

PARK RIDGE ROAD INDUSTRIAL STAGE 10, PARK RIDGE ENGINEERING SERVICES REPORT




15 JULY 2022



CRESTMead LAND PTY LTD

PARK RIDGE ROAD INDUSTRIAL STAGE 10, PARK RIDGE

ENGINEERING SERVICES REPORT

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REVISIONS

Revision	Date	Description	Prepared by	Approved by
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1 EXECUTIVE SUMMARY

Crestmead Land Pty Ltd has commissioned Arcadis to prepare an Engineering Services Report (ESR) for a development application for the site located over the following allotments:

- 247-257 Park Ridge Road, Park Ridge (Lot 1 on RP104726);
- 259 Park Ridge Road, Park Ridge (Lot 2 on RP104726);
- 261 Park Ridge Road, Park Ridge (Lot 3 on RP104726);
- 263-273 Park Ridge Road, Park Ridge (Lot 4 on RP104726);
- 275-285 Park Ridge Road, Park Ridge (Lot 5 on RP104726);
- 287 Park Ridge Road, Park Ridge (Lot 6 on RP104726);

The proposed development includes the creation of medium impact industry and commercial allotments in addition to new roads and drainage reserves.

This report addresses the municipal engineering services component of the development and the engineering planning issues associated with the development application. This report demonstrates that the proposed development can connect to the local stormwater, potable water and sewerage reticulation systems as well as transport infrastructure.

Stormwater quantity and quality from the site will be managed through the combination of municipal and private infrastructure. The Site Based Stormwater Management Plan (SBSMP), reference 'GA0002-30133252-AAR', for the site has demonstrated that attenuation of the post-development site discharge to pre-development rates can be achieved through the use of combined bioretention/detention basins prior to the site's existing site discharge location. An internal pit and pipe network is proposed to convey minor flows within the development site to the above-mentioned basins. The SBSMP prepared by Arcadis should be referred to for a more in-depth analysis of the proposed drainage regime.

The proposed development will connect to the DN200 water main within the verge of Park Ridge Road to the North of the site. An internal water reticulation network following the proposed internal road alignment will supply potable and firefighting water to the development allotments and future areas to the south and west. A Water Network Capacity Assessment (reference GA0003-30133252-AAR-WNCA' has been completed by Arcadis and should be referred to for a more in-depth analysis of the proposed water network adjoining the development.

Sewer will be provided via extension of gravity sewer main through a private allotment to the north up to the frontage of the site from the ongoing development associated with Heritage Park Stage 8 (OW/248/2021). An internal sewer network within the proposed road reserves will service the development allotments, discharging to a temporary pump station that will operate until such time of the completion of Council's future gravity sewer reticulation works to the south associated with the LCC LWIA Infrastructure Planning. During the interim period, a pressure sewer rising main will send flows from the temporary sewer pump station back to the northern boundary where it will connect to the external sewer extended from Heritage Park Stage 8.

Connection to the existing electrical and telecommunications infrastructure identified Park Ridge Road adjacent to the proposed development shall be designed by a specialist electrical and telecommunications consultant in accordance with Council and Energex requirements.

Vehicular access to the development is proposed via the construction of a temporary intersection onto Park Ridge Road and the construction of new roads internal to the development site to service the proposed residential allotments.

In order to facilitate the proposed development and future allotments with road access and servicing, bulk earthwork is required to be undertaken across the site. Cut and fill earthworks operations and batter profiling will be undertaken in one construction phase.

2 SITE CHARACTERISTICS

2.1 Location Details

The subject site is located within Holmview, South-East Queensland, Australia over the following allotment(s):

- 247-257 Park Ridge Road, Park Ridge (Lot 1 on RP104726);
- 259 Park Ridge Road, Park Ridge (Lot 2 on RP104726);
- 261 Park Ridge Road, Park Ridge (Lot 3 on RP104726);
- 263-273 Park Ridge Road, Park Ridge (Lot 4 on RP104726);
- 275-285 Park Ridge Road, Park Ridge (Lot 5 on RP104726);
- 287 Park Ridge Road, Park Ridge (Lot 6 on RP104726);

The site is bordered by Park Ridge Road to the north and existing rural residential land to the east, south and west. The site has a total area of 21.06ha.

In its current state, the site is consisting as an existing agricultural/commercial site with internal roads, permanent and temporary structures, dams and grassed areas. In terms of vegetation, the site contains a small area of vegetation on the southern boundary with the majority of the site being cleared area with short grass cover.

The Logan City Council is the local government authority.

2.2 Land Usage

In its current state, the project site contains a residential dwelling with an associated driveway alongside dense bushland. Figure 2-1 below provides a current locality plan of the site.



Figure 2-1 Site Locality Plan (Aerial Imagery Courtesy of Nearmap)

2.3 Topography and Features

The existing site topography can be described to consist of varying grades divided by an existing ridgeline that runs centrally through the site. For the western portion, an existing grade of approximately 3-8% has been identified in a south-western direction. For the eastern portion, an existing grade of approximately 3-10% has been identified in a south-eastern direction. The site has an approximate high point at RL63.00m AHD internally adjacent to the northern boundary of the site and an approximate low point at RL39.6m AHD on the southern boundary.

Existing on-site dwellings are located primarily along the frontage of the site adjacent to Park Ridge Road which are established as a mixture of residential and commercial structures. Existing dams are located throughout the site towards the lower portion of the site on the southern boundary.

3 PROPOSED DEVELOPMENT

The proposed development involves the construction of a commercial subdivision, including:

- 5 industrial/commercial allotments,
- Industrial road network,
- Stormwater treatment and attenuation devices,
- Temporary sewer pump station and pressure sewer reticulation
- Civil services infrastructure including stormwater drainage, sewage and water reticulation

A plan extract of the proposed development has been provided in Figure 3-1. It is proposed that the development works be completed within two construction phases identified as Stages 10A and 10B.

Engineering schematic plans are provided within the development application package and should be referred to for further information.



Figure 3-1 Proposed Development Layout with Staging

4 INFRASTRUCTURE SERVICES

4.1 Stormwater Drainage

A Site Based Stormwater Management Plan (SBSMP) 'GA0002-30133252-AAR' has been prepared separately which addresses the stormwater management planning requirements for the development. The SBSMP should be referred to for a more in-depth analysis of prevailing stormwater constraints and opportunities, however a summary of key engineering requirements is provided herein.

4.1.1 Existing Stormwater Drainage

As the site currently stands, there is no existing piped stormwater drainage network within the vicinity of the site. An existing table drain that conveys runoff from Park Ridge Road conveys flows downstream.

The site generally consists of a western and eastern portion divided by a ridgeline central to the site. The western section of the site generally grades towards an existing dam located on the south-eastern boundary which outlets to a minor waterway corridor down stream of the site. The eastern section of the site has runoff directed towards the south-eastern boundary where another minor waterway corridor is noted downstream. A small portion of the sites eastern frontage drains to an existing table drain located in the Park Ridge Road Reserve to the North.

At the southern boundary two distinct low points are noted resulting from the crest that runs through the centre of the development site, effectively splitting flows towards the lower corner boundaries of the site. The eastern discharge location receives stormwater runoff from the site and external areas to the west of the site. Runoff conveyed by these external catchments exits the site to the south where it drains to the minor waterway corridor that ultimately converges with another minor waterway conveyance path approximately 620m downstream of the site.

An existing catchment plan has been provided in the Engineering Drawings in Appendix A.

4.1.2 Proposed Stormwater Drainage

The proposed development will implement an internal pit and pipe network to capture minor stormwater runoff within the site. A combined stormwater detention and bio-retention basin will receive and manage this runoff in order to achieve Council's quantity attenuation and quality objectives. A secondary private bio-retention/detention basin is proposed to service Lot 66. Stormwater from the site will maintain the Lawful Points of Discharge (LPD) identified within the Stormwater Management Plan via discharging from the above-mentioned basins to the south-east and south-west of the site.

The SBSMP prepared by Arcadis should be referred to for further details on the exact methodology used to achieve Council objectives.

Refer to Appendix A for engineering drawings for further details.

4.1.3 LCC Stormwater Priority Infrastructure Plan

A review of the LCC Priority Infrastructure Plan (PIP), for trunk stormwater infrastructure Map PIP-05.00 has not identified any proposed upgrades within the vicinity of the proposed development site.

4.1.4 Flood Management

A review of the LCC Flood Hazard Trigger Overlay Map OM-05 has identified the site as being affected by the designated Flooding and Inundation Areas. However, the site has only minor interaction with the flood affected areas overlay and the mapping does not limit development or require further assessment.

4.2 Water Network

4.2.1 Existing Potable Water

The following existing water mains and fittings have been identified within the vicinity of the development site.

- 1 x DN200 water main located adjacent to the site, within the southern verge of Park Ridge Road.

4.2.2 Proposed Potable Water

Connection for the proposed development to LCC’s supply network will be provided via a connection to the following water mains:

- DN200 water main located within the southern verge of Park Ridge Road

The developer shall, as part of the development works, construct an internal water reticulation network for the proposed development. A Water Network Capacity Assessment (WNCA) ‘GA0003-30133252-AAR’ has been completed by Arcadis and should be referred to for a more in-depth analysis of the proposed water network. The WNCA has assumed an indicative development layout to provide a more detailed assessment.

No augmentations to the existing system or reconstruction of the existing water main adjacent to the development site is noted as being required. All existing water meters will be decommissioned as part of these works. Connections to each proposed lots will be provided in the form of future connection lines in which master meters can be connected. The proposed connection locations and indicative internal water network are detailed on the engineering drawings included in Appendix A.

4.2.3 Projected Development Loadings

The existing development site has one zoning type (Logan Planning Scheme Ver 6.0 Zone Map), with the site zoned as Emerging Community. The proposed subdivision intends to differ from the Council zoning and developed as a Medium Industry and Mixed-Use Commercial site as provided under the variation request over the site. The demand generation for proposed development is based off the above map as well as Logan’s Net Developable Area & Planned Density Area Maps in conjunction with Table SC3.1.5 in the Version 6 2015 Planning Scheme.

The development loading has been calculated based on the proposed plan of development to determine the expected demand in Equivalent Persons (EP) proposed to be added to Council’s water network.

Table 4-1 Planned Density Loading

Planned Density Area		EP/dev ha
N056	Commercial, General/Heavy Industry	17.5

To formulate a loading for each catchment, the higher planned density loading value within the catchment was used for the whole catchment. Table 4-2 below outlines the resulting loading for each catchment as a result of the above maps, tables and statement.

Table 4-2 Projected Development Loading

Lot	Area (ha)	Conversion Rate	Proposed Demand (EP)
62	3.602	17.5	63.04
63	6.430	17.5	112.53
64	1.651	17.5	28.89
65	0.792	17.5	13.86
66	5.389	17.5	94.31
Total			312.62

4.2.4 Fire System Water Supply

In accordance with the SEQ WS&S D&C Code, the site is permitted to draw fire flows for an Industrial subdivision of 30L/sec for 2 hours. The WNCA 'F003-30133252-AAR' completed by Arcadis and should be referred to for a more in-depth analysis of the proposed water network under fire fighting conditions. The internal water reticulation network designed as part of the future Operational Works application shall considered the requirements of the design code and network assessment.

4.2.5 LCC Water Priority Infrastructure Plan

A review of the LCC Priority Infrastructure Plan (PIP), for trunk water infrastructure Map PIP-03.00 has not identified any proposed upgrades within the vicinity of the proposed development site.

4.3 Sewer Network

4.3.1 Existing Sewer

The site is noted as having no municipal sewer infrastructure within the direct vicinity and as such will require external sewer works to cater for the development. There is an industrial/commercial development to the North (Green Road, Park Ridge Stage 8) falling under Operational Works approval OW/248/2021 which is noted as containing reticulated sewer main and having provided stubs in which to service the upstream sewer catchment.

This neighbouring industrial development is currently under construction, with earlier stages complete. The following sewer mains associated with this development have been identified as appropriate to cater for the proposed site:

- 1 x DN150 gravity sewer main stub adjacent to the southern boundary of the development site (lot 1005 on SP317016) provided from OW/248/2021, which will gravity feed through to the Rai Drive SPS.

4.3.2 LCC SEWERAGE PRIORITY INFRASTRUCTURE PLAN AND SEWER PLANNING

A review of the LCC Priority Infrastructure Plan (PIP), for trunk sewerage infrastructure Map PIP-04.00 has not identified any proposed upgrades within the vicinity of the proposed development site. However, the site falls within one of the SPS Catchments as per LWIA's Planned Infrastructure Wastewater plan. Please refer to Figure 4-4 below which is an extract of the wastewater plan contained in Appendix A.

It is noted that future sewer planning intends to service the site catchment as part of the Park Ridge South Catchment, where a future DN225 dia sewer main is to be brought to the southern boundary of the site.

Considering the above future planning, the development will grade south to an interim sewer pump station that will be decommissioned upon completion of the DN225 sewer, where the sites sewer catchment will be redirected in accordance with the LWIA Infrastructure Plan

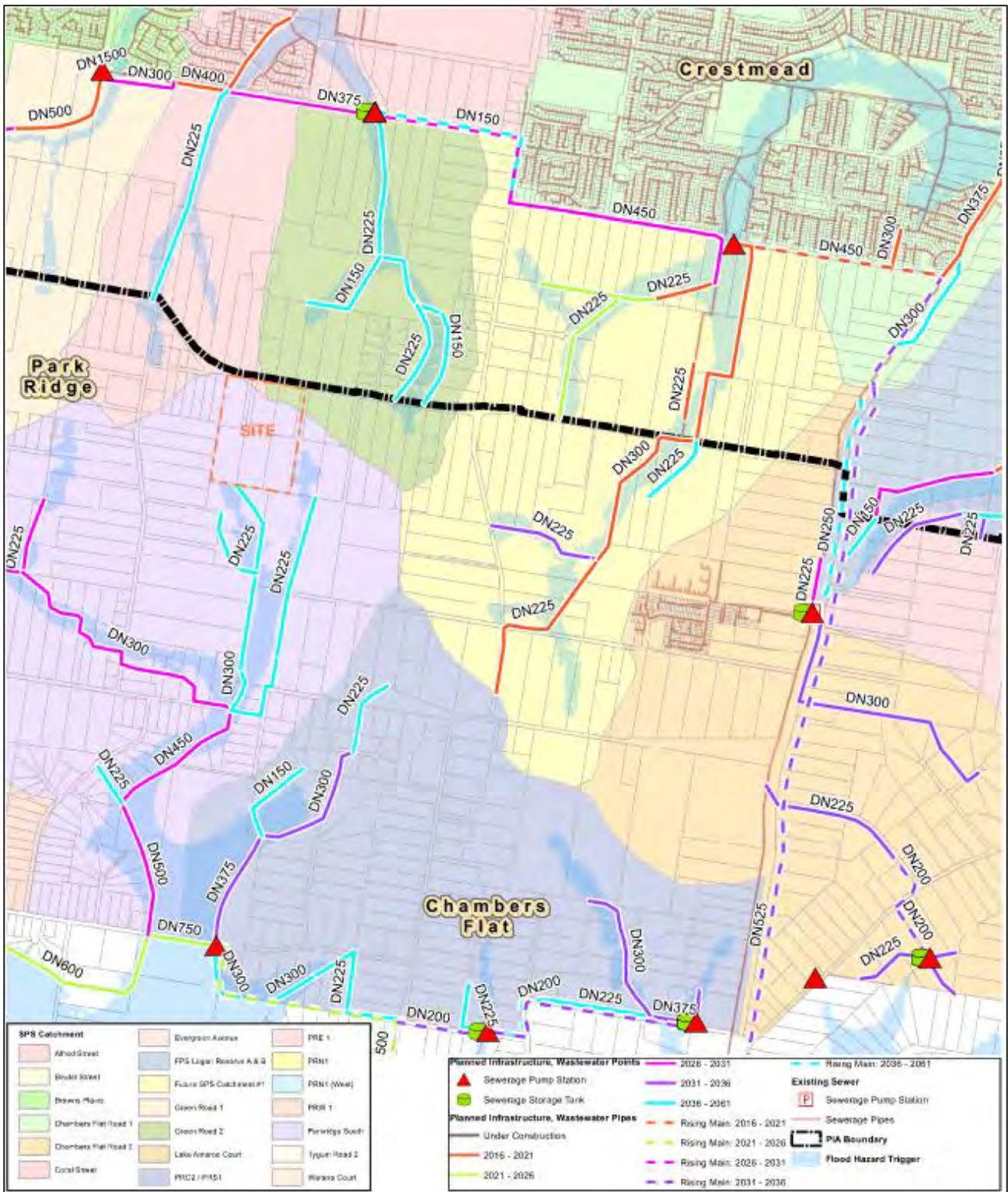


Figure 4-1 Exert from LWIA Planned Infrastructure Mapping

4.3.3 Proposed Sewer

The primary connection for the proposed development to LCC’s wastewater supply network will be provided via a connection to the DN150 gravity wastewater main to sewer stub provided under Operational Works plans OW/248/2021. External sewer works are required to be completed in order to achieve sewer service to the subject development. An extension of this gravity sewer main through the adjacent private property (Lot 2 on RP129688) through to the Park Ridge Road Reserve will be provided to service allotments within the proposed development.

Due to the existing topography of the site falling mainly from north to south and having no direct municipal sewer reticulation adjacent to the site, the proposed development will be required to be serviced by a combination of gravity reticulated sewer and pressure sewer. The developer shall, as part of the development works, construct an internal gravity sewer network for the proposed developed with connections provided to all proposed allotments.

It is intended for internal gravity sewer to drain to the south where an interim sewer pump station will capture effluent and pump back to the northern boundary of the site via an internal rising main. The proposed rising main will direct flows to Park Ridge Road, where a discharge manhole provided under the external sewer works. An existing Infrastructure Agreement between Council and the developer of the Green Road, Park Ridge Stage 8 confirms that this is the intended plan of development and service, however it is noted that an amended Infrastructure Agreement will be sought.

The proposed connection locations and indicative internal sewer network are detailed on the engineering drawings included in Appendix A.

4.3.4 Projected Development Loadings

Due to the nature of the development and its location, the wastewater demand is calculated in the same manner as the water supply. Refer to section 4.2.3 for further details.

With respect to the connection to and extension of the 150mm dia gravity sewer main from Green Road, Park Ridge – Stage 8, the downstream sewer network has spare capacity to cater for the proposed development. A review of the 150mm dia gravity sewer main catchment notes that it receives approximately 137 EP from the industrial development associated with OW/248/2021. The proposed development loadings are calculated to be

Table 4-3 Projected and Existing Development Loadings

Location	Area (ha)	Conversion Rate	Proposed Demand (EP)
Site	17.864	17.5	312.620
Green Road Stage 8	7.826	17.5	136.955
Total			449.575

Table 4-4 Existing Downstream Sewer Capacity

Diameter	Grade	1 in	Full Flow (m ³ /s)	3/4d Flow (m ³ /s)	EP
150mm	0.67%	150	0.0126	0.01151	994.62

4.4 Other Services

A Dial Before You Dig (DBYD) search has identified existing electrical and telecommunications services within Park Ridge Road adjacent to the northern boundary of the development site.

The proposed development will incorporate low-voltage electricity and telecommunications supply designed by a specialist electrical and telecommunications consultant in accordance with Council and Energex requirements.

The DBYD search results are provided in Appendix D and should be referred to for the locations of the above-mentioned services within the vicinity of the site.

5 ROADS AND ACCESS

5.1.1 Internal Roads

Vehicular access to the development is initially proposed via connection to Park Ridge Road to the north of the site and the construction of a temporary intersection. A new internal road network is proposed to be constructed to service the development site and provide individual access to the proposed industrial allotments. Internal roads are proposed to be designed and constructed to LCC standard as an industrial collector road, with industrial access roads providing individual lot access as seen in Figures 5-1 and 5-2 below.

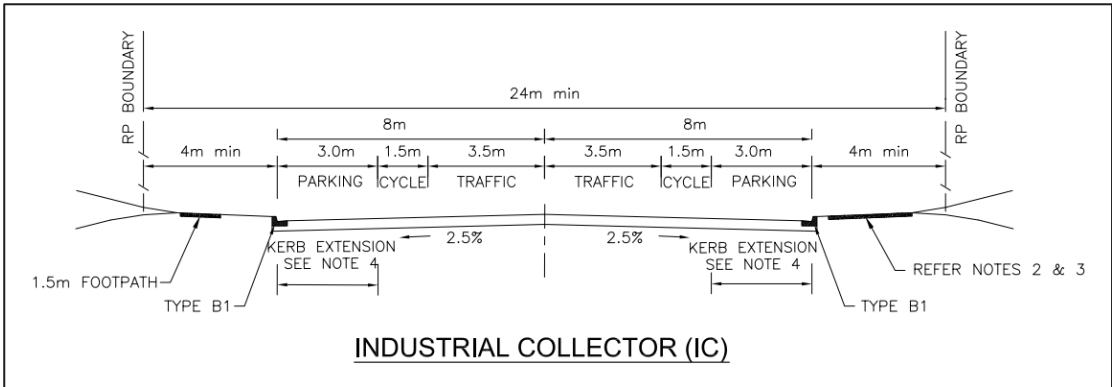


Figure 5-1 LCC Standard Industrial Collector Road Cross Section

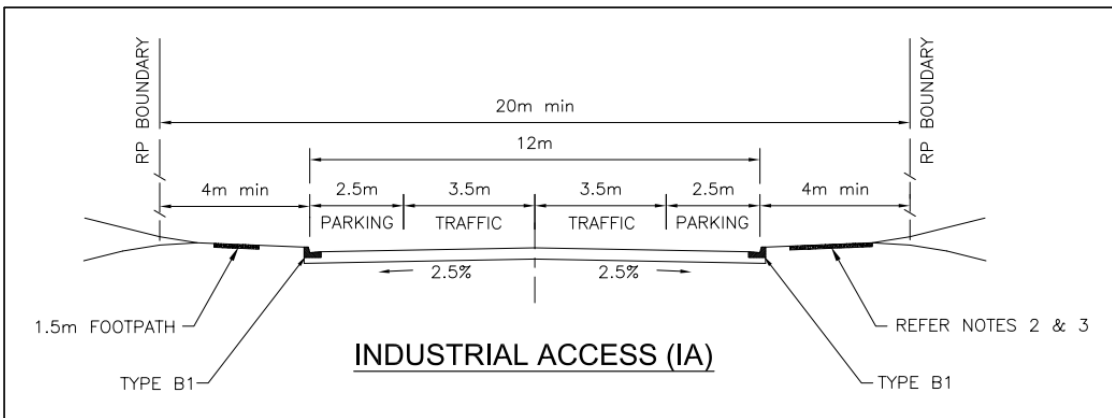


Figure 5-2 LCC Standard Industrial Access Road Cross Section

Internal Roads are proposed to be constructed as follows (Refer Appendix A for engineering drawings)

- Road IC03 – Industrial Collector Road
- Road IA01 – Industrial Access Road
- Road IA02 – Industrial Access Road

The internal industrial roads will be terminated at the western and southern boundary utilising temporary cul de sac arrangements sized to cater for the design service vehicle until such time as any future development upstream has been commenced (three turnarounds in total). Refer Appendix A for further details within the engineering drawings.

All internal roads will be designed in accordance with Logan City Council Guidelines, based on the proposed lots within the service catchment. Pedestrian access will be provided from the adjoining roadway via footpaths designed in accordance with LCC guidelines.

Refer to Appendix A for engineering drawings.

5.1.2 LCC Road Priority Infrastructure Plan

A review of the LCC PIP for trunk movement infrastructure Map PIP-06.00 has identified the following proposed infrastructure north of the proposed development site:

- Park Ridge Road is identified as a future road with land resumption required to facilitate the future carriage way; and
- The future Park Ridge Connector Road is proposed to the North of the development.

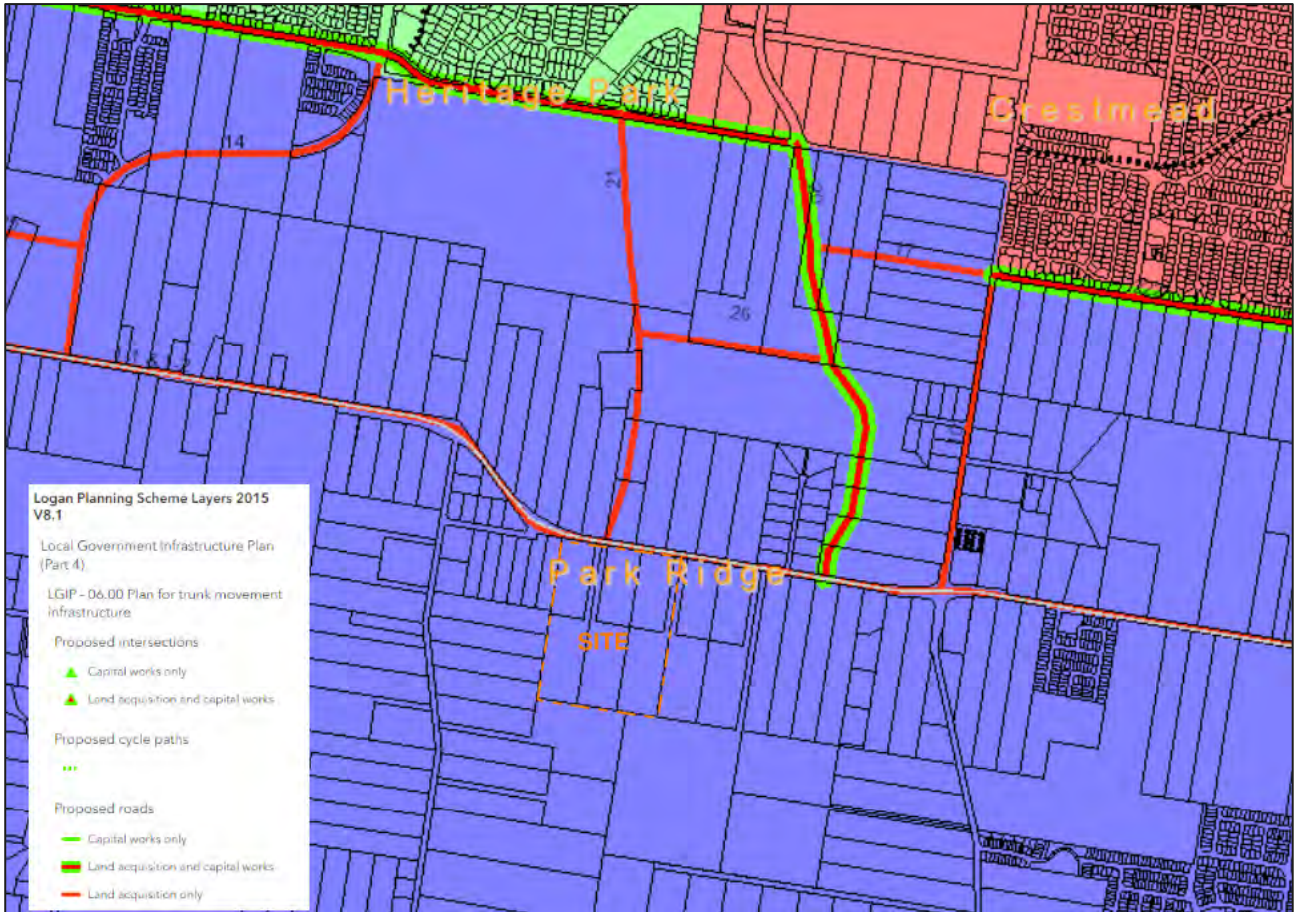


Figure 5-3 Exert from LCC Trunk Movement Infrastructure Map LGIP-06.00

6 EARTHWORKS

The proposed development will involve the undertaking of cut and fill earthworks operations to facilitate the construction of intersections and internal roads, surface drainage and allotments. Batters will be constructed throughout the site to create a terraced profile between the internal industrial lots which upon completion of profiling will be stabilised through hydromulching or an approved equivalent methodology. Due to the nature of the development, earthworks pads are intended to be provided to each allotment at 0.5% minimum grade to facilitate future building works and design vehicle movements.

The proposed development layout proposes the connection to Park Ridge Road runs parallel to the Northern boundary of the subject site. Minor intersection and verge grading will be required to connect internal roadworks to Park Ridge Road and maintain the existing table drain that conveys flows downstream.

Preliminary bulk earthworks drawings are provided in Appendix A for reference.

7 LCC OVERLAY MAPS

The proposed development site is subject to property constraints as identified by LCC's 2015 V8.1 Planning Scheme overlay mapping system. Clarification and acknowledgement of these constraints are presented below in order to demonstrate mitigation of any potential impacts on the design and surrounding area. Layouts from Council's interactive mapping system for each applicable overlay trigger have been provided in Appendix C.

Biodiversity Areas (OM-02)

The project site partially triggers the biodiversity area overlay map as being an area of local environmental significance. Therefore, the impacts of development to local wildlife and vegetation must be considered by a suitably qualified consultant.

Bushfire Hazard (OM-03)

The site falls within the bushfire hazard trigger area. A bushfire management plan may be required to further investigate potential issues related to bushfire in and around the vicinity of the development, inclusive of mitigation measures required to support further detailed design and dwelling Construction. However aerial imagery indicates areas adjacent to the development site works have been largely cleared.

Flood Hazard Overlay (OM-05)

A review of the LCC Flood Hazard Trigger Overlay Map OM-05 has identified the site as being affected by the designated Flooding and Inundation Areas. However, the site has only minor interaction with the flood affected areas overlay and the mapping does not limit development or require further assessment. Refer to Section 4.1.

Landslide Hazard Overlay (OM-08)

A large portion of the site in the triggers Council's landslide hazard overlay. The section is identified as being a hazard area with a slope equal to or greater than 15%. Specialist geotechnical engineering advice is recommended during the detail design phase in order to address Council's requirements (ie: Slope Stability Reports, Landslide Hazard Assessment, etc).

Regional Infrastructure Corridors and Facilities (OM-09)

The site is noted as containing an powerline corridor and associated 40m buffer for 275kv electrical and therefore triggers the 275kv Electrical Corridor overlay under the LCC planning scheme (OM-09.01). The proposed development provides an easement over the noted corridor and will propose to incorporate the buffer requirements into future individual allotment works and operation.

Minor Waterway (OM-14)

Lot 2 on RP104726 of the site is noted as containing an overland flow path that directs stormwater runoff to downstream drainage corridor and therefore triggers the Waterway Corridor trigger under the LCC planning scheme. The proposed development provides a drainage reserve which is intended to be adopted for stormwater management (refer SBSMP 'GA0002-30133252-AAR').

8 LCC COUNCIL CODES

LCC Development Codes applicable to the proposed development have been completed and provided in Appendix E for reference. The relevant codes that have been completed are as follows;

- Overlay Code 8.2.8 – Landslide hazard and steep slope area overlay code;
- Overlay Code 8.2.12 – Waterway corridors and wetlands overlay code;
- Development Code 9.4.2 – Filling and excavation code;
- Development Code 9.4.3 – Infrastructure code; and
- Development Code 9.4.7 – Servicing access and parking code.

9 CONCLUSION

Crestmead Land Pty Ltd has commissioned Arcadis to prepare a Concept Engineering Services Report for a proposed industrial subdivision development at Park Ridge Road, Park Ridge. The proposed development is comprised of multiple industrial lots.

This report addresses and provides information relating specifically to the civil engineering aspects of the proposed development works including stormwater, water, sewer, roads, electrical and telecommunications connections, as well as preliminary information for bulk earthworks.

The site will manage stormwater quality through the use of public and private infrastructure prior to discharging to municipal and private combined bio-retention/detention site which will mitigate flows to pre-developed conditions prior to out letting to the sites Lawful Points of discharge. Stormwater drainage collected on site shall be directed towards the proposed on-site bioretention basins, then discharged into the existing downstream water. The site incorporates a treatment train of stormwater quality devices including two bioretention basins. The Site Based Stormwater Management Plan 'GA0002-30133252-AAR-SBSMP' prepared by Arcadis proves that attenuation of the post-development site discharge to pre-development rates can be achieved in accordance with the requirements of LCC's Planning Scheme and should be referred to for further details.

The proposed development will connect to the DN200 water main within the verge of Park Ridge Road to the North of the site. An internal water reticulation network along the proposed internal road network will supply potable and firefighting water to the development allotments and future areas to the west. A Water Network Capacity Assessment (reference GA0003-30133252-AAR-WNCA' has been completed by Arcadis and should be referred to for a more in-depth analysis of the proposed water network adjoining the development.

Sewer will be provided via extension of gravity sewer main through a private allotment to the north up to the frontage of the site from the ongoing development associated with Heritage Park Stage 8 (OW/248/2021). An internal sewer network within the proposed road reserves will service the development allotments, discharging to a temporary pump station that will operate until such time of the completion of Council's future gravity sewer reticulation works to the south associated with the LCC LWIA Infrastructure Planning. During the interim period, a pressure sewer rising main will send flows from the temporary sewer pump station back to the northern boundary where it will connect to the external sewer extended from Heritage Park Stage 8.

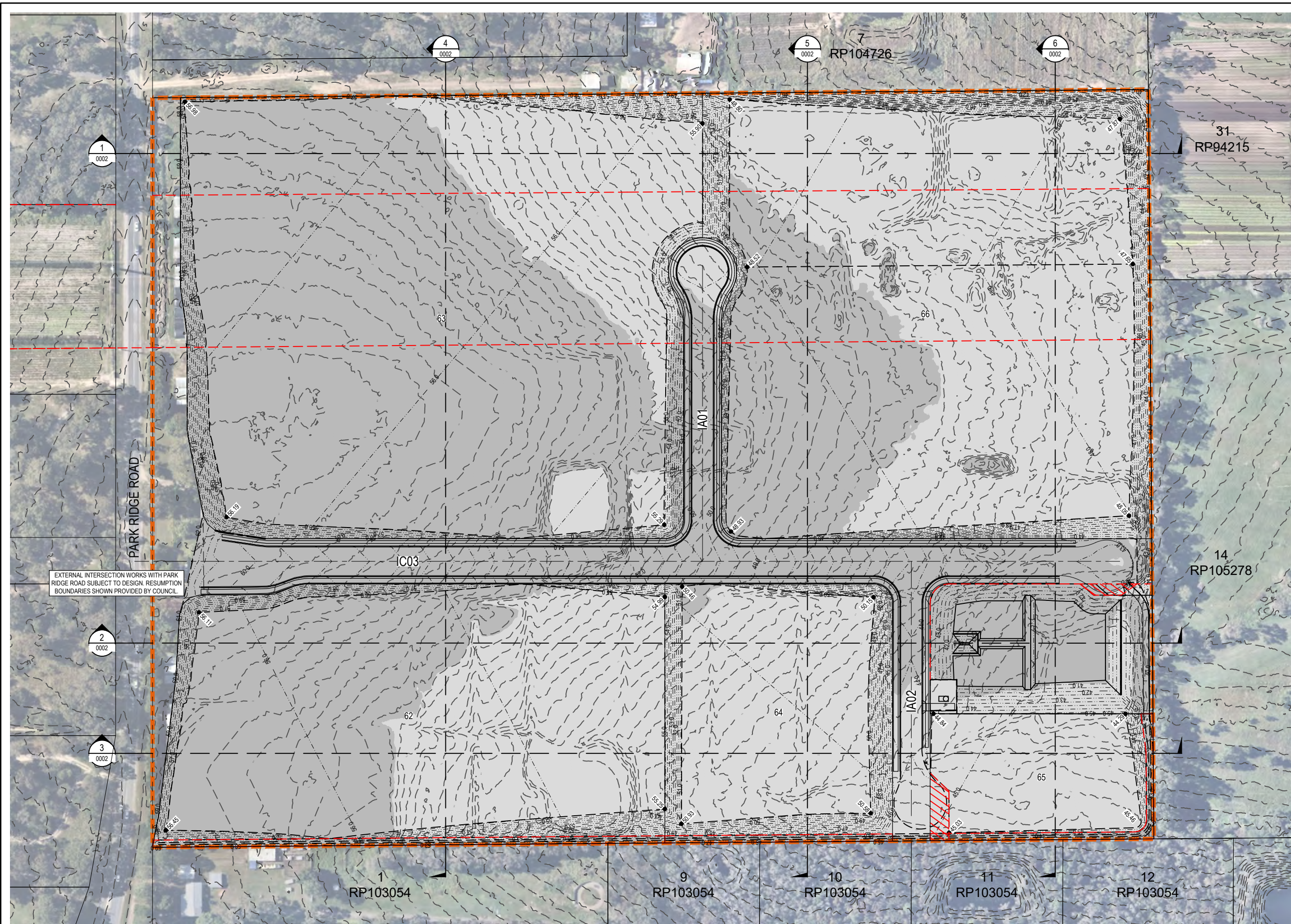
Connection to the existing electrical and telecommunications infrastructure identified within Park Ridge Road adjacent to the proposed development shall be designed by a specialist electrical and telecommunications consultant in accordance with Council and relevant asset owner requirements.

Vehicular access to the development is proposed from Park Ridge Road, with internal access from the industrial collector and access roads through the site. A temporary external intersection to the site will be provided in order to facilitate the new traffic to and from the site until such time as LCC complete the proposed ultimate Park Ridge Road upgrade as noted in Council's GLIP-06.00 Trunk Movement Infrastructure Mapping.

Future Operational Works applications will be sought to permit the works to be undertaken.

APPENDIX A

Engineering Drawings



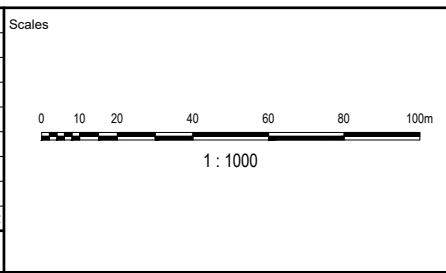
LEGEND	
--- 5.0 ---	PROPOSED SURFACE CONTOURS
- - - 5.0 - - -	EXISTING SURFACE CONTOURS
[Light Grey Box]	EARTHWORKS AREA OF FILL
[Dark Grey Box]	EARTHWORKS AREA OF CUT
● 14.25	BUILDING PAD AND LEVEL
- - - - -	NOMINAL KERB LINE
[Pink Dashed Line]	PROPOSED BOULDER RETAINING WALL
- - - SWD - - -	EXISTING STORMWATER RETICULATION
- - - S - - -	EXISTING SEWERAGE RETICULATION
- - - W - - -	EXISTING WATER RETICULATION
- - - e - - -	EXISTING UNDERGROUND ELECTRICAL RETICULATION
- - - oh - - -	EXISTING OVERHEAD ELECTRICAL RETICULATION
- - - c - - -	EXISTING COMMUNICATIONS RETICULATION
- - -	EXISTING EDGE OF BITUMEN
[Orange Dashed Line]	SITE BOUNDARY
[Red Dashed Line]	EASEMENT

PRELIMINARY CUT / FILL VOLUMES	
CUT	-261,663m ³
FILL	254,347m ³
BALANCE	-7,316m ³

NOTE: NO COMPACTION OR BULKING FACTORS HAVE BEEN APPLIED.

EXTERNAL INTERSECTION WORKS WITH PARK RIDGE ROAD SUBJECT TO DESIGN. RESUMPTION BOUNDARIES SHOWN PROVIDED BY COUNCIL.

Issue	Description	DR	CH	VE	Date
01	ISSUED FOR APPROVAL	NF	NF	LP	22.07.2022



Surveyor

Planner

POINTCORP

Status			
PRELIMINARY NOT TO BE USED FOR CONSTRUCTION			
© Copyright reserved			
Original Issue Signatures			
Drawn	D. KEARNEY	Original Size	A1
Designed	N. FAHEY	Height Datum	AHD
Project Manager	L. PRIZEMAN	Grid	MGA
Verified	M. WENZEL		

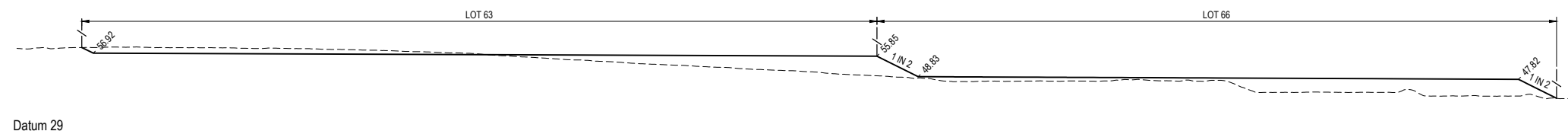
Project
**PARK RIDGE ROAD INDUSTRIAL
STAGE 10**

Title
**CONCEPTUAL BULK
EARTHWORKS PLAN**

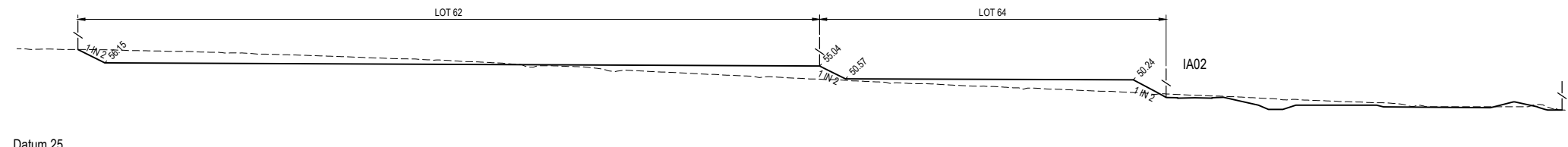
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Project No. | Folder Prefix | Zone | Stage | Phase | Discipline | Type | Drawing No. | Issue

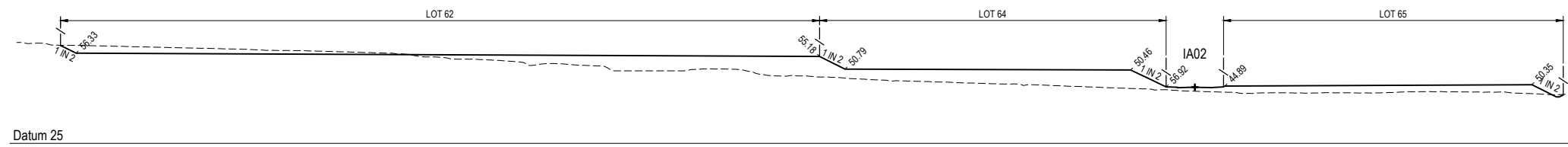
30133253 - AAP - 0510DA - CV - DRG - 0001-01



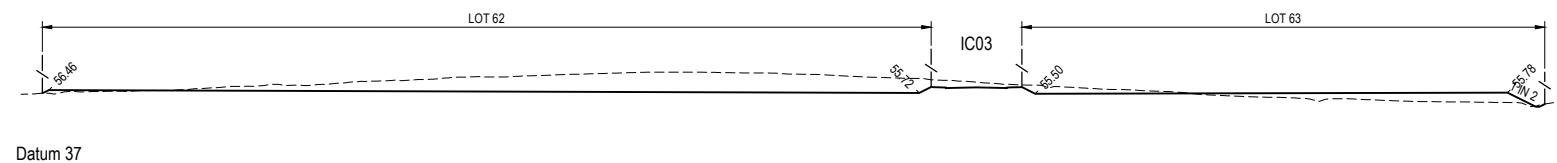
SECTION 1
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1:1000 VERT.



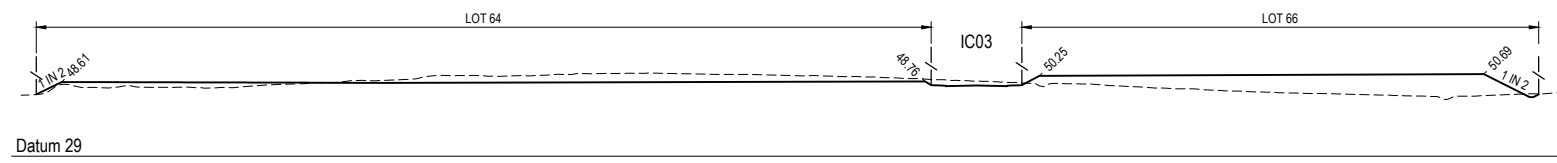
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1:1000 VERT.



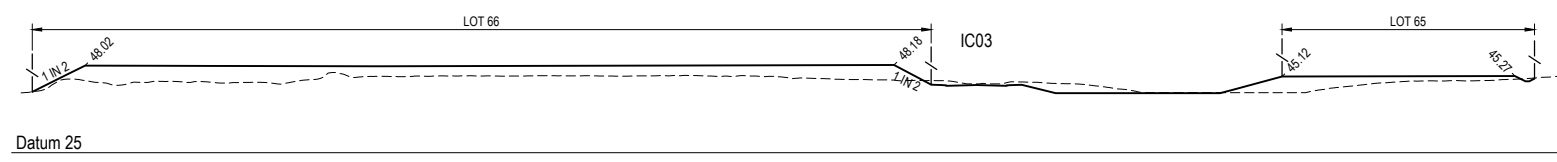
SECTION 3
SCALE 1:1000 HORI.
1:1000 VERT.



SECTION 4
SCALE 1:1000 HORI.
1:1000 VERT.

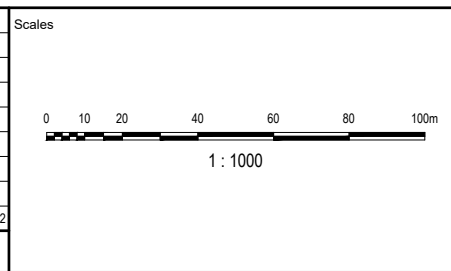


SECTION 5
SCALE 1:1000 HORI.
1:1000 VERT.



SECTION 6
SCALE 1:1000 HORI.
1:1000 VERT.

Issue	Description	DR	CH	VE	Date
01	ISSUED FOR APPROVAL	NF	NF	LP	22.07.2022



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Project Manager	L. PRIZEMAN	Grid	MGA
Verified	M. WENZEL		

Project
**PARK RIDGE ROAD INDUSTRIAL
STAGE 10**

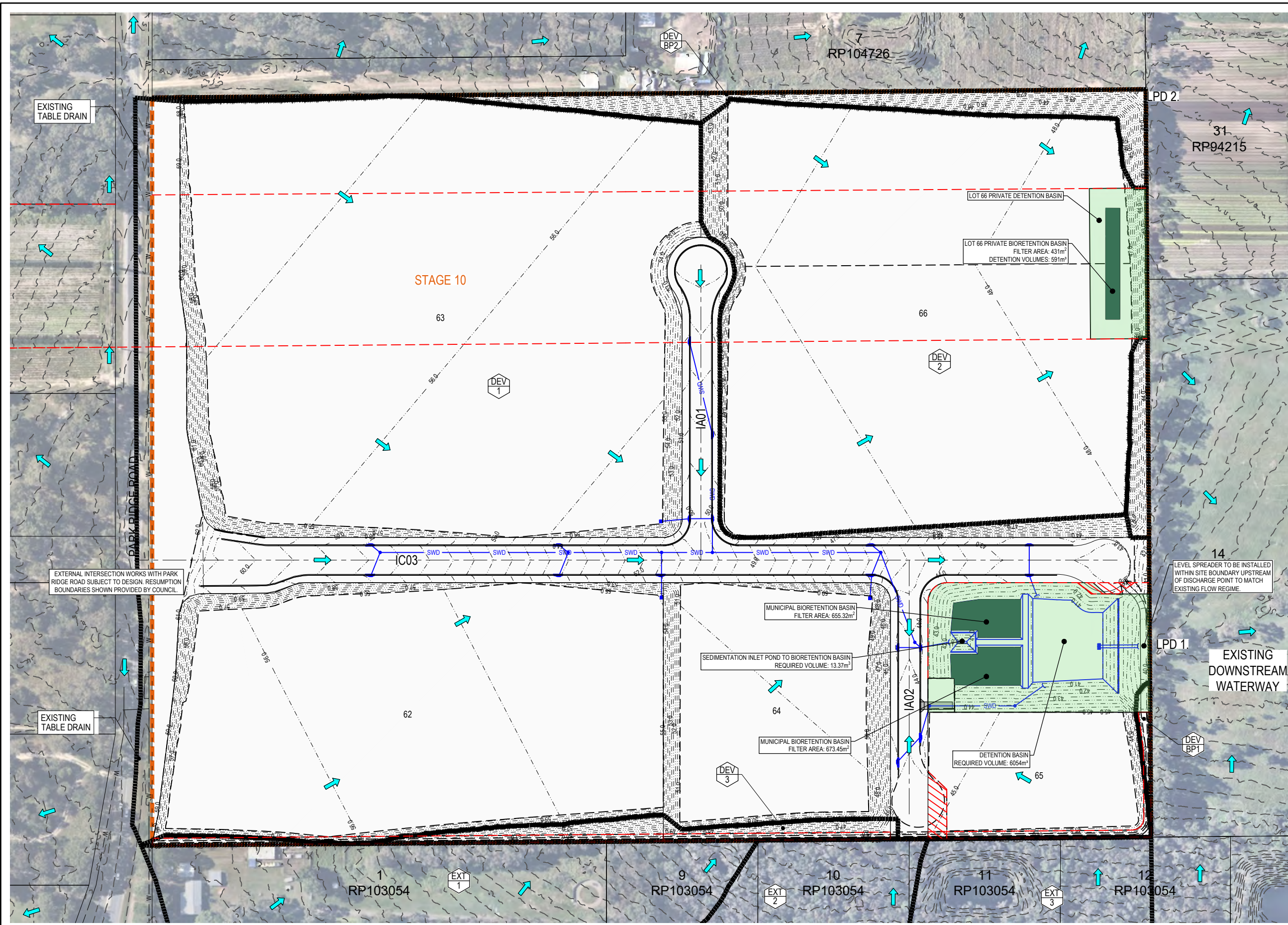
Title
**CONCEPTUAL BULK
EARTHWORKS SECTIONS**



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Project No. | Folder Prefix | Zone | Stage | Phase | Discipline | Type | Drawing No. | Issue

30133253 - AAP - 0510DA - CV - DRG - 0002-01



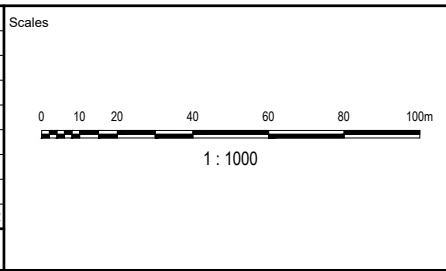
LEGEND

- CATCHMENT BOUNDARY
- CATCHMENT IDENTIFIER
- SWD ● PROPOSED STORMWATER RETICULATION AND STRUCTURE
- SWD ● EXISTING STORMWATER RETICULATION AND STRUCTURE
- NOMINAL KERB LINE
- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- ← DIRECTION OF OVERLAND FLOW
- LPD LEGAL POINT OF DISCHARGE
- SITE BOUNDARY

CATCHMENT TABLE

CATCHMENT LABEL	AREA (ha)
DEV/1	15.600
DEV/2	4.930
DEV/3	0.281
DEV/BP1	0.138
DEV/BP2	0.440
EXT/1	4.298
EXT/2	6.254
EXT/3	5.308

Issue	Description	DR	CH	VE	Date
01	ISSUED FOR APPROVAL	NF	NF	LP	22.07.2022



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Project

PARK RIDGE ROAD INDUSTRIAL STAGE 10

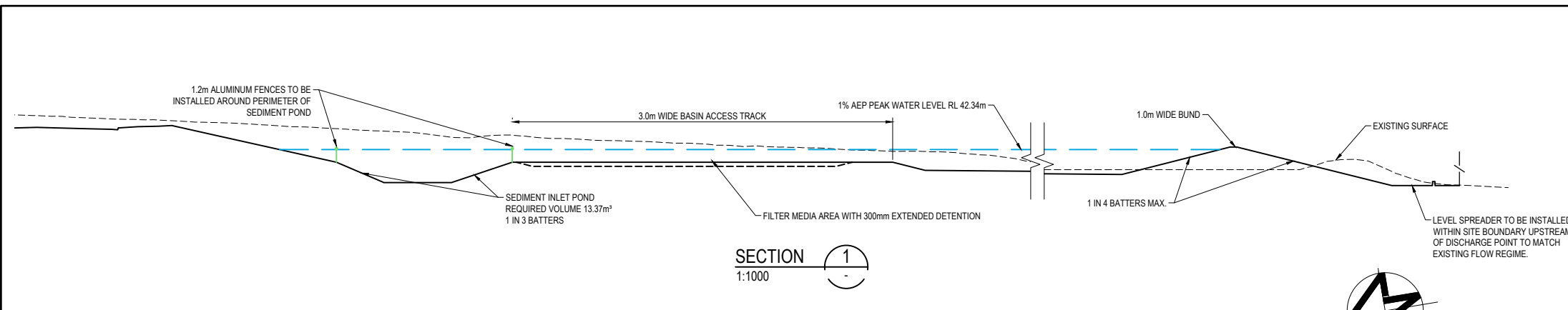
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POST DEVELOPED STORMWATER CATCHMENT PLAN

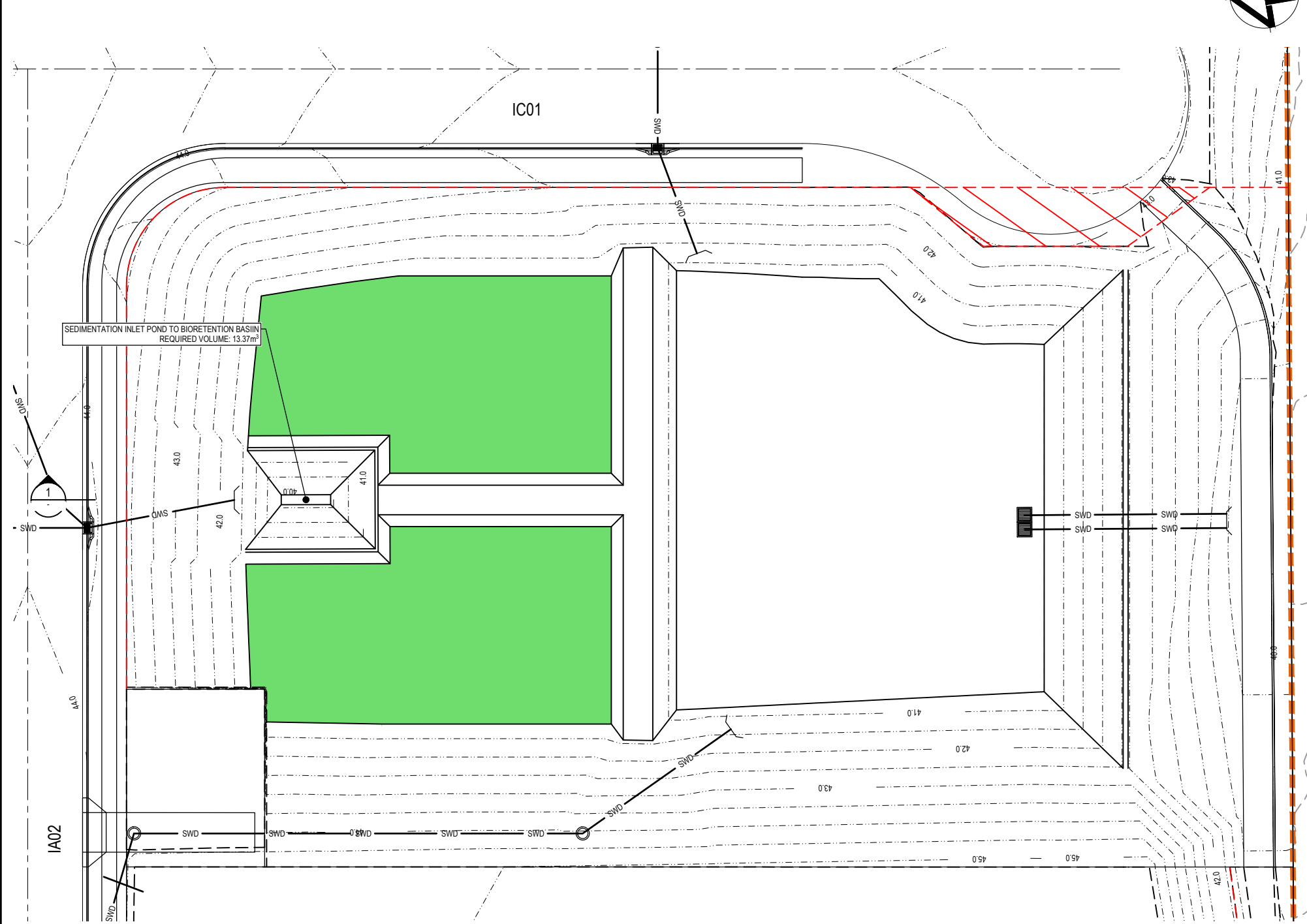
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SOIL FILTER MEDIA NOTES		
PARAMETER	TEST METHOD IN ACCORDANCE WITH	REQUIREMENT
SATURATED HYDRAULIC CONDUCTIVITY	ASTM 11815-11	50 - 500 mm/hr (200 PREFERRED)
pH	AS 4419	5.5 - 7.5
ELECTRICAL CONDUCTIVITY	AS 4419	<1.2 dS/m
NITROGEN CONTENT	AS 4419	<400 mg/kg
PHOSPHORUS CONTENT	AS 4419	<35 mg/kg
ORGANIC CONTENT	AS 4419	3% - 10%, WHERE ORGANIC CONTENT IS BELOW THIS THRESHOLD, THE FILTER MEDIA MAY BE AMELIORATED BY ADDING 50mm OF COMPOST AND TINGING IT INTO THE TOP 150mm OF FILTER MEDIA.
PARTICLE SIZE DISTRIBUTION	AS 1289.3.6.1 - 1995	CLAY & SILT 3 - 6% (<0.05mm) VERY FINE SAND 5 - 30% (0.05 - 0.15mm) FINE SAND 10 - 30% (0.15 - 0.25mm) MEDIUM TO COARSE SAND 40 - 60% (0.25 - 1.0mm) COARSE SAND 7 - 10% (1.0 - 2.0mm) FINE GRAVEL <3% (2.0 - 3.4mm)



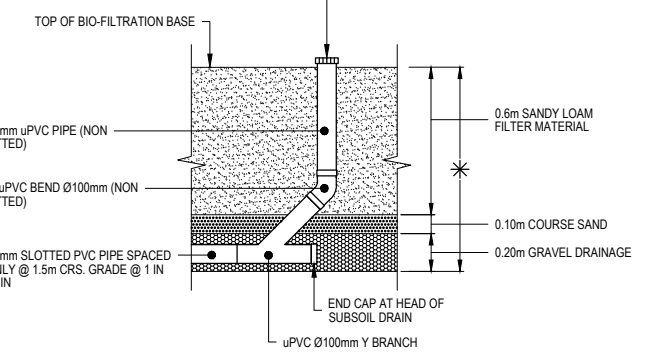
NOTES

- FILTER MEDIA LAYER SHALL CONFORM WITH THE SPECIFICATIONS OF FAWB GUIDELINES FOR BIO-FILTRATION 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%.
- TRANSITION & DRAINAGE MEDIA LAYER SHALL CONFORM WITH THE SPECIFICATIONS OF FAWB GUIDELINES FOR BIO-FILTRATION MEDIA (VERSION 3.01) & WATER BY DESIGN SPECIFICATIONS "BIO-RETENTION TECHNICAL DESIGN GUIDELINES VERSION 1".
- 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 - BIO-RETENTION SYSTEMS (VERSION 1.1). ALL COSTS ASSOCIATED WITH THE DETAILED SURVEY OF THE BIO-RETENTION 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CO-SIGNING THE WATER BY DESIGN CONSTRUCTION & ESTABLISHMENT SIGN OFF FORMS - BIO-RETENTION SYSTEMS (VERSION 1.1) AT THE TIME OF CONSTRUCTION OF THE BIO-RETENTION SYSTEMS AS WELL AS MANAGING & COMPLYING WITH THE RELEVANT HOLD & WITNESS POINTS SPECIFIED IN THESE FORMS.
- ALL UNDER DRAINAGE CONNECTIONS TO BE Y JUNCTIONS.

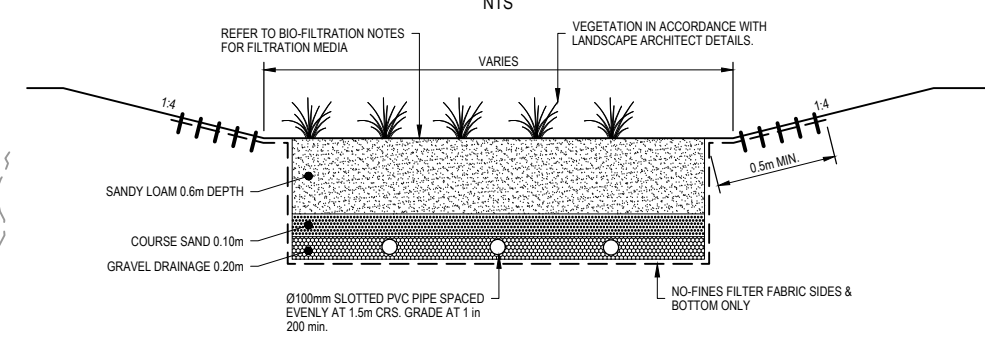
LEGEND

--- 5.0 ---	PROPOSED SURFACE CONTOURS
--- 5.0 ---	EXISTING SURFACE CONTOURS
[Green Box]	PROPOSED BIO RETENTION / DETENTION BASIN
---	NOMINAL KERB LINE
[Pink Box]	PROPOSED BOULDER RETAINING WALL
---	EXISTING STORMWATER RETICULATION
---	EXISTING SEWERAGE RETICULATION
---	EXISTING WATER RETICULATION
---	EXISTING UNDERGROUND ELECTRICAL RETICULATION
---	EXISTING OVERHEAD ELECTRICAL RETICULATION
---	EXISTING COMMUNICATIONS RETICULATION
---	EXISTING EDGE OF BITUMEN
---	STAGE BOUNDARY
---	EASEMENT

C.I. CAP. EXTEND CAP TO APPROX 150mm ABOVE BIO-RETENTION BASIN SURFACE. PROVIDE LOCKING FUNCTION OR SECURE CAP WITH SCREWS.

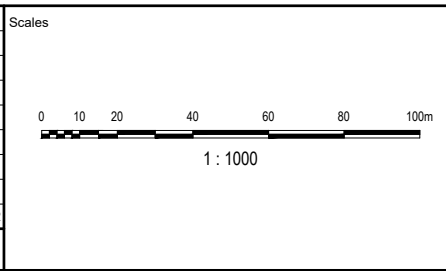


TYPICAL FLUSHING END DETAIL



TYPICAL BIO-RETENTION/DETENTION BASIN SECTION

Issue	Description	DR	CH	VE	Date
01	ISSUED FOR APPROVAL	NF	NF	LP	22.07.2022



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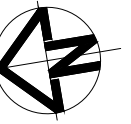
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Verified	M. WENZEL		

Project	
PARK RIDGE ROAD INDUSTRIAL STAGE 10	
Title	
STORMWATER MANAGEMENT DETAILS	

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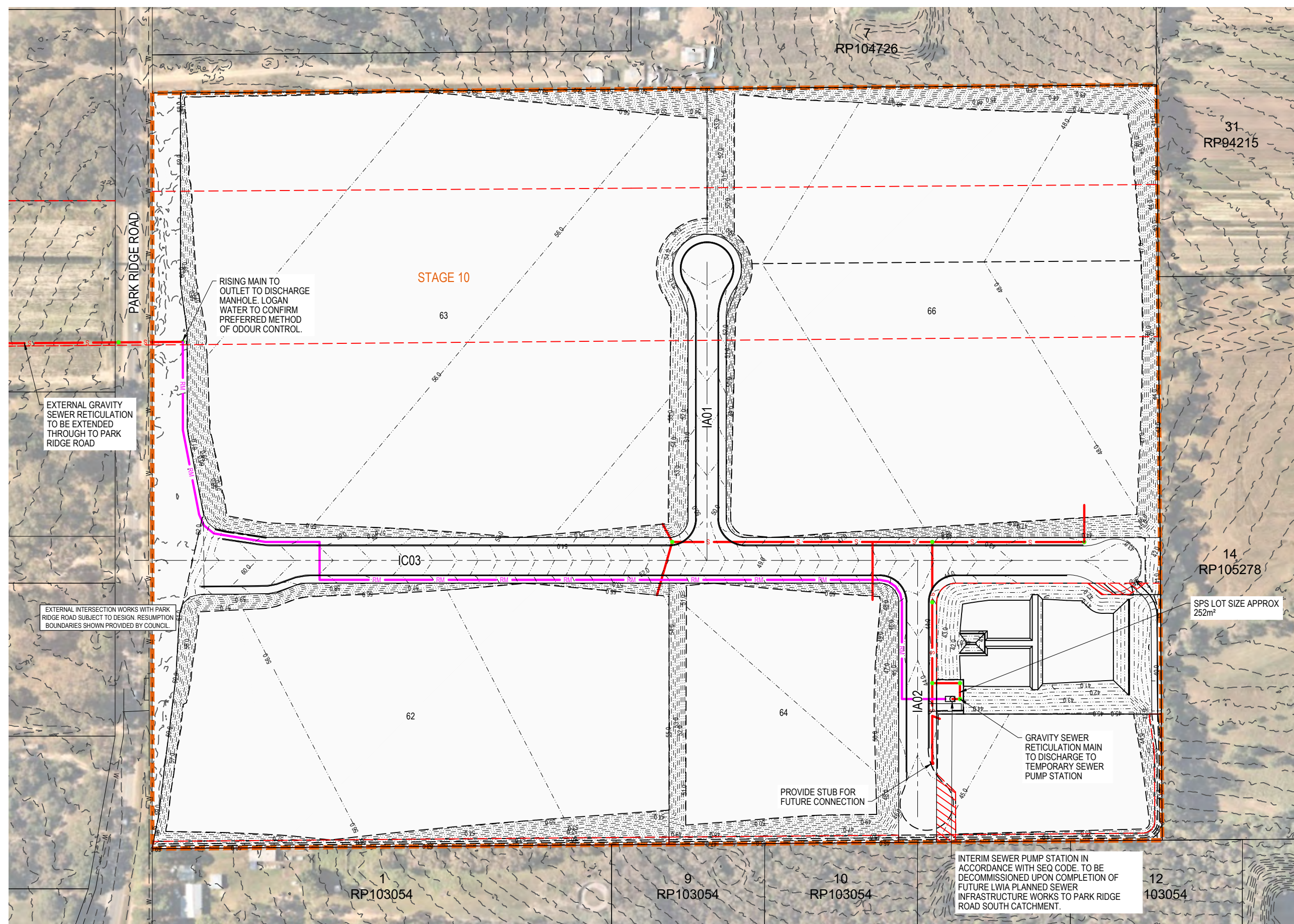
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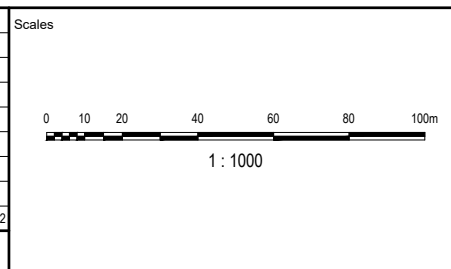


LEGEND

- S — PROPOSED Ø150 SEWER GRAVITY MAIN
- RM — PROPOSED Ø110 OD SEWER RISING MAIN
- - - 5.0 - - - PROPOSED SURFACE CONTOURS
- - - 5.0 - - - EXISTING SURFACE CONTOURS
- — — NOMINAL KERB LINE
- - - SWD - - - EXISTING STORMWATER RETICULATION
- - - S - - - EXISTING SEWERAGE RETICULATION
- - - W - - - EXISTING WATER RETICULATION
- - - e - - - EXISTING UNDERGROUND ELECTRICAL RETICULATION
- - - oh - - - EXISTING OVERHEAD ELECTRICAL RETICULATION
- - - c - - - EXISTING COMMUNICATIONS RETICULATION
- - - EXISTING EDGE OF BITUMEN
- - - - - SITE BOUNDARY
- - - - - EASEMENT



Issue	Description	DR	CH	VE	Date
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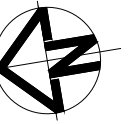
Project
**PARK RIDGE ROAD INDUSTRIAL
STAGE 10**

Title
**CONCEPTUAL SEWER
RETICULATION LAYOUT PLAN**

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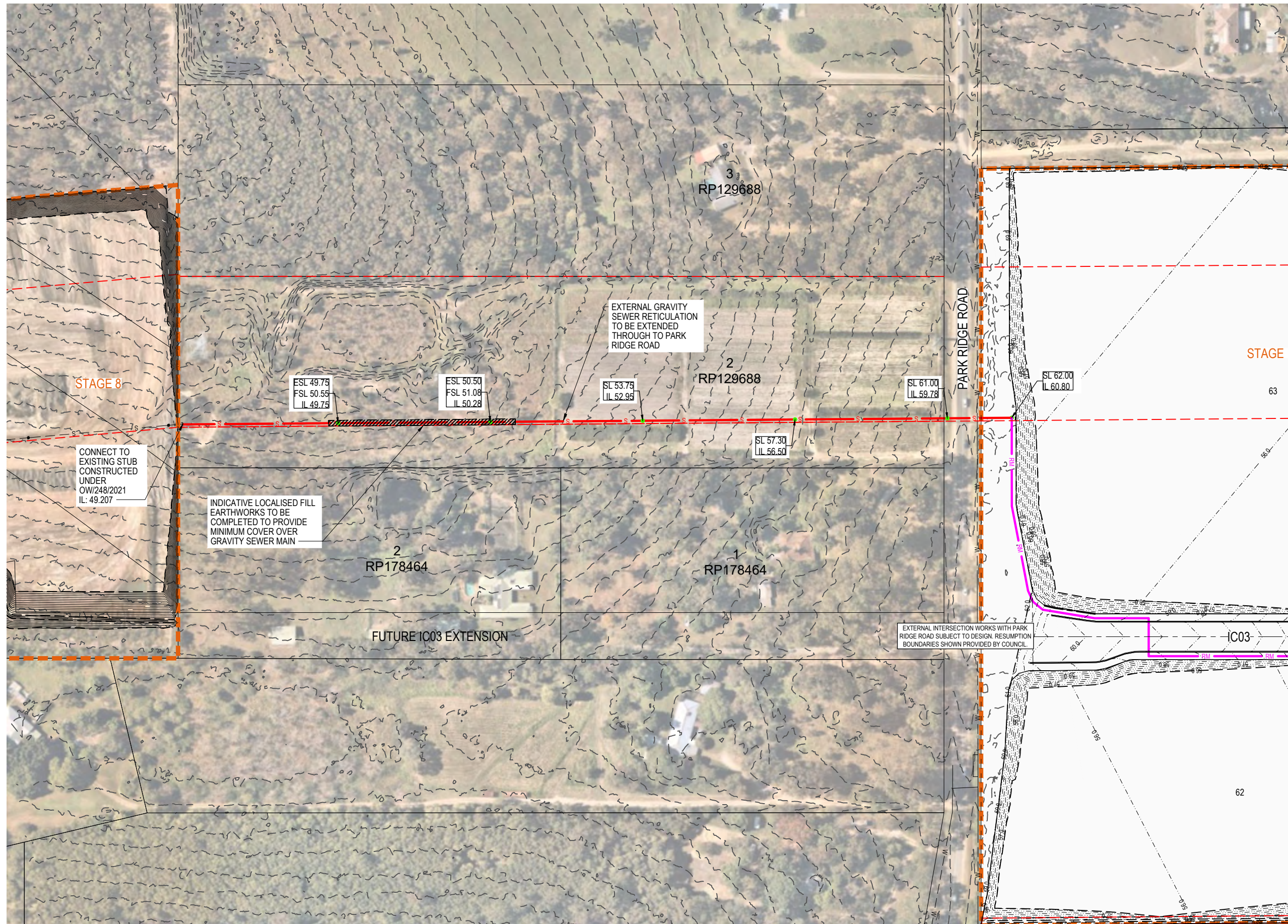
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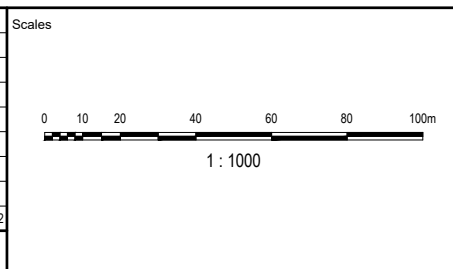


LEGEND

	S	PROPOSED Ø150 SEWER GRAVITY MAIN
	RM	PROPOSED Ø110 OD SEWER RISING MAIN
	-5.0	PROPOSED SURFACE CONTOURS
	-5.0	EXISTING SURFACE CONTOURS
		NOMINAL KERB LINE
	SWD	EXISTING STORMWATER RETICULATION
	S	EXISTING SEWERAGE RETICULATION
	W	EXISTING WATER RETICULATION
	e	EXISTING UNDERGROUND ELECTRICAL RETICULATION
	oh	EXISTING OVERHEAD ELECTRICAL RETICULATION
	c	EXISTING COMMUNICATIONS RETICULATION
		EXISTING EDGE OF BITUMEN
		SITE BOUNDARY
		EASEMENT



Issue	Description	DR	CH	VE	Date
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Project	
PARK RIDGE ROAD INDUSTRIAL STAGE 10	
Title	
CONCEPTUAL EXTERNAL SEWER RETICULATION LAYOUT PLAN	

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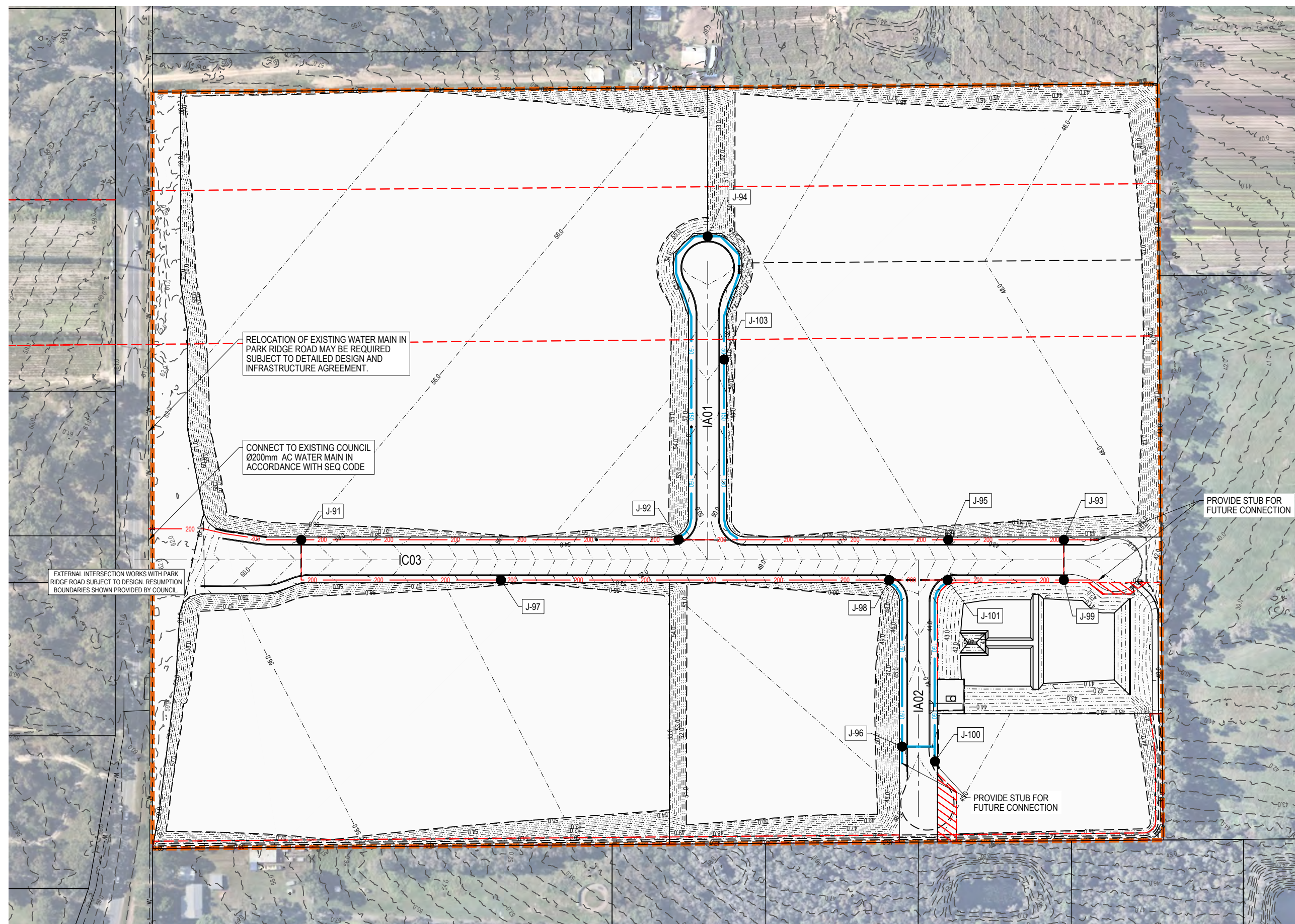
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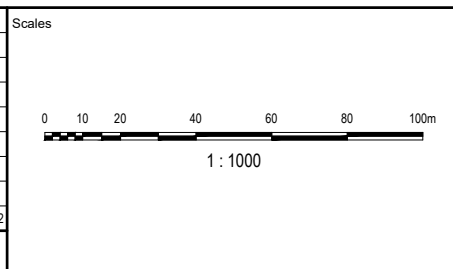


LEGEND

- 150 PROPOSED Ø150 WATER MAIN
- 200 PROPOSED Ø200 WATER MAIN
- - - 5.0 PROPOSED SURFACE CONTOURS
- - - 5.0 EXISTING SURFACE CONTOURS
- NOMINAL KERB LINE
- - - SWD EXISTING STORMWATER RETICULATION
- - - S EXISTING SEWERAGE RETICULATION
- - - W EXISTING WATER RETICULATION
- - - e EXISTING UNDERGROUND ELECTRICAL RETICULATION
- - - oh EXISTING OVERHEAD ELECTRICAL RETICULATION
- - - c EXISTING COMMUNICATIONS RETICULATION
- - - EXISTING EDGE OF BITUMEN
- - - SITE BOUNDARY
- - - EASEMENT



Issue	Description	DR	CH	VE	Date
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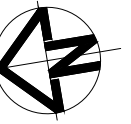
Project
**PARK RIDGE ROAD INDUSTRIAL
STAGE 10**

Title
WATER NETWORK PLAN

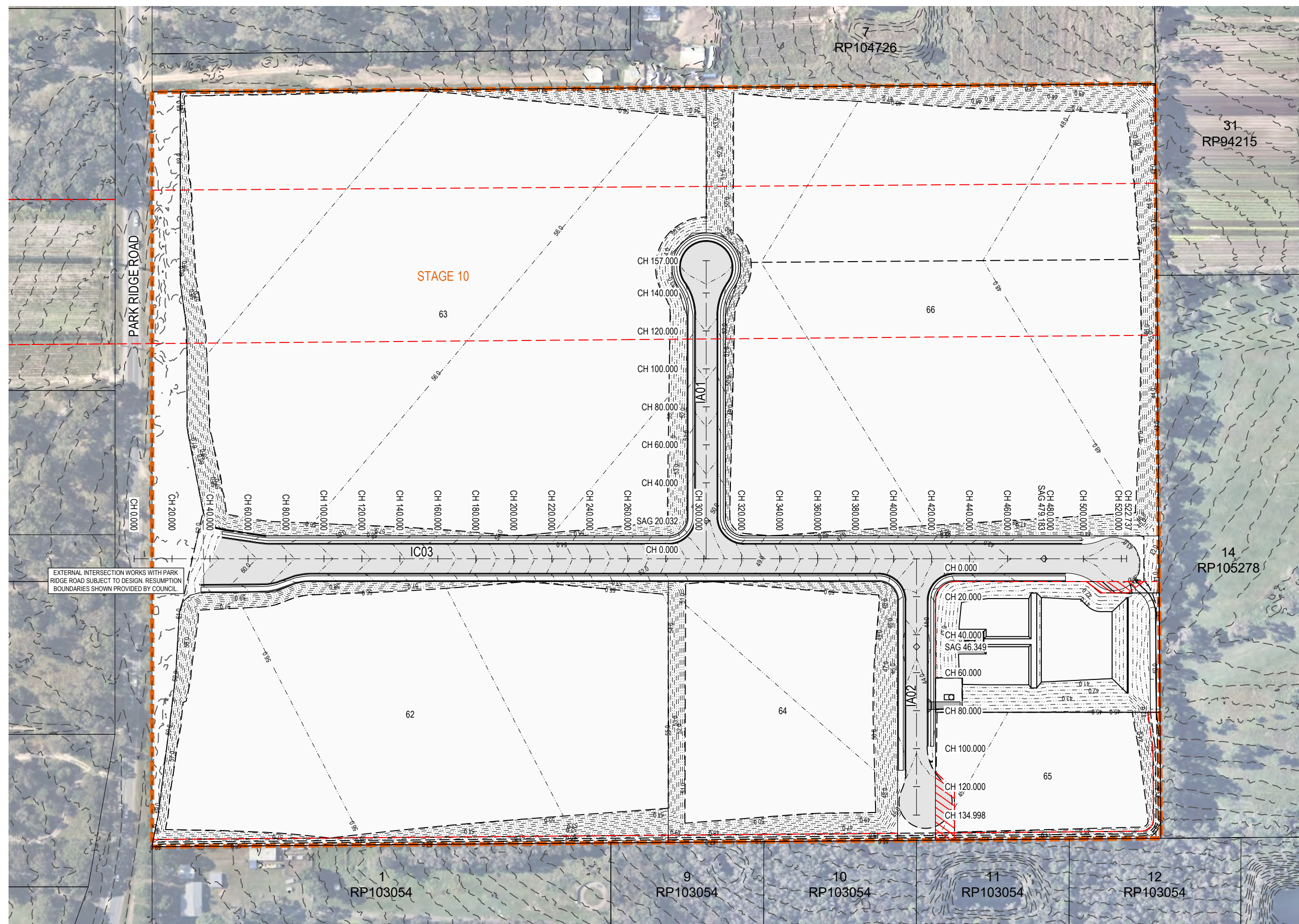
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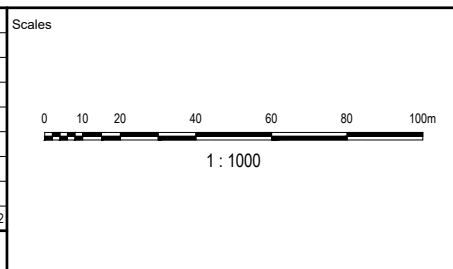


LEGEND	
--- 5.0 ---	PROPOSED SURFACE CONTOURS
--- 5.0 ---	EXISTING SURFACE CONTOURS
●	BUILDING PAD AND LEVEL
---	NOMINAL KERB LINE
[Hatched Box]	PROPOSED ASPHALT PAVEMENT
---	EXISTING STORMWATER RETICULATION
---	EXISTING SEWERAGE RETICULATION
---	EXISTING WATER RETICULATION
---	EXISTING UNDERGROUND ELECTRICAL RETICULATION
---	EXISTING OVERHEAD ELECTRICAL RETICULATION
---	EXISTING COMMUNICATIONS RETICULATION
---	EXISTING EDGE OF BITUMEN
[Orange Dashed Line]	SITE BOUNDARY
[Red Dashed Line]	EASEMENT



EXTERNAL INTERSECTION WORKS WITH PARK RIDGE ROAD SUBJECT TO DESIGN. RESUMPTION BOUNDARIES SHOWN PROVIDED BY COUNCIL.

Issue	Description	DR	CH	VE	Date
01	ISSUED FOR APPROVAL	NF	NF	LP	22.07.2022



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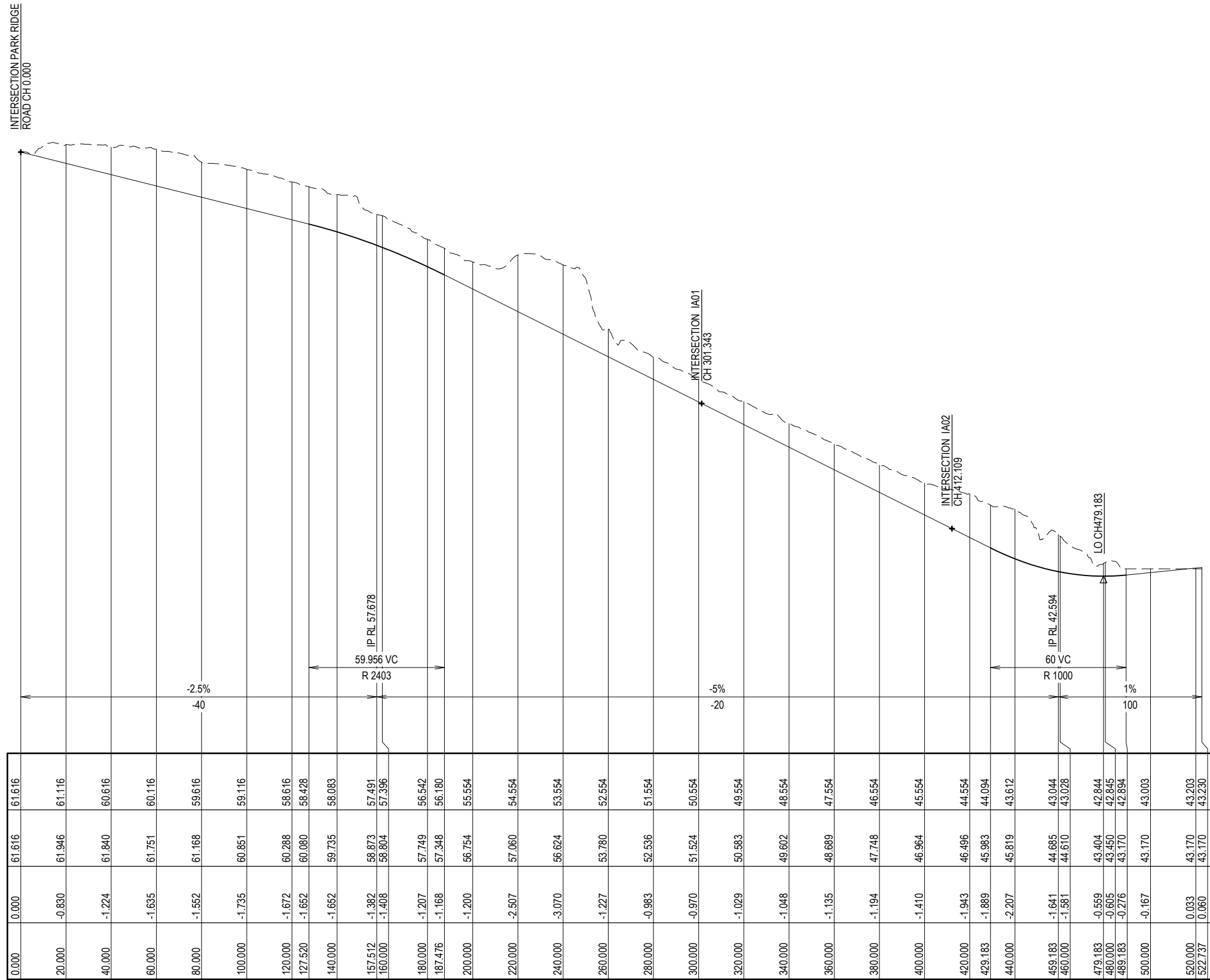
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Project	
PARK RIDGE ROAD INDUSTRIAL STAGE 10	
Title	
CONCEPTUAL ROADWORKS PLAN	

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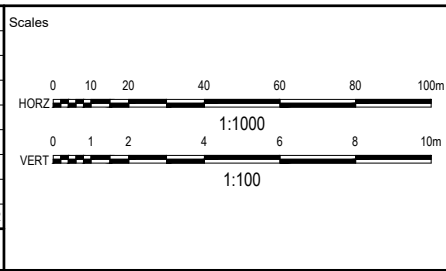


Vertical Curve Length (m)
 Vertical Curve Radius (m)
 Vertical Grade (%)
 Vertical Grade (1 in ...)
 Horizontal Curve Radius (m)
 DATUM RL.35.000

DESIGN LEVELS ON ROAD CENTRELINE	EXISTING SURFACE ON ROAD CENTRELINE	CUT / FILL DEPTH	PEGGED CHAINAGE
61.616	61.616	0.000	0.000
61.116	61.946	-0.830	20.000
60.616	61.840	-1.224	40.000
60.116	61.751	-1.635	60.000
59.616	61.168	-1.552	80.000
59.116	60.851	-1.735	100.000
58.616	60.288	-1.672	120.000
58.428	60.080	-1.652	127.520
58.083	59.735	-1.652	140.000
57.491	58.873	-1.382	157.512
57.396	58.804	-1.408	160.000
56.542	57.749	-1.207	180.000
56.180	57.348	-1.168	187.476
55.554	56.754	-1.200	200.000
54.554	57.060	-2.507	220.000
53.554	56.624	-3.070	240.000
52.554	53.780	-1.227	260.000
51.554	52.536	-0.983	280.000
50.554	51.524	-0.970	300.000
49.554	50.583	-1.029	320.000
48.554	49.602	-1.048	340.000
47.554	48.689	-1.135	360.000
46.554	47.748	-1.194	380.000
45.554	46.964	-1.410	400.000
44.554	46.496	-1.943	420.000
44.094	45.993	-1.889	429.183
43.612	45.819	-2.207	440.000
43.044	44.685	-1.641	459.183
43.028	44.610	-1.581	460.000
42.844	43.404	-0.559	479.183
42.845	43.450	-0.605	480.000
42.894	43.170	-0.276	489.183
43.003	43.170	-0.167	500.000
43.203	43.170	0.033	520.000
43.230	43.170	0.060	522.737

IC01 LONGITUDINAL SECTION
 SCALE: HORIZONTAL - 1:1000
 VERTICAL - 1:100

Issue	Description	DR	CH	VE	Date
01	ISSUED FOR APPROVAL	NF	NF	LP	22.07.2022



Surveyor: **dts**
 Planner: **rps**

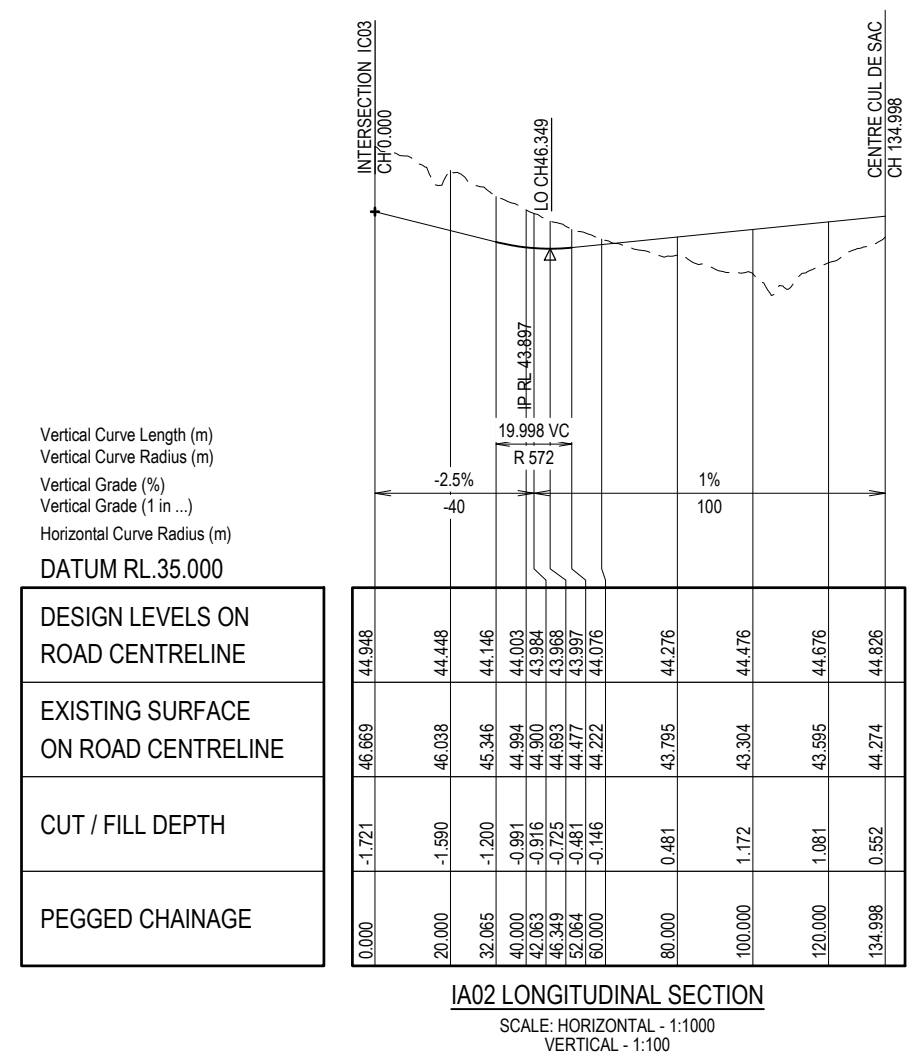
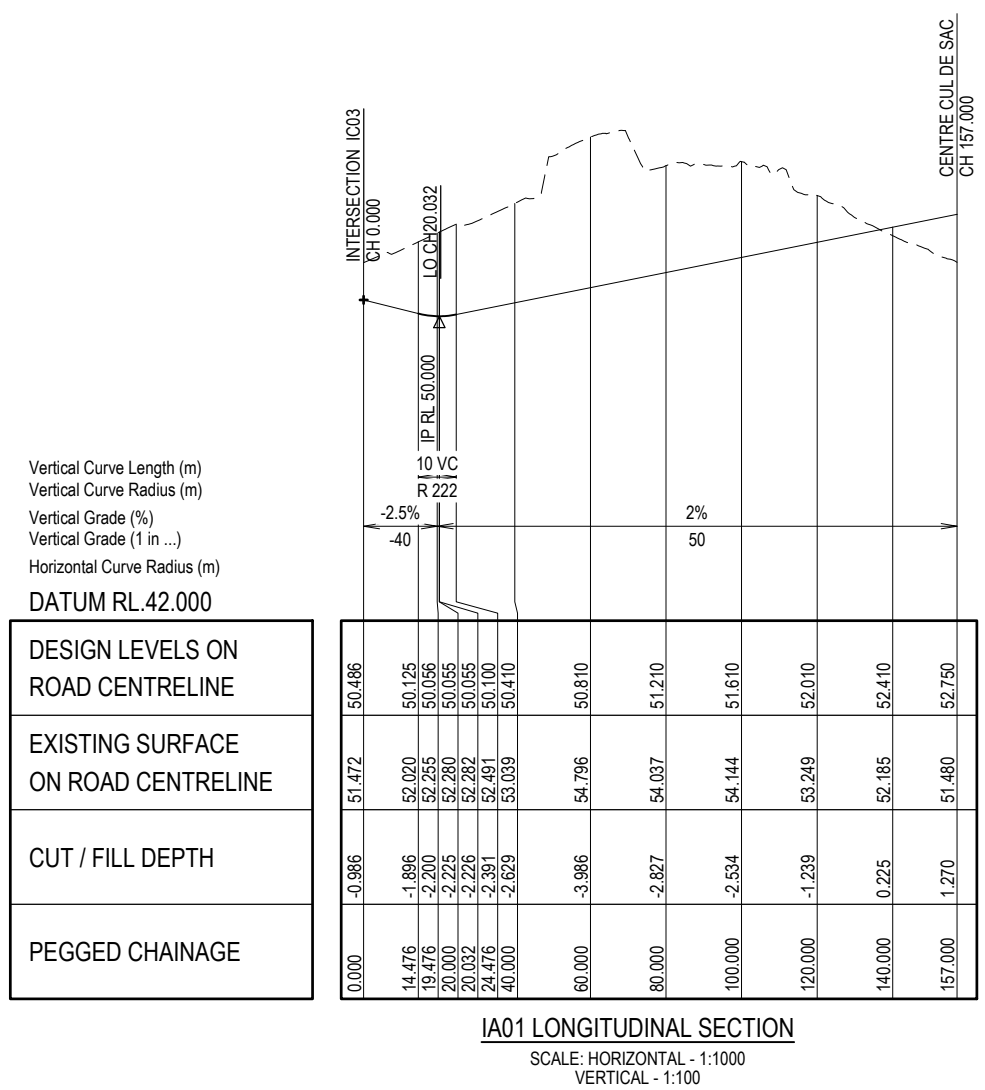
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Project Manager	L. PRIZEMAN	Grid	MGA
Verified	M. WENZEL		

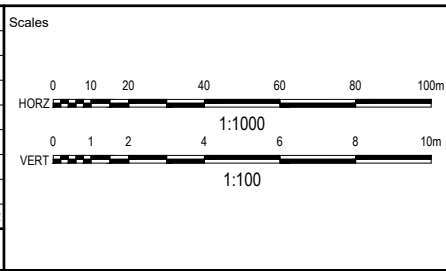
Project: PARK RIDGE ROAD INDUSTRIAL STAGE 10
 Title: CONCEPTUAL ROADWORKS LONGITUDINAL SECTION SHEET 1

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Original Issue Signatures	
Drawn	D. KEARNEY
Designed	N. FAHEY
Project Manager	L. PRIZEMAN
Verified	M. WENZEL

Original Size	A1
Height Datum	AHD
Grid	MGA

Project

PARK RIDGE ROAD INDUSTRIAL STAGE 10

Title

CONCEPTUAL ROADWORKS LONGITUDINAL SECTION SHEET 2

Arcadis Australia Pacific Pty Limited
P O Box 1653
Southport QLD 4215
ABN 76 104 485 289
Tel No: +61 7 5532 3933
Fax No: +61 7 5591 4778
www.arcadis.com

Project No. | Folder Prefix | Zone | Stage | Phase | Discipline | Type | Drawing No. | Issue

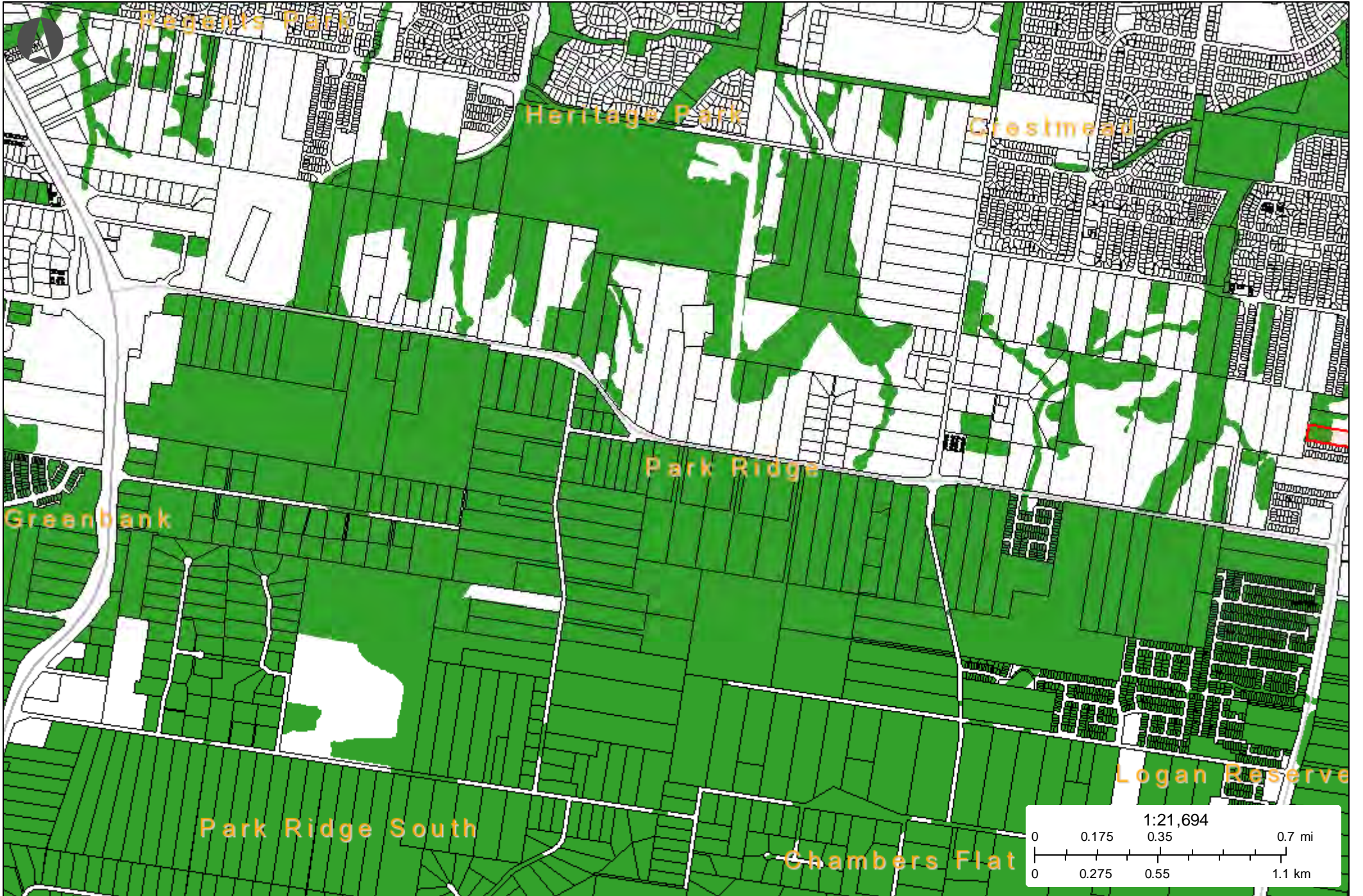
30133253 - AAP - 0510DA - CV - DRG - 0011-01

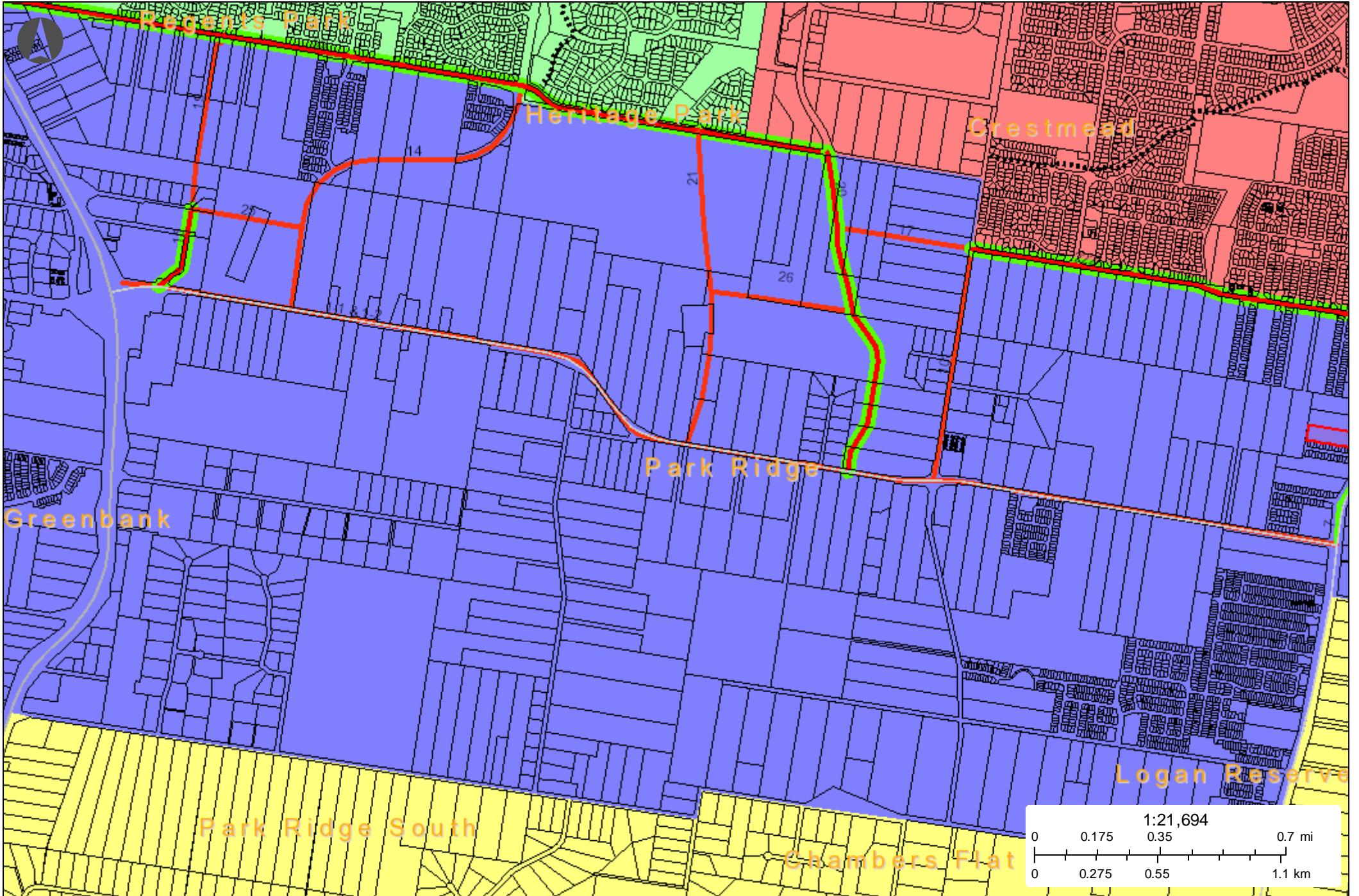
APPENDIX B

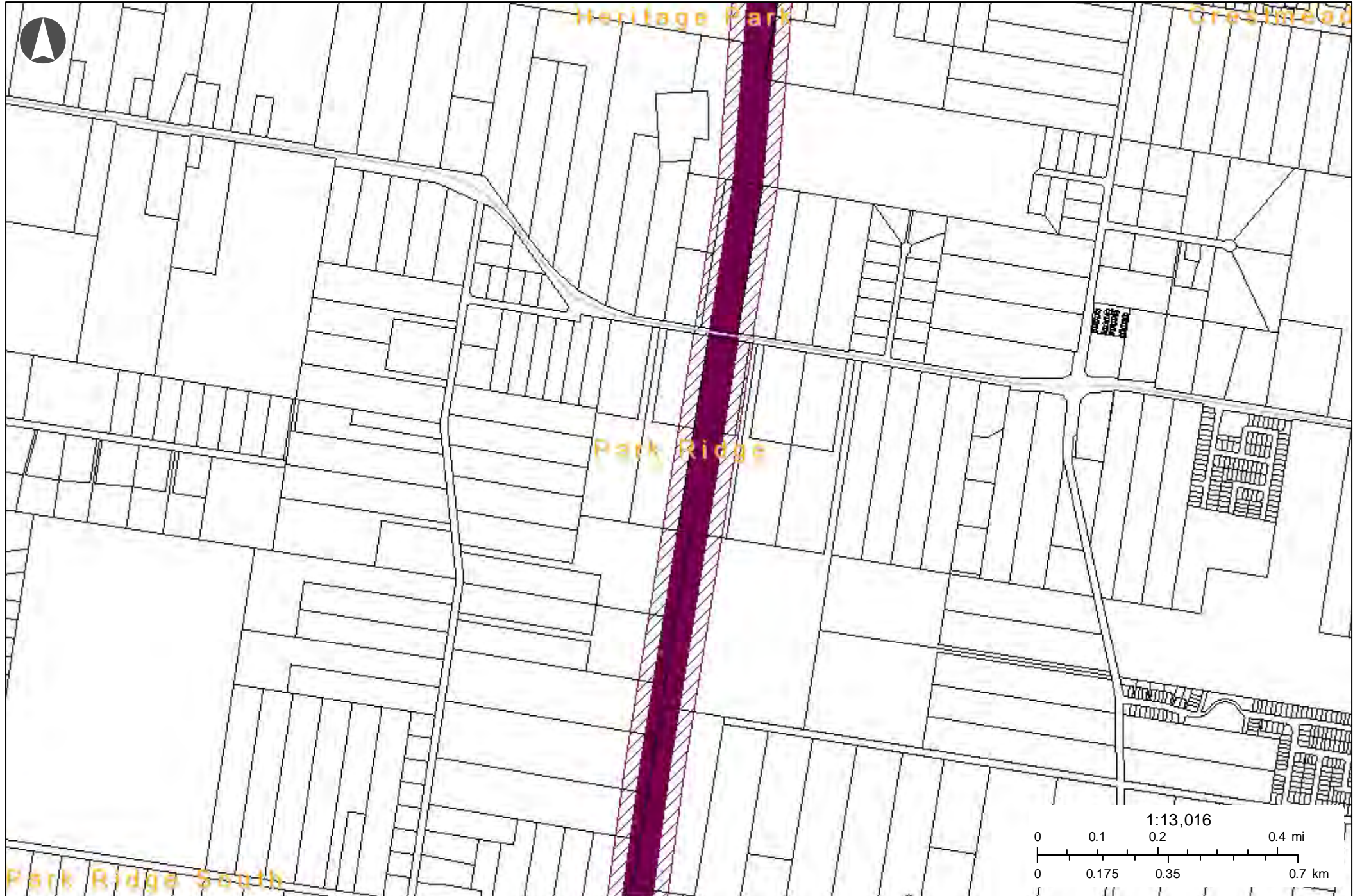
Overlay Maps

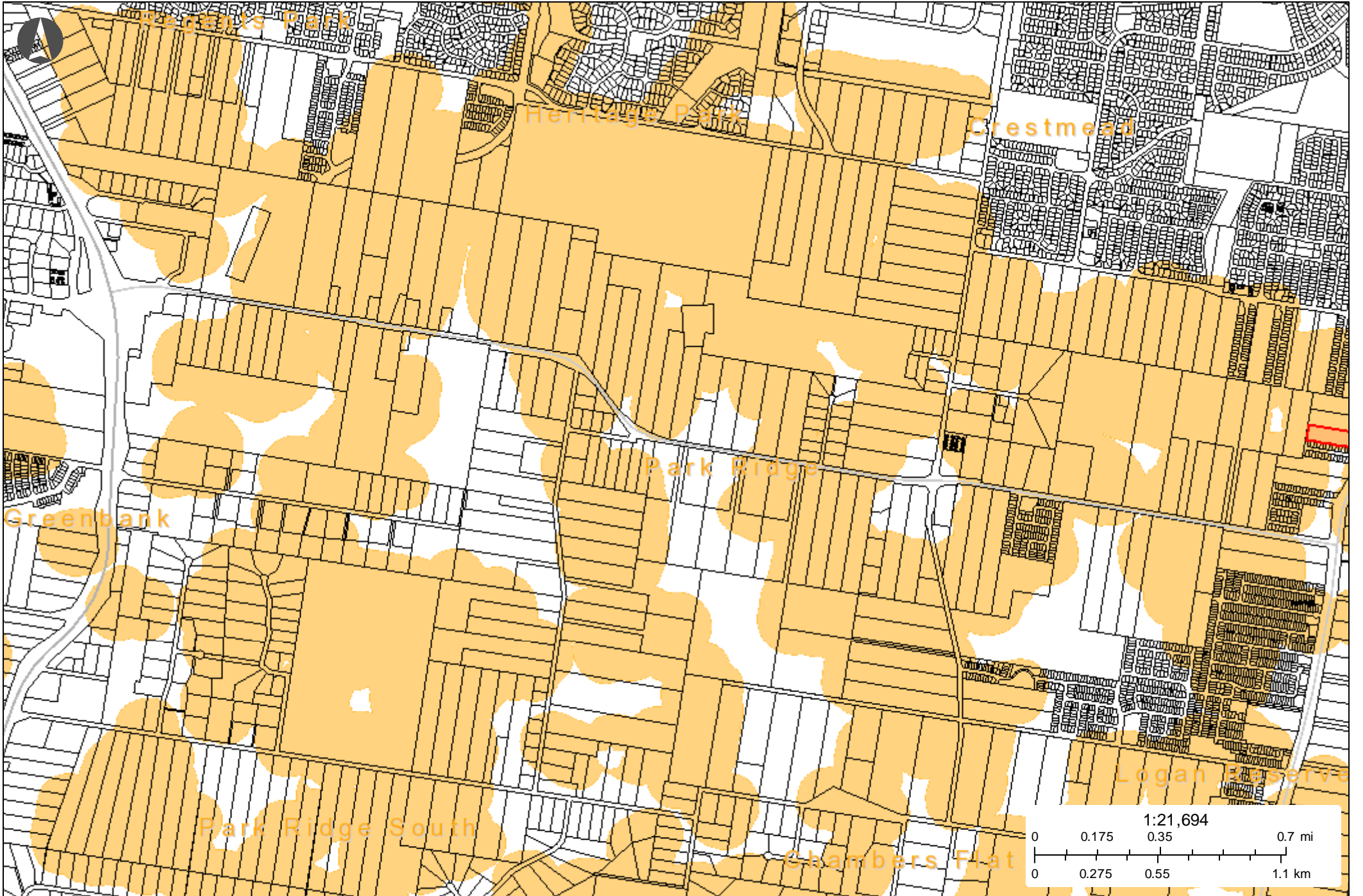












APPENDIX C

Dial Before You Dig Maps



Caller Details

Contact: Lachlan Scott **Caller Id:** 3165102 **Phone:** 0423 418 220
Company: Arcadis
Address: PO Box 1653 **Email:** lachlan.scott@arcadis.com
 Southport QLD 4215

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.



User Reference: 30133252
Working on Behalf of: Private
Enquiry Date: 23/06/2022 **Start Date:** 24/06/2022 **End Date:** 24/06/2022

Address:
 261 Park Ridge Road
 Park Ridge QLD 4125

Job Purpose:
 Excavation

Onsite Activities:
 Manual Excavation, Mechanical Excavation

Location of Workplace:
 Both

Location in Road:
 Road, Nature Strip, Footpath

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:
 Not supplied

Your Responsibilities and Duty of Care

- The lodgement of an enquiry does not authorise the project to commence. You must obtain all necessary information from any and all likely impacted asset owners prior to excavation.
- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at www.1100.com.au
- For more information on safe excavation practices, visit www.1100.com.au

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.

** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.

Asset owners highlighted with a hash # require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
212870532	Energex QLD	13 12 53	NOTIFIED
212870533	Logan City Council	(07) 3412 3412	NOTIFIED
212870534	NBN Co Qld	1800 687 626	NOTIFIED
212870530	Optus and or Uecomm Qld	1800 505 777	NOTIFIED
212870531	Telstra QLD FA	1800 653 935	NOTIFIED

END OF UTILITIES LIST

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.gov.au • ABN 21-627-796 435



Arcadis - Lachlan Scott
PO Box 1653
Southport QLD 4215
lachlan.scott@arcadis.com

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	212870533
Enquiry Date	23/06/2022 13:28
Response	AFFECTED
Address	261 Park Ridge Road Park Ridge
Location in Road	Road,Nature Strip,Footpath
Activity	Manual Excavation,Mechanical Excavation

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

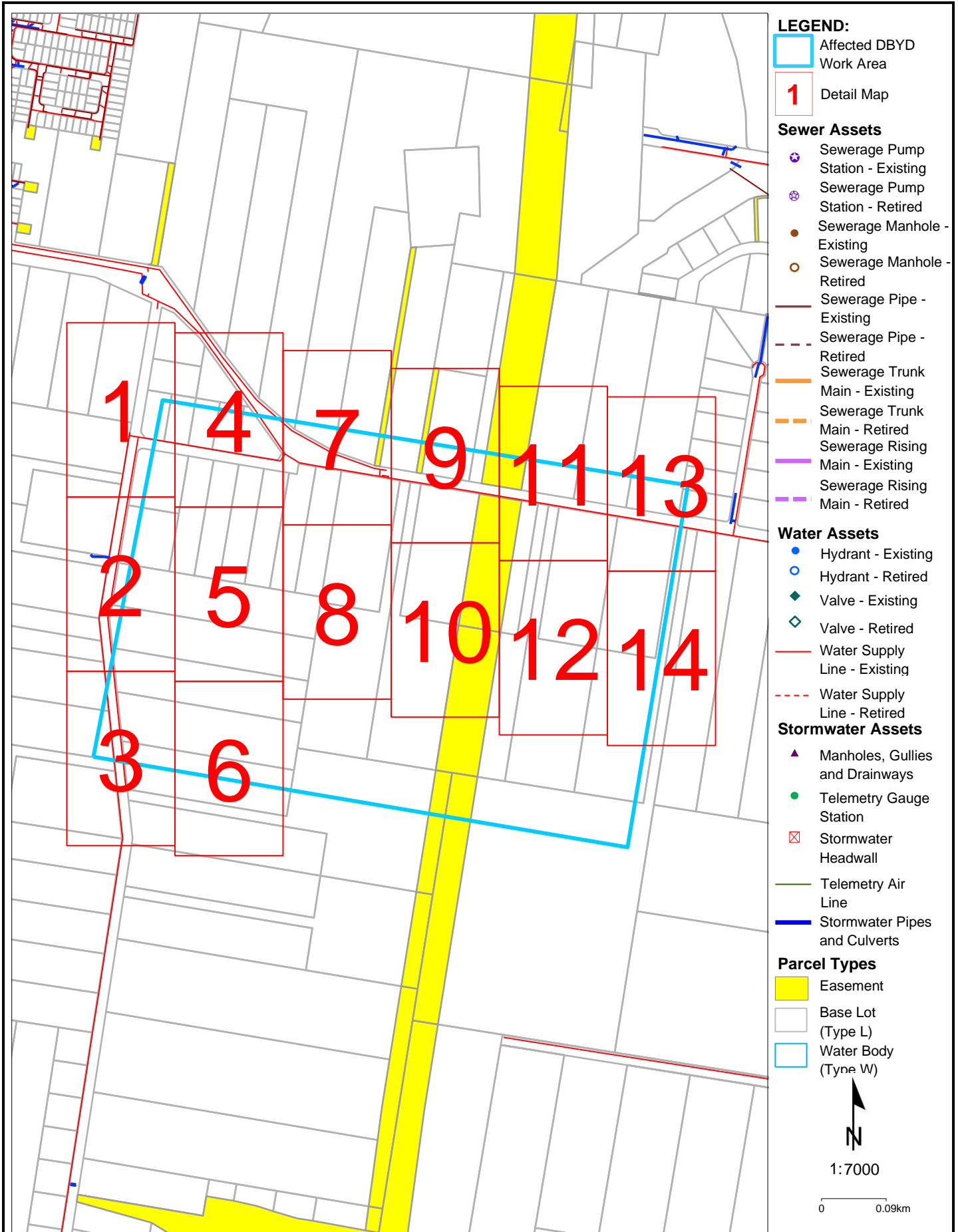
Logan City Council now provides a limited amount of As-Constructed and Drainage Plans on-line, click on the [Logan City As-Constructed Plans](#) link and type in the property address you are seeking. Unfortunately, not all properties will have plan records accessible on-line. The following options are 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](#)

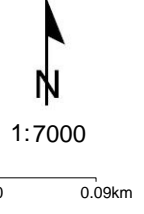
If you need more assistance please call us on 07 3412 3412 or email us at council@logan.qld.gov.au.

Disclaimer: This document is confidential to the addressee and may also be privileged, and neither confidentiality nor privilege is waived, lost or destroyed by virtue of it being transmitted to an incorrect addressee. Unauthorised use of the contents is therefore strictly prohibited. Any information contained in this document that has been extracted from Council's records is believed to be accurate, but no responsibility is assumed for any error or omission. Council will only accept responsibility for information contained under official letterhead and duly signed by, or on behalf of, Chief Executive Officer.

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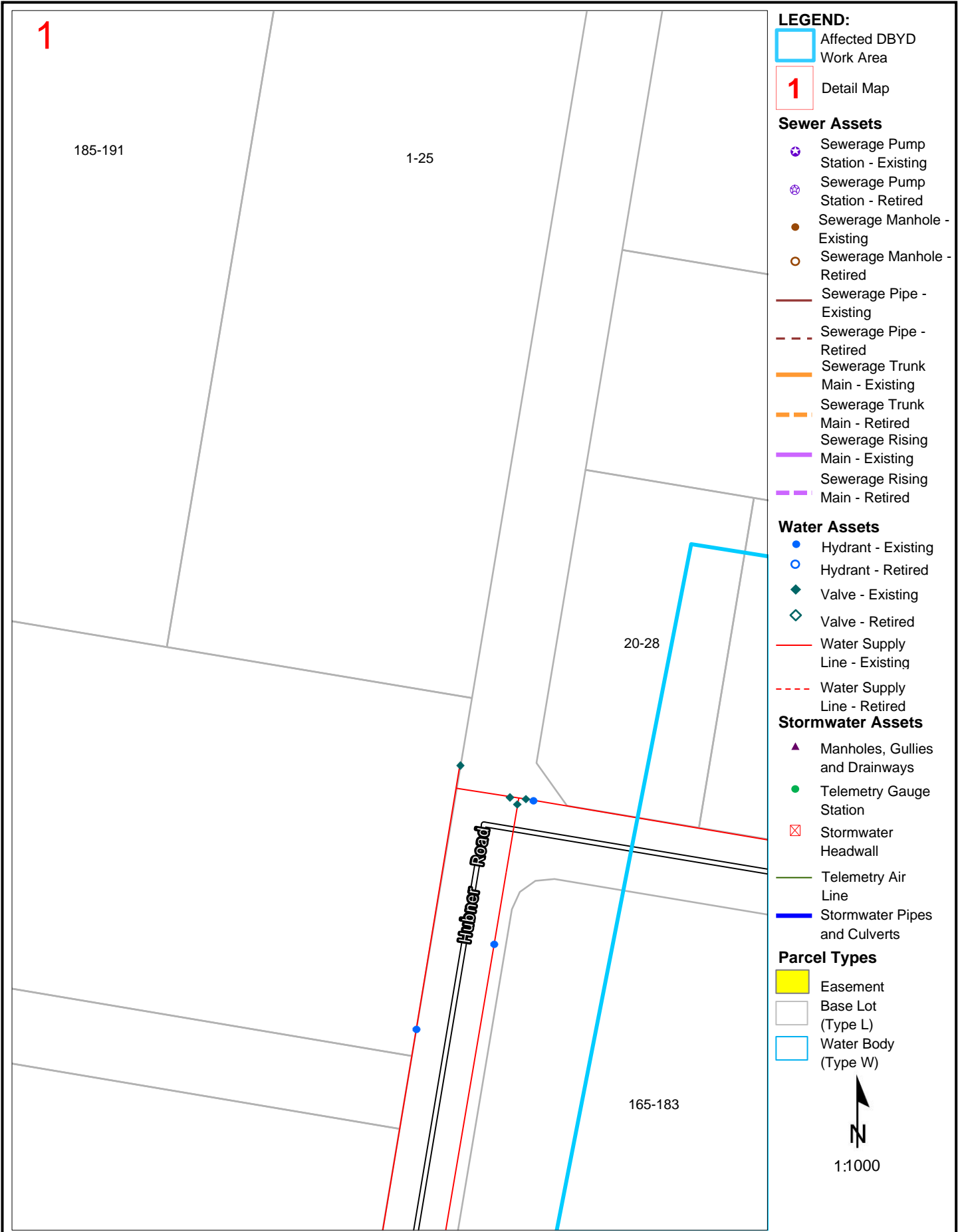


- LEGEND:**
- Affected DBYD Work Area
 - 1 Detail Map
- Sewer Assets**
- ✳ Sewerage Pump Station - Existing
 - ✳ Sewerage Pump Station - Retired
 - Sewerage Manhole - Existing
 - Sewerage Manhole - Retired
 - Sewerage Pipe - Existing
 - - - Sewerage Pipe - Retired
 - Sewerage Trunk Main - Existing
 - - - 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)



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LEGEND:

- Affected DBYD Work Area
- 1 Detail Map

Sewer Assets

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- - - 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)



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2

153-163

Hubner Road

LEGEND:

Affected DBYD Work Area

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)

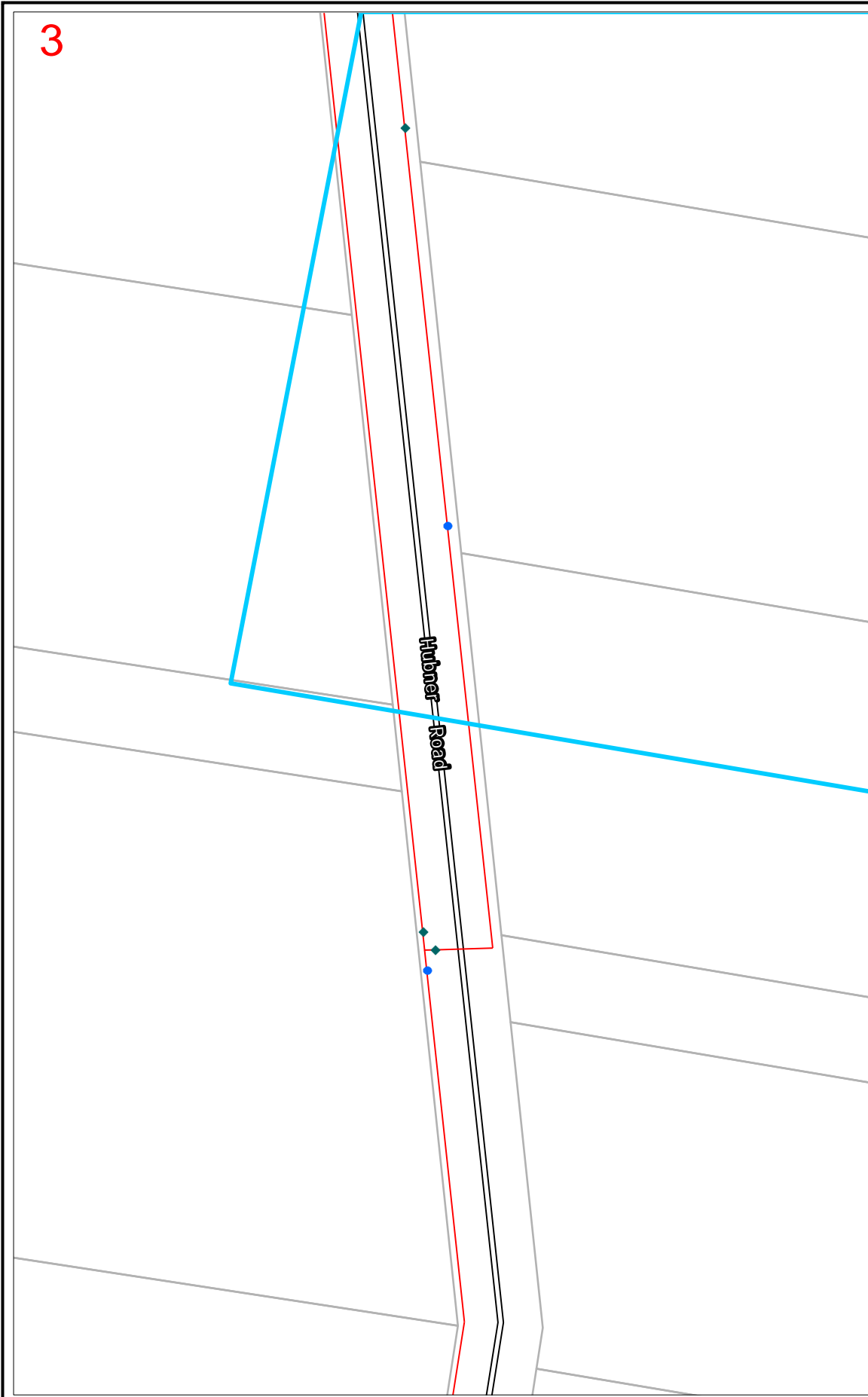


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3



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

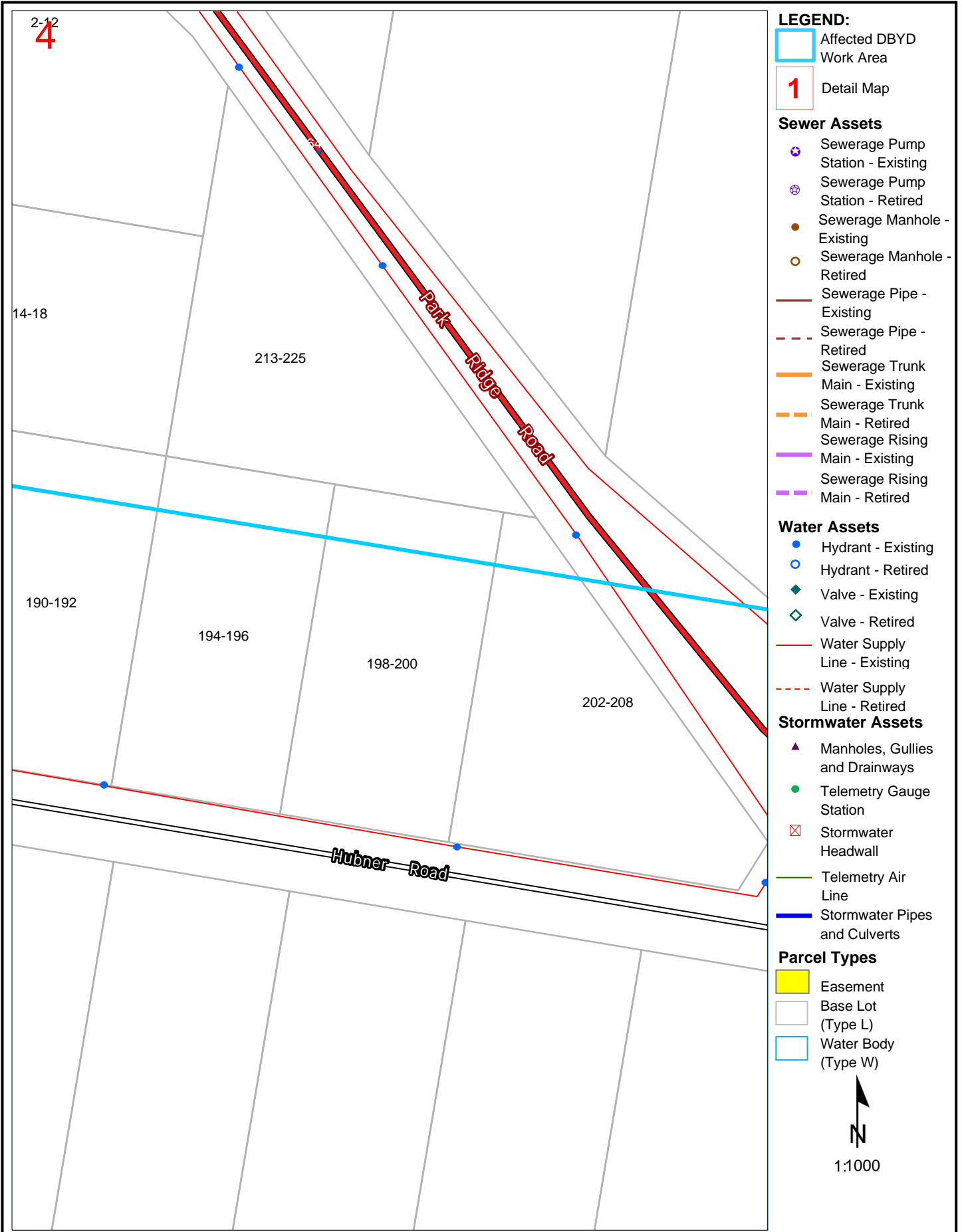
- Easement
- Base Lot (Type L)
- Water Body (Type W)

N

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LEGEND:

Affected DBYD Work Area

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

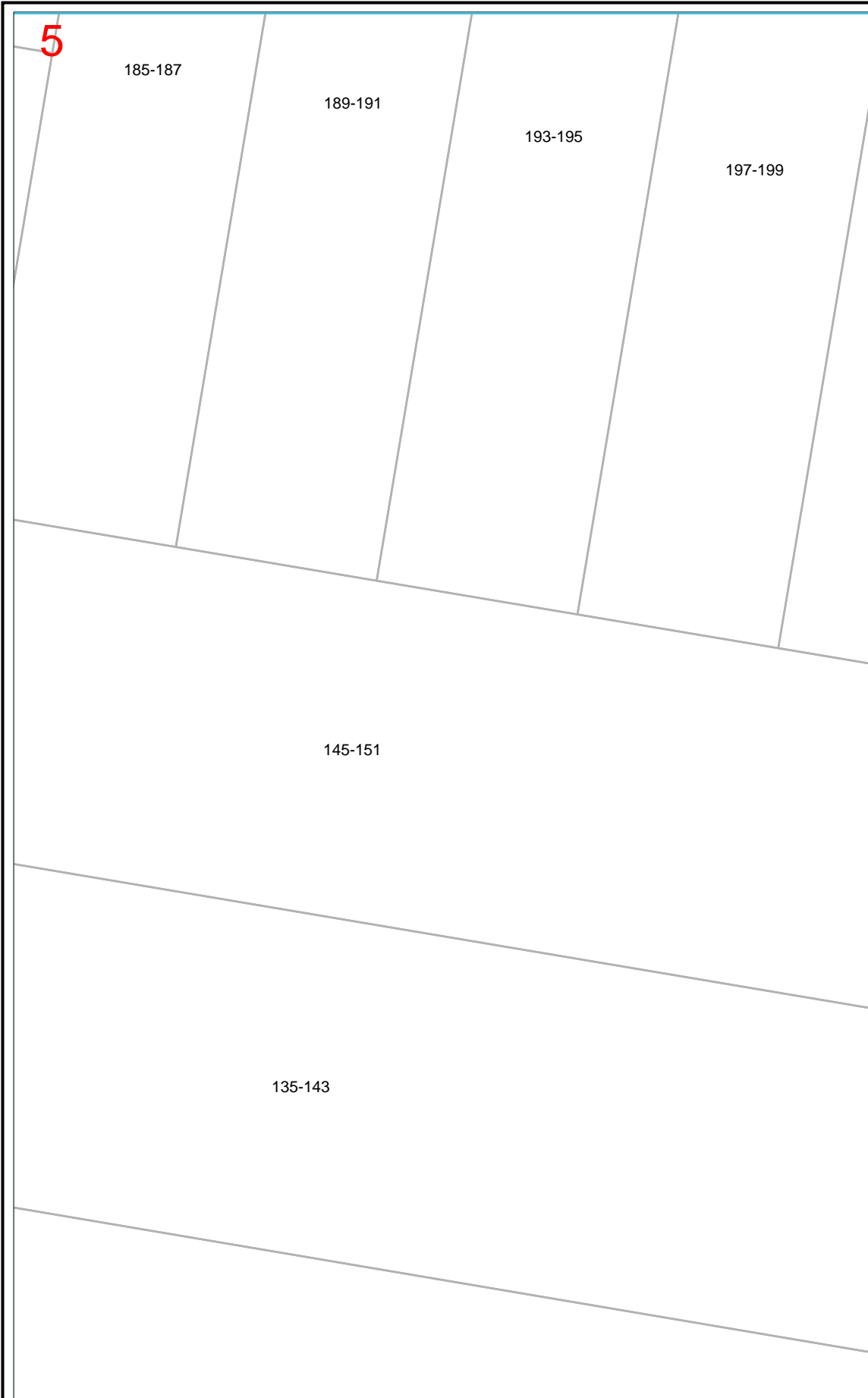
Parcel Types

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





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LEGEND:

-  Affected DBYD Work Area
-  Detail Map






Sewer Assets

-  Sewerage Pump Station - Existing
-  Sewerage Pump Station - Retired
-  Sewerage Manhole - Existing
-  Sewerage Manhole - Retired
-  Sewerage Pipe - Existing
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-  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
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-  Stormwater Pipes and Culverts

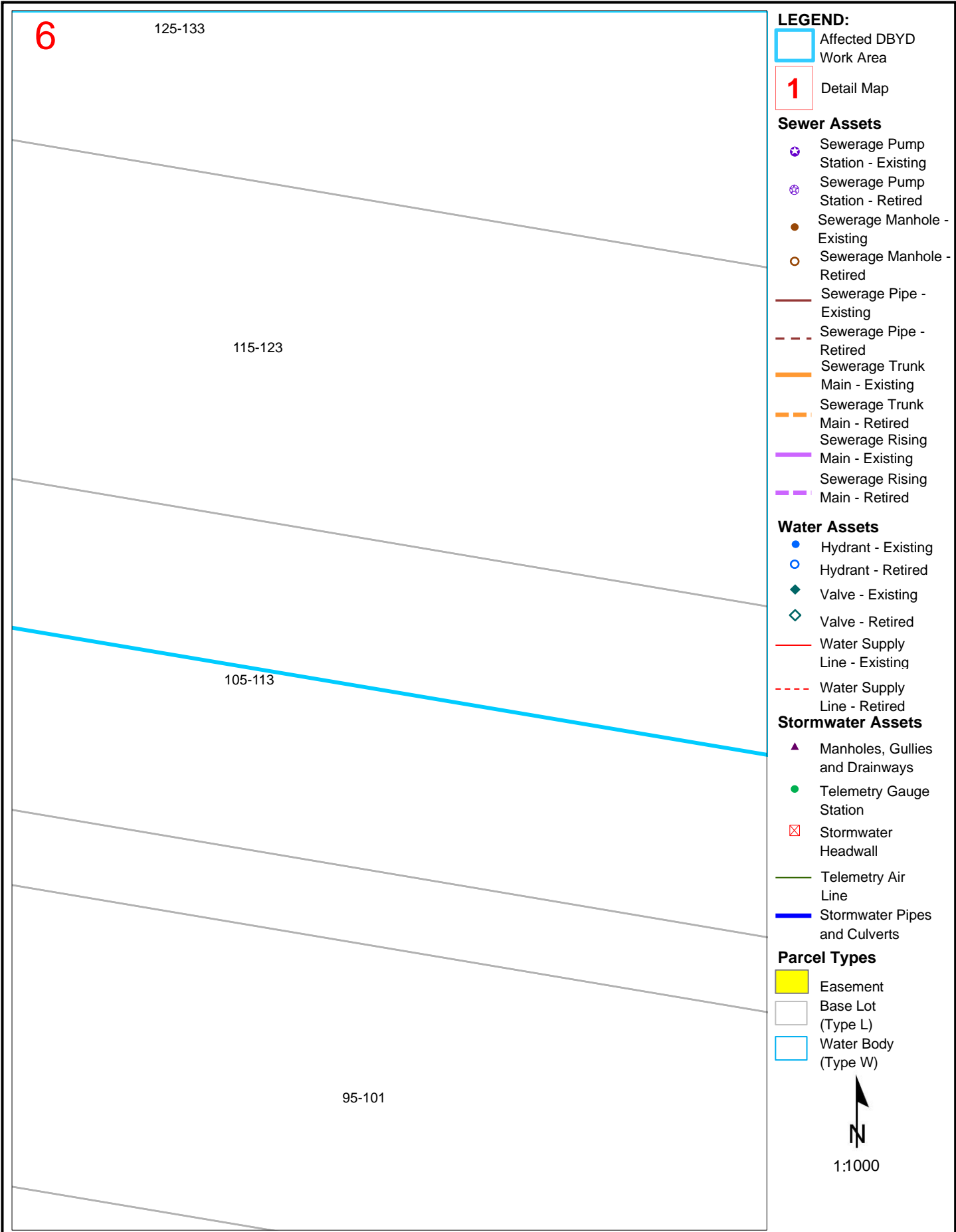
Parcel Types

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



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LEGEND:







 Affected DBYD Work Area

 Detail Map






Sewer Assets

-  Sewerage Pump Station - Existing
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Water Assets

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-  Valve - Existing
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Stormwater Assets

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Parcel Types

-  Easement
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7

LEGEND:

Affected DBYD Work Area

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
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- Sewerage Rising Main - Retired

Water Assets

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

Stormwater Assets

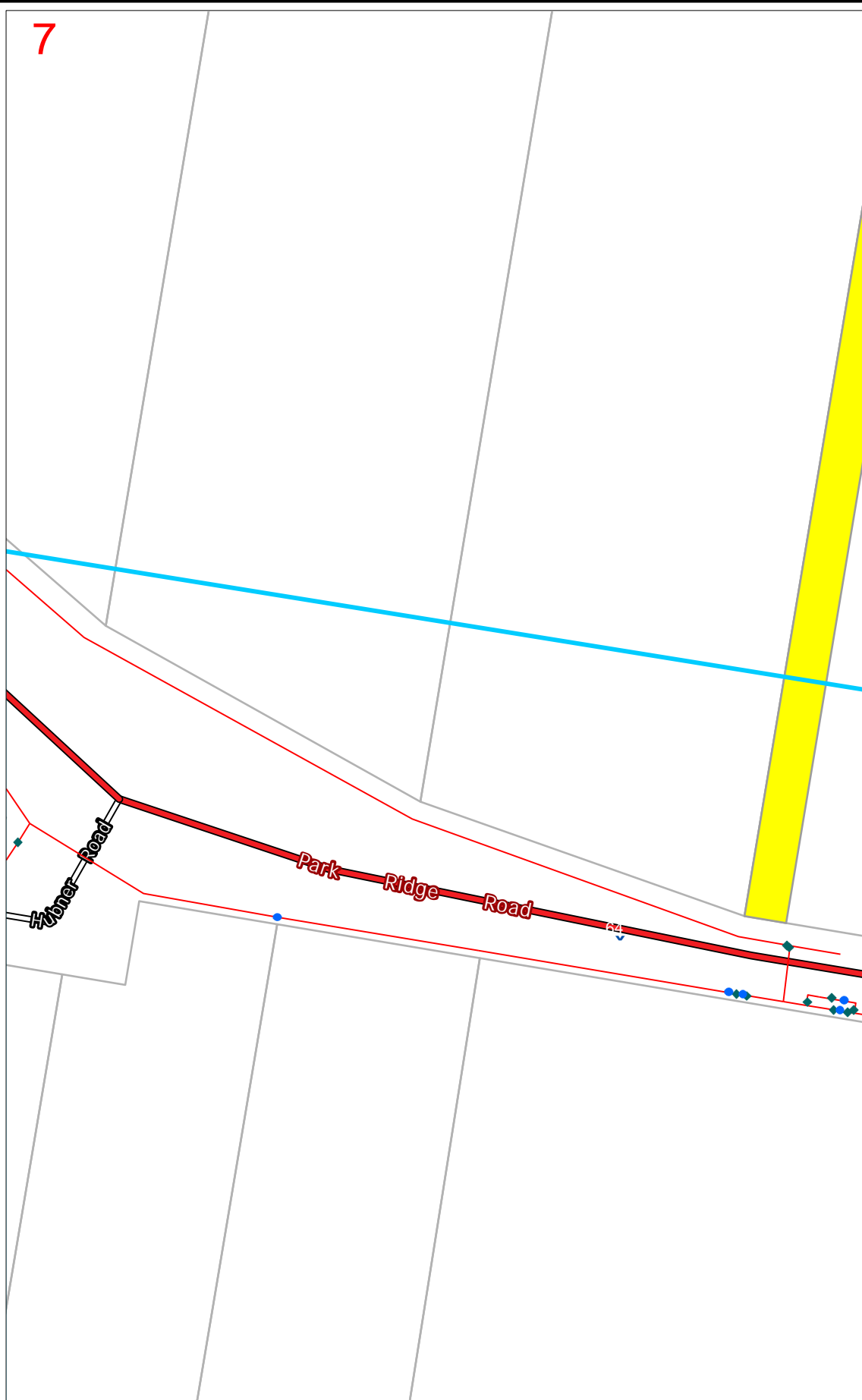
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Parcel Types

- Easement
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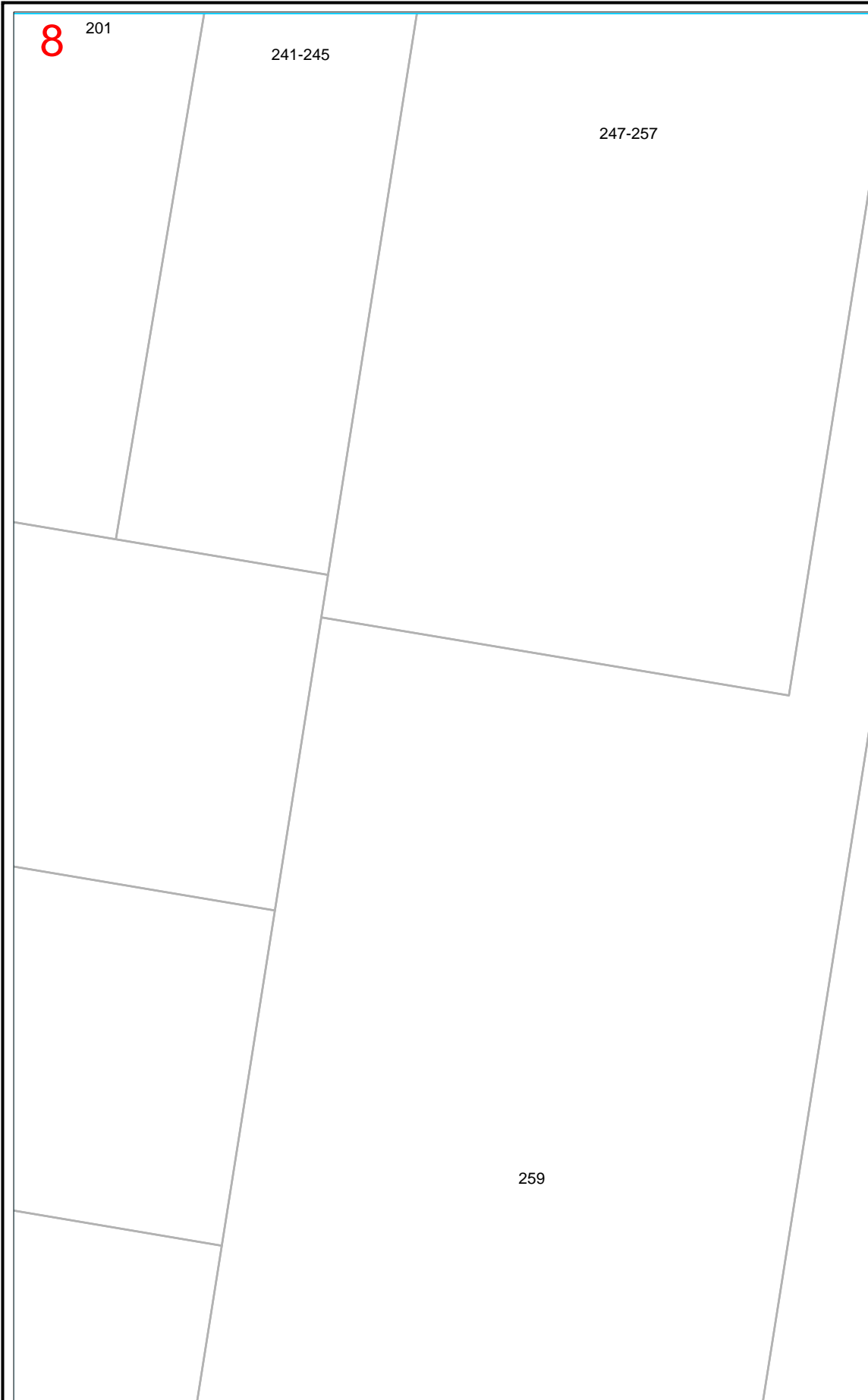


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LEGEND:







 Affected DBYD Work Area

 Detail Map






Sewer Assets

-  Sewerage Pump Station - Existing
-  Sewerage Pump Station - Retired
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Water Assets

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Stormwater Assets

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

Parcel Types

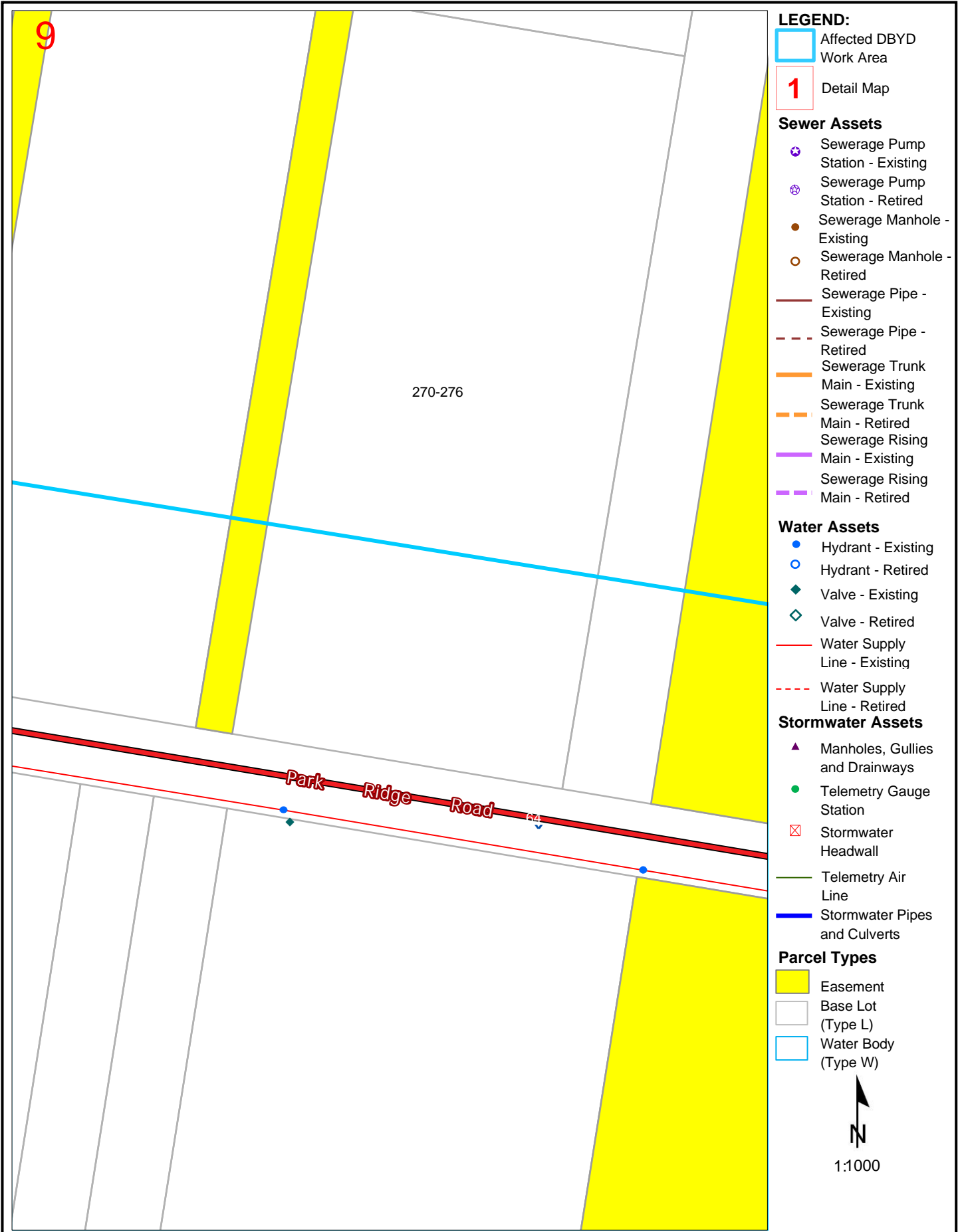
-  Easement
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1:1000

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LEGEND:

Affected DBYD Work Area

Detail Map

Sewer Assets

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Parcel Types

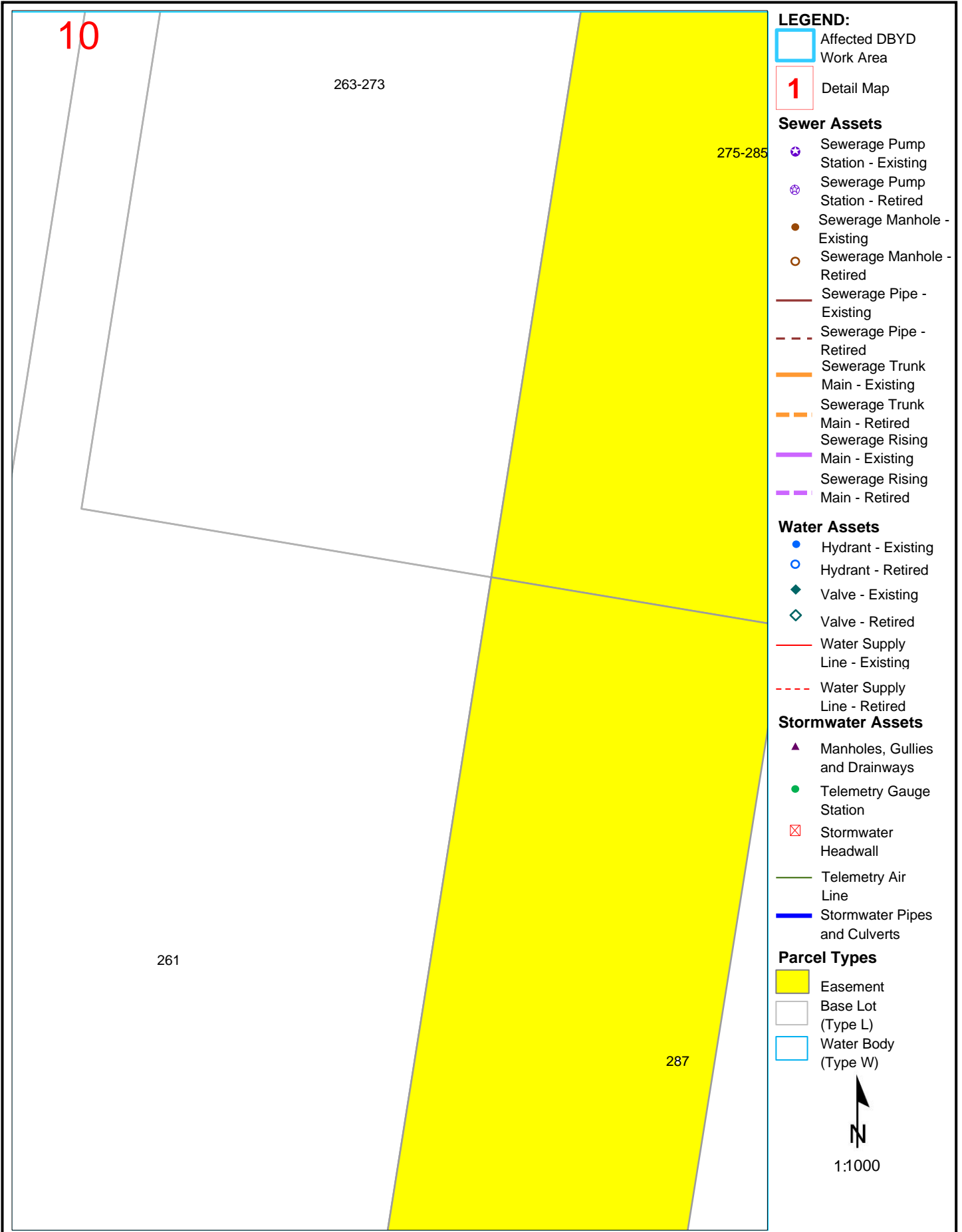
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LEGEND:

Affected DBYD Work Area

Detail Map

Sewer Assets

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- Sewerage Pump Station - Retired
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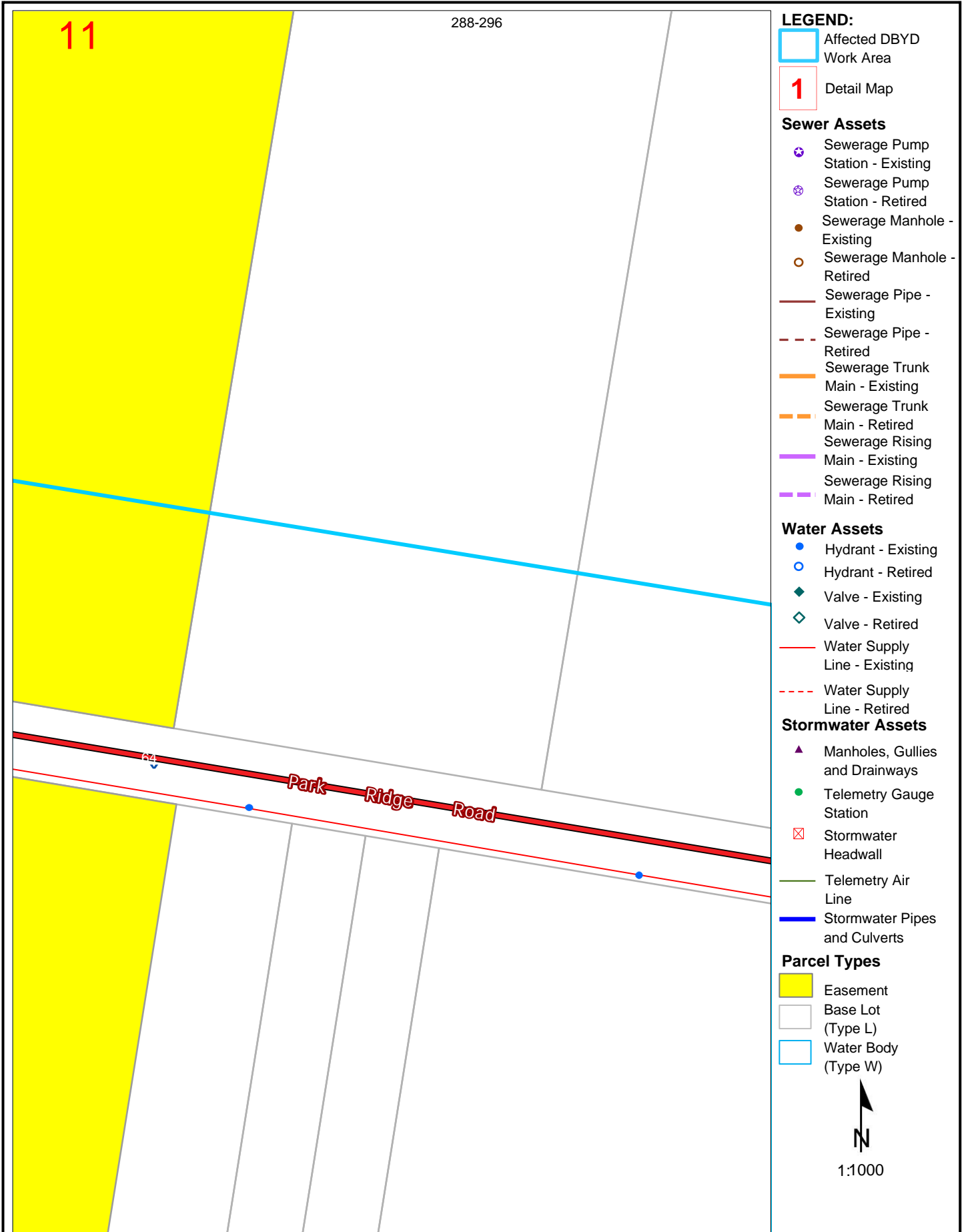
Parcel Types

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- Water Body (Type W)



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LEGEND:

Affected DBYD Work Area

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

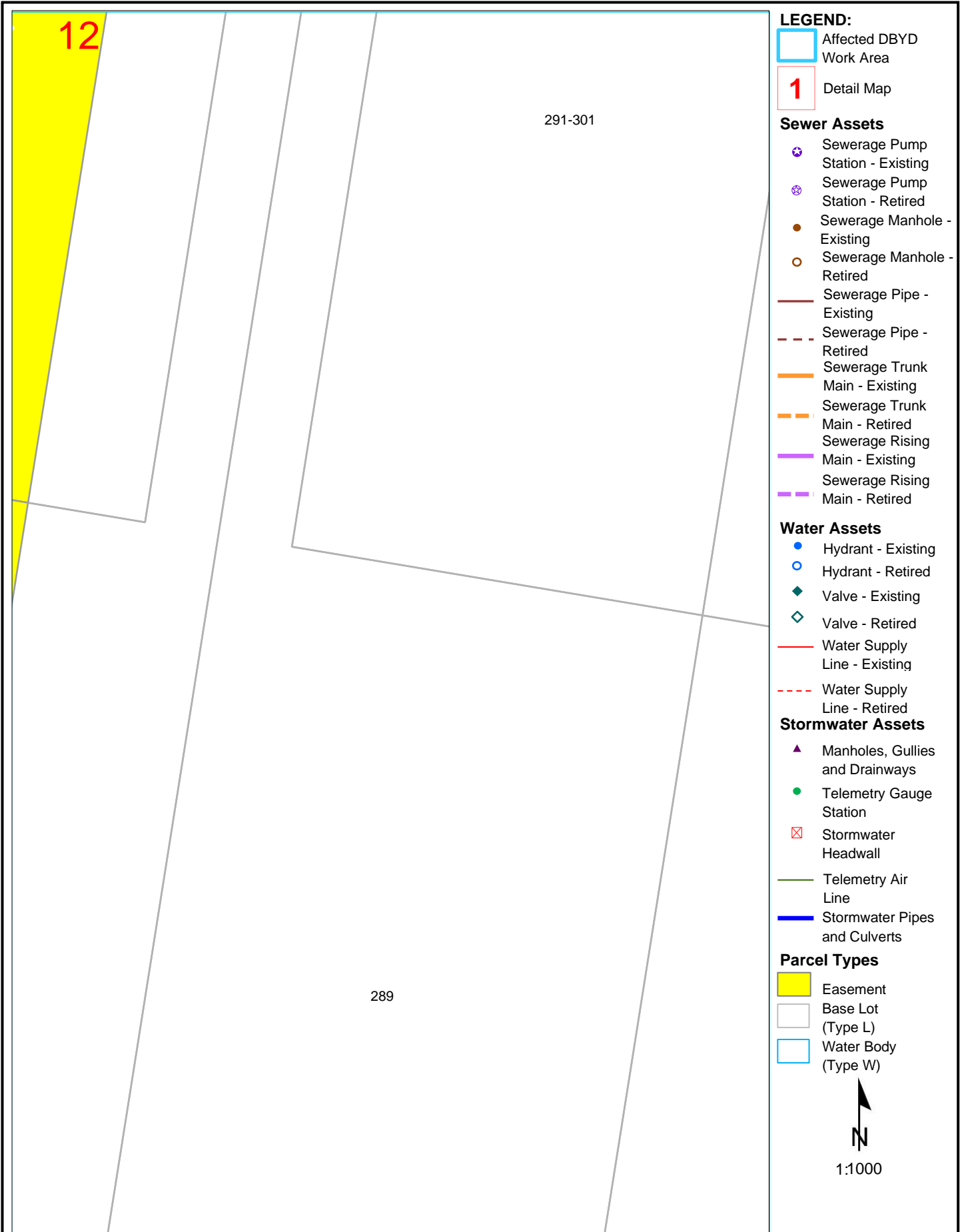
- Easement
- Base Lot (Type L)
- Water Body (Type W)




1:1000

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LEGEND:







 Affected DBYD Work Area

 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)



1:1000

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13

308-316

14-18

8-12

2-6

Park Ridge Road

LEGEND:

Affected DBYD Work Area

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

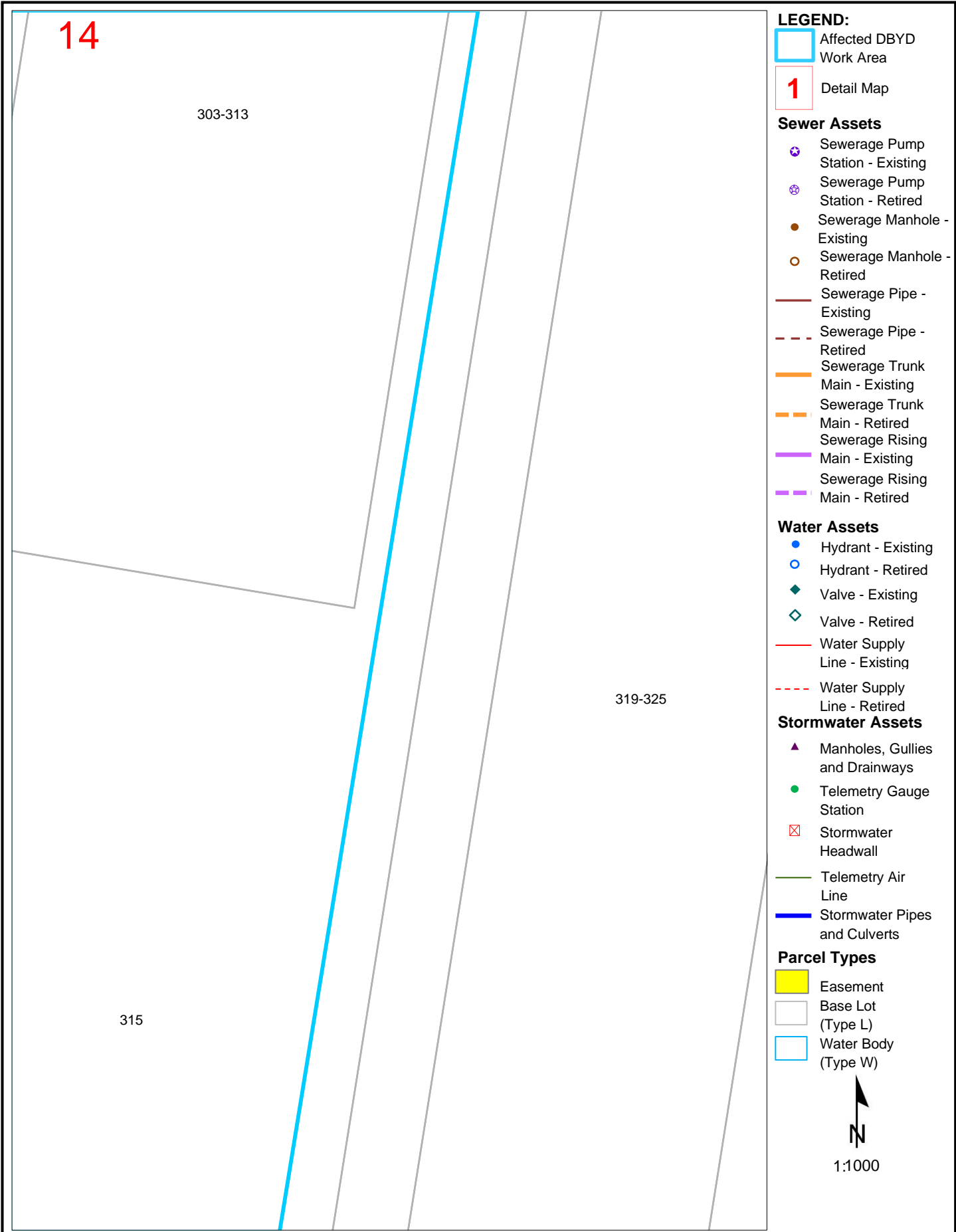
- Easement
- Base Lot (Type L)
- Water Body (Type W)



1:1000

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LEGEND:

Affected DBYD Work Area

Detail Map

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- Sewerage Pipe - Retired
- Sewerage Trunk Main - Existing
- Sewerage Trunk Main - Retired
- Sewerage Rising Main - Existing
- Sewerage Rising Main - Retired

Water Assets

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- Valve - Retired
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Stormwater Assets

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Parcel Types

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



1:1000

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OVERVIEW

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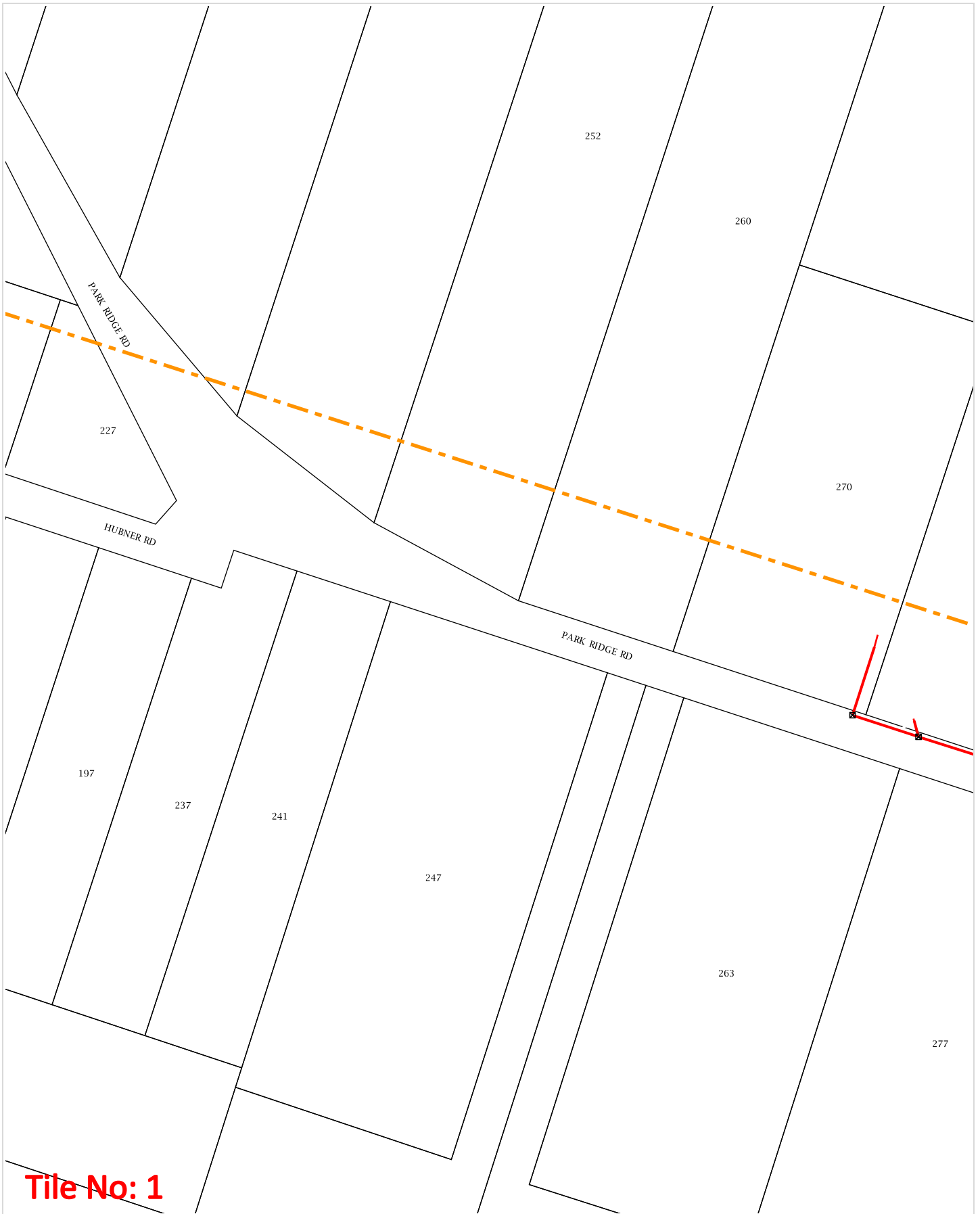
Sequence Number: 212870530

Date Generated: 23 Jun 2022



For all Optus DBYD plan enquiries –
 Email: Fibre.Locations@optus.net.au
 For urgent onsite assistance contact 1800 505 777
 Optus Limited ACN 052 833 208





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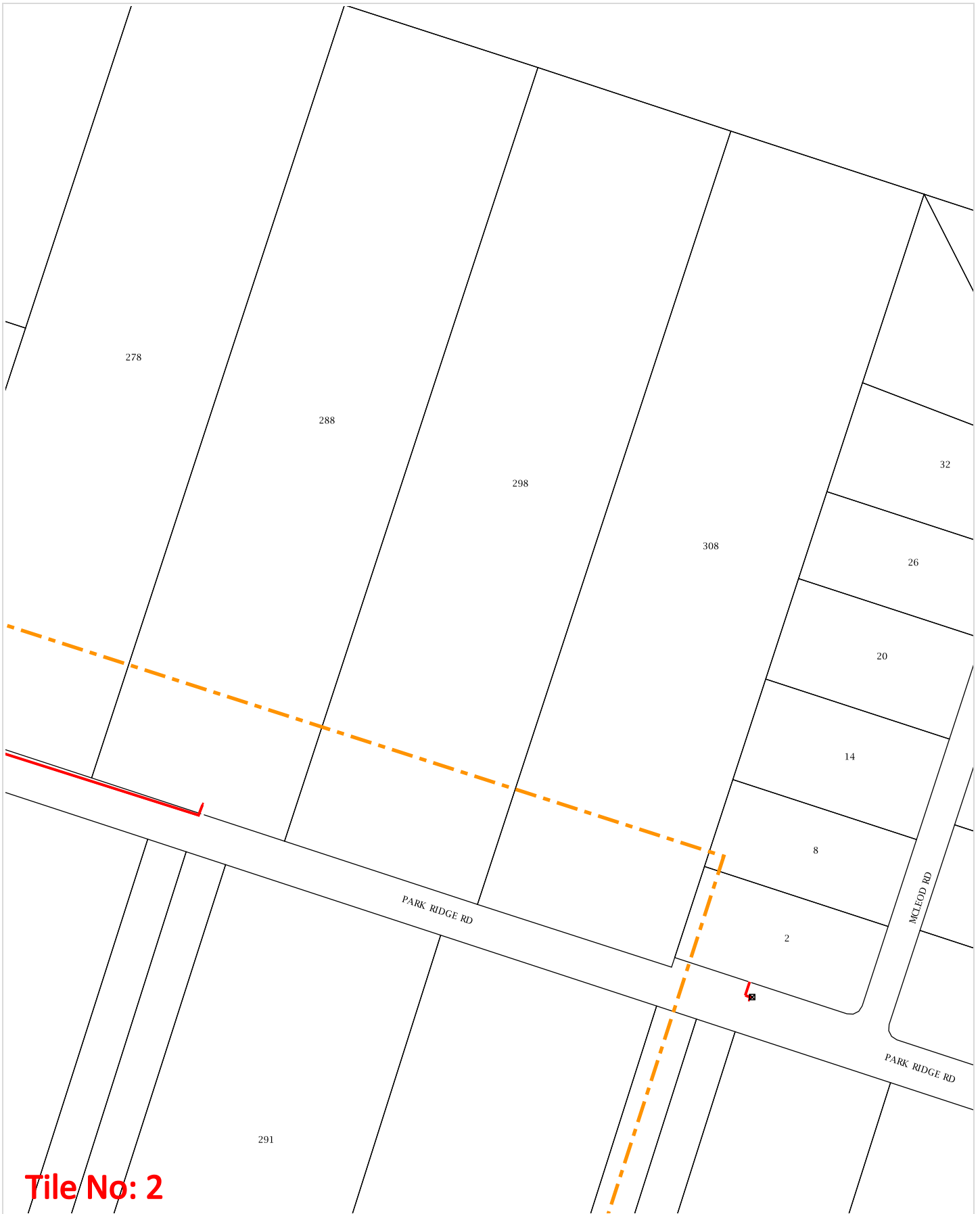
Sequence Number: 212870530

Date Generated: 23 Jun 2022



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Tile No: 2

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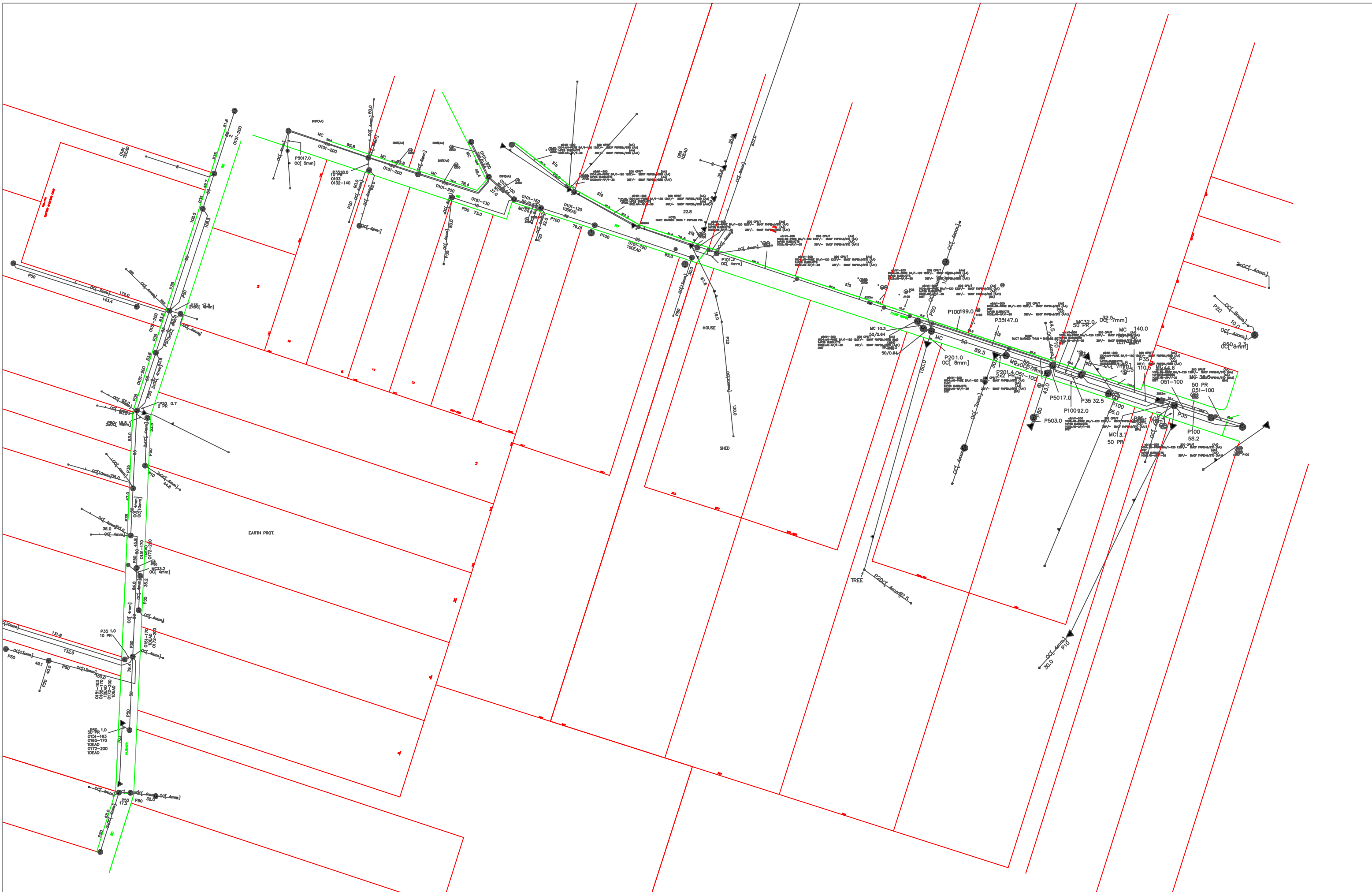
Sequence Number: 212870530

Date Generated: 23 Jun 2022



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LEGEND

IT'S HOW WE CONNECT



For more info contact a Certified Locating Organisation or Telstra Plan Services 1800 653 935

	Exchange (Major Cable Present)		Cable Jointing Pit (number indicating Pit Type)
	Footway Access Chamber (can vary from 1-lid to 12-lid)		Elevated Joint (above ground joint on buried cable)
	Pillar / Cabinet (above ground / free standing)		Telstra Plant in shared Utility trench
	Above ground complex equipment housing (eg RIM) Please Note: This equipment is powered by 240V Electricity		Aerial Cable
	OC Other Carrier Telecommunications Cable/Asset		Aerial Cable (attached to joint Use Pole eg. Power)
	Dist Distribution cables in Main Cable ducts		Direct Buried Cable
	MC Main Cable ducts on a Distribution plan		Marker Post Installed
	Blocked or damaged duct.		Buried Transponder
	Roadside / Front Boundary 2 pair lead-in to property from pit in street 1		Marker Post, Transponder
	O59 ← pair working (pair ID 059) 1DEAD ← 1 pair dead (i.e. spare, not connected)		SMOF Optical Fibre cable direct buried
	Side / Rear Property Boundary Property Number 107	<div style="border: 1px solid black; padding: 5px;"> <p>Some examples of conduit type and size:</p> <p>A - Asbestos cement, P - PVC / Plastic, C - Concrete, GI - Galanised iron, E - Earthenware Conduit sizes <i>nominally</i> range from 20mm to 100mm P50 50mm PVC conduit P100 100mm PVC conduit A100 100mm asbestos cement conduit</p> </div>	
	Single to multiple round conduit Configurations 1, 2, 4, 9 respectively P100 (attached text denotes conduit type and size)		
	Multiple square conduit Configurations 2, 4, 6 respectively E85 (attached text denotes conduit type and size)		
Some Examples of how to read Telstra Plans			
	-50- 10 30 P50 20.0	One 50mm PVC conduit (P50) containing a 50-pair and a 10-pair cable between two 6-pits. approximately 20.0m apart, with a direct buried 30-pair cable along the same route	
	AA - (cable information) AB - (cable information) BA - (cable information) C100 P100 245.0	Two separate conduit runs between two footway access chambers (manholes) approximately 245m apart A nest of four 100mm PVC conduits (P100) containing assorted cables in three ducts (one being empty) and one empty 100mm concrete duct (C100) along	

WARNING: Telstra plans and location information conform to Quality Level 'D' of the Australian Standard AS 5488 - Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans. FURTHER ON SITE INVESTIGATION IS REQUIRED TO VALIDATE THE EXACT LOCATION OF TELSTRA PLANT PRIOR TO COMMENCING CONSTRUCTION WORK. A plant location service is an essential part of the process to validate the exact location of Telstra assets and to ensure the assets are protected during construction works. The exact position of Telstra assets can only be validated by physically exposing them. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

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



DBYD

Sequence: 212870532

Date: 23/06/2022

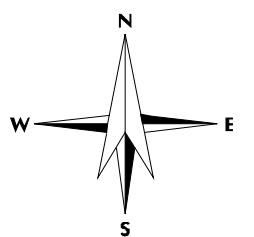
Scale: 1:4196

OVERVIEW



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

AS5488 Category "D" Plan



DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.


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.



DBYD SYMBOLGY LEGEND

	Cross Bonding Link Box - Critical		Planned Cross Bonding Link Box - New/Updated
	Disconnect Box - Critical		Planned Cross Bonding Link Box - Remove
	Ring Main Unit		Planned Disconnect Box - New/Updated
	Distribution Pad Substation		Planned Disconnect Box - Remove
	Earth		Planned Distribution Pad Substation – New/Updated
	Remote Earth		Planned Distribution Pad Substation - Remove
	Cable Marker		Planned Distribution Ground Substation – New/Updated
	Handhole		Planned Distribution Ground Substation - Remove
	Manhole		Planned Ring Main Unit – New/Updated
	Commercial Industrial Pillar		Planned Ring Main Unit - Remove
	Distribution Cabinet		Planned Earth – New/Updated
	Link Pillar		Planned Earth - Remove
	Service Pillar		Planned Cable Marker – New/Updated
	Feeder Pillar		Planned Cable Marker - Remove
	Pole		Planned Remote Earth – New/Updated
	Streetlight Column		Planned Remote Earth - Remove
	Communication Junction Pillar		Planned Underground Warning Post – New/Updated
	Communication Pit		Planned Underground Warning Post - Remove
	Fibre Patch Panel		Planned Pilot Cubicle – New/Updated
	Pilot Cubicle		Planned Pilot Cubicle – Remove
	Underground Asset 33kV and above		Planned Fibre Patch Panel – New/Updated
	Underground Asset below 33kV		Planned Fibre Patch Panel – Remove
	Underground Conduit with or without cable		Planned Commercial Industrial Pillar – New/Updated
	Pit		Planned Commercial Industrial Pillar – Remove
	Communication Boundary		Planned Distribution Cabinet – New/Updated
	Reserve (RE)		Planned Distribution Cabinet – Remove
	Water Resource (WR)		Planned Link Pillar – New/Updated
	Cadastral Parcels		Planned Link Pillar – Remove
	Planned Jointing Pit – New/Updated		Planned Service Pillar – New/Updated
	Planned Jointing Pit - Remove		Planned Service Pillar – Remove
	Planned Communication Boundary – New/Updated		Planned Pole – New/Updated
	Planned Communication Boundary - Remove		Planned Pole – Remove
	Planned Tunnel/Trench/Bore - New/Updated		Planned Manhole – New/Updated
	Planned Tunnel/Trench/Bore - Remove		Planned Manhole – Remove
			Planned Streetlight Column – New/Updated
			Planned Streetlight Column – Remove
			Planned Handhole – New/Updated
			Planned Handhole – Remove
			Planned Communication Junction Pillar – New/Updated
			Planned Communication Junction Pillar – Remove

To: Lachlan Scott
Phone: Not Supplied
Fax: Not Supplied
Email: lachlan.scott@arcadis.com

Dial before you dig Job #:	32198787	
Sequence #	212870534	
Issue Date:	23/06/2022	
Location:	261 Park Ridge Road , Park Ridge , QLD , 4125	

Indicative Plans

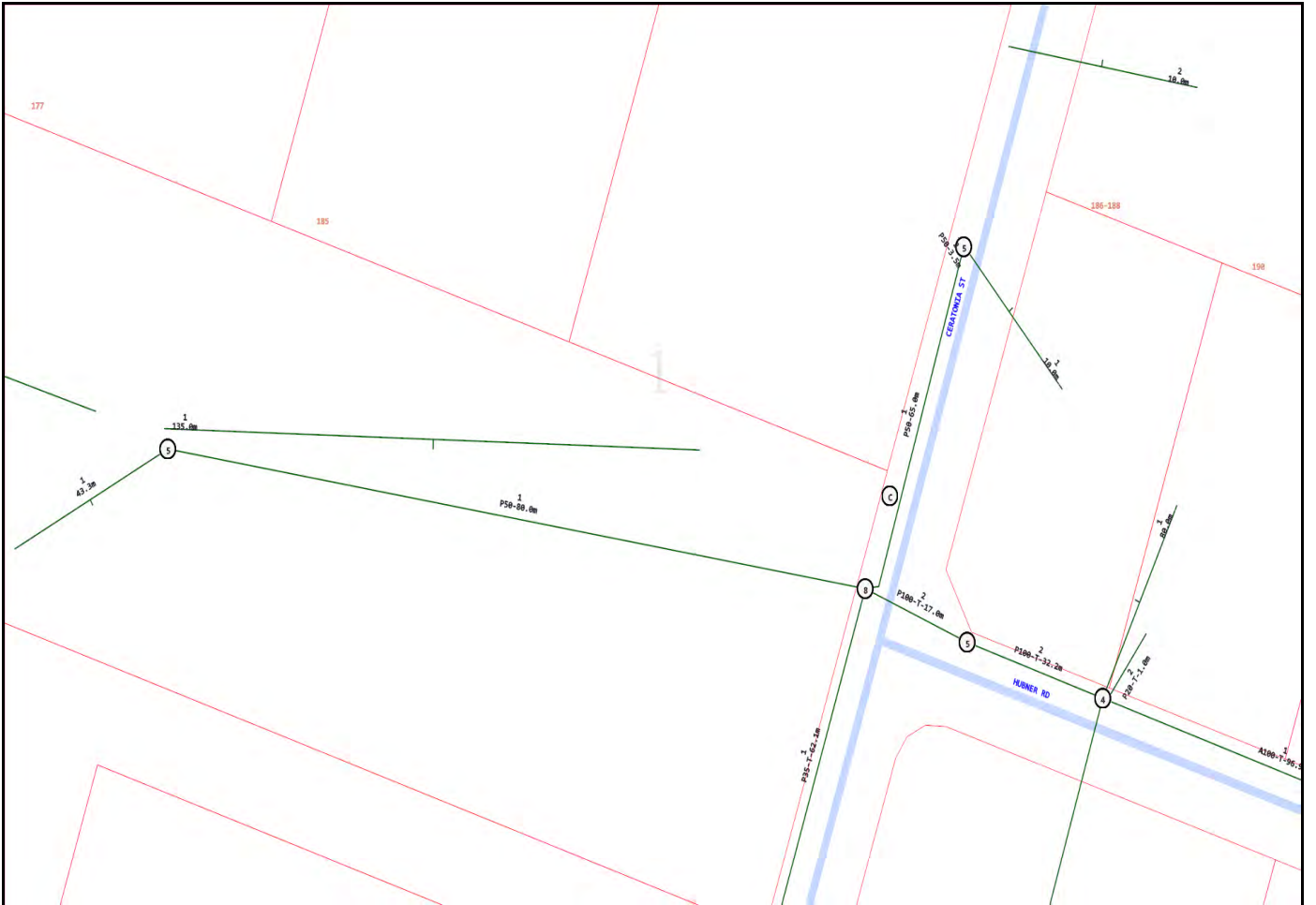
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2	8	14	20
3	9	15	21
4	10	16	22
5	11	17	23
6	12	18	24

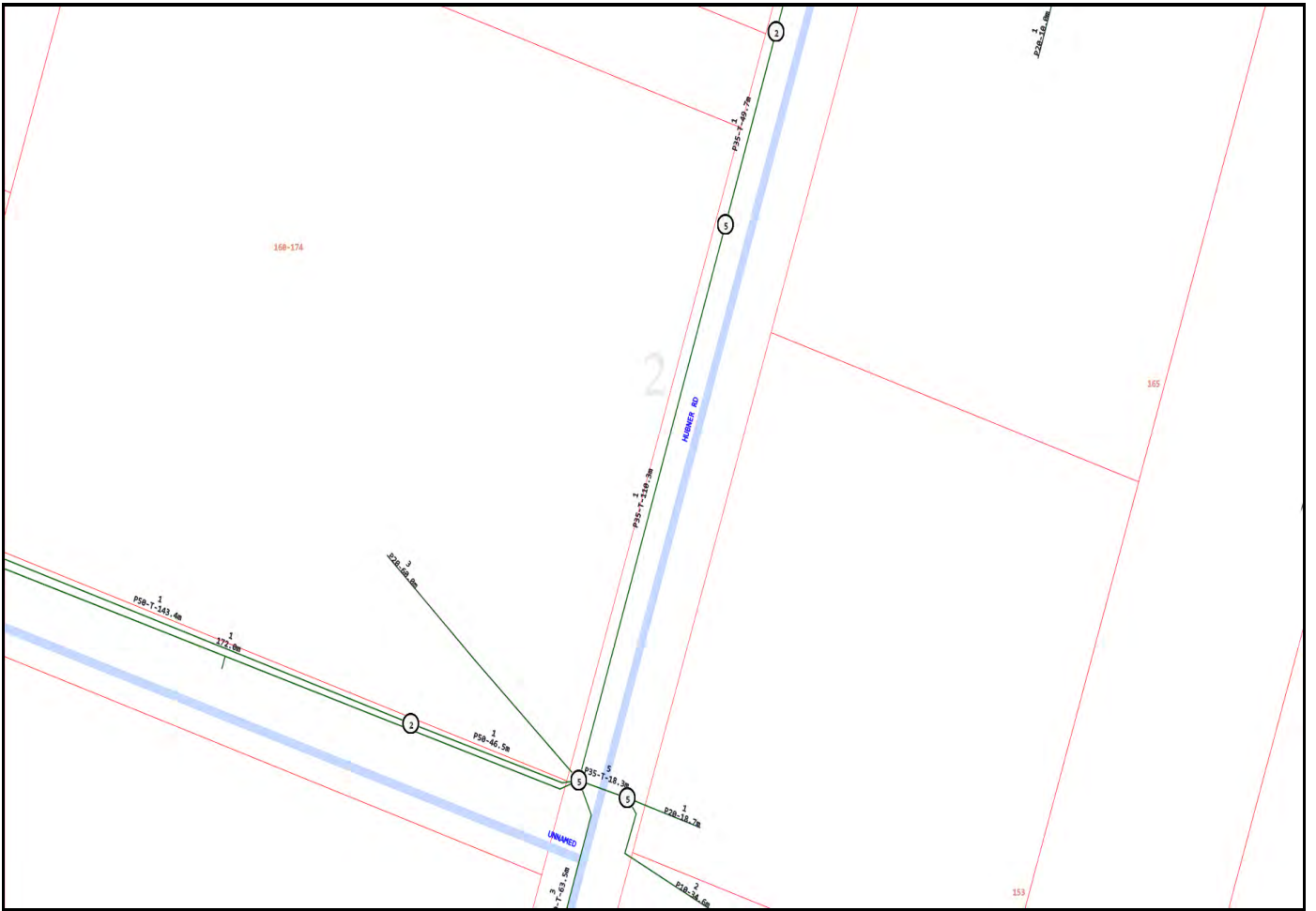


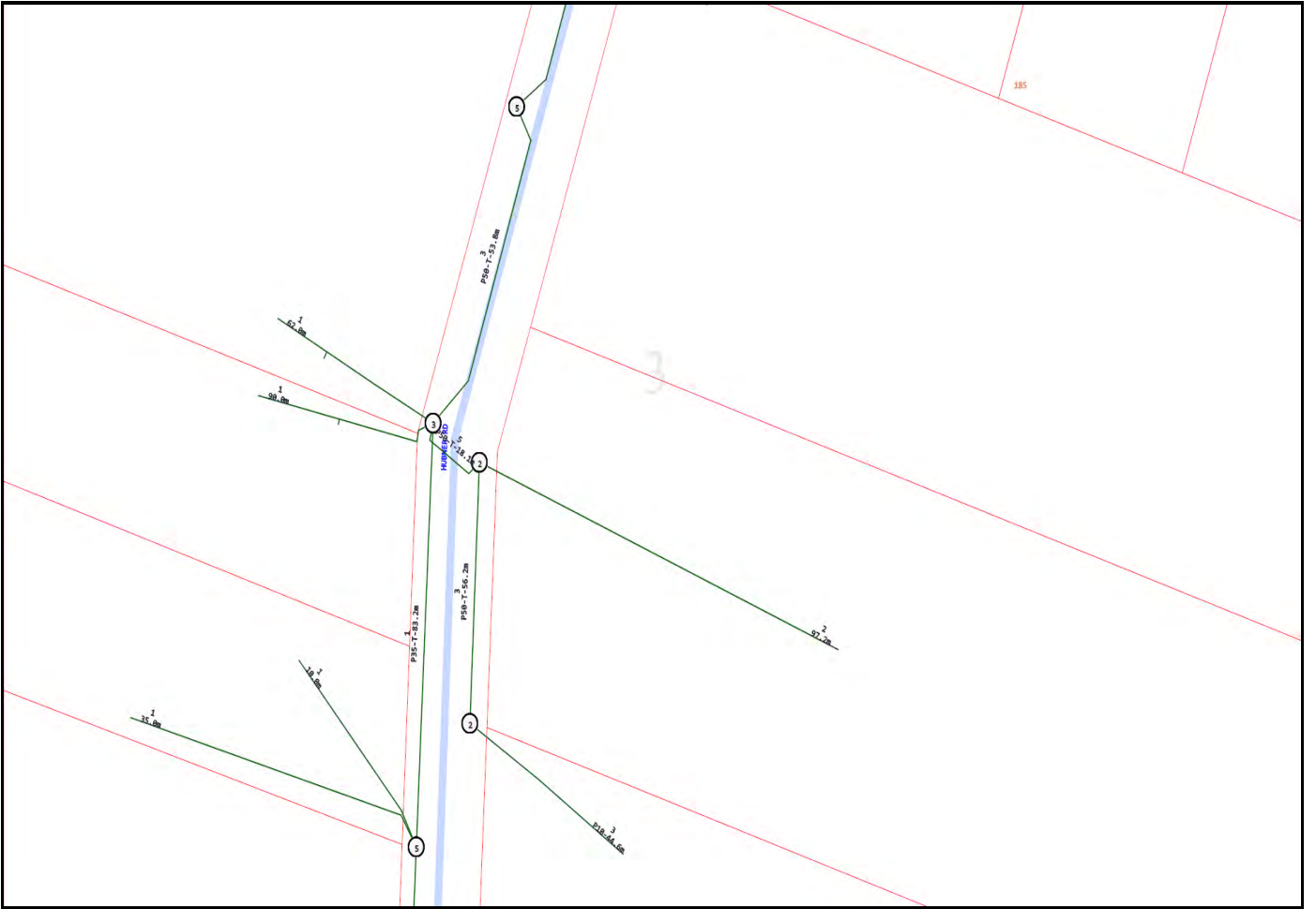
LEGEND

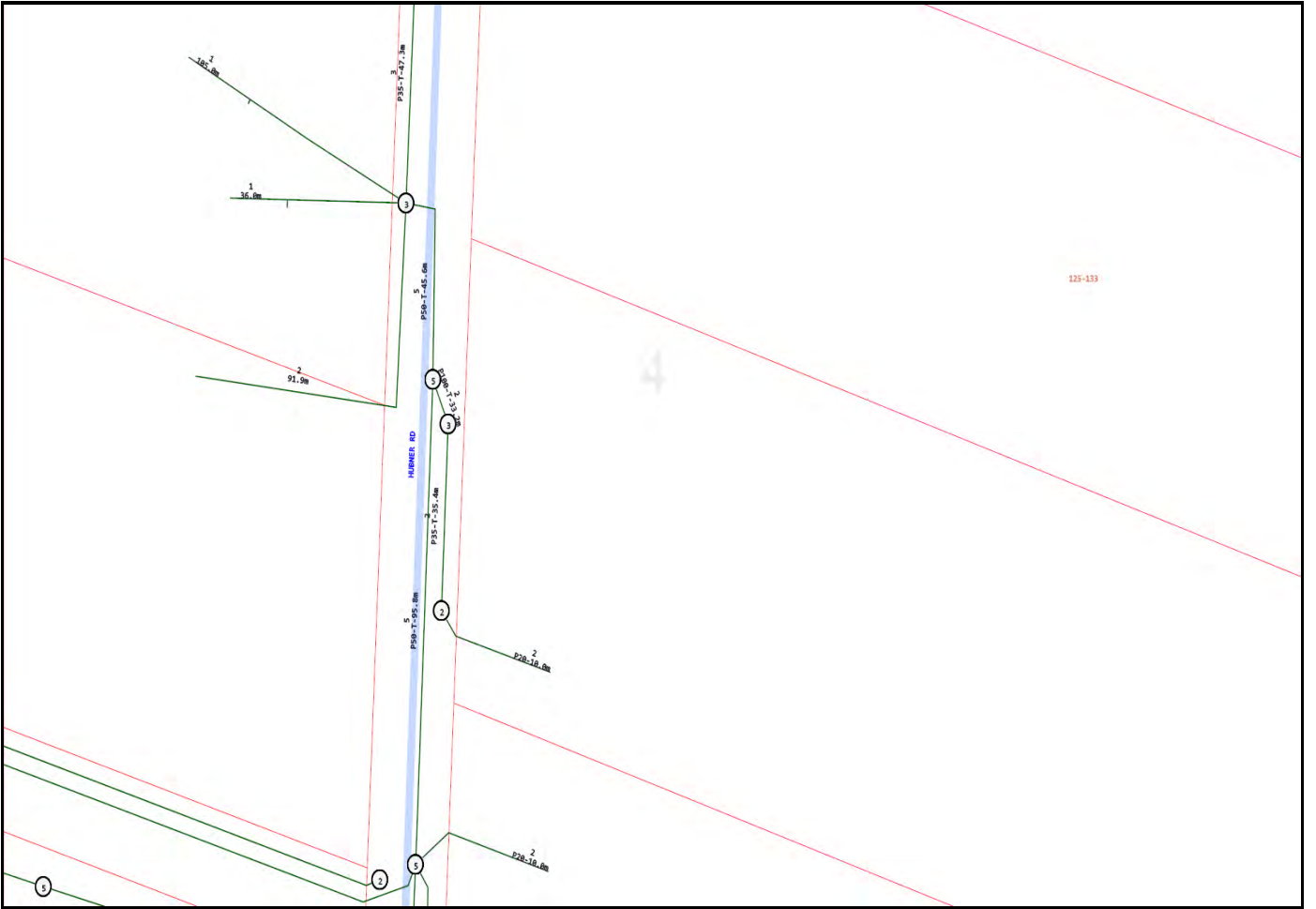


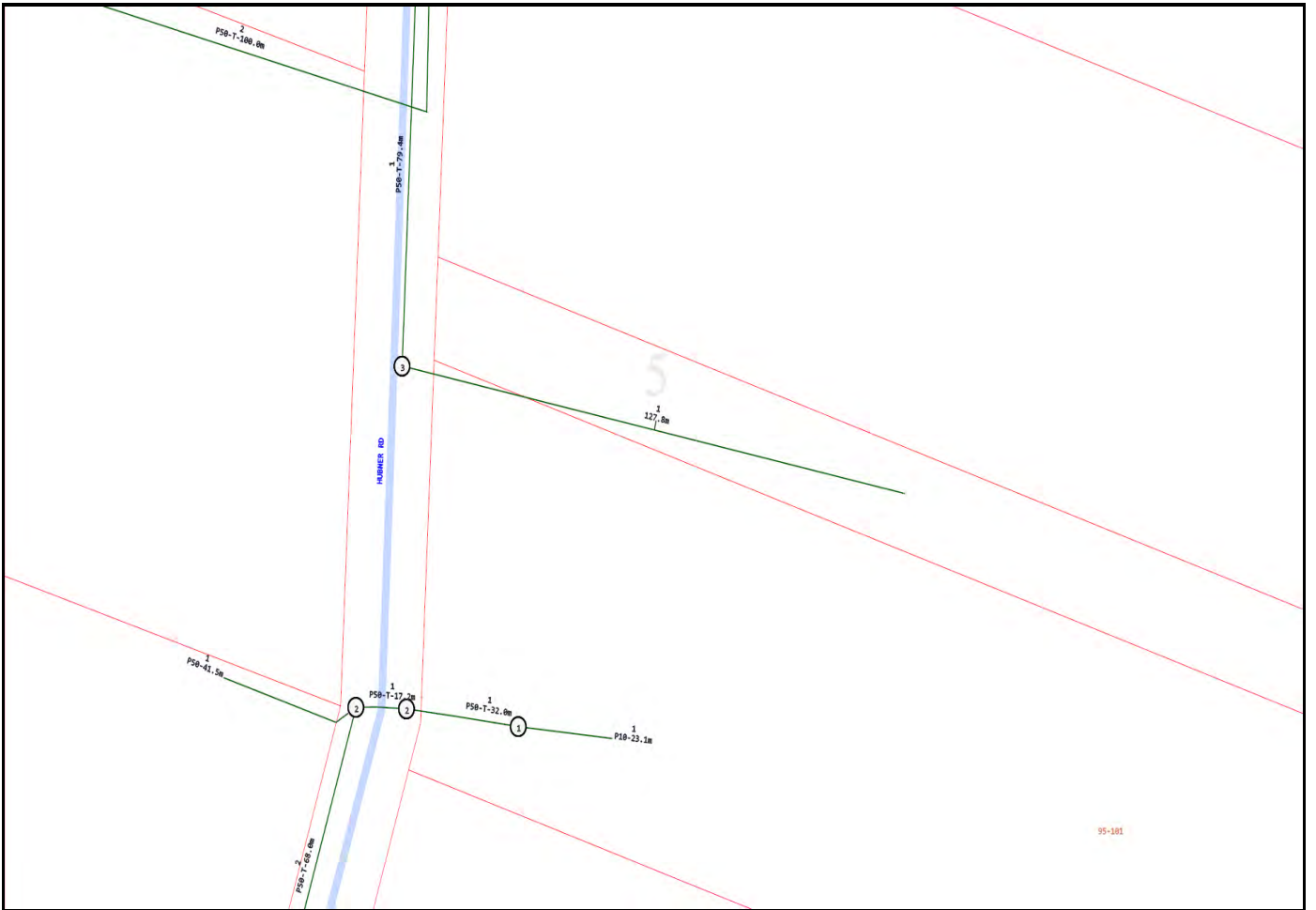
	Parcel and the location
	Pit with size "5"
	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40)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

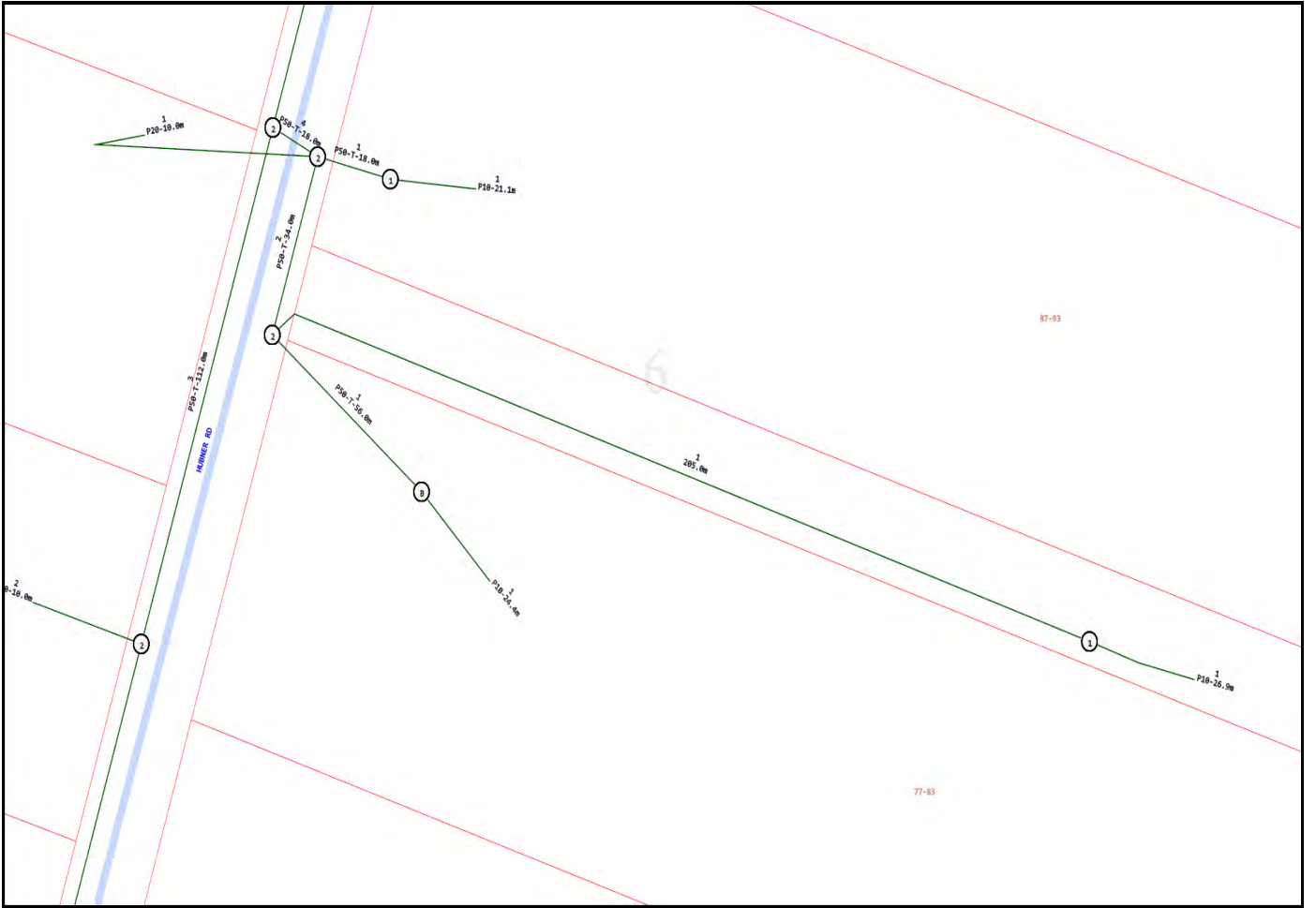


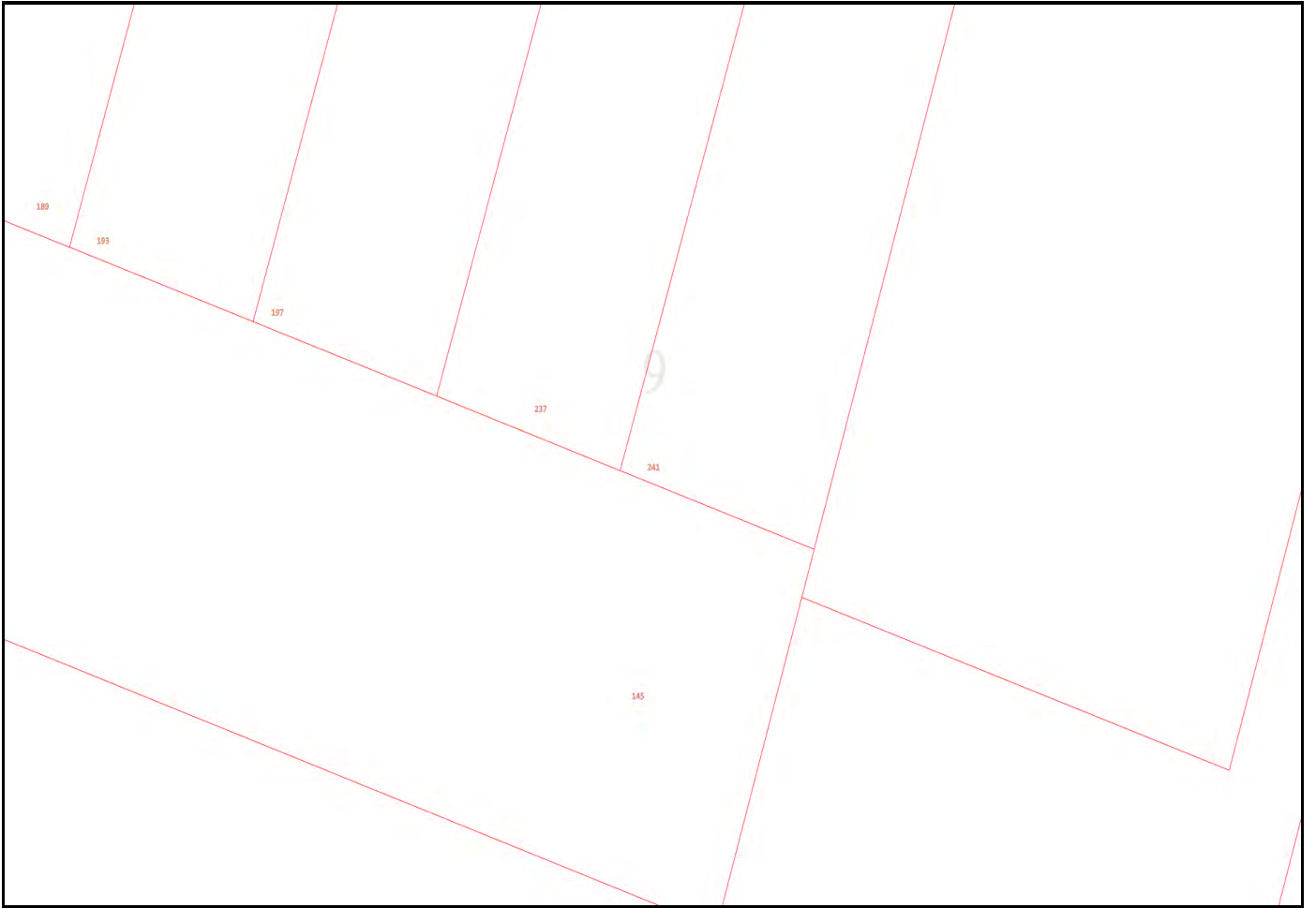


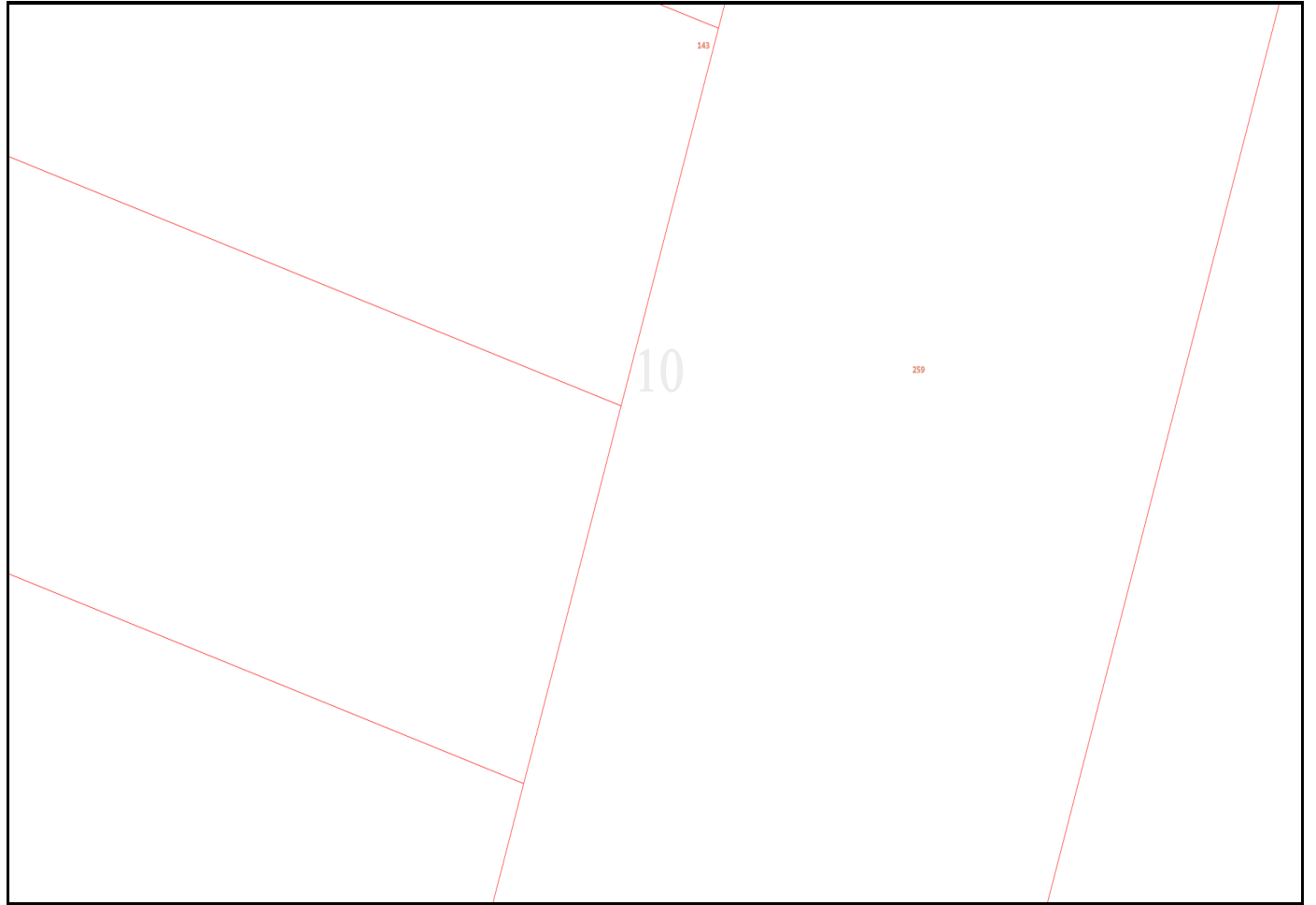


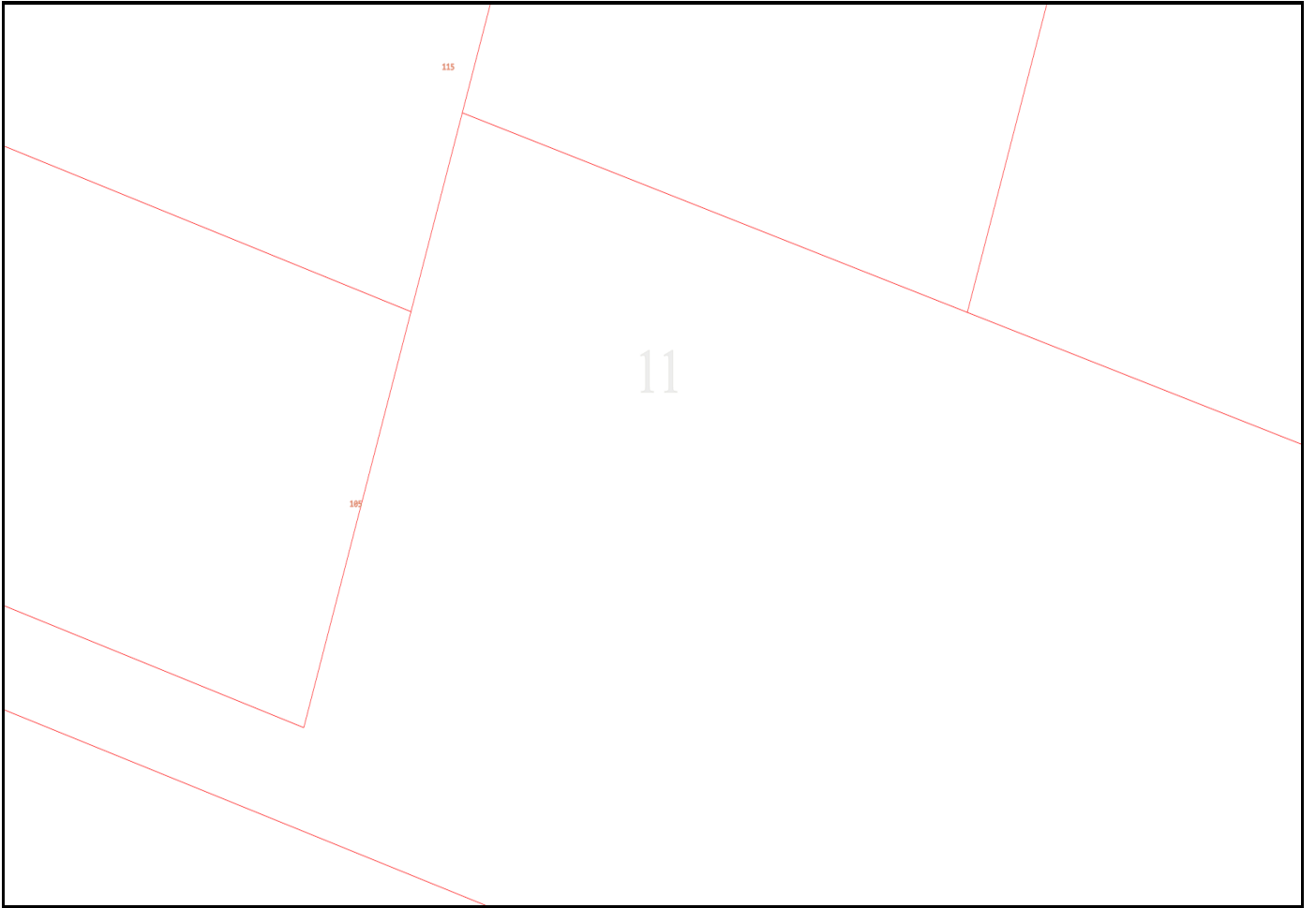


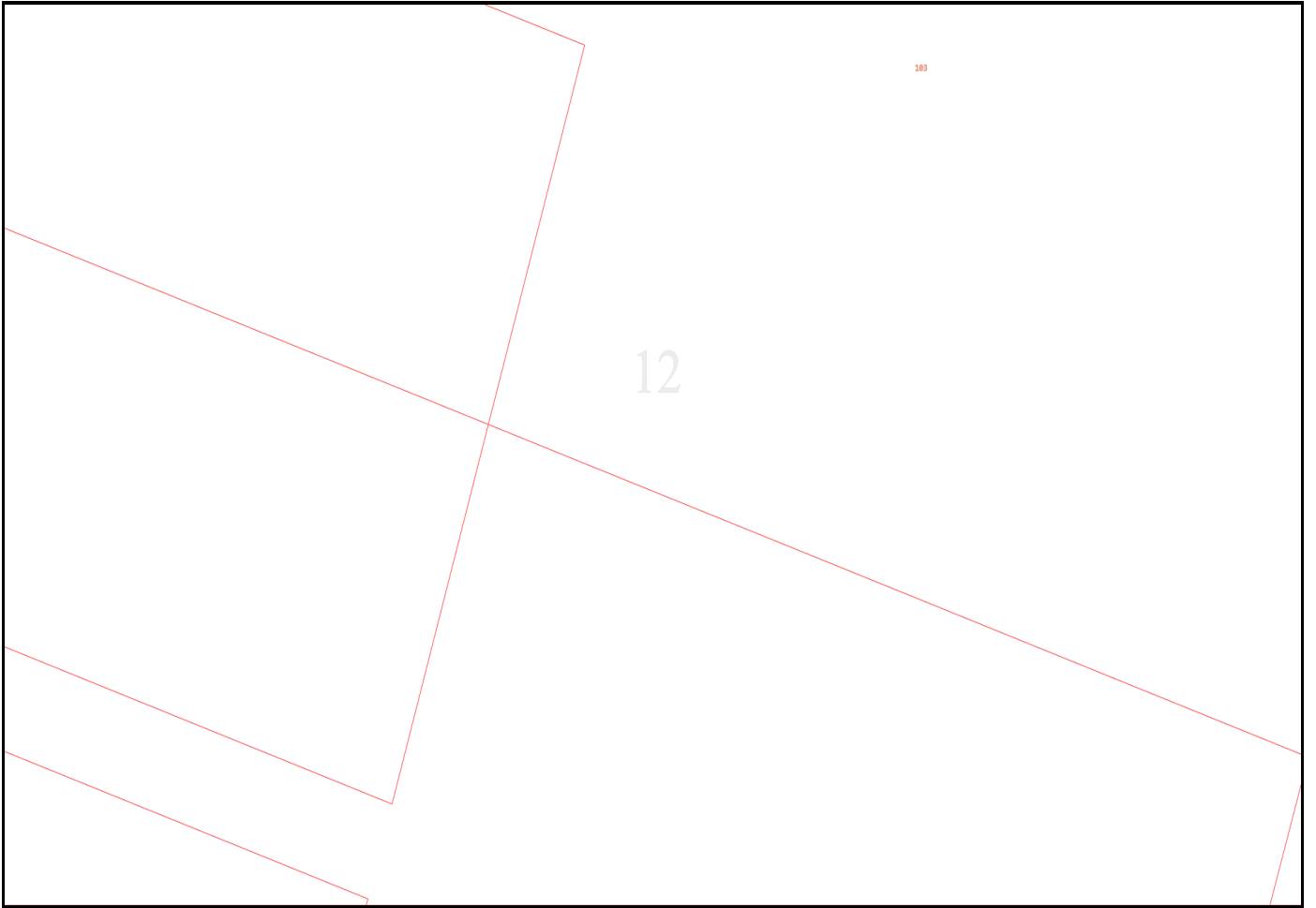


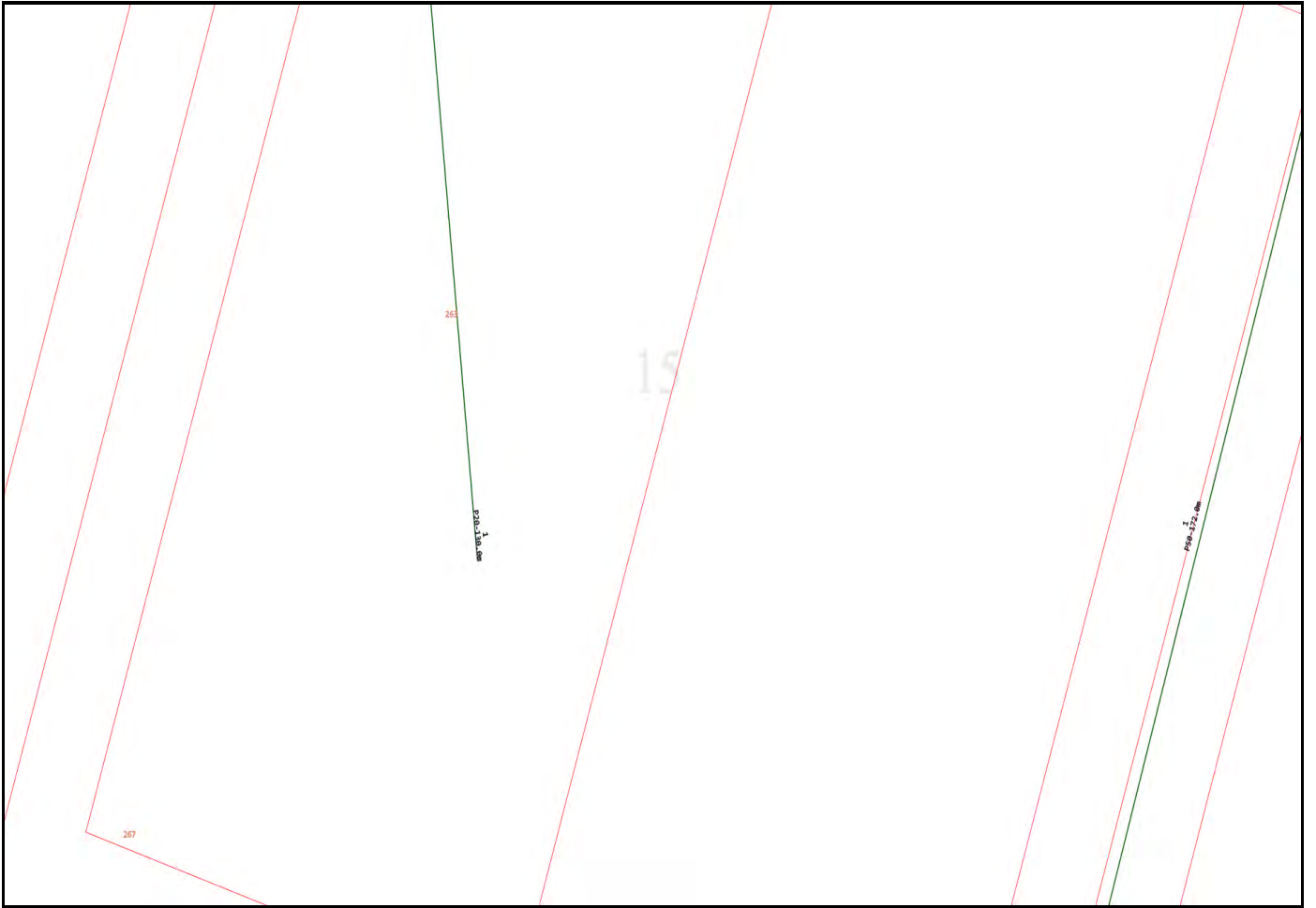




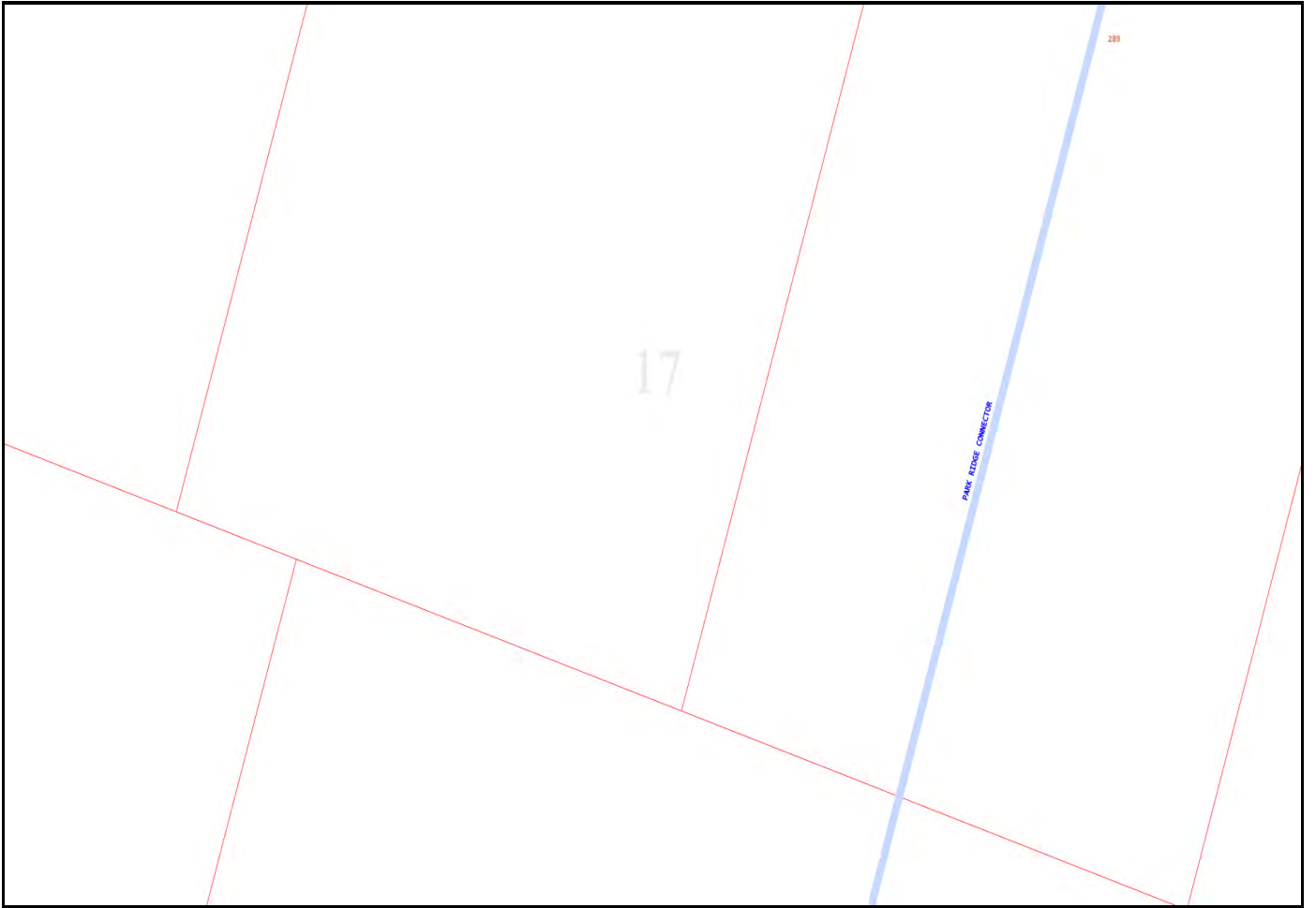


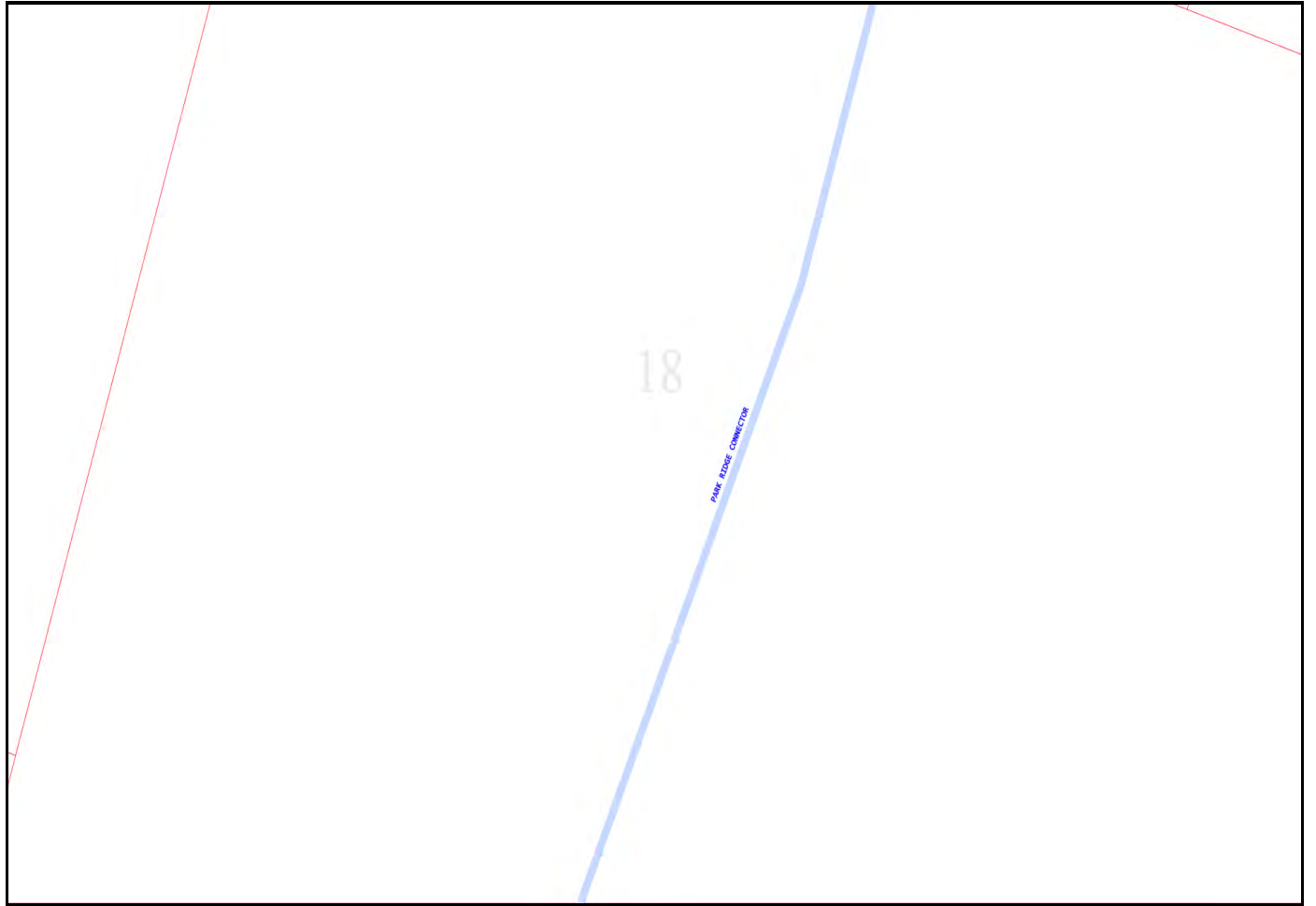


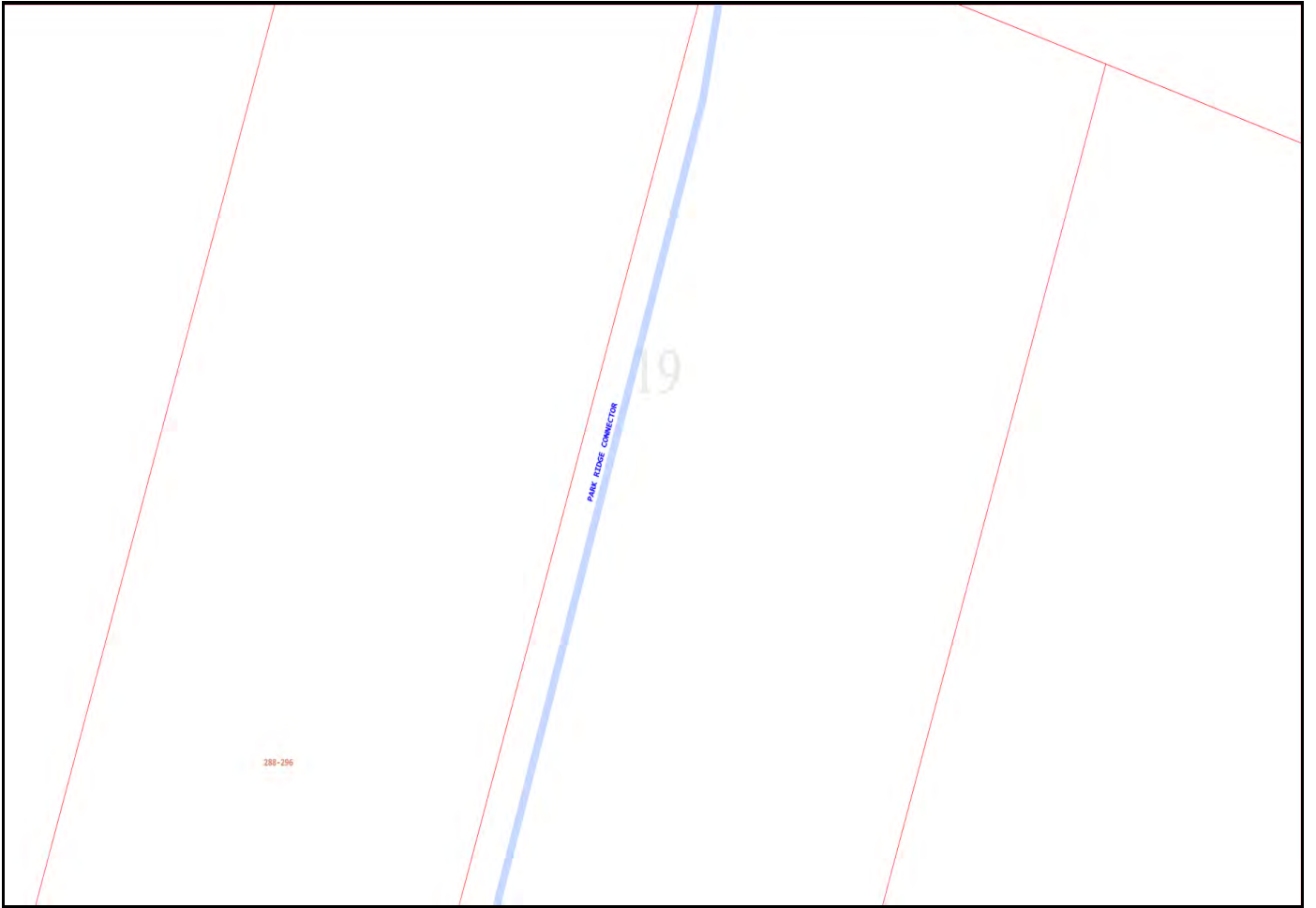


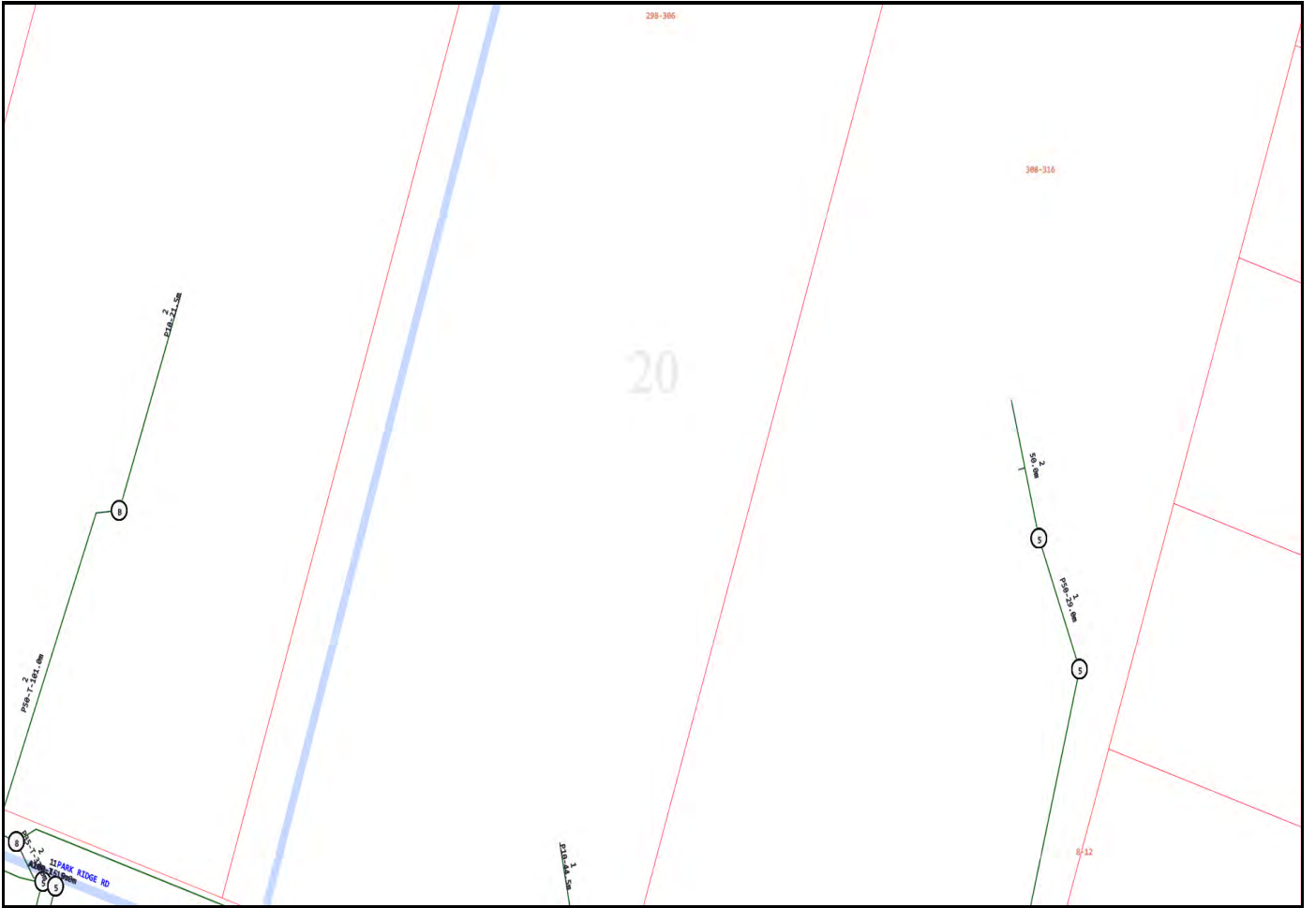


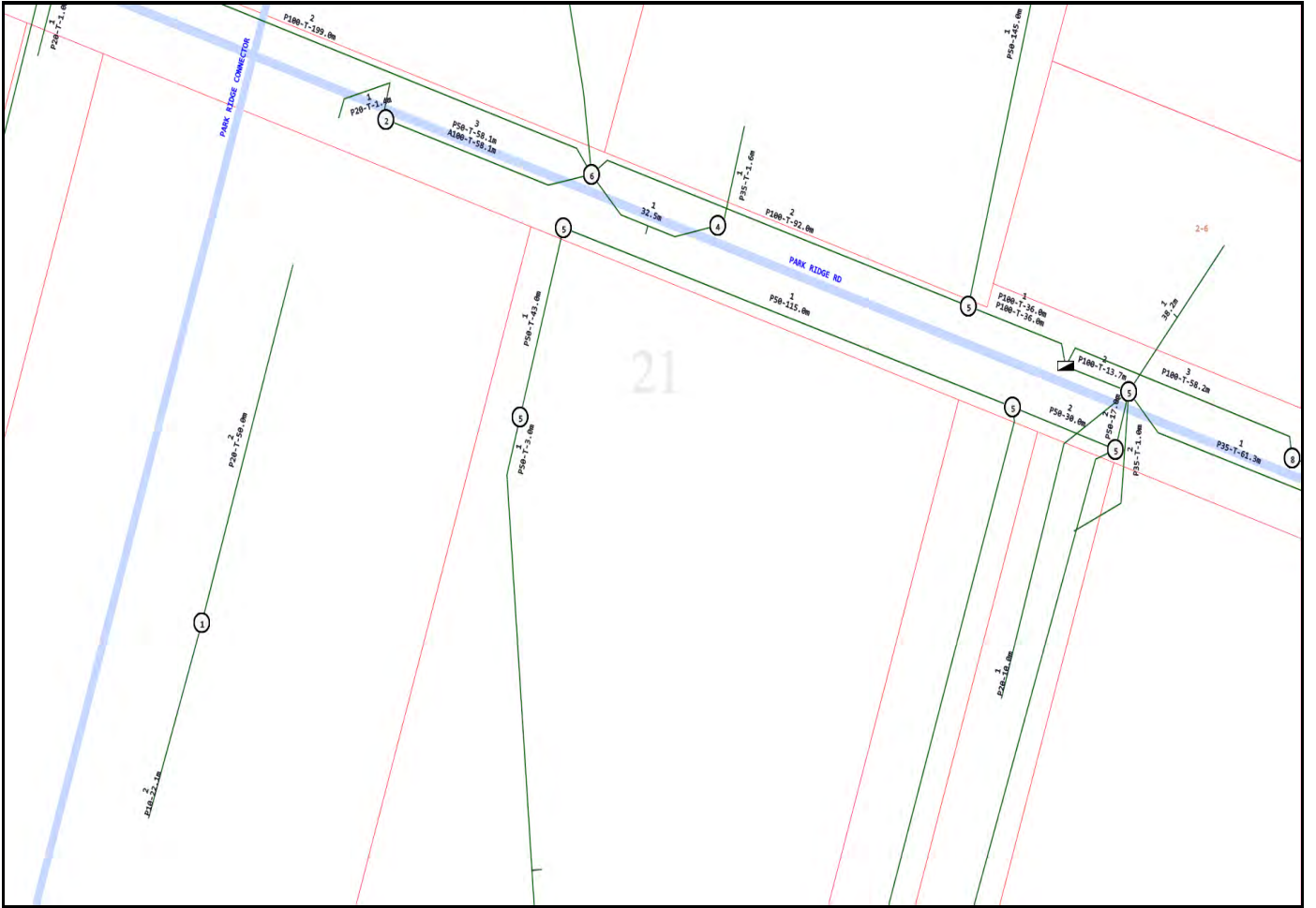


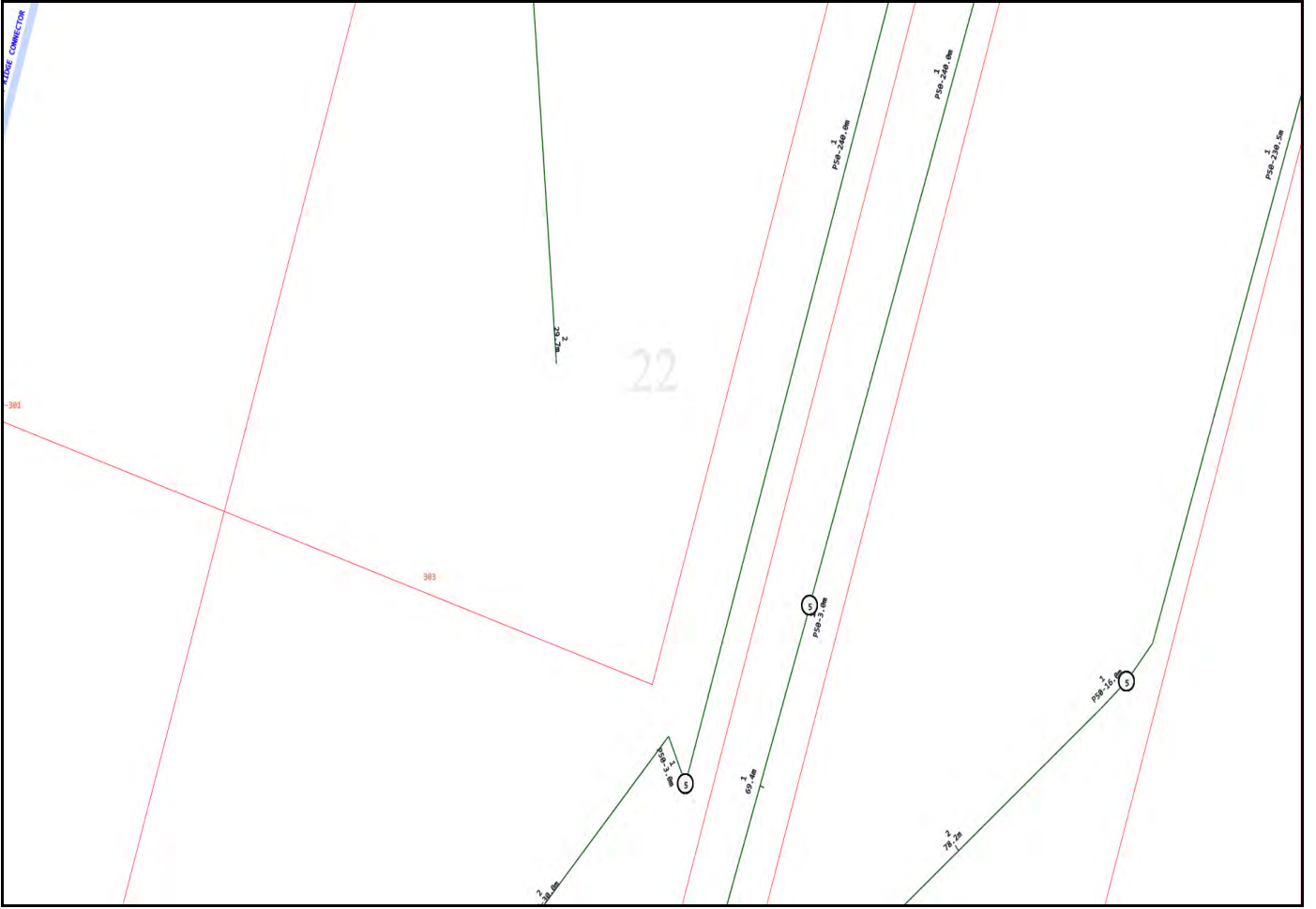


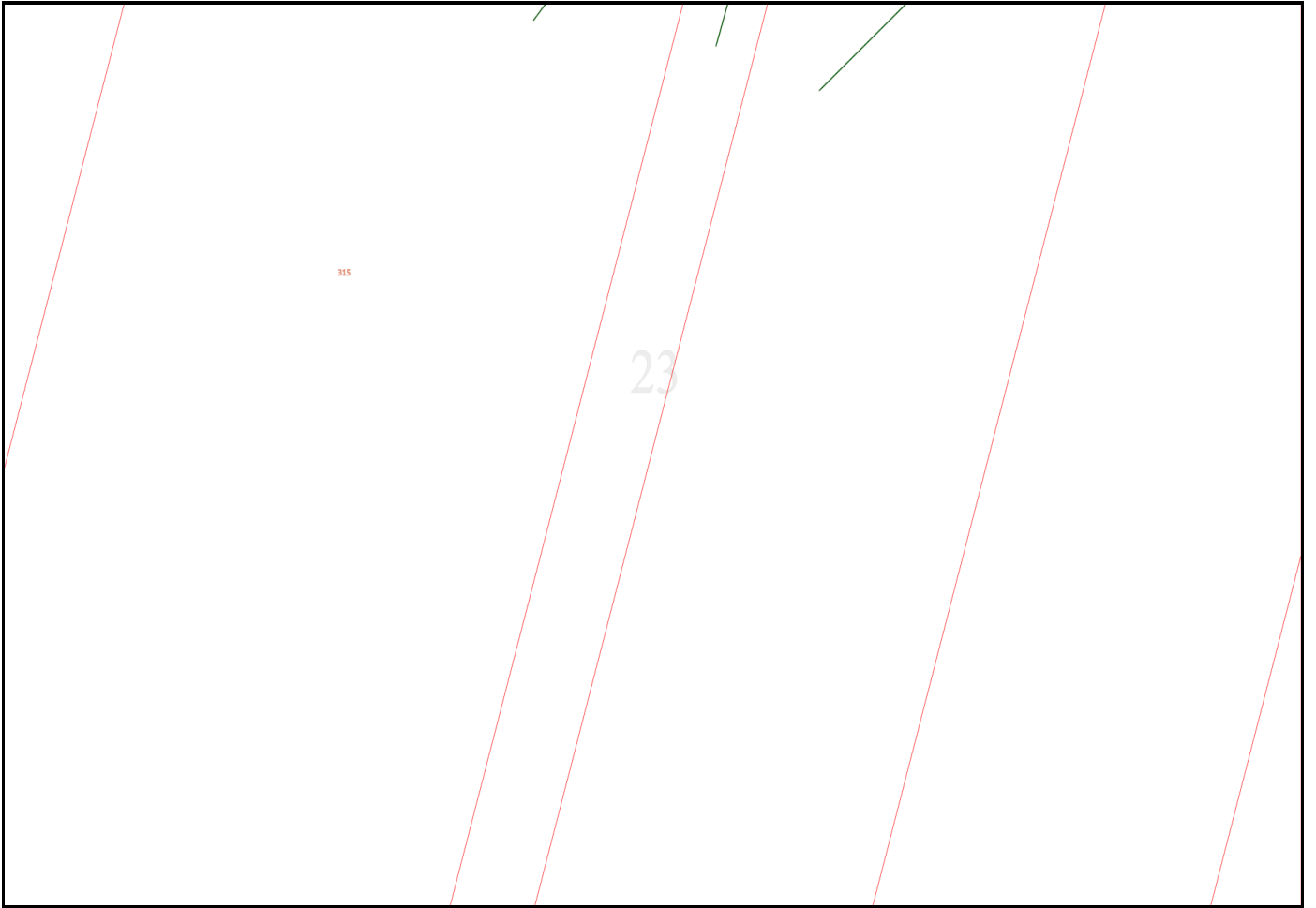


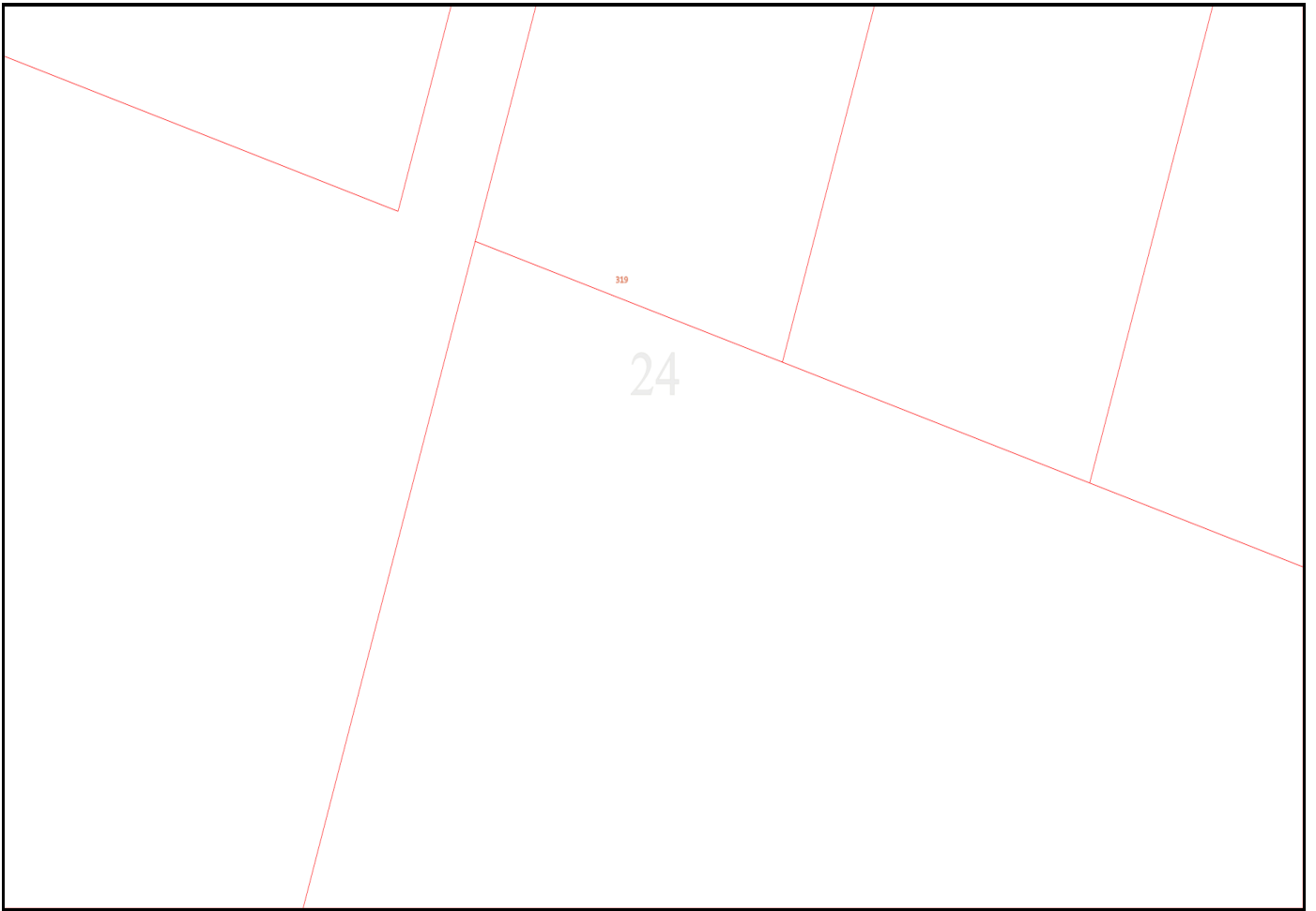












Emergency Contacts

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

APPENDIX D

LCC Codes

9.4.2 Filling and excavation code

9.4.2.1 Application

1. This code applies to:
 - a. material change of use:
 - i. that is accepted development (subject to requirements) or code assessable and for which the Filling and excavation code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column in a table of assessment in section 5.5 - Categories of development and assessment - Material change of use in Part 5 - Tables of assessment;
 - ii. that is made impact assessment in a table of assessment in section 5.5 - Categories of development and assessment - Material change of use or section 5.9 - Categories of development and assessment - local plans in Part 5 - Tables of assessment;
 - b. reconfiguring a lot:
 - i. that is code assessable and for which the Filling and excavation code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column in Table 5.6.1 - Reconfiguring a lot in Part 5 - Tables of assessment;
 - ii. that is impact assessable in Table 5.6.1 - Reconfiguring a lot in Part 5 - Tables of assessment;
 - c. operational work that is accepted development (subject to requirements) and code assessable operational work - filling or excavation for which the Filling and excavation code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column in Table 5.8.1 - Operational work.
2. When using this code, reference should be made to section 5.3.2 - Determining the category of development and category of assessment and, where applicable, section 5.3.3 - Determining the 'assessment benchmarks for assessable development and requirements for accepted development' located in Part 5 - Tables of assessment.

9.4.2.2 Purpose

1. The purpose of the code is to protect premises, people and natural processes from adverse impacts associated with filling or excavation.
2. The purpose of the code will be achieved through the following overall outcomes:
 - a. development protects:
 - i. natural physical processes and ecosystems;
 - ii. existing and planned infrastructure;
 - iii. personal health and safety and premises;
 - iv. visual amenity.

9.4.2.3 Assessment benchmarks for assessable development and requirements for accepted development

Part A - Requirements for accepted development (subject to requirements) and assessment benchmarks for assessable development

Table 9.4.2.3.1 - Filling and excavation code: accepted development (subject to requirements) and assessable development

Performance outcomes	Acceptable outcomes	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 development site shall incorporate drainage, sediment, erosion and dust control measures to ensure works undertaken on site do not adversely affect the downstream waterway and stormwater network. Sediment and erosion control plans endorsed by a CPESC certified engineer will be provided at the time of operational works submission.
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 Topsoil and spoil shall be stockpiled in select locations around the site during construction. Appropriate measures, including sediment and erosion control shall be implemented to ensure the stockpiling of such materials does not adversely affect natural processes and ecosystems.
PO3 Filling is carried out using stable, solid and clean	AO3 Filling complies with part 3.3 - Filling and	AO3 – COMPLIES Filling on site shall be carried out using stable,

earth, free of organic and putrescible waste, rubbish and refuse material.	excavation standards in Planning scheme policy 5 - Infrastructure.	solid and clean materials. It is expected that Level 1 geotechnical supervision shall be undertaken during the earthworks phase.
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 All earthworks conducted on site shall be undertaken in a manner which protects any existing or proposed infrastructure and services in accordance with the standards in planning scheme policy 5-Infrastructure.
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 All earthworks conducted on site shall be undertaken in a safe manner, with appropriate workplace health and safety measures being implemented.
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 development proposes to maintain a similar drainage regime as the existing scenario. The site shall be free draining and is to incorporate a combined bio retention/detention basin to treat and detain stormwater prior to discharging from the site in accordance with Council's planning scheme requirements. Engineering Services Report, reference GA0001-30133252-AAR by Arcadis, should be referred to for further details.
Batters		

<p>PO7 A batter:</p> <ul style="list-style-type: none"> 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. 	<p>A07 A batter is designed and constructed to comply with the standards specified in 3.3.6 - Batters and retaining walls in Planning scheme policy 5 - Infrastructure.</p>	<p>PO7 – COMPLIES Batters shall be designed and constructed to comply with the standards specified in section 3.3.6–Batters in planning scheme policy 5–Infrastructure where possible. Due to the industrial nature of the development, 1:2 batters have been adopted internal to proposed allotment. Such batters are proposed to be adequately stabilized through seeding/hydromulching upon completion of earthworks operations and monitored until such time as building works commence on individual allotments by others. The final design shall be submitted to Council for approval as part of a future development application.</p>
Retaining walls		
<p>PO8 A retaining wall:</p> <ul style="list-style-type: none"> a. is not constructed of timber and is 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; 	<p>A08 A retaining wall is designed and constructed to comply with the standards specified in section 3.3.6.2 - Retaining walls in Planning scheme policy 5 - Infrastructure.</p>	<p>PO8 – COMPLIES Retaining walls have not been proposed as part of the concept earthworks for the proposed development at this current time. Should retaining walls be required after further investigation during the detail design period, retaining walls shall be designed and constructed to comply with the standards specified in section 3.3.6.2–Batters and retaining walls in planning scheme policy 5–Infrastructure where possible.</p>

<p>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.</p>		
Filling of a dam		
<p>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.</p>	<p>A09 The filling of a dam complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.</p>	<p>PO9 – NOT APPLICABLE Filling of dams will comply with part 3.3.</p>

9.4.3 Infrastructure code

9.4.3.1 Application

1. This code applies to:
 - a. material change of use:
 - i. that is accepted development (subject to requirements) or code assessable and for which the Infrastructure code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column in a table of assessment in section 5.5 - Categories of development and assessment - Material change of use in Part 5 - Tables of assessment;
 - ii. that is made impact assessment in a table of assessment in section 5.5 - Categories of development and assessment - Material change of use or section 5.9 - Categories of development and assessment - Local plans in Part 5 - Tables of assessment;
 - b. reconfiguring a lot:
 - i. that is code assessable and for which the Infrastructure code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column in Table 5.6.1 - Reconfiguring a lot in Part 5 - Tables of assessment;
 - ii. made impact assessment in Table 5.6.1 - Reconfiguring a lot in Part 5 - Tables of assessment;
 - c. operational work that is infrastructure work:
 - i. that is accepted development (subject to requirements) or code assessable and for which the Infrastructure code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column Table 5.8.1 - Operational work in Part 5 - Tables of assessment.
2. When using this code, reference should be made to section 5.3.2 - Determining the category of development and category of assessment and, where applicable, section 5.3.3 - Determining the 'assessment benchmarks for assessable development and requirements for accepted development' located in Part 5 - Tables of assessment.

9.4.3.2 Purpose

1. The purpose of the code is to ensure that infrastructure is provided to service development.
2. The purpose of the code will be achieved through the following overall outcomes:
 - a. development protects the existing infrastructure and planned infrastructure networks being the:
 - i. movement network;
 - ii. park network;
 - iii. water network;

- iv. sewerage network;
- v. stormwater network;
- vi. other networks including electricity, gas and telecommunications;
- vii. land for community facilities network;
- b. development other than operational work provides infrastructure that is necessary to service the development, including elements of:
 - i. a safe, efficient and legible road network;
 - ii. a safe, efficient and legible public transport network;
 - iii. a safe, efficient and legible cycle network;
 - iv. a safe, efficient and legible pedestrian network;
 - v. a safe, efficient and legible parks network;
 - vi. a safe and efficient water network;
 - vii. a safe and efficient sewerage network;
 - viii. a safe and efficient stormwater network;
 - ix. safe and efficient other networks including electricity, gas and telecommunications;
 - x. a safe and efficient road lighting network;
 - xi. land for a community facilities network;
- c. development integrates with existing and planned infrastructure networks;
- d. infrastructure is designed and constructed to deliver a standard of service that is efficient and equitable;
- e. the cost to the community for the life of the infrastructure is minimised by providing for a suitable design life, ease of maintenance and ease of replacement;
- f. infrastructure protects personal health and safety and premises;
- g. infrastructure protects environmental values.

9.4.3.3 Assessment benchmarks for assessable development and requirements for accepted development

Part A - Requirements for accepted development (subject to requirements) and assessment benchmarks for assessable development

Table 9.4.3.3.1 - Infrastructure code: accepted development (subject to requirements) and assessable development

Performance outcomes	Acceptable outcomes	Comments
For accepted development (subject to requirements) and assessable development		

Provision, design, construction and location of infrastructure		
<p>PO1 Development is demonstrated to be capable of being serviced by necessary infrastructure.</p>	<p>AO1 Reports, plans and drawings are provided in accordance with part 2 of Planning scheme policy 5 - Infrastructure.</p>	<p>AO1 – COMPLIES The development can be adequately serviced with all necessary engineering services, including sewer, water, stormwater drainage, electrical and telecommunication infrastructure. Engineering Services Report, reference GA0001-30133252AAR by Arcadis should be referred to for further details.</p>
<p>PO2 Development:</p> <ul style="list-style-type: none"> a. provides necessary infrastructure to service the development; b. provides that the design, construction and location of necessary infrastructure: <ul style="list-style-type: none"> 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 a suitable design life, ease of maintenance and ease of replacement; vi. protects personal health, safety and premises; vii. protects environmental values. 	<p>AO2 Development:</p> <ul style="list-style-type: none"> 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; 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 	<p>AO2 – COMPLIES The development shall make connection to Council's existing water and sewer supply services in accordance with the SEQ Code. Engineering Services Report, reference GA0001-30133252-AAR by Arcadis should be referred to for further details.</p>

	<p>of Planning scheme policy 5 - Infrastructure;</p> <p>h. provides road lighting in accordance with part 3.5 of Planning scheme policy 5 - Infrastructure;</p> <p>i. provides electricity reticulation in accordance with part 3.8 of Planning scheme policy 5 - Infrastructure;</p> <p>j. provides gas and telecommunications reticulation in accordance with part 3.9 of Planning scheme policy 5 - Infrastructure.</p> <p>k. is consistent with the general planning layouts in part 7.2 of Planning scheme policy 5 - Infrastructure.</p> <p>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.</p>	
Location of development		
<p>PO3 Development is located to protect existing and planned infrastructure networks.</p>	<p>AO3 Development is located outside:</p> <p>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;</p> <p>b. planned public transport network identified on Figure 3.4.1.3.1 - Public transport network in Planning scheme policy 5 - Infrastructure;</p> <p>c. a planned cycle network identified on Figure 3.4.1.2.1 - Cycle network in Planning scheme policy 5 - Infrastructure;</p> <p>d. a planned network identified in Local government infrastructure plan map LGIP-</p>	<p>AO3 – COMPLIES Trunk infrastructure upgrades are within the immediate vicinity of the site in accordance with Council Priority Infrastructure Planning maps. A temporary intersection arrangement has been proposed to cater for the proposed development in the interim until such time as Council's upgrade works begin. Refer Bitzios Traffic Impact Assessment for further details.</p>

	07.00 Plan for trunk parks infrastructure in Schedule 3 - Local government infrastructure plan mapping and tables.	
Fire fighting		
<p>PO4 Development in a water service area accessed by common private title provides:</p> <ul style="list-style-type: none"> a. fire hydrant infrastructure; b. unimpeded access for emergency services vehicles. <p>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.</p>	<p>AO4 Development in a water service area involving a material change of use or reconfiguring a lot where, or to be, accessed by common private title ensures that fire hydrant placement and technical requirements for streets and access ways are in accordance with:</p> <ul style="list-style-type: none"> a. Australian Standard (AS) 2419.1 - 2005 <i>Fire hydrant installations</i>; b. QFES: <i>Fire Hydrant and vehicle access guidelines for residential, commercial and industrial lots</i>. 	<p>PO4 – NOT APPLICABLE The development does not propose any common private titles.</p>
<p>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.</p>	<p>AO5 Development:</p> <ul style="list-style-type: none"> 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 on-site water storage in accordance with Table 9.4.3.3.2 - Water storage for fire fighting, dedicated or retained for fire fighting purposes that is made of fire resistant materials and is: <ul style="list-style-type: none"> i. a separate tank; or ii. a reserve section in the bottom part of the main water supply tank/water tank. 	<p>AO5 – COMPLIES The development will be connected to a reticulated water supply network which shall be designed to provide adequate levels of service for firefighting and property service demands. Engineering Services Report, reference GA0001-30133252-AAR by Arcadis should be referred to for further details.</p>

	<p>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.</p>	
Disposal of trade waste		
<p>PO6 The disposal of trade waste in a sewerage supply service area does not adversely affect the sewerage network.</p>	<p>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.</p>	<p>AO6 – NOT APPLICABLE The development does not propose any sites which are to generate or dispose of trade waste.</p>
Roof water drainage and surface water drainage		
<p>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.</p>	<p>AO7 Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.</p>	<p>AO7 – COMPLIES The development proposes to maintain a similar drainage regime as the existing scenario. The site shall be free draining and is to incorporate a combined bio retention/detention basin to treat and detain stormwater prior to discharging from the site in accordance with Council's planning scheme requirements. Engineering Services Report, reference GA0001-30133252-AAR by Arcadis, should be referred to for further details.</p>
Natural flow of surface water		
<p>PO8 Development provides that the natural flow of</p>	<p>AO8 Development complies with the standards for</p>	<p>AO8 – COMPLIES The development does not propose to significantly disturb the natural flow of surface</p>

<p>surface water is:</p> <ul style="list-style-type: none"> 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. 	<p>stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.</p>	<p>water. Engineering Services Report, reference GA0001-30133252-AAR by Arcadis should be referred to for further details.</p>
<p>Water sensitive urban design</p>		
<p>PO9 Development which provides stormwater infrastructure incorporates water sensitive urban design principles having regard to:</p> <ul style="list-style-type: none"> 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. 	<p>AO9 Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.</p>	<p>AO9 – COMPLIES The development proposes to manage stormwater quantity and quality via combined bioretention/ detention basins. This has been designed in accordance with QUDM, and Council guidelines. Engineering Services Report, reference GA0001-30133252-AAR by Arcadis, should be referred to for further details.</p>
<p>Movement network</p>		
<p>PO10 The projected traffic levels for a use do not adversely affect the planned standards of service for a road or intersection.</p>	<p>AO10 Development does not cause or contribute to projected traffic levels:</p> <ul style="list-style-type: none"> a. exceeding the maximum vehicle trips per day in Table 3.4.1.4.2 in Planning scheme 	<p>PO10 – COMPLIES The proposed internal road network shall be subject to detailed design. Appropriate measures shall be incorporated to manage any impacts on surrounding traffic</p>

	<p>policy 5 - Infrastructure; or</p> <p>b. exceeding the maximum control delays through intersections in peak periods in Table 3.4.1.4.3 in Planning scheme policy 5 - Infrastructure.</p>	<p>levels.</p>
Integrated movement concept report		
<p>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.</p>	<p>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.</p>	<p>PO11 – NOT APPLICABLE Refer BitziosTraffic Impact Assessment for further details.</p>
For assessable development only		
Land use and transport integration		
<p>PO12 Development within 400 metres of existing or future public passenger transport facilities where the total site area is 5,000m² or more:</p> <ul style="list-style-type: none"> 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; 	<p>AO12 No acceptable outcome provided.</p>	<p>PO12 – COMPLIES The proposed development will incorporate a road network which is designed and constructed in accordance with Council’s guidelines. The road network will be designed to facilitate efficient, safe and accessible travel routes to support pedestrian and vehicle movements.</p>

<p>d. provides for direct and safe access to and use of existing or future public passenger transport facilities.</p> <p>Note - SPP code: Land use and transport integration in Appendix 4 of the state planning policy provides guidance to achieve this outcome.</p>		
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Table 9.4.3.3.2 - Water storage for fire fighting

Column 1 Lot size / use type	Column 2 Water requirement
For each residential lot:	
a. less than 1,000m ²	5,000 litres
b. between 1,000m ² and less than 1 hectare	10,000 litres
c. greater than 1 hectare	20,000 litres
Multiple dwelling	5,000 litres per dwelling up to a maximum of 20,000 litres
A use other than Multiple dwelling	5,000 litres or the prevailing rural fire brigade standard