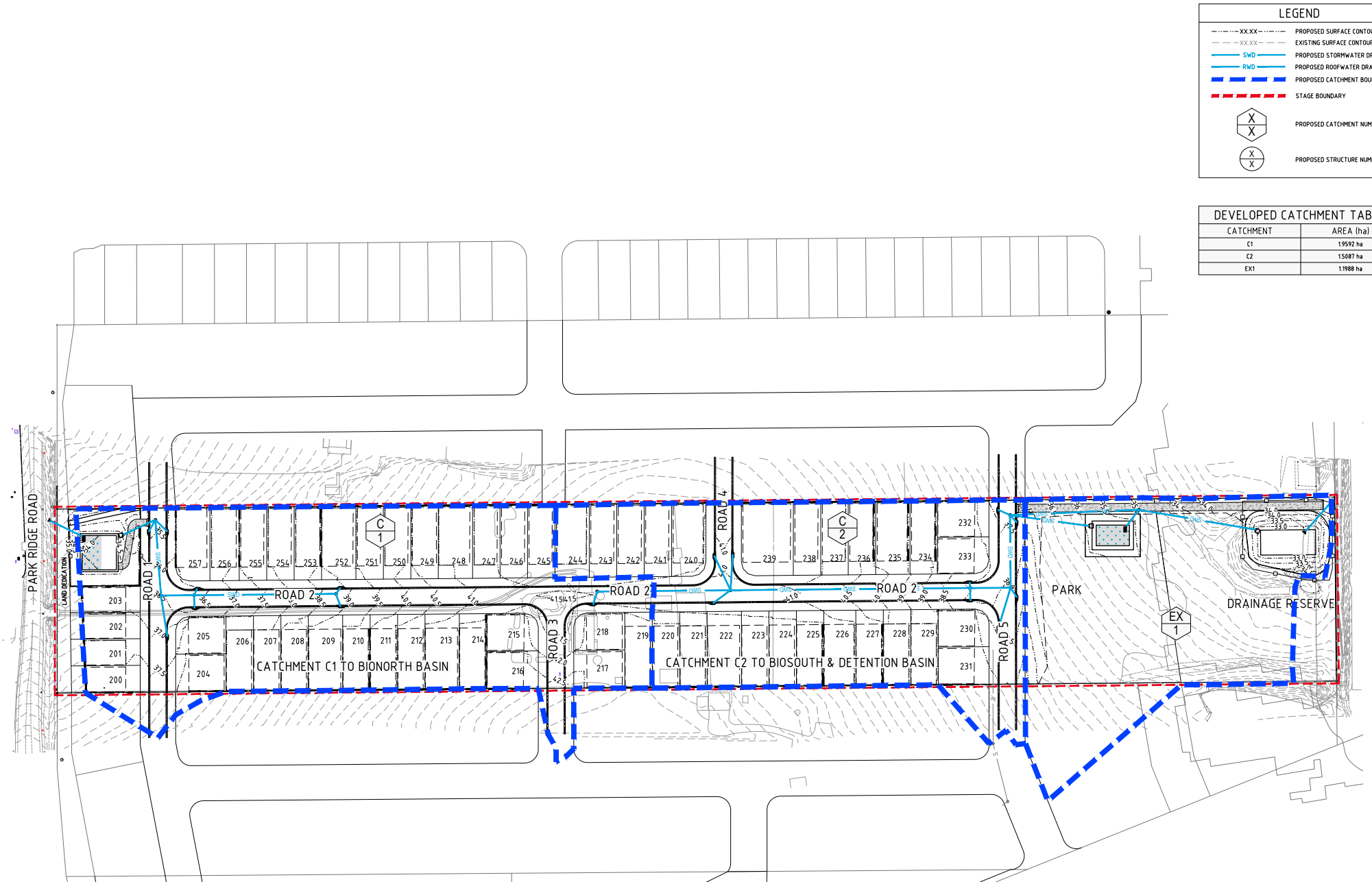
DRAWING TITLE
CIVIL ENGINEERING PACKAGE
VEHICLE TURN PATH LAYOUT PLAN

JOB NUMBER
BN213636

DRAWING NUMBER
C291

REVISION
2

DRAWING SHEET SIZE = A1



DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ
JOB MANAGER: R.HUANG
VERIFIER:

FOR APPROVAL

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
2	ISSUED FOR APPROVAL	CL	GC	RH	01.08.23

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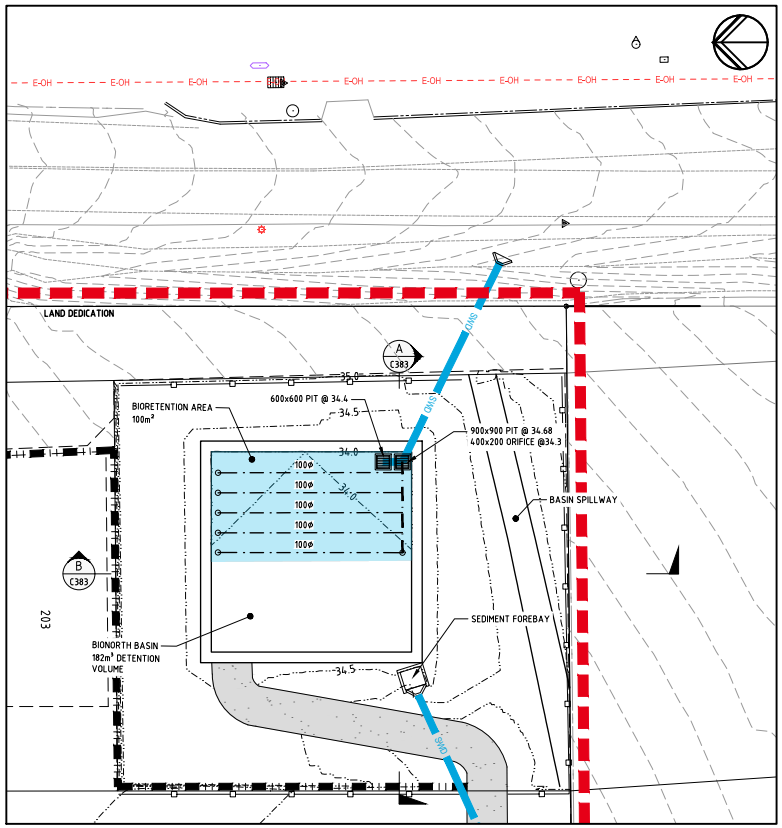
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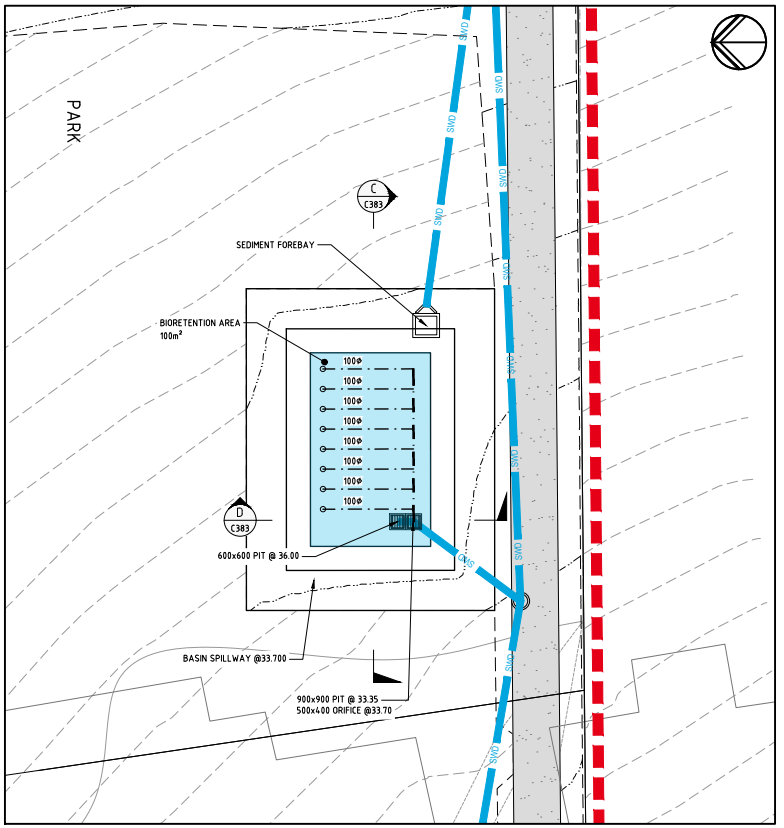
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(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
STORMWATER CATCHMENT KEY PLAN

JOB NUMBER
BN213636
DRAWING NUMBER **C310**
REVISION **2**
DRAWING SHEET SIZE = A1



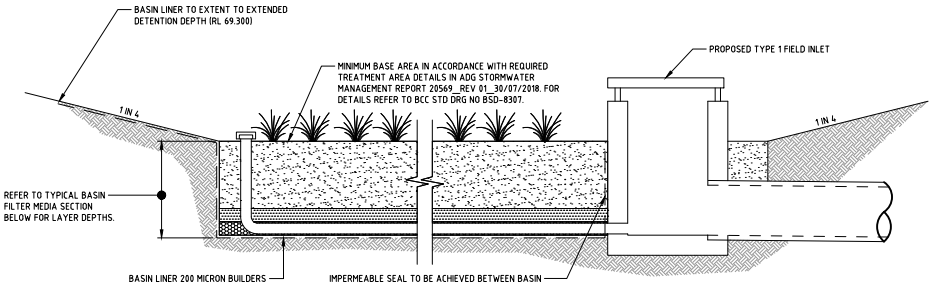


LEGEND

- XX.XX — PROPOSED SURFACE CONTOURS
- XX.XX — EXISTING SURFACE CONTOURS
- SWD — PROPOSED STORMWATER DRAINAGE
- STAGE BOUNDARY
- PROPOSED FILTER MEDIA AREA

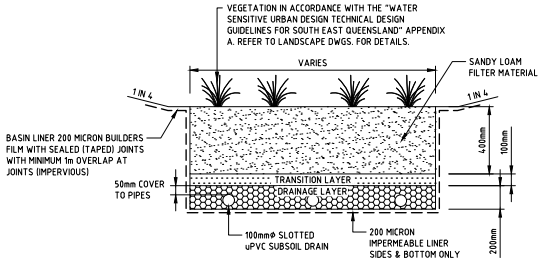
NOTES

1. ALL STORMWATER DRAINAGE PIPES ARE TO BE S.R.C. CLASS '2' OR F.R.C CLASS 'I' UNLESS NOTED OTHERWISE.
2. FILTER MEDIA LAYER SHALL CONFORM WITH THE SPECIFICATIONS OF FAWB GUIDELINES FOR BIOFILTRATION MEDIA (VERSION 3.01) & WATER BY DESIGN SPECIFICATIONS "BIO RETENTION TECHNICAL DESIGN GUIDELINES VERSION 1". THE MINIMUM ORGANIC CONTENT OF THE FILTER MEDIA SHALL BE 3%.
3. TRANSITION & DRAINAGE MEDIA LAYER SHALL CONFORM WITH THE SPECIFICATIONS OF FAWB GUIDELINES FOR BIOFILTRATION MEDIA (VERSION 3.01) & WATER BY DESIGN SPECIFICATIONS "BIO RETENTION TECHNICAL DESIGN GUIDELINES VERSION 1".
4. THE CONTRACTOR IS RESPONSIBLE FOR UNDERTAKING DETAILED SURVEY OF EACH LAYER OF THE MEDIA INSTALLED INCLUDING THE SUBGRADE & FINISHED LEVEL SURVEYS. THE DIGITAL SURVEY DATA FOR EACH LAYER IS TO BE ISSUED TO THE SUPERINTENDENT FOR REVIEW PRIOR TO THE SUBSEQUENT LAYER BEING INSTALLED. THE REQUIRED TOLERANCES FOR CONSTRUCTION OF THE MEDIA LAYERS IS INCLUDED IN THE WATER BY DESIGN CONSTRUCTION & ESTABLISHMENT SIGN OFF FORMS – BIORETENTION SYSTEMS (VERSION 1.1). ALL COSTS ASSOCIATED WITH THE DETAILED SURVEY OF THE BIORETENTION SYSTEMS, THE STAGED CONSTRUCTION APPROACH DUE TO THE SURVEY REVIEW PROCESS, & ANY REWORKS REQUIRED AS A RESULT OF THE SURVEY REVIEWS ARE DEEMED INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR THE PROJECT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CO-SIGNING THE WATER BY DESIGN CONSTRUCTION & ESTABLISHMENT SIGN OFF FORMS – BIORETENTION SYSTEMS (VERSION 1.1) AT THE TIME OF CONSTRUCTION OF THE BIORETENTION SYSTEMS AS WELL AS MANAGING & COMPLYING WITH THE RELEVANT HOLD & WITNESS POINTS SPECIFIED IN THESE FORMS.
6. THE MINIMUM HYDRAULIC CONDUCTIVITY OF ANY LAYER OF BIO BASIN MEDIA SHALL BE 200MM/H.



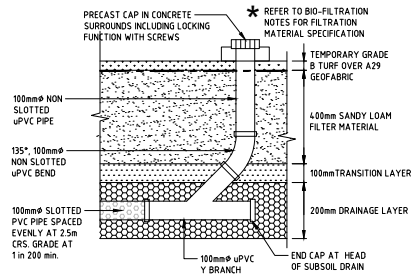
TYPICAL BIO-RETENTION/DETENTION BASIN SECTION

NTS



TYPICAL BASIN FILTER MEDIA SECTION

NTS



TYPICAL FLUSHING END DETAIL

NTS

VERIFIER:
JOB MANAGER: R.HUANG
DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ

FOR APPROVAL

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
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SCALE 1:200@A1 — 0 2 4 6 8 10m

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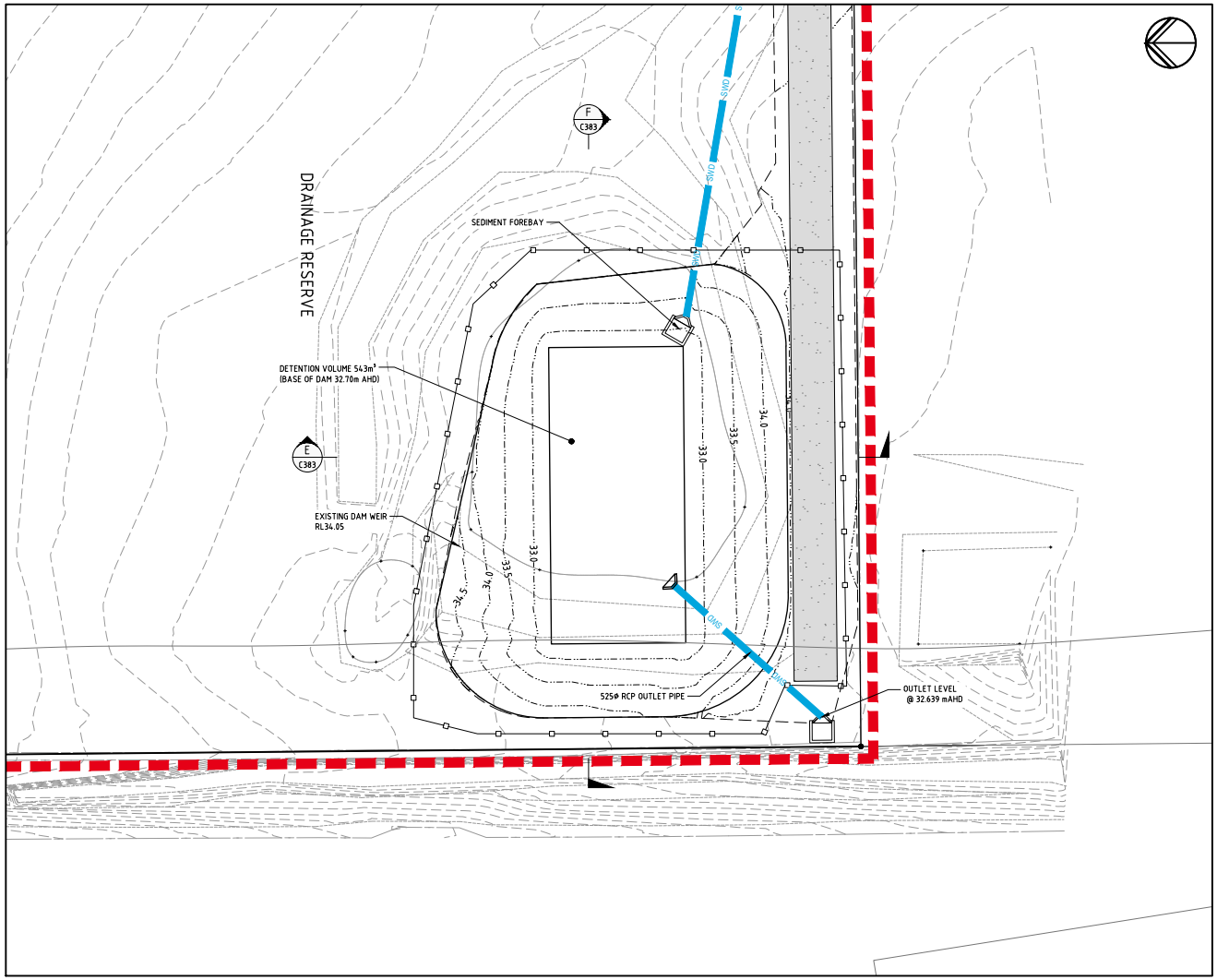
PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
PRELIMINARY BIO-BASIN LAYOUT PLAN SHEET 1 OF 3

JOB NUMBER
BN213636

DRAWING NUMBER	REVISION
C381	2

DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- PROPOSED STORMWATER DRAINAGE
- STAGE BOUNDARY

NOTES

1. ALL STORMWATER DRAINAGE PIPES ARE TO BE S.R.C. CLASS '2' OR F.R.C CLASS '1' UNLESS NOTED OTHERWISE.
2. FILTER MEDIA LAYER SHALL CONFORM WITH THE SPECIFICATIONS OF FAWB GUIDELINES FOR BIOFILTRATION MEDIA (VERSION 3.01) & WATER BY DESIGN SPECIFICATIONS "BIO RETENTION TECHNICAL DESIGN GUIDELINES VERSION 1". THE MINIMUM ORGANIC CONTENT OF THE FILTER MEDIA SHALL BE 3%.
3. TRANSITION & DRAINAGE MEDIA LAYER SHALL CONFORM WITH THE SPECIFICATIONS OF FAWB GUIDELINES FOR BIOFILTRATION MEDIA (VERSION 3.01) & WATER BY DESIGN SPECIFICATIONS "BIO RETENTION TECHNICAL DESIGN GUIDELINES VERSION 1".
4. THE CONTRACTOR IS RESPONSIBLE FOR UNDERTAKING DETAILED SURVEY OF EACH LAYER OF THE MEDIA INSTALLED INCLUDING THE SUBGRADE & FINISHED LEVEL SURVEYS. THE DIGITAL SURVEY DATA FOR EACH LAYER IS TO BE ISSUED TO THE SUPERINTENDENT FOR REVIEW PRIOR TO THE SUBSEQUENT LAYER BEING INSTALLED. THE REQUIRED TOLERANCES FOR CONSTRUCTION OF THE MEDIA LAYERS IS INCLUDED IN THE WATER BY DESIGN CONSTRUCTION & ESTABLISHMENT SIGN OFF FORMS – BIORETENTION SYSTEMS (VERSION 1.1). ALL COSTS ASSOCIATED WITH THE DETAILED SURVEY OF THE BIORETENTION SYSTEMS, THE STAGED CONSTRUCTION APPROACH DUE TO THE SURVEY REVIEW PROCESS, & ANY REWORKS REQUIRED AS A RESULT OF THE SURVEY REVIEWS ARE DEEMED INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR THE PROJECT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CO-SIGNING THE WATER BY DESIGN CONSTRUCTION & ESTABLISHMENT SIGN OFF FORMS – BIORETENTION SYSTEMS (VERSION 1.1) AT THE TIME OF CONSTRUCTION OF THE BIORETENTION SYSTEMS AS WELL AS MANAGING & COMPLYING WITH THE RELEVANT HOLD & WITNESS POINTS SPECIFIED IN THESE FORMS.
6. THE MINIMUM HYDRAULIC CONDUCTIVITY OF ANY LAYER OF BIO BASIN MEDIA SHALL BE 200MM/H.

DRAWN: CLOPEZ
DESIGNED: R.MITCHELL
JOB MANAGER: R.HUANG
VERIFIER:

FOR APPROVAL

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
2	ISSUED FOR APPROVAL	CL	GC	RH	01.08.23

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0 2 4 6 8 10m

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(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

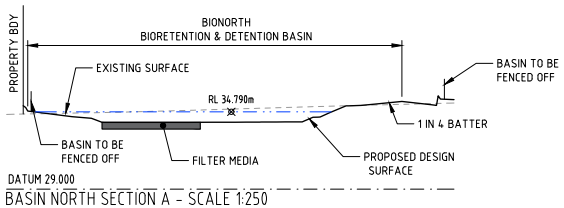
PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
PRELIMINARY BIO-BASIN LAYOUT PLAN SHEET 2 OF 3

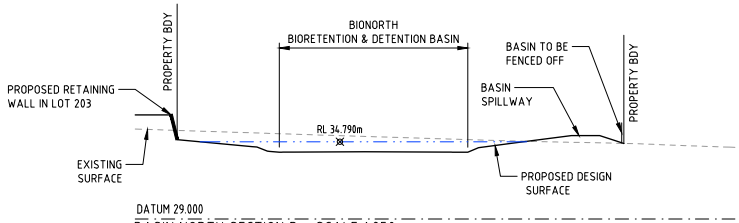
JOB NUMBER
BN213636

DRAWING NUMBER	REVISION
C382	2

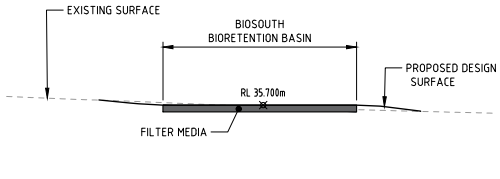
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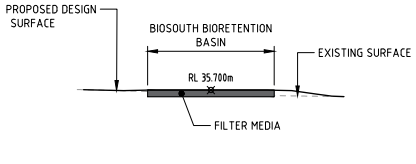
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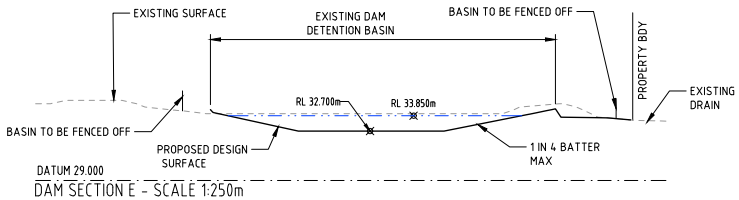
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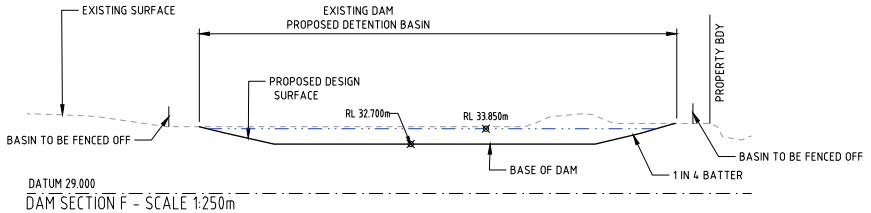
BASIN SOUTH SECTION C - SCALE 1:250m



BASIN SOUTH SECTION D - SCALE 1:250m



DAM SECTION E - SCALE 1:250m



DAM SECTION F - SCALE 1:250m

DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ
JOB MANAGER: R.HUANG
VERIFIER:

FOR APPROVAL

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
2	ISSUED FOR APPROVAL	CL	GC	RH	01.08.23

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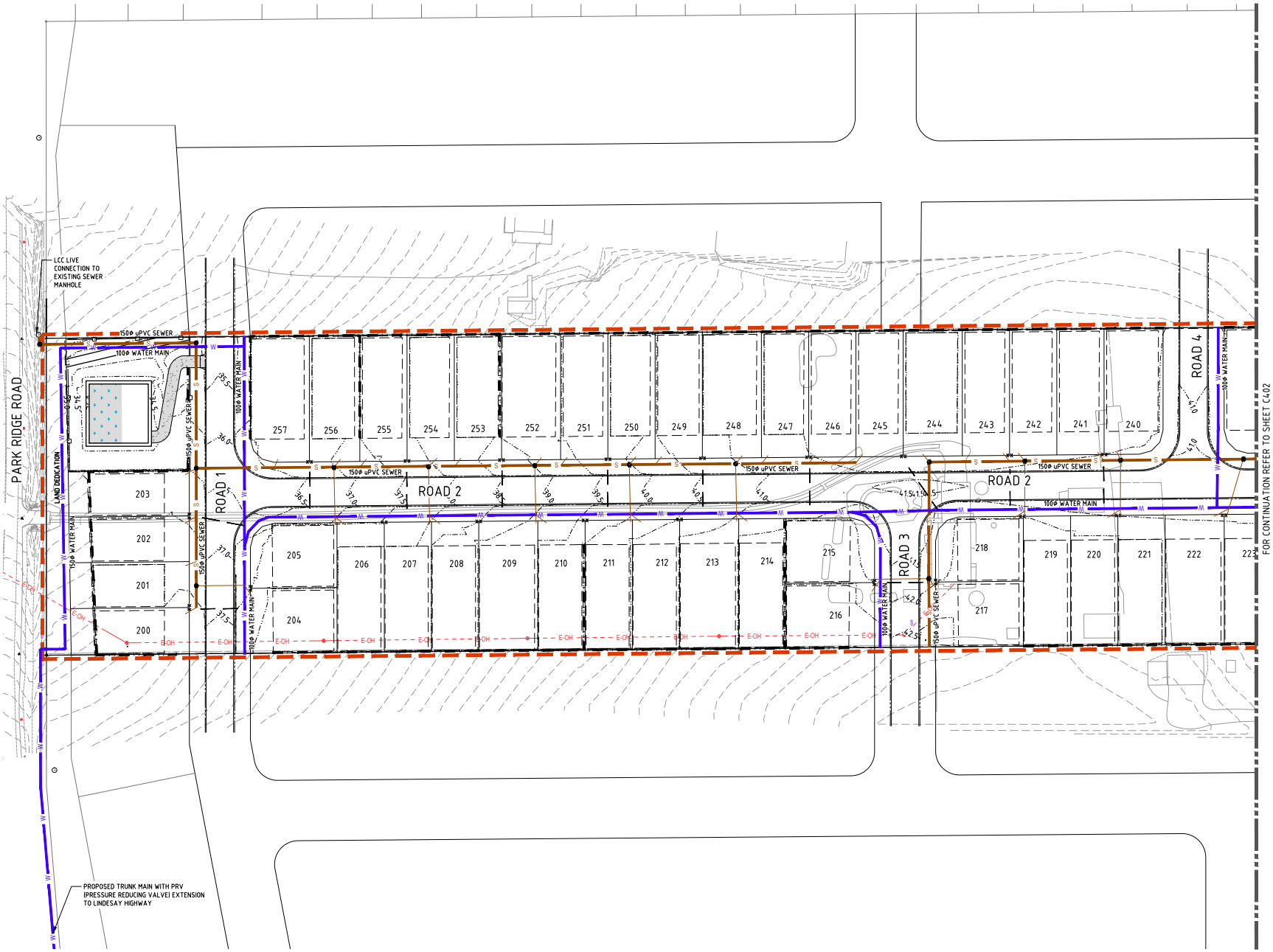
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Brisbane
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GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
PRELIMINARY BIO-BASIN LAYOUT PLAN SHEET 3 OF 3

JOB NUMBER **BN213636**
DRAWING NUMBER **C383**
REVISION **2**
DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED SEWER RETICULATION
- PROPOSED WATER RETICULATION
- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- EXISTING ELECTRICITY (OVERHEAD)
- PROPOSED RETAINING WALL CONCRETE SLEEPER
- STAGE BOUNDARY
- WATER METER
- WATER CONDUIT
- SEWER CONNECTION

DESIGNED: R.MITCHELL
DRAWN: C.LOPEZ
JOB MANAGER: R.HUANG
VERIFIER:

FOR APPROVAL

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
2	ISSUED FOR APPROVAL	CL	GC	RH	01.08.23

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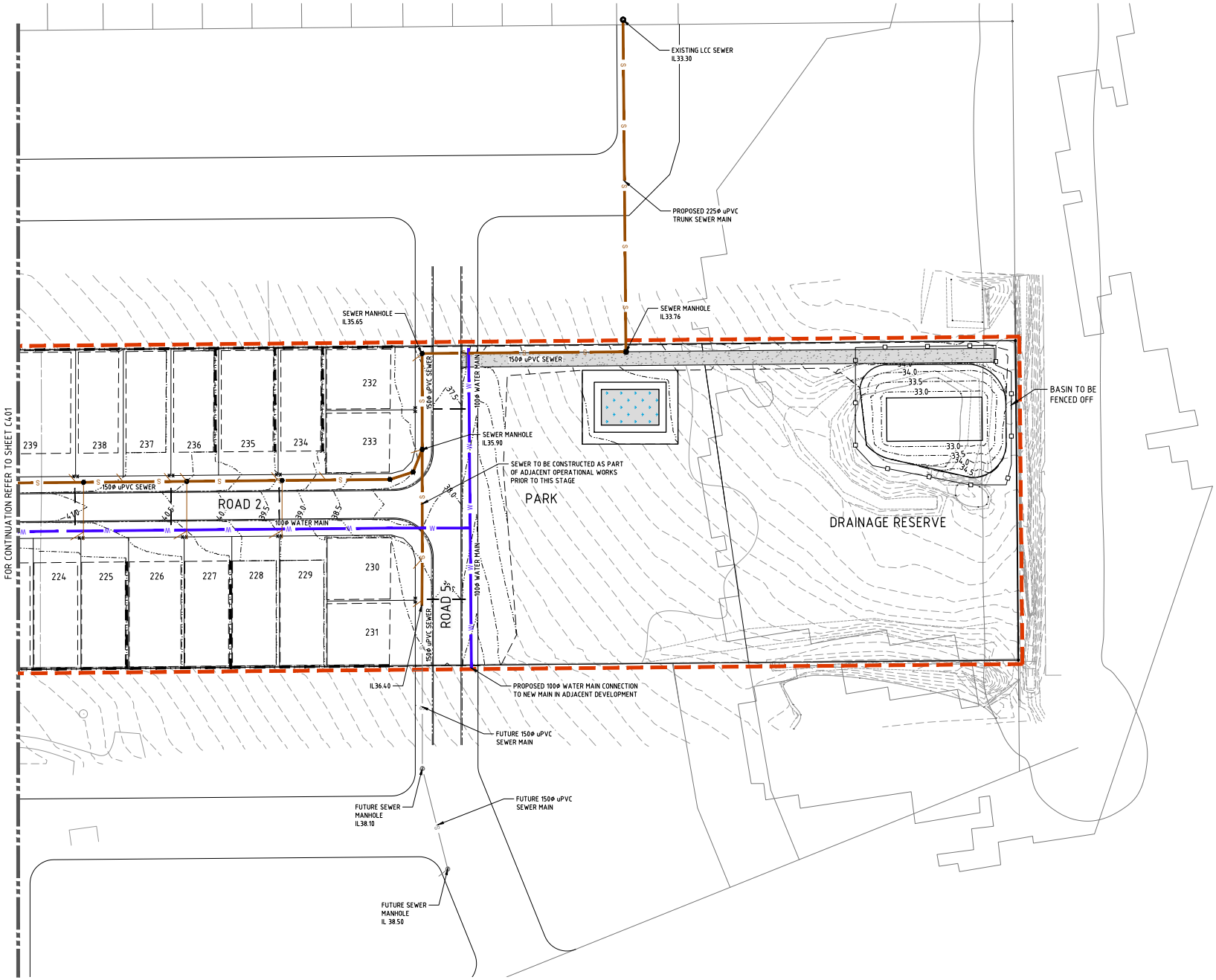
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GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

PROJECT
57 LOT RESIDENTIAL SUBDIVISION DEVELOPMENT
391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
SEWER AND WATER RETICULATION LAYOUT PLAN SHEET 1 OF 2

JOB NUMBER: **BN213636**
DRAWING NUMBER: **C401**
REVISION: **2**
DRAWING SHEET SIZE = A1



DRAWN: CLOPEZ
DESIGNED: R.MITCHELL
JOB MANAGER: R.HUANG
VERIFIER:

FOR APPROVAL

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR APPROVAL	KAE	SK	SK	15.03.23
2	ISSUED FOR APPROVAL	CL	GC	RH	01.08.23

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SCALE 1:500@A1 0 5 10 15 20 25m

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Level 9, 200 Mary Street, Brisbane QLD 4000
GPO BOX 423 Brisbane QLD 4001
(07) 3365 0400 brisbane@northrop.com.au
ABN 81 094 433 100

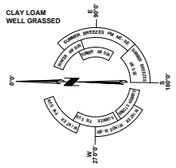
PROJECT
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391-397 PARK RIDGE ROAD, PARK RIDGE QLD 4125

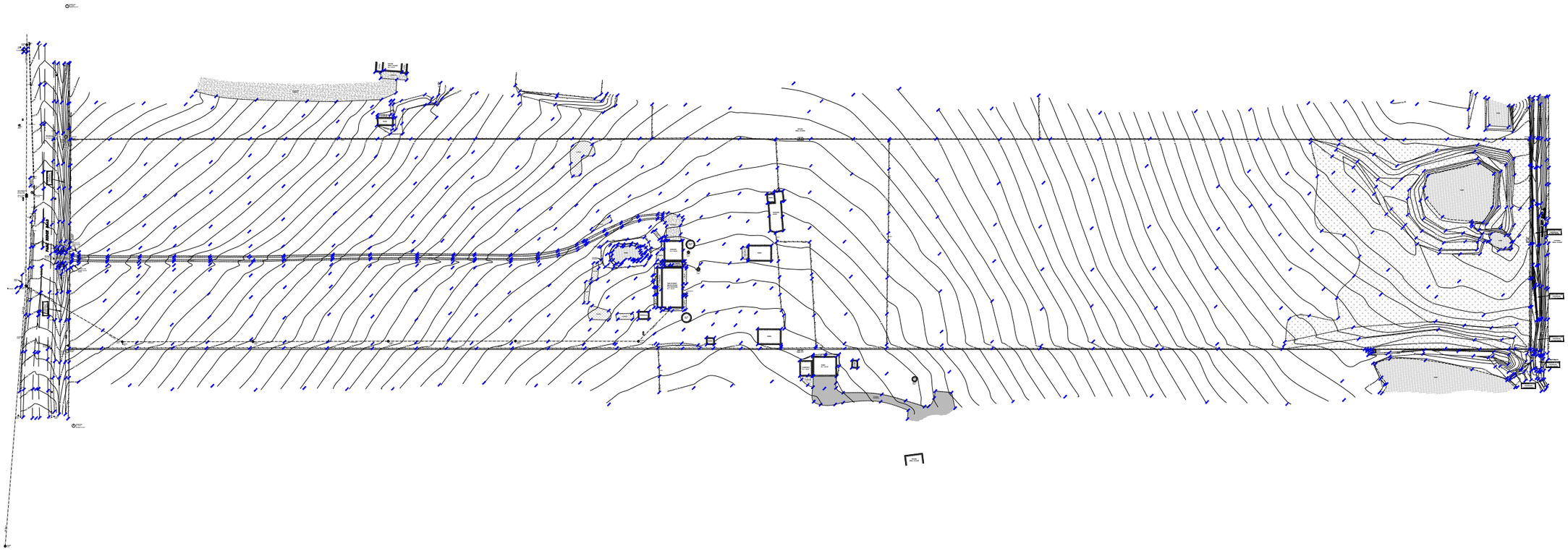
DRAWING TITLE
CIVIL ENGINEERING PACKAGE
SEWER AND WATER RETICULATION LAYOUT PLAN SHEET 2 OF 2

JOB NUMBER **BN213636**
DRAWING NUMBER **C402**
REVISION **2**
DRAWING SHEET SIZE = A1

Appendix B – Detailed Site Survey

CLAY LOAM
WELL GRASSED




TOP OF BANK
TOP OF BANK
TOP OF BANK

Appendix C – DBYD Information

Dial Before You Dig (DBYD)

Asset Location Response

PO Box 3226 Logan City DC QLD 4114 • 150 Wembley Road, Logan Central
p (07) 3412 3412 • **e** council@logan.qld.gov.au • www.logan.qld.qov.au • ABN 21-627-796 435



Robin Huang
Level 9,200 Mary Street
Brisbane City QLD 4000
rhuang@northrop.com.au

Logan City Council has been advised that you have placed an enquiry through the Dial Before You Dig service. Our records indicate the enquiry with the following details are affecting Logan City Council asset(s).

Enquiry Details	
Sequence Number	208585576
Enquiry Date	25/02/2022 14:23
Response	**AFFECTED**
Address	391-397 Park Ridge Road Park Ridge
Location in Road	Road,Footpath,Nature Strip
Activity	Planning and Design

Please review plans attached and contact Logan City Council prior to commencing works:

Logan City Council now provides a limited amount of As-Constructed and Drainage Plans on-line, click on the *Logan City As-Constructed Plans* link and type in the property address you are seeking. Unfortunately, not all properties will have plan records accessible on-line. The following options are available to customers should a record not be available:

- For **As Constructed Private Sewer/Roofwater *(Inside Properties)***
  Contact *Development Assessment, Building & Plumbing*
  p: (07) 3412 5269
  Alternatively visit our Website Link to the relevant PS1 or PS2 forms:
  Logan City As-Constructed Plans

- For **As Constructed Private Sewer/Water/Stormwater *(Outside Properties)***
  Contact *Road Infrastructure Planning*
  p: (07) 3412 5282
  Alternatively visit our Website Link for PS3 forms:
  Logan City As-Constructed Plans

If you need more assistance please call us on 07 3412 3412 or email us at council@logan.qld.gov.au.

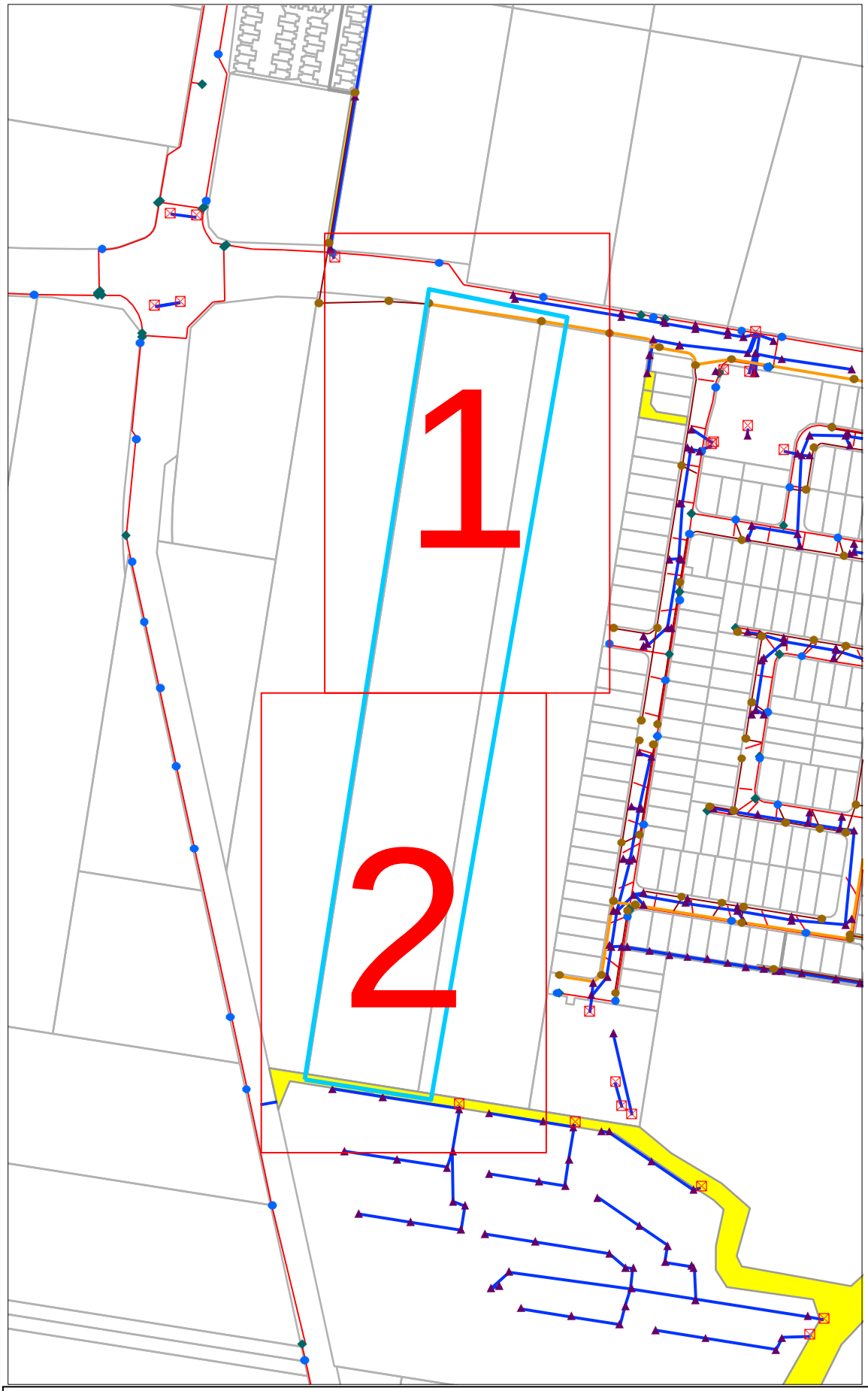
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Logan City Council's infrastructure dates back over many years and may include manufactured materials containing asbestos. You are solely responsible for ensuring that appropriate care is taken at all times and that you comply with all mandatory requirements relating to such matters, including but not limited to "workplace health and safety".

Overview Map

Sequence No: 208585576

391-397 Park Ridge Road Park Ridge



LEGEND:

- Affected DBYD Work Area
- 1 Detail Map

Sewer Assets

- Sewerage Pump Station - Existing
- Sewerage Pump Station - Retired
- Sewerage Manhole - Existing
- Sewerage Manhole - Retired
- Sewerage Pipe - Existing
- Sewerage Pipe - Retired
- Sewerage Trunk Main - Existing
- Sewerage Trunk Main - Retired
- Sewerage Rising Main - Existing
- Sewerage Rising Main - Retired

Water Assets

- Hydrant - Existing
- Hydrant - Retired
- Valve - Existing
- Valve - Retired
- Water Supply Line - Existing
- Water Supply Line - Retired

Stormwater Assets

- Manholes, Gullies and Drainways
- Telemetry Gauge Station
- Stormwater Headwall
- Telemetry Air Line
- Stormwater Pipes and Culverts

Parcel Types

- Easement
- Base Lot (Type L)
- Water Body (Type W)

N

1:3000

0 0.03km

Disclaimer: The plans are indicative only and while all reasonable care has been taken in producing this information, Logan City Council does not warrant the accuracy, completeness or currency of this information and accepts no responsibility for, or in connection with any loss or damage suffered as a result of any inaccuracies, errors or omissions or your reliance on this information. Base material reproduced with permission of the Director-General, Department of Natural Resources and Mines. The State of Queensland (Department of Natural Resources and Mines).

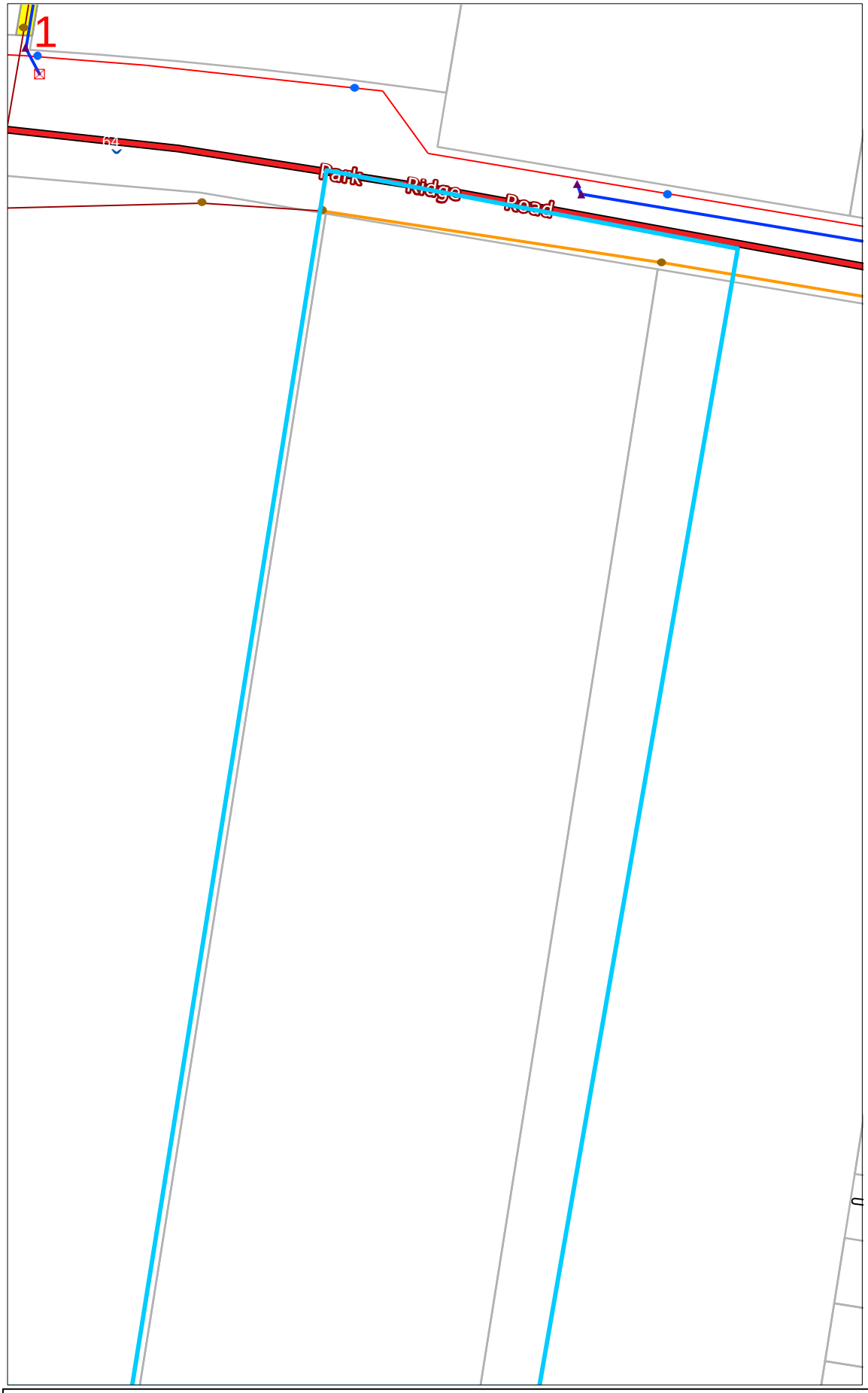
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LOGAN CITY COUNCIL

Map 1

Sequence No: 208585576

391-397 Park Ridge Road Park Ridge



LEGEND:

- Affected DBYD Work Area
- 1 Detail Map

Sewer Assets

- Sewerage Pump Station - Existing
- Sewerage Pump Station - Retired
- Sewerage Manhole - Existing
- Sewerage Manhole - Retired
- Sewerage Pipe - Existing
- Sewerage Pipe - Retired
- Sewerage Trunk Main - Existing
- Sewerage Trunk Main - Retired
- Sewerage Rising Main - Existing
- Sewerage Rising Main - Retired

Water Assets

- Hydrant - Existing
- Hydrant - Retired
- Valve - Existing
- Valve - Retired
- Water Supply Line - Existing
- Water Supply Line - Retired

Stormwater Assets

- Manholes, Gullies and Drainways
- Telemetry Gauge Station
- Stormwater Headwall
- Telemetry Air Line
- Stormwater Pipes and Culverts

Parcel Types

- Easement
- Base Lot (Type L)
- Water Body (Type W)

N

1:1000

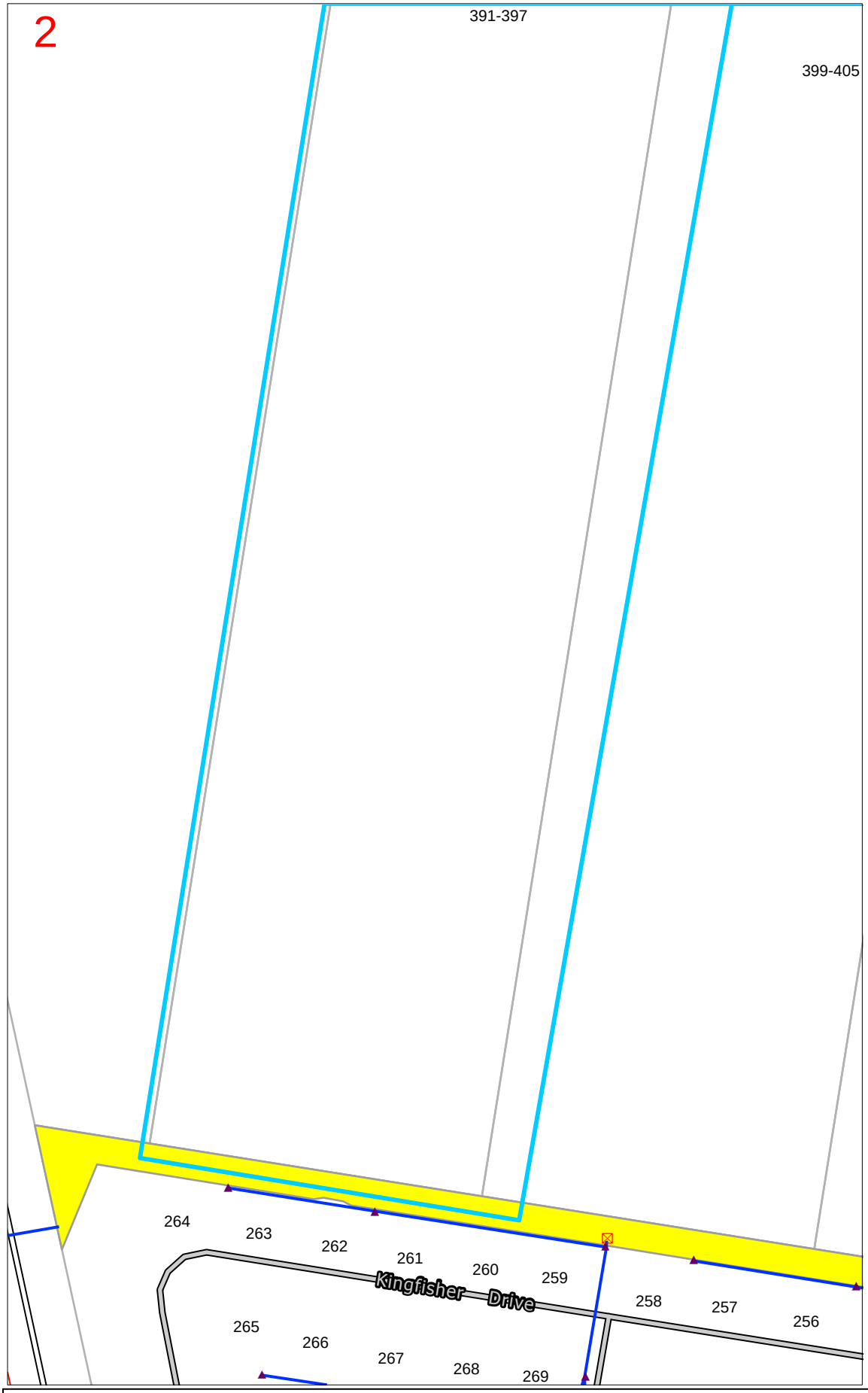
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Map 2

Sequence No: 208585576

391-397 Park Ridge Road Park Ridge



LEGEND:

- Affected DBYD Work Area
- 1 Detail Map

Sewer Assets

- Sewerage Pump Station - Existing
- Sewerage Pump Station - Retired
- Sewerage Manhole - Existing
- Sewerage Manhole - Retired
- Sewerage Pipe - Existing
- Sewerage Pipe - Retired
- Sewerage Trunk Main - Existing
- Sewerage Trunk Main - Retired
- Sewerage Rising Main - Existing
- Sewerage Rising Main - Retired

Water Assets

- Hydrant - Existing
- Hydrant - Retired
- Valve - Existing
- Valve - Retired
- Water Supply Line - Existing
- Water Supply Line - Retired

Stormwater Assets

- Manholes, Gullies and Drainways
- Telemetry Gauge Station
- Stormwater Headwall
- Telemetry Air Line
- Stormwater Pipes and Culverts

Parcel Types

- Easement
- Base Lot (Type L)
- Water Body (Type W)

N

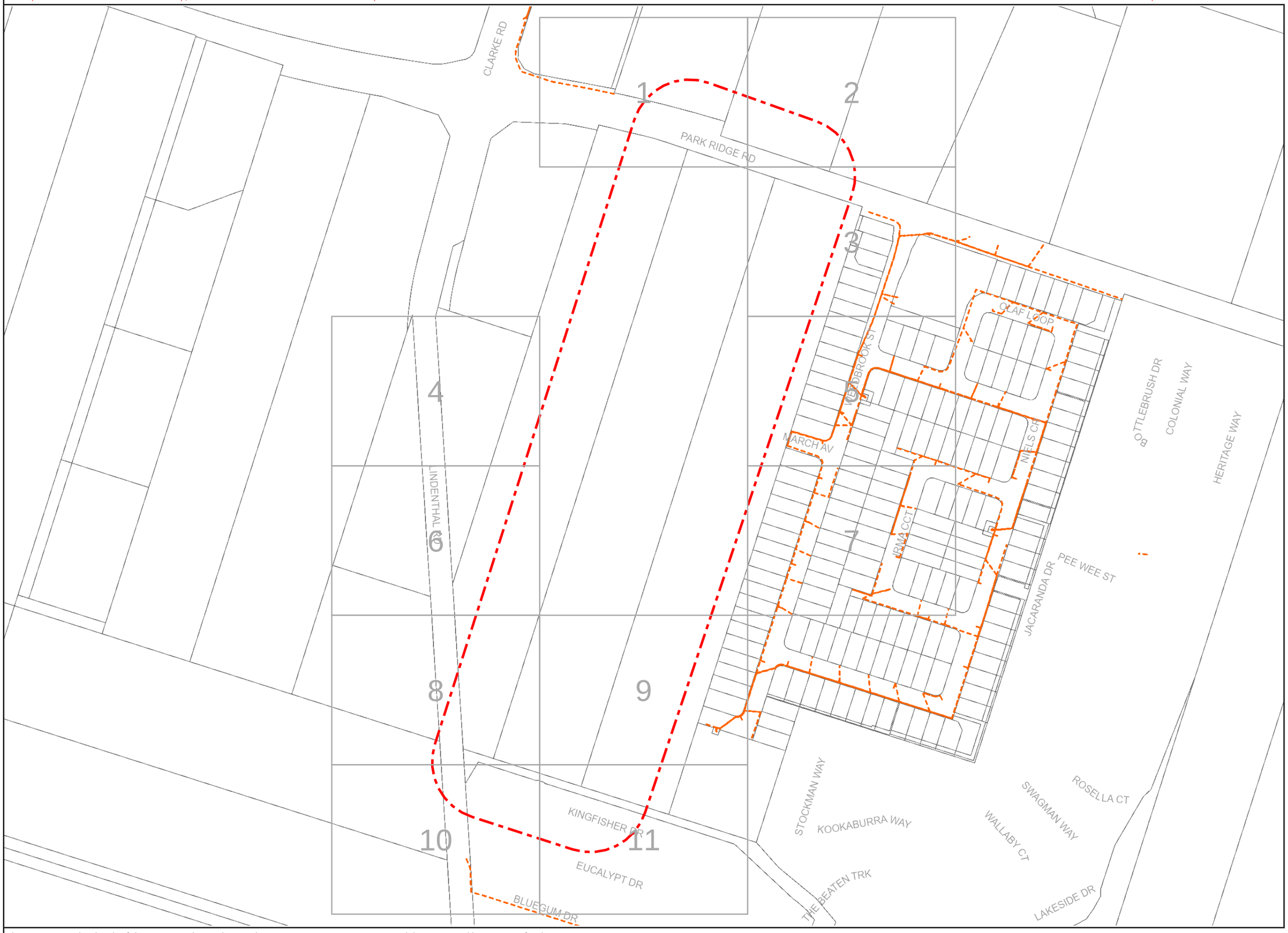
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All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX DBYD map, then ENERGEX shall be contacted immediately.

For Emergency Situations please call 13 19 62



This output provides details of the ENERGEX electrical network. As variations map exist no responsibility is incurred by ENERGEX for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

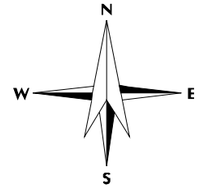
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Date: 25/02/2022

Scale: 1:3075
OVERVIEW

For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

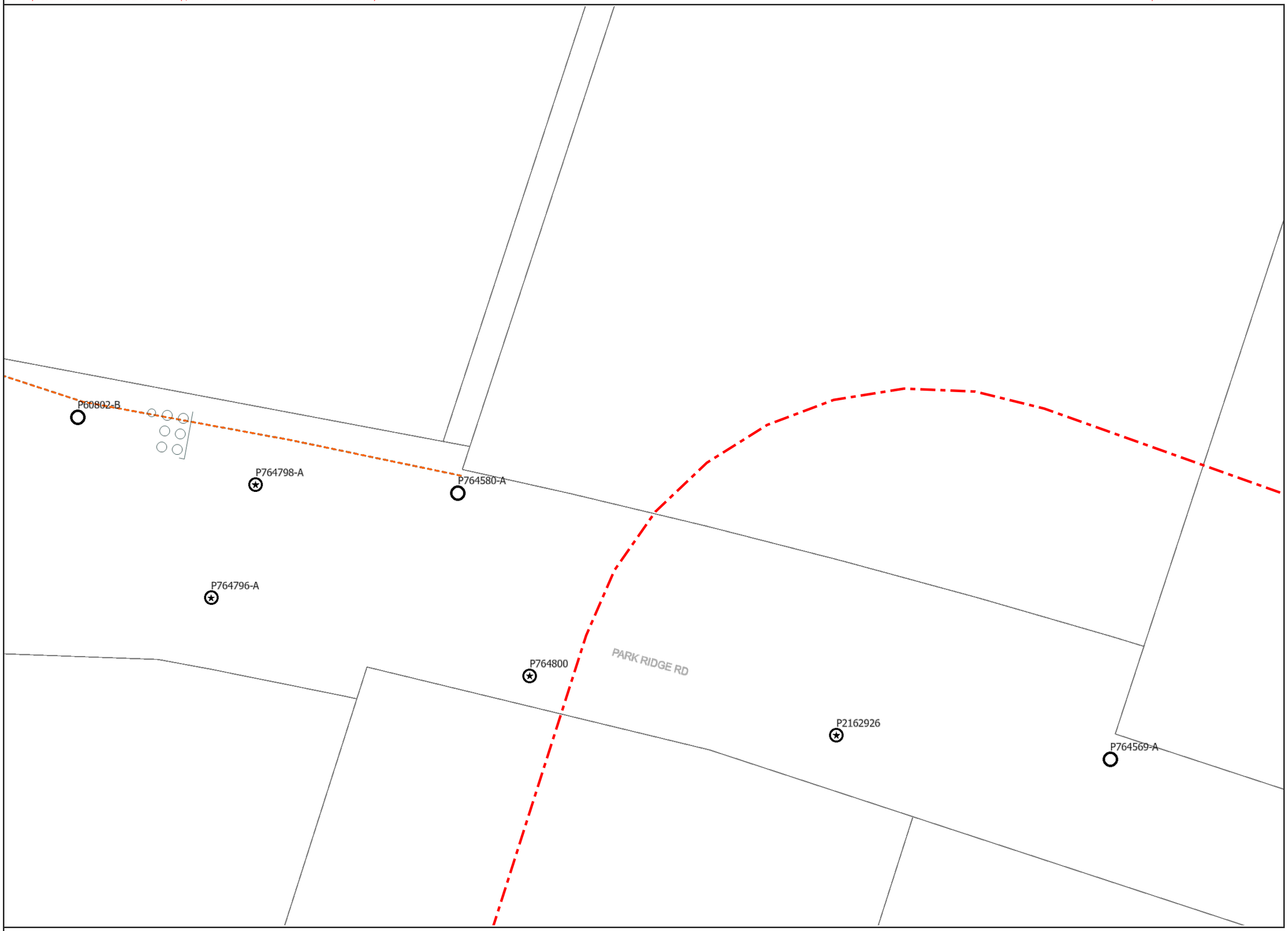
AS5488 Category "D" Plan



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energex

DBYD

Sequence: 208585577
Date: 25/02/2022

Scale: 1:500
Tile No: 1

For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

AS5488 Category "D" Plan

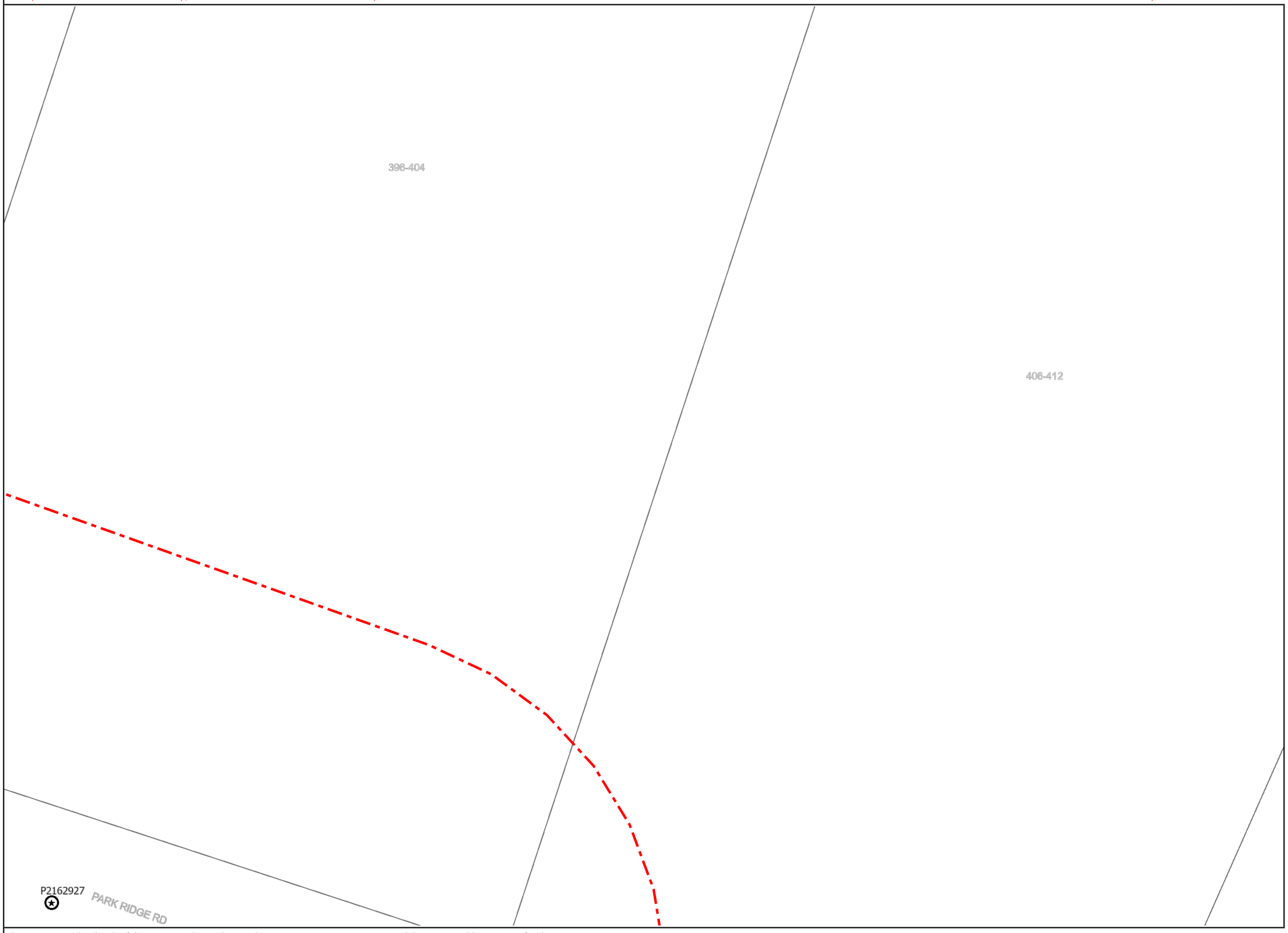
N
W E
S

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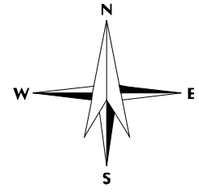
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Date: 25/02/2022

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For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

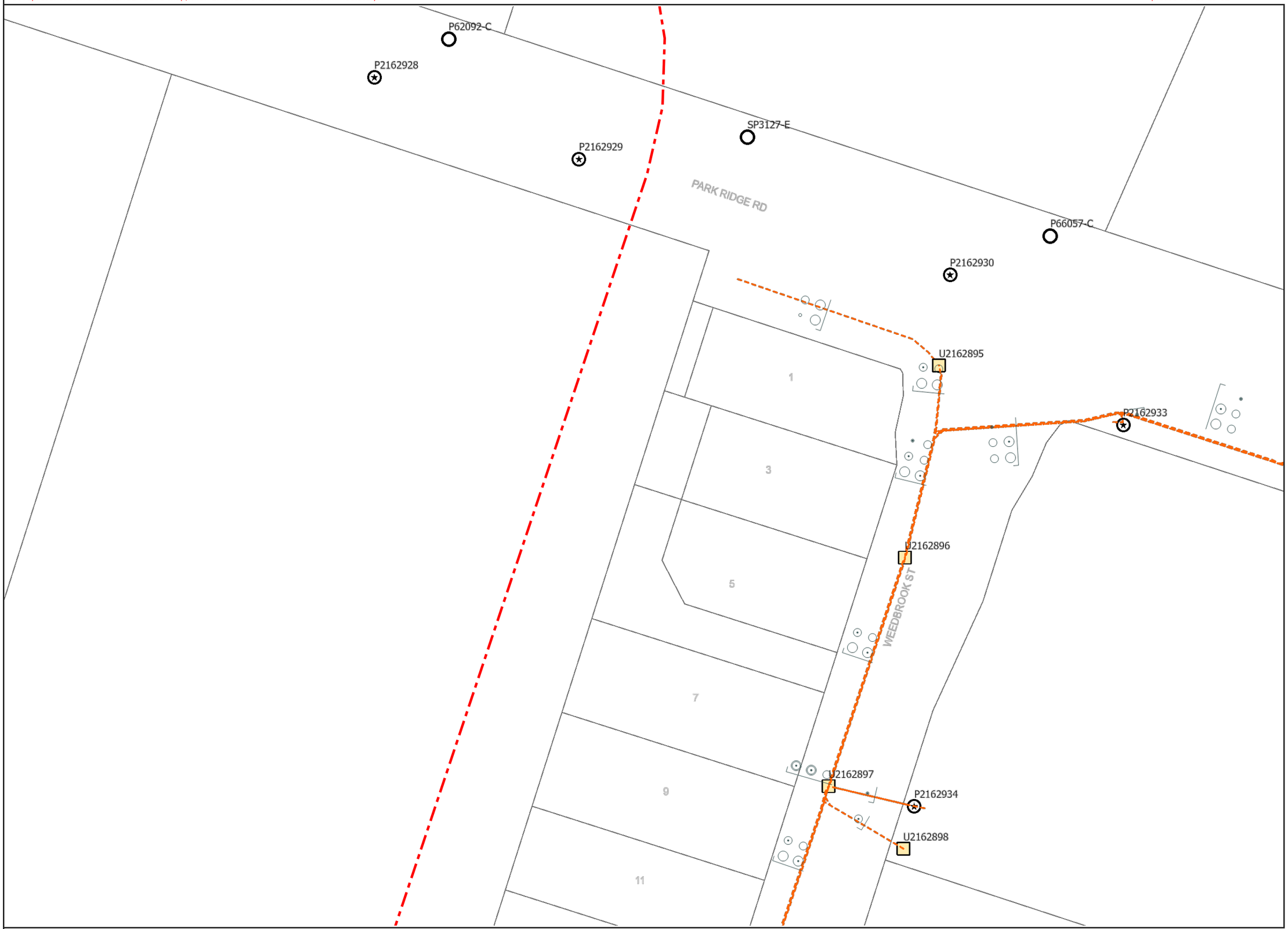
AS5488 Category "D" Plan



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DBYD

Sequence: 208585577
Date: 25/02/2022

Scale: 1:500
Tile No: 3

For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

AS5488 Category "D" Plan

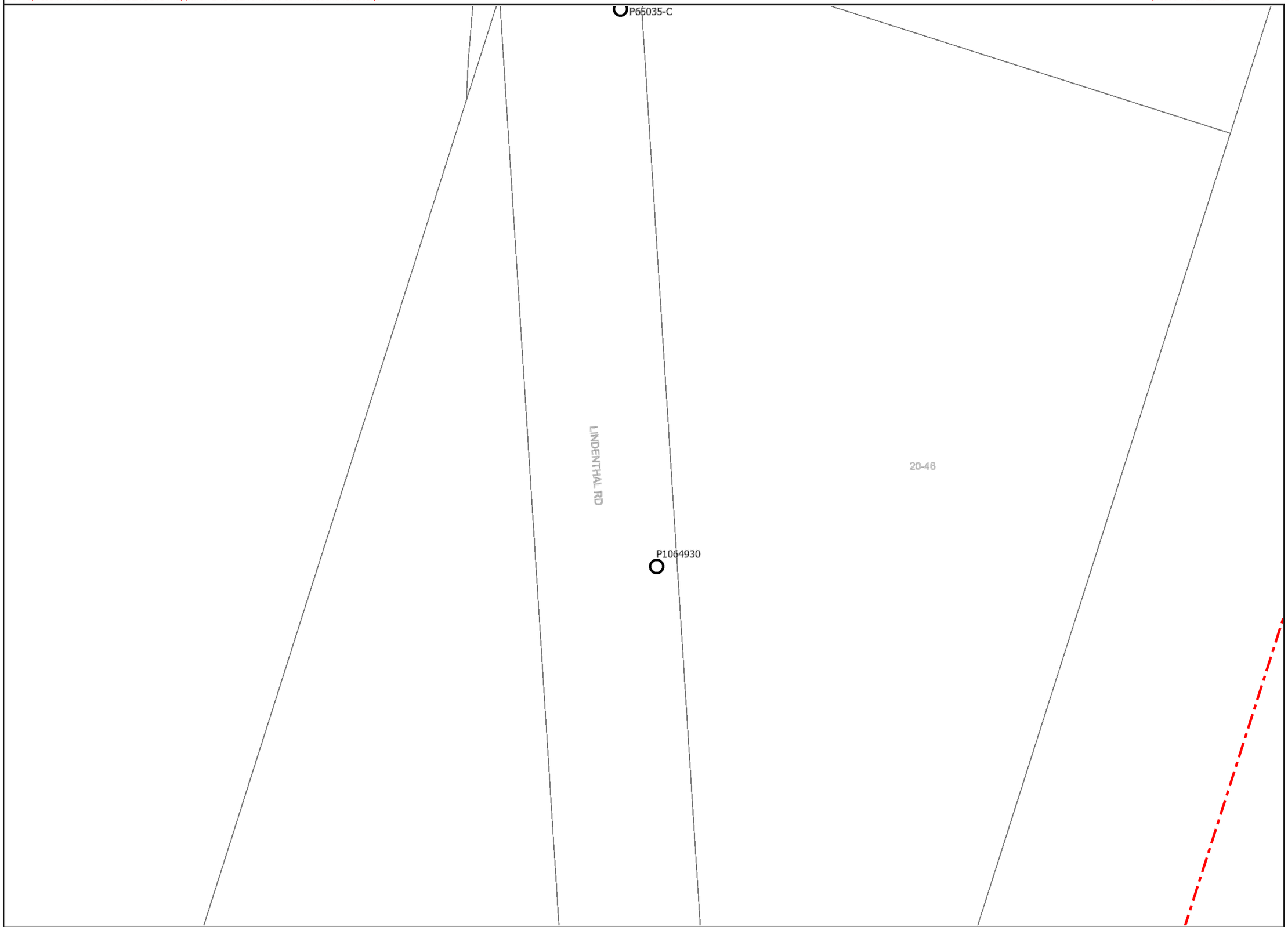
N
W E
S

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Paper size A3 Map has been designed to be reproduced in colour

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For Emergency Situations please call 13 19 62



energex

DBYD

Sequence: 208585577
Date: 25/02/2022

Scale: 1:500
Tile No: 4

For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

AS5488 Category "D" Plan

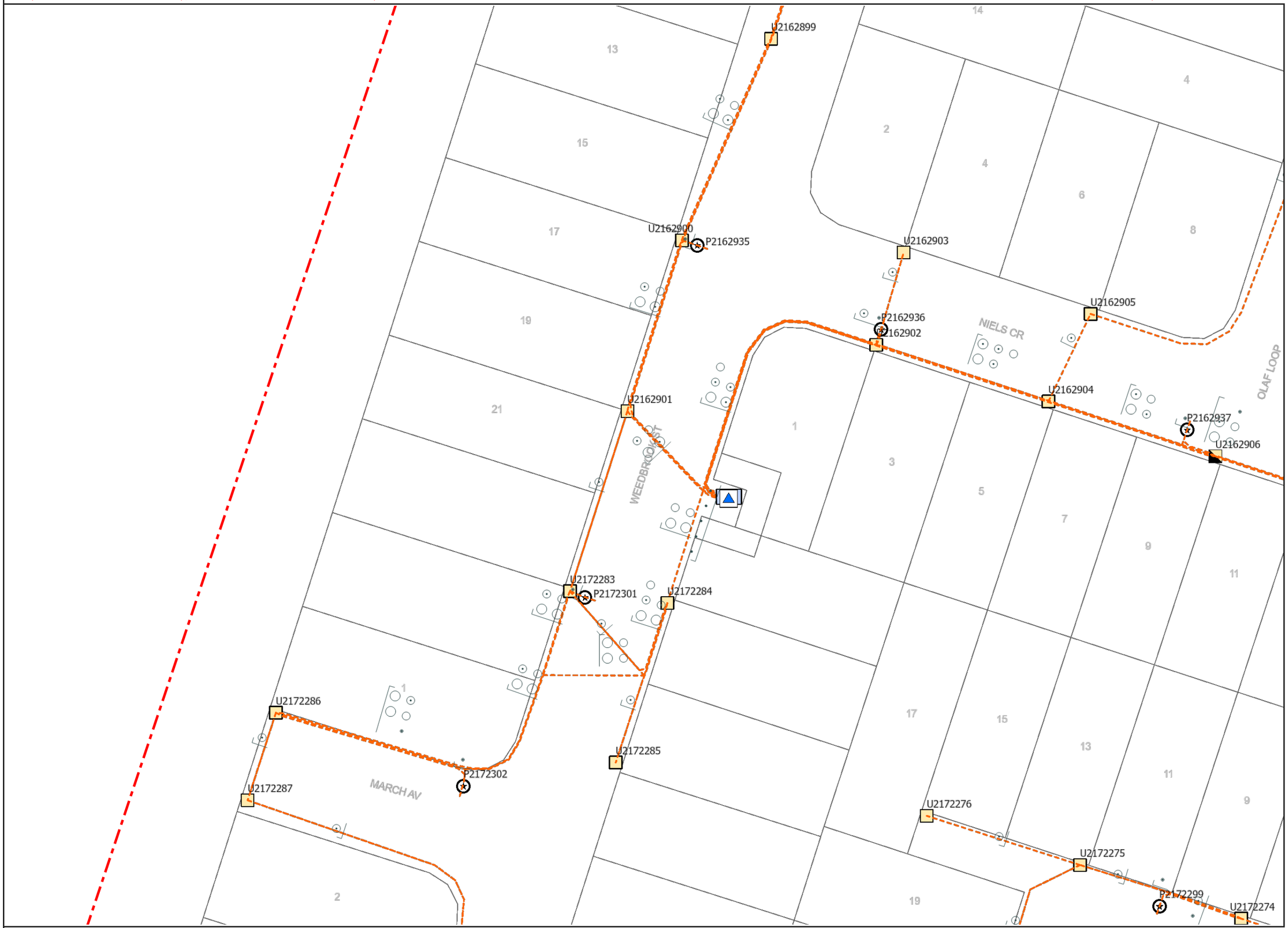
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For Emergency Situations please call 13 19 62



DBYD

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Date: 25/02/2022

Scale: 1:500
Tile No: 5

For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

AS5488 Category "D" Plan

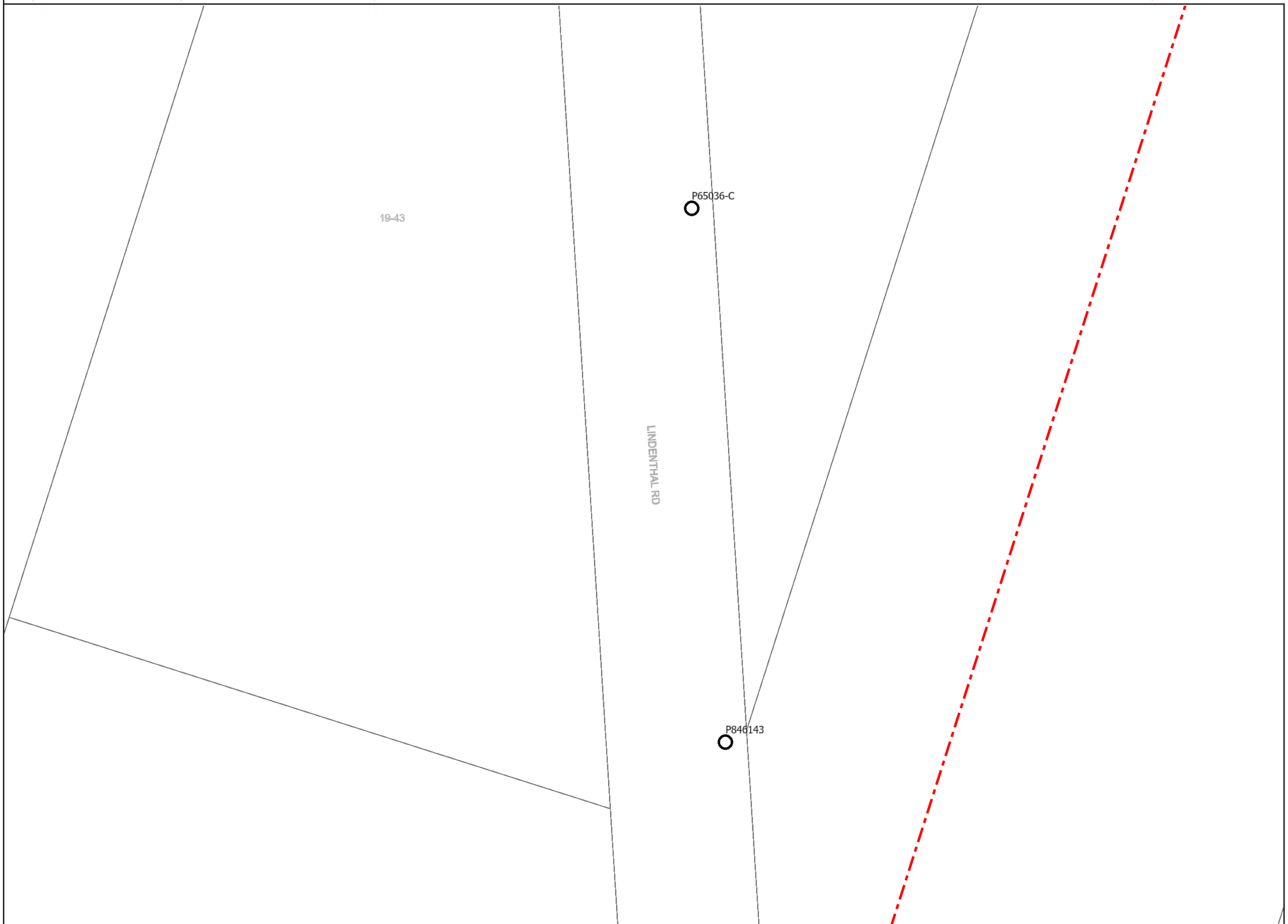
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energex

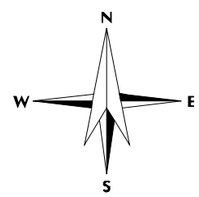
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For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

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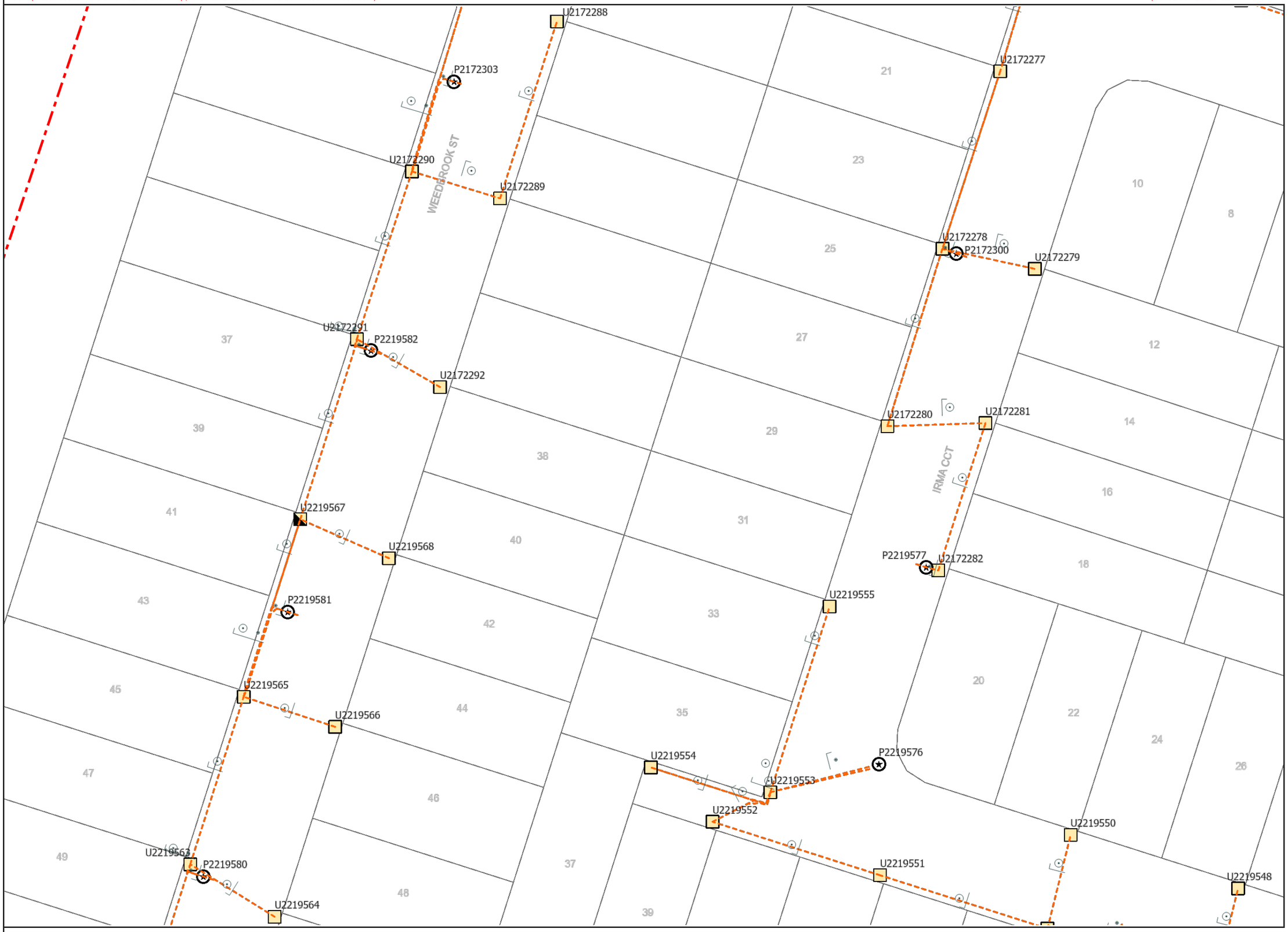


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For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

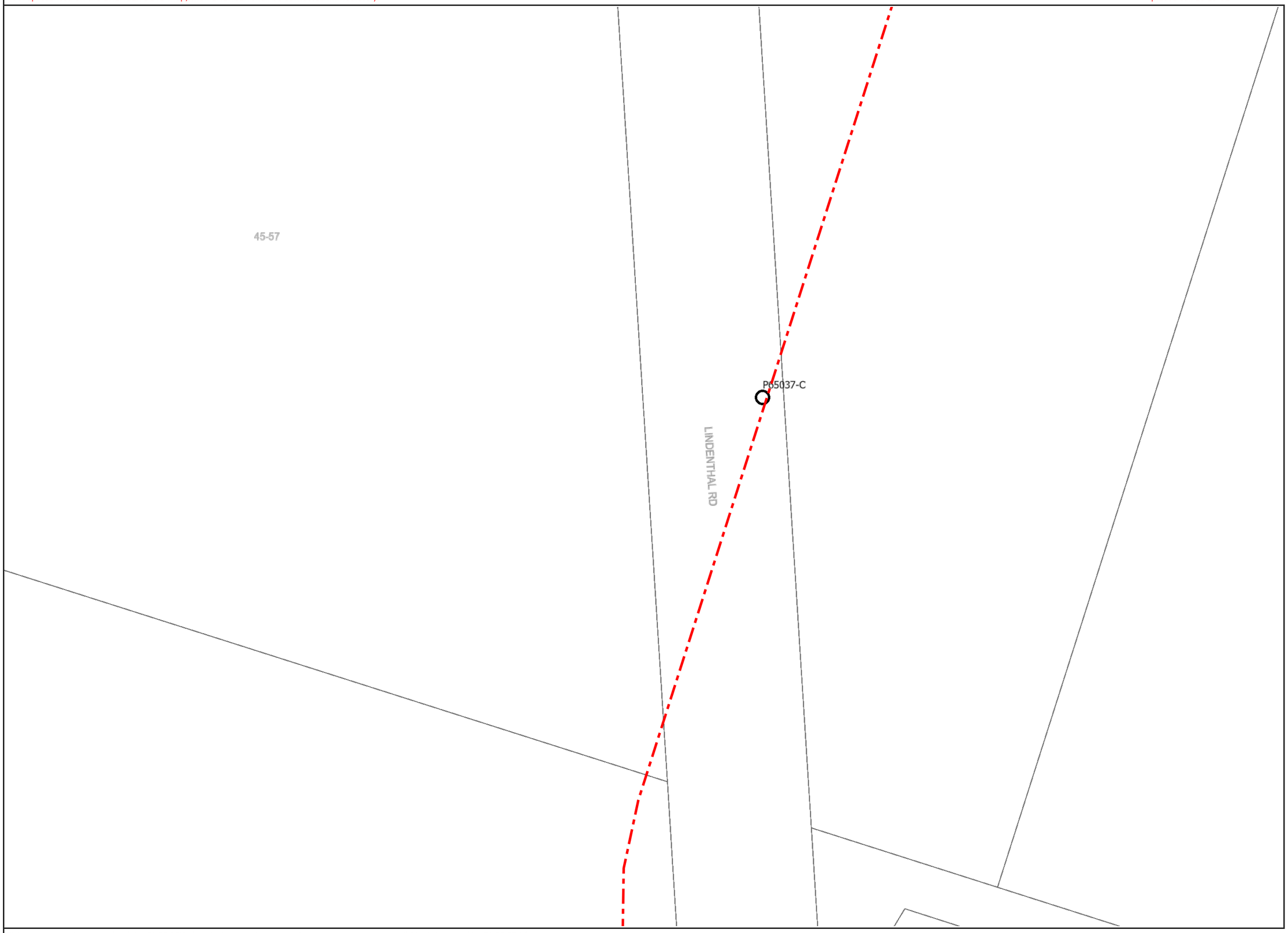
AS5488 Category "D" Plan

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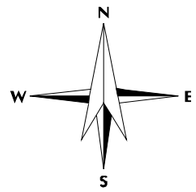
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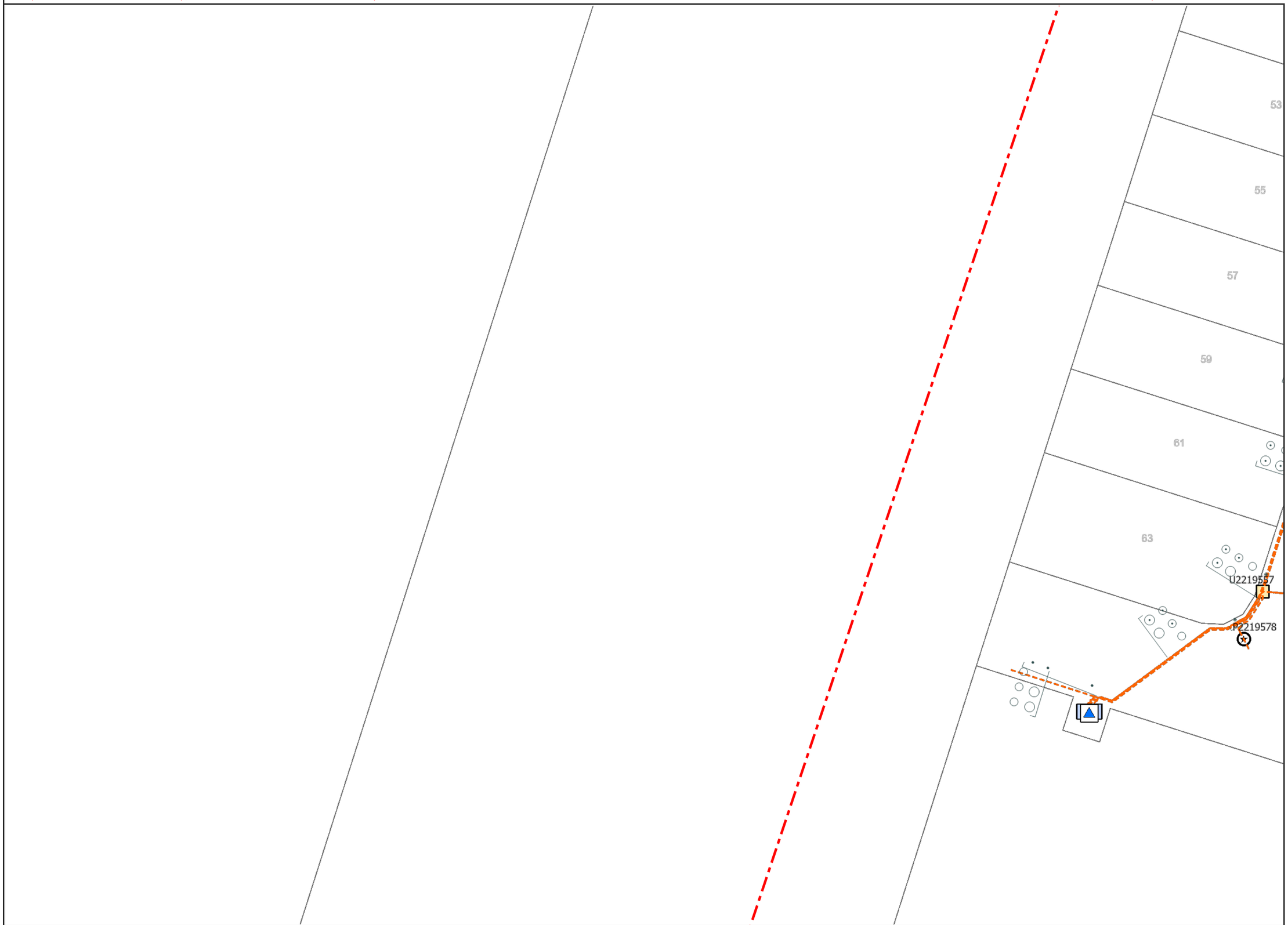


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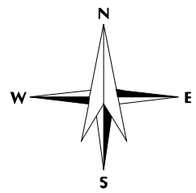
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For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

AS5488 Category "D" Plan

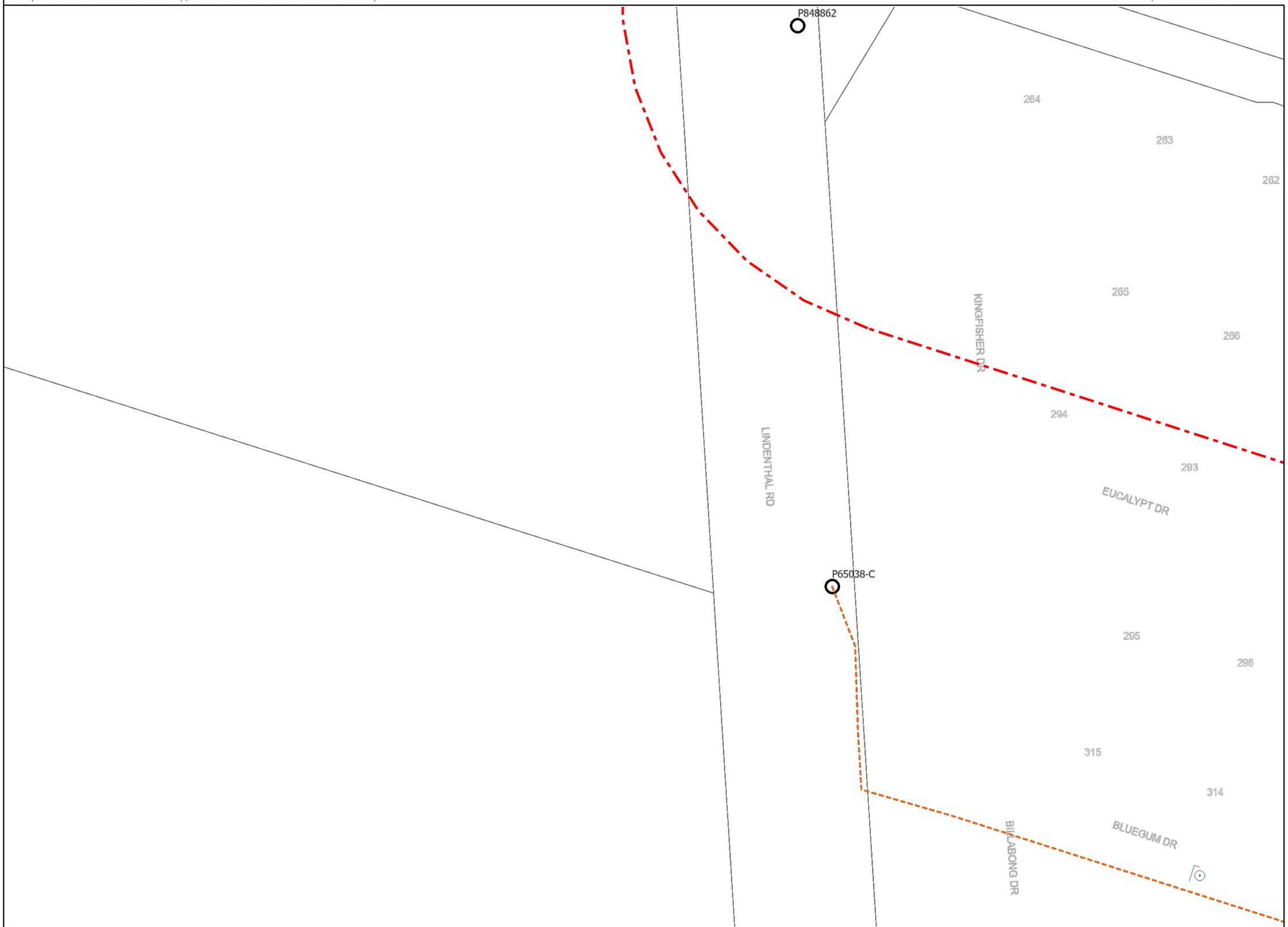


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DBYD

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Date: 25/02/2022

Scale: 1:500
Tile No: 10

For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

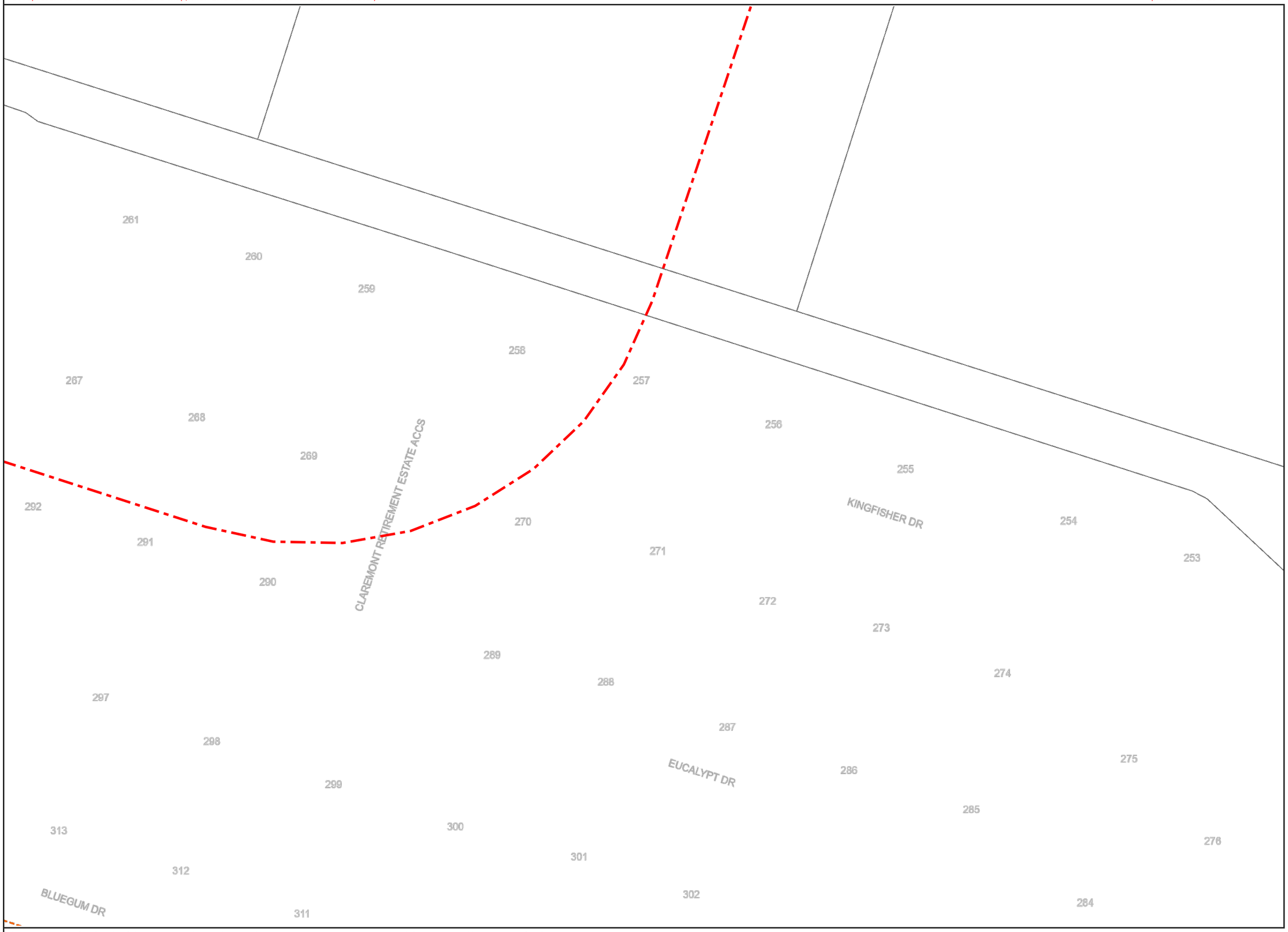
AS5488 Category "D" Plan

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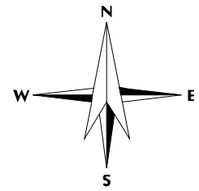
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Date: 25/02/2022

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AS5488 Category "D" Plan



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To:	Robin Huang
Phone:	Not Supplied
Fax:	Not Supplied
Email:	rhuang@northrop.com.au

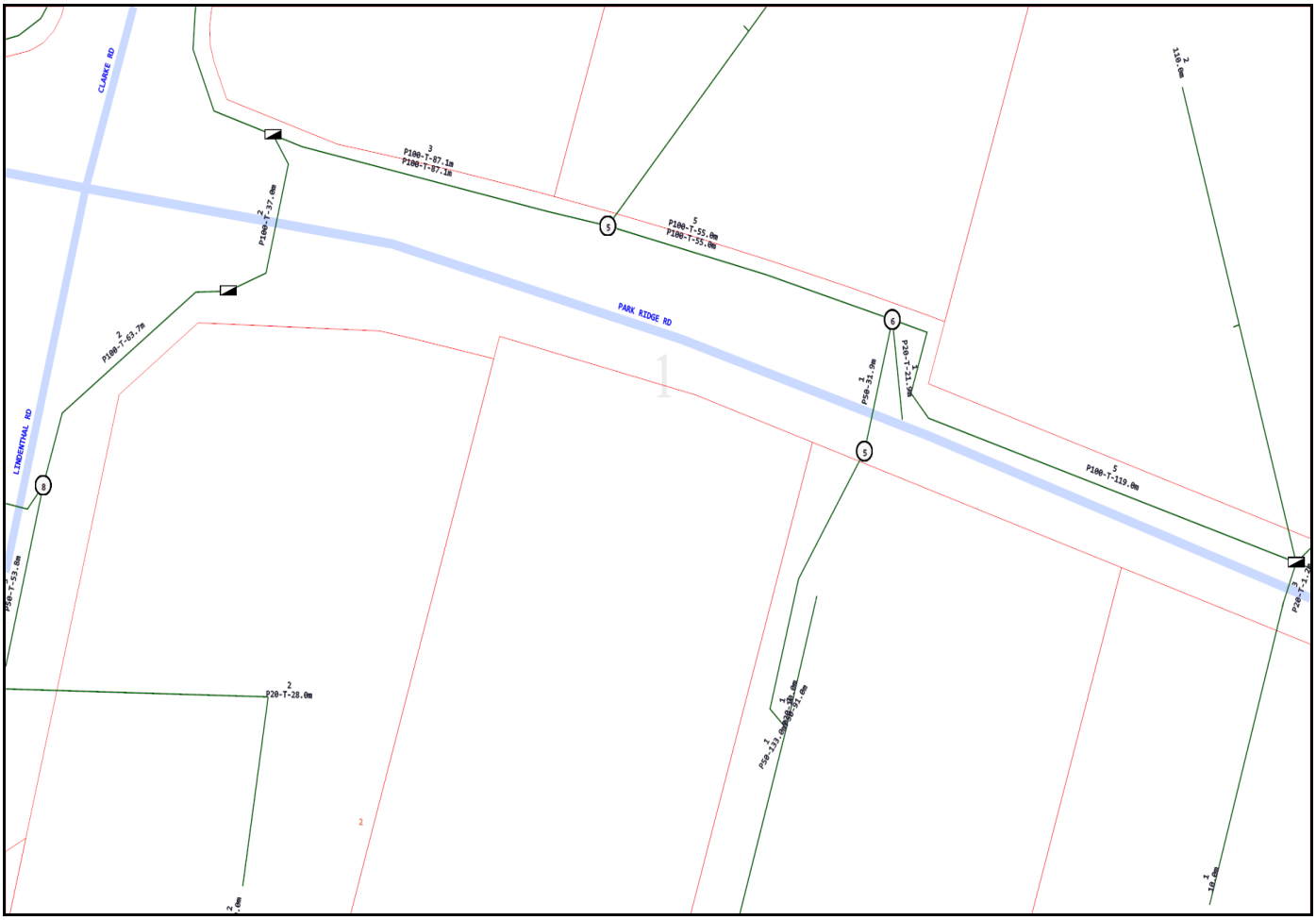
Dial before you dig Job #:	31471102
Sequence #	208585578
Issue Date:	25/02/2022
Location:	391-397 Park Ridge Road , Park Ridge , QLD , 4125

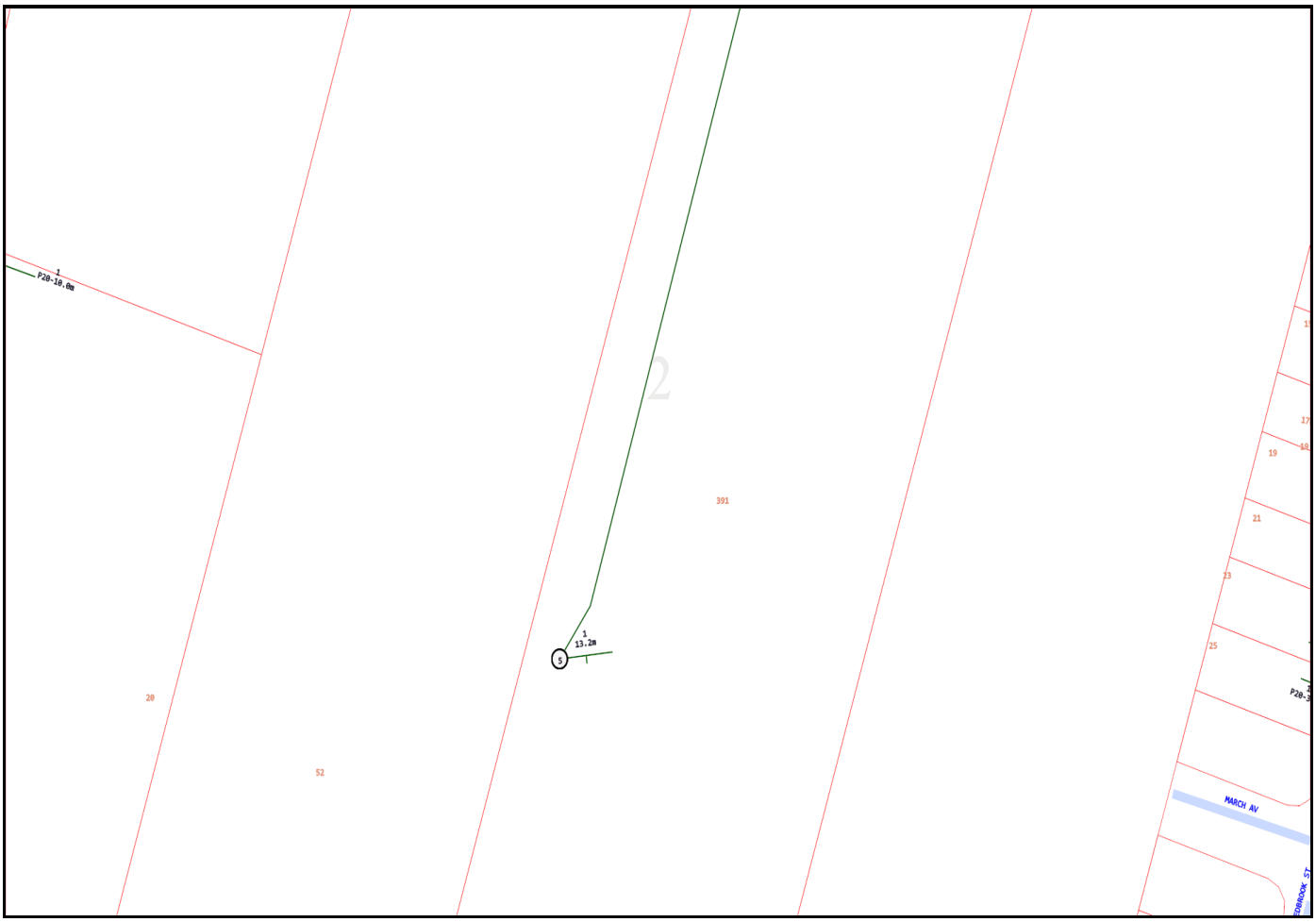
Indicative Plans

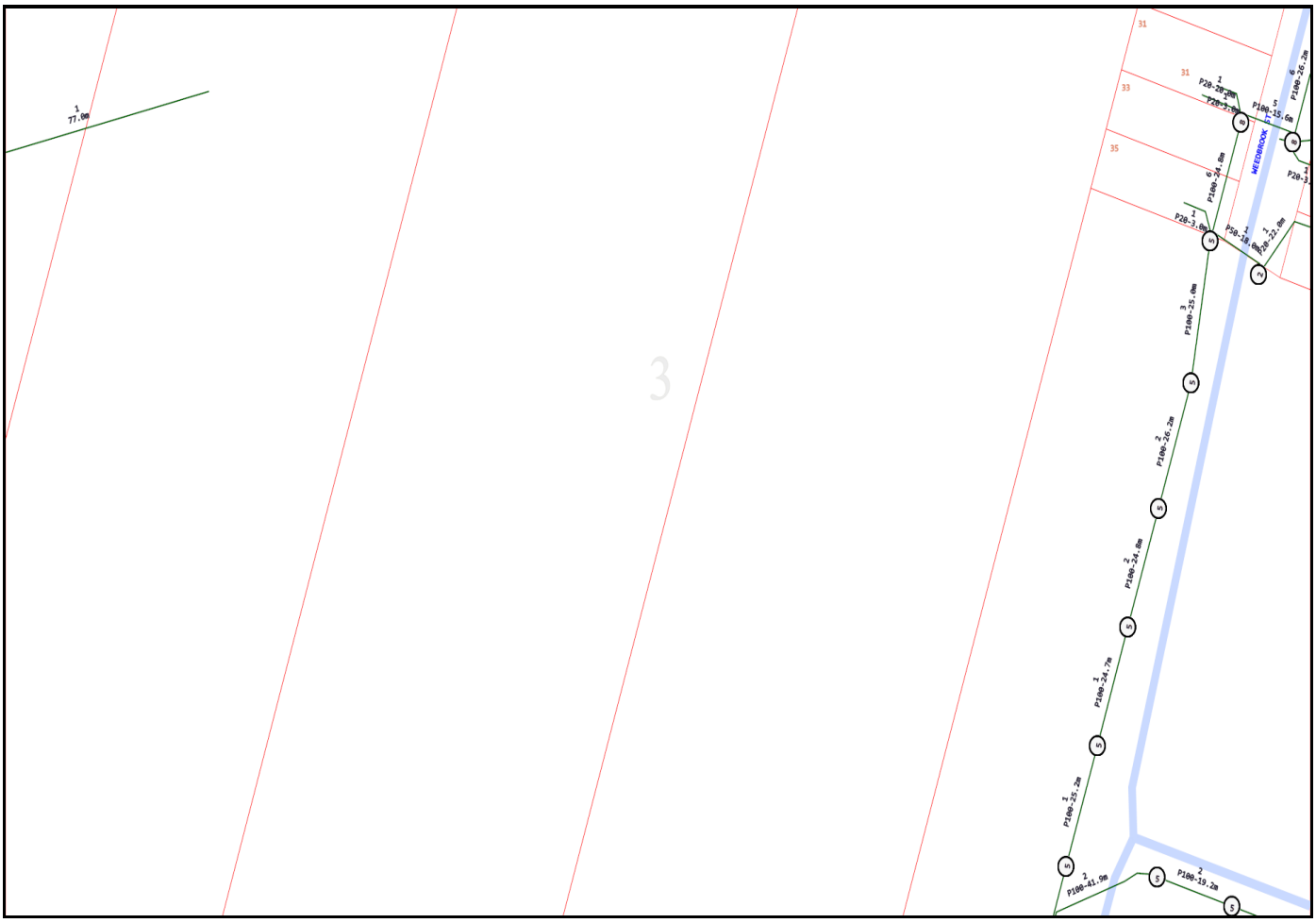


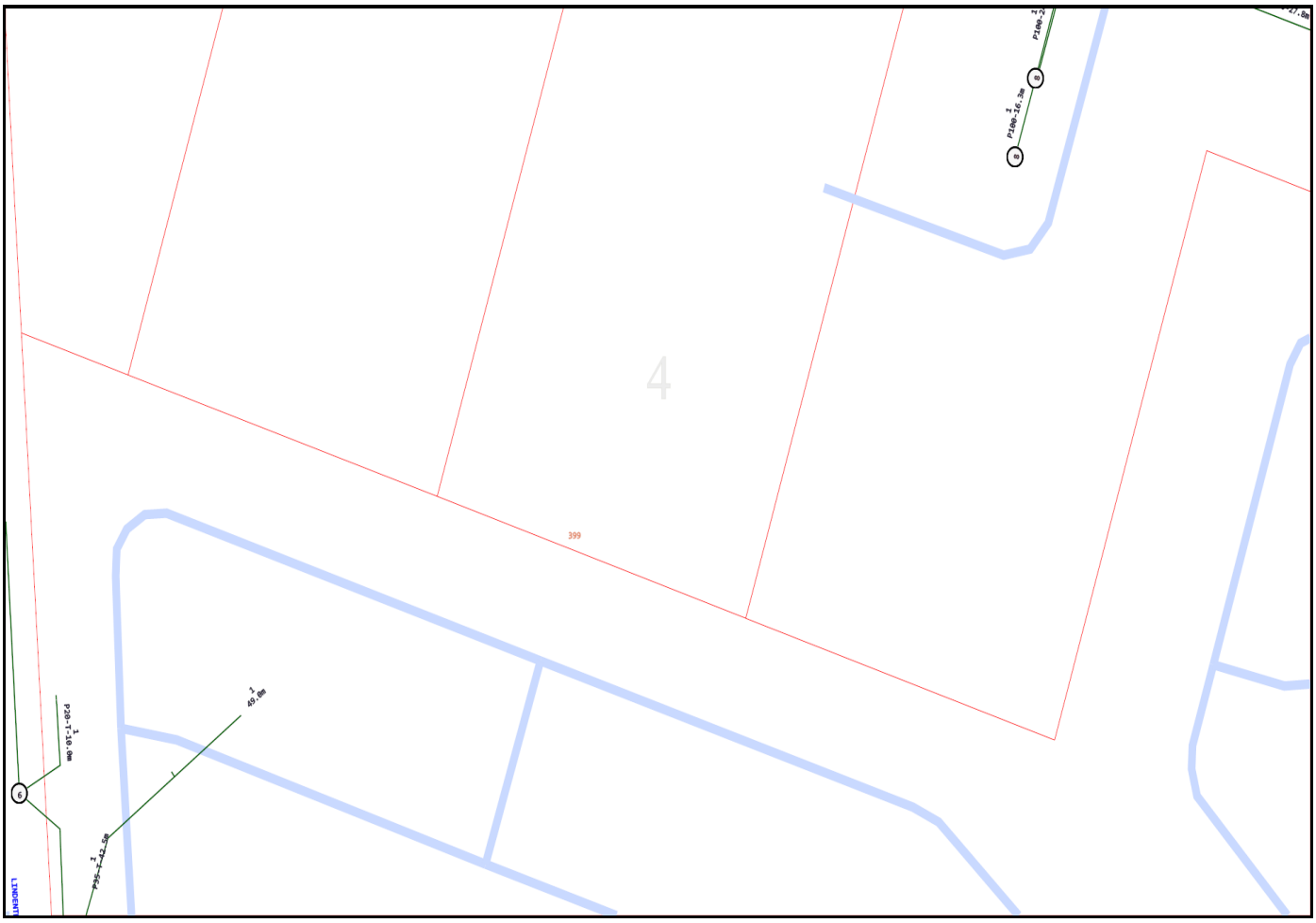
LEGEND

34	Parcel and the location
5	Pit with size "5"
2E	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
2 PO – T- 25.0m P40 – 20.0m 5 9	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
2 10.0m 5 9	2 Direct buried cables between pits of sizes ,"5" and "9" are 10.0m apart.
5 9	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
5 9	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
5 9	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
BROADWAY ST	Road and the street name "Broadway ST"
Scale	0 20 40 60 Meters 1:2000 1 cm equals 20 m


CLARKE RD
PARK RIDGE RD
LINDENTHAL RD
P100-T-87.1m
P100-T-87.1m
P100-T-37.0m
P100-T-55.0m
P100-T-55.0m
P100-T-63.7m
P50-T-53.8m
P50-T-31.9m
P20-T-21.5m
P100-T-119.0m
P20-T-28.0m
P50-T-33.0m
P50-T-31.0m
116.0m
1
2


1
P20-10.0m
1
13.2m
5
391
52
20
19
21
23
25
MARCH AV


3
31
31
33
35
MEEDBROOK
1
77.0m
P20-26.2m
P20-3.0m
P100-15.6m
P100-26.2m
P100-24.8m
P20-3.6m
P50-15.0m
P50-22.8m
P100-25.0m
P100-26.2m
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P100-24.7m
P100-25.2m
P100-41.9m
P100-19.2m



Emergency Contacts

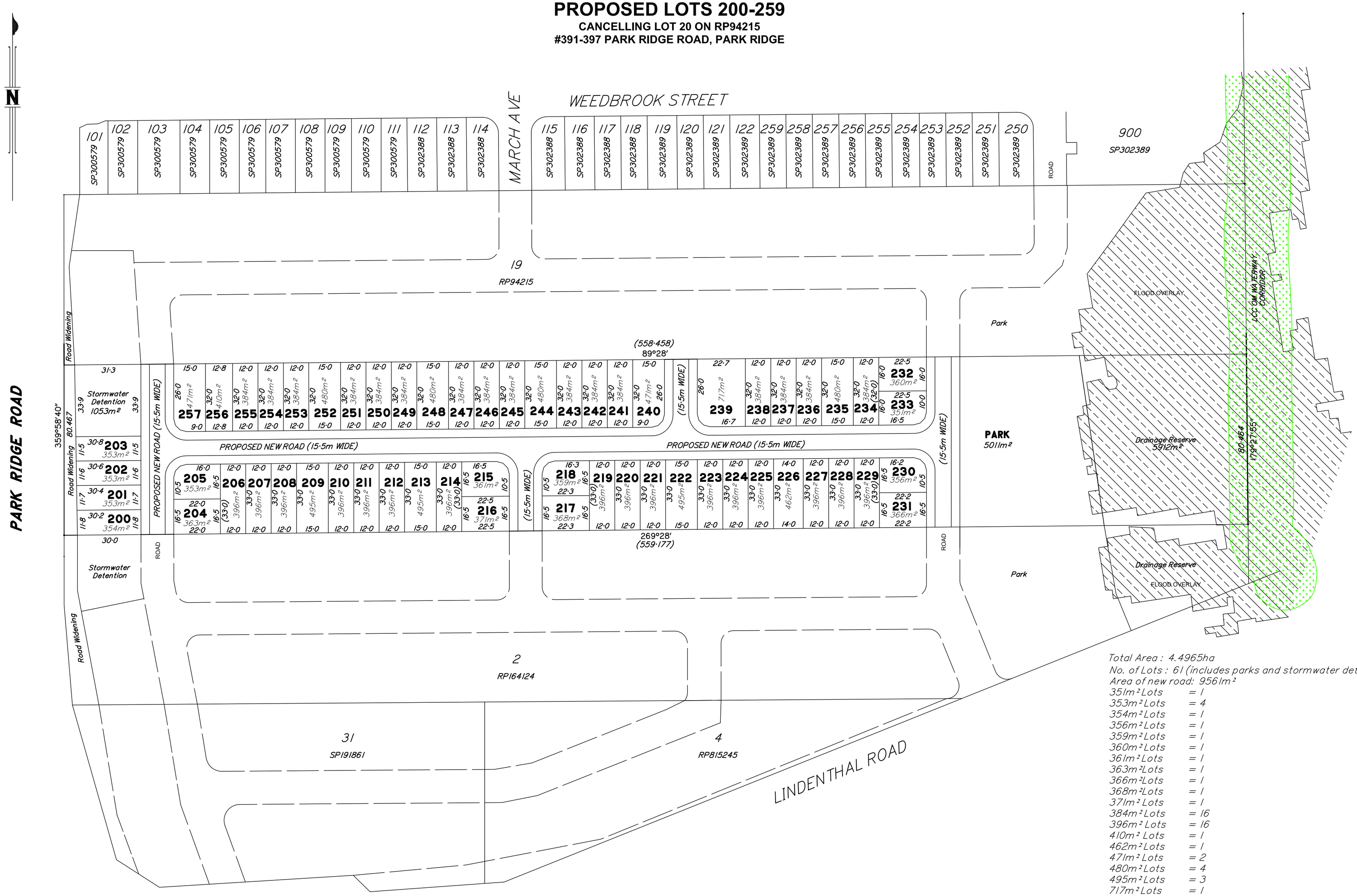
You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

Appendix D – Subdivision Proposal Plan

PROPOSAL PLAN

PROPOSED LOTS 200-259

CANCELLING LOT 20 ON RP94215
#391-397 PARK RIDGE ROAD, PARK RIDGE



Total Area : 4.4965ha
No. of Lots : 61 (includes parks and stormwater detention)
Area of new road: 956lm²

351m² Lots	= 1
353m² Lots	= 4
354m² Lots	= 1
356m² Lots	= 1
359m² Lots	= 1
360m² Lots	= 1
361m² Lots	= 1
363m² Lots	= 1
366m² Lots	= 1
368m² Lots	= 1
371m² Lots	= 1
384m² Lots	= 16
396m² Lots	= 16
410m² Lots	= 1
462m² Lots	= 1
471m² Lots	= 2
480m² Lots	= 4
495m² Lots	= 3
717m² Lots	= 1

This design is preliminary only and is subject to review to accommodate Local Authority, Engineering and Marketing requirements. Areas and distances are approximate only and subject to survey

STEVE COOPER & ASSOCIATES PTY LTD
ABN 67 010 839 022
LICENSED LAND SURVEYORS,
LAND PLANNING CONSULTANTS.
PH:- 3846 6477
27 NORFOLK ROAD, SOUTH BRISBANE 4101
EMAIL:- admin@stevecooper.com.au

SITE:
#391-397 PARK RIDGE ROAD
PARK RIDGE
LOT 20 ON RP94215

LOCAL AUTH: LOGAN C.C.
AREA: 4.496ha
UBD REF: 100 P1

SUBDIVISION PROPOSAL PLAN

DATE: 14/02/2023 SURVEYOR: JP
DRAWN BY: GBF
CCAD: 21-2306proposal.mjo CHECKED:
SCALE: 1:1250 - Orig A2
10 0 25 50
JOB NO: 21-2306p3

Appendix E – Code Response Tables

9.4.2 Filling and Excavation code

Table Error! No text of specified style in document..**1–Filling and excavation code: accepted development (subject to requirements) and assessable development**

Performance outcomes	Acceptable outcomes	Complies	Comments
For accepted development (subject to requirements) and assessable development			
Protection of natural processes and ecosystems			
PO1 The discharge of sediments and pollutants from filling or excavation does not adversely affect a waterway or the stormwater network.	**AO1** The discharge of sediments and pollutants to a waterway or stormwater network complies with part 3.3—Filling and excavation standards in planning scheme policy 5—Infrastructure.	**AO1 Complies**	The proposed development will comply with all relevant policies, State Planning Policy and IECA guidelines to ensure water quality is not degraded in received waterways
PO2 Topsoil and spoil stockpiled on the premises do not adversely affect natural processes and ecosystems.	**AO2** Topsoil and spoil is stockpiled to comply with part 3.3–Filling and excavation standards in planning scheme policy 5–Infrastructure.	**AO2 Complies**	Stockpile locations will be designated in areas that will minimise impact to any existing natural processes and ecosystems
PO3 Filling is carried out using stable, solid and clean earth, free of organic and putrescible waste, rubbish and refuse material.	**AO3** Filling complies with part 3.3–Filling and excavation standards in planning scheme policy 5–Infrastructure.	**AO3 Complies**	Any unsuitable material will be disposed off-site and replaced with clean fill as required
Protection of existing and planned infrastructure			
PO4 Filling or excavation works do not adversely affect infrastructure, including any services.	**AO4** Filling or excavation works comply with part 3.3–Filling and excavation standards in planning scheme policy 5–Infrastructure.	**AO4 Complies**	The proposed development will not adversely affect infrastructure, including any services. Augmentation of the existing infrastructure is proposed, details of which are documented in the Site Based Stormwater Management Plan.

Performance outcomes	Acceptable outcomes	Complies	Comments
Protection and enhancement of personal health and safety and premises			
PO5 Filling or excavation works do not adversely affect personal health and safety.	**AO5** Filling or excavation works comply with part 3.3–Filling and excavation standards in planning scheme policy 5–Infrastructure.	**AO5 Complies**	Construction of the proposed development will not adversely affect personal health and safety.
Surface water flow			
PO6 Surface water drainage does not cause any of the following: (a) ponding on any premises; or (b) a hazard or adversely affect personal health and safety and premises; or (c) diversion or concentration of flow from or onto adjoining premises or infrastructure.	**AO6** Surface water drainage complies with part 3.3–Filling or excavation standards in planning scheme policy 5–Infrastructure.	**AO6 Complies**	The proposed development will not adversely impact on surface water drainage.
Batters			
PO7 A batter: (a) does not adversely affect the natural physical processes and ecosystems; (b) protects existing and planned infrastructure; (c) is safe, stable and easily maintained; (d) is landscaped to enhance visual amenity.	**AO7** A batter is designed and constructed to comply with the standards specified in section 3.3.6–Batters and retaining walls in planning scheme policy 5–Infrastructure.	**AO7 Complies**	The proposed development has landscaped batters at a maximum grade of 1V:4H with appropriate landscape treatments where necessary.
Retaining walls			
PO8 A retaining wall:	**AO8** A retaining wall is designed and constructed to comply with the standards specified in section	**AO8 Complies**	The proposed development comprises of boulder and block retaining walls that are designed to

Performance outcomes	Acceptable outcomes	Complies	Comments
(a) is not constructed of timber and are not located on existing or proposed lot boundaries, or movement networks; (b) does not adversely affect the natural physical processes and ecosystems; (c) is located to avoid conflict with adjoining premises; (d) is located such that existing and planned infrastructure is not adversely affected; (e) protects the visual amenity of adjoining premises or a public open space; (f) is located within the premises that is being filled; (g) is located within the premises that is cut and is designed to take any surcharge loading allowable on the uphill lot; (h) is safe and stable; (i) enables easy access for maintenance.	3.3.6.2–Retaining walls in planning scheme policy 5–Infrastructure.		comply with all relevant building regulation. Walls will not adversely impact natural physical processes and ecosystems, adjacent premises, existing or planned infrastructure, safety, stability.
Filling of a dam			
PO9 The filling of a dam: (a) does not adversely affect the natural physical processes and ecosystems; (b) creates a safe and stable surface; (c) is integrated into the landscape.	**AO9** The filling of a dam complies with part 3.3–Filling and excavation standards in planning scheme policy 5–Infrastructure.	**AO9 N/A**	The proposed development does not comprise of dams that require filling.

9.4.3 Infrastructure code

Table Error! No text of specified style in document..**1–Infrastructure code: accepted development (subject to requirements) and assessable development**

Performance outcomes	Acceptable outcomes	Complies	Comments
For accepted development (subject to requirements) and assessable development			
Provision, design, construction and location of infrastructure			
PO1 Development is demonstrated to be capable of being serviced by necessary infrastructure.	**AO1** Reports, plans and drawings are provided in accordance with part 2 of planning scheme policy 5–Infrastructure.	A01 Complies	The development can be adequately serviced by all engineering services including stormwater drainage, sewer reticulation, water reticulation, electrical and communications services. The Engineering Services Report prepared by Northrop provides the relevant details.
PO2 Development: (a) provides necessary infrastructure to service the development; (b) provides that the design, construction and location of necessary infrastructure: (i) protects existing and planned infrastructure networks; (ii) services proposed development; (iii) integrates with existing and planned infrastructure networks; (iv) delivers a standard of service that is efficient and equitable; (v) minimises the cost to the community for the life of the infrastructure by providing	**AO2** Development: (a) in a water supply service area connects to the water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code; (b) not in a water supply service area provides a tank with a minimum storage capacity of 45,000 litres; (c) in a sewerage supply service area connects to the waste water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code; (d) not in a sewerage supply service area complies with part 1 of the Queensland Plumbing and Wastewater Code;	A02 Complies	The development can achieve a sufficient level of service with respect to water supply from the reticulated supply, has a suitably sized connection available to the site and discharges to a sufficiently sized sewerage conveyance system, has a sufficiently sized stormwater discharge point of connection at the downstream boundary, will make a suitable road and pedestrian connection at the site frontages which will include the required extent of street lighting through an underground

Performance outcomes	Acceptable outcomes	Complies	Comments
a suitable design life, ease of maintenance and ease of replacement; (vi) protects personal health, safety and premises; (vii) protects environmental values.	(e) provides stormwater infrastructure in accordance with part 3.6 of planning scheme policy 5–Infrastructure; (f) provides a movement network infrastructure in accordance with part 3.4 of planning scheme policy 5–Infrastructure; (g) provides parks in accordance with part 3.12 of planning scheme policy 5–Infrastructure; (h) provides road lighting in accordance with part 3.5 of planning scheme policy 5–Infrastructure; (i) provides electricity reticulation in accordance with part 3.8 of planning scheme policy 5–Infrastructure; (j) provides gas and telecommunications reticulation in accordance with part 3.9 of planning scheme policy 5–Infrastructure. Editor's note—The delivery of any part of a network identified in the plans for trunk infrastructure is governed by Part 4–Local government infrastructure plan.		reticulated network encompassing an extension to the local communications network. The Engineering Services Report prepared by Northrop provides the relevant details in relation to the above.
Location of development			

Performance outcomes	Acceptable outcomes	Complies	Comments
PO3 Development is located to protect existing and planned infrastructure networks.	**AO3** Development is located outside: (a) planned widening of a road or a new road identified in Table 7.3.1.1–Road encroachment maps of planning scheme policy 5—Infrastructure; (b) planned public transport network identified on Figure 3.4.1.3.1—Public transport network in planning scheme policy 5—Infrastructure; (c) a planned cycle network identified on Figure 3.4.1.2.1–Cycle network in planning scheme policy 5–Infrastructure; (d) a planned network identified in Local government infrastructure plan map–LGIP-07.00 Plan for trunk parks infrastructure in Schedule 3–Local government infrastructure plan mapping and tables.	A03 Complies	The development accounts for the connection to existing infrastructure items where required. The Engineering Services Report prepared by Northrop provides the relevant details in relation to the above.
Fire fighting			
PO4 Development in a water service area accessed by common private title provides: (a) fire hydrant infrastructure; (b) unimpeded access for emergency services vehicles. Editor's note–The term common private title refers to areas such as access roads in community title developments or strata title unit access, which are private and under group or body corporate control.	**AO4** Development in a water service area accessed by common private title complies with the Acceptable outcomes of the SPP code: Fire services in developments accessed by common private title in Appendix 1 of the state planning policy.	A04 NA	NA

Performance outcomes	Acceptable outcomes	Complies	Comments
PO5 Development not in a water service area provides sufficient water storage with adequate pressure, volume and flow to service development for fire fighting purposes.	**AO5** Development: (a) is connected to a reticulated water supply scheme that has sufficient flow and pressure characteristics for fire fighting purposes at all times with a minimum pressure and flow of 10 litres per second at 200kPa; or (b) has an on-site water storage in accordance with **Error! Reference source not found.**, dedicated or retained for fire fighting purposes that is made of fire resistant materials and is: (i) a separate tank; or (ii) a reserve section in the bottom part of the main water supply tankwater tank . Editor's note—The requirement in AO5 is; – in addition to the requirement for potable water supply/storage in AO2 in Table 9.4.3.3.1–Infrastructure code: accepted development (subject to requirements) and assessable development; – reflected in AO5 in Table 8.2.3.3.1–Bushfire hazard overlay code: accepted development (subject to requirements) and assessable development.	A05 Complies	The development will make connection to a reticulated water supply network which will be designed in conjunction with an onsite water storage facility to ensure adequate levels of service for firefighting and property service demands are met. The extent of this service will be determined by a hydraulic design consultant.
Disposal of trade waste			
PO6 The disposal of trade waste in a sewerage supply service area does not adversely affect the sewerage network.	**AO6** The disposal of trade waste in a sewerage supply service area complies with the sewer admission standards in section 3.2.6–Sewer admission standards in planning scheme policy 3–Environmental management.	N/A	This does not apply as the development does not propose a use requiring trade waste disposal.
Roof water drainage and surface water drainage			

Performance outcomes	Acceptable outcomes	Complies	Comments
PO7 Development provides stormwater infrastructure for the drainage of the premises so as not to cause any of the following: (a) ponding of stormwater on the premises; (b) a hazard to personal health and safety; (c) damage to premises; (d) an increased risk of flooding to premises within the catchment.	**AO7** Development complies with the standards for stormwater infrastructure specified in part 3.6 of planning scheme policy 5–Infrastructure.	A07 Complies	The development will maintain an outcome that is consistent with the current stormwater drainage regime. Stormwater flows will be collected within the proposed development areas and discharged in a method consistent with the council planning scheme requirements. The method of onsite treatment is documented in the Site Based Stormwater Management Plan prepared by Northrop.
Natural flow of surface water			
PO8 Development provides that the natural flow of surface water is: (a) not altered so as to cause a risk to personal health and safety or damage to property; (b) not increased in intensity, velocity or frequency; (c) not concentrated onto adjoining premises.	**AO8** Development complies with the standards for stormwater infrastructure specified in part 3.6 of planning scheme policy 5–Infrastructure.	A08 Complies	The development will maintain an outcome that is consistent with the current stormwater drainage regime. Stormwater flows will be collected within the proposed development areas and discharged in a method consistent with the council planning scheme requirements. The method of onsite treatment is documented in the Site Based Stormwater Management Plan prepared by Northrop.

Water sensitive urban design			
PO9 Development which provides stormwater infrastructure incorporates water sensitive urban design principles having regard to: (a) protecting existing natural features and ecological processes; (b) protecting the natural hydrologic behaviour of catchments; (c) protecting the existing natural flow and water quality regimes of waterways; (d) protecting water quality of surface and ground waters; (e) minimising demand on the water network; (f) minimising sewage discharges to the natural environment; (g) integrating water into the landscape to enhance visual and ecological values.	**AO9** Development complies with the standards for stormwater infrastructure specified in part 3.6 of planning scheme policy 5–Infrastructure.	A09 Complies	The development will maintain an outcome that is consistent with the current stormwater drainage regime. Stormwater flows will be collected within the proposed development areas and discharges in method consistent with the council planning scheme requirements. The method of onsite treatment is documented in the Site Based Stormwater Management Plan prepared by Northrop.
Movement network			
PO10 The projected traffic levels for a use do not adversely affect the planned standards of service for a road or intersection.	**AO10** Development does not cause or contribute to projected traffic levels: (a) exceeding the maximum vehicle trips per day in Table 3.4.1.4.2 in planning scheme policy 5–Infrastructure; or (b) exceeding the maximum control delays through intersections in peak periods in Table 3.4.1.4.3 in planning scheme policy 5—Infrastructure.	A010 Complies	To be confirmed by Traffic Engineer

Integrated movement concept report			
PO11 Development which generates more than 3,000 vehicle trips per average weekday is designed to integrate the movement network to minimise the transportation costs required to service the use.	**AO11** Development which generates more than 3,000 vehicle trips per average weekday provides an integrated movement concept report which integrates the planning of the movement network in accordance with part 2 and 3 of planning scheme policy 5–Infrastructure.	N/A	Movement network to be addressed by Traffic Engineer
For assessable development only			
Land use and transport integration			
PO12 Development within 400 metres of existing or future public passenger transport facilities where the total site are is 5,000m^2 or more: (a) supports a road hierarchy which facilitates efficient, safe and accessible bus services connecting to existing and future public passenger transport facilities; (b) enhances connectivity between existing and future public passenger transport facilities and other transport modes; (c) optimises the walkable catchment to existing and future public passenger transport facilities; (d) provides for direct and safe access to and use of existing or future public passenger transport facilities. Note–SPP code: Land use and transport integration in Appendix 4 of the state planning policy provides guidance to achieve this outcome.	**AO12** No acceptable outcome provided.	P012	No extension to the public road network are proposed. Pedestrian connections to public areas is consistent with existing infrastructure.

Appendix F – Council Overlay Map

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Biodiversity Areas

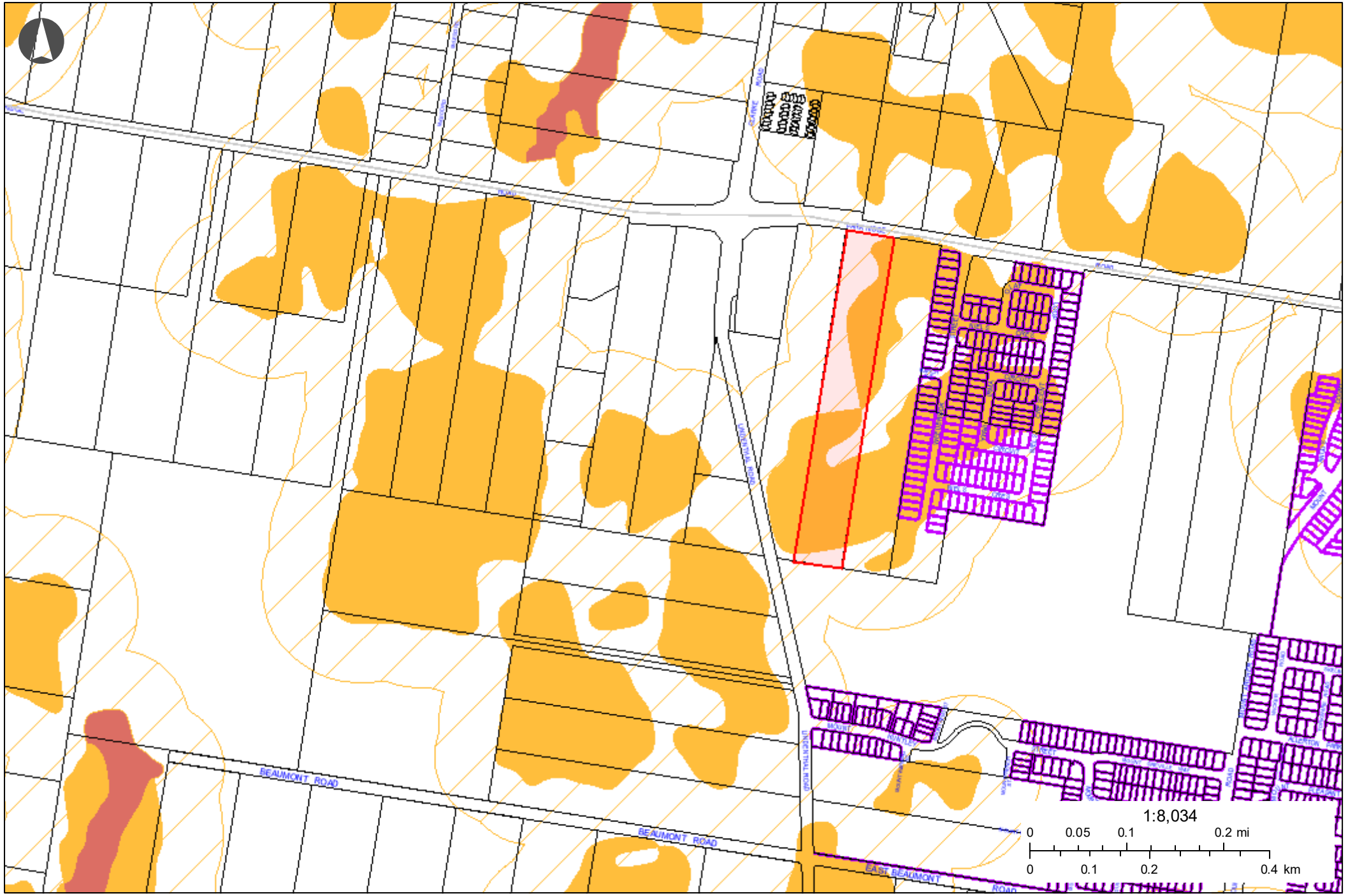


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Bushfire Hazard Risk Area

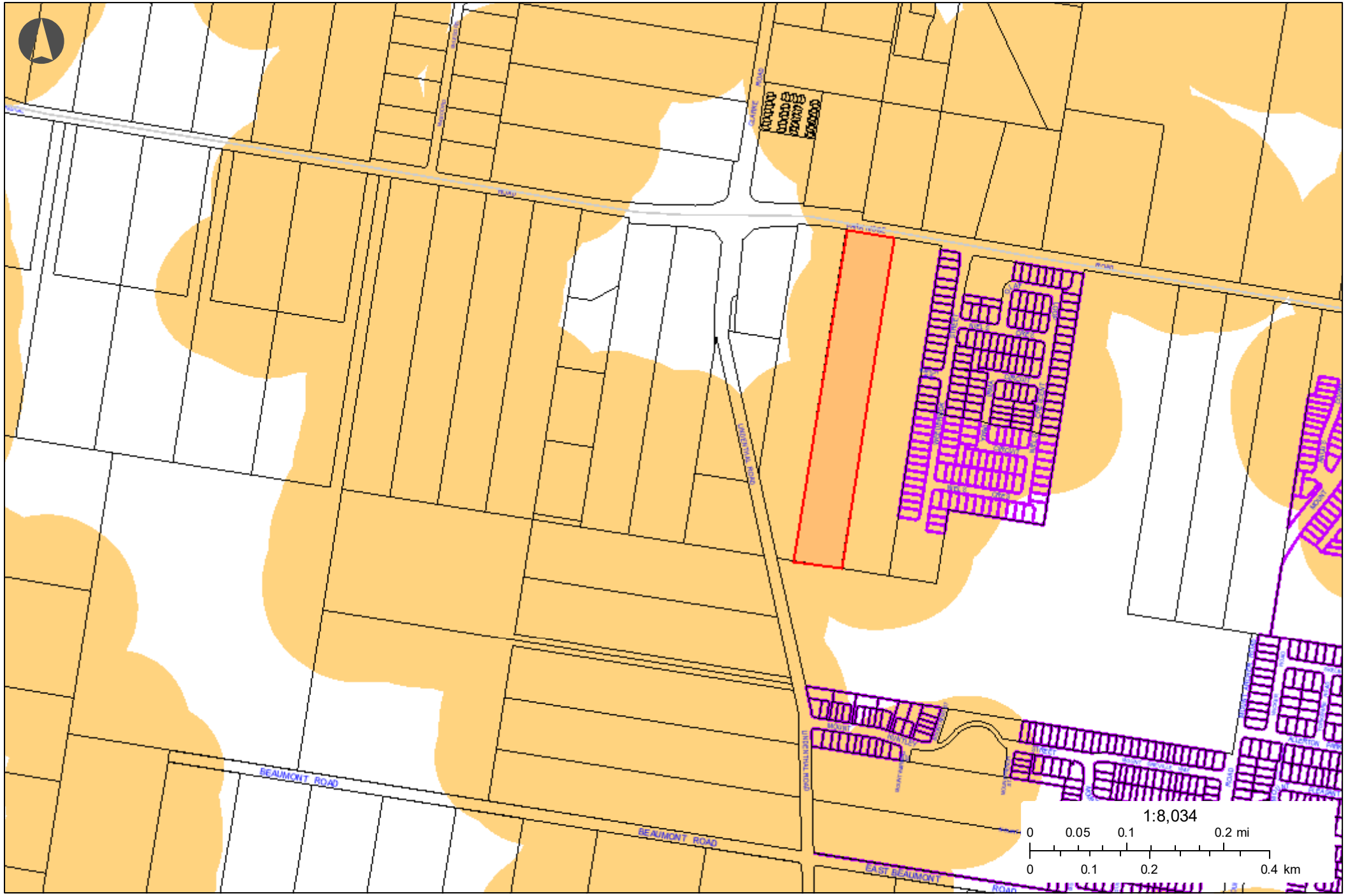


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Bushfire Hazard Trigger

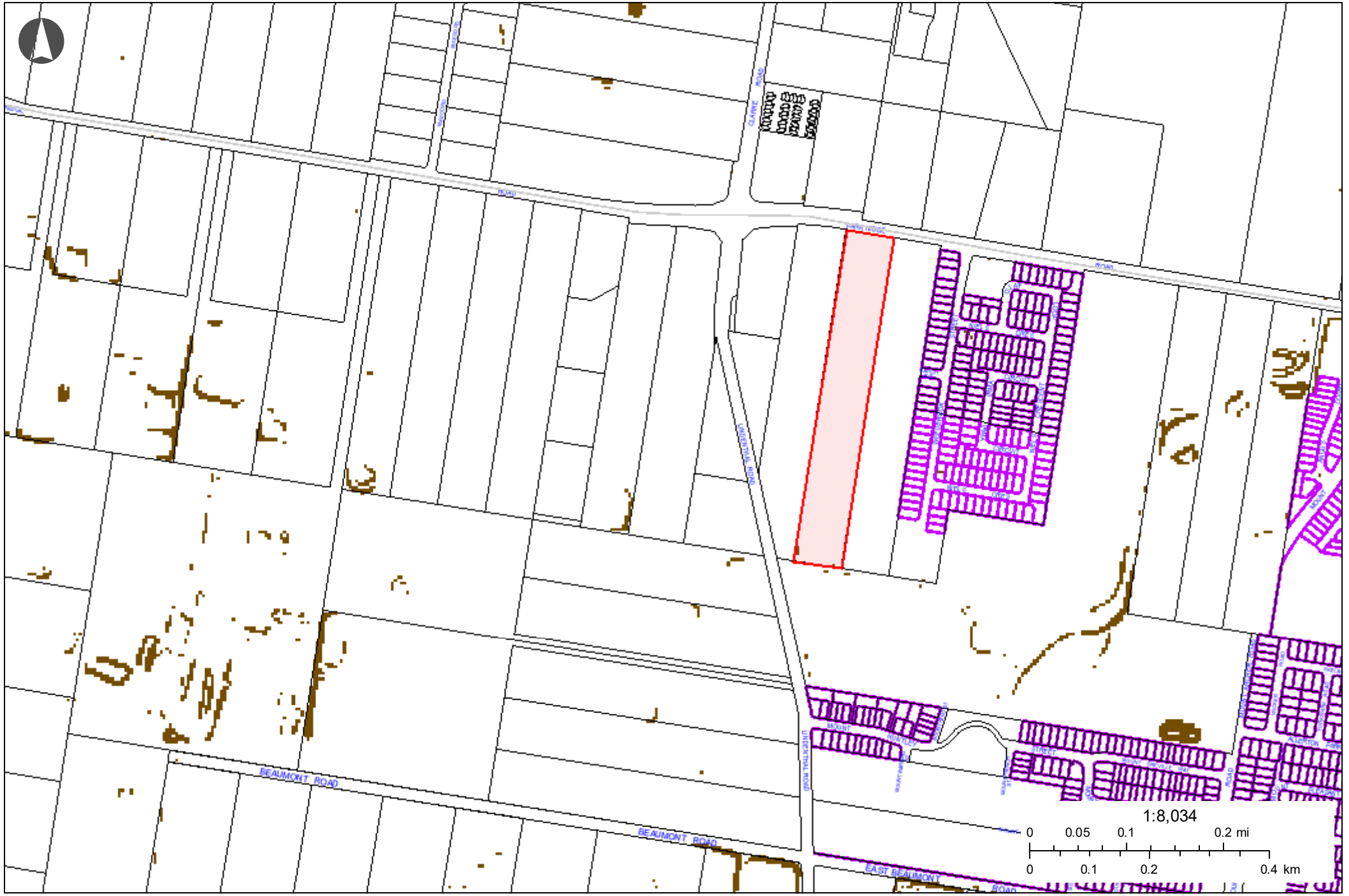


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Equal to or greater than 15 percent slope hazard area

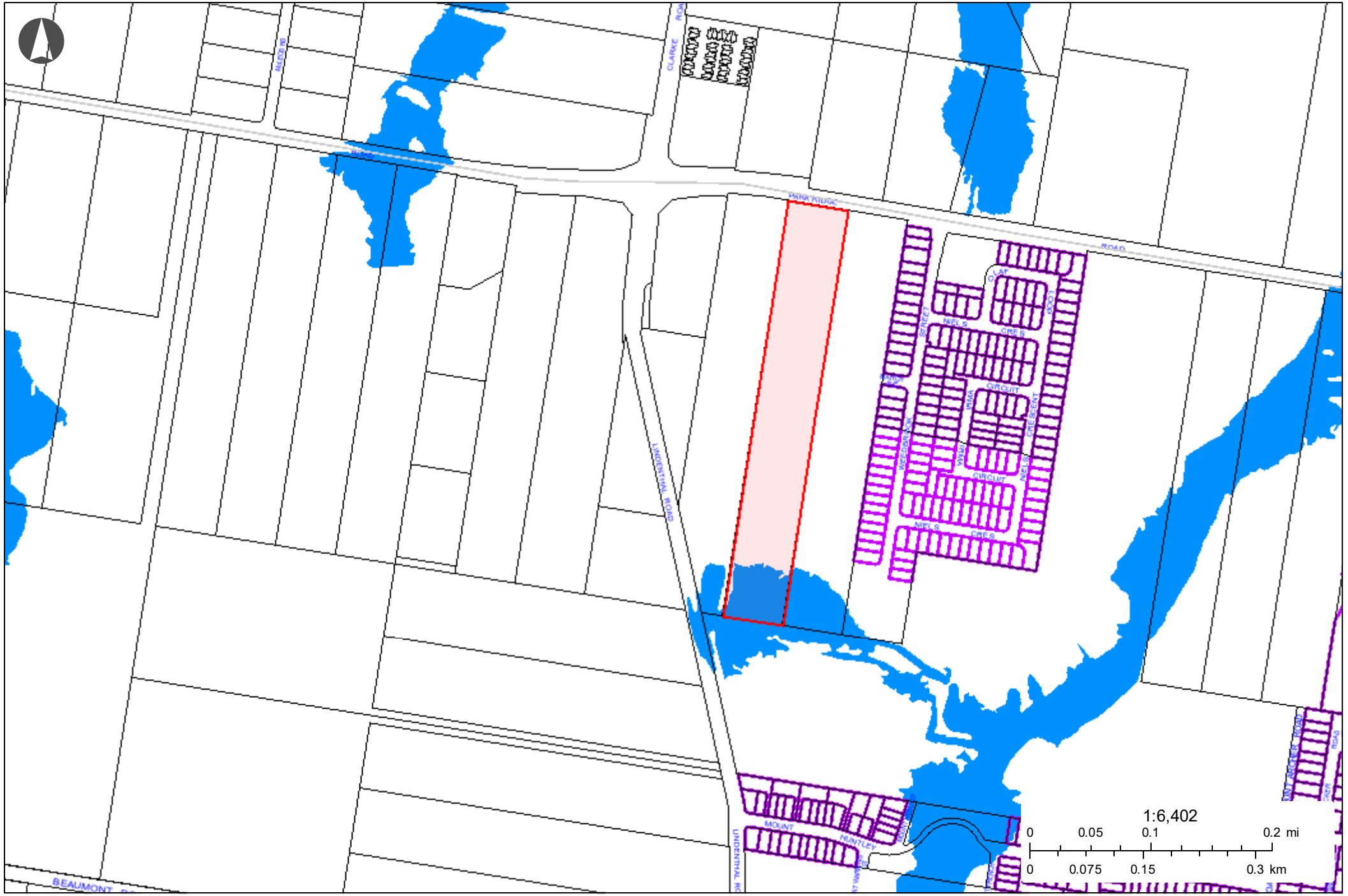


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Flooding

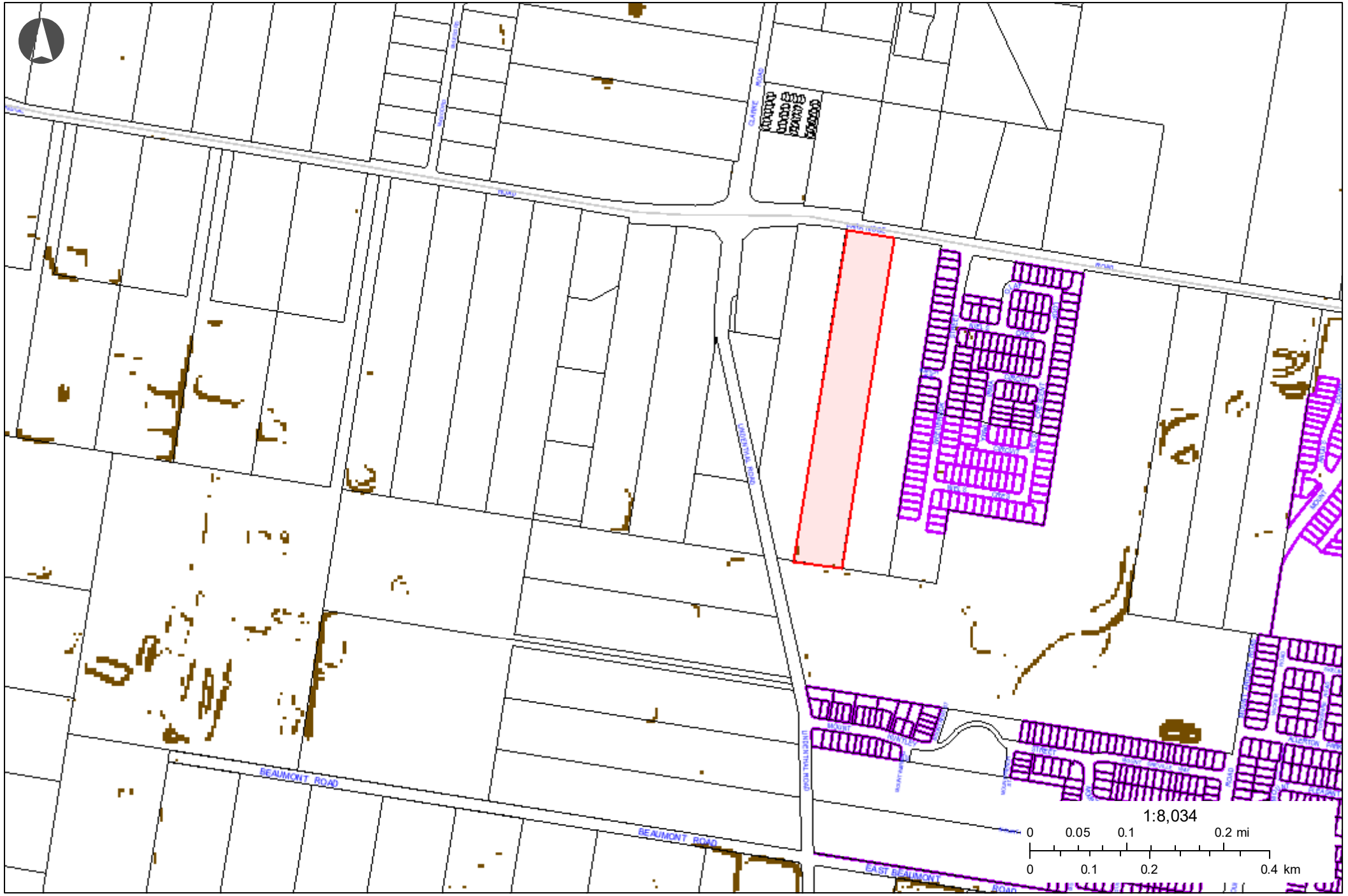


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Landslide Hazard and Steep Slopes Area

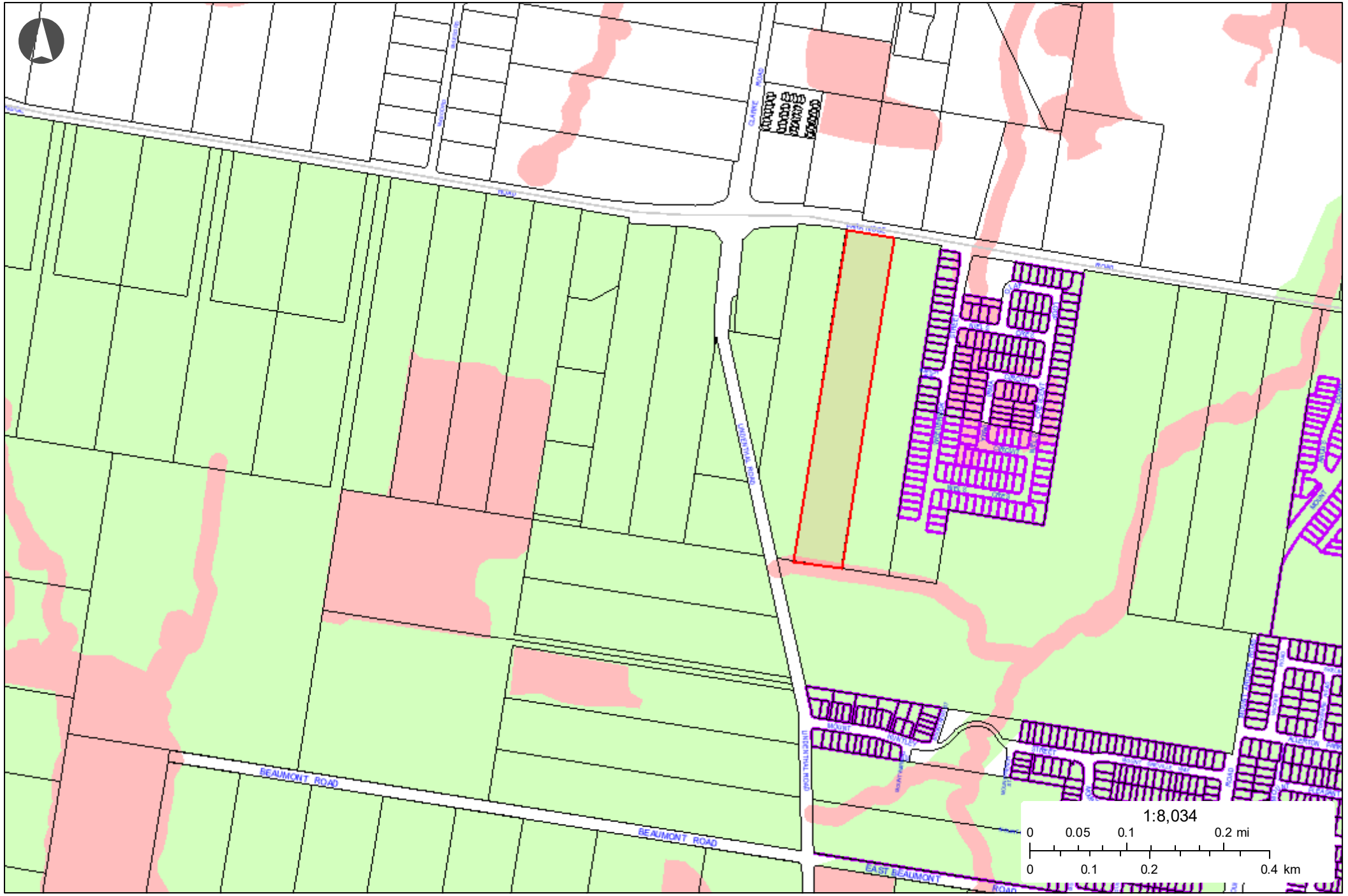


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Vegetation Management Areas

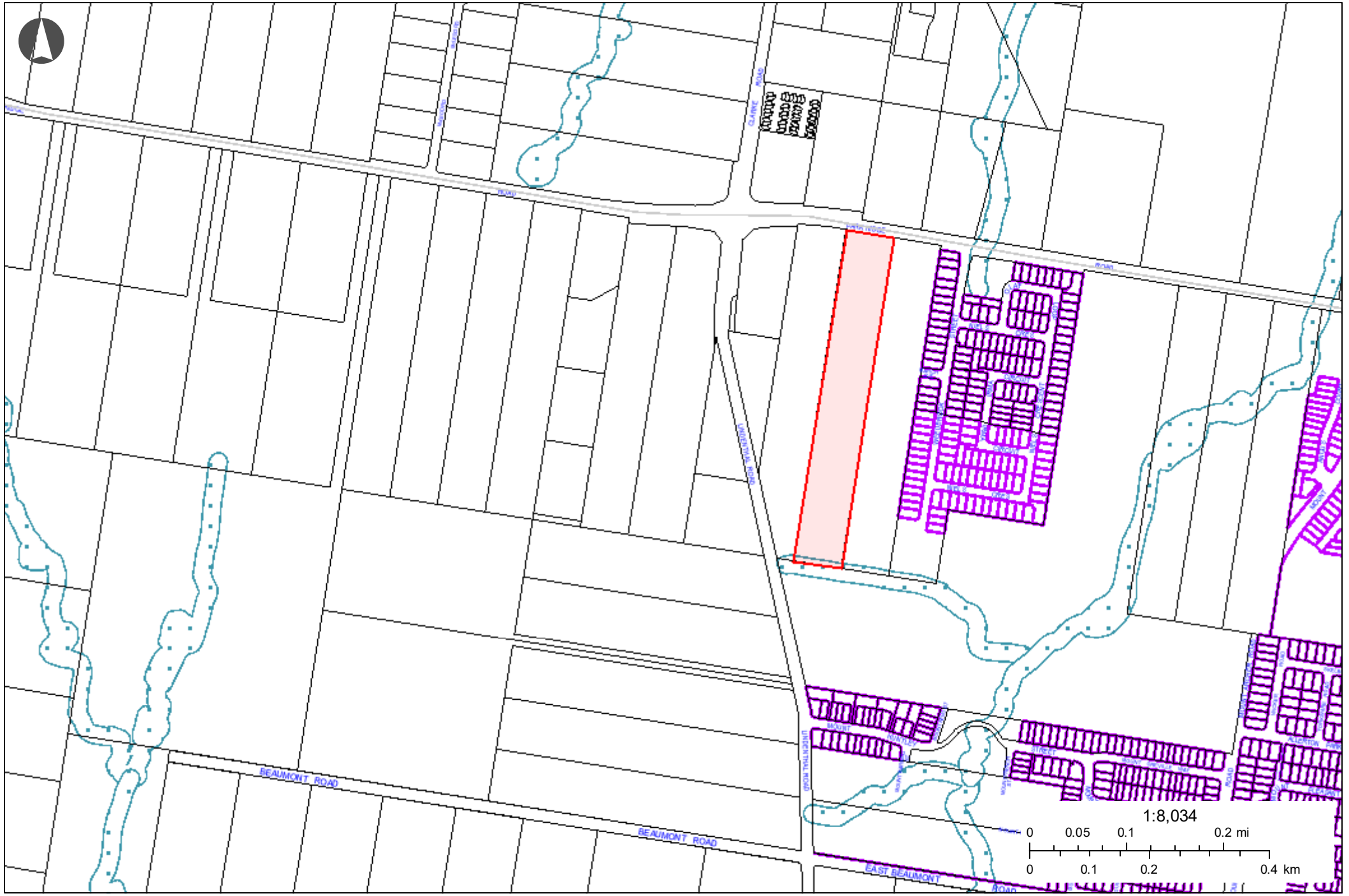


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Waterway Corridor Trigger



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