

# Preliminary Infrastructure Review



GROUP DEVELOPMENT SERVICES



**614, 618 & 626 Old Northern  
Road and 27 & 21 Derriwong  
Road, Dural**

**September 2022**

Document Control	
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## 1. EXECUTIVE SUMMARY

Legacy Property Pty Ltd has engaged Group Development Services Pty Ltd (GDS) to undertake a Preliminary Infrastructure review to support a Planning Proposal request by Legacy Property to The Hills Shire Council (Council) to rezone land at Old Northern Road and Derriwong Road, Dural. The site is located at 614, 618 & 626 Old Northern Road and 27 & 21 Derriwong Road, Dural. It is legally known as Lot 2 in DP541329, Lot 9 in DP237576, Lot X in DP501233, Lot 2 in DP567995 and Lot Y2 in DP 91653.

This report is a limited desktop review of the availability and capacity of the essential infrastructure in proximity to the site in conjunction with relevant feasibility information provided and received. For the purposes of this review, it has been assumed that water, sewer, telecommunications, natural gas and electricity are to be supplied by the relevant jurisdictional utility authorities. Noting that natural gas is not necessarily a required service for dwelling development applications. Decentralised servicing options, such as on-site treatment of sewerage, have not been considered.



## 2. SITE APPRECIATION

### 2.1. Legal Description

The subject site's address is 614, 618 & 626 Old Northern Road and 27 & 21 Derriwong Road, Dural. It is legally described as Lot 2 in DP541329, Lot 9 in DP237576, Lot X in DP501233, Lot Y2 in DP 91653 and Lot 2 in DP567995 (Figure1).



Figure 1 – Site Location Source: SIXMaps



## 2.2. Site Description

The site is irregular in shape and is composed of five lots. The property is mostly cleared of any vegetation, and contains houses, sheds and associated water and sewer tanks. The total area of this proposal is approximately 12.879 hectares in size, and has frontage to both Old Northern Road and Derriwong Road (Figure 2). The site slopes to the west into a neighbour and south towards Derriwong Road. Desktop aerial imagery indicates that part of the site was used for agricultural purposes and that part of the site was used for small business.

The site is within The Hills Shire Council LGA. However, it should be noted that the subject location is also very close to the border of the Hornsby Shire LGA. This is because the subject site's locational boundary backs up onto Old Northern Road, which is a boundary point between the two differing LGA's. Surrounding the site is a mixed variety of commercial, industrial, and residential uses. The site is currently zoned RU6 Rural Transition under The Hills LEP 2012.



Figure 2 – Subject site (source: Council Planning Proposal Gateway Determination Report PP2021 4415).

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### 3. PROPOSED DEVELOPMENT

It is understood that a planning proposal seeks to change the zoning of the site from RU6 Rural Transition to R2 (Low Density Residential) and SP2 Infrastructure. This change is to facilitate the development of the site into a approx. 110 lot residential subdivision and a new local park. The indicative subdivision layout submitted with the Planning Proposal request provides a mix of larger residential lots ranging from 600sqm to 3,400sqm. This will contribute additional housing supply, diversity and choice in the local area, and support the viability of the Dural village centre. An area for open space is also proposed within this development (Figure 3 below).

Whilst early in the feasibility stage, a draft plan of subdivision has been prepared by Urbis , which can be seen in figure 3. Detailed design and calculations are required for the services proposed for this development.

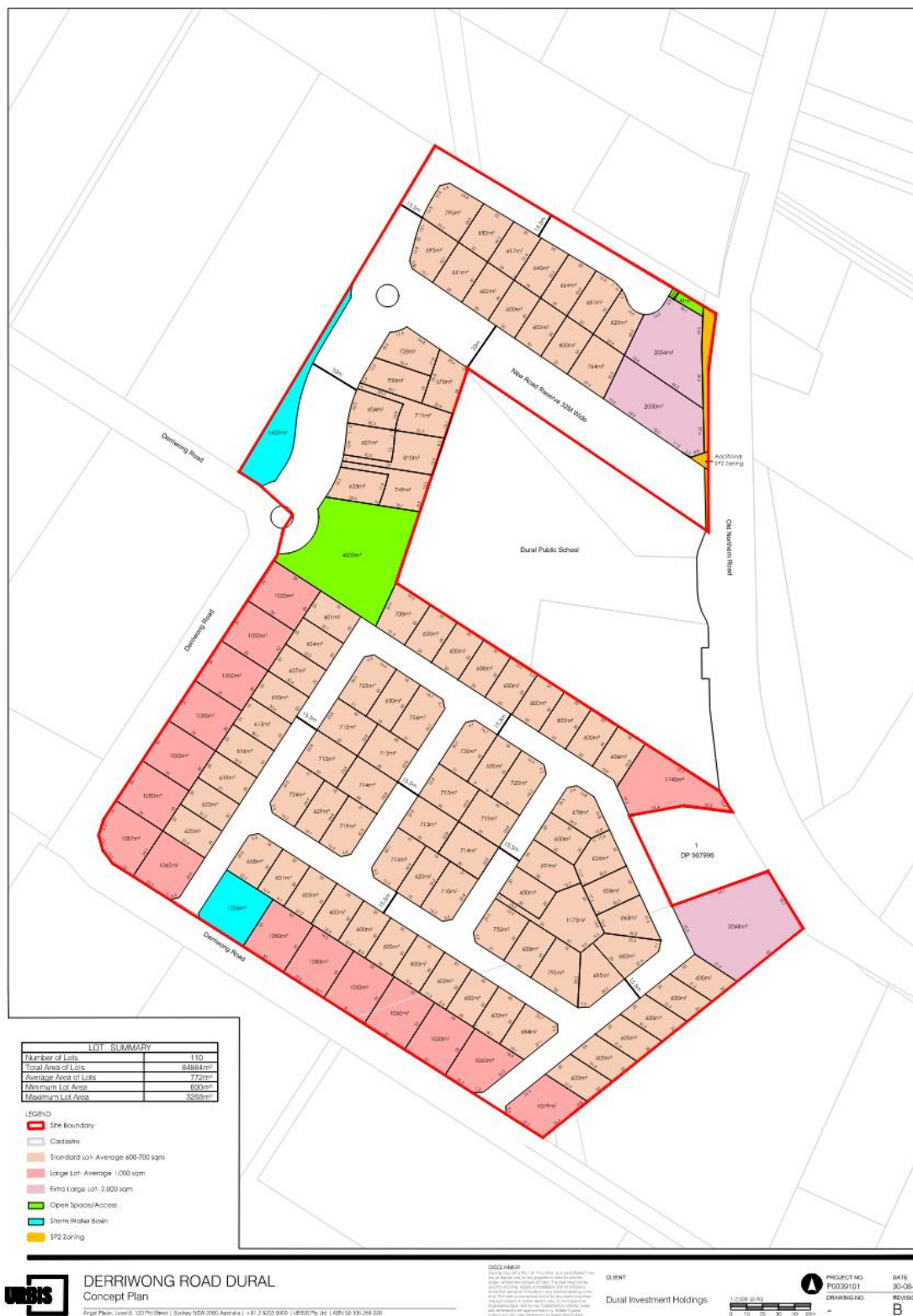


Figure 3 – URBIS Proposed subdivision Plan



## 4. INFRASTRUCTURE

### 4.1. Existing Infrastructure within the Site

Within the site boundaries, includes the following infrastructure:

- A 16m wide Easement for Transmission Lines, which transects through the centre of the site. It is intended to relocate this Transmission Line underground along Derriwong Rd and through a future public road to connect between the two sides of the site..
- Private telecommunications and electrical lines connecting the existing dwellings and sheds to the mains in the adjoining Public Roads.
- Septic/aerated tanks and water tanks.

This information has been derived from Dial Before You Dig searches (contained at Appendix A), aerial imagery and Deposited plans. Both the Dial Before You Dig searches and a title search of the property do not disclose the presence of any other services within the site.



Figure 4 – Subject property with Cadastral information

## **4.2. Existing Infrastructure Adjacent to and Surrounding the Site**

Surrounding the property are numerous existing utilities, both underground and above ground. The information has been derived from Dial Before You Dig (DBYD) searches, as well as aerial imagery. A site inspection has been conducted to verify that these services still exist.

Adjacent to the property on the Eastern frontage, within the road reserve on Old Northern Road, exist the following services, presented below.

### **4.2.1. Electricity**

High voltage underground cabling appears to transition from above ground to underground at certain points, and terminate at the existing pad-mount substations. The pad mount substation is located on the Dural Public School land (Lot 6 DP 847797) and connects to Old Northern Road via overhead lines. These are Endeavour Energy & Ausgrid Assets.

Similarly, on the southwestern side of the property, along Derriwong Road, low voltage overhead lights bound the property.

### **4.2.2. Telecommunications**

A fiber optic cable which is in a separate utility conduit runs on the far side of Old Northern Road. This asset is owned by Optus and it is assumed to be of commercial use.

A series of above ground NBN owned cables run in the same location as the above ground electrical, described previously. The DBYD indicates areas of underground assets adjoining the property also and through the property at various locations adjacent to the school and servicing the school.

### **4.2.3. Wastewater**

Along Old Northern Road, there is a 180mm High Density Polyethylene (HDPE) pressure sewer line that discharges sewerage from two pump stations located north of the subject site (Glenorie & Galston, NSW). Roughly 260m south of the subject site, a gravity sewer line made of vitrified clay, with a 375mm diameter discharges west through a piped network. Both assets are owned by Sydney Water.

### **4.2.4. Potable Water**

Fronting the property on Old Northern Road appear to be a series of water main trunk carriers. These are; 500mm, 250mm & 600mm diameter Cast Iron Cement Lined (CICL) mains.

Also running alongside the site on Derriwong Road is a combination of 150mm and 100mm CICL watermain.

All assets are owned by Sydney Water.

### **4.2.5. Natural Gas**

Fronting the property, on Old Northern Road, is a 160mm Polyethylene 210kPa pressure gas line. This is a Jemena asset.

**All relevant Dial Before You Dig diagrams have been provided in the Appendix section of this report.**



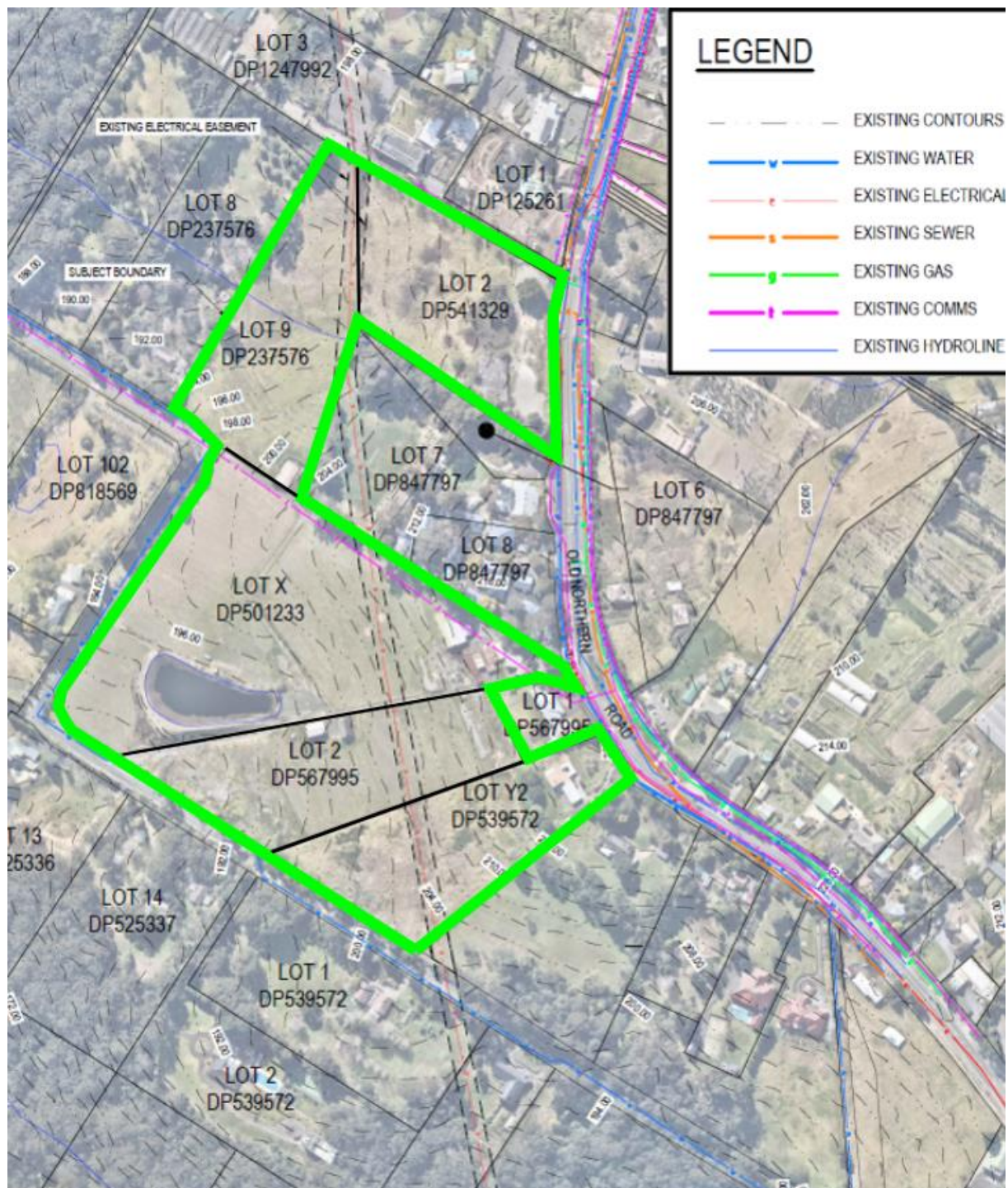


Figure 5 - Existing Services within & surrounding site

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### **4.3. Wastewater**

As noted in the existing infrastructure section of this report, there is an existing gravity sewer main within reasonable vicinity to the site. The preferred connection point is approximately 500m south of the subject site.

#### **4.3.1. Gravity Main**

The proposed connection method is to construct a gravity main. This requires a lead in sewer of about 535m in length, which will connect into the existing gravity main. Sydney Water have provided an invert level of RL 177.20 at the proposed connection point. The lowest point in our site is approximately RL 189.0.

Pursuing this option requires permission to enter (PTE) from downstream properties.

It should be noted that the previous advice from Sydney Water that upgrades to their system would be required for the proposed yield. As the yield is less than previously proposed, the network upgrades required would be assessed by Sydney Water.

#### **4.3.2. Funding of works**

Under Sydney Water's policies for funding, there may be opportunity to receive a contribution towards the construction of this sewer extension. Sydney Water has two mechanisms for developer's attempting to attain a contribution, these include a schedule of rates or by a procurement process. A contribution assessment will be undertaken to determine contribution acceptance and value. Detailed designs with quotations for the cost of works from accredited contractors will be required.



## 4.4. Potable Water

As part of the original infrastructure report that was undertaken on this property, a Sydney Water feasibility letter had been issued. This letter was issued under Sydney Water Case number 154616, dated 1<sup>st</sup> July 2016. GDS has since applied for an updated feasibility letter to ensure capacity is still available to service the proposed development, a response is yet to be received from Sydney Water on this feasibility application.

Corresponding to Sydney Water's advice, the preferred connection point for this development is along the 200mm diameter watermain in Old Northern Road, for which adequate capacity to service the proposed development has been confirmed.

A 150mm diameter watermain that runs within the Derriwong Road will also supply the proposed development. These connection points are shown in Figure 6.

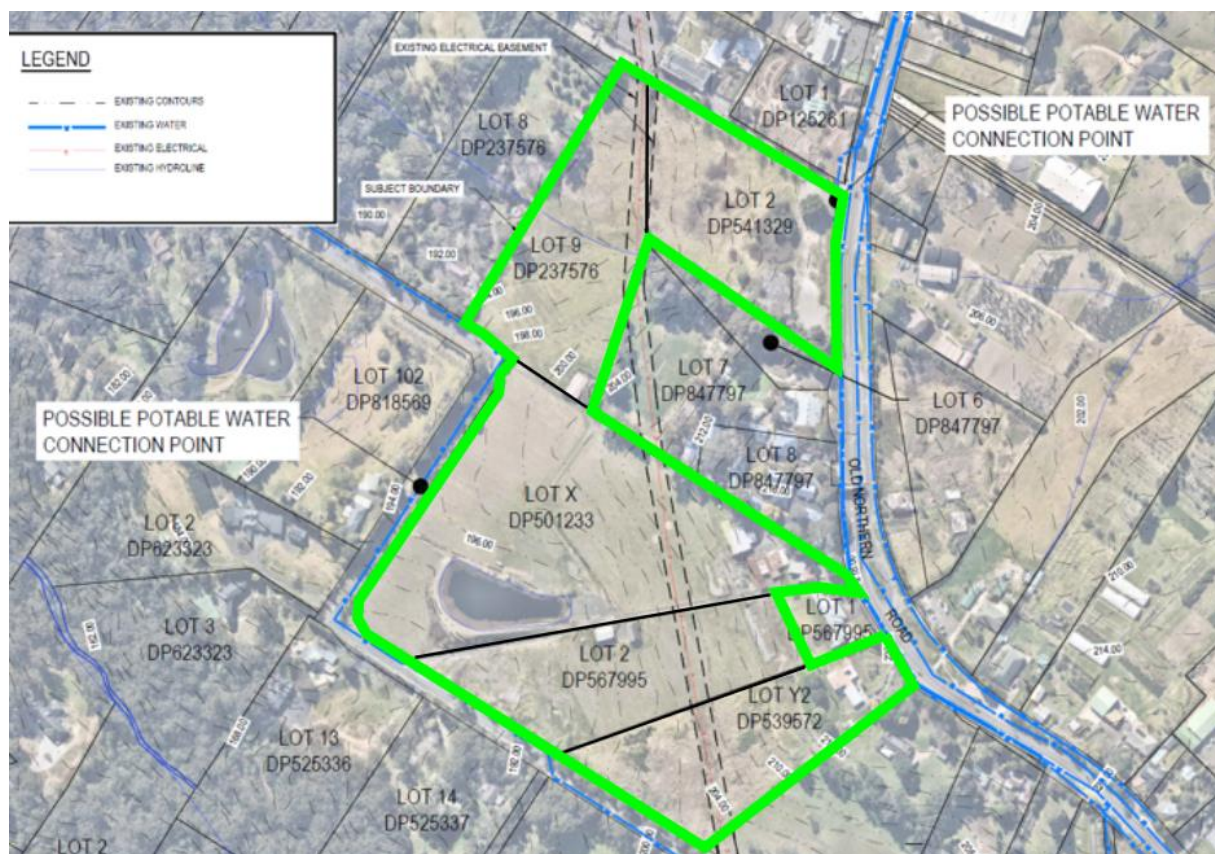


Figure 6 – Possible Connection Points of Watermain

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## 4.5. Electrical Supply

GDS has made an application for electricity supply with Endeavour Energy, under NRS3509. This application returned an assessment that indicated that an ASP Level 3 Designer should be appointed to carry out the design work and to calculate the voltage requirements suitable for a residential development of this size.

It is noted that Endeavour Energy have a 11kV distribution feeder within the Old Northern Road reserve adjacent to the site, this would be the likely primary location of connection for reticulation of the site.

Substation(s) will be required to service the proposed development. In our experience, a substation of 500kVA rating can service between 50-60 residential dwellings. Two substations may therefore be required for the proposed development. Substations must be placed on private residential blocks rather than on public land (Roads and Parks). The location of the substation(s) would be subject to voltage drop calculations, which would be determined during the detail design phase, with regards to Endeavour Energy's access and safety requirements.

66kV overhead transmission line (and associated Easement), which transects the site, will impact on the location of residential lots, roads, and infrastructure. These overhead lines have a total span of 630m through the site, with intermediate poles being located every 150-300m. See figure 7.

It is likely that the proposed development shall design the undergrounding of this overhead asset to suit the subdivision network. Clearance, easements, and restrictions would similarly apply. An underground asset would also require a minimum easement width of 3m-5m, depending on the quantity of cables.

A preliminary asset relocation design has been undertaken to relocate the 66kV overhead lines along the future road alignment. This design will be finalised with the final approved road layout. Refer Appendix for a copy of the preliminary plan.

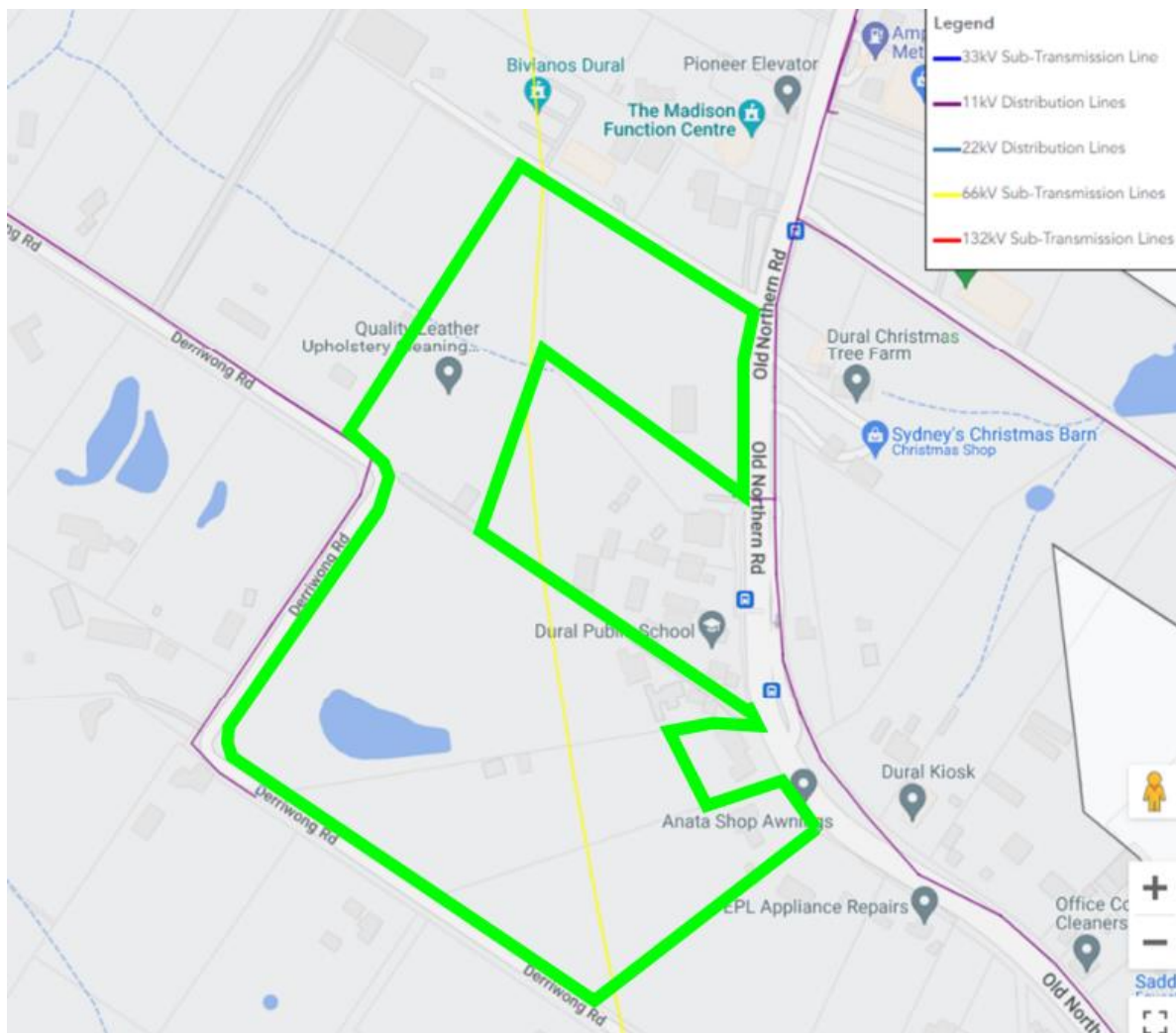


Figure 7 – Endeavour Energy Spatial Mapping tool

## 4.6. Telecommunications Infrastructure

In our opinion, it will be feasible to connect NBN at this site via the standard new development process, without any significant backhaul charges or commercial assessments. The Dial Before You Dig network diagrams indicate that the NBN broadband network exists in close proximity to the site. Similarly, Optus Fibre Optic cable is also present. The development is well within the NBN fixed line footprint and NBN will supply Fibre to the Premise (FTTP) technology, as the development proposes more than 5 dwellings.

NBN Rollout maps indicate the area is well accessible to NBN technology, as illustrated in figure 9.

There is a series of above ground cables that run along the sites frontage to Derriwong Road, which will require undergrounding. Further investigation is required to determine the owner of this asset.

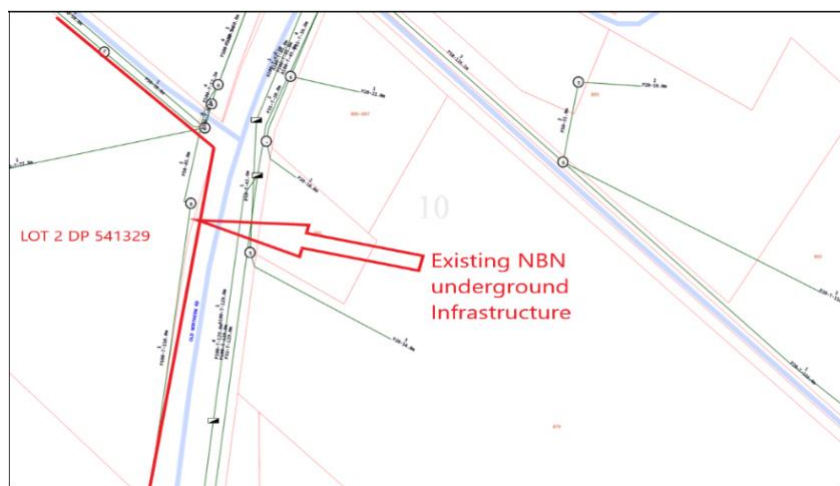


Figure 8 – NBN Facilities

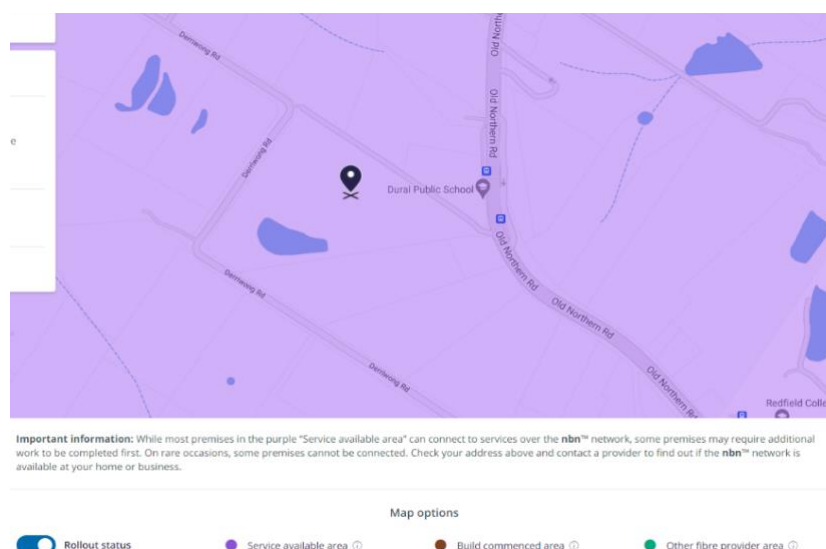


Figure 9 – Service Available Area



## 4.7. Natural Gas

GDS have made preliminary enquiries with Jemena in relation to the proposed development. We have been advised that the existing 160mm Polyethylene 210kPa network will likely cater for the demand of the proposed development.

The below DBYD overlay indicates that the connection point for the proposed development will be the North-eastern end of the site as there is a stub connection point which crosses Old Northern Road. The gas network is best created in a loop configuration, requiring a second connection point on Old Northern Road, to the southern end of the site. This is for network redundancy.

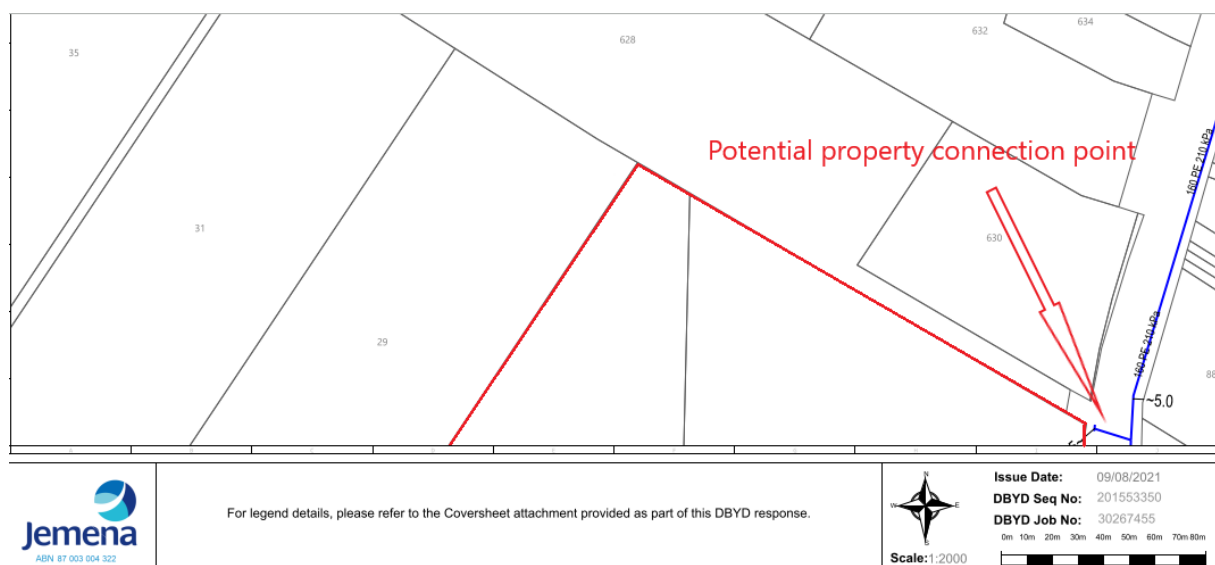


Figure 10 – Jemena Potential Connection Point Source: DBYD, 2021

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#### **4.8. Stormwater & Water Sensitive Urban design (WSUD)**

The objective of the stormwater design is to collect, control flows, treat and drain the surface water into the closest waterway. The site at present has no formalised pit and pipe drainage network. A drainage easement exists for Lot 2 in DP 541329 & Lot 9 in DP 237576, towards the West of the site to a mapped watercourse. The proposed development will construct new purpose-built pit and pipe infrastructure. In addition, the Hill Shire Council's Development Control Plan (DCP) will provide the design controls for this site's infrastructure, in terms of off-site discharge rates, and water quality.

The design for the detention of water would generally be a combined design of rainwater tanks and a larger open detention areas. The re-use of water using rainwater tanks would reduce water demand and reduce the environmental impact of homeowners. The discharge of this water would ultimately follow the natural water courses and lead into the nearby creek, in this case appears to be a branch which connects to O'Haras Creek. It is noted there is a current low point on Derriwong Road that discharges into the neighbouring property. A conceptual stormwater plan must be prepared in accordance with the Hills Shire Council DCP when undertaking the development application for the property. This assessment of the hydraulic requirements of the site will determine the required detention of water, typically by onsite detention (OSD) basins.

OSD basins will generally be provided at the lowest points in the development, based on the topography of the site and the current natural low points this will require two dedicated permanent OSD basins which would be located in the western portion of the site and the southern portion of the site. The two OSD's would allow for transient stormwater storage to provide a reduction in the discharge rate of surface water from the site. The ground slope must be considered in the development plans, noting flat areas will demand more area for storage in OSD systems.

The stormwater system required for the development needs to ensure that it has sufficient capacity to cater for large storm events to comply with council controls that require post development discharge flows from the site to be reduced to match or improve on the pre development discharge flows from the site so as to not overload the downstream infrastructure and housing.

In review, GDS are of the opinion that an adequate stormwater system can be provided, which is both efficient and economically viable for the project using gravity supplied techniques.

Note drainage easements on neighbouring properties may be required to facilitate safe discharge through properties to the existing water course locations to the south and west of the site. These will need to be formalised as part of the DA and subsequent registration processes.

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## 5. Conclusion and recommendations

The preliminary findings of this report are:

- The proposed development can likely be serviced. Lead-in infrastructure would need to be constructed for sewer serviceability.
- There is sufficient capacity within the local potable water mains network and flexibility in where to provide the connection point.
- There is capacity within the local provision of HV electrical infrastructure to service the proposed development.
- Two or more electrical substations will be required to be constructed within the site.
- Gas can be made available to the site if required.
- High speed NBN internet can be supplied to the site.

The recommendations of this report are:

- To prepare service designs early in the development process to refine the demand/load of the development.
- To note that advice from those authorities is point-in-time advice and is subject to change.
- To prepare applications to Endeavour Energy, Sydney Water and Jemena early in the development process, so that capacity can be set aside

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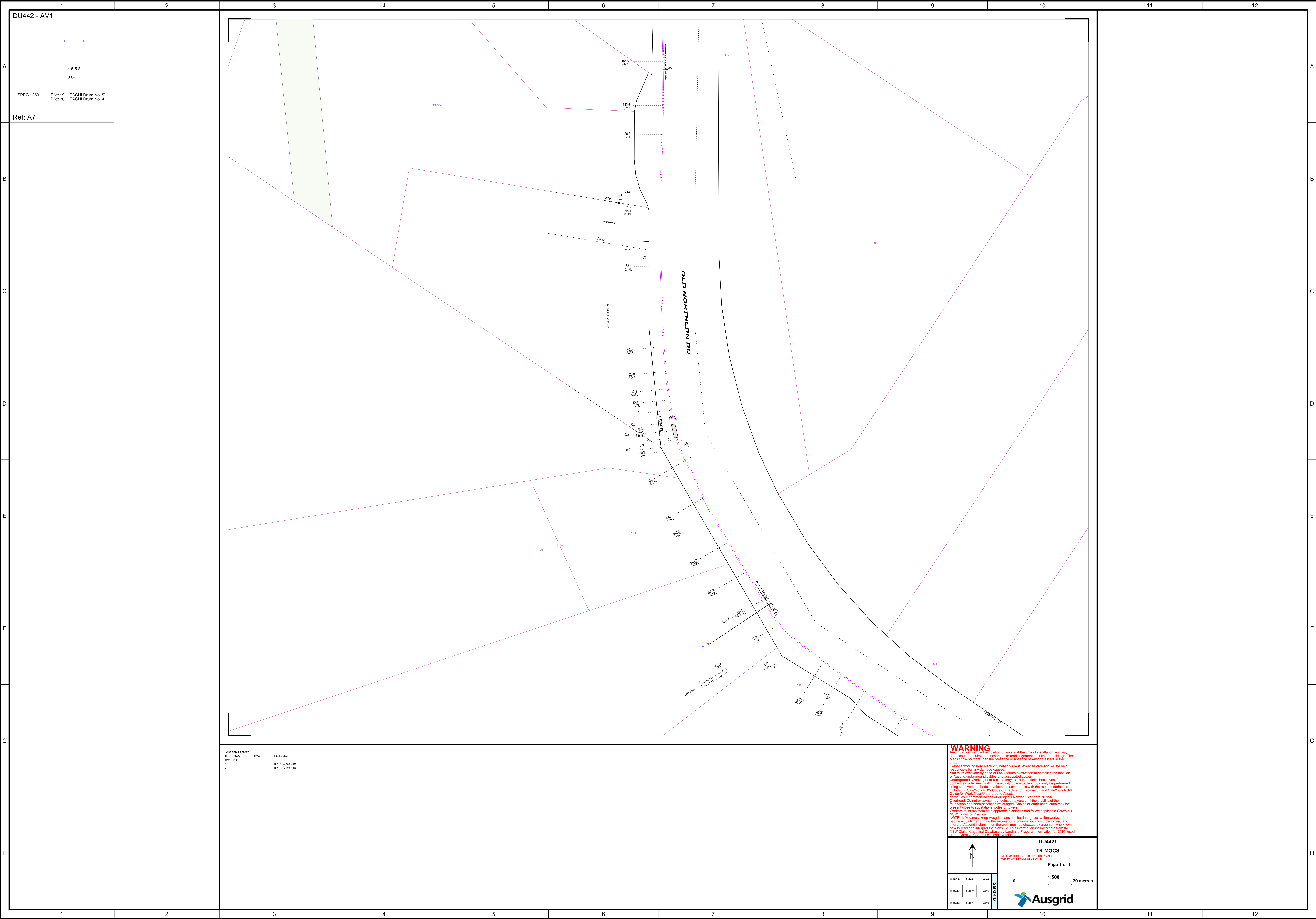
## 6. APPENDIX

Dial Before You Dig record information

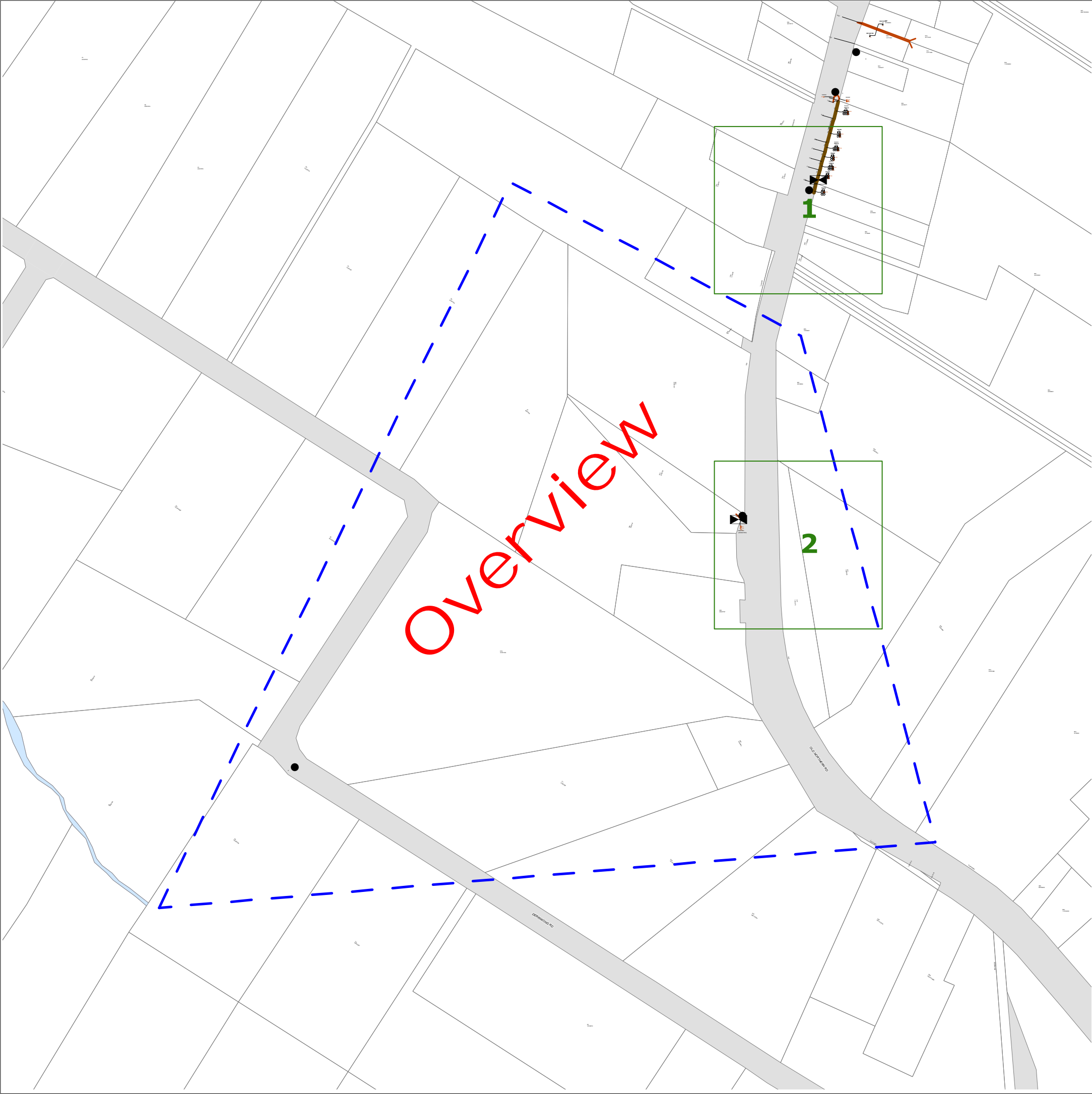




You are working near Transmission Cables. You must contact Ausgrid on (02) 4951 9200 at least two weeks before work commences. See Ausgrid Network Standard NS156.







**WARNING**

- **All electrical apparatus shall be regarded as live until proved de-energised.** Contact with live electrical apparatus will cause severe injury or death.
- In accordance with the *Electricity Supply Act 1995*, you are obliged to report any damage to Endeavour Energy Assets immediately by calling **131 003**.
- The customer must obtain a new set of plans from Endeavour Energy if work has not been started or completed within twenty **(20)** working days of the original plan issue date.
- The customer must contact Endeavour Energy if any of the plans provided have blank pages, as some underground asset information may be incomplete.
- Endeavour Energy underground earth grids may exist and their location **may not** be shown on plans. Persons excavating are expected to exercise all due care, especially in the vicinity of padmount substations, pole mounted substations, pole mounted switches, transmission poles and towers.
- Endeavour Energy plans **do not** show any underground customer service mains or information relating to service mains within private property.
- Asbestos or asbestos-containing material may be present on or near Endeavour Energy's underground assets.
- Organo-Chloride Pesticides (OCP) may be present in some sub-transmission trenches.
- All plans must be printed and made available at the worksite where excavation is to be undertaken. Plans must be reviewed and understood by the crew on site prior to commencing excavation.

**INFORMATION PROVIDED BY ENDEAVOUR ENERGY**

- Any plans provided pursuant to this service are intended to show the approximate location of underground assets relative to road boundaries, property fences and other structures at the time of installation.
- Depth of underground assets may vary significantly from information provided on plans as a result of changes to road, footpath or surface levels subsequent to installation.
- Such plans have been prepared solely for use by Endeavour Energy staff for design, construction and maintenance purposes.
- All enquiry details and results are kept in a register.

**DISCLAIMER**

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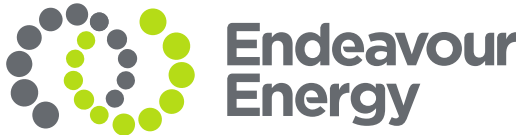
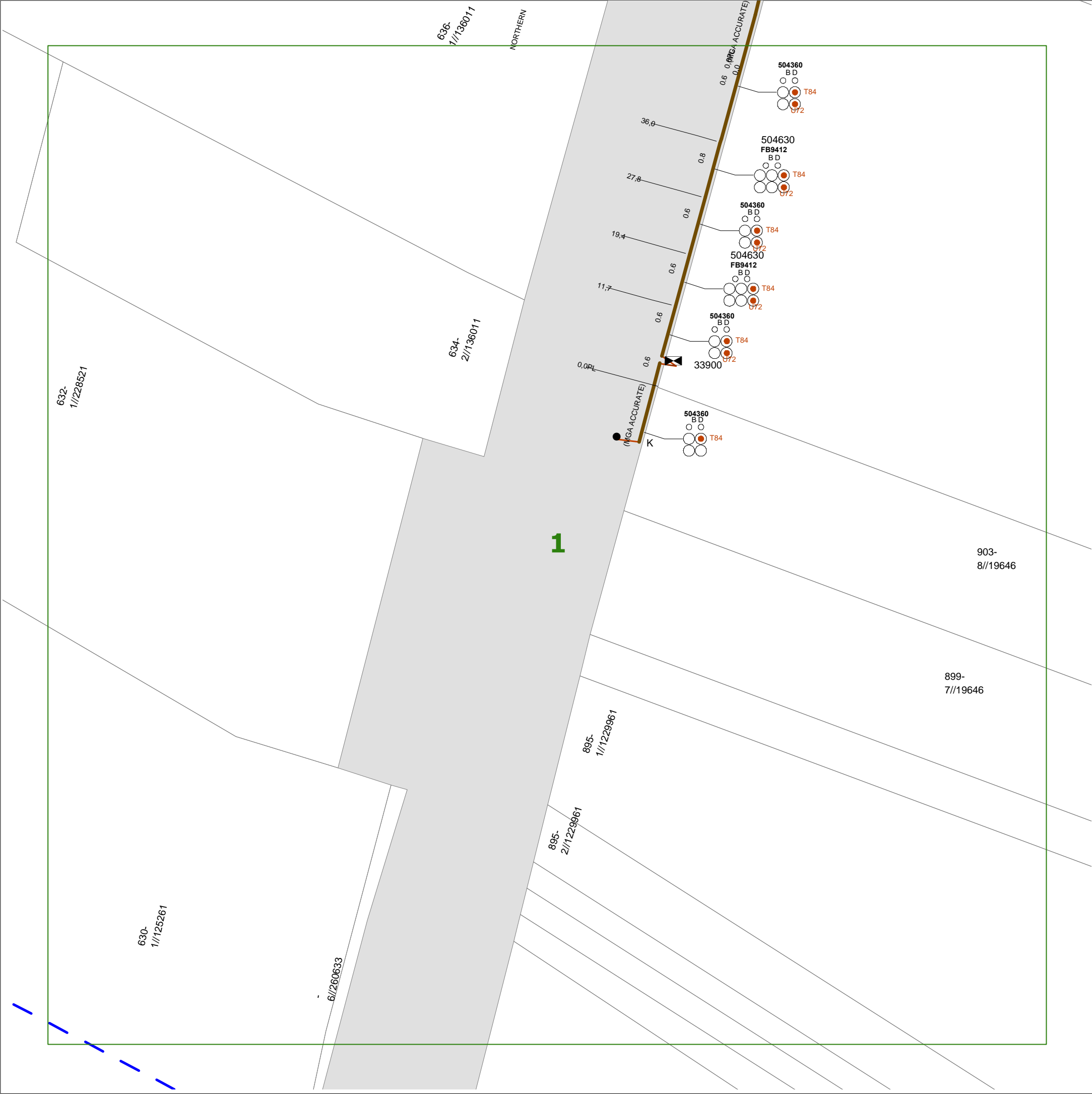
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- or ■ Street light column
- ▤ Padmount substation
- or ■ Overground pillar (O.G.Box)
- ▤ Underground pit
- ▬ Duct run
- ▬ Cable run
- ⊙ Typical duct section
- ▲ Asbestos warning



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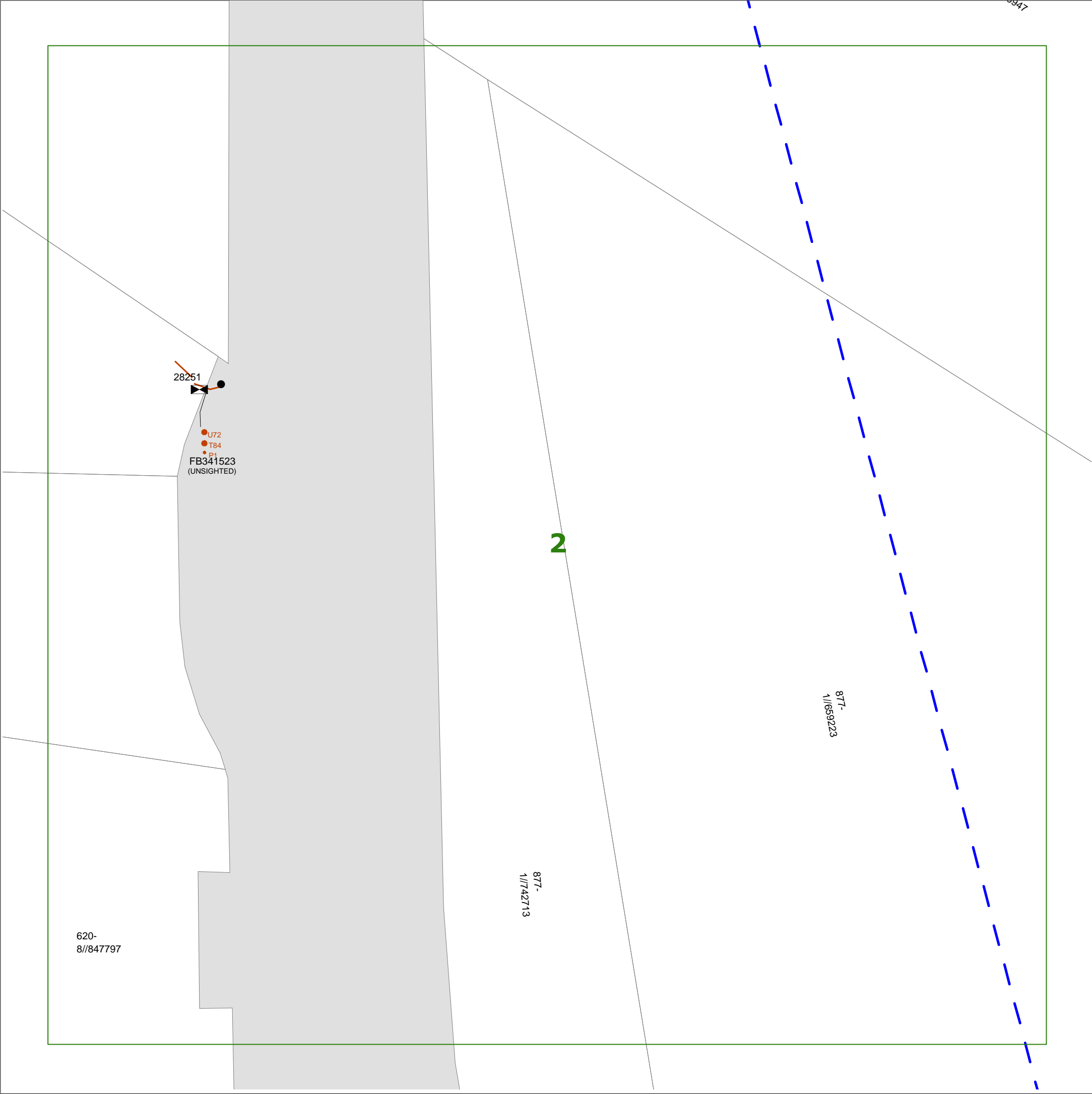
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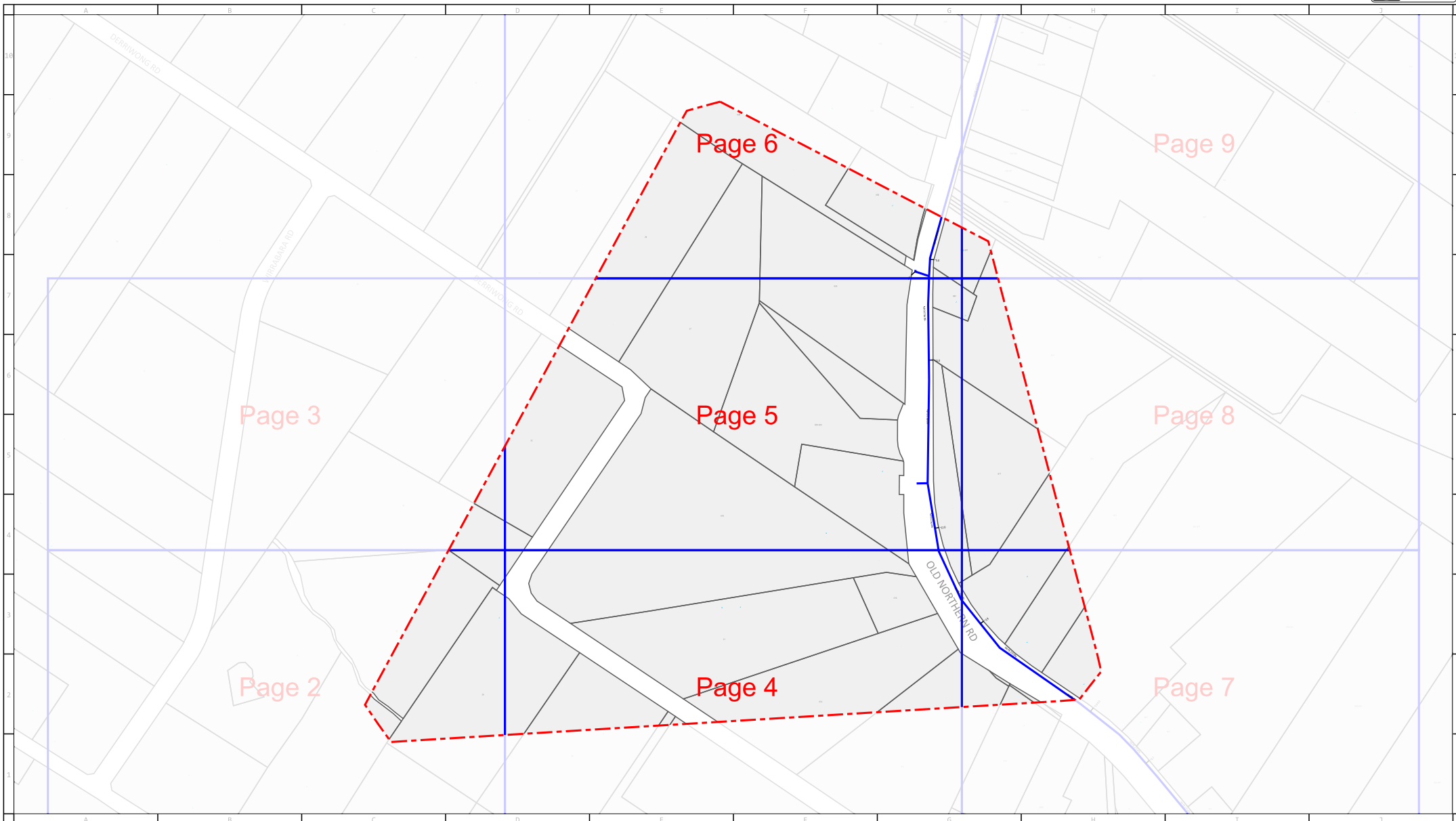
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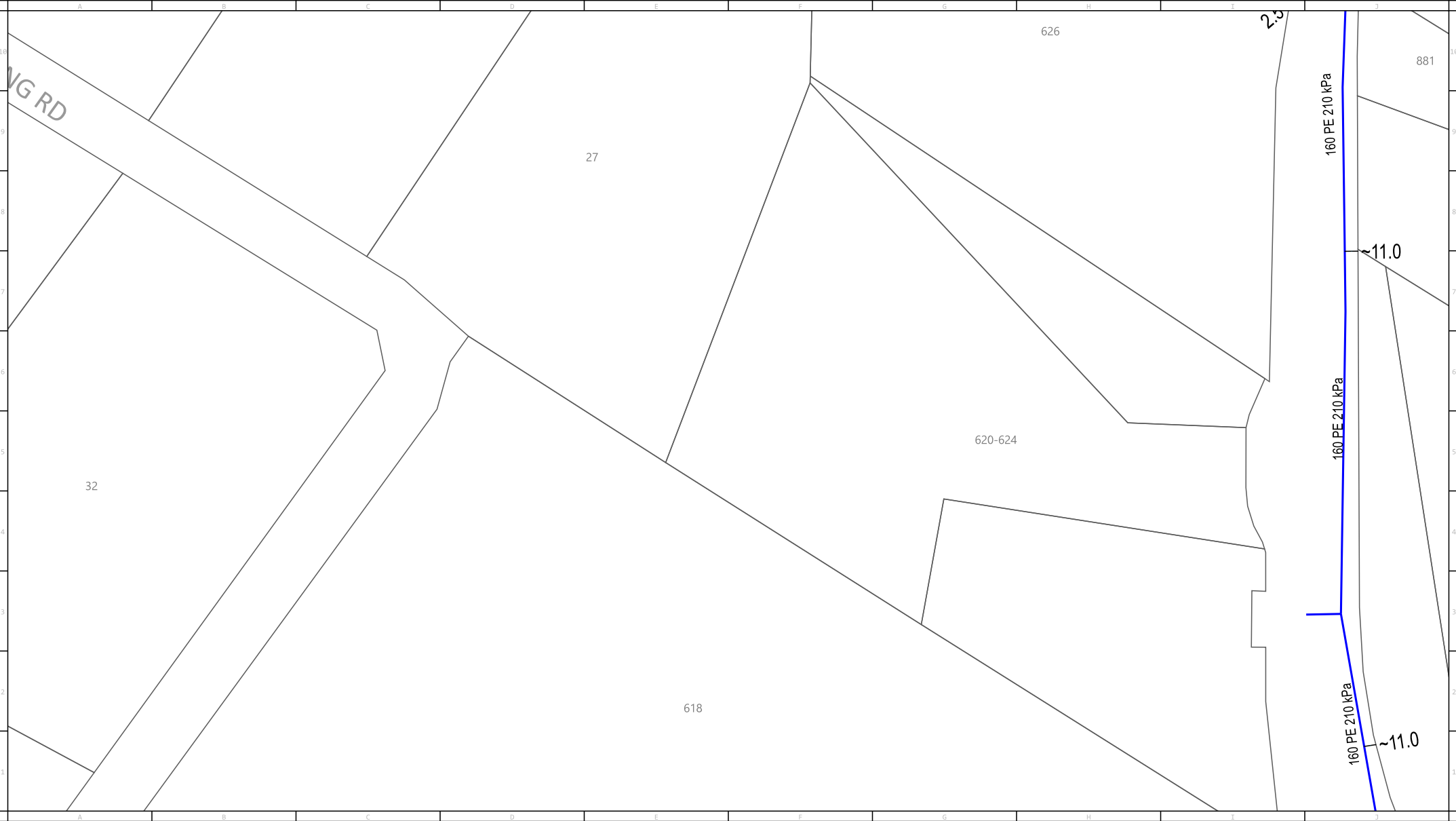
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For legend details, please refer to the Coversheet attachment provided as part of this DBYD response.



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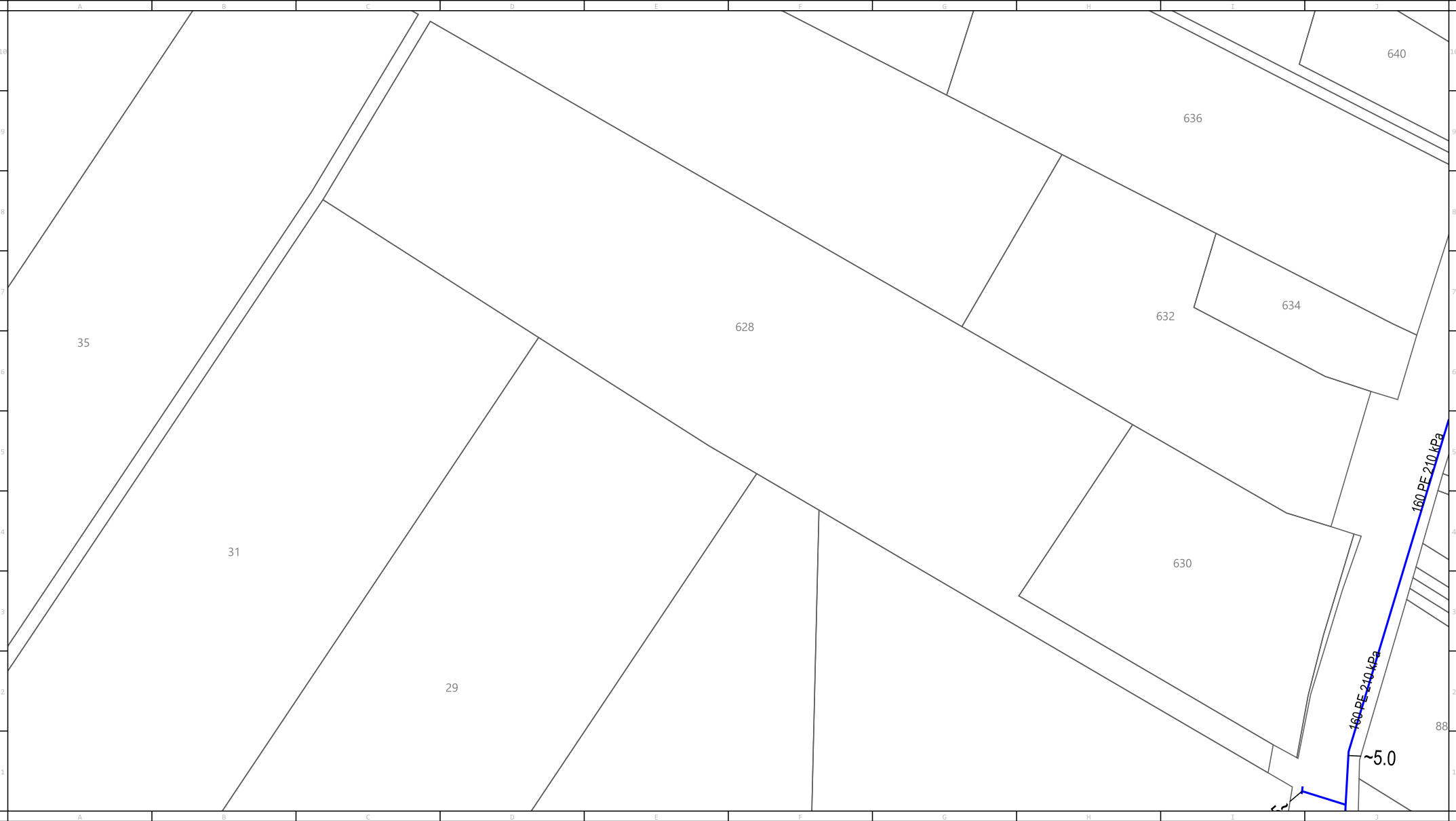
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**WARNING:**This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.



For legend details, please refer to the Coversheet attachment provided as part of this DBYD response.



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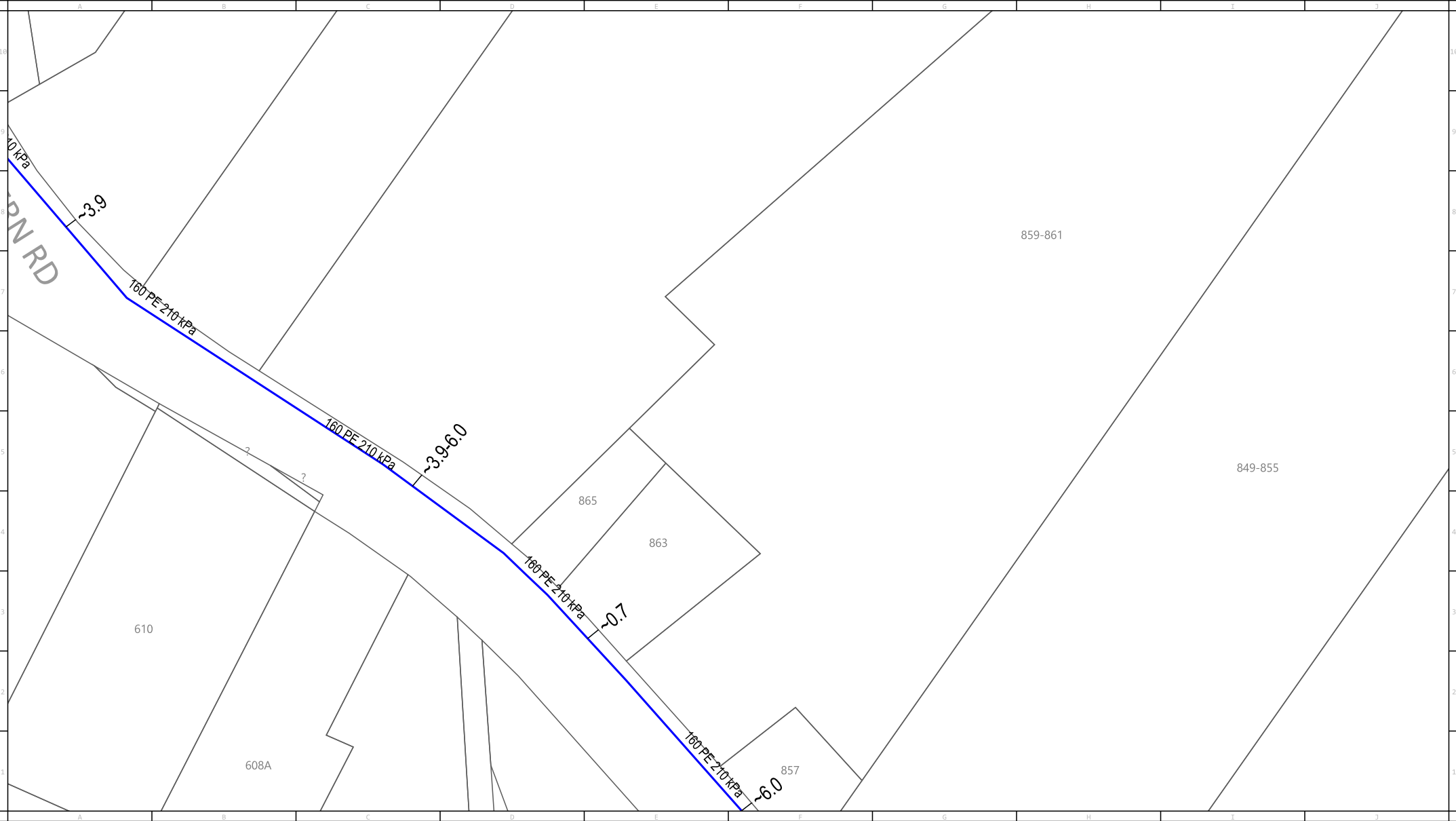
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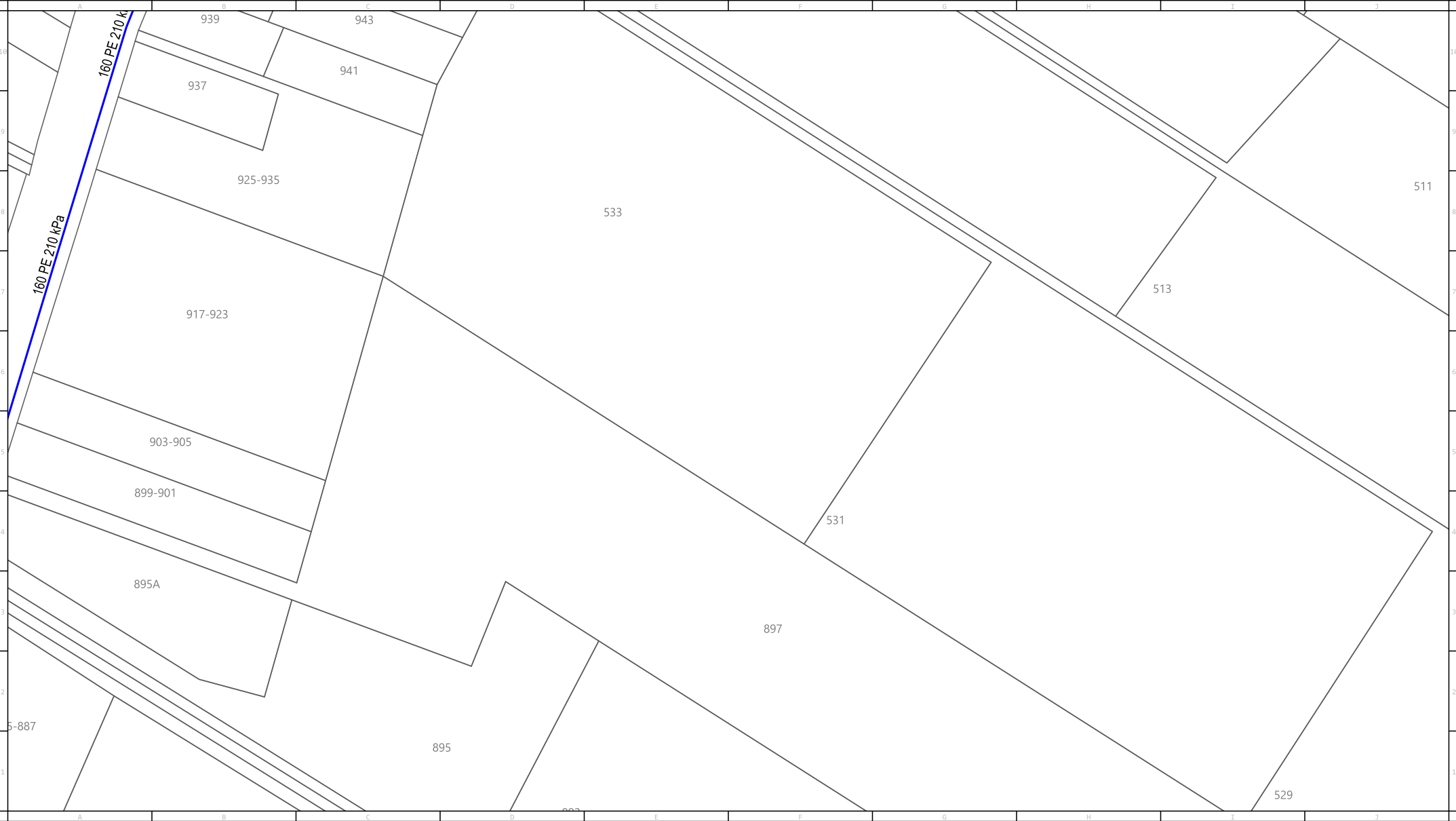
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**DBYD Job No:** 30267455

0m 10m 20m 30m 40m 50m 60m 70m 80m

**WARNING:**This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.





For legend details, please refer to the Coversheet attachment provided as part of this DBYD response.



Scale:1:2000

**Issue Date:** 09/08/2021

**DBYD Seq No:** 201553350

**DBYD Job No:** 30267455

0m 10m 20m 30m 40m 50m 60m 70m 80m

**WARNING:**This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.



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Sequence Number: 201553343

Date Generated: 09/08/2021



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





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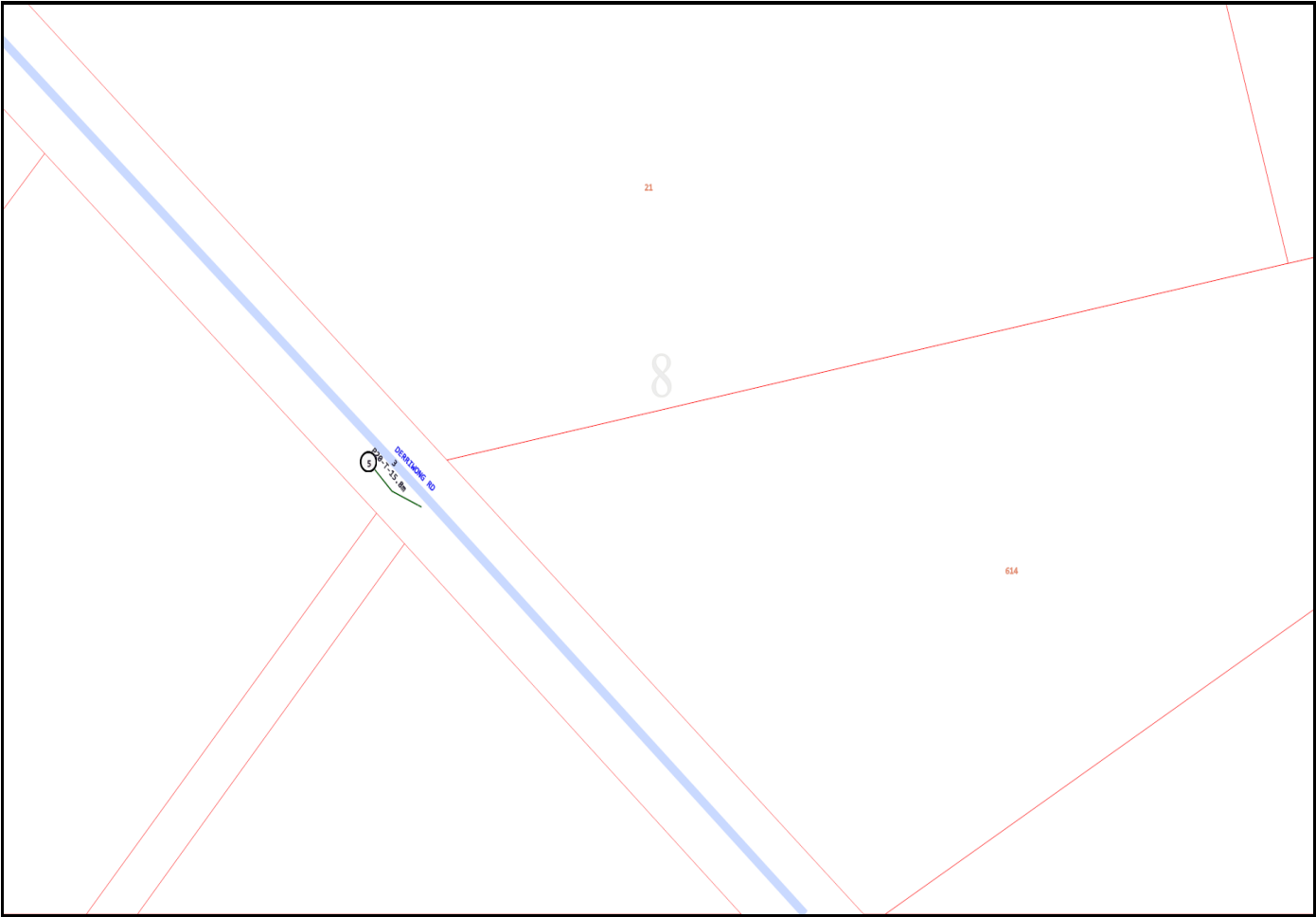
Sequence Number: 201553343

Date Generated: 09/08/2021

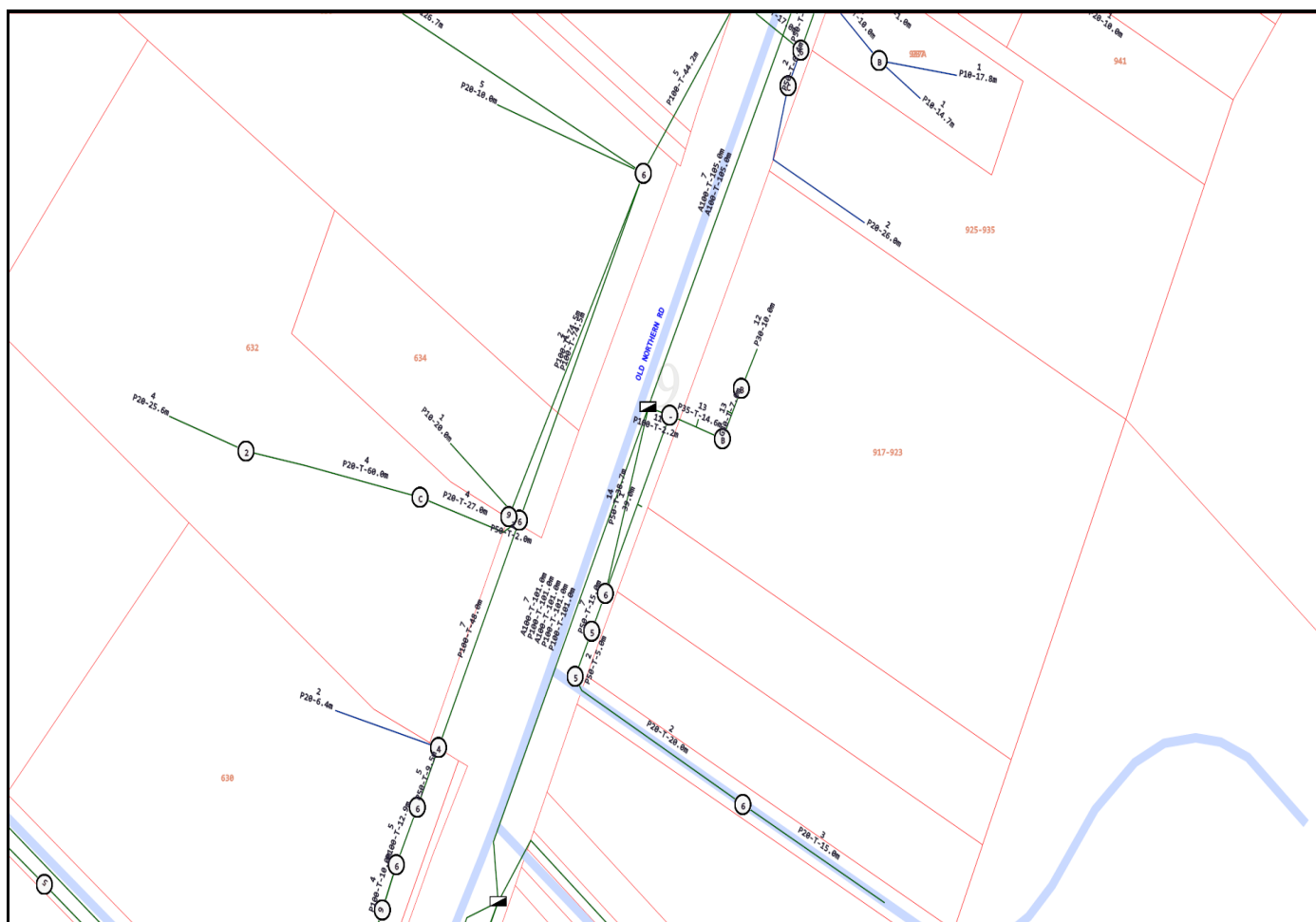


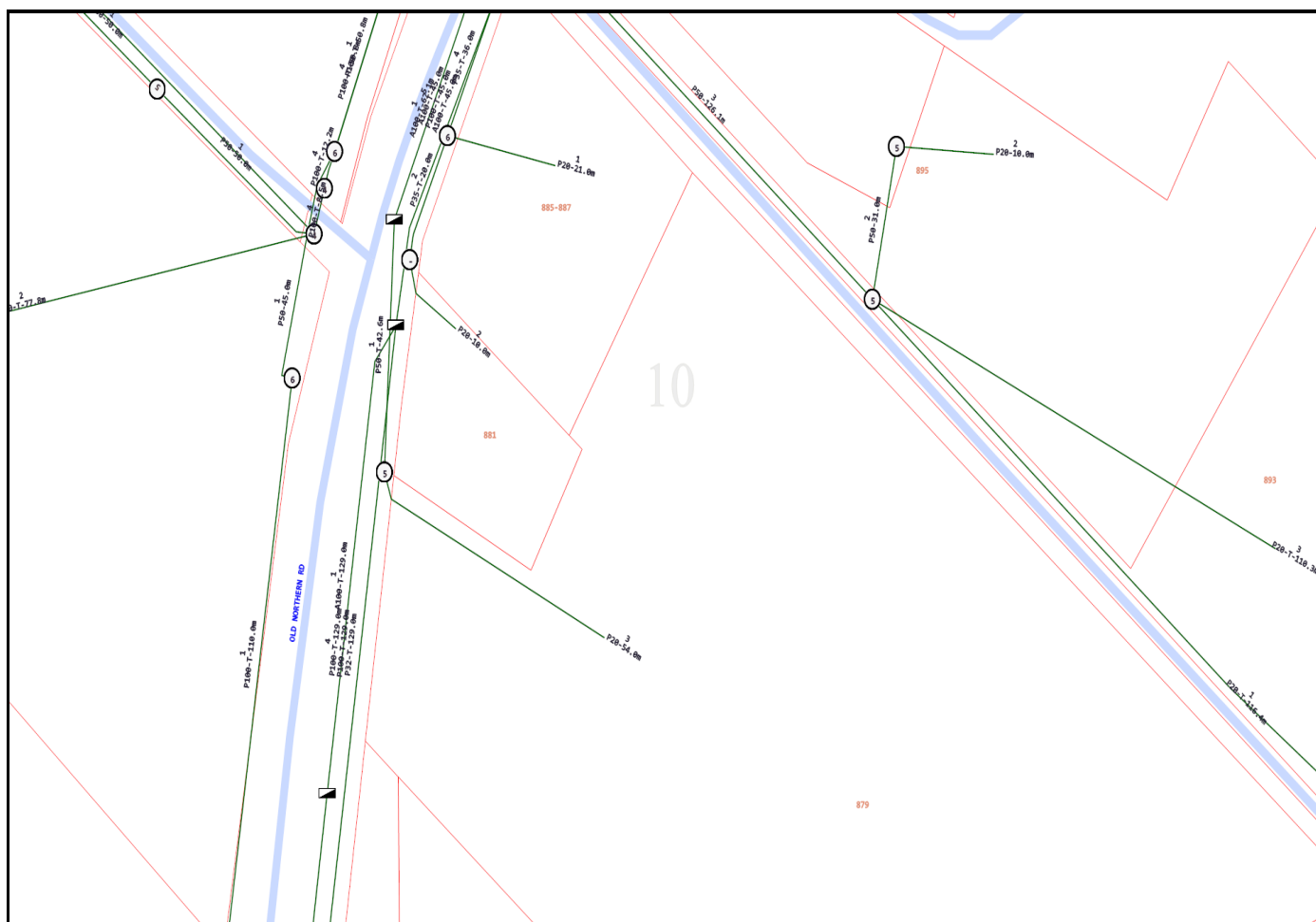
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Email: [Fibre.Locations@optus.net.au](mailto:Fibre.Locations@optus.net.au)  
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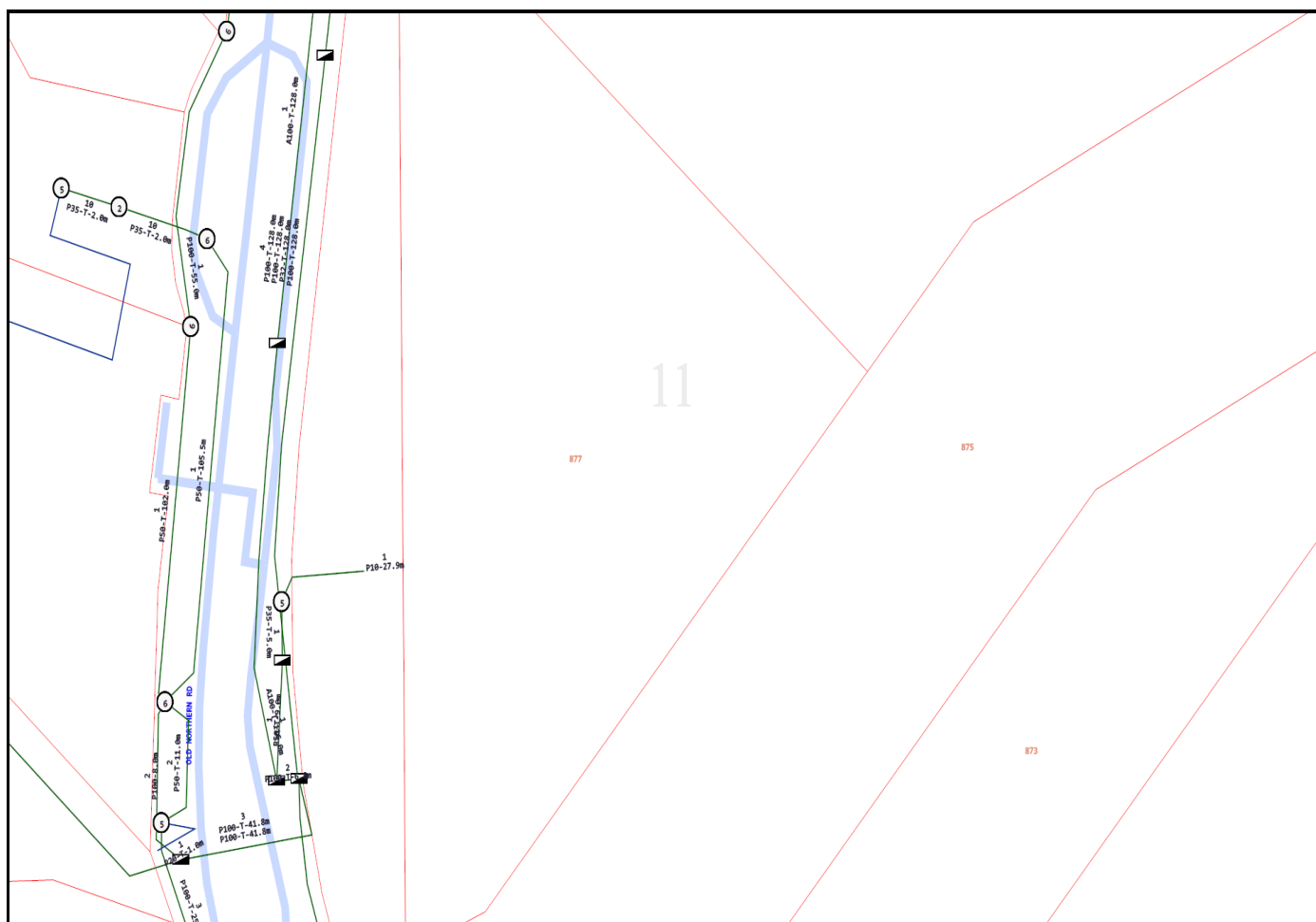


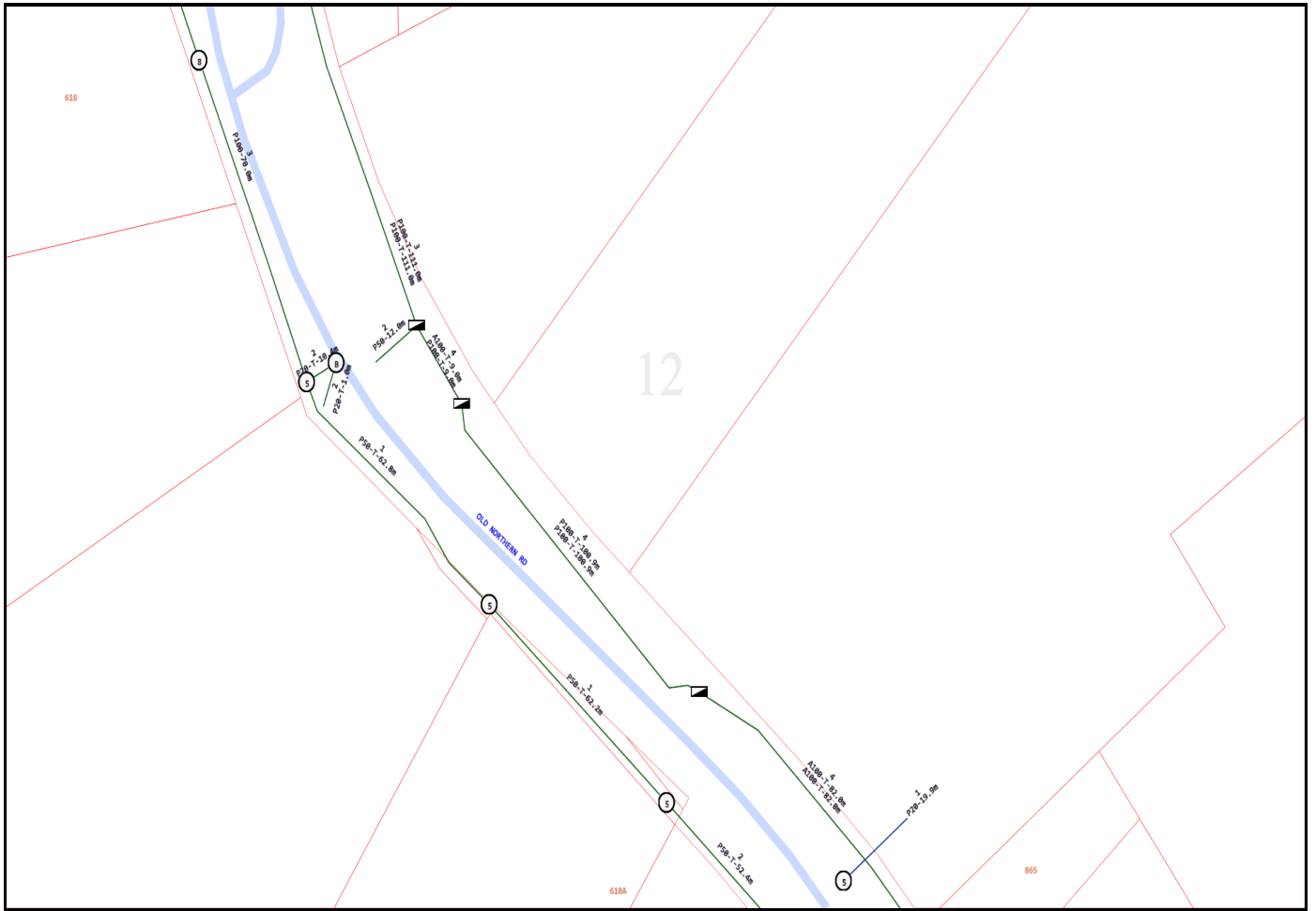








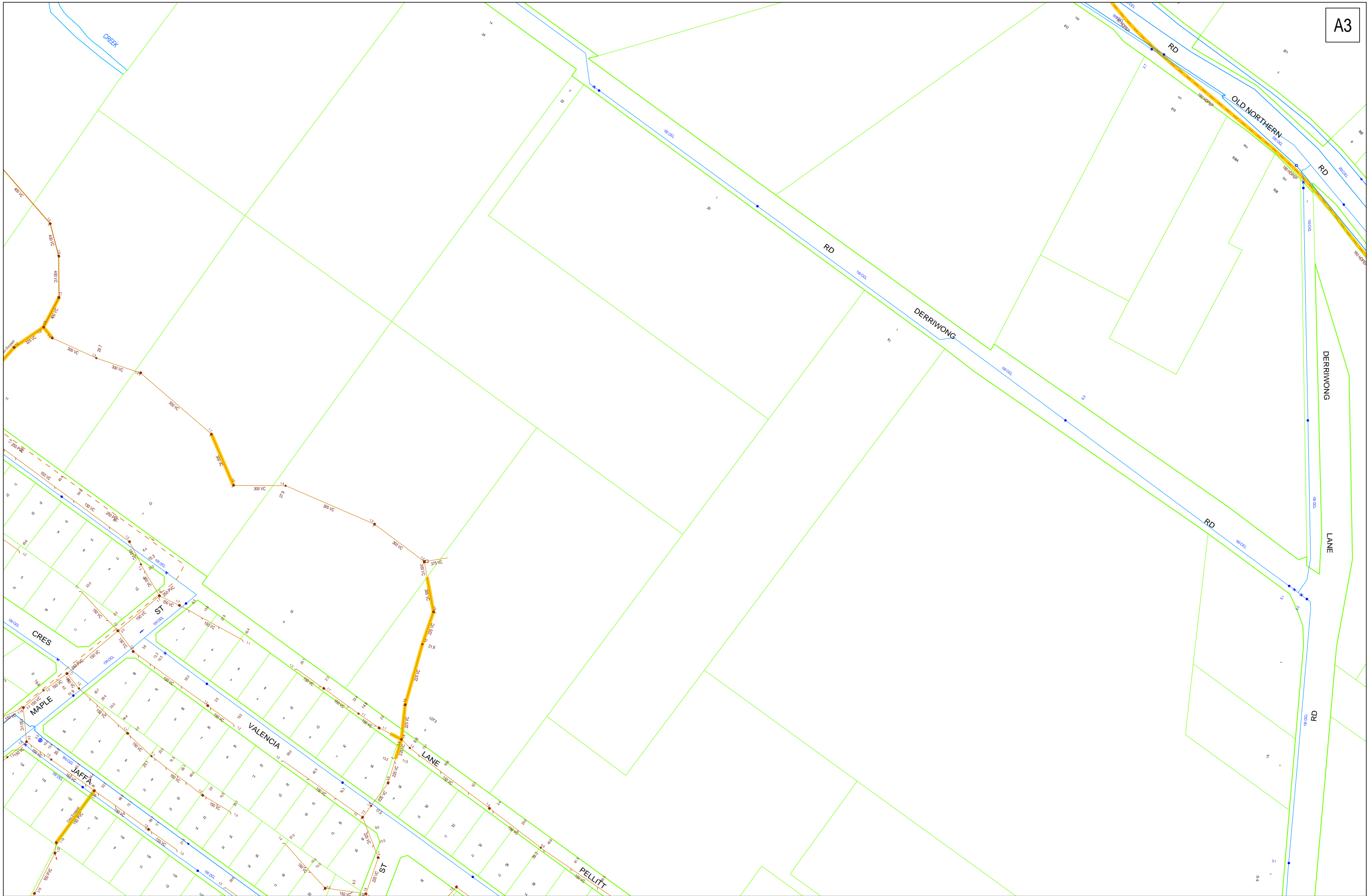


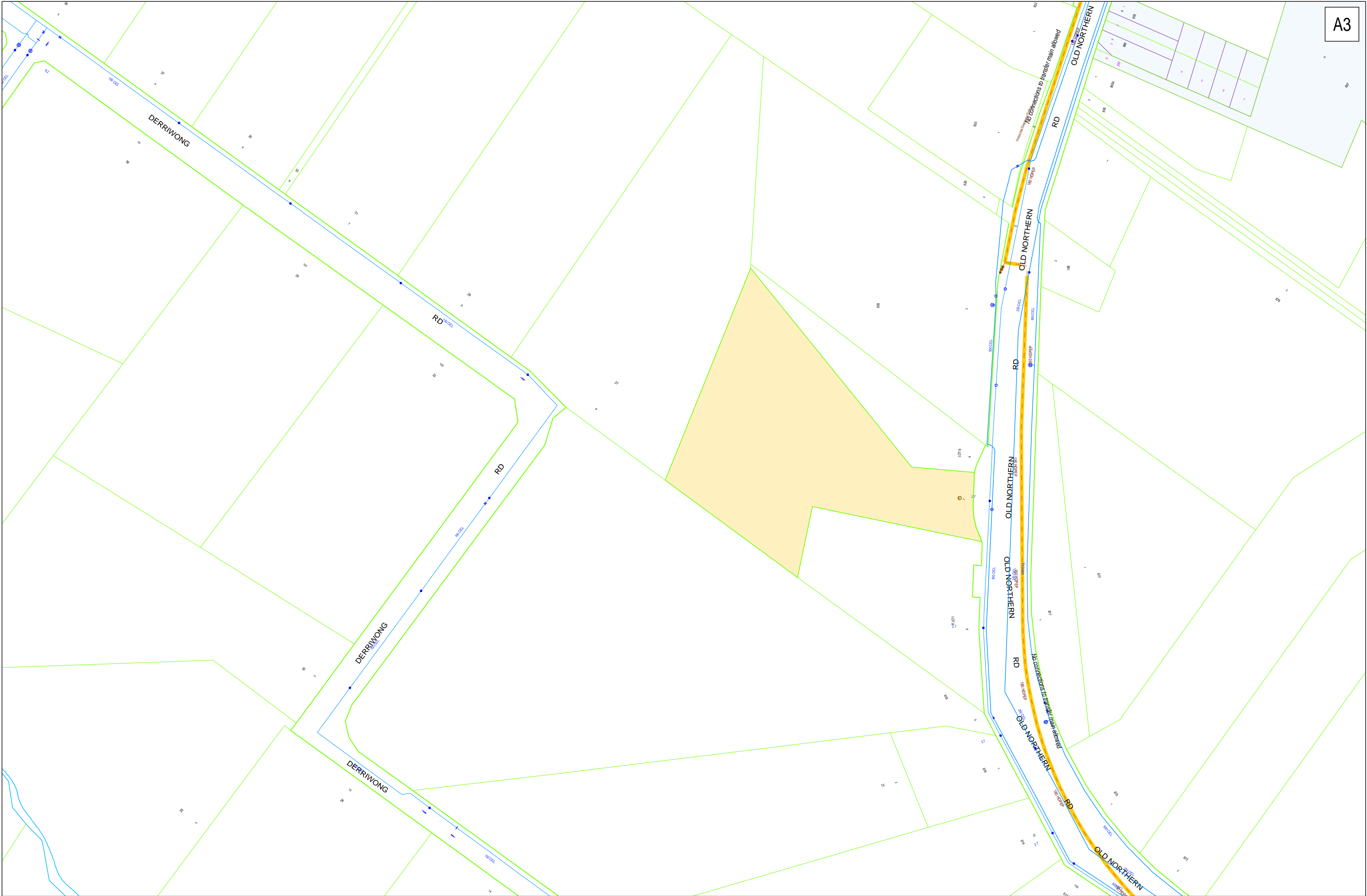


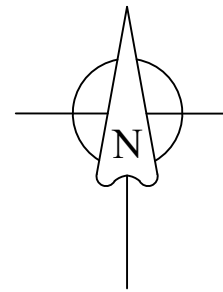
## Emergency Contacts

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



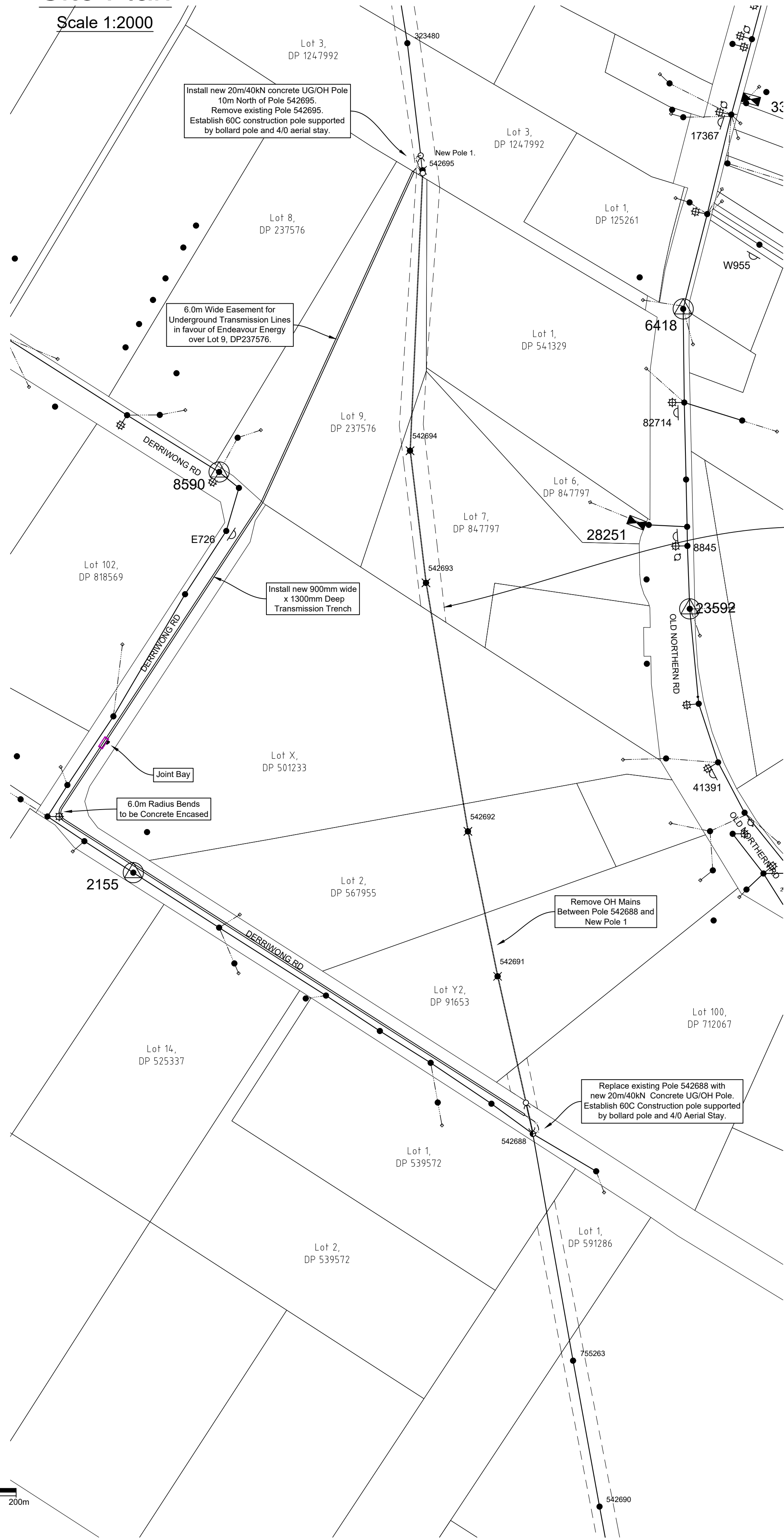






# Site Plan

Scale 1:2000



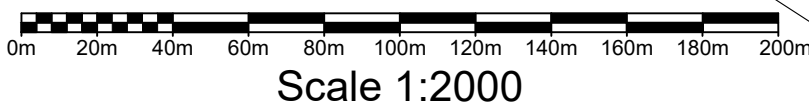
Existing Easement for Overhead Power Lines within

- Lot 1, DP 541329;
- Lot 9, DP 237576;
- Lot 7, DP 847797;
- Lot X, DP 501233;
- Lot 2, DP 567955;
- Lot Y2, DP 91653;
- Lot 100, DP 712067

where overhead mains have been removed will be released in accordance with Endeavour Energy policy 9.2.4 - Network Easement Release.

## LEGEND

- Existing Overhead Mains
- Remove Existing Overhead Mains
- Existing Underground Cables,
- Existing Conduits (Ducts),
- Proposed New Conduits (Ducts),
- Proposed New Pole,
- Existing Pole,
- Existing Pole to be Replaced,
- Existing Pole to be Removed,
- Proposed New Aerial Stay,
- Existing Streetlight Lantern,
- Existing Padmount Substation,
- Existing Pole Substation,
- Under Slung Links (USL) - N/O
- Customer Connection Point (CCP),

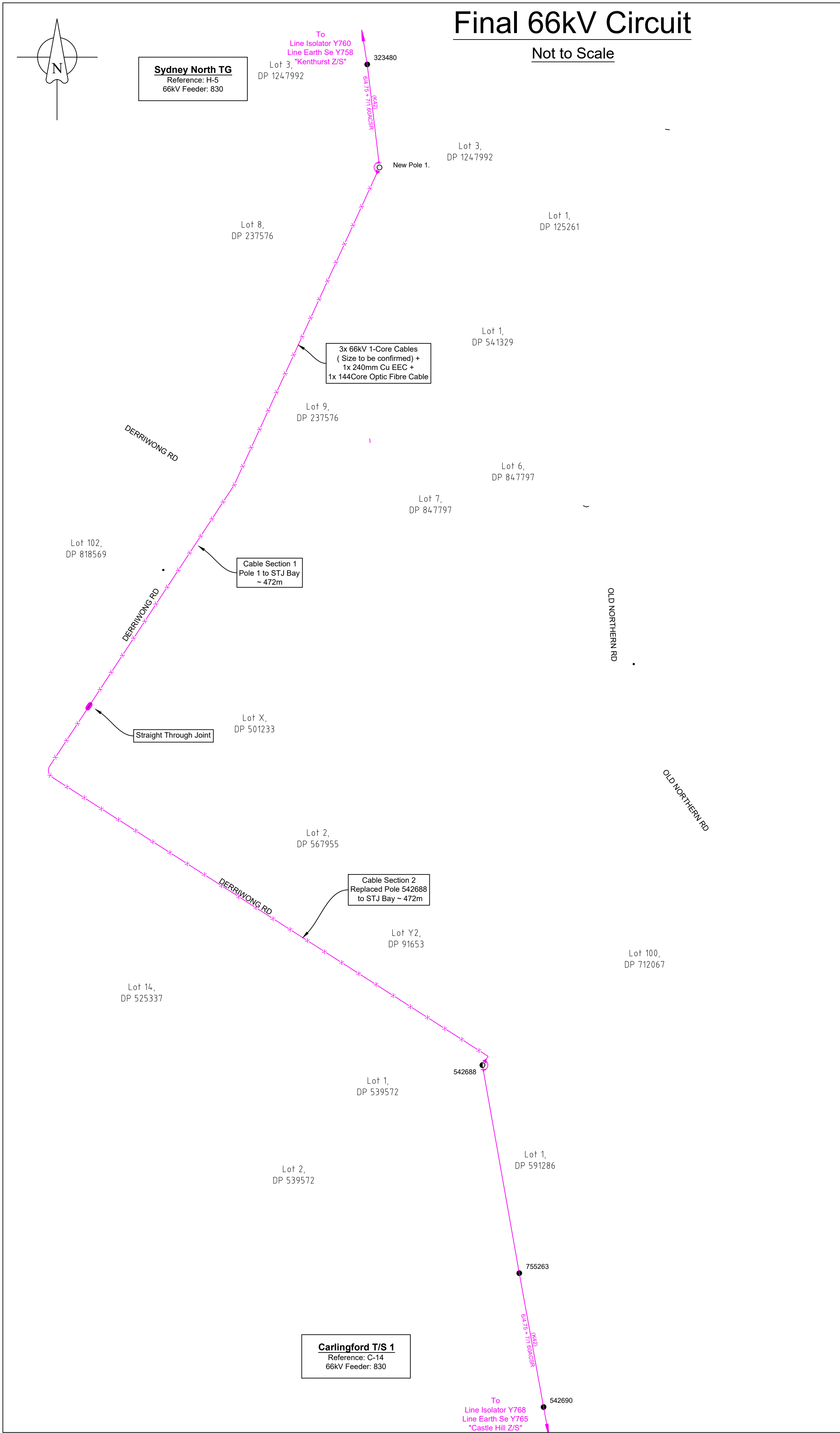


Scale 1:2000

Cadastre: © Land and Property Information 2016

# Final 66kV Circuit

Not to Scale



Sydney North TG  
Reference: H-5  
66kV Feeder: 830

To  
Line Isolator Y760  
Line Earth Se Y758  
"Kenthurst Z/S"

Cable Section 1  
Pole 1 to STJ Bay  
~ 472m

Cable Section 2  
Replaced Pole 542688  
to STJ Bay ~ 472m

Carlingford T/S 1  
Reference: C-14  
66kV Feeder: 830

To  
Line Isolator Y768  
Line Earth Se Y765  
"Castle Hill Z/S"

  
**POWER LINE DESIGN PTY LTD**  
PO BOX 338 Mittagong NSW 2575  
Ph (02) 4872 1920 Fax (02) 4872 1240  
Accredited Designer Number 2468 / ABN: 33107 551 846

The preparation of this design has been undertaken giving due consideration to the existing services. The project constructor is wholly responsible for verify the exact location of existing services and permanent survey marks prior to commencing construction. No responsibility or liability will be accepted by the designer of this project for damage to existing services as a result of this design.

PLD Ref: XXXX

TEMPLATE VERSION No. 5.0

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## Reference Drawings

## Work Orders

## CAMS File No.

## AM Project No.

## General

## Overhead

## Underground

## Substations

## EE Depot

## EE Region

## HV OP Diagram

## Local Government Area

## The Hills Shire

## ARP4941

## Kings Park

## Northern

## Sydney North

## Original Scale

## 1:1000

## Drawn

## Michael.J.B

## Date

## 11-03-2022

## Ch'd

## Michael.J.B

## Design

## Michael.J.B

## DO NOT SCALE

## Dimensions in Meters

## Derriwong Road

## DURAL

## ARP4941

**66kV Asset Relocation Feeder 830**  
**(Overhead to Underground)**  
**Proposed Method of Asset Relocation**



A1

PMAR1

A

SHEET No 1 OF 1 SHEETS

AMENDMENTS  
ORIGINAL ISSUE  
DRAFT No. 01



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