

S4

SEARs Infrastructure Requirements Report

NEXTDC

Reference: P521243

Revision: E



Document control record

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Document control		aurecon				
Report title		SEARs Infrastructure Requirements Report				
Document code		Project number		P521243		
File path		Https://aurecongroup.sharepoint.com/sites/521243/5_WorkingFiles/Engineering/Site Infrastructure/SEARs Infrastructure Report - 1 Nov 23/S4 SEARs Infrastructure Report.docx				
Client		NEXTDC				
Client contact		James Cameron		Client reference		Technical Director
Rev	Date	Revision details/status	Author	Reviewer	Verifier (if required)	Approver
A	2023-12-20	Draft Issue	JC	SK		SS
B	2024-03-11	Final Issue for Adequacy Review	JC	SK		SS
C	2024-03-18	Updated Final Issue for Adequacy Review	JC	SK		SS
D	2024-04-19	Final Issue	JC	SK		BM
E	2024-06-14	Final Issue	JC	SK		BM
Current revision		E				

Approval			
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1 Preface

1.1 Executive Summary

This S4 SEARs Infrastructure Report has been prepared by Aurecon on behalf of NEXTDC Limited to accompany a detailed State Significant Development Application (SSDA) for the S4 data centre development at 16 Johnston Crescent, Horsley Park. The site is legally described as Lot 305 in Deposited Plan 1275011.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-63741210). This report concludes that the proposed data centre development is suitable and warrants approval subject to the implementation of the following mitigation measures.

- HV Substation designed by a certified ASP3 provider to Transgrid standards.
- Fuel tanks designed to comply with AS1940.
- Generator containers to be acoustically treated to limit noise during testing.
- Rainwater harvesting tanks and filtration to be implemented to supplement the site industrial water system.
- On-site fire water storage will be implemented to supplement the Sydney Water supply and ensure sufficient water is available for the fire suppression systems.

Following the implementation of the above mitigation measures, the remaining impacts are appropriate.

There is no construction impact on existing publicly or privately owned utilities within the subject site.

The proposed data centre is a mission-critical facility, and as such, it necessitates redundancy for its utility services, including electrical generation, water storage, and alternate routes for telecommunication conduits. The construction of the data centre will be carried out in stages to align with market demand.

The power supply arrangement will be from the new Lumea 330kV/33kV Substation. The substation is planned to be located within S4 site in the southeast corner. The substation will be fed from Transgrid's Sydney West Transmission Substation via 2 no. 330kV feeders, stepping voltages down to 33kV via 4 no. 330/33kV transformers, 4 independent 33kV busbars allow for dedicated 33kV supplies reticulated for N-1 redundancy to NEXTDC S4 in all development stages.

The 33kV electrical supply will be distributed throughout the buildings within the site via client's own electrical infrastructure. Main 33kV switchgears will be provided at each building for efficient controls and protections.

Backup electrical supply comprises low voltage 2MW and 3MW standby generators. Each generator will be accommodated in a containerised generator enclosure with noise attenuation. The fuel storage of each building is designed to comply with AS1940 and is sized to provide 48 hours of backup power.

Fire protection systems for the site include fire sprinkler (pre-action to Hyperscale Type buildings), fire hydrant, water mist (for the generators' enclosures), gas suppression (to retail data halls in Building A) and fire detection and alarm systems throughout. Each building will be provided with dedicated main fire panels and dedicated signals to the fire dispatch centre.

The fire suppression infrastructure including storage tanks, pumps and booster assemblies are centralized and will feed the whole site via ring mains.

The fire water demand for the site has been calculated using the most demanding fire event scenario. Currently, the fire suppression demand is accommodated by the full capacity of on-site storage tanks. Considering the use of Li-ion batteries, an augmented water supply has been taken into account. The fire protection strategy is pending review and approval by Fire and Rescue NSW (FRNSW).

The Telecommunications Pathways servicing the site consists of 4 main Points of Entry (PoE's), in four physically diverse locations to provide maximum separation between adjacent pathways. Each of these external pathways provide capacity for 24 x P100 Conduits to provide adequate capacity to service all NEXTDC S4 development stages. Internal communications pathways have 32 x P100 Conduits to provide pathways for all Lead-In and Intra-building communications cabling, particularly from the Building A which will host telecommunications carrier network equipment and site-wide Operations Technology Infrastructure to allow connectivity and monitoring across the site.

1.2 Abbreviations and Glossary

HV	High voltage (330 kV)
kV	Kilo Volt
kW	Kilo watts
LV	Low voltage (400 V)
MV	Medium voltage (33kV)
MVA	Mega Volt Ampere
MW	Mega Watt
UG	Underground
no.	Number of

2 Introduction

2.1 Purpose of this Report

This report has been prepared by Aurecon to accompany a detailed SSDA for the proposed S4 data centre development at 16 Johnston Crescent, Horsley Park (SSD-63741210).

The application seeks consent for construction and operation of a data centre development and includes site preparation works, bulk earthworks and infrastructure, and construction of the buildings, ancillary facilities, and associated site works.

The key features of the Proposal are summarised as follows:

- Site preparation works including bulk earthworks.
- Staged construction and operation of five data centre buildings comprising a total gross floor area (GFA) of 63,654m² including 52,916m² of technical data hall floor space and 10,738m² of ancillary office and innovation floor space, including ‘front of house’ meeting and function spaces, and a café.
- Associated and ancillary on-site facilities on-site parking for 200 cars, business identification signage (pylon and elevation signage), civil and stormwater works and 9,900m² of deep soil landscaping.
- Delivery of 232 megawatts of power, including a 330/33kV substation and 33kV switching stations, plus above ground diesel storage tanks and above ground water tanks for industrial water and fire water.

The Project will be delivered in three construction stages as follows:

- Stage 1 = Buildings A to C and substation
- Stage 2 = Building D
- Stage 3 = Building E

This report has been prepared in response to the requirements contained within the Secretary’s Environmental Assessment Requirements (SEARs) dated 27 October 2023 issued for the SSDA (SSD-63741210). Specifically, this report has been prepared to respond to the SEARS requirement issued below.

Table 2.1 SEARs Requirements

Item	Description of Requirement	Section Reference (this Report)
22. Infrastructure Requirements and Utilities	<p>In consultation with relevant service providers:</p> <ul style="list-style-type: none"> ■ assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site. ■ identify any infrastructure required on-site and off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained. ■ provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the development. 	<p>5. Existing Environment 6. Servicing Strategies 0. Assessment of Potential Construction Impacts 0. Assessment of Potential Operational Impacts</p>

This report will outline the technical impacts of the proposal on the existing public utilities within the proposal boundary and describes the proposed servicing strategy for the data centre. To satisfy the Secretary's Environmental Assessment Requirements (SEARs), this report contains the following information:

- Overview of existing utility services within the proposal boundary, including necessary protection measures.
- Estimated demand assessment for the proposed services.
- Description of infrastructure staging and delivery.
- Summary of any consultations undertaken with each service provider.
- Description of the proposed servicing strategy for each service.

2.2 The Site

The site is located at 16 Johnston Crescent, Horsley Park within the Fairfield Local Government Area (LGA). The site is legally described as Lot 305 in Deposited Plan 1275011.

An aerial photograph of the site is provided at Figure 2-1. The site comprises vacant land which has been cleared of vegetation and does not contain any existing built form structures. Bulk earthworks approved under DA-893-201 are currently underway on the site.

The site will be well serviced by infrastructure. The signalised intersection of Lenore Drive and Old Wallgrove Road at Eastern Creek is approximately 2 kilometres to the north, providing access to Wallgrove Road and the Westlink M7 Motorway to the east and Erskine Park Road and Mamre Road to the west. Each of these roads provides access to the M4 Motorway to the north and M5 Motorway to the south. A utilities and site services report will accompany the EIS.

The site is located approximately 35 kilometres west of the Sydney Central Business District (CBD), 17 kilometres west of the Parramatta CBD and 10 kilometres north-east of the future Western Sydney International (WSI) airport.

The site is within a developing employment precinct, including the ESR Horsley Logistics Park, Oakdale Central, Oakdale South and Horsley Park Employment Precinct. It is also close to other established and emerging employment-generating precincts, including Eastern Creek to the north, Huntingwood to the north-east, Wetherill Park and Mamre Road West to the north-west and Wetherill Park to the east.

Figure 2-1 Site Aerial Photograph



Source: Nearthmap (2023)

2.3 Detailed Project Description

The key components of the Project are listed in the following table.

Table 2.2 Project Details

Descriptor	Project Details
Project Area	The site has a total area of 8.206 hectares. The entire site will be disturbed by the Project.
Use and Activities	Data centre with ancillary office and innovation floor space and café
Project Summary	<ul style="list-style-type: none"> ■ Site preparation works including bulk earthworks. ■ Staged construction and operation of five data centre buildings comprising a total gross floor area (GFA) of 63,654m² including 52,916m² of technical data hall floor space and 10,738m² of ancillary office and innovation floor space, including 'front of house' meeting and function spaces, and a café. ■ Ancillary development including on-site parking for 200 cars, business identification signage (pylon and elevation signage), civil and stormwater works. ■ Delivery of 232 megawatts of power, including a 330kV substation and a 33kV switching station, plus above ground diesel storage tanks and above ground water tanks for industrial water and fire water.

Gross Floor Area	Total GFA of 63,654 m ² , broken down as follows: <ul style="list-style-type: none"> ■ Data halls/technical: 52,916 m² ■ Mission critical (MCX) office, innovation and admin floor space: 10,738m². ■ Total number of data houses: 34 data houses
Maximum Height	<ul style="list-style-type: none"> ■ Building A – 32 metres over three storeys ■ Buildings B, C, D and E – 39 metres over four storeys
Floor Space Ratio	0.78:1
Deep Soil Area	9,900 m ² (12.1% of site area)
Car Parking	200 car spaces including 6 DDA spaces and 10 EV spaces
Motorbike Parking	5 spaces
Bicycle Parking	24 spaces
Utilities	<p>Provision of required utilities:</p> <ul style="list-style-type: none"> ■ Building A Utilities including: <ul style="list-style-type: none"> - Above ground diesel storage tanks (10 x 25kL each) - Above ground water tanks for industrial water (4 x 170kL each) ■ Building B Utilities including: <ul style="list-style-type: none"> - Above ground diesel storage tanks (10 x 65kL each) - Above ground water tanks for industrial water (4 x 580kL each) ■ Building C Utilities including: <ul style="list-style-type: none"> - Above ground diesel storage tanks (10 x 65kL each) - Above ground water tanks for industrial water (4 x 580kL each) ■ Building D Utilities including: <ul style="list-style-type: none"> - Above ground diesel storage tanks (10 x 65kL each) - Above ground water tanks for industrial water (4 x 580kL each) ■ Building E Utilities including: <ul style="list-style-type: none"> - Above ground diesel storage tanks (14 x 65kL each) - Above ground water tanks for industrial water (6 x 580kL each) <p>Fire Water Storage Tanks:</p> <ul style="list-style-type: none"> ■ Above ground water tanks for fire water (6 x 340kL each) <p>Substation:</p> <ul style="list-style-type: none"> ■ On site 330kV substation plus 33kV switching station
Power Consumption	232 megawatts
Operations and Management	The facility would be constructed and operated by NEXTDC. The site would be operated on a 24-hour, 7 day a week basis.
Existing Services and Infrastructure	Existing services and infrastructures will be extended, adapted and augmented to meet the demands of the Project.

Staging/Phasing

There will be 3 construction stages:

- Stage 1 = Buildings A to C and Substation
- Stage 2 = Building D
- Stage 3 = Building E

3 Policy and Planning Context

This chapter presents the relevant regulation, legislation, and policy governing the management of public utilities as it relates to the proposal.

3.1 Legislative Context

3.1.1 Commonwealth Legislation

- Telecommunications Act 1997
- Security of Critical Infrastructure Act 2018

3.1.2 New South Wales Legislation

- State Environmental Planning Policy (Transport and Infrastructure) 2021
- Protection of the Environment Operations Act 1997
- Electricity Supply Act 1995
- Gas Supply Act 1996
- Water Management Act 2000

3.1.3 Guidelines

- Building over and adjacent to pipe assets, Sydney Water 2015
- Fire Safety guideline, access for fire brigade vehicles and firefighters, Fire and Rescue NSW (FRNSW) v05.01, November 2020

4 Methodology

This Chapter outlines the methodology used to define the baseline and undertake the environmental assessment of potential impacts of the proposal on public utilities including definition of the study area used as the basis of the assessment.

4.1 Study Area

The assessment area will be limited to the subject site (including site boundary) and the surrounding roads.

4.2 Method of Assessment

To address the project SEARs as well as any points raised by the public utilities, the following methodology was used.

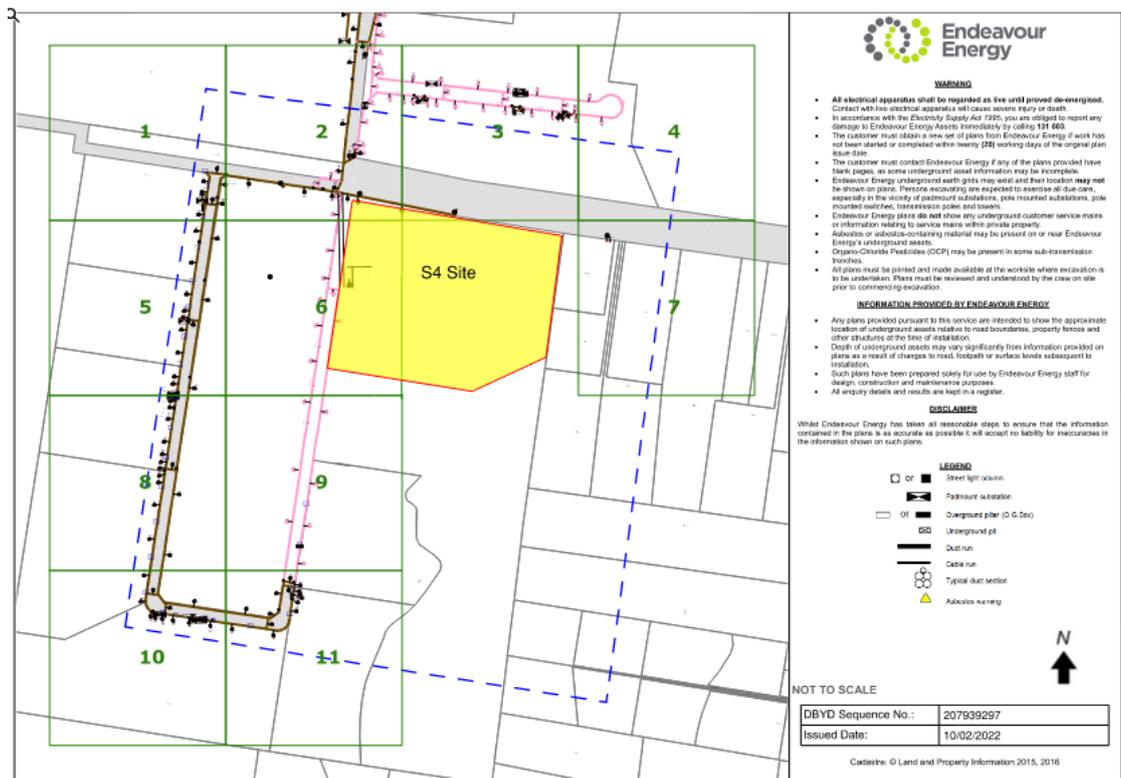
- Collate and review the latest Before You Dig Australia (BYDA) information, as well as any other publicly available utility data.
- Assess proposed site layout against any public utility infrastructure within the proposal boundary and identify any necessary diversion or protection works.
- Undertake demand assessments for each core utility serving the data centre.
- Consultation with relevant authorities to determine off site utility upgrades.
- Develop a site plan considering the key on-site utility infrastructure required to service the data centre, including identifying potential easements and rights of way.

5 Existing Environment

5.1 Electrical Services

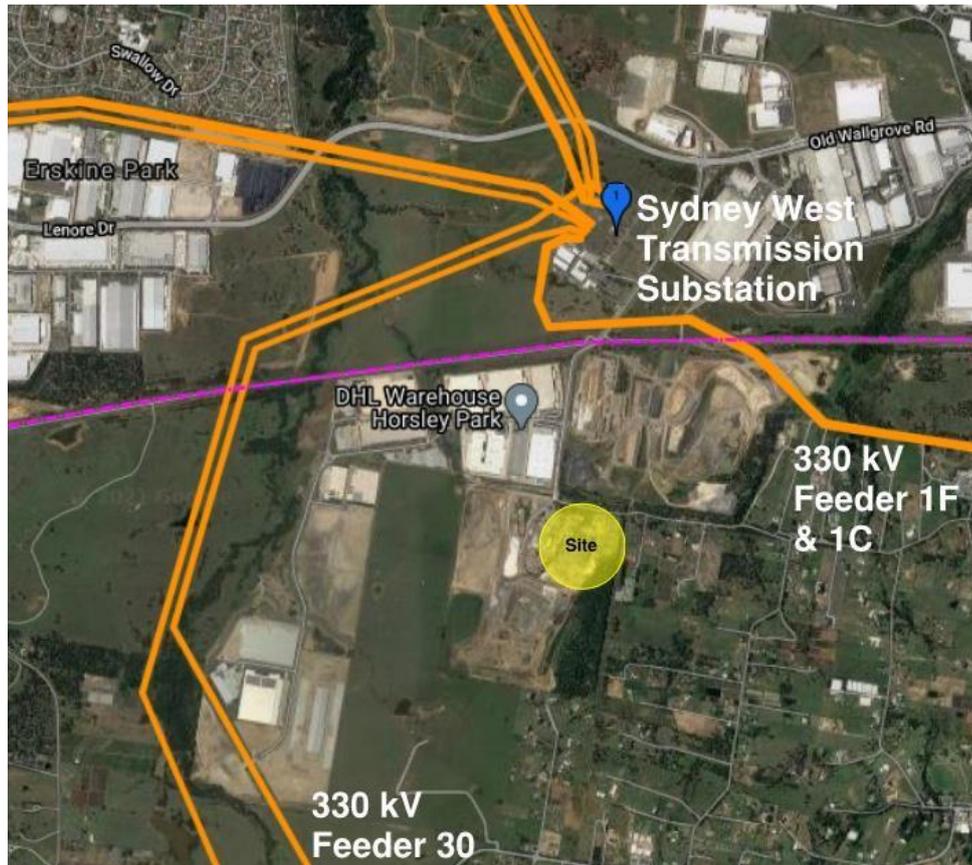
Within the subject site boundary, there are no existing electrical services present based on DBYD information from Endeavour Energy (refer to screenshot below).

Figure 5-1 Coversheet of Endeavour Energy DBYD plan showing local assets



The site is located approximately 2km south of the Sydney West 330kV transmission substation. The surrounding Transgrid network operates at 330kV with outgoing feeders from the transmission substation. HV infrastructure is shown in figure below.

Figure 5-2 Aerial view showing HV Transmission Networks in proximity to the site



Transgrid transmission network (Source: S4 Site Appraisal Due Diligence Capacity Feasibility and Risk Report Rev 2, 15 Jun 21)

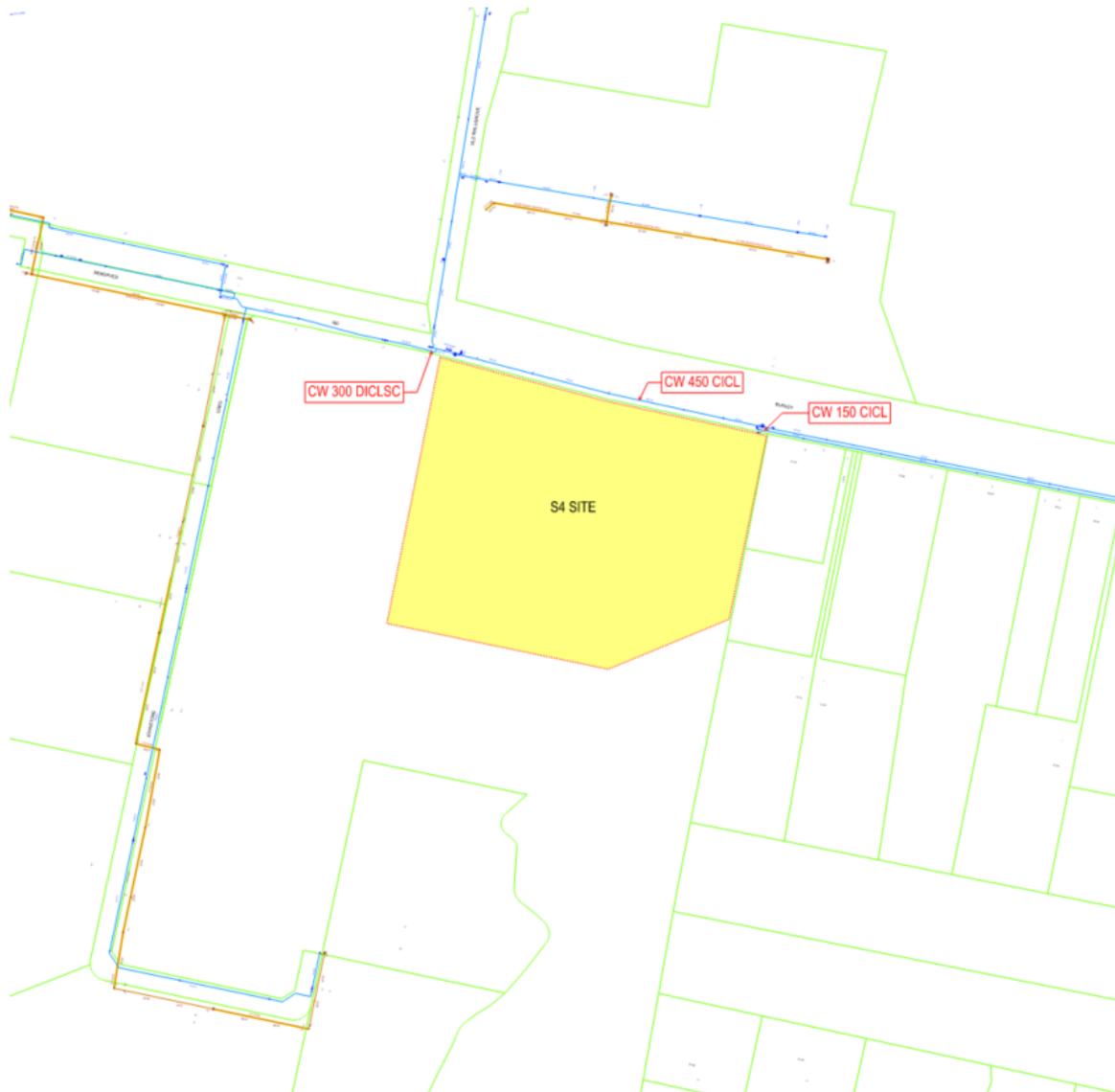
- Feeder 30 is Overhead line from Sydney West to Liverpool Transmission Substation
- Feeder 1F & 1C Overhead line from Sydney West to Holroyd Transmission Substation
- Sydney West Transmission Substation is Bulk Supply point for Endeavour Energy.

5.2 Water Services – Sydney Water

Note: Refer to Sydney Water report

Based on DBYD information from Sydney Water, there is a 450mm DICL potable water trunk main along the Burley Road and a 150 CICI potable water main at the North-West corner of the project site. The image below indicates the location of the existing Sydney Water asset.

Figure 5-3 Water assets in proximity to the site

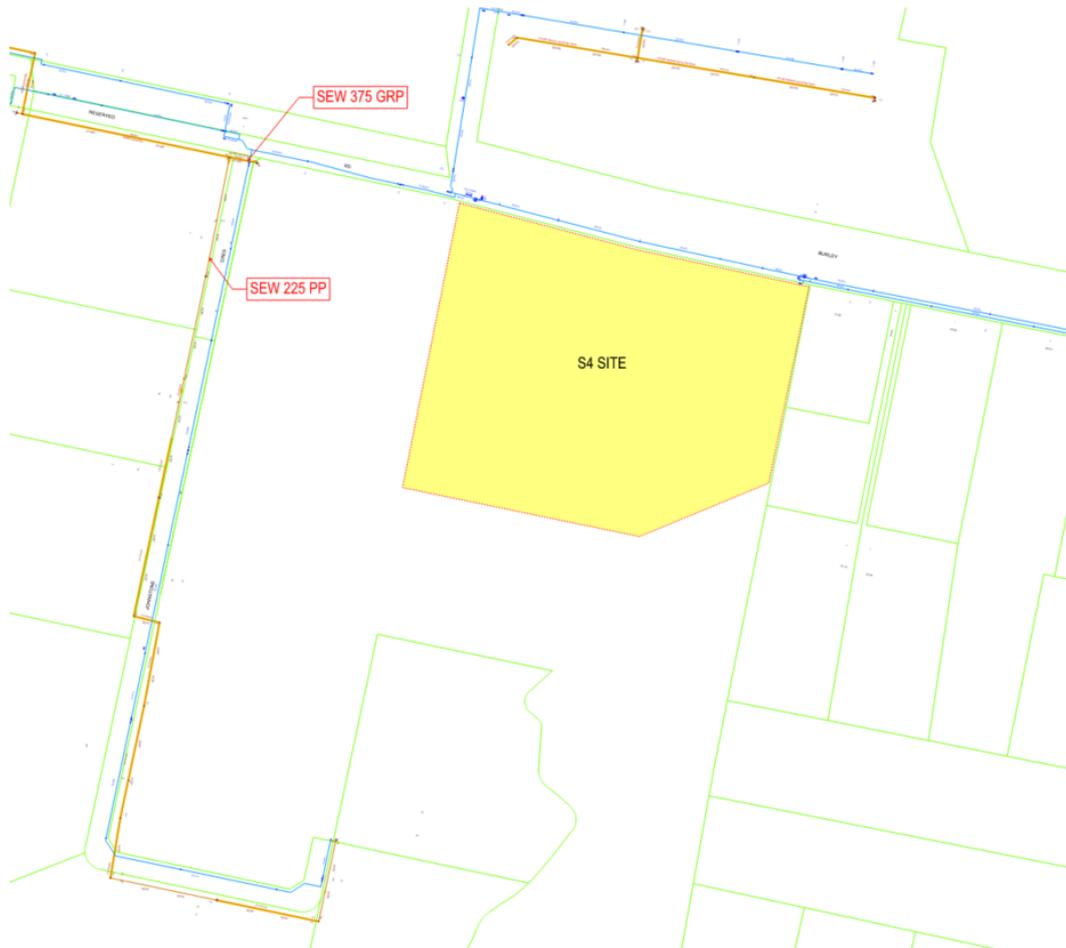


5.3 Sewer Services – Sydney Water

Note: Refer to Sydney Water Report

Based on DBYD information from Sydney Water, there are no existing sewer main within the subject site boundary. There is a 375mm GRP existing gravity sewer main located near Reserved Road approximately 350m away from the project site boundary. The image below indicates the existing Sydney Water Sewer asset.

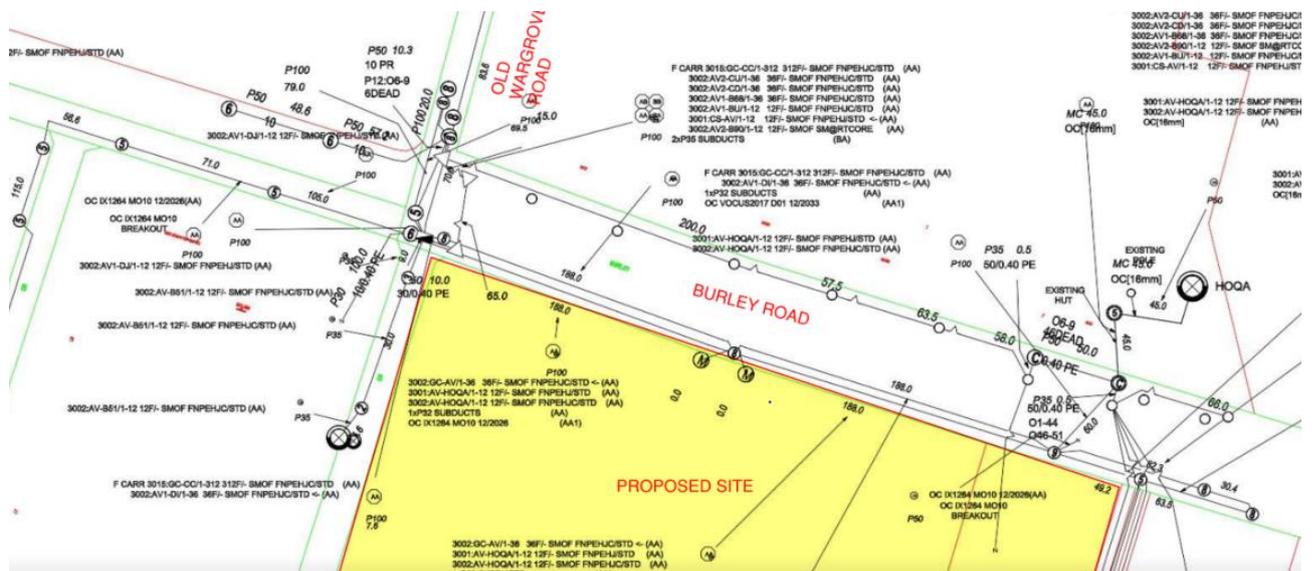
Figure 5-4 Sewer Assets in proximity to the site



5.4 Communications Services

There are currently several connections into the subject site from Telstra from the North and Wester Property Boundaries. At the intersection of Burley Road and Old Wallgrove Road there is a manhole present servicing the surrounding businesses as shown below.

Figure 5-5 - Telstra BYDA Plan



Additionally, directly adjacent to the site there is current some connectivity on the Northern Site Boundary at the intersection of Old Wallgrove Road and Burley Road from the following providers:

- Optus
- Vocus
- TPG

It is not expected that the above existing infrastructure would have sufficient capacity to service the proposed development and would be expected that expansion of the existing in-ground infrastructure would be required by carrier that would connect to the proposed site.

5.5 Gas Services

DBYD information received from Jemena shows a high-pressure gas pipeline (1050kPa) running along the Northern boundary of the site (future Burley Road extension). The pipe is approximately 3m away from the site boundary. The site does not propose to utilise gas and as such will not be connecting to the gas main

5.6 Existing Stormwater Assets

There are no existing stormwater assets identified on site.

5.7 Traffic Signals

Refer to the Traffic Report for information regarding Traffic Signals.

5.8 Consented Development

The development for this site is related to Lot 305 of DP1275011. A future development is planned for Lot 306 and will be subject to a separate SSDA at the time of development. The figure below shows the Lot Boundaries.

Figure 5-6 Lot Boundary for the Consented Development



6 Servicing Strategies

This chapter provides details on the service requirements and outlines the proposed servicing strategies for the development.

The proposed development is a data centre which necessitates a controlled system where temperature environment can be optimised to ensure the safe functioning of the highly loaded equipment within data halls. Consequently, there is a high demand for both electrical and water resources, with fluctuations throughout the year depending on ambient temperatures. Additionally, the substantial telecommunication infrastructure including cable pulling pits and underground conduits is required for effective operation of such development.

These additional demands can be met by either upgrading the existing utility infrastructure or adding dedicated infrastructure connected to the main utility source. Further details are described in the next sections.

Major utility infrastructure required to serve the data centre includes:

- HV switching station & control room
- Back-up electrical generators
- Potable and industrial water tanks
- Fire water storage tanks and pumps
- Connection points to estate and precinct infrastructure

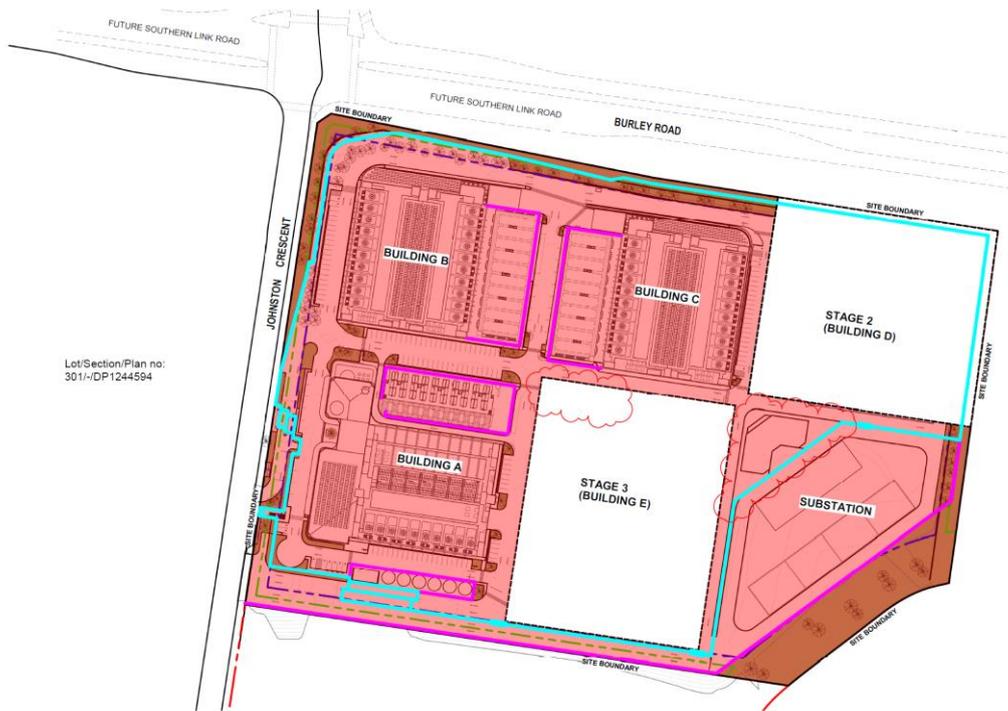
The construction of the proposed development is proposed in multiple phases and stages. The exact ramping programme is to be confirmed but anticipated to be in the order of 10 to 15 years. With the number of data halls increasing over a period, the increase in utility demand will follow a similar ramping profile. The assessment and information presented in the following sections reflect the final arrangement however information is presented on key intermediate steps. Table 4 presents a high-level construction staging of the data centre.

6.1 Electrical Infrastructure and Back-Up Generators

The new development is proposed to be supplied by a new Lumea 330kV/33kV Substation. The power supply will be distributed within the site via the client's own underground electrical infrastructure.

The development comprises five buildings, three of which are planned to be built in Stage 1 while the remaining two buildings shall be built in Stages 2 and 3 as shown in the overall site plan below. The substation will be built as part of Stage 1 work, and will be rated to eventually supply up to 500MVA at N-1 redundancy.

Figure 6-1 Site Plan Showing the Construction Phasing



The data centre is a mission critical facility and therefore requires back up generation. Each building will be provided with diesel-generators and uninterrupted power supply (UPS) systems. All generators will be housed in prefabricated, acoustic rated, generator enclosures with belly tanks to store diesel. All the generator enclosures will be free-standing on the external gantry area. UPSs are proposed to be accommodated within electrical room and UPS batteries are separately located in dedicated battery rooms. Details of the proposed backup generation system is described in Section 6.1.5.

6.1.1 Demand Estimate

The power supply requirements of the Facility are dictated by the power loads follows:

- Stage 1 Day 1: 14.9 MVA from end-2024 (Permanent from Transgrid)
- Stage 1: 122.1 MVA at N-1 redundancy from mid-2025 (Permanent from Transgrid)
- Stage 2: 175.8 MVA at N-1 redundancy from mid-2026 (Permanent from Transgrid)
- Stage 3: 247.3 MVA at N-1 redundancy from mid-2027 (Permanent from Transgrid)

The preliminary maximum demand calculation is provided in the table below.

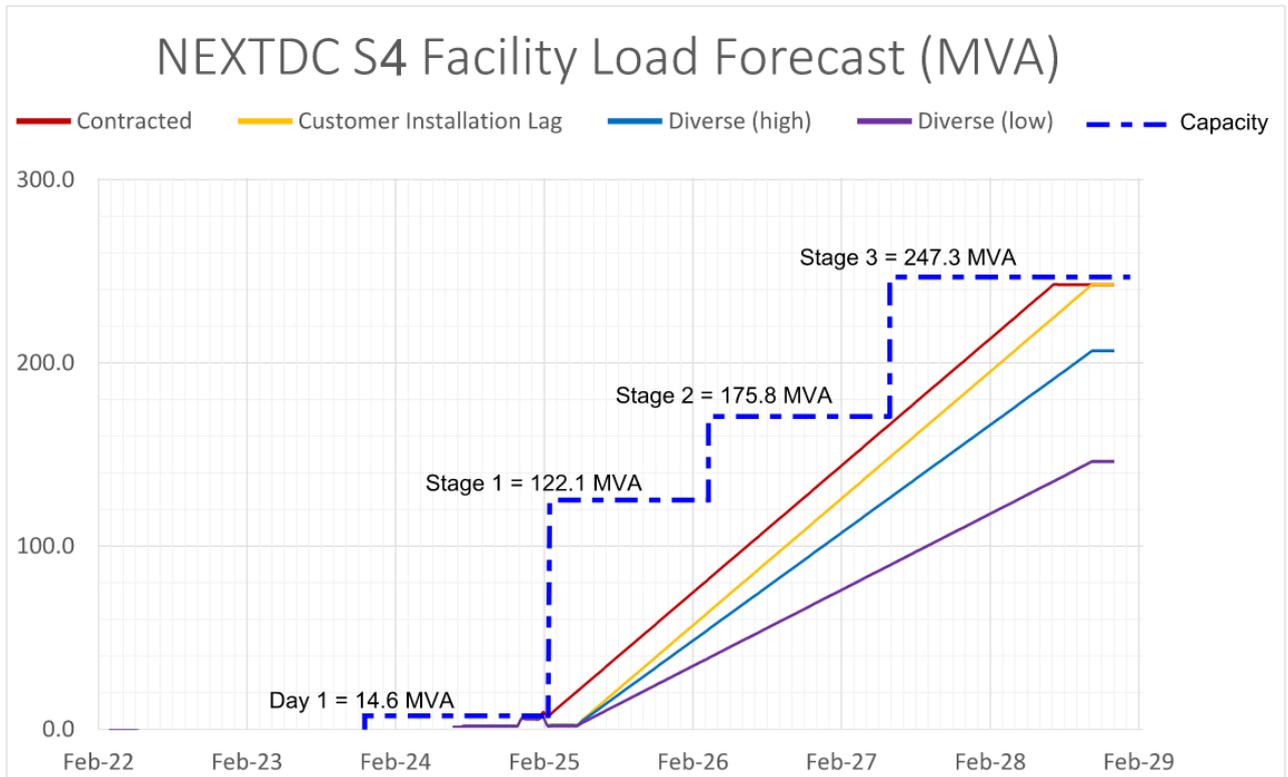
Table 6.1 Preliminary Site Electrical Maximum Demand Calculation

		IT (MW)	Battery Charger (%)	Battery Charger Load (MW)	Peak PUE	MW	PF	MV A	Accumulated MVA
Stage 1	Building A	10	8	0.5	1.35	14	0.96	14.9	14.9
	Building B	36	8	1.8	1.35	50.4	0.96	53.6	68.5
	Building C	36	8	1.8	1.35	50.4	0.96	53.6	122.1
Stage 2	Building D	36	8	1.8	1.35	50.4	0.96	53.6	175.8
Stage 3	Building E	48	8	2.4	1.35	67.2	0.96	71.5	247.3
	Total	166				232.4			

It is anticipated that Stage 1 supply will be connected to Transgrid's 330kV/33kV transformer.

An indicative facility load forecast is provided in figure below.

Table 6.2 NEXTDC S4 Indicative Load Ramp Curve



The figure above shows the forecast load in red solid line with estimated actual loads in different scenarios in various solid lines. The development capacity is provided in dash-dotted blue line. The dates for permanent supply and the substation construction are a rough estimate and shown as a guideline only. The actual date is subject to the final construction programme, data centre business plan and confirmation from relevant electricity authorities.

6.1.2 On Site Electrical Infrastructure

The electrical infrastructure for the proposed development is divided into three stages namely Stage 1, Stage 2, and Stage 3. A brief description of each step is described below:

- Stage 1: Permanent power supply.
 - A power supply from two (2) 330kV underground cables is anticipated to be connected to the new 330/33kV substation
 - The 330/33kV substation will be fitted with two (2) of 330kV/33kV transformers. Power supplies will be distributed within the development via NEXTDC's owned 33kV main switching station and 33kV underground electrical distribution system to the various buildings from a 33kV switching station.
- Stage 2: Permanent power supply from Lumea 330kV/33kV substation
 - The 330/33kV substation will comprise two (2) 330kV/33kV transformers
 - Stage 2 supply is sufficient to supply the maximum demand of Building A, B and C.
 - 33kV switchgear will be installed as dedicated switchboards within the 33kV HV Switchgear building (nominated as Building X) providing full flexibility on control as well as enhanced electrical protection.
- Stage 3: Permanent power supply from Lumea 330kV/33kV substation
 - The 330/33kV substation will comprise three (3) 330kV/33kV transformers
 - Stage 3 supply will supply all buildings in Phase 1 namely Building A, B, C, D, and E.
 - Stage 3 power supply may supply other development in the proximity.
 - 33kV switchgear will be installed as dedicated switchboards within the 33kV HV Switchgear building (nominated as Building X) providing full flexibility on control as well as enhanced electrical protection.

The new 330/33kV substation will be owned and operated by Lumea/Transgrid. The equipment in the 330/33kV substation includes:

- 330kV gas insulated switchgear (GIS). The 330kV GIS will be accommodated in a dedicated building.
- Up to four (4) 330kV/33kV power transformers.
- Four (4) 33kV/0.415kV auxiliary/earthing transformers to supply the electrical demands of the substation harmonic filters, earthing transformers & neutral earth resistances may be required subject to system studies.
- Protection and control equipment (including batteries and battery chargers) collocated within a dedicated space.

The coordination with Lumea has been initiated (connection enquiry initiated in November 2020) in relation to asset ownership & demarcation, property and easement. The plan is for Lumea/Transgrid to:

- Design, construct, own and operate the 330kV/33kV Substation, demarcation of asset being the 33kV terminals of NEXTDC's 33kV Switching Station (i.e. end of 33kV cables feeding from Lumea's 330/33kV transformers).
- Lumea/Transgrid will likely be provided an easement for 330kV/33kV Substation access, 330kV cable route, and the 330/33kV Substation Site.

The Connection Process Agreement (CPA) has been signed between NEXTDC and Lumea, and the two (2) organisations are in the process of formulating a Connection Agreement. Lumea are in the process of undertaking due diligence before commencing the detailed design.

The infrastructure in the new 33kV switching station adjacent to the 330/33kV substation will be owned and operated by NEXTDC. The equipment in the system includes:

- Up to four (4) 33kV switchboards for distribution to the various building 33kV switching stations
- Two (2) 33kV/0.415kV indoor dry-type auxiliary transformers to supply the electrical demands of the switching station

- Protection and control equipment.
- Batteries and battery chargers.

6.1.3 Consultation

Consultation is currently being undertaken with the following stakeholders:

- Endeavour Energy
- Transgrid
- Lumea
- Environment Protection Authority (EPA)

The information in the table below summaries all consultation carried out. All the records are included as an Appendix.

Table 6.3 Stakeholder Consultation Summary

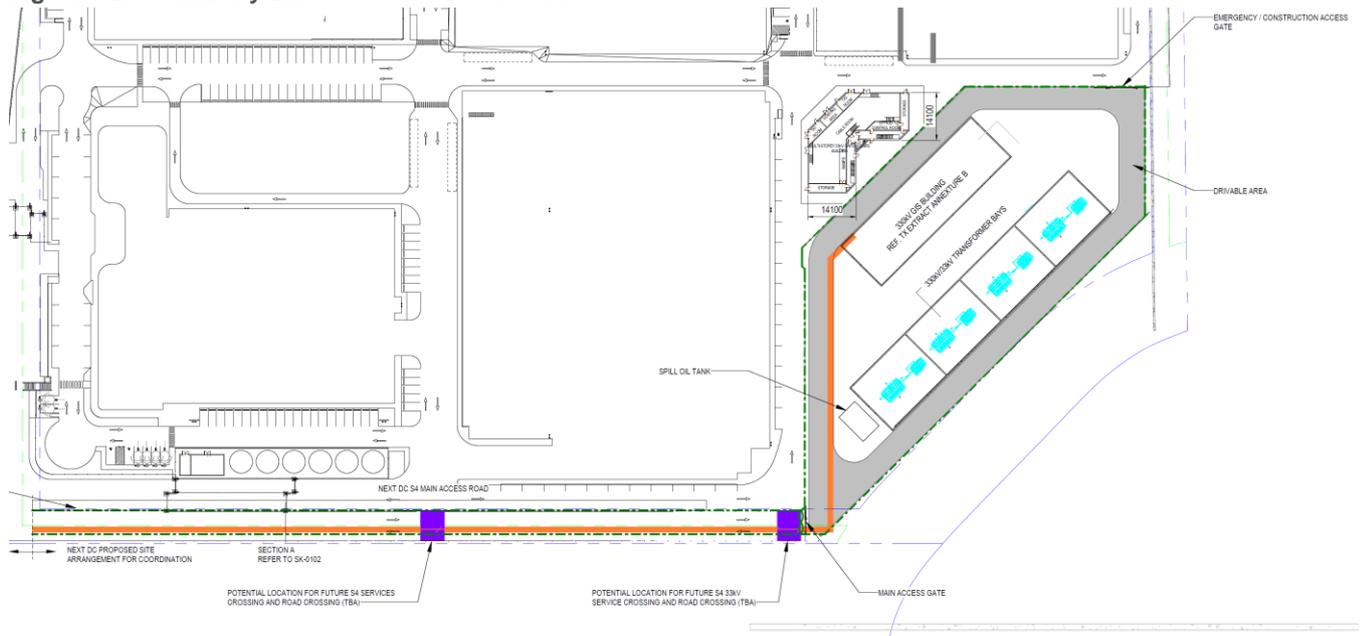
Stakeholders	Date	Outcomes/activities
Lumea & Transgrid	2023/11/22	<p>Consultation with Lumea on the NEXTDC planned property set up. Including land ownership, demarcation of asset, easement plan and conditions.</p> <p>Up to date site plans on 330kV feeder route and 330kV/33kV substation area with S4 site were shared with Lumea for comment.</p> <p>Lumea to interface with their internal property group to confirm acceptance of the proposed property set up & easement conditions.</p> <p>TransGrid's design team to perform initial assessment on substation spacial requirement.</p>
Lumea & Transgrid	2023/12/04	Email communications with Lumea around transformer delivery requirements for substation access.
Lumea & Transgrid	2024/02/13	Email communications discussing potentially changing the substation from DCA to DNA assets
Lumea & Transgrid	2024/02/26	Email communications around Transgrid's exclusion zone requirements.
Environment Protection Authority		Environment Protection Authority (EPA) provided further explanation of Schedule 1, Clause 17 of the POEO Act and provided with examples of recent data centre SSDA advices
Lumea & Transgrid	2024/05/15	Consultation with Lumea on design development
Lumea & Transgrid	2024/05/21	Consultation with Lumea on design development
Lumea & Transgrid	2024/06/13	Consultation with Lumea on design development – Interface coordination

6.1.4 Connection

The 330kV supply routes connecting the subject site to the TransGrid asset do not form part of the SSD and will be to a separate approval.

The 330/33kV Substation is planned to be located within the S4 site in the southeast corner, refer Figure 6-2 below. The substation will be fed from Transgrid Sydney West Transmission Substation via two (2) 330kV underground cables. It steps the 330kV voltage down to 33kV via up to four (4) of 330/33kV to the NEXTDC S4 buildings in all development stages. The power supplies shall then be reticulated to throughout the development via the customer's 33kV switching station and underground infrastructure.

Figure 6-2 Preliminary Lumea 330/33kV Site Plan



6.1.5 Back-Up Generators

The site will feature several containerised diesel generators to maintain supply to the mission critical facility. See table below for the breakdown of generators across each building on the site.

Table 6.4 Back-Up Generators on Site

		No. Generators	Accumulated No. Generators
Day 1	Building A	10	10
Day 2	Building B	20	30
	Building C	20	50
Day 3	Building D	20	70
	Building E	28	98

See *Backup Power Report* for further details.

6.2 Potable and Industrial Water

The Potable water supply will be connected to the Sydney Water infrastructure and be provided by dual Sydney Water connections. The supply will reticulate across the site and will services each building. Each building will have dual connections, with each building being metered. Each building will be provided with building dedicated water storage tanks that will supply the industrial water systems. These water supplies provide the top up to the industrial water storage tanks and pumps distribute the water to the cooling towers and the humidifiers. The water supplies for the tanks will be provided with individual water meters for monitoring. The building potable domestic supplies will include water metres for monitoring and will connect the domestic system and sanitary fixtures. The system will be designed in accordance with AS3500.1.

The potable water usage will be monitored by pulse output water meters for all mechanical plant and at high water point of use items and connected to a monitoring system. All taps and fixtures will have a minimum working pressure of 200kPa and a maximum operating pressure of 500kPa. Velocities will not exceed the limitation specified in AS 3500.1.

Building bathroom groups will be provided with individual hot and cold water isolation. Consideration will be given to water minimisation strategies to reduce the environmental footprint of the facility. Allowance will be made for each individual fixture to have self-regulating flow control. The project will include water efficient sanitary fitting and fixtures.

6.3 Fire Water

The fire water supply for the firefighting operation is provided by the full capacity on-site fire water storage tanks. At this stage, there are 6 storage tanks each with effective capacity of 340kL KL. The capacity of the fire tanks is based on the worst-case demand for the fire hydrant and fire sprinkler to the site. The storage of 4 hours has been included in the calculations for the fire sprinkler system at this stage due to risk associated with the Li-ion batteries installing as battery backup units within the racks inside the Hyperscale Type data halls. This is aligned with enhanced water supply strategy required by FRNSW.

Should Sydney Water asset around the site be capable to supplying fire hydrant or fire sprinkler demand for the 95% of the time (in accordance with AS code requirements), the capacity of the on-site storage tanks may be revisited. As on-site storage tanks are the primary water supply to the firefighting system, large-bore-suction connections were provided for both fire sprinkler and fire hydrant system at the booster assemblies.

External fire hydrants are provided on site for the fire brigade to use at first instance. The external fire hydrants are connected to the site fire hydrant ring main.

The location of the fire hydrants and booster assemblies are in accordance with the requirements of Australian standards, however, it may subject to change as per FRNSW requirements.

The fire protection strategy including the fire water storage will need to be reviewed by the FRNSW.

6.4 Sanitary Drainage

The Sanitary Drainage system for the site will be connected to the Sydney Water infrastructure. The site will reticulate sanitary drainage across the site and will connect to the building systems as required. Each buildings sanitary drainage system will be connected to the building drainage system. The Sanitary Drainage systems will be designed in accordance with AS3500.2

Floor wastes and trench grates will be located within the battery areas. The floor wastes and trench grates will act as a drain outlet to capture sprinkler runoff in the event the sprinkler system activation. Concurrently, the main drainage system outlet prior to authority connection will be closed and the wastewater will then overflow into a 100kL containment tank for subsequent testing before discharged into the authority sewer network.

6.5 Grease Waste

A 1,000L grease arrestor is proposed to cater café located within Building A FOH where grease will be collected to be removed from the stie by a contracted grease removal agent. The drainage from the grease arrestor outlet will connect into site gravity sanitary drainage system.

6.6 Rainwater Reuse

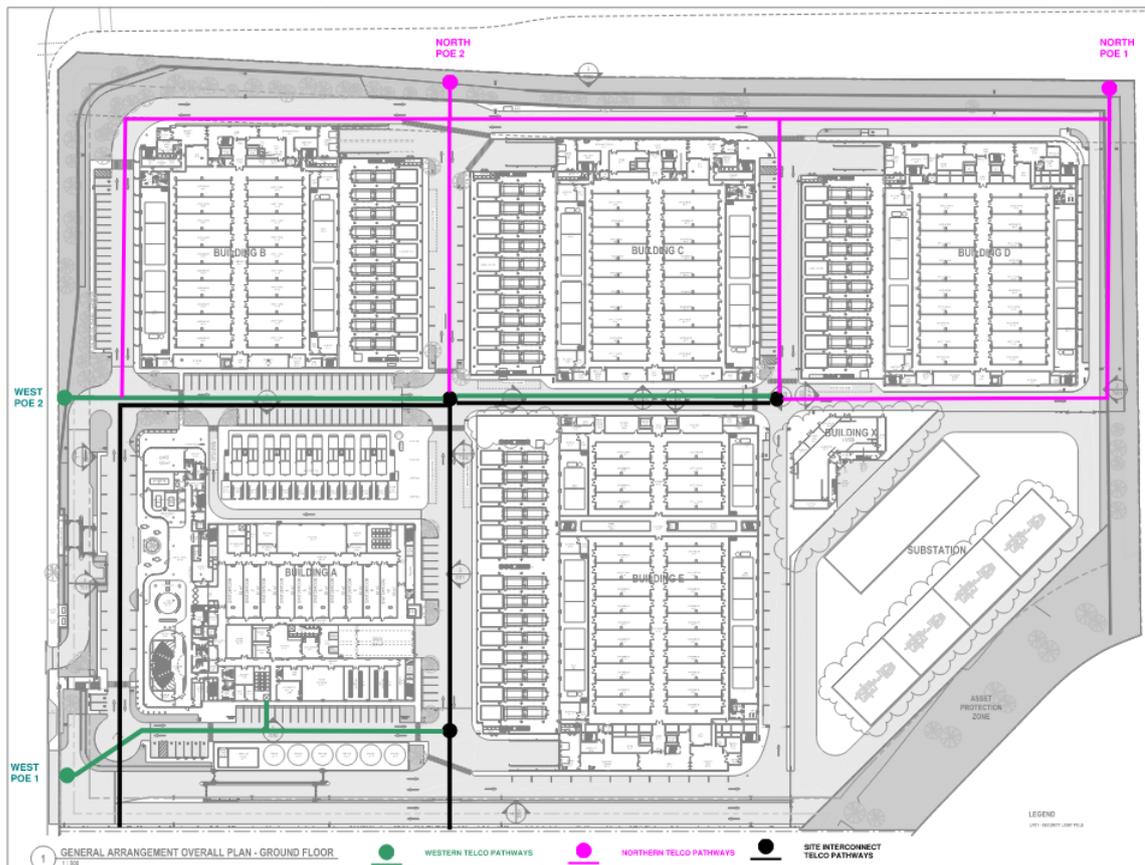
Each building will be equipped with a rainwater harvesting tank and filtration system to facilitate the rainwater reuse system. The rainwater reuse system is designed to contribute back into industrial make up water, in addition to total mechanical make up water demand. Building A will have 40kL in-ground rainwater harvesting tank where only the roof rainwater runoff will be collected through downpipes. The remaining downpipes and rainwater harvesting tank overflow will interconnect with the civil in-ground stormwater system. The collected rainwater will be treated through a set of filtration system prior to be pumped back into the building industrial water storage tanks. Buildings B, C and D will each be provided with 100kL in-ground rainwater harvesting tank.

6.7 Telecommunications

6.7.1 External Site Telecommunications

The proposed site is currently proposed to be serviced by 4 main Telecommunications Points-of-Entry for network carriers and hyperscale clients, 2 on each of the road facing perimeter of the site to provide capacity and diversity, refer to the figure below.

Figure 6-3 - Telecommunications POE's and Internal Interconnectivity



The Western Telecommunications Pathways comprises of two (2) POE's entering the site from Johnston Crescent on the West. These connections reticulate along Johnston Crescent and along the Western Side of Old Wallgrove Road and other future road developments.

The Eastern Pathway comprises of another two (2) POE's entering the site along Burley Road on the North, with connections to reticulate along the Eastern Side of Old Wallgrove Road and other future road developments.

6.7.2 Internal Site Reticulation

Internally within the site, all main communications pathways from the POE's to each of the proposed buildings shall consist of 32 x 100mm communication conduits installed underneath roadways and paths, as well as several Large Manholes in strategic locations within the site to provide additional connectivity for communication pathways and to provide sufficient capacity to suit the staging of the proposed development.

All buildings will be provided with connectivity in general originating from the Main Building, however provisions have been made for capacity to service clients requiring their own direct cabling infrastructure.

Both the Eastern and Western Pathways are to maintain a minimum of 20m of separation to minimise the risk of impact from the same event, as well as multiple reticulation pathways around to building for capacity and diversity.

6.8 Gas

There are no gas services required for the subject site. All services to be powered by electrical sources, with backup services to be provided by means of diesel backup generator. There are also no existing gas services within the subject site boundary. As such, no consultation with Jemena has been undertaken.

7 Assessment of Potential Construction Impacts

7.1 Electricity

The baseline condition is that there is no existing electrical infrastructure within the subject site and thus construction works within the development site will not cause any impact to electrical infrastructure. Underground infrastructure will be installed as part of the first stage of the construction. Accordingly, this then existing electrical infrastructure will be protected during the next stage of construction. Measures to avoid damage to electrical services will be implemented.

7.2 Water Supply

The proposed water infrastructure will be upgraded as per the Sydney water report. Generally, the site will connect to the Sydney Water main via Sydney Water contractors. The mains connection can be undertaken live however it is expected that the water main will be extended for the site requirements. These works will be undertaken by Sydney Water providers and undertaken in accordance with Sydney Water requirements. The impacts associated with this connection will be minimal due to the Sydney Water infrastructure being configured in a ring main arrangement. The ring main will be isolated at the area of connection avoiding potential impact.

7.3 Sewerage

The proposed sewer infrastructure will be upgraded as per the Sydney water report. Generally, the site will connect to the Sydney Water main via Sydney Water contractors. The mains connection can be undertaken live due to the location (end of line) These works will be undertaken by Sydney Water providers and undertaken in accordance with Sydney Water requirements. The impacts associated with this connection will be minimal due to the Sydney Water infrastructure being end of line.

7.4 Telecommunications

The existing Telecommunications infrastructure within the immediate surrounds of the proposed site will be upgraded and expanded to provide diversity and connectivity to support the site and any future expansions. Underground infrastructure will be installed as part of the first stage of the construction. Accordingly, this then existing Telecommunications infrastructure will be protected during the next stage of construction. Measures to avoid damage to existing telecommunications services will be implemented.

7.5 Gas

There are no gas services proposed for the subject site. There is however a high-pressure gas main along the northern boundary of the subject site. As part of construction, the contractor will need to follow Jemena procedures for working in proximity to high pressure gas mains. The contractor will be responsible for the following:

- Preparing a suitable plan in accordance with the Jemena guideline “Designing, Constructing and operating assets near Jemena gas pipelines” (GAS-960-GL-PL-001),
- Submissions and obtaining the necessary approvals from Jemena.
- Arranging for a pipeline operator from Jemena to be present as required by the proposed plan and approvals.

8 Assessment of Potential Operational Impacts

8.1 Electricity

Potential operational impacts of the electrical infrastructure within the subject site include:

- Noise emissions from the 330/33kV transformers
- High noise levels when testing or operating back-up generators.
- Fuel spills when filling generators.
- Fire and explosion risks associated with the generators.
- Fire and explosion risks associated with the switching station.
- Air pollution when generators are operational.

8.2 Water and Sewerage

Generally, the site will not have any local impacts during operations. The Water provided to the site and the sewer being discharged from the site will be controlled by Sydney Water.

Impacts that the site may have include.

- Noise from water and sewer pumps

8.3 Telecommunications

Buildout of significant quantity of inground infrastructure will occur in the vicinity of the site by Telecommunications carriers and the like to provide the required connectivity and capacity to the site. This should not have any impact on adjacent developments in the area and has the potential to provide greater connectivity for surrounding businesses.

8.4 Gas

As there are no gas services proposed for the site, and no existing gas services within the subject site boundary, there are no operational impacts envisioned for gas services.

9 Environmental Management Measures

ID	Impacts	Mitigation	Responsibility	Timing
IR1	High electrical demand impacting the surrounding HV network.	Proposals are to have data centre specific electrical supply. Electrical authorities have confirmed that capacity exists within the network to serve the site.	NEXTDC/Electrical Authority	Design
IR2	High noise levels when testing or operating back-up generators.	Generators are containerised units which include noise attenuation features. The noise level of generator testing will be assessed against NSW Noise Policy for Industry.	NEXTDC /Contractor	Design and Operation
IR3	Fuel spills when filling generators.	Fuel tanks will be designed to comply with AS1940. Fuel tanks will be double walled. Each fill point will have all ancillaries to meet requirements of AS1940.	NEXTDC /Contractor	Design and Operation
IR4	Fire and explosion risks associated with the generators.	Generators will be designed in accordance with AS 1940 which defines minimum clearance from building and separation between fuel storage tanks. Generators located behind security fencing/gates meaning only approved personnel can access this area.	NEXTDC /Contractor	Design and Operation
IR5	Fire and explosion risks associated with the HV equipment.	All HV equipment will be designed in accordance with relevant current version of Australian Standards and Industry Associations Standards and Guidelines. HV equipment will be secured behind security fencing/gates and/or locked doors, meaning only authorised personnel can access this area.	NEXTDC /Contractor	Design and Operation
IR6	Air pollution when generators are operational	Two separate mains supply routes are proposed and the probability of mains failure has been investigated for the electrical supply. Failure rates for a supply in this arrangement are extremely low meaning the generators will rarely be used. Generators will include specific emissions control measures and will be Tier 2 certified to Australian EPA requirements.	NEXTDC /Contractor	Design and Operation

IR7	Greenhouse gas emissions from the 330kV GIS	<p>The 330kV GIS equipment will contain some 5 to 8 tonnes (depending on the substation design) of Sulfurhexafluorid (SF₆). SF₆ is an inert gas with excellent dielectrical characteristics. However, SF₆ is also a greenhouse gas (GHG) with a greenhouse warming potential (GWP) that is 23,500 times the equivalent of CO₂.</p> <p>To mitigate this potential impact, the GIS will be specified with a very low maximum SF₆ leaking rate and the GIS will be operated with due care and the required regulatory environmental process, including yearly GHG emissions reporting. Other measures include the attempt to source a GIS from a manufacturer who offers GIS that is free of SF₆ and uses instead a gas with a lower (or 0) GWP. At present, such solutions don't exist worldwide for 330kV.</p>	NEXTDC / Lumea	Design and Operation
IR8	Noise emissions from the 330/33kV transformers	Noise walls are proposed for the 330/33kV transformers	NEXTDC / Lumea	Design and Operation

10 Summary of Residual Impacts

This section provides a summary of construction risks and operational risks, both pre-mitigation as well as residual following implementation of the management measures described in earlier sections. These are summarised in the table below.

Potential Adverse Impact	Relevant Management Measures	Potential Residual Impact	Commentary around management of residual impacts
Construction			
Spills/ leakages from on-site storage of effluent during early construction phases.	On-site storage tanks such as septic tanks will be in accordance with the relevant Australian Standards	Low risk of spillage during waste loading to tanker.	Contractor to use a licensed and certified waste disposal company, as well as providing relevant SWMS for filling operations. Storage tanks to be regularly inspected during operation for damages that may cause leakage.
Damage to high pressure gas line adjacent to site	Contractor to prepare a plan in accordance with Jemena procedures for working near pipelines, and have it approved by Jemena. Contractor will arrange spotters with Jemena as necessary during construction.	Low risk of damage to pipeline by construction works.	Contractor to ensure the Jemena approved plan is followed during construction to minimise residual risk.
Operation			
High noise levels when testing or operating back-up generators.	Generators are containerised units which include noise attenuation features. Generators will only operate in the unlikely event that all electrical supplies to a building are off-line.	Potential that noise levels are high.	The noise level of generator testing will be assessed against NSW Noise Policy for Industry. Testing of generators to be undertaken during daytime periods unless otherwise required.
Fuel spills during generator refilling	Fuel tanks to be double skinned. Each fill point to have ancillaries to meet AS1940.	Risk of accidental fuel spills during refilling.	Operator to prepare a management plan detailing safe method of work for filling generators. Supplier to have spill kits available at the time of filling.

11 References

- Australian Rainfall and Runoff, 2016. Australian Rainfall and Runoff.
- Environmental Protection Authority, 1997. Managing Urban Stormwater: Council Handbook.
- NSW Government, 1997. Protection of the Environment Operations Act.
- NSW Government, 2021. State Environmental Planning Policy (Transport and Infrastructure).
- NSW Government, 2009. State Environmental Planning Policy (Western Sydney Employment Area).

Appendix A – Before You Dig Australia (BYDA)

If further clarification is required, please contact:
 Endeavour Energy
 Phone: (02) 9853 4161 (8:00am-4:30pm Mon-Fri)
Emergency Phone Number: 131 003



DBYD Underground Search Report

Date: 10/02/2022

DBYD Sequence No: 207939297

DBYD Job No: 31359964

ENDEAVOUR ENERGY ASSETS AFFECTED

To:	Steven Sam	Company:	Aurecon
Address:	116 Military Road, Neutral Bay, NSW 2089		
Cust. ID:	3177830	Email:	steven.sam@aurecongroup.com
Phone:	+61407059574		
Enquiry Location:	327 Burley Road, Horsley Park, NSW 2175		

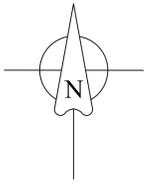
Our Search has shown that **UNDERGROUND ASSETS ARE PRESENT** on our plans within the nominated enquiry location. This search is based on the graphical position of the excavation site as denoted in the DBYD customer confirmation sheet.

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.

SUPPLEMENTARY MATERIAL

Material	Purpose	Location
DBYD Cover Letter	Endeavour Energy DBYD response Cover Letter	Attached
DBYD Important Information & Disclaimer	Endeavour Energy disclaimer, responsibilities and information on understanding plans	Attached
DBYD Response Plans	Endeavour Energy DBYD plans	Attached
Work Cover NSW "Work near underground assets: Guide"	Guideline for anyone involved in construction work near underground assets	Contact Work Cover NSW for a copy
Work Cover NSW "Excavation work: Code of practice"	Practical guidance on managing health and safety risks associated with excavation	URL [Click Here]
Safe Work Australia "Working in the vicinity of overhead and underground electric lines guidance material"	Provides information on how to manage risks when working in the vicinity of overhead and underground electric lines at a workplace	URL [Click Here]
Endeavour Energy Safety Brochures & Guides	To raise awareness of dangers of working on or near Endeavour Energy's assets	URL [Click Here]



LOCALITY MAP
NOT TO SCALE

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP: Construction Practices
EMS: Environmental Management Standards
MCI: Mains Construction Instruction
MCI: Mains Design Instruction
MCI: Substation Design Instruction
SAD 0001: Design Drawing Standard
SAD 0002: Construction Management Standard
SAD 0003: Substation Management Standard
SAD 0004: Electrical Design Standard
SAD 0005: Electrical Design Standard
SAD 0006: Electrical Design Standard
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SAD 0100: Electrical Design Standard

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____
WORKS COMPLETED: _____
SIGNATURE: _____ DATE: _____
INSPECTED BY: _____
DATE: _____
OF: _____
CONTRACT No. _____
I HEREBY CERTIFY THAT ALL WORK SHOWN ON THIS DRAWING HAVE BEEN RECORDED IN ACCORDANCE WITH STANDARD SAD 0004.
SIGNATURE: _____
DATE: _____

DUCT DECLARATION

1 _____
OF _____
CONTACT NUMBER _____
HEREBY CERTIFY THAT THE DUCTS SHOWN ON THIS DRAWING HAVE BEEN INSTALLED IN ACCORDANCE WITH STANDARDS MCI0006 AND SAD0004.
THE INSTALLATION OF THE DUCTS WAS
COMMENCED ON _____
& COMPLETED ON _____
SIGNATURE _____
LAND SURVEYOR REGISTERED UNDER SURVEYING ACT 2002.

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: A
Date Approved: 06/07/2020
Examiner's Signature: _____
Print Name: Saroun Ly
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

ENDEAVOUR ENERGY WARNING
This plan shows the approximate location of underground cables relative to fixtures existing when the cables were laid, and has been prepared solely for Endeavour Energy's own use. Endeavour Energy has taken reasonable steps to ensure that the information is as accurate as possible but will accept no liability for inaccuracies in the information shown on such plans from any cause whatsoever arising.
Persons excavating are expected to exercise all due care in the vicinity where cables are indicated and will be held responsible for any damage caused to Endeavour Energy's Property.
All Electrical apparatus shall be considered as live until proved de-energised. Contact with live electrical apparatus will cause severe injury or death.

Cadastre: © Land and Property Information 2016

Those excavating near Endeavour Energy's cables should be aware that ASBESTOS OR ASBESTOS - CONTAINING MATERIAL MAY BE PRESENT in Endeavour Energy's underground assets and that Organo-Chloride Pesticides(OCP) may be present in some sub-transmission trenches

connect REF. NUMBER
DV738B
D11

Connect Design Pty Ltd
Electrical Infrastructure Consultancy, Design & Construction
6 Progress Cct, Prestons NSW 2170
Tel: 02 9733 3333
Fax: 02 9733 3330
Email: mail@cinf.com.au

Issue Date: 20/02/2022, DBD Sequence No: 207939297

REFERENCE DRAWINGS	WORK ORDERS	CAP / SAMP No.	UIS0884
	GENERAL	AM PROJ. No.	
	OVERHEAD	HV SWITCHING	
	UNDERGROUND	UBD/PENGUIN REF	MAP 206 REFN9
	SUBSTATIONS	GIS MAP No	U82524
		HV OP DIAGRAM	EASTERN CREEK 1H10
		LOCAL GOV AREA	FAIRFIELD

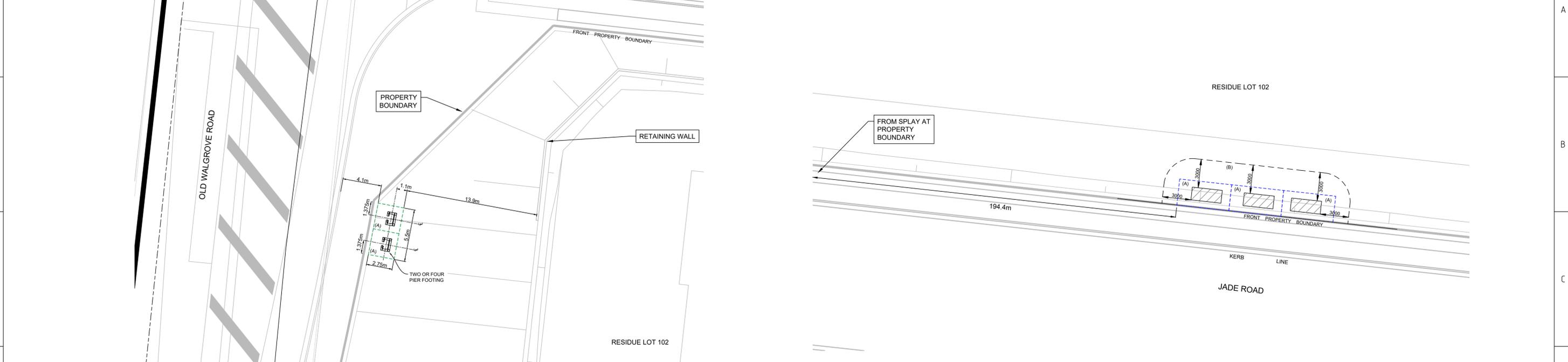
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DRAWN: DCM	DATE: 24/06/2020
CH'D: C.HORNER	DESIGN: W.Thai

OLD WALLGROVE ROAD
HORSLEY PARK
UIS0884
DUCT, TRENCH & EASEMENT REQUIREMENTS

Endeavour Energy

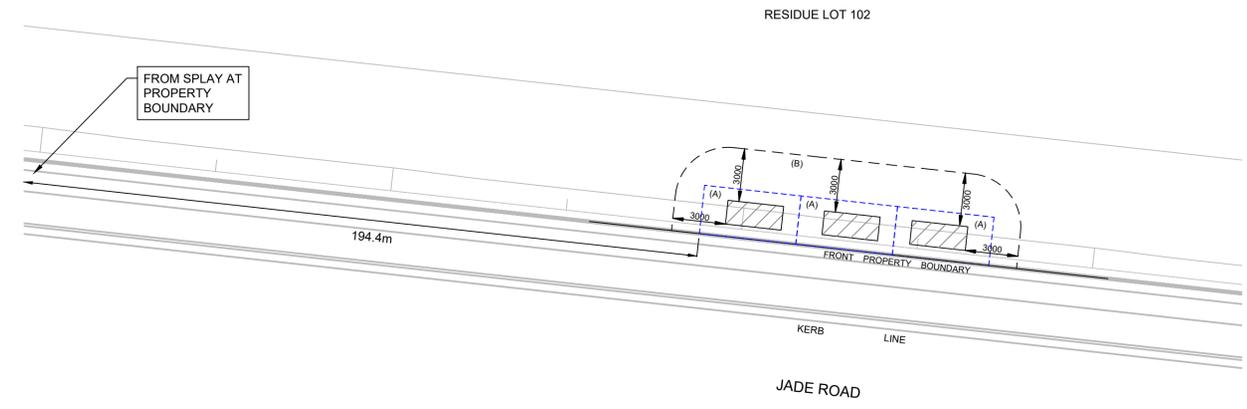
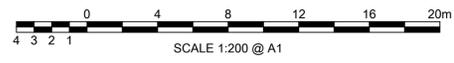
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SHEET No 1 OF 3 SHEETS



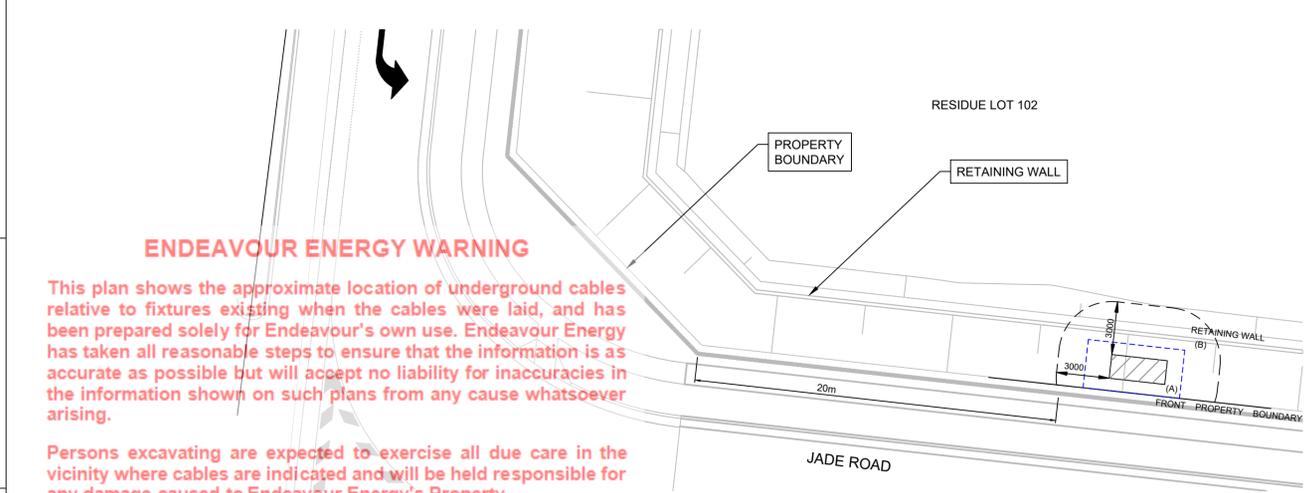
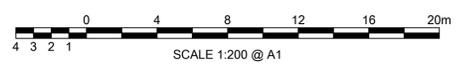
(A) EASEMENT FOR FUTURE SWITCHING STATION 2.75 x 5.5m.

**EASEMENT AND RESTRICTION ZONE DIAGRAM
FOR FUTURE SWITCHING STATIONS 54712 & 54714
COMMON EARTHING - NON-RESIDENTIAL**



(A) EASEMENT FOR FUTURE PADMOUNT SUBSTATION 2.75 x 16.5m.
(B) RESTRICTION ON THE USE OF LAND IN RELATION TO THE FIRE RATING OF BUILDINGS MEASURED 3 METRES FROM SUBSTATION PLINTH

**EASEMENT AND RESTRICTION ZONE DIAGRAM
FOR FUTURE PADMOUNT SUBSTATIONS 54711, 54713 & 54715
COMMON EARTHING - NON-RESIDENTIAL**



(A) EASEMENT FOR FUTURE PADMOUNT SUBSTATION 2.75x5.5 CENTRED AROUND THE SUBSTATION PLINTH EXCEPT FOR 0.25 METRE OFFSET TOWARD THE HV END
(B) RESTRICTION ON THE USE OF LAND IN RELATION TO THE FIRE RATING OF BUILDINGS MEASURED 3 METRES FROM SUBSTATION PLINTH

**EASEMENT AND RESTRICTION ZONE DIAGRAM
FOR FUTURE PADMOUNT SUBSTATION 54717
COMMON EARTHING - NON-RESIDENTIAL**



ENDEAVOUR ENERGY WARNING

This plan shows the approximate location of underground cables relative to fixtures existing when the cables were laid, and has been prepared solely for Endeavour's own use. Endeavour Energy has taken all reasonable steps to ensure that the information is as accurate as possible but will accept no liability for inaccuracies in the information shown on such plans from any cause whatsoever arising.

Persons excavating are expected to exercise all due care in the vicinity where cables are indicated and will be held responsible for any damage caused to Endeavour Energy's Property

All Electrical apparatus shall be considered as live until proved de-energised. Contact with live electrical apparatus will cause severe injury or death

Those excavating near Endeavour Energy's cables should be aware that ASBESTOS OR ASBESTOS - CONTAINING MATERIAL MAY BE PRESENT in Endeavour Energy's underground assets and that Organo-Chloride Pesticides(OCP) may be present in some sub-transmission trenches

CERTIFIED BY ENDEAVOUR ENERGY
Amendment: A
Date Approved: 06/07/2020
Examiner's Signature:
Print Name: Saroun Ly
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____
WORKS COMPLETED: _____
SIGNATURE: _____ DATE: _____

INSPECTED BY: _____
SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____
OF: _____
CONTACT No.: _____
HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOR ENERGY STANDARD SAD 0004.

SIGNATURE: _____
DATE: _____

DESIGN COMPLIANCE AND INDEMNITY

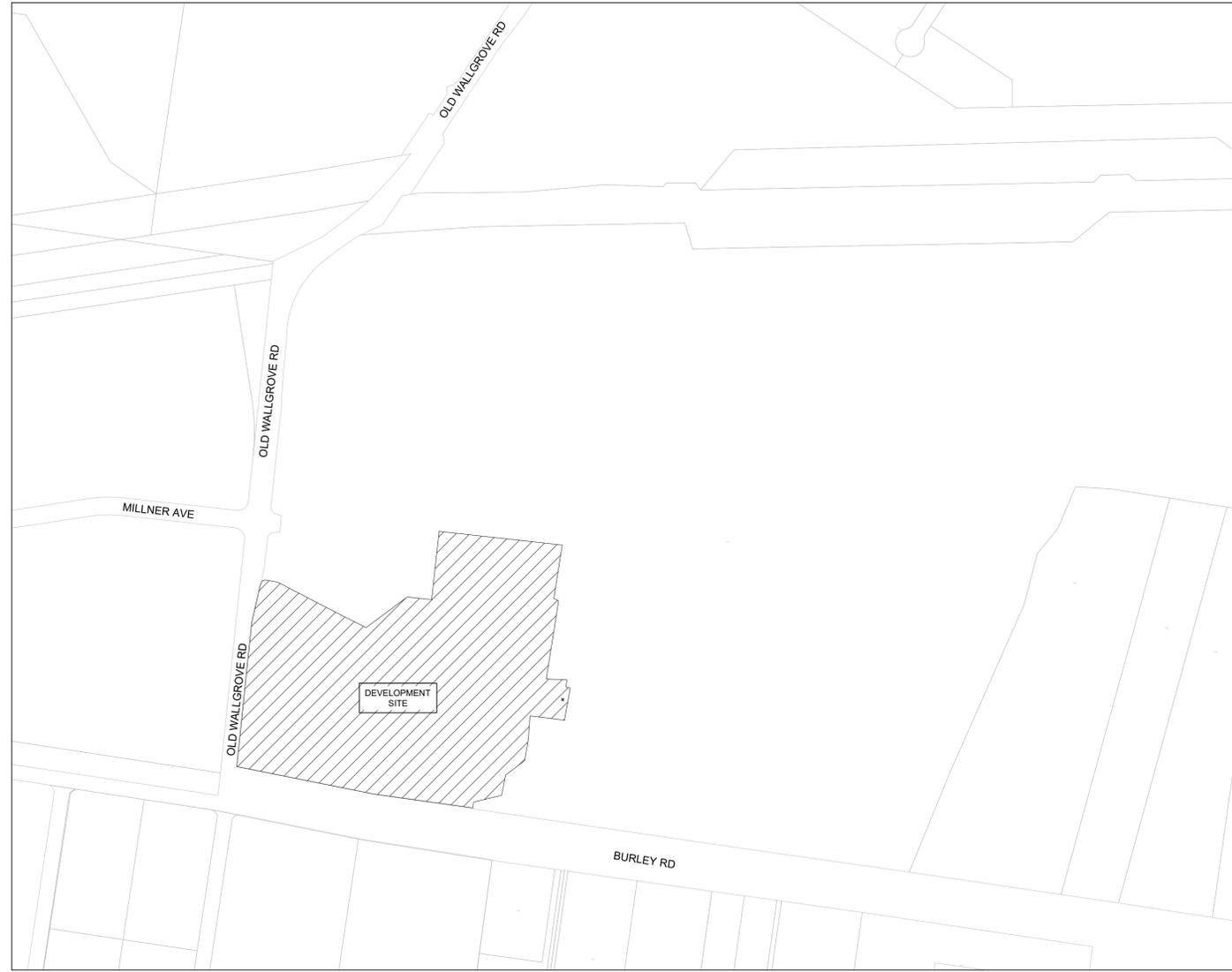
This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

- CP: Connection Policy
- EMS: Environmental Management Standard
- MCI: Mains Construction Instruction
- MDI: Mains Design Instruction
- PDI: Protection Design Instruction
- SDI: Substation Design Instruction
- SAD 0001: Design Drawing Standard
- MMI: Mains Maintenance Instruction
- SMI: Substation Maintenance Instruction
- LDI 0001: Public Lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

CONNECT INFRASTRUCTURE DESIGN PTY LTD indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: _____
Name: Winston Thai
Service Provider Number: 1104 Date: 24/06/2020



LOCALITY MAP
NOT TO SCALE

ENDEAVOUR ENERGY WARNING

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connect Connect Design Pty Ltd
 Electrical Infrastructure Consultancy, Design & Construction
 Tel: 02 9733 3333
 Fax: 02 9733 3330
 Email: mail@cnf.com.au
 6 Progress Cct, Prestons NSW 2170
 PO Box 10, Busby NSW 2170

connect REF. NUMBER
DV738B
E13

RELATIVE VERSION No. 5.0
 THIS DRAWING AND THE COPYRIGHT THEREIN IS THE PROPERTY OF ENDEAVOUR ENERGY AND MAY NOT BE COPIED, REPRODUCED, DISTRIBUTED, LOANED OR USED WITHOUT THE WRITTEN CONSENT OF ENDEAVOUR ENERGY

REFERENCE DRAWINGS	WORK ORDERS	CAP / SAMP No.	UIS0884
	GENERAL	AM PROJ. No.	
	OVERHEAD	HV SWITCHING	
	UNDERGROUND	UBD/PENGUIN REF	MAP 206 REFN9
	SUBSTATIONS	GIS MAP No	U82524
		HV OP DIAGRAM	EASTERN CREEK 1H10
		LOCAL GOV AREA	FAIRFIELD

ORIGINAL SCALE	DO NOT SCALE DIMENSIONS IN METRES
DRAWN DCM	DATE 09/04/2020
CH'D C.HORNER	DESIGN W.Thai

OLD WALLGROVE ROAD
 HORSLEY PARK
 UIS0884
 ELECTRICAL RETICULATION



A1 517058 A
 SHEET No 1 OF 6 SHEETS

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 Amendment: A
 Date Approved: 06/07/2020
 Examiner's Signature: _____
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 This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

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INSPECTED BY: _____

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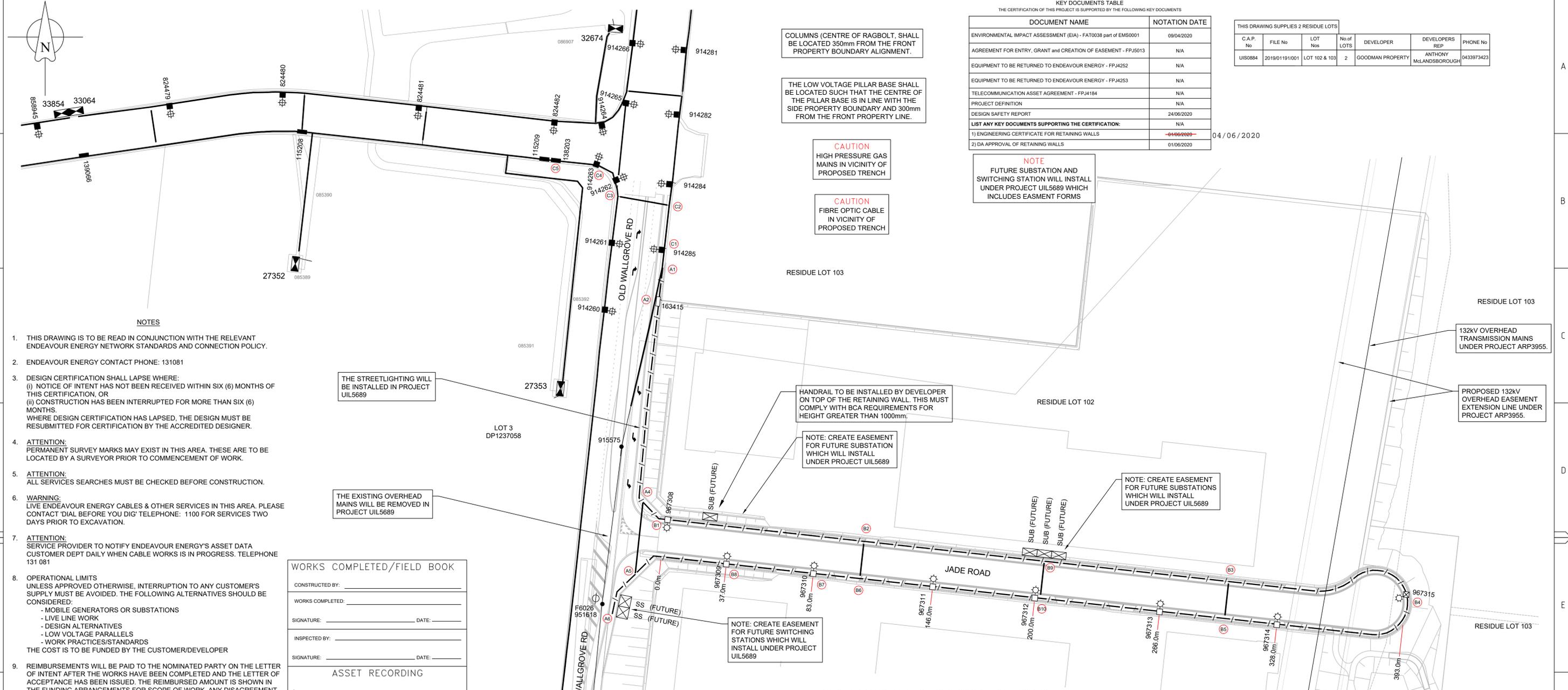
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- SMI: Substation Maintenance Instruction
- LDI 0001: Public Lighting Electrical Design Element

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Signed: _____

Name: Winston Thai
 Service Provider Number: 1104 Date: 24/06/2020



- NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ENDEAVOUR ENERGY NETWORK STANDARDS AND CONNECTION POLICY.
2. ENDEAVOUR ENERGY CONTACT PHONE: 131081
3. DESIGN CERTIFICATION SHALL LAPSE WHERE:
(i) NOTICE OF INTENT HAS NOT BEEN RECEIVED WITHIN SIX (6) MONTHS OF THIS CERTIFICATION, OR
(ii) CONSTRUCTION HAS BEEN INTERRUPTED FOR MORE THAN SIX (6) MONTHS.
WHERE DESIGN CERTIFICATION HAS LAPSED, THE DESIGN MUST BE RESUBMITTED FOR CERTIFICATION BY THE ACCREDITED DESIGNER.
4. ATTENTION: PERMANENT SURVEY MARKS MAY EXIST IN THIS AREA. THESE ARE TO BE LOCATED BY A SURVEYOR PRIOR TO COMMENCEMENT OF WORK.
5. ATTENTION: ALL SERVICES SEARCHES MUST BE CHECKED BEFORE CONSTRUCTION.
6. WARNING: LIVE ENDEAVOUR ENERGY CABLES & OTHER SERVICES IN THIS AREA. PLEASE CONTACT 'DIAL BEFORE YOU DIG' TELEPHONE: 1100 FOR SERVICES TWO DAYS PRIOR TO EXCAVATION.
7. ATTENTION: SERVICE PROVIDER TO NOTIFY ENDEAVOUR ENERGY'S ASSET DATA CUSTOMER DEPT DAILY WHEN CABLE WORKS IS IN PROGRESS. TELEPHONE 131 081
8. OPERATIONAL LIMITS UNLESS APPROVED OTHERWISE, INTERRUPTION TO ANY CUSTOMER'S SUPPLY MUST BE AVOIDED. THE FOLLOWING ALTERNATIVES SHOULD BE CONSIDERED:
- MOBILE GENERATORS OR SUBSTATIONS
- LIVE LINE WORK
- DESIGN ALTERNATIVES
- LOW VOLTAGE PARALLELS
- WORK PRACTICES/STANDARDS
THE COST IS TO BE FUNDED BY THE CUSTOMER/DEVELOPER
9. REIMBURSEMENTS WILL BE PAID TO THE NOMINATED PARTY ON THE LETTER OF INTENT AFTER THE WORKS HAVE BEEN COMPLETED AND THE LETTER OF ACCEPTANCE HAS BEEN ISSUED. THE REIMBURSED AMOUNT IS SHOWN IN THE FUNDING ARRANGEMENTS FOR SCOPE OF WORK. ANY DISAGREEMENT WITH THE AMOUNT SHOULD BE RESOLVED WITH ENDEAVOUR ENERGY PRIOR TO THE COMMENCEMENT OF WORKS.
10. HAVE ALL THE EXISTING ASSETS BEEN FIELD CHECKED AND ARE ACCURATE AT THE TIME OF DESIGN: YES
11. ENDEAVOUR ENERGY'S GENERIC EMP, EMS 0001, IS PART OF THIS DESIGN.
12. ALL SERVICE WORK TO BE INSTALLED IN ACCORDANCE WITH AS/NZS 3000 AND THE NSW SERVICE AND INSTALLATION RULES
13. CUSTOMER TO ARRANGE FOR INSTALLATION & CONNECTION OF SERVICE MAINS BY A LEVEL 2 ACCREDITED SERVICE PROVIDER.
14. DO NOT PLACE ANY RELIANCE ON ANY QUANTITIES OR DIMENSIONS GIVEN IN THIS DRAWING. QUANTITIES AND DIMENSIONS GIVEN ON THIS DRAWING ARE BASED ON DESIGN INFORMATION AND SITE CONDITIONS AT THE TIME OF DESIGN. DESIGNER'S QUANTITIES AND DIMENSIONS ARE FOR INFORMATION ONLY. BUILDER OF THIS PROJECT MUST CHECK ALL QUANTITIES AND DIMENSIONS ON SITE PRIOR TO TENDERING AND PRIOR TO CONSTRUCTION.
15. ATTENTION: THE PREPARATION OF THIS DESIGN HAS BEEN UNDERTAKEN GIVING DUE CONSIDERATION TO THE EXISTING SERVICES. THE PROJECT DESIGNER HAS TAKEN ALL REASONABLE STEPS TO ENSURE THAT THE INFORMATION IS CORRECT. HOWEVER, THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR THE LOCATION OF EXISTING SERVICES AND PERMANENT SURVEY MARKS BEFORE CONSTRUCTION COMMENCES, AND NO RESPONSIBILITY NOR LIABILITY WILL BE ACCEPTED BY THE DESIGNER OF THIS PROJECT FOR DAMAGE TO EXISTING SERVICES AS A RESULT OF THIS DESIGN AND/OR CONSTRUCTION.
16. TELECOMMUNICATIONS ASSETS ARE NOT AFFECTED BY WORKS IN THIS PROJECT. DAMAGE CAUSED TO ENDEAVOUR ENERGY'S PROPERTY

WORKS COMPLETED/FIELD BOOK
CONSTRUCTED BY:
WORKS COMPLETED:
SIGNATURE: DATE:
INSPECTED BY:
SIGNATURE: DATE:
ASSET RECORDING
I:
OF:
CONTACT No.:
HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SA0 0004.
SIGNATURE:
DATE:

DESIGN COMPLIANCE AND INDEMNITY
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GP: Connection Policy
EM: Environmental Management Standard
MIP: Mains Construction Instruction
MDS: Mains Design Instruction
SDI: Substation Design Instruction
SDS: Substation Design Standard
SMI: Substation Maintenance Instruction
SM: Substation Design Element
Additionally, where relevant, the design complies with AS/NZS 7000 'Overhead Line Design - Detailed Procedures' published by The Australian Standards.
Indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design, with the above standards.
Service Provider Number: 1104 Date: 24/06/2020

APPROVAL TO CONNECT TO PUBLIC LIGHTING
Reviewers Name: Saroun Ly
Date Approved: 06/07/2020
Reviewers:
Signature:
This approval is issued subject to Endeavour Energy's General Terms & Conditions for connection of Public Lighting Assets and is specifically for Drawing No. xxxxxx Amendment x.

CERTIFIED BY ENDEAVOUR ENERGY
Amendment: A
Date Approved: 06/07/2020
Examiner's Signature:
Print Name: Saroun Ly
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

FUNDING ARRANGEMENTS FOR SCOPE OF WORKS
Table with columns: ENDEAVOUR ENERGY SUPPLIED MATERIALS, ENDEAVOUR ENERGY FUNDED & CONSTRUCTED, ENDEAVOUR ENERGY FUNDED & ASP L1 CONSTRUCTED - REIMBURSEMENT (exc GST), CUSTOMER FUNDED NON-CONTESTABLE WORKS, CUSTOMER FUNDED, CUSTOMER FUNDED CONTESTABLE WORKS.

SITE PLAN
SCALE 1:1000 @ A1
SITE PLAN LEGEND
EXISTING OVERHEAD CONDUCTOR
EXISTING UNDERGROUND MAINS
HIGH VOLTAGE TRENCHING
EXISTING DUCTS
EXISTING PILLAR
NEW PILLAR
EXISTING COLUMN
NEW COLUMN 7.5m MOUNTING HEIGHT ON A TYPE 2/TYPED 2
NEW COLUMN 7.5m MOUNTING HEIGHT ON A TYPE 2/TYPED 2
EXISTING LANTERN
NEW LANTERN
EXISTING PADMOUNT SUBSTATION
FUTURE PADMOUNT SUBSTATION LOCATION
NEW SWITCHING STATION
HV ISOLATION POINT - ABS (CLOSED) (AIR BREAK SWITCH)
EXISTING HV LOAD BREAK SWITCH

KEY DOCUMENTS TABLE
THE CERTIFICATION OF THIS PROJECT IS SUPPORTED BY THE FOLLOWING KEY DOCUMENTS
Table with columns: DOCUMENT NAME, NOTATION DATE.

THIS DRAWING SUPPLIES 2 RESIDUE LOTS
Table with columns: C.A.P. No, FILE No, LOT Nos, No of LOTS, DEVELOPER, DEVELOPERS REP, PHONE No.

LIGHTING EQUIPMENT SCHEDULE																				
ITEM ID	STATE	SL NUMBER		SUPPORT NUMBER	LUMINAIRE				COLUMN/POLE				BRACKET/OUTREACH			UPCAST	CATEGORY	CHARGE TO	MOUNTING HEIGHT	
		NEW	NEW	NEW	DESCRIPTION	PART NO	QTY	RATE CODE	DESCRIPTION	PART NO	FOOTING (RAG BOLT/FOUNDATION)	QTY	RATE CODE	DESCRIPTION	PART NO					RATE CODE
☀	NEW	L287884, L287885, L287886, L287887, L287888, L287889, L287890	C967308, C967309, C967310, C967311, C967312, C967313, C967314		17W LED Gerard P4	JLB99G05L17	7	889	5.5m SLIM LINE MAST COLUMN	IE-SL 5.5	TYPE 2 / TYPE 2	7	995	3.0m CURVED PIPE OUTREACH	IE 3.0 PCS/25	991	5°	PR5	FAIRFIELD CITY COUNCIL	7.5m
☀	NEW	L287891	C967315		17W LED Gerard P4	JLB99G05L17	1	889	5.5m SLIM LINE MAST COLUMN	IE-SL 5.5	TYPE 2 / TYPE 2	1	995	1.5m CURVED PIPE OUTREACH	IE 1.5 PCS/25	990	5°	PR5	FAIRFIELD CITY COUNCIL	7.5m

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Signed: _____
 Name: Winston Thai
 Service Provider Number: 1104 Date: 24/06/2020

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

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Amendment: A

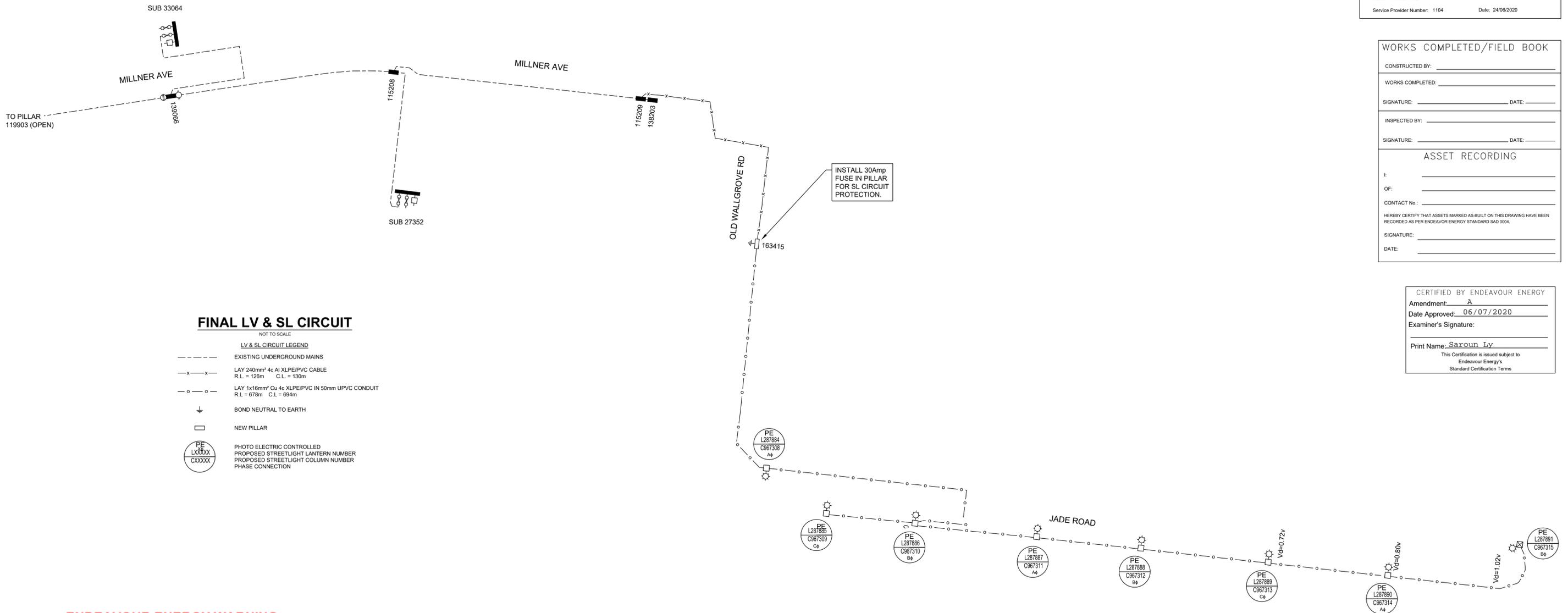
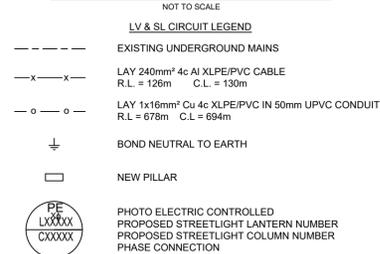
Date Approved: 06/07/2020

Examiner's Signature: _____

Print Name: Saroun Ly

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

FINAL LV & SL CIRCUIT



INSTALL 30Amp FUSE IN PILLAR FOR SL CIRCUIT PROTECTION.

ENDEAVOUR ENERGY WARNING

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connect Electrical Infrastructure Consultancy, Design & Construction

Tel: 02 9733 3333
 Fax: 02 9733 3330
 Email: mail@cinf.com.au

6 Progress Cct, Prestons NSW 2170
 PO Box 10, Sula Macdonald Way 20

connect REF. NUMBER
DV738B
E13

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REFERENCE DRAWINGS	WORK ORDERS	CAP / SAMP No.	UIS0884
	GENERAL	AM PROJ. No.	
	OVERHEAD	HV SWITCHING	
	UNDERGROUND	UBD/PENGUIN REF	MAP 206 REFN9
	SUBSTATIONS	GIS MAP No	U82524
		HV OP DIAGRAM	EASTERN CREEK 1H10
		LOCAL GOV AREA	FAIRFIELD

ORIGINAL SCALE	DO NOT SCALE DIMENSIONS IN METRES
DRAWN DCM	
DATE 24/06/2020	
CH'D C.HORNER	DESIGN W.Thai

OLD WALLGROVE ROAD
 HORSLEY PARK
 UIS0884
 ELECTRICAL RETICULATION

Endeavour Energy

A1 517058 A

SHEET No 3 OF 6 SHEETS

DUCT BREAKDOWN TABLE					
ROUTE	CONFIGURATION	ROUTE LENGTH (m)	REIMBURSEMENT (m) X (\$)	EXISTING DUCT USAGE CHARGE (m) X (\$)	
A1 - A2	EXISTING 2x50mm LV, NEW 6x125mm UPVC DUCTS	20	- NIL	- NIL	
A1 - C1	EXISTING 6x125mm UPVC DUCTS	10	- NIL	- 10m of 125mm duct @ \$23/m = \$230	
A2 - A4	NEW 2x50mm SL, 6x125mm UPVC DUCTS	105	- NIL	- NIL	
A4 - A5	NEW (ROAD CROSSING) 2x50mm SL, 6x125mm UPVC DUCTS	38	- NIL	- NIL	
A4 - B1	NEW 2x50mm SL, 6x125mm UPVC DUCTS	15	- NIL	- NIL	
A5 - A6	NEW 2x50mm SL, 6x125mm UPVC DUCTS	26	- NIL	- NIL	
B1 - B2	NEW 2x50mm SL, 6x125mm UPVC DUCTS	110	- NIL	- NIL	
B2 - B3	NEW 2x50mm SL, 6x125mm UPVC DUCTS	193	- NIL	- NIL	
B2 - B6	NEW (ROAD CROSSING) 2x50mm SL, 6x125mm UPVC DUCTS	20	- NIL	- NIL	
B3 - B4	NEW 2x50mm SL, 6x125mm UPVC DUCTS	103	- NIL	- NIL	
B3 - B5	NEW (ROAD CROSSING) 2x50mm SL, 6x125mm UPVC DUCTS	20	- NIL	- NIL	
B4 - B5	NEW 2x50mm SL, 6x125mm UPVC DUCTS	111	- NIL	- NIL	
B5 - B6	NEW 2x50mm SL, 6x125mm UPVC DUCTS	195	- NIL	- NIL	
B6 - B7	NEW 2x50mm SL, 6x125mm UPVC DUCTS	25	- NIL	- NIL	

DUCT REIMBURSEMENT SCHEDULE					
NODES	CONFIGURATION	ROUTE LENGTH (m)	REIMBURSEMENT (m) X (\$)	EXISTING DUCT USAGE CHARGE (m) X (\$)	
B7 - B8	NEW 2x50mm SL, 6x125mm UPVC DUCTS	46	- NIL	- NIL	
B8 - A5	NEW 2x50mm SL, 6x125mm UPVC DUCTS	51	- NIL	- NIL	
B9 - B10	NEW (ROAD CROSSING) 2x50mm SL, 6x125mm UPVC DUCTS	20	- NIL	- NIL	
C1 - C2	EXISTING 6x125mm UPVC DUCTS	25	- NIL	- 25m of 125mm duct @ \$23/m = \$575	
C2 - C3	EXISTING (ROAD CROSSING) 6x125mm UPVC DUCTS	27	- NIL	- 30m of 125mm duct @ \$23/m = \$690	
C3 - C4	EXISTING 6x125mm UPVC DUCTS	22	- NIL	- 20m of 125mm duct @ \$23/m = \$460	
C4 - C5	EXISTING 6x125mm UPVC DUCTS	22	- NIL	- 25m of 125mm duct @ \$23/m = \$575	
TOTAL		1204m	- NIL	\$2,530	

LEGEND

- (S) SPARE DUCT - FUNDED BY CLIENT
- (E) SPARE DUCT - FUNDED BY ENDEAVOR ENERGY
- DUCT WITH NEW CABLE
- DUCT WITH EXISTING CABLE
- DIRECT BURIED CABLE
- CABLE/DUCT TO BE REMOVED
- NEW TRENCH
- EXISTING TRENCH
- UNDERBORE

CERTIFIED BY ENDEAVOUR ENERGY
 Amendment: A
 Date Approved: 06/07/2020
 Examiner's Signature: _____
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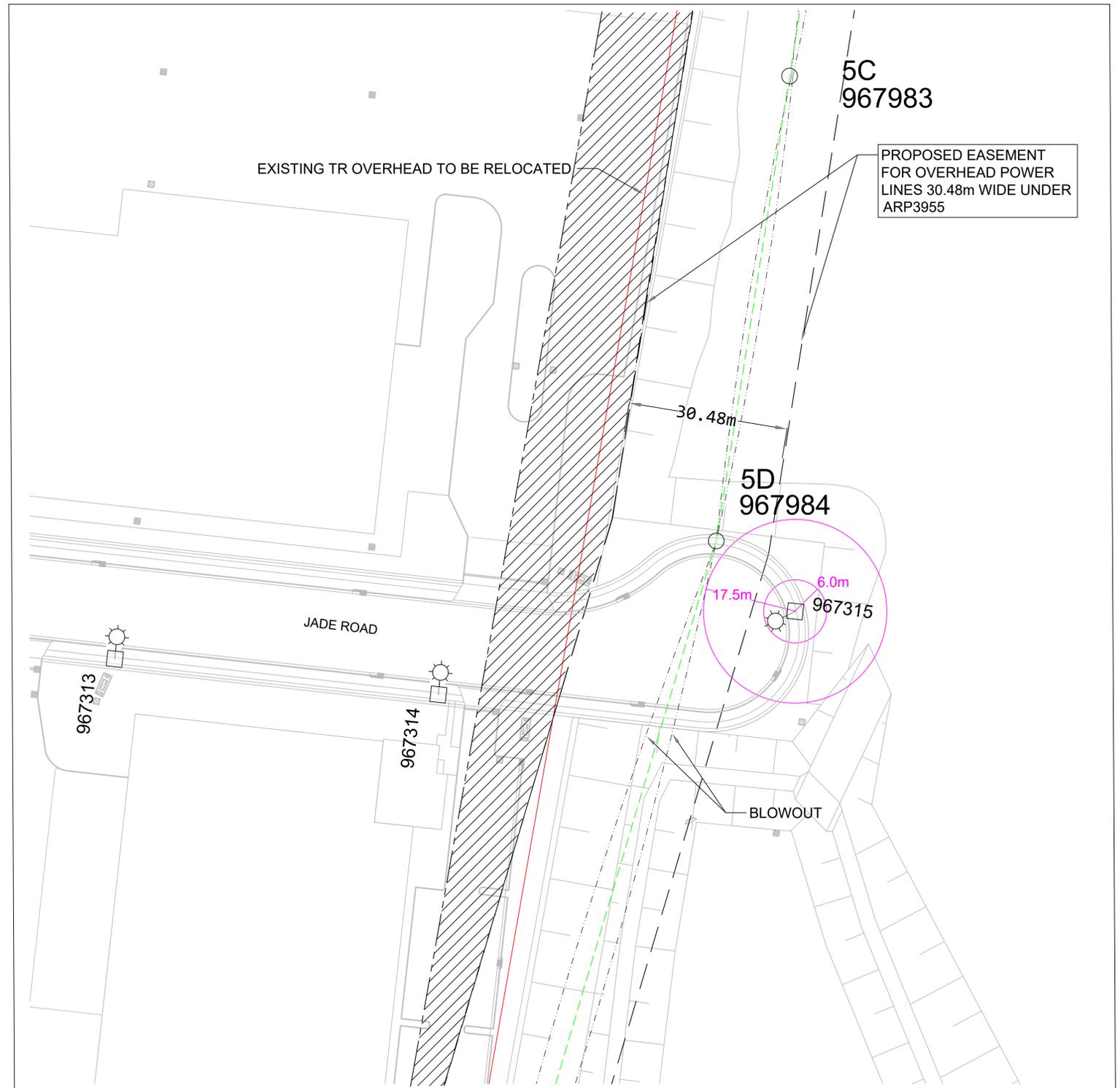
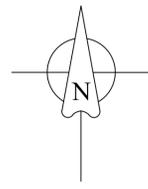
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AMENDMENTS	ORIGINAL	<p>Connect Design Pty Ltd Electrical Infrastructure Consultancy, Design & Construction 6 Progress Cct, Prestons NSW 2170 Tel: 02 9733 3333 Fax: 02 9733 3330 Email: mail@cinf.com.au</p>	connect REF. NUMBER DV738B E13	REFERENCE DRAWINGS WORK ORDERS CAP / SAMP No. UIS0884 AM PROJ. No. HV SWITCHING UBD/PENGUIN REF MAP 206 REFN9 GIS MAP No U82524 HV OP DIAGRAM EASTERN CREEK 1H10 LOCAL GOV AREA FAIRFIELD	ORIGINAL SCALE DO NOT SCALE DIMENSIONS IN METRES DRAWN DCM DATE 24/06/2020 CH'D C.HORNER DESIGN W.Thai	OLD WALL GROVE ROAD HORSLEY PARK UIS0884 ELECTRICAL RETICULATION	
	A1 517058 SHEET No 4 OF 5 SHEETS						



EXISTING TR OVERHEAD TO BE RELOCATED

PROPOSED EASEMENT FOR OVERHEAD POWER LINES 30.48m WIDE UNDER ARP3955

30.48m

5D
967984

17.5m
6.0m
967315

JADE ROAD

BLOWOUT

967313

967314

ARP3955 PROPOSED TRANSMISSION EASEMENT AND BLOWOUT

NOT TO SCALE

- EXISTING EASEMENT FOR OVERHEAD CABLE MINIMUM 30.48 WIDE
- BLOWOUT OF PROPOSED OVERHEAD MAINS
- PROPOSED OVERHEAD TRANSMISSION MAINS
- NEW TRANSMISSION POLE
- ▨ EXISTING EASEMENT TO BE EXTINGUISHED

ENDEAVOUR ENERGY WARNING

This plan shows the approximate location of underground cables relative to fixtures existing when the cables were laid, and has been prepared solely for Endeavour's own use. Endeavour Energy has taken all reasonable steps to ensure that the information is as accurate as possible but will accept no liability for inaccuracies in the information shown on such plans from any cause whatsoever arising.

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CERTIFIED BY ENDEAVOUR ENERGY
 Amendment: A
 Date Approved: 06/07/2020
 Examiner's Signature: _____
 Print Name: Saroun Ly
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP: Connection Policy
 EMS: Environmental Management Standard
 MCI: Mains Construction Instruction
 MCI: Mains Design Instruction
 PDI: Protection Design Instruction
 SDI: Substation Design Instruction
 SAD 0001: Design Drawing Standard
 MMI: Mains Maintenance Instruction
 SMI: Substation Maintenance Instruction
 LDI 0001: Public Lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

CONNECT INFRASTRUCTURE DESIGN PTY LTD indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: _____
 Name: Winston Thai
 Service Provider Number: 1104 Date: 24/06/2020

Those excavating near Endeavour Energy's cables should be aware that ASBESTOS OR ASBESTOS - CONTAINING MATERIAL MAY BE PRESENT in Endeavour Energy's underground assets and that Organo-Chloride Pesticides(OCP) may be present in some sub-transmission trenches

connect Connect Design Pty Ltd
Electrical Infrastructure Consultancy, Design & Construction
 Tel: 02 9733 3333
 Fax: 02 9733 3330
 Email: mail@cnf.com.au
 6 Progress Cct, Prestons NSW 2170
 PO Box 114, Prestons NSW 2170

connect REF. NUMBER
DV738B
E13

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REFERENCE DRAWINGS	WORK ORDERS	CAP / SAMP No.	UIS0884
	GENERAL	AM PROJ. No.	
	OVERHEAD	HV SWITCHING	
	UNDERGROUND	UBD/PENGUIN REF	MAP 206 REFN9
	SUBSTATIONS	GIS MAP No	U82524
		HV OP DIAGRAM	EASTERN CREEK 1H10
		LOCAL GOV AREA	FAIRFIELD

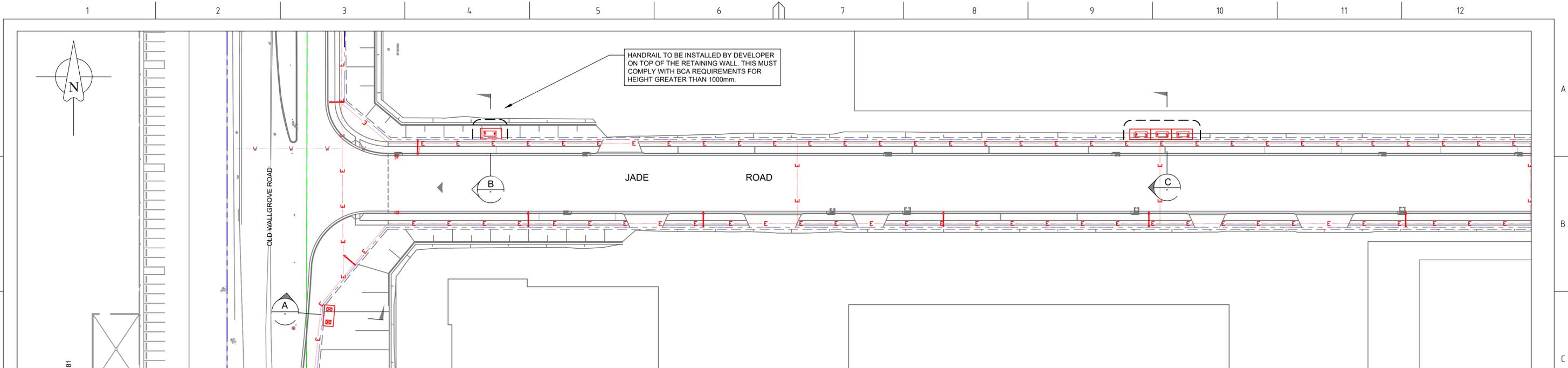
ORIGINAL SCALE	DO NOT SCALE DIMENSIONS IN METRES
DRAWN: DCM	DATE: 24/06/2020
CH'D: C.HORNER	DESIGN: W.Thai

OLD WALLGROVE ROAD
 HORSLEY PARK
 UIS0884
ELECTRICAL RETICULATION

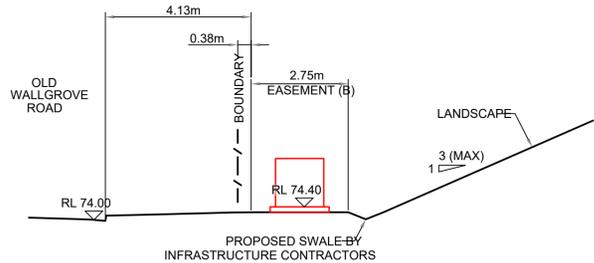
Endeavour Energy

A1 517058 A

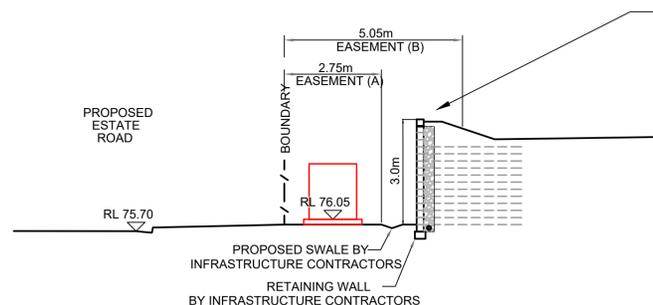
SHEET No 5 OF 6 SHEETS



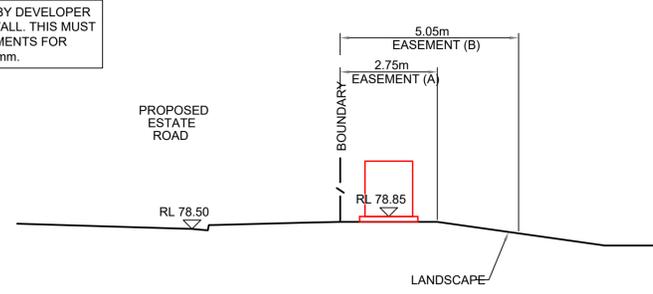
RETAINING WALL SITE PLAN
SCALE 1 : 500



SWITCHING STATIONS
54712, 54714 SECTION A
1 : 100



SUBSTATION
54717 SECTION B
1 : 100



SUBSTATION
54715, 54713, 54711 SECTION C
1 : 100

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WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

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SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

OF: _____

CONTACT No.: _____

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SIGNATURE: _____

DATE: _____

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AMENDMENTS ORIGINAL A	1	2	3	4	5	6	7	8	9	10	11	12	
	connect REF. NUMBER DV738B E13				REFERENCE DRAWINGS		WORK ORDERS		CAP / SAMP No. UIS0884	AM PROJ. No.	ORIGINAL SCALE	DO NOT SCALE DIMENSIONS IN METRES	
	Tel: 02 9733 3333 Fax: 02 9733 3330 Email: mail@cinf.com.au				GENERAL		OVERHEAD		UBD/PENGUIN REF	MAP 206 REF N9	DRAWN	DCM	OLD WALL GROVE ROAD HORSLEY PARK UIS0884 ELECTRICAL RETICULATION
	Date: _____				UNDERGROUND		SUBSTATIONS		GIS MAP No	U82524	DATE	24/06/2020	
Issue Date: 20/02/2022, DBVD Sequence No: 207939297				LOCAL GOV AREA		EASTERN CREEK 1 H10		FAIRFIELD	CH'D	C.HORNER	DESIGN	W.Thai	

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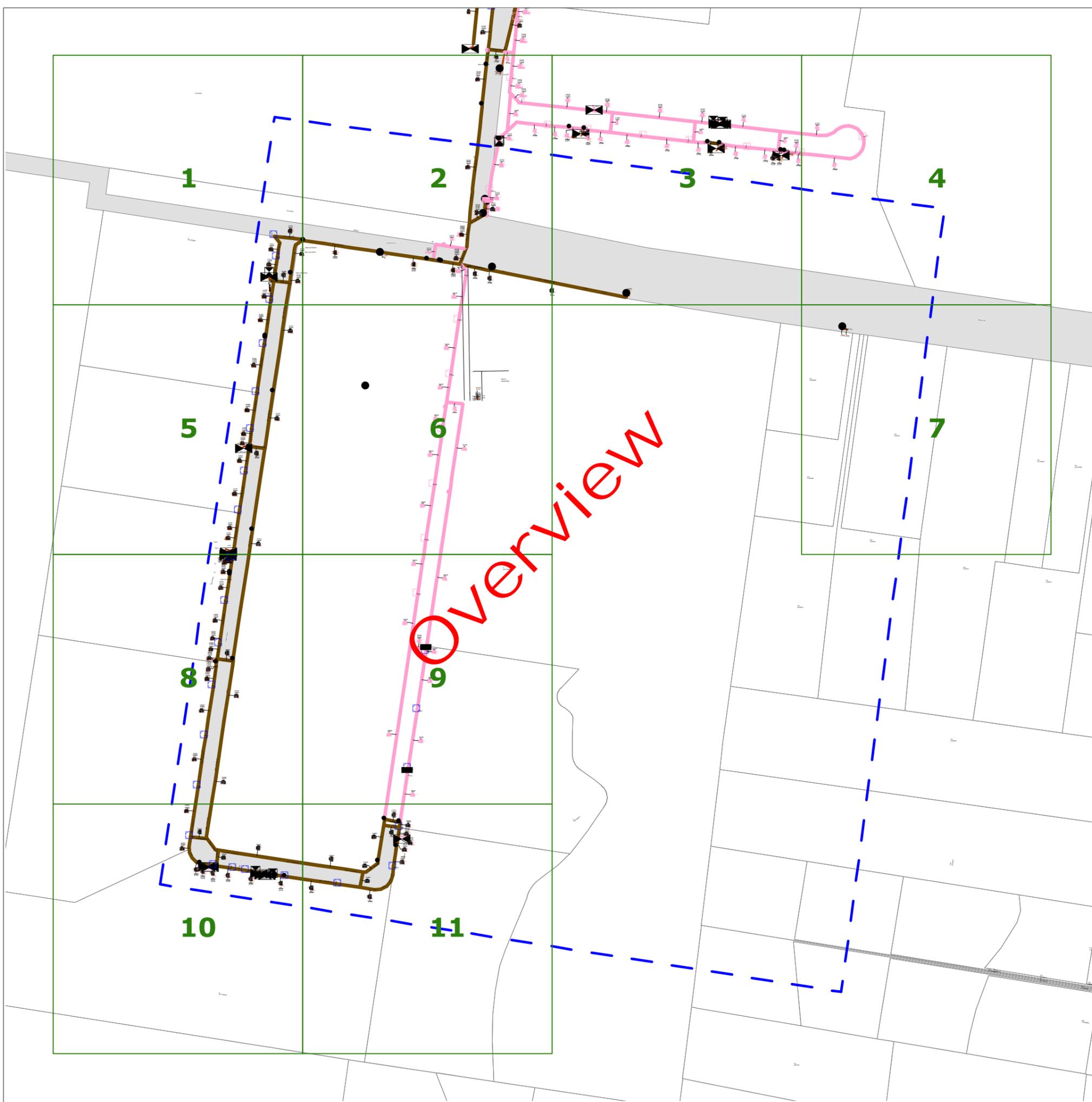
LEGEND

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



NOT TO SCALE

DBYD Sequence No.:	207939297
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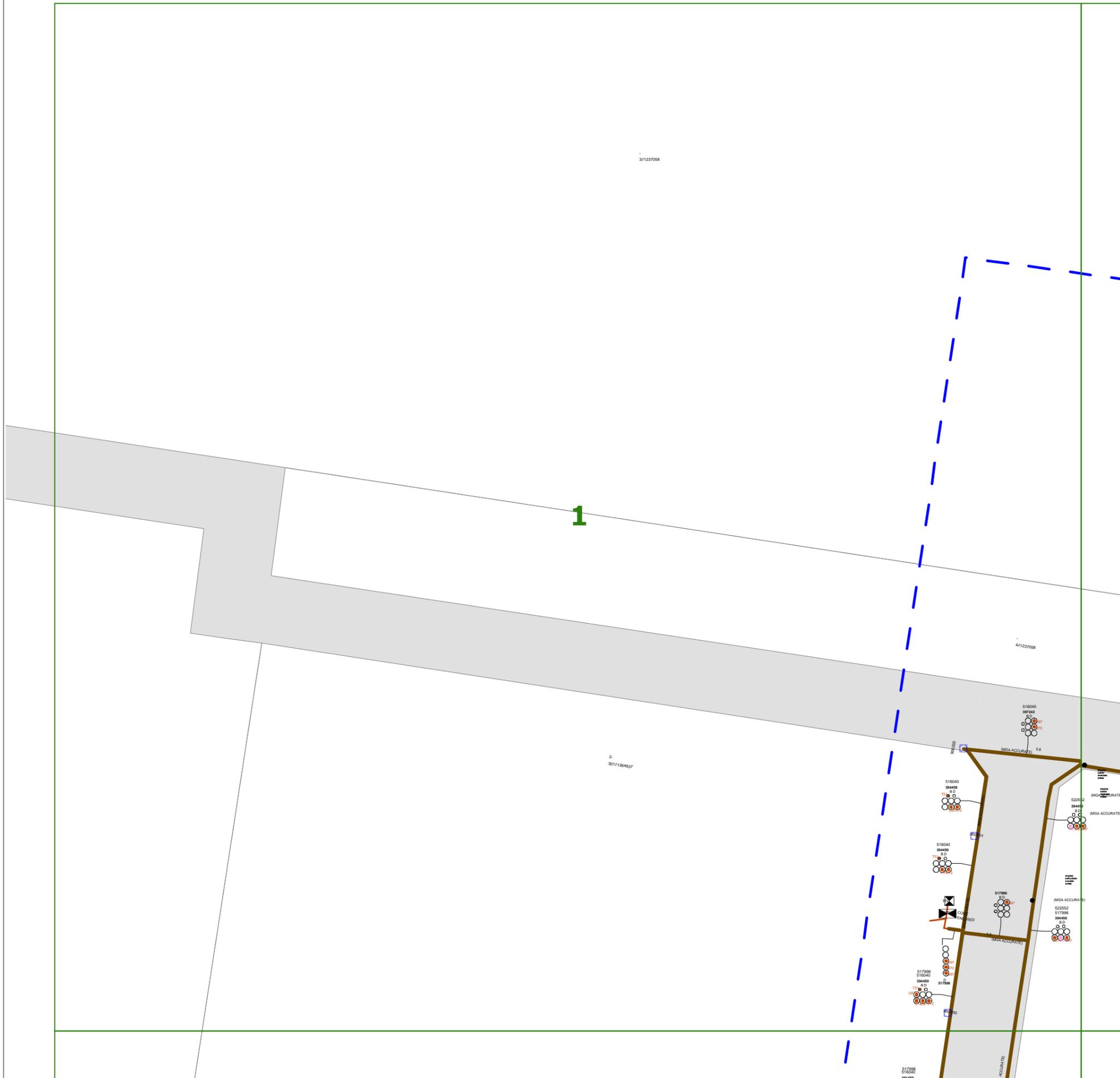
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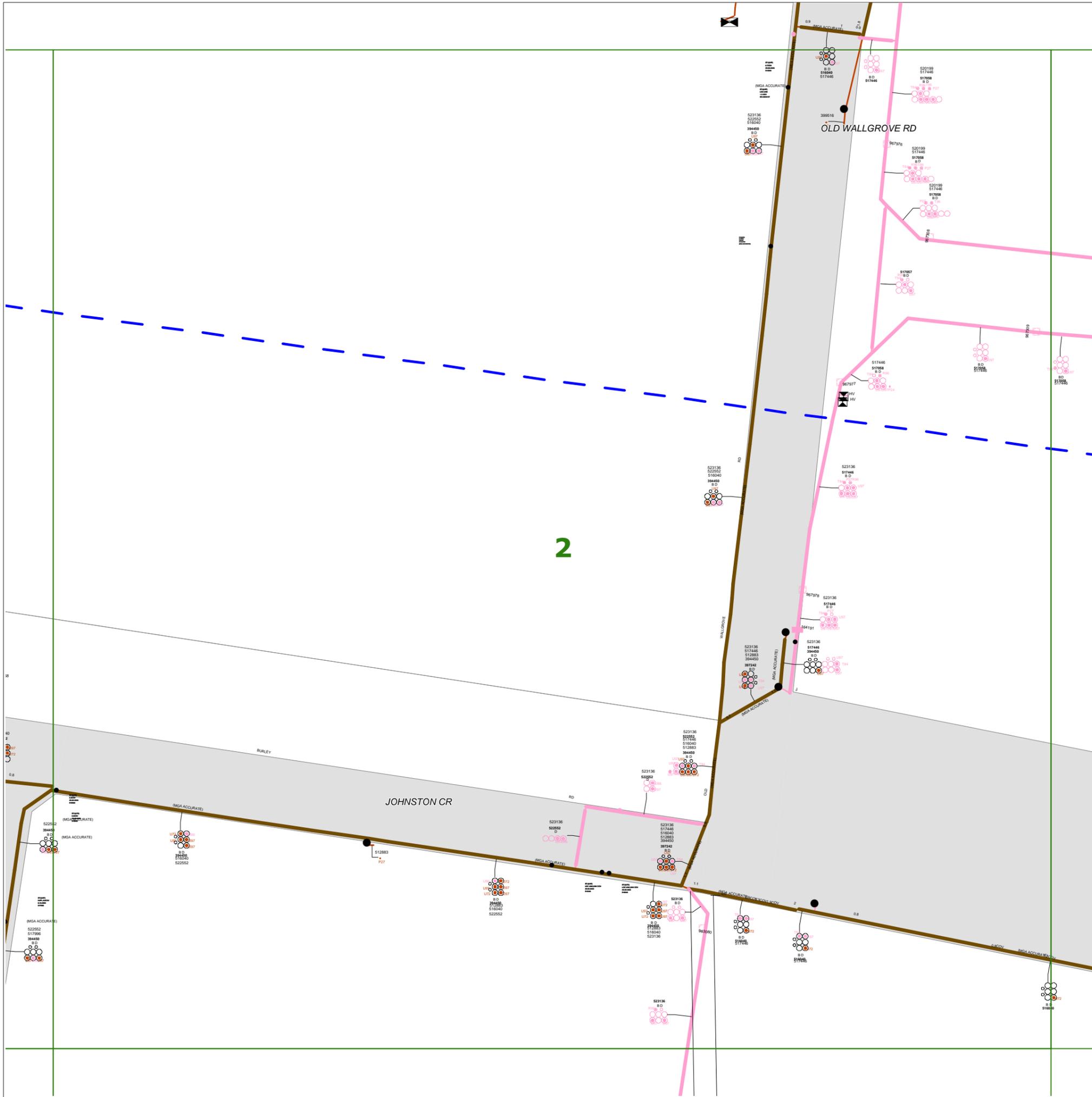
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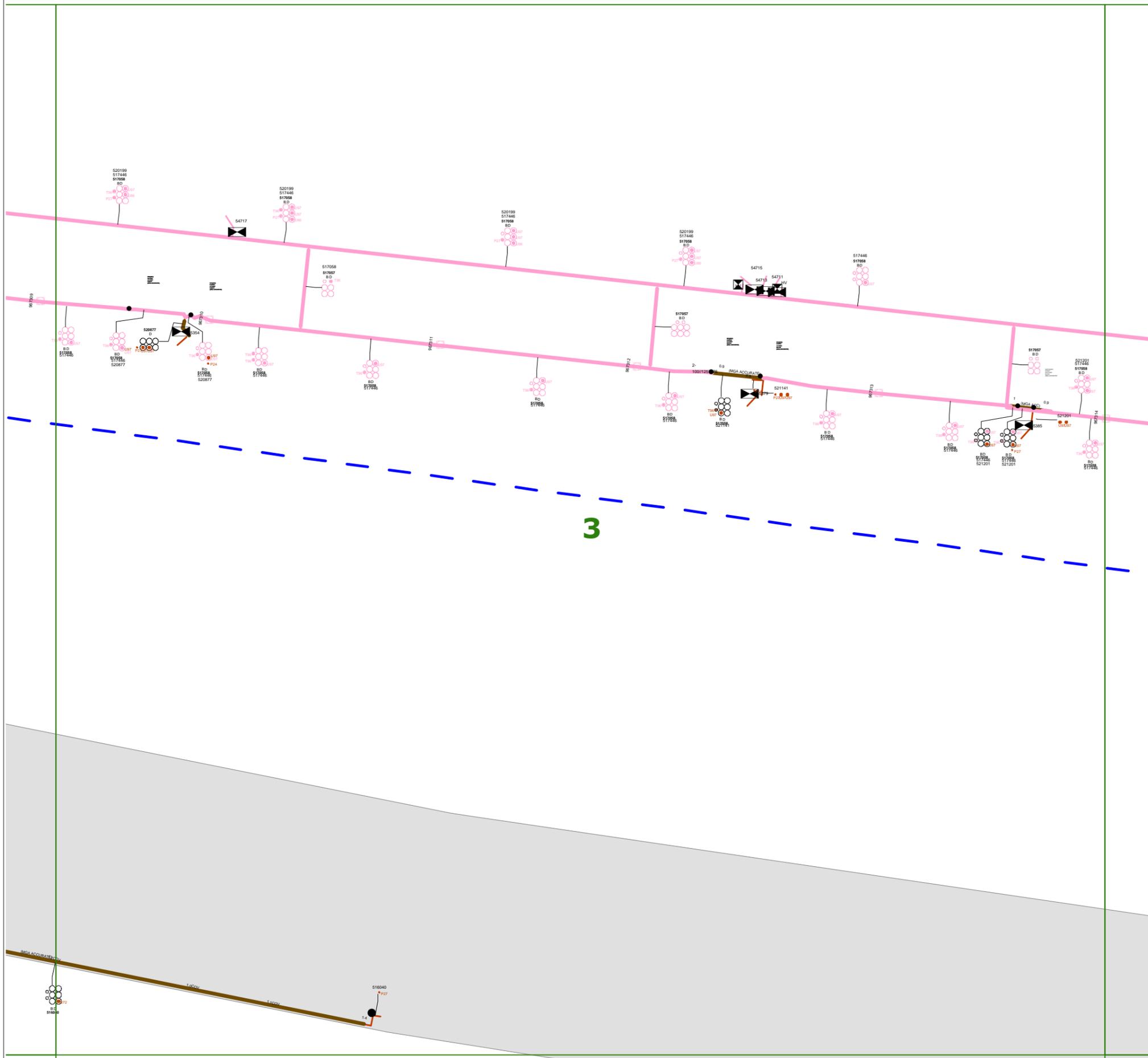
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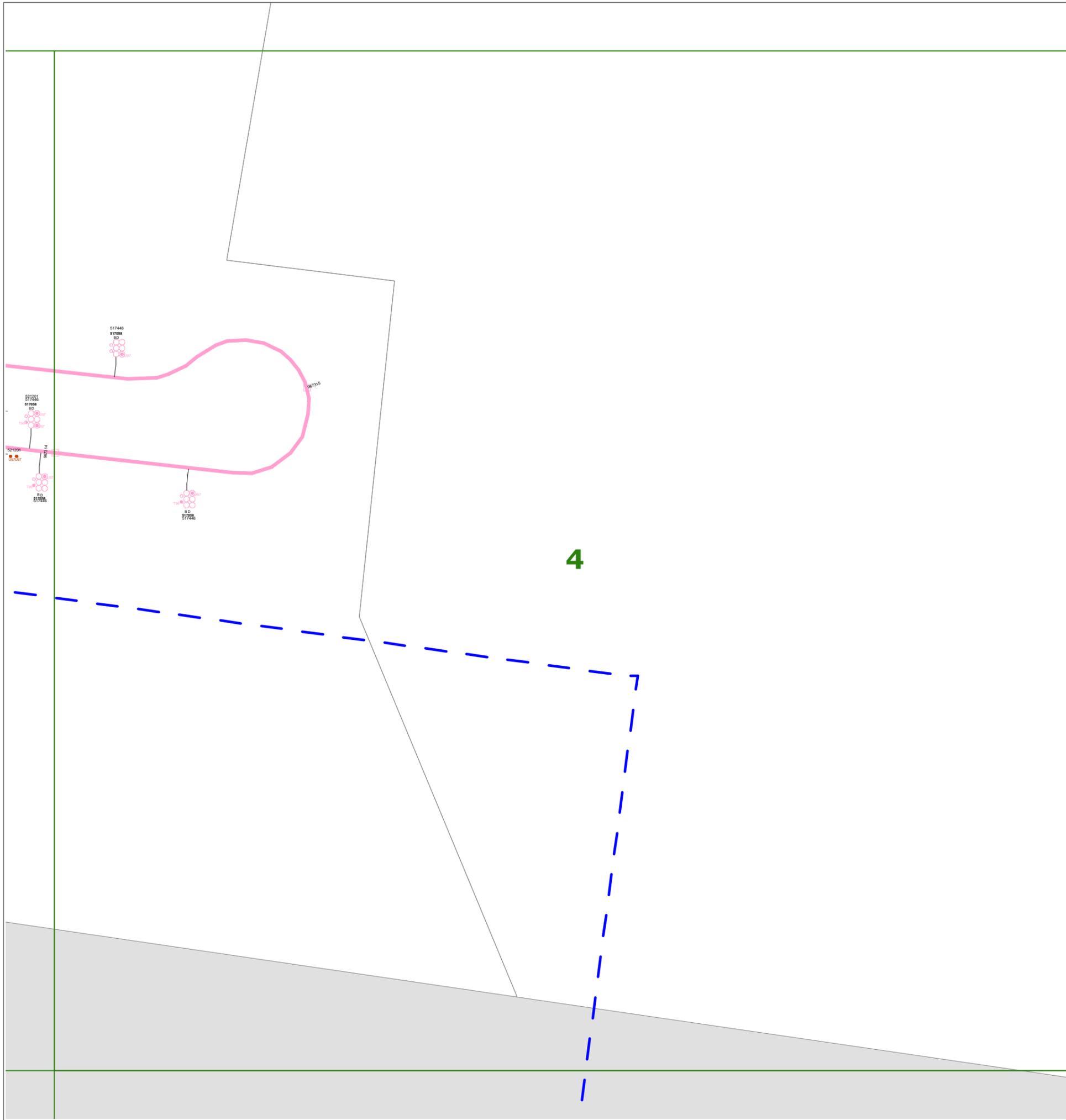
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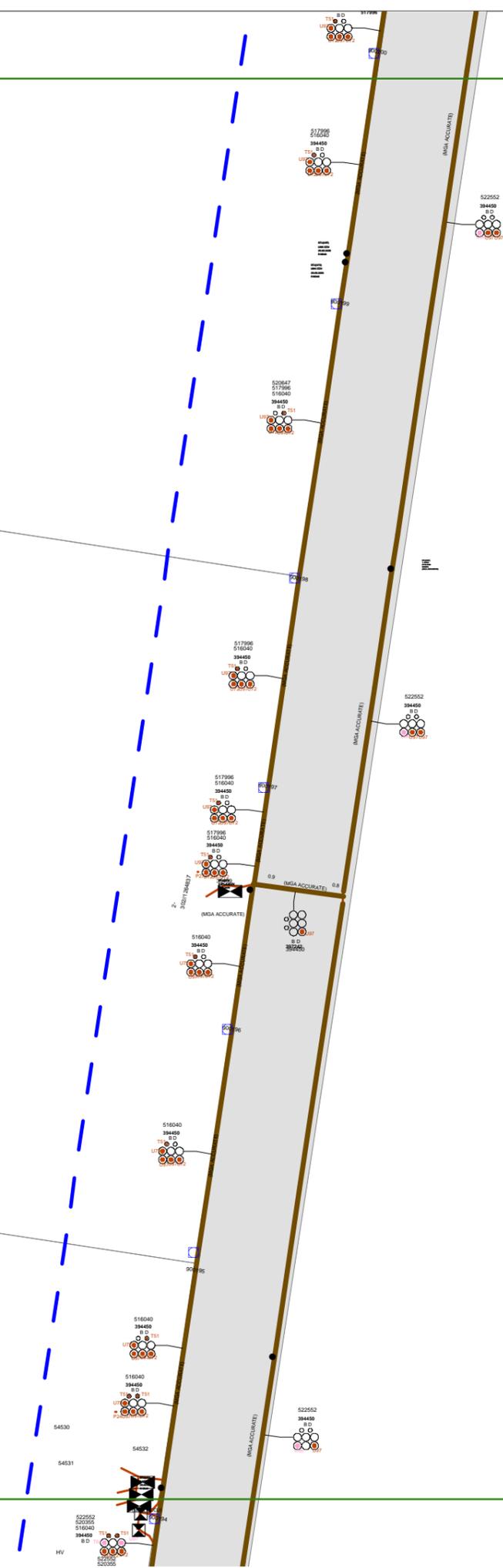
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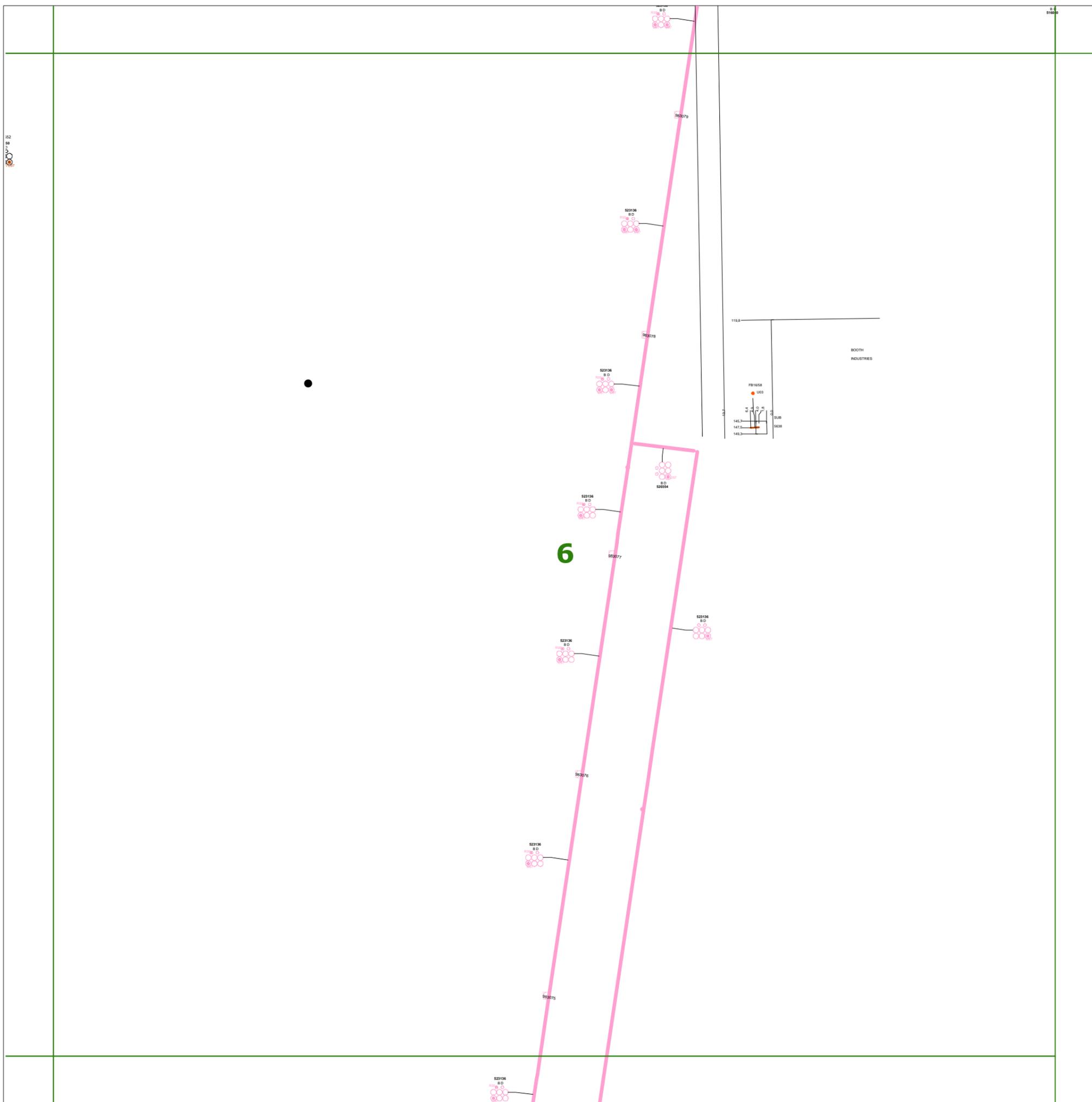
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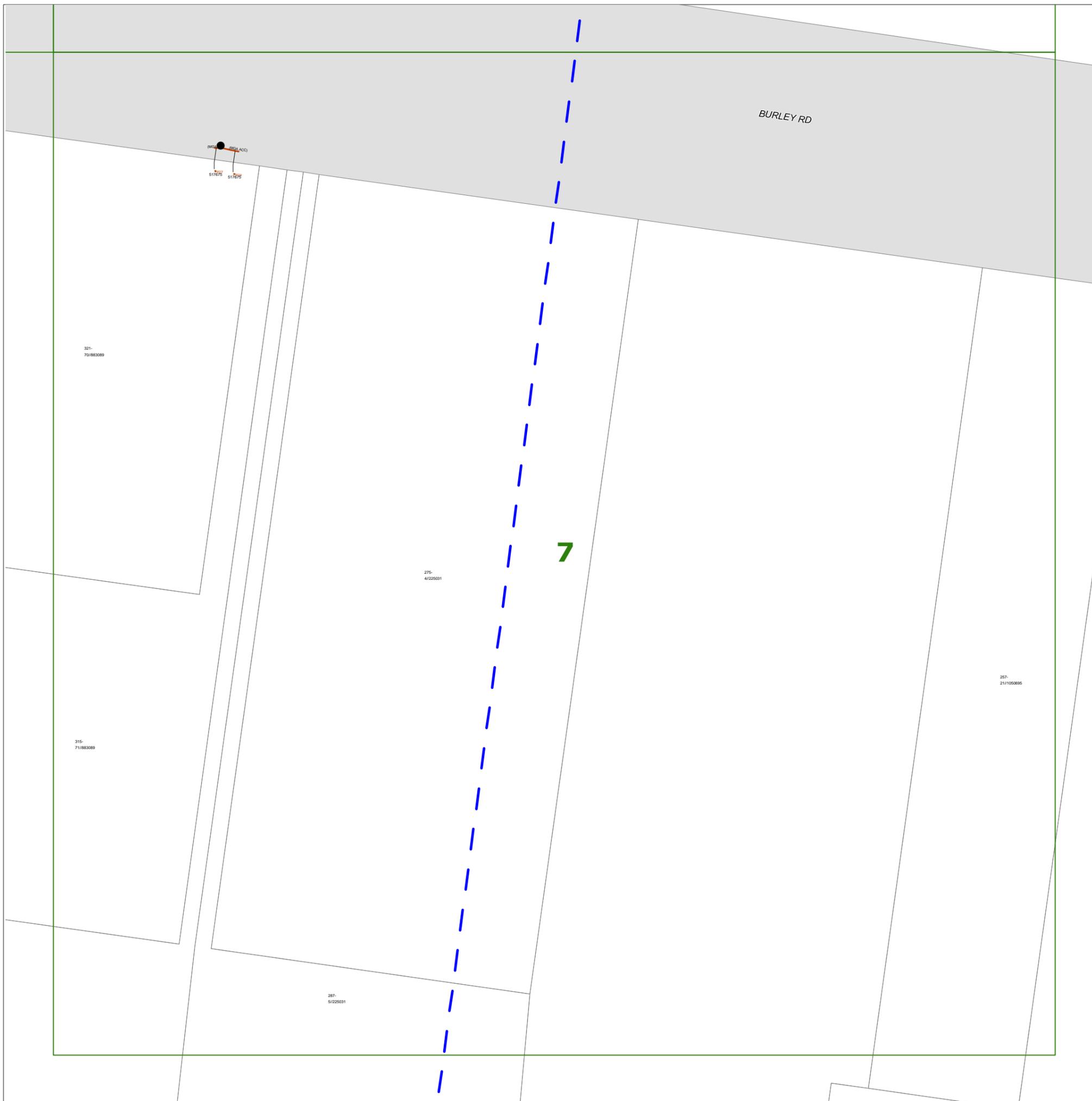
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- Endeavour Energy underground earth grids may exist and their location **may not** be shown on plans. Persons excavating are expected to exercise all due care, especially in the vicinity of padmount substations, pole mounted substations, pole mounted 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.
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- 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.

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Whilst Endeavour Energy has taken all reasonable steps to ensure that the information contained in the plans is as accurate as possible it will accept no liability for inaccuracies in the information shown on such plans.

LEGEND

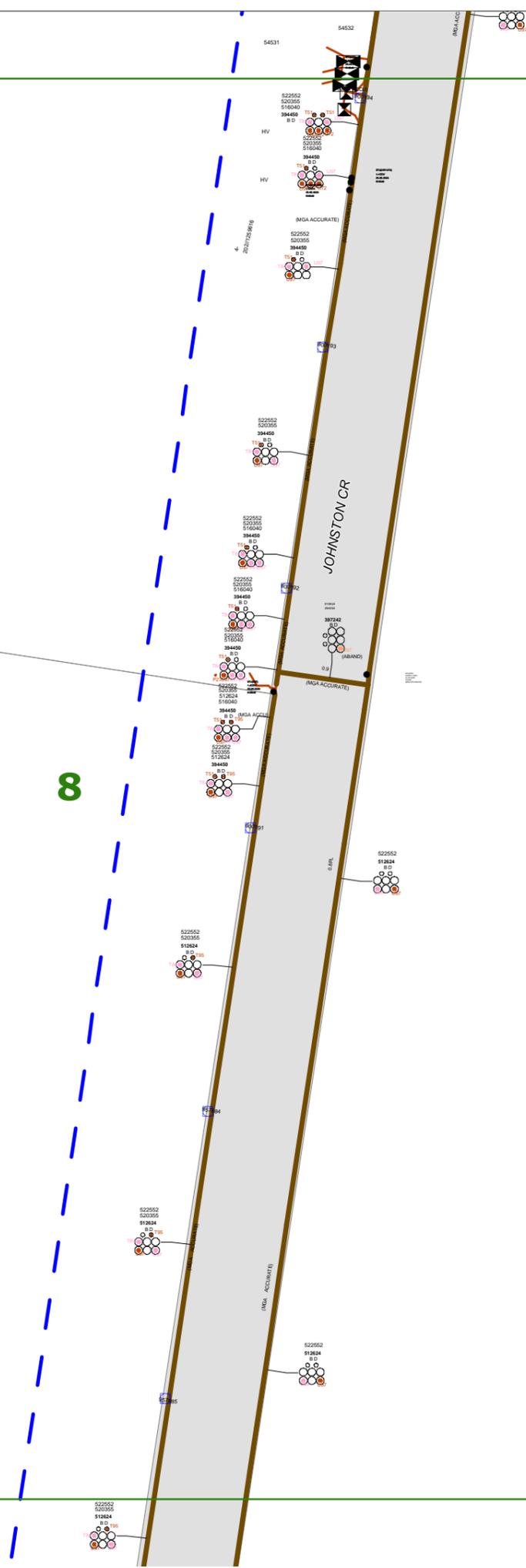
-  OR  Street light column
-  Padmount substation
-  OR  Overground pillar (O.G.Box)
-  Underground pit
-  Duct run
-  Cable run
-  Typical duct section
-  Asbestos warning



NOT TO SCALE

DBYD Sequence No.:	207939297
Issued Date:	10/02/2022

8



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**.
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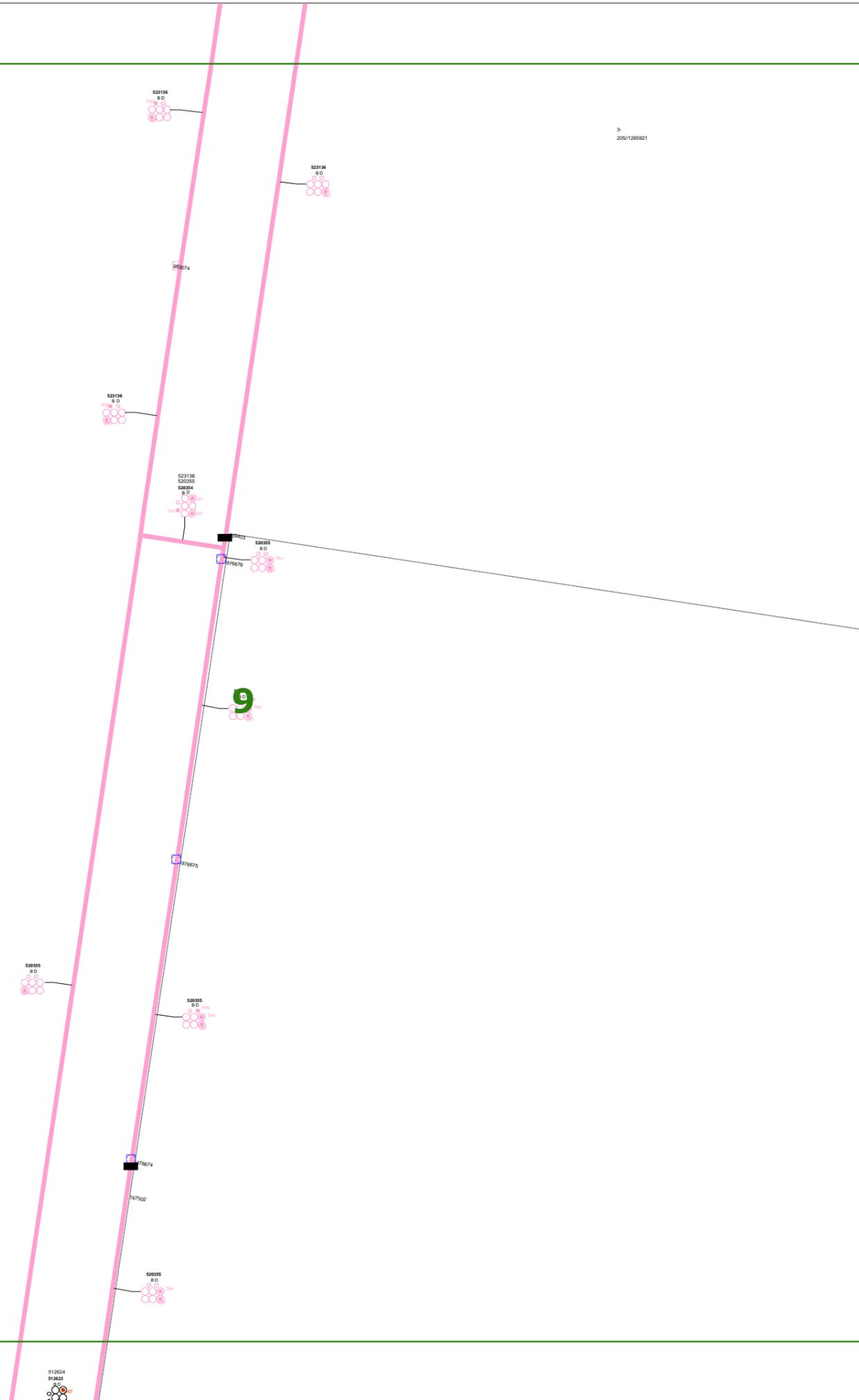
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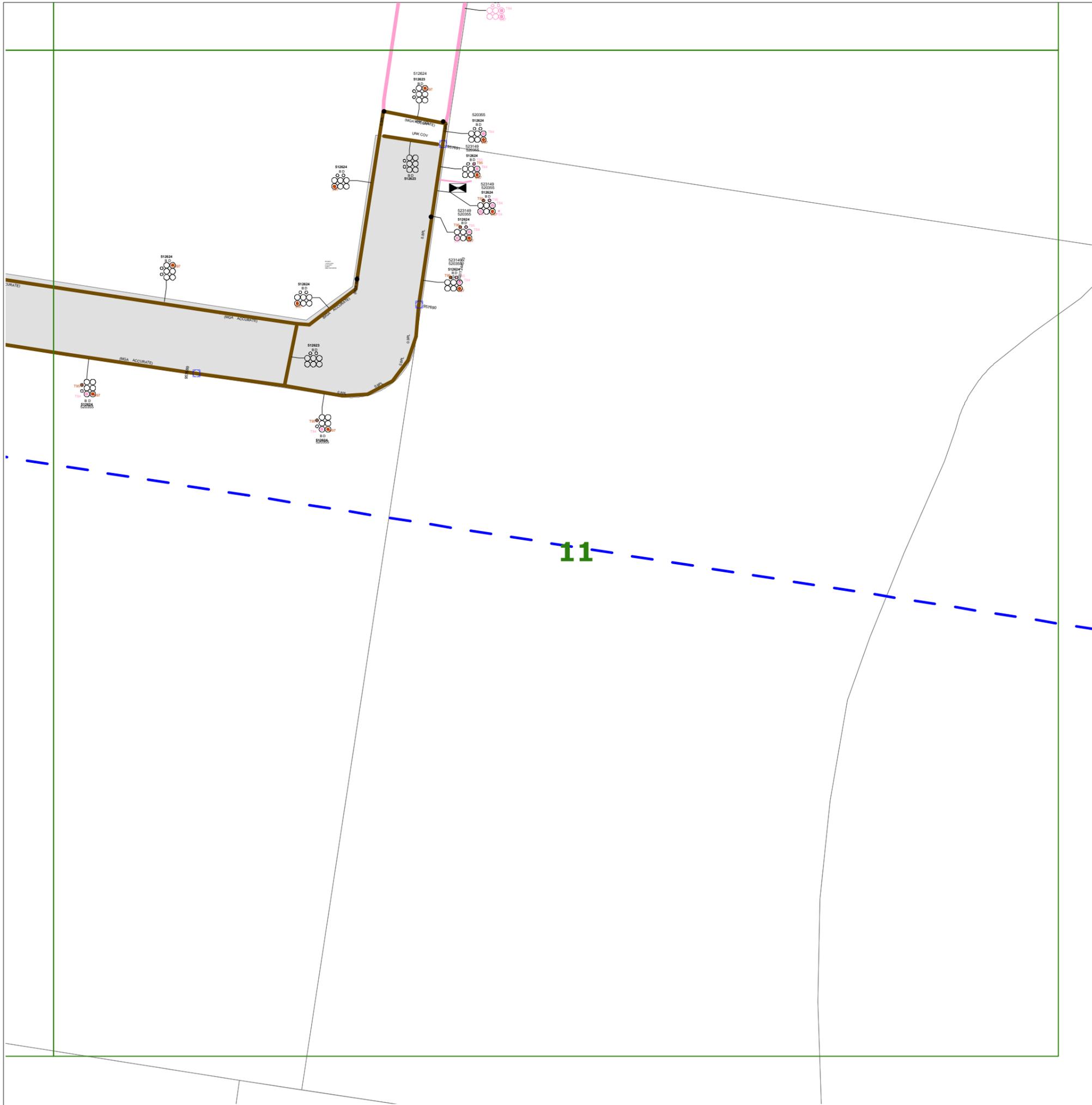
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Jemena Gas Network Protection

High Pressure - Assets Affected

This information is only valid for 28 days from the date of issue

In reply to your enquiry, there are **High Pressure Gas Mains** in the vicinity of your intended work, as generally illustrated on the attached map. There may also be other mains or services at the location, as discussed in the warning below. **For an explanation of the map, please see the information below and the legend attachment.**

Excavation Guidelines

Prior to **any** excavations in this area, you **must** contact the High Pressure Response Coordinator to arrange a survey via:

<http://mygasservices.jemena.com.au> (High Pressure Works / High Pressure Standby)

Please note that a duty of care exists to ensure gas assets are not compromised or damaged. Jemena's expectation is the excavator operator holds a current Verification of Competency (VOC) or equivalent for the machine to be used near Jemena High Pressure Gas Assets.

Further standby enquiries can be directed to the High Pressure Coordinator -

E: infrastructureprotection@jemena.com.au or **PH:** 1300 665 380

Appointments will be coordinated with availability of a Jemena Representative to arrange a survey. For all works in the vicinity of High Pressure Gas Mains you must arrange for a Jemena Representative to attend and supervise all excavations. Charges may apply.

In accordance with clause 34(5) of the Gas Supply (Safety and Network Management) Regulation 2013 (NSW), you should be informed that all excavation, (including pot-holing by hand to confirm the location of pipes) should be performed in accordance with "**Work Near Underground Assets Guideline**" published in 2007 by the Work Cover Authority.

A copy of this Guideline is available at: www.safework.nsw.gov.au

Warning: The enclosed plans show the position of Jemena Gas Networks (NSW) Ltd's underground gas mains and installations in public gazetted roads only. **Individual customers' services and services belonging to other third parties are not included** on these plans. These plans have been prepared solely for the use of Jemena Gas Networks (NSW) Ltd and Jemena Asset Management Pty Ltd (together "**Jemena**") and any reliance placed on these plans by you is entirely at your own risk. The plans may show the position of underground mains and installations relative to fences, buildings etc., as they existed at the time the mains etc were installed. The plans may not have been updated to take account of any subsequent change in the location or style of those features since the time at which the plans were initially prepared. Jemena makes no warranty as to the accuracy or completeness of the enclosed plans and does not assume any duty of care to you nor any responsibility for the accuracy, adequacy, suitability or completeness of the plans or for any error, omission, lack of detail, transmission failure or corruption in the information provided. Jemena does not accept any responsibility for any loss that you or anyone else may suffer in connection with the provision of these plans, however that loss may arise (including whether or not arising from the negligence of Jemena, its employees, agents, officers or contractors). The recipient of these plans must use their own care and diligence in carrying out their works and must carry out further surveys to locate services at their work site. Persons excavating or carrying out other earthworks will be held responsible for any damage caused to Jemena's underground mains and equipment. Jemena advises that you may be required to carry out potholing by hand if required by a Jemena Representative to confirm the location of Jemena's main and installations. This must also be performed by you under the supervision of a Jemena Representative and be carried out in accordance with the Working Near Underground Assets Guideline published in 2007 by Work Cover Authority

In case of Emergency Phone 131 909 (24 hours)

Admin 1300 880 906

Network Mains

	Proposed New Main (coloured as per kPa)		
	Proposed Isolate (coloured as per kPa)		
	Unknown kPa		
	2kPa Low Pressure gas main		
	7kPa Low Pressure gas main		
	30kPa Medium pressure gas main		
	100kPa Medium Pressure gas main		
	210kPa Medium Pressure gas main		
	300kPa Medium Pressure gas main		
	400kPa Medium Pressure gas main		
	1050kPa High Pressure gas main		
	3500kPa High Pressure gas main		
	7000kPa High Pressure gas main		
	>7000kPa Transmission pipeline		
	Isolated Service - Former Med/High Pressure		
	Isolated Steel Main - Treat as High Pressure		
	Conduit or Casing		
100 PVC	Size & Material (see conduit material codes)		
	Critical Main -Treat as High Pressure (Main coloured as per kPa)		
	Exposed Main section EXPOSED		
	Shallow Main section: see Protection Code below, no code assume no protection SHALLOW-SP		
SP	Steel Plate	CE	Concrete Encased
PP	PE Plate	JNK	Unknown Type
CS	Concrete Slab		

Network Assets

	Siphon
	Network Valve
	High Pressure Main Line Valve (=>1050kPa)
	High Pressure Automatic Line Break Valve (>1050kPa)
	Boundary Regulator Set (=<1050kPa)
	Distribution Regulator Set (=<1050kPa)
	High Pressure Regulating Station (>1050kPa)

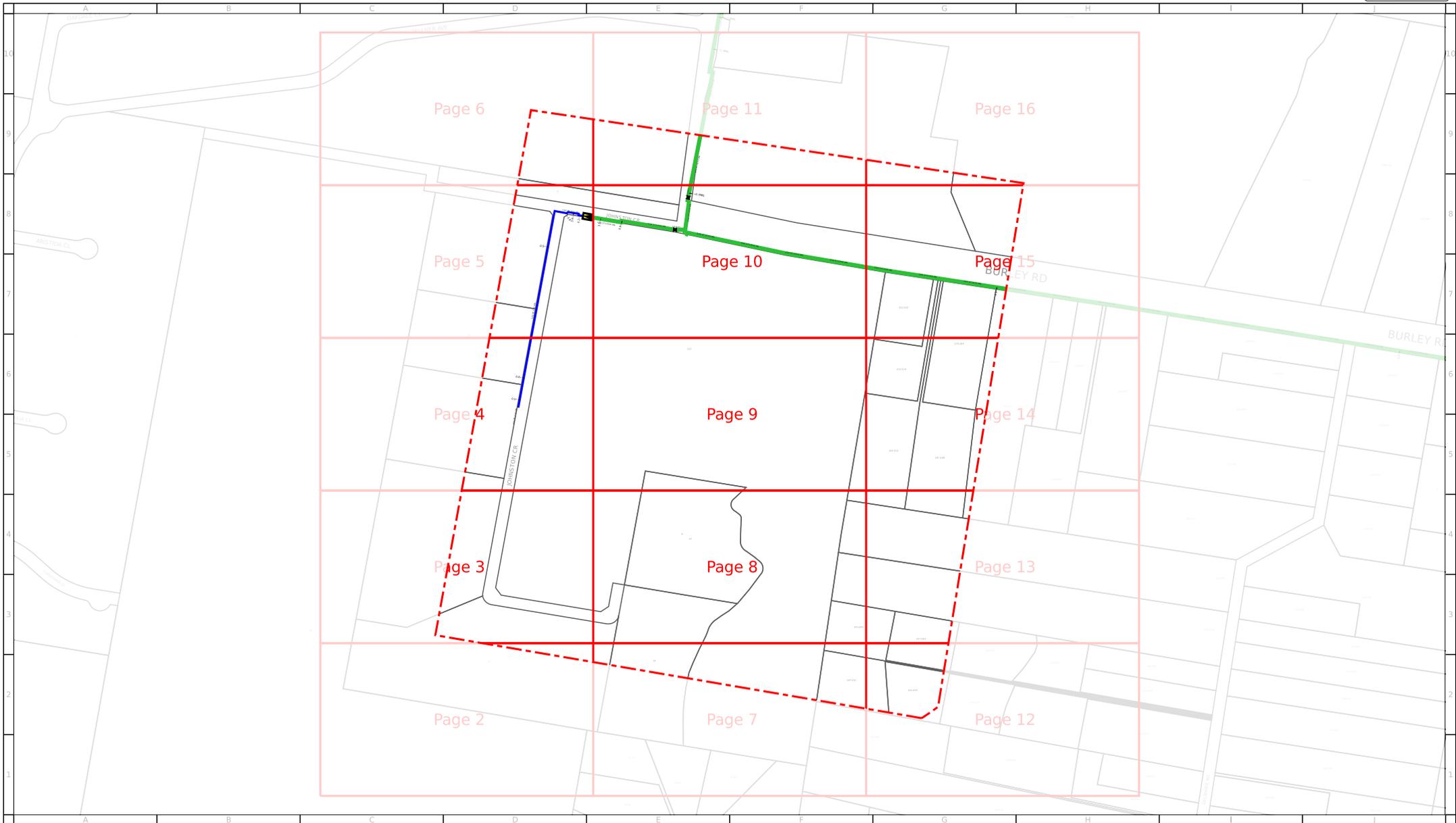
Annotations

Pipe and Conduit Material Codes

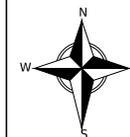
NY	Nylon	NB	Nominal Bore – Cast Iron
PE	Polyethylene	ST	Steel
P/PL	Plastic (undefined)	C/CO	Copper
PVC	Polyvinyl Chloride		

Pipe code combinations and dimension references

	NB 50MM NY	50mm Nylon main inserted into 6 inch (Nominal Bore) Cast Iron pipe
	50MM 32MM NY	32mm Nylon main inserted into 50mm Steel pipe
~1.5		Distance (in metres) of main from Boundary Line (MBL)
MBK		Distance in Metres Back of Kerb
MKL		Distance in Metres from Kerb Line
MEBL		Distance in Metres from Eastern Boundary Line (North/South/West)
MCL		Distance in Metres from Centre Line of Road
MFL		Distance in Metres from Fence Line



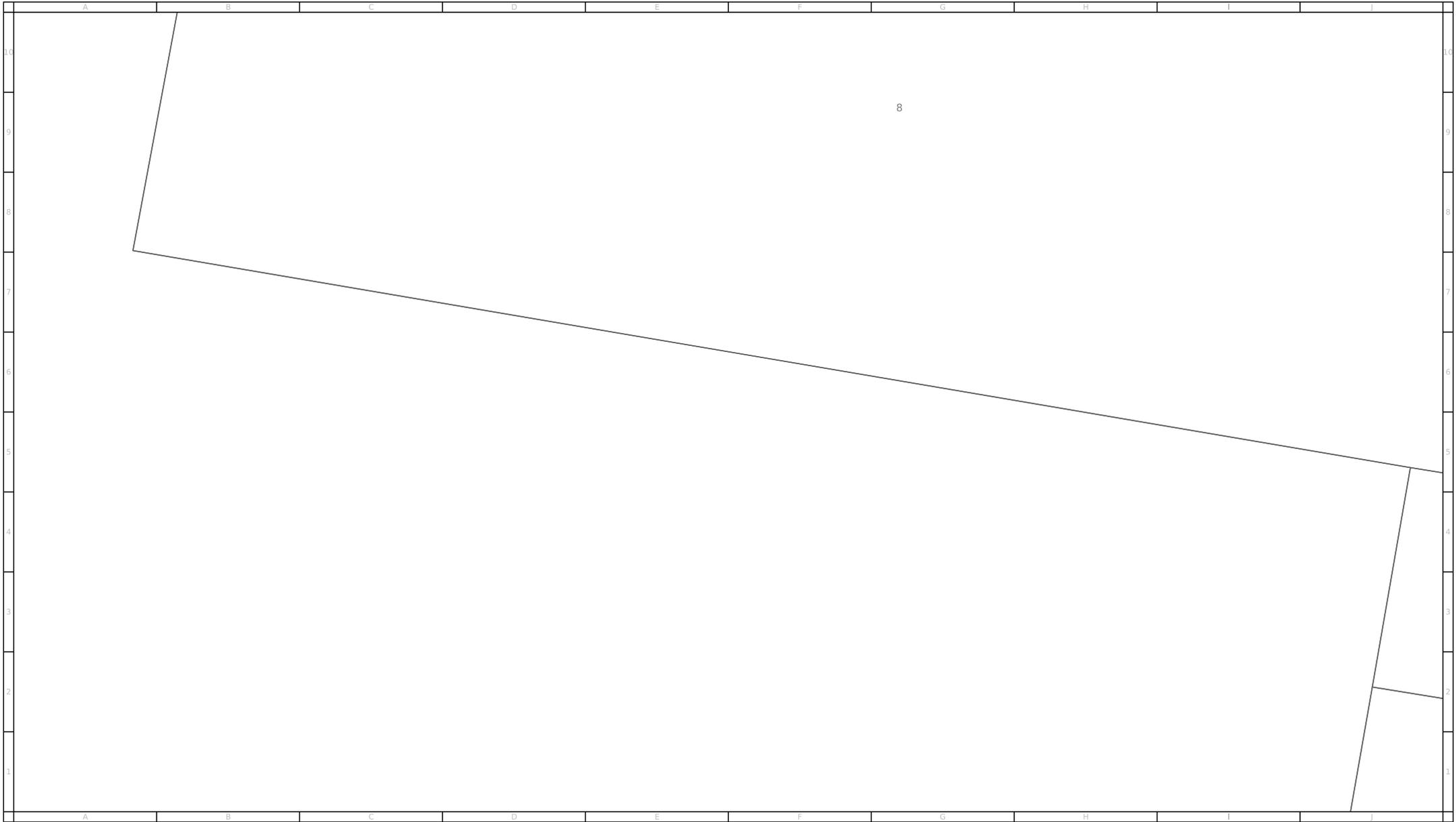
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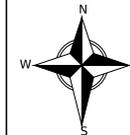
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Issue Date: 09/02/2022
 DBYD Seq No: 207939300
 DBYD Job No: 31359964
 Overview Page:

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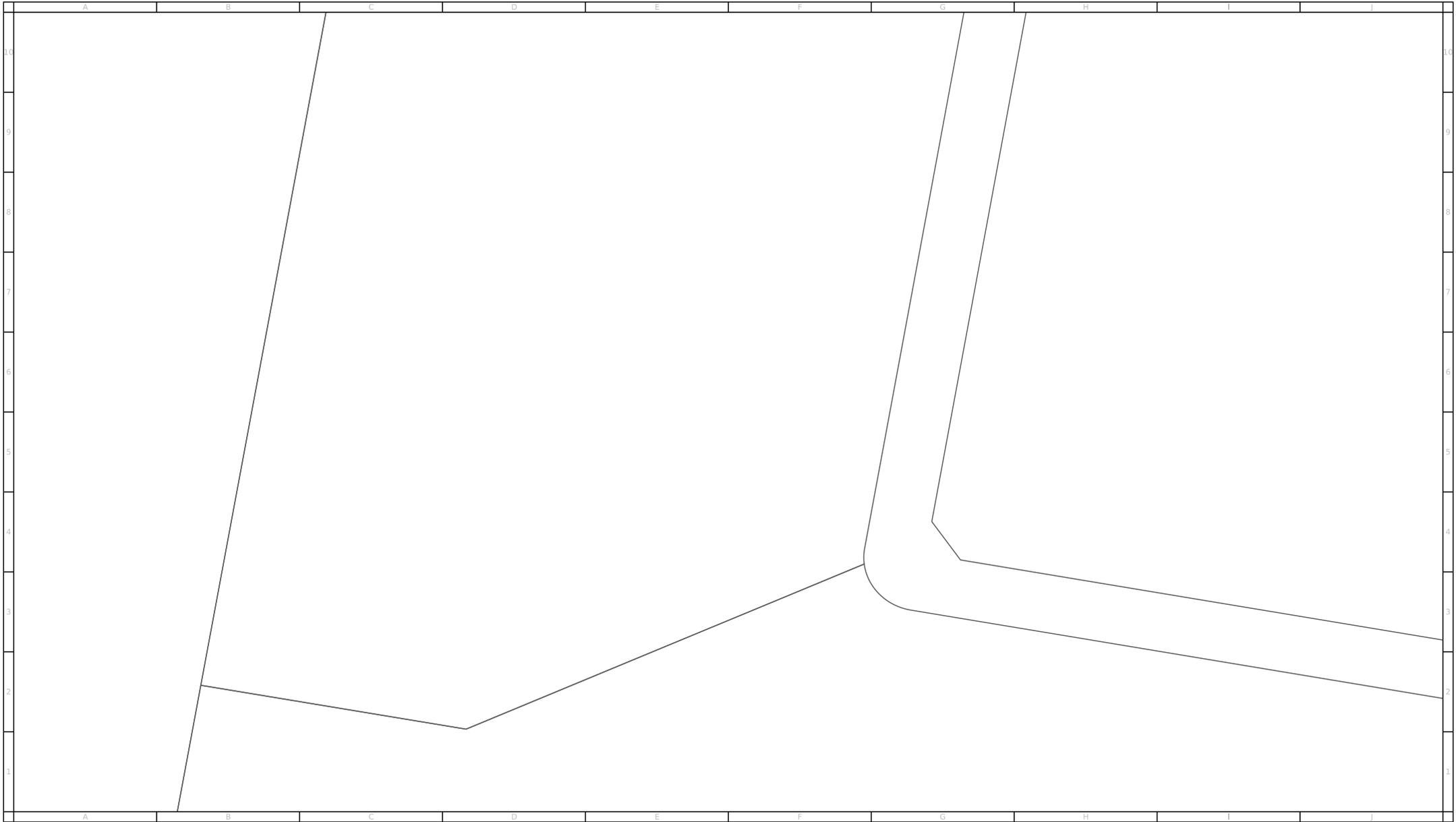
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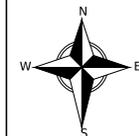
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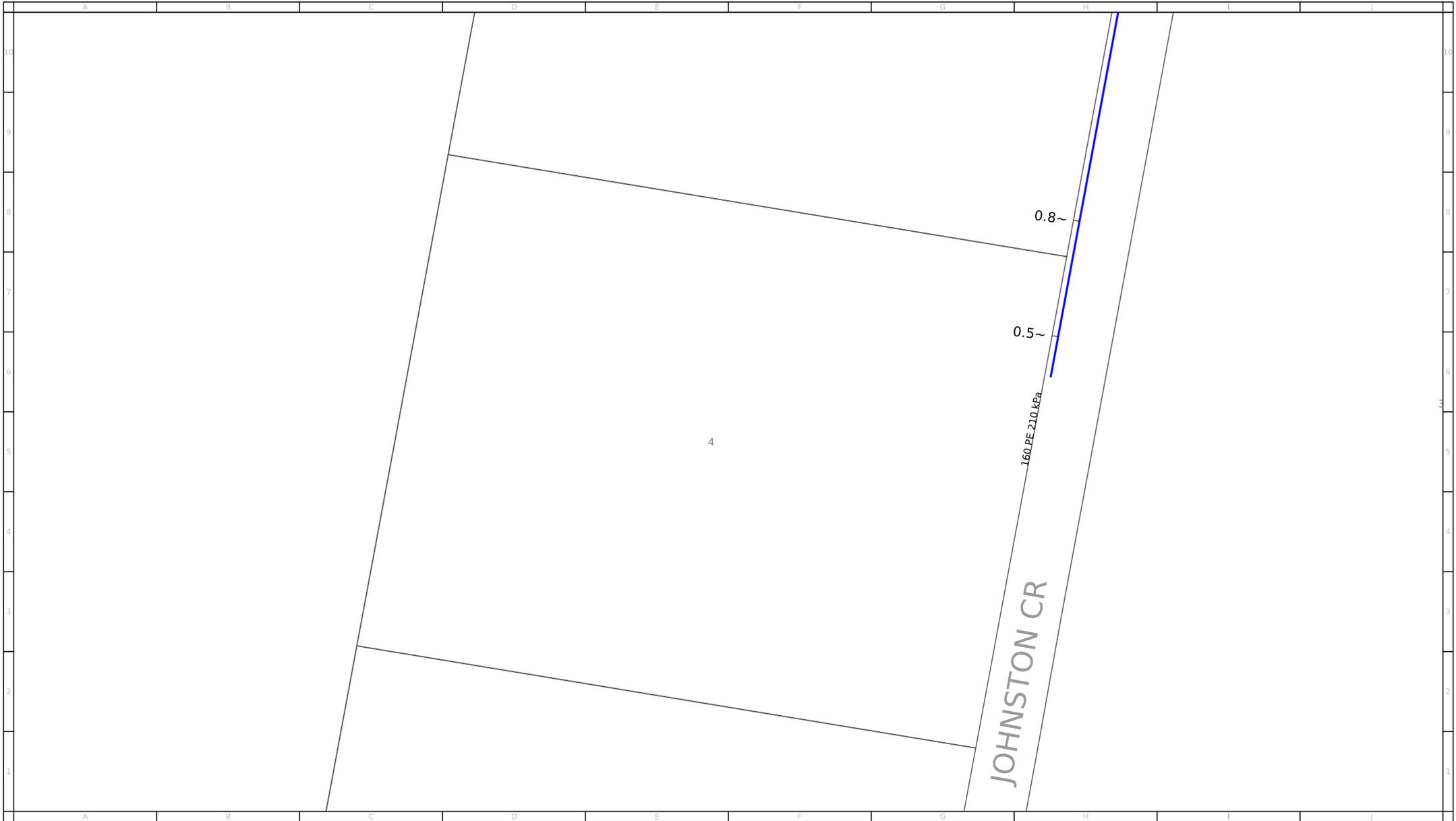
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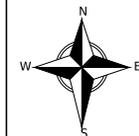
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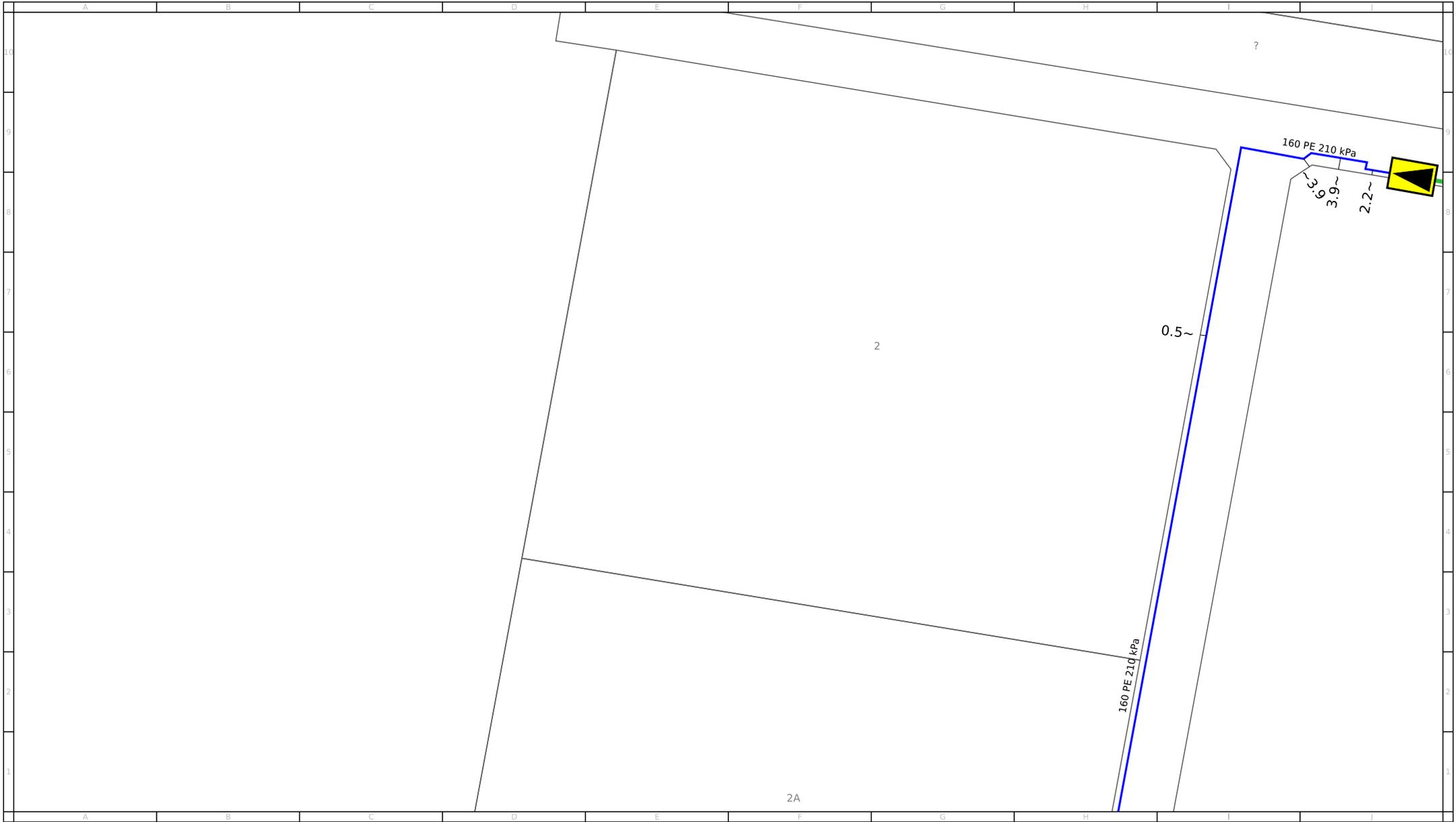
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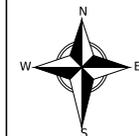
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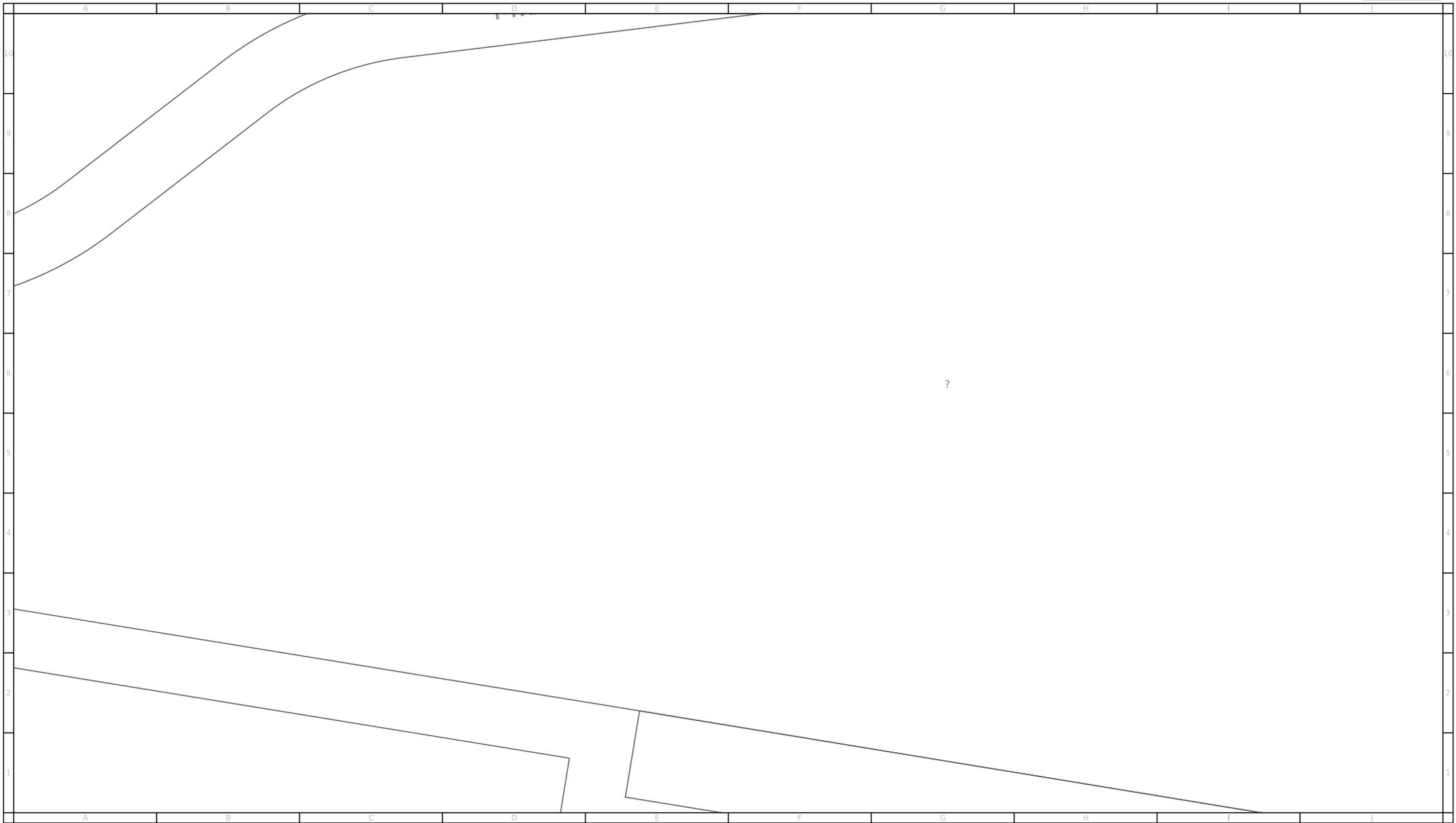
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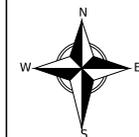
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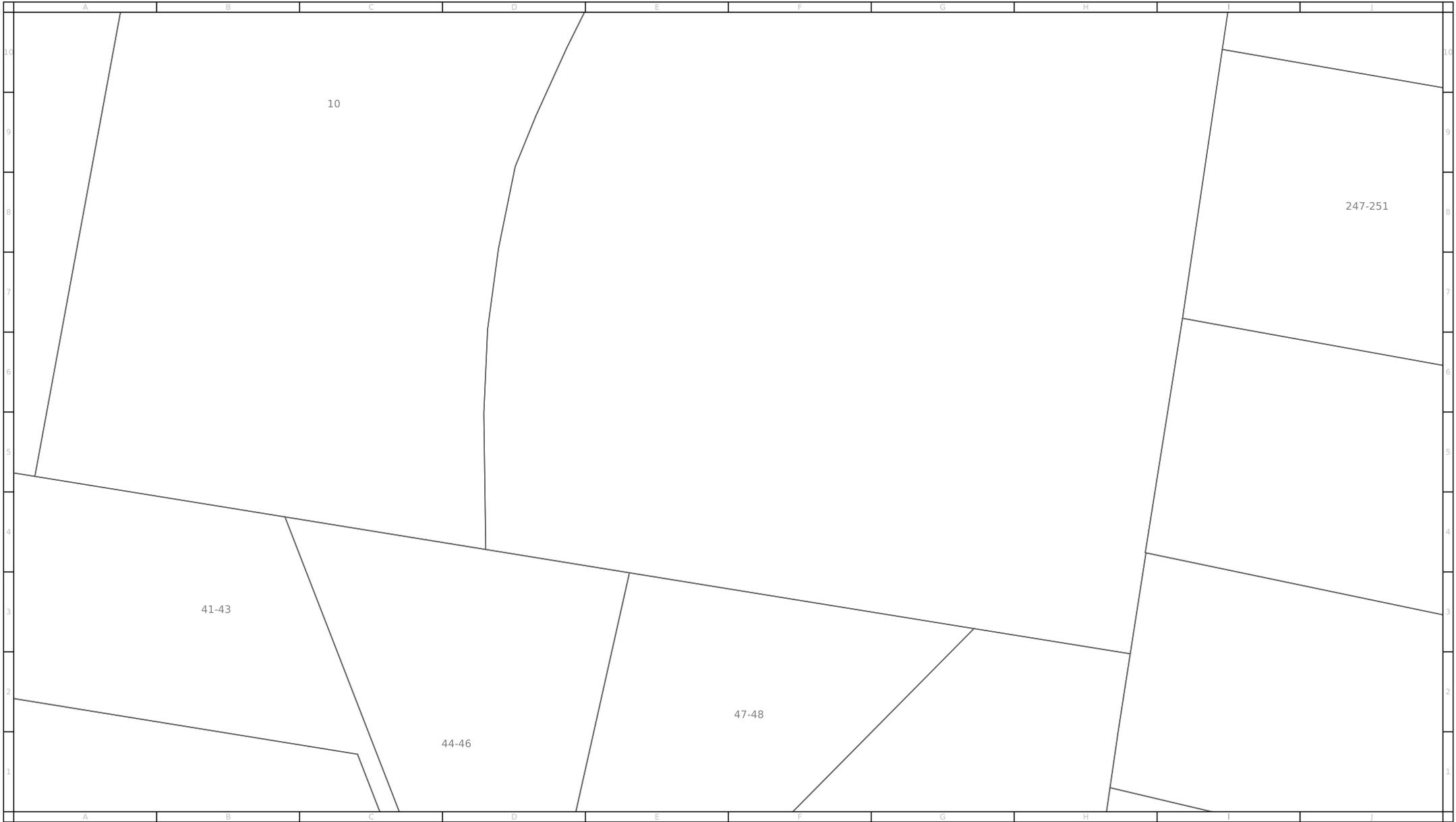


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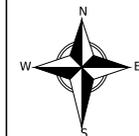
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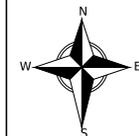
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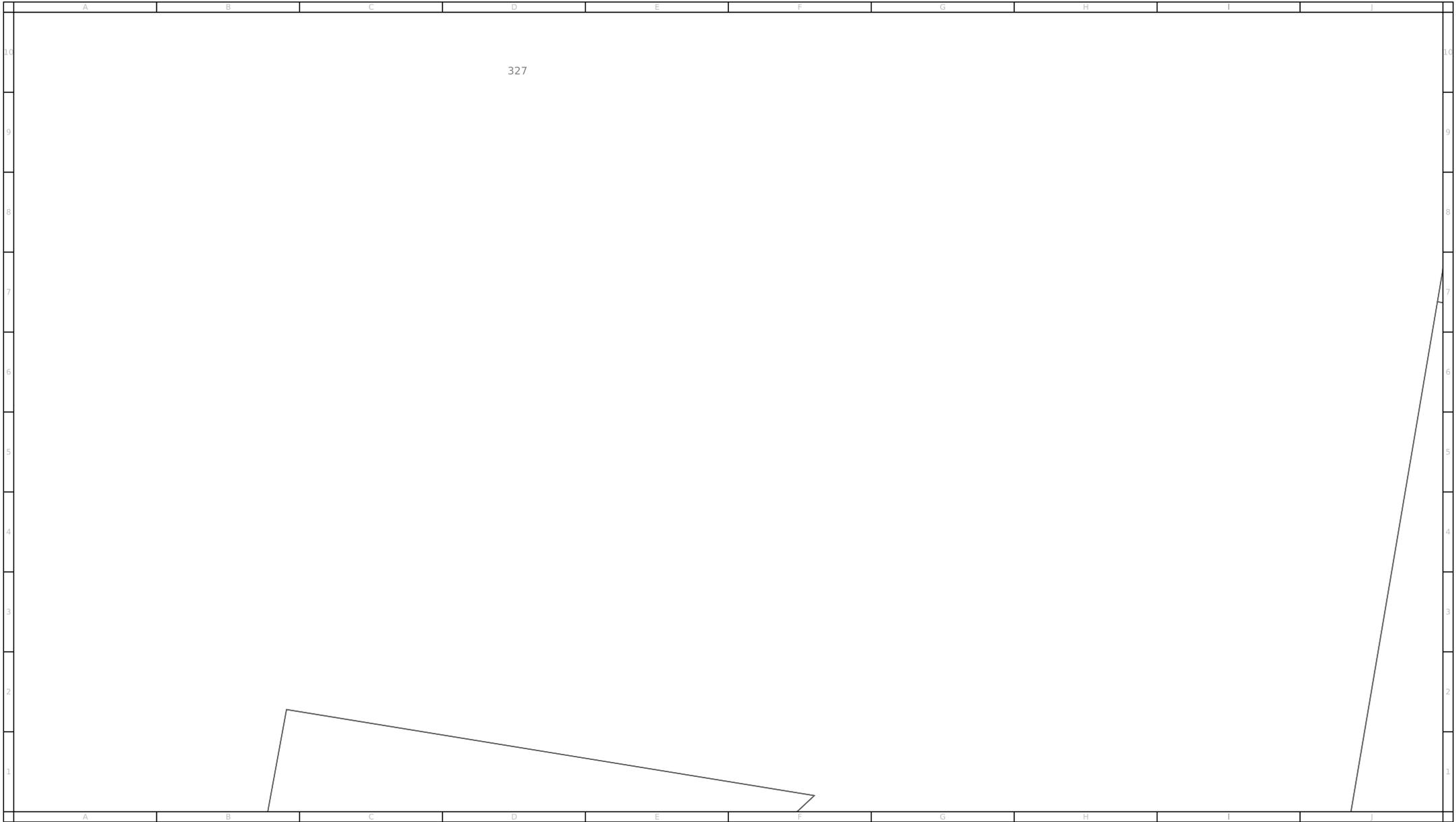
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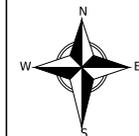
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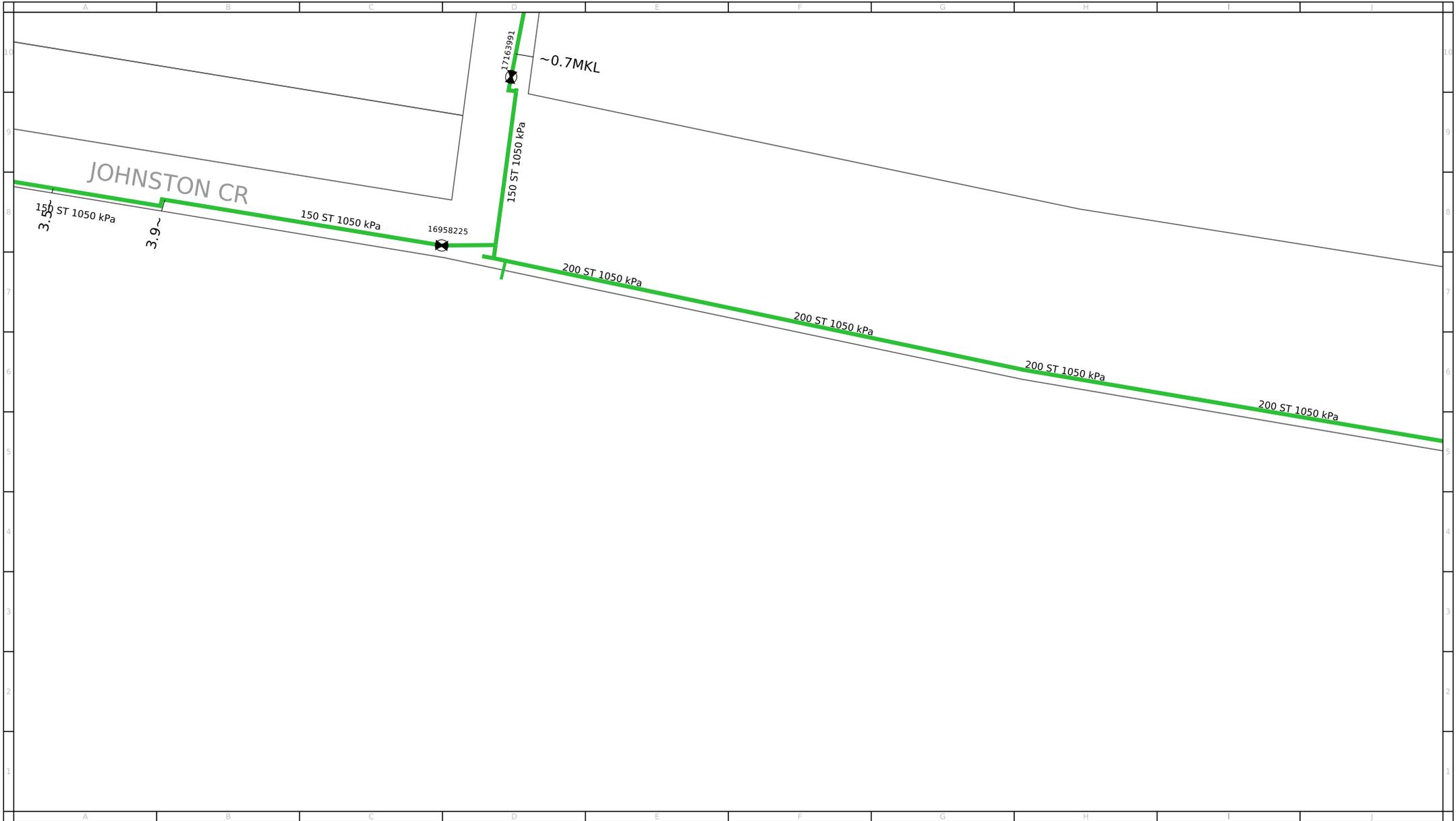
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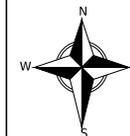
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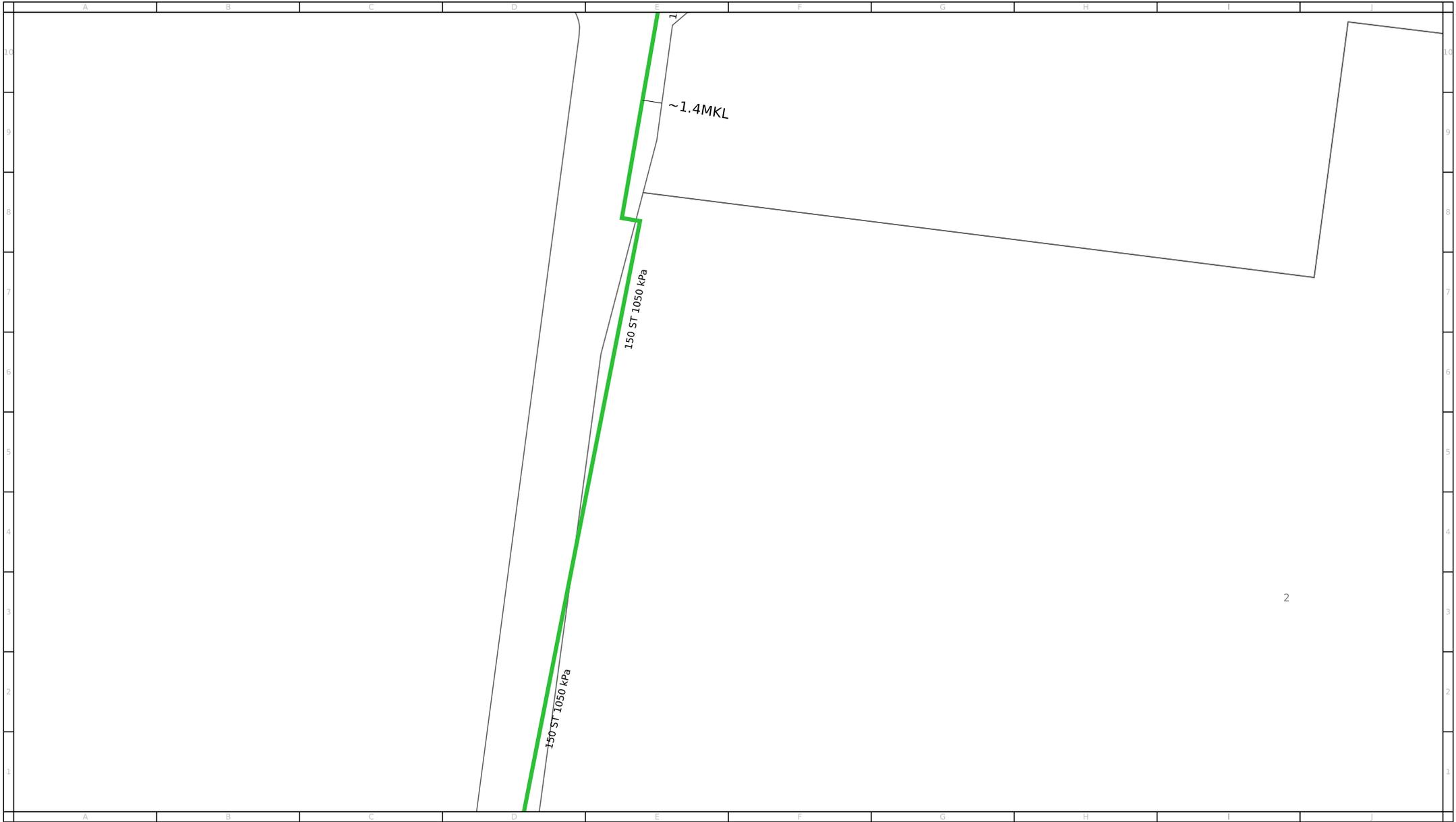
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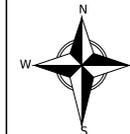
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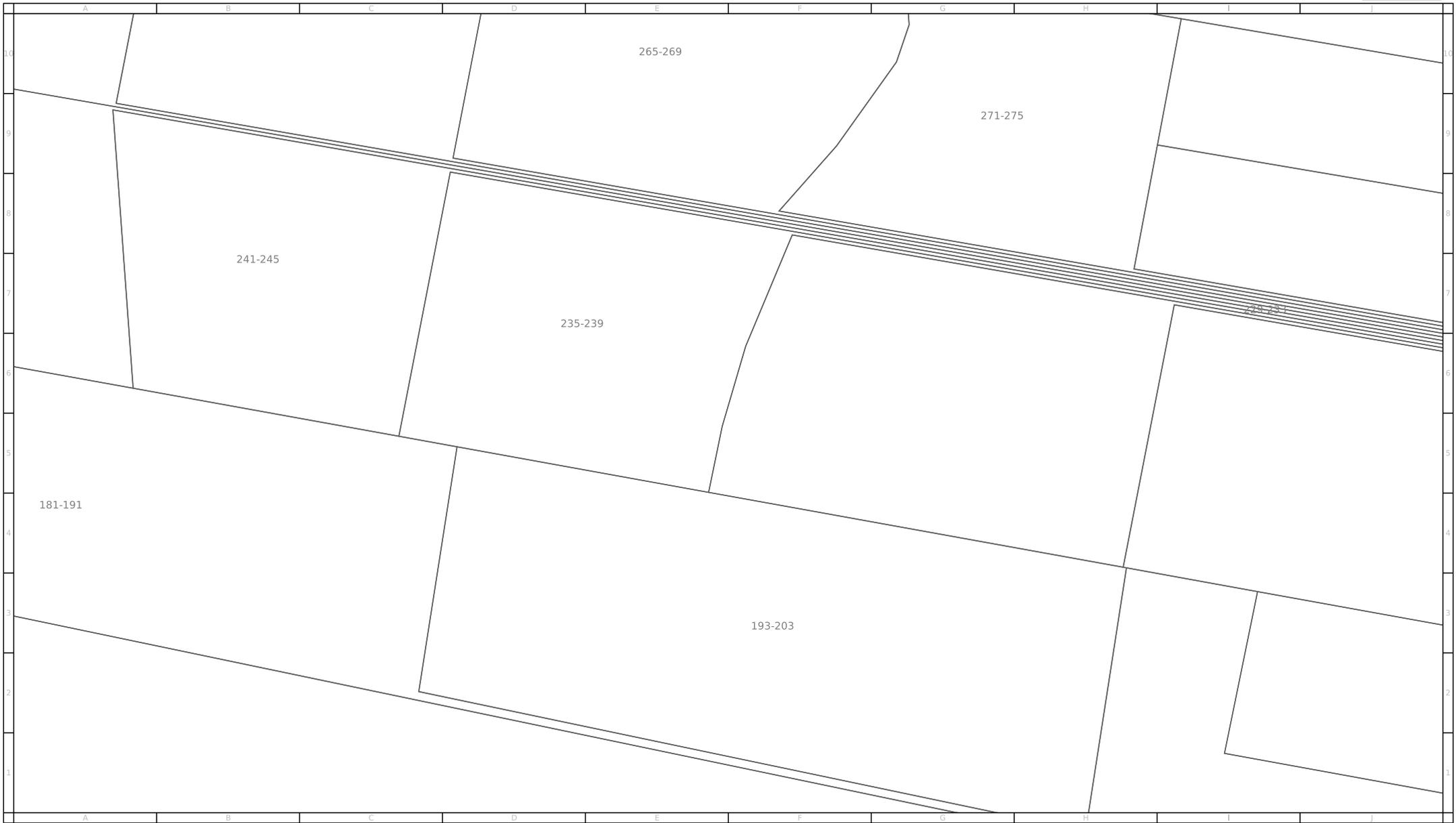
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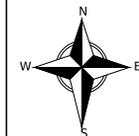
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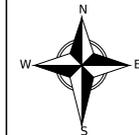
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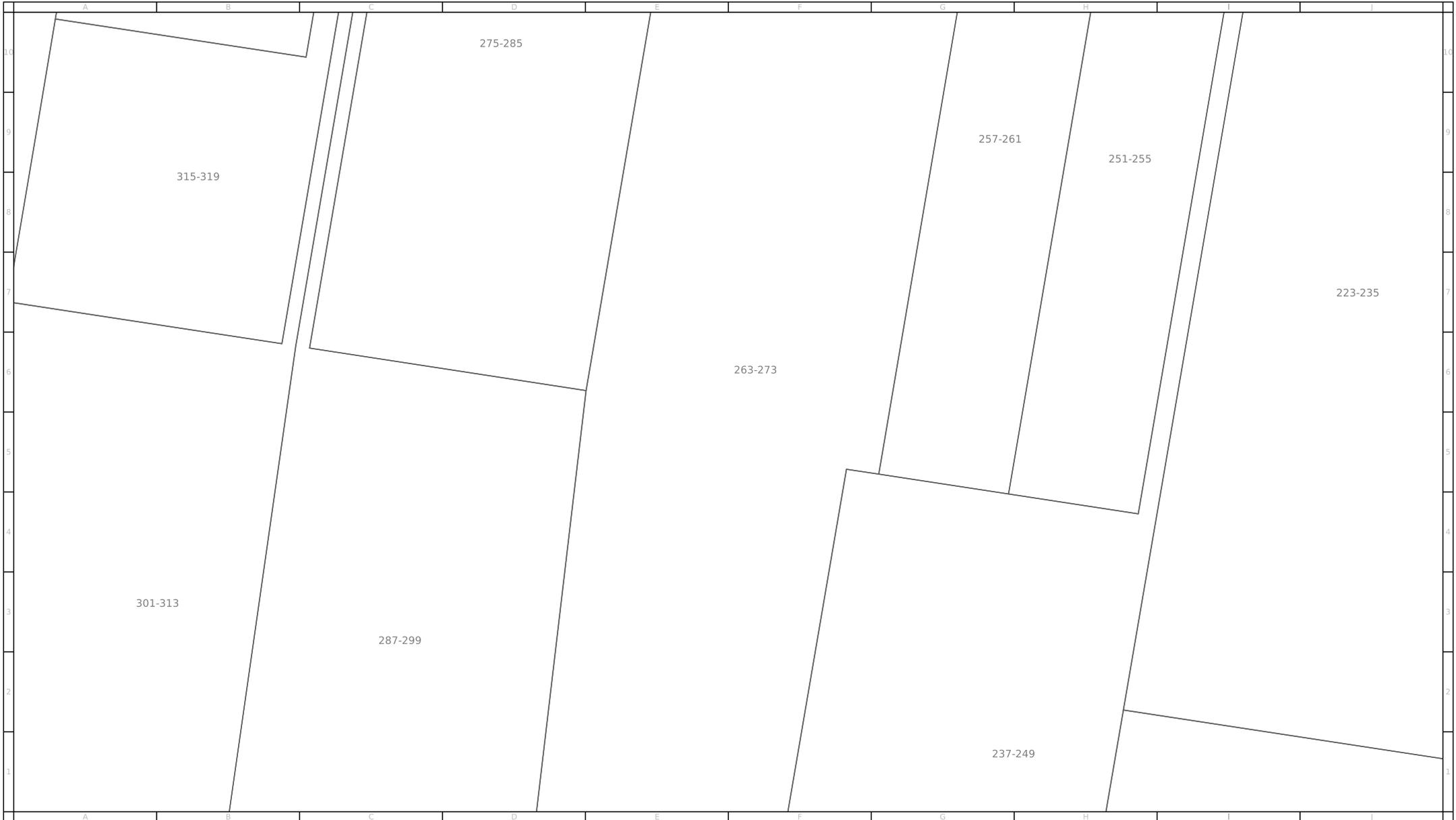
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 DBYD Seq No: 207939300
 DBYD Job No: 31359964

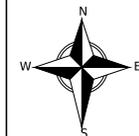
0m 10m 20m 30m 40m 50m 60m 70m 80m



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.



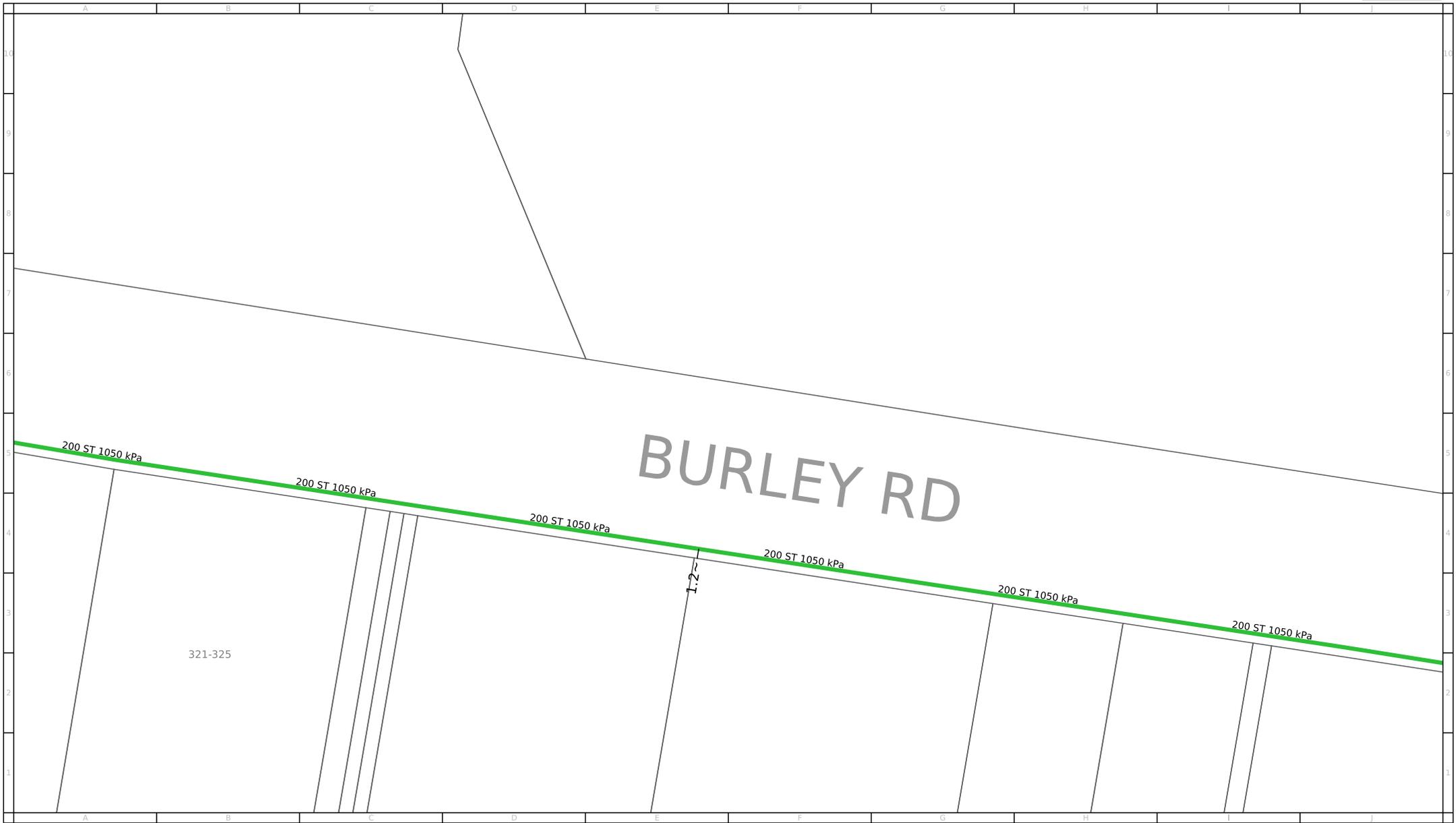
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Issue Date: 09/02/2022
 DBYD Seq No: 207939300
 DBYD Job No: 31359964

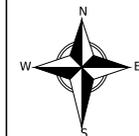
0m 10m 20m 30m 40m 50m 60m 70m 80m



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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Scale: 1:2000

Issue Date: 09/02/2022
 DBYD Seq No: 207939300
 DBYD Job No: 31359964

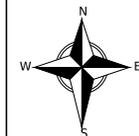
0m 10m 20m 30m 40m 50m 60m 70m 80m



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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Scale: 1:2000

Issue Date: 09/02/2022
DBYD Seq No: 207939300
DBYD Job No: 31359964

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.

To: Steven Sam
Phone: Not Supplied
Fax: Not Supplied
Email: steven.sam@aurecongroup.com

Dial before you dig Job #:	31359964	
Sequence #	207939295	
Issue Date:	09/02/2022	
Location:	327 Burley Road , Horsley Park , NSW , 2175	

Indicative Plans

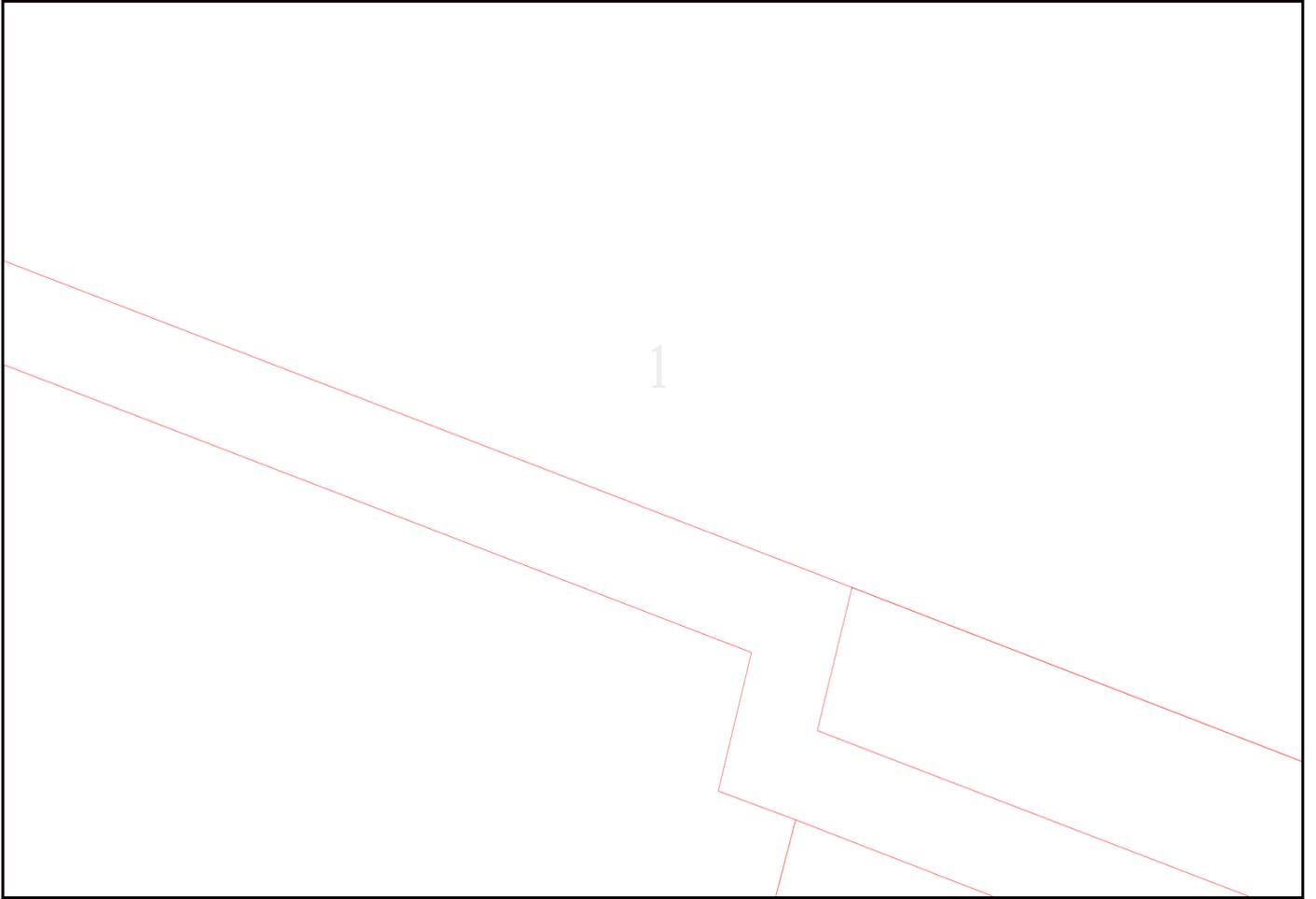
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3	10	17	24
4	11	18	25
5	12	19	26
6	13	20	27
7	14	21	28

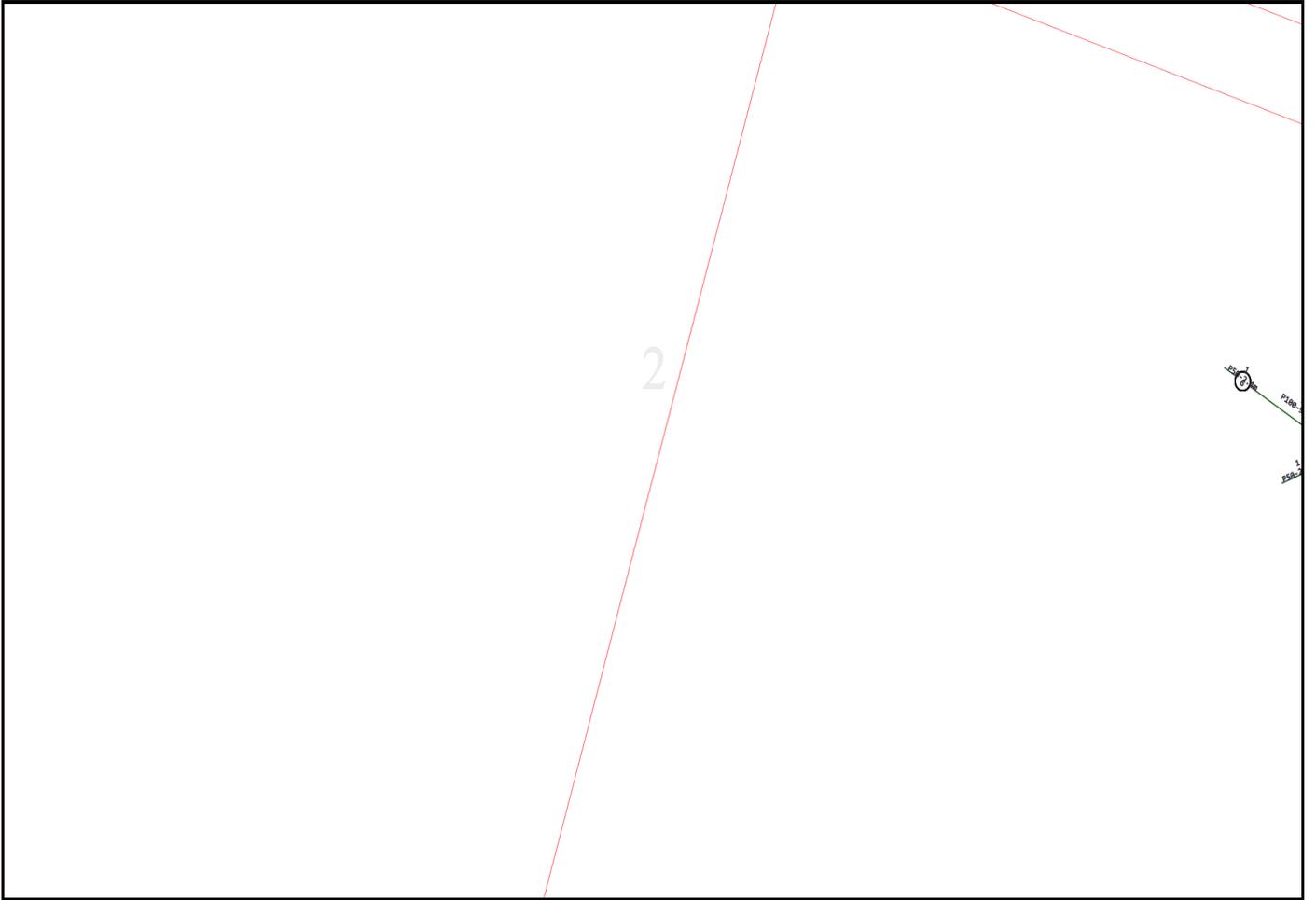


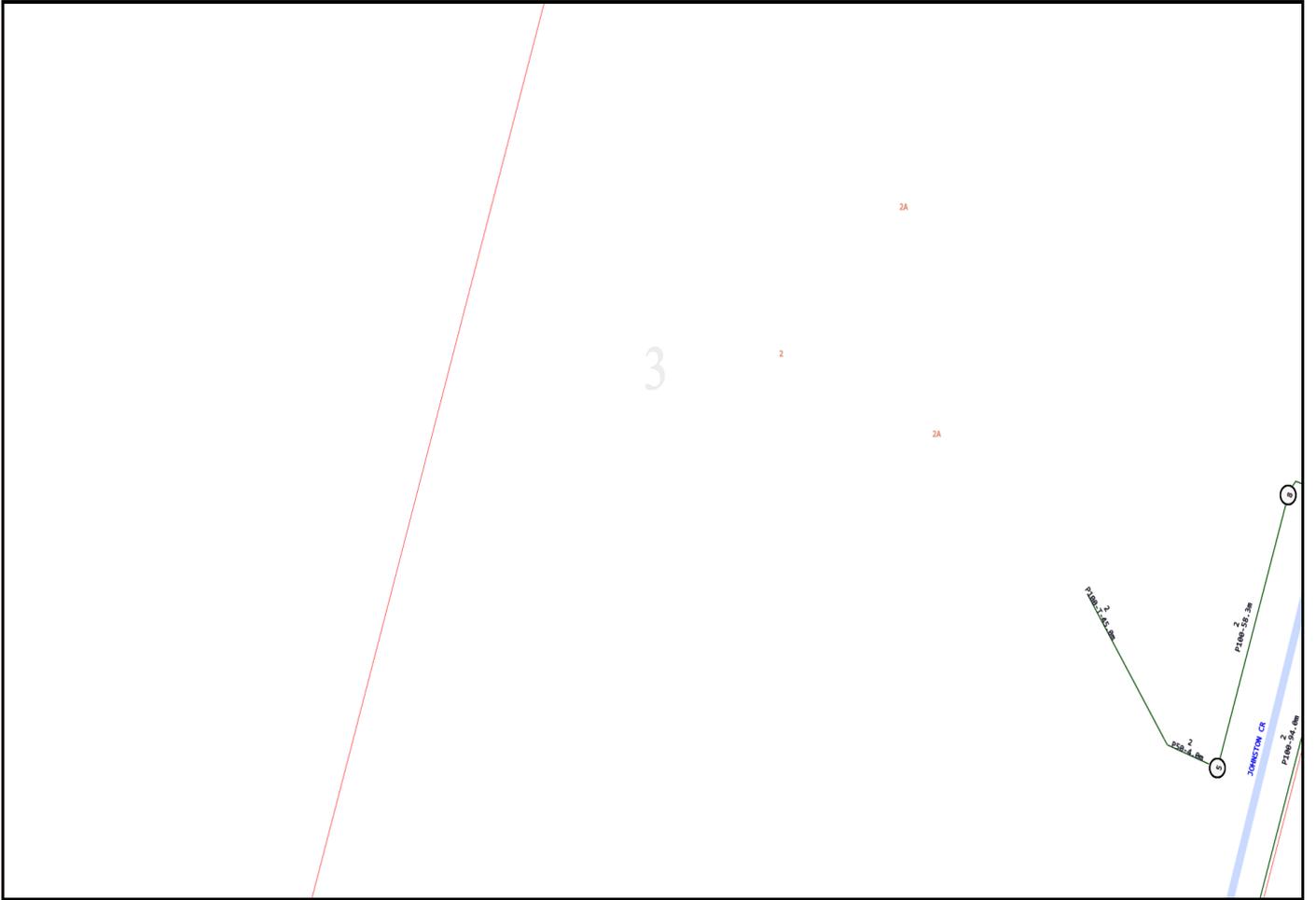
LEGEND



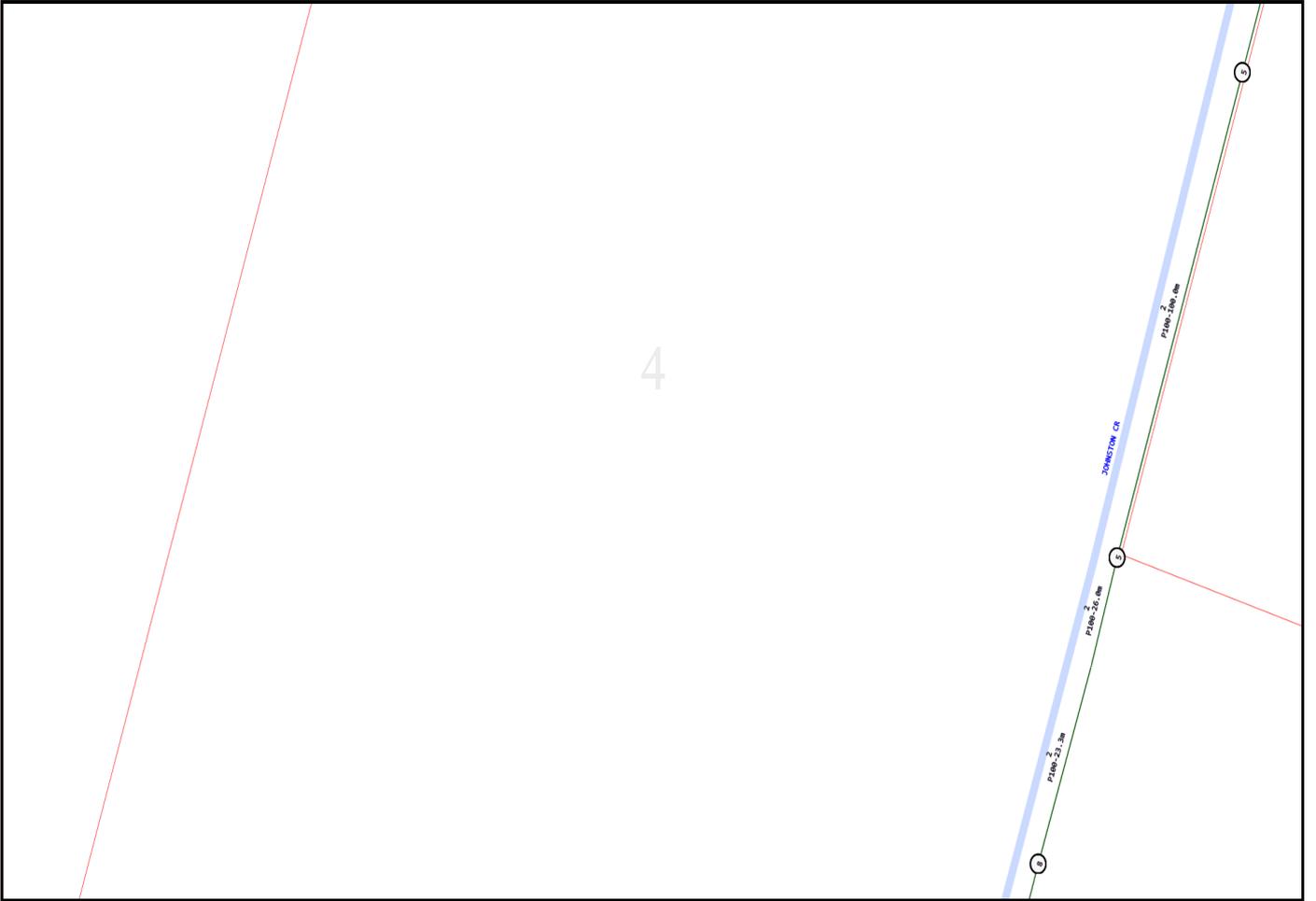
	Parcel and the location
	Pit with size "5"
	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) 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



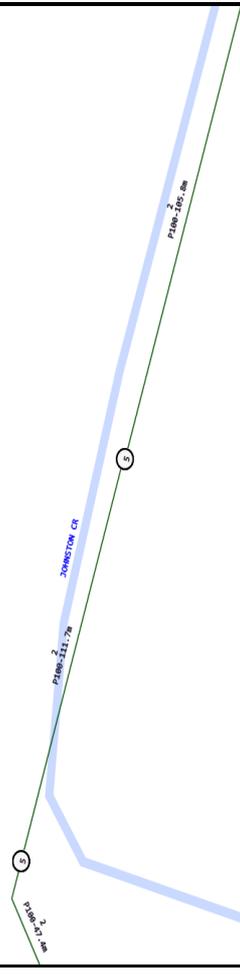


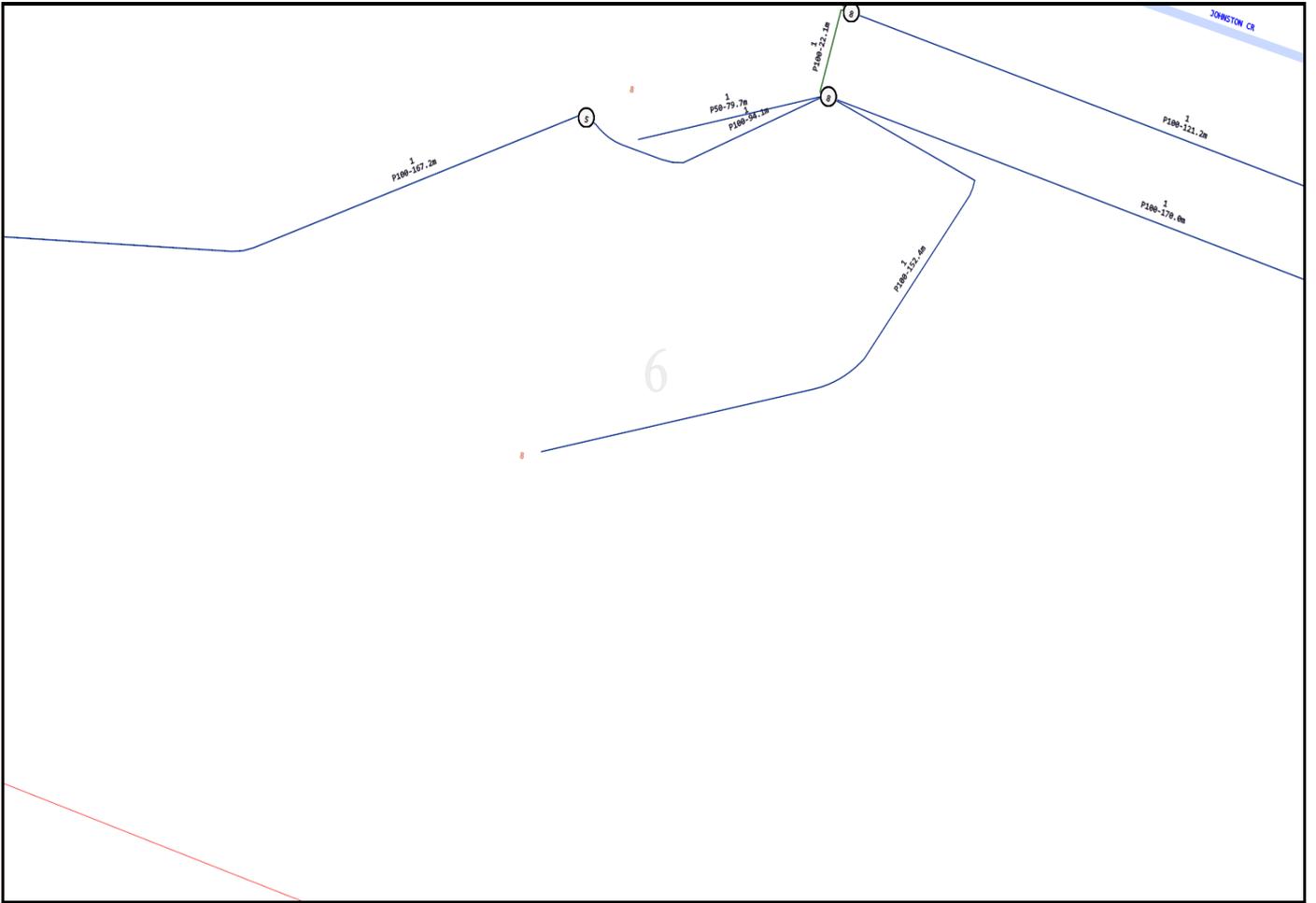


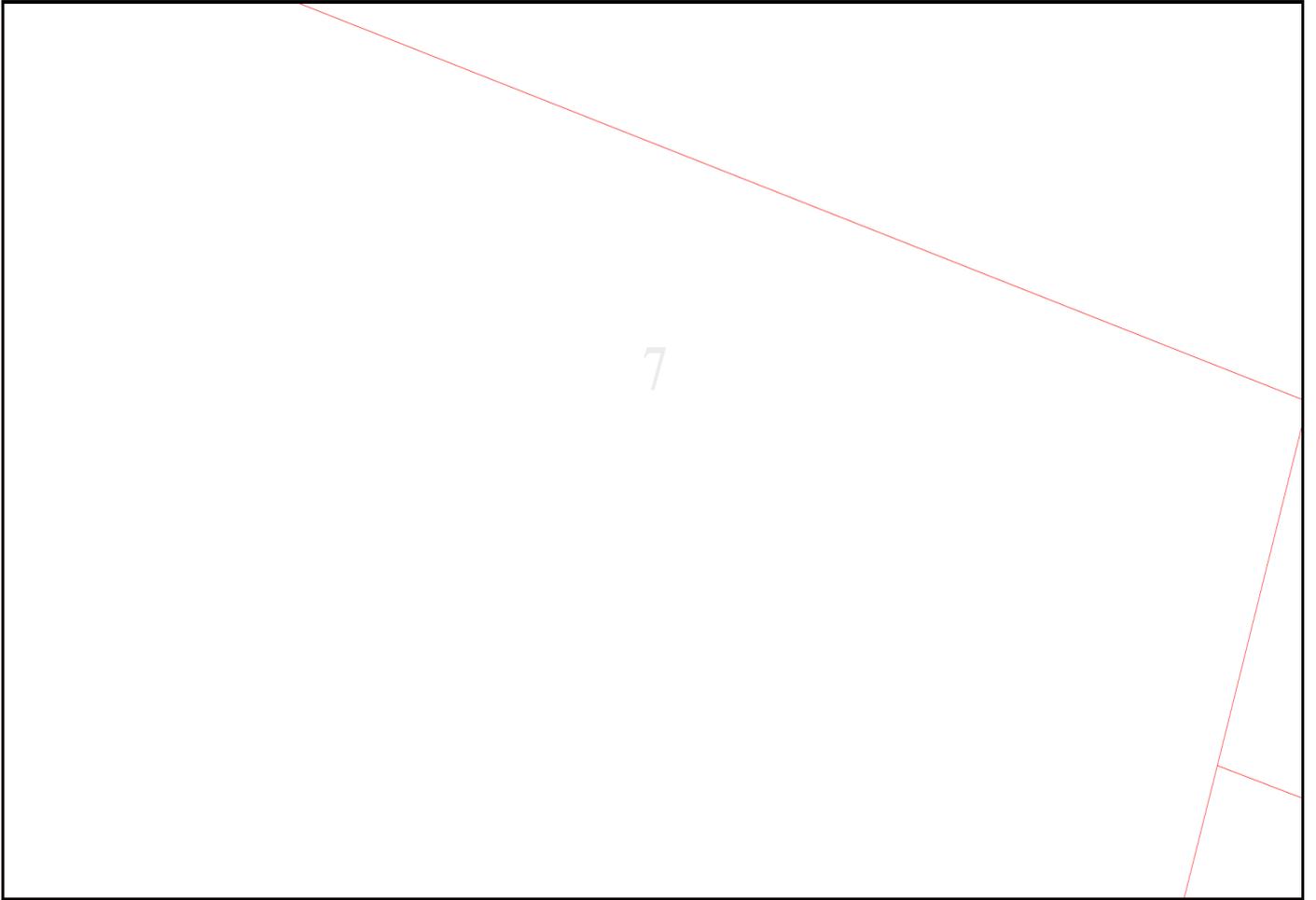
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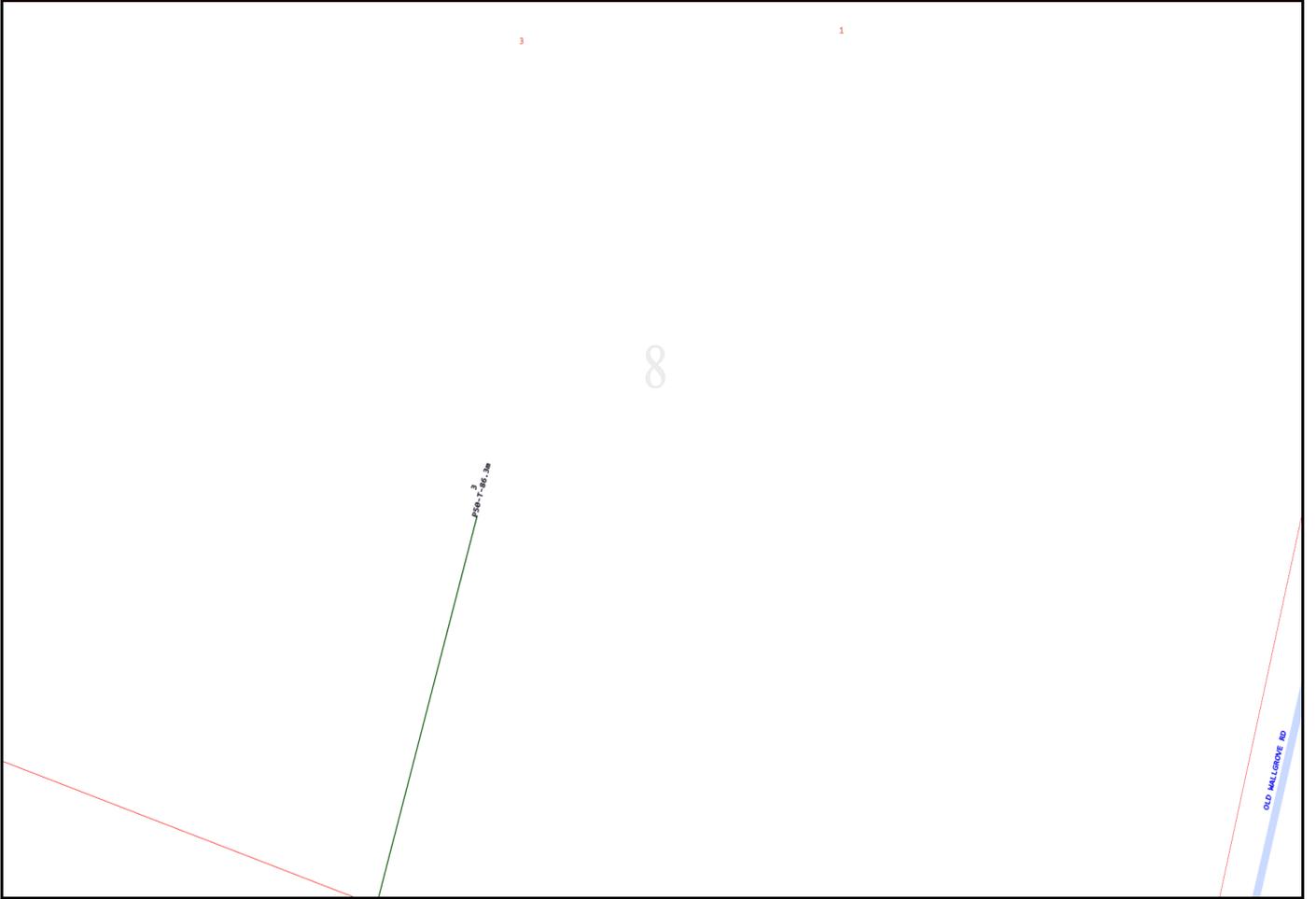


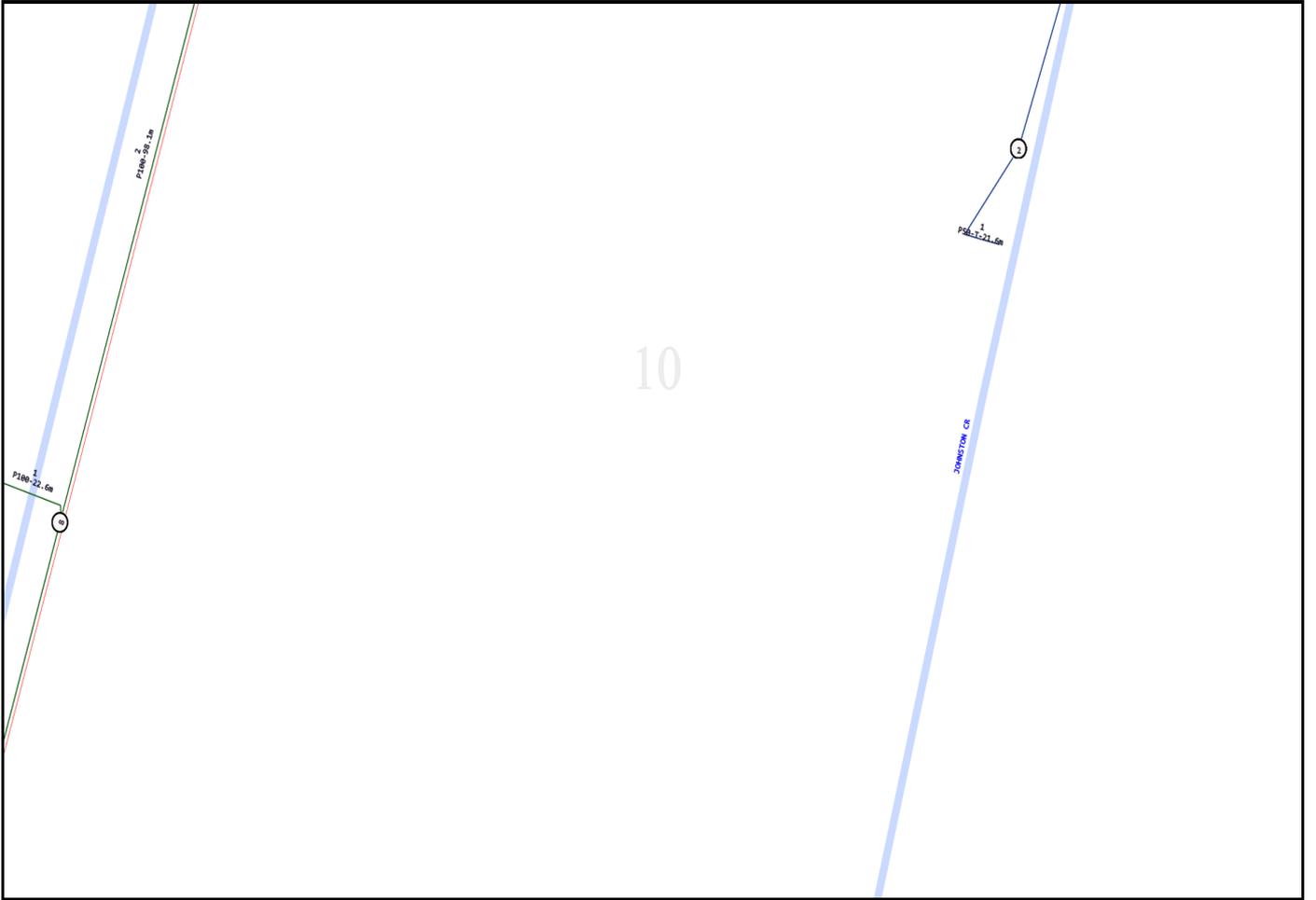
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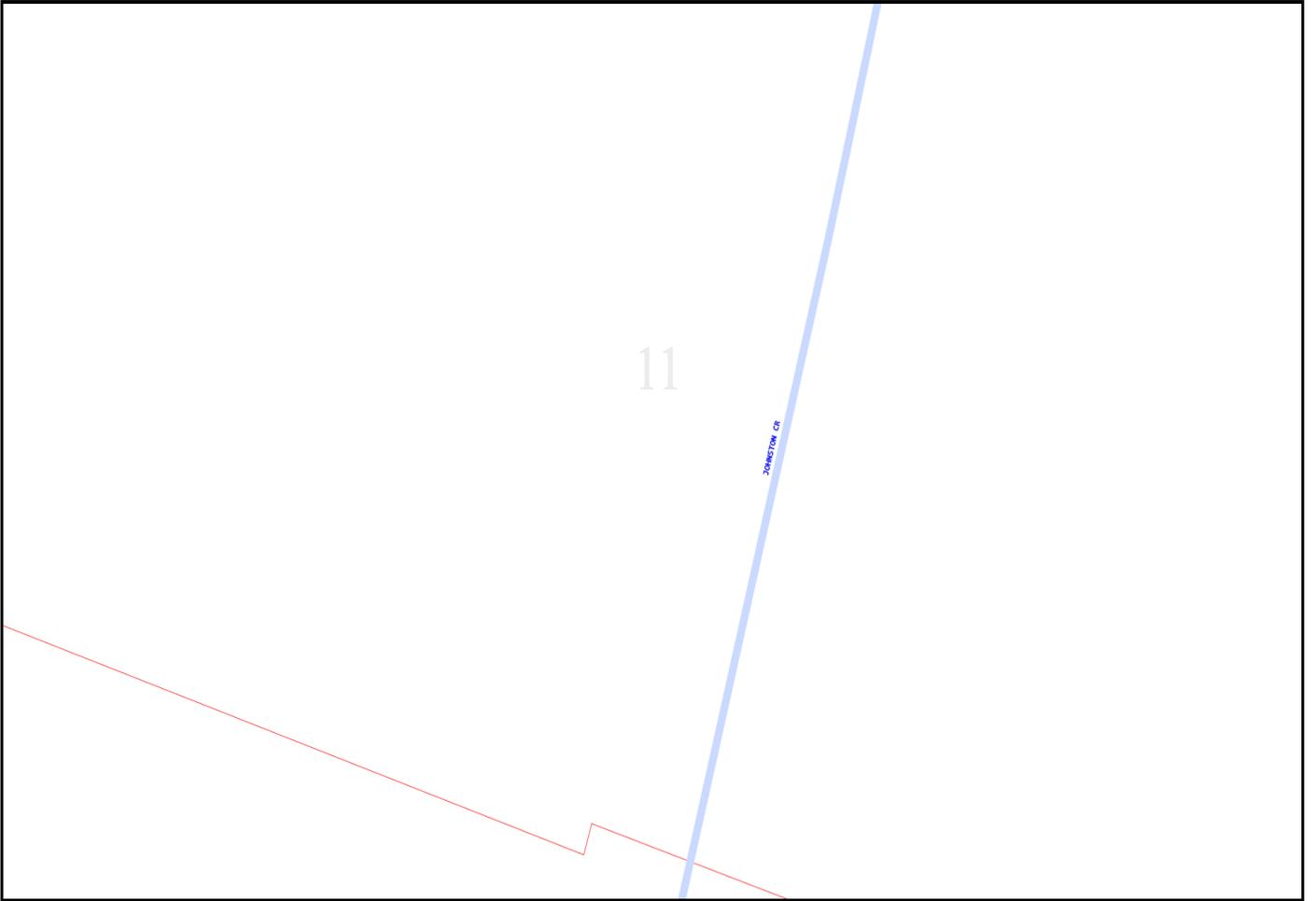


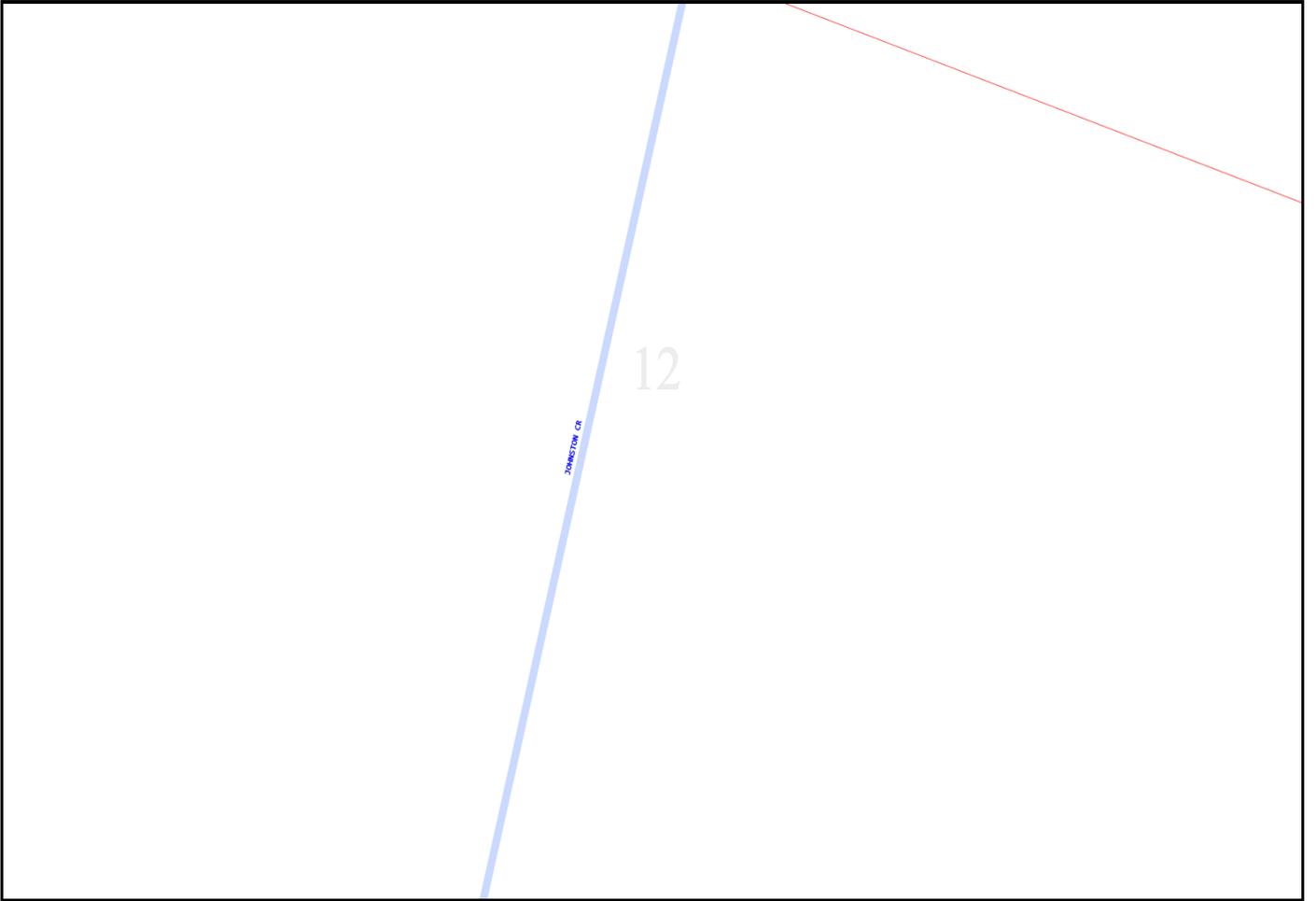


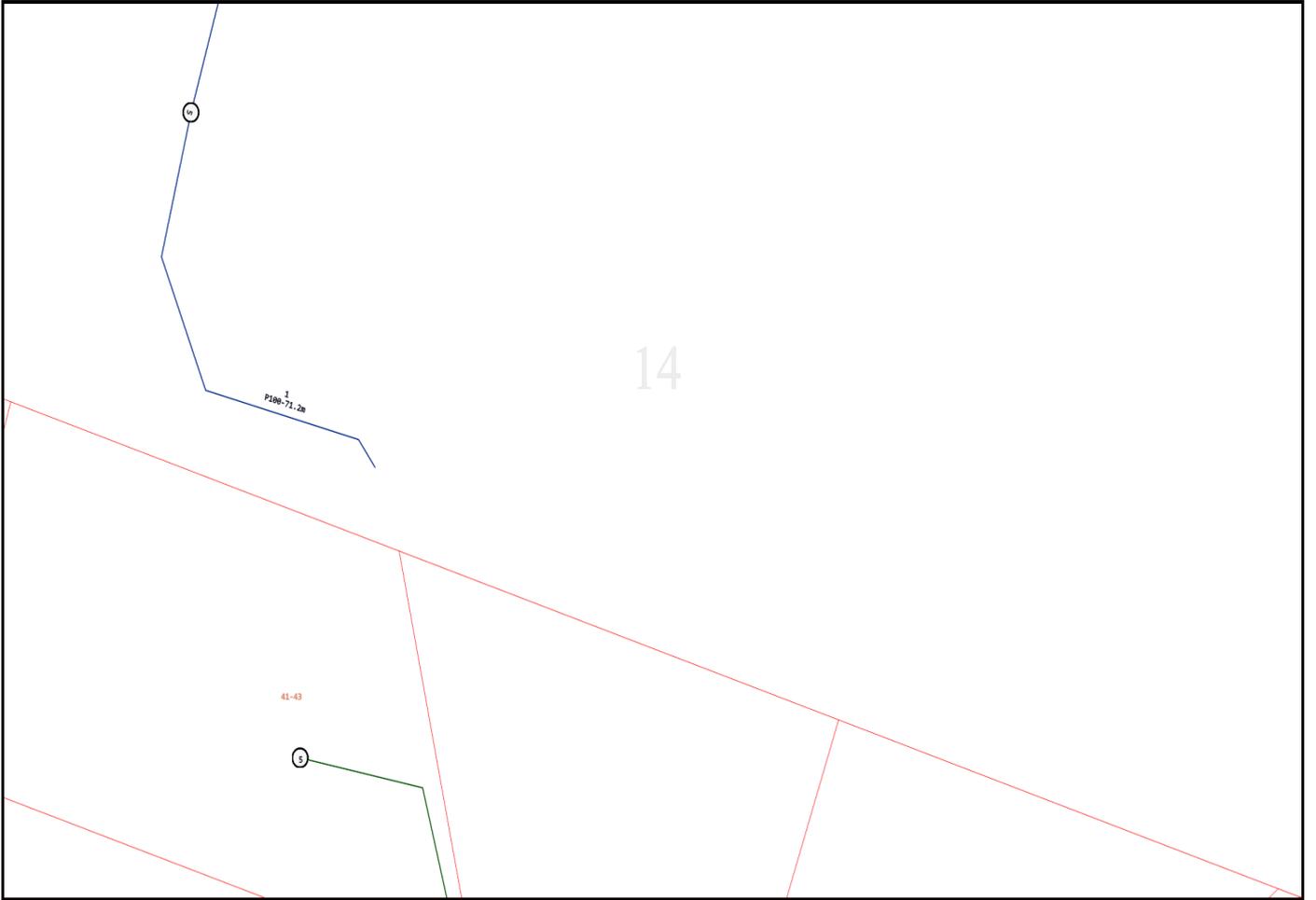




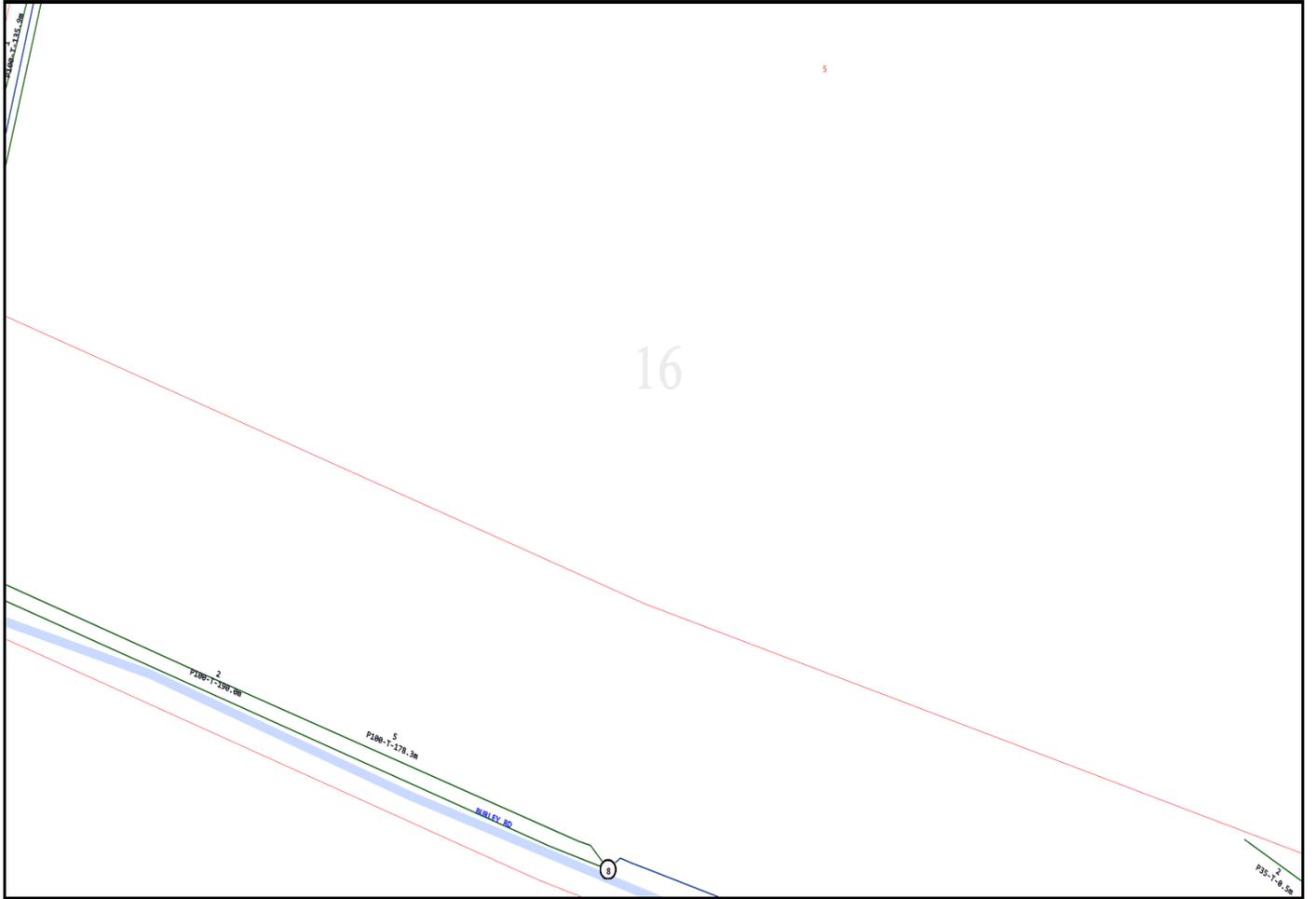
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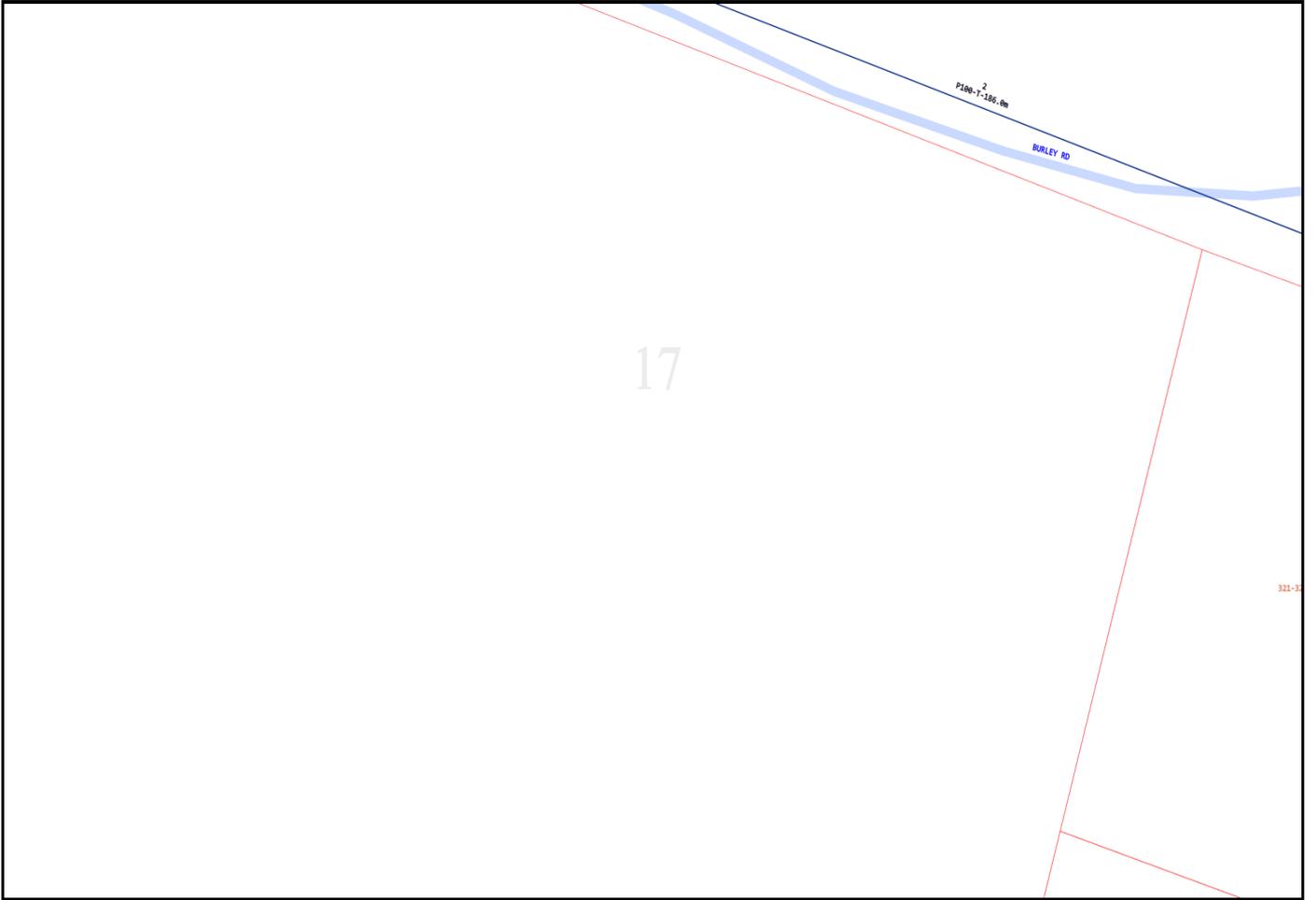


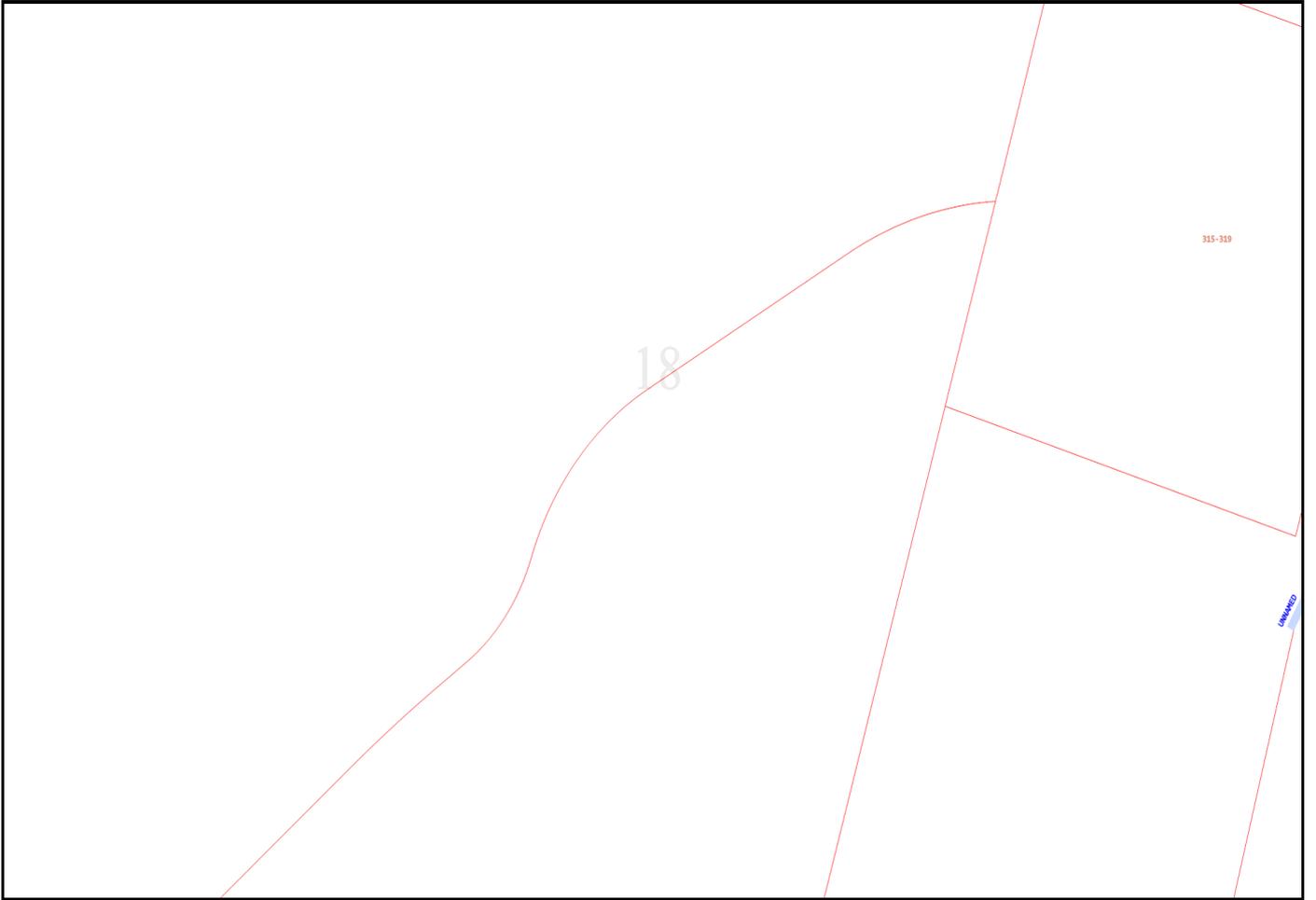


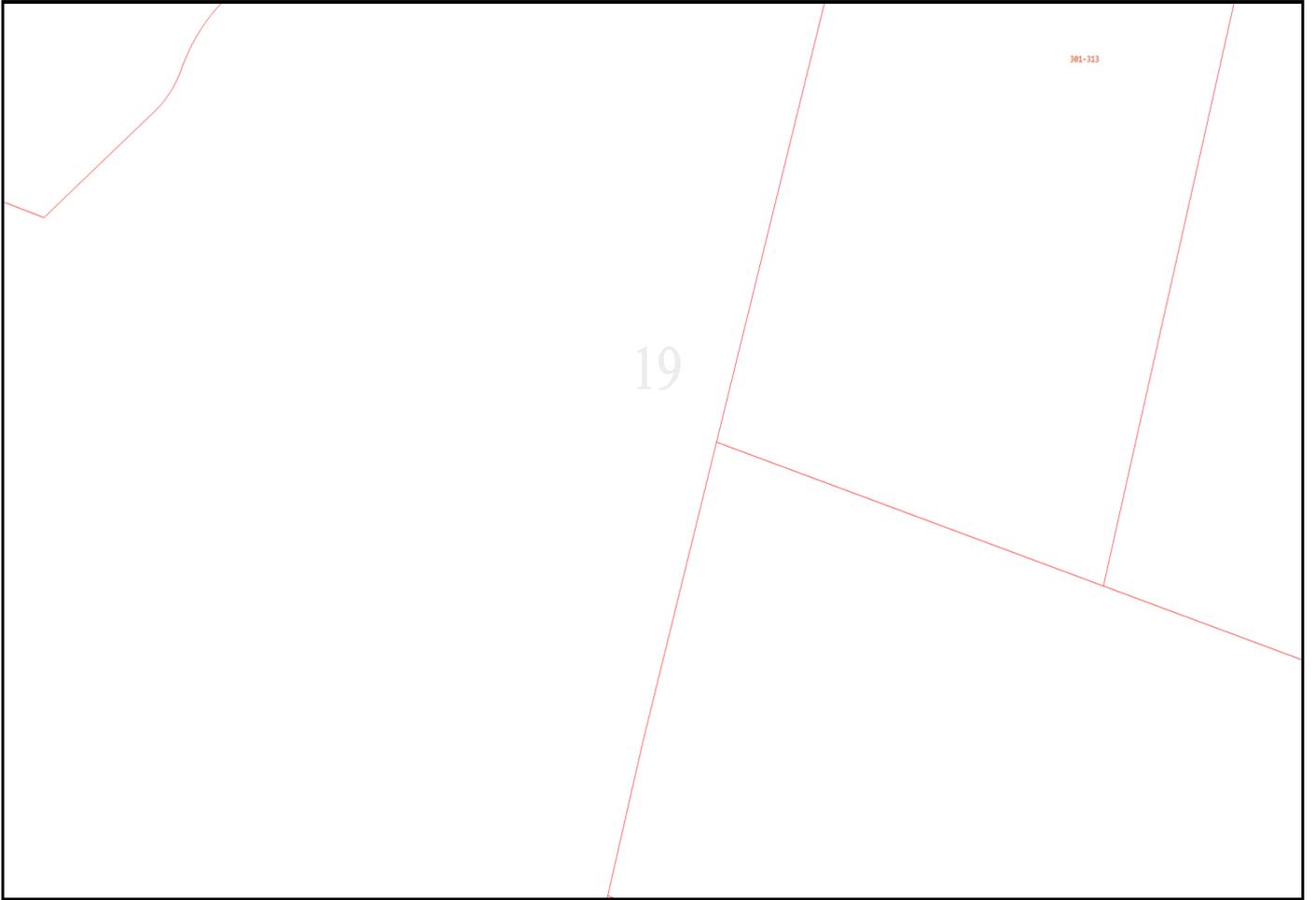






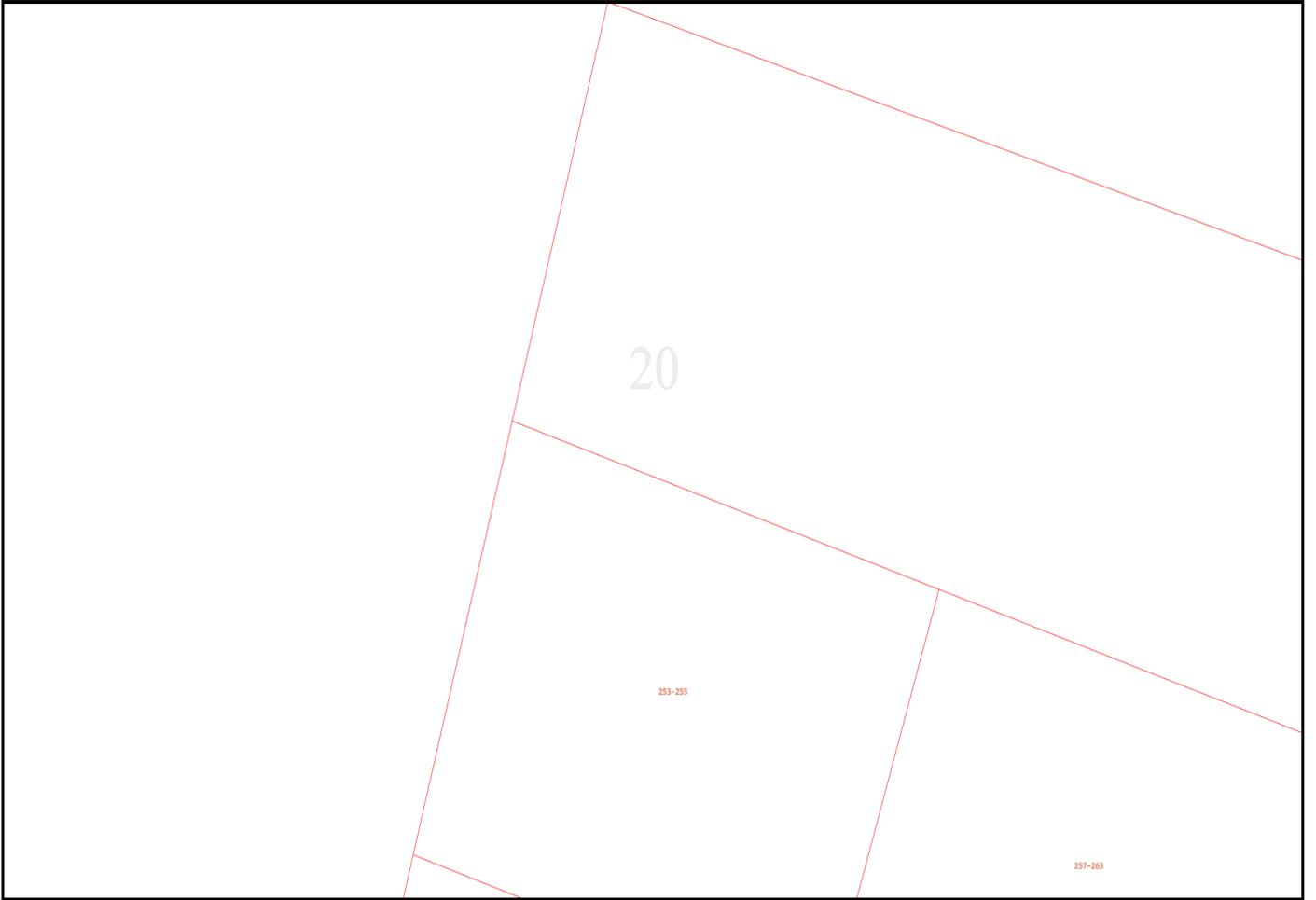


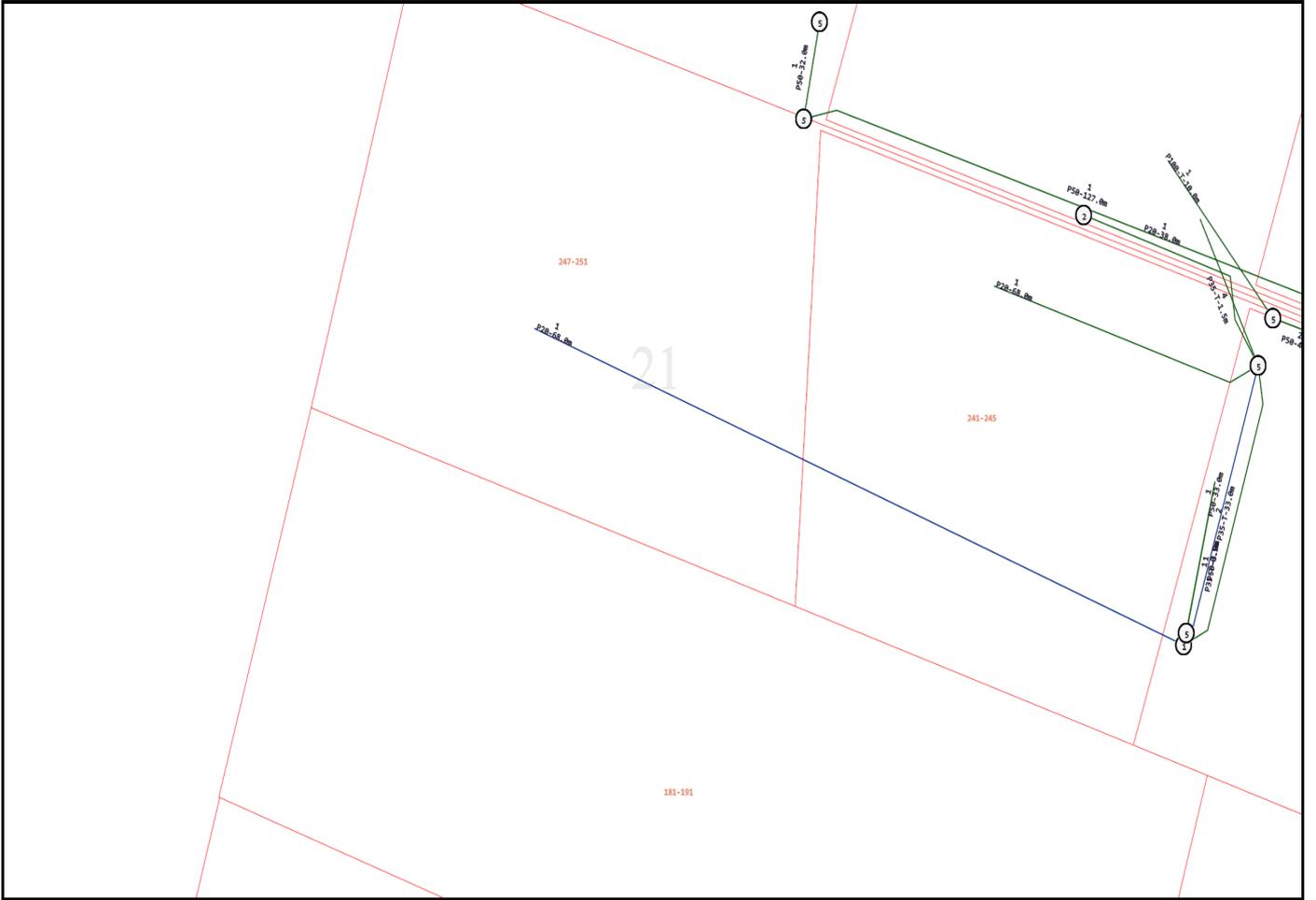




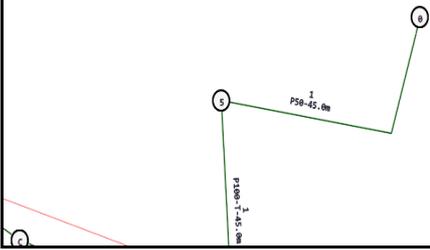
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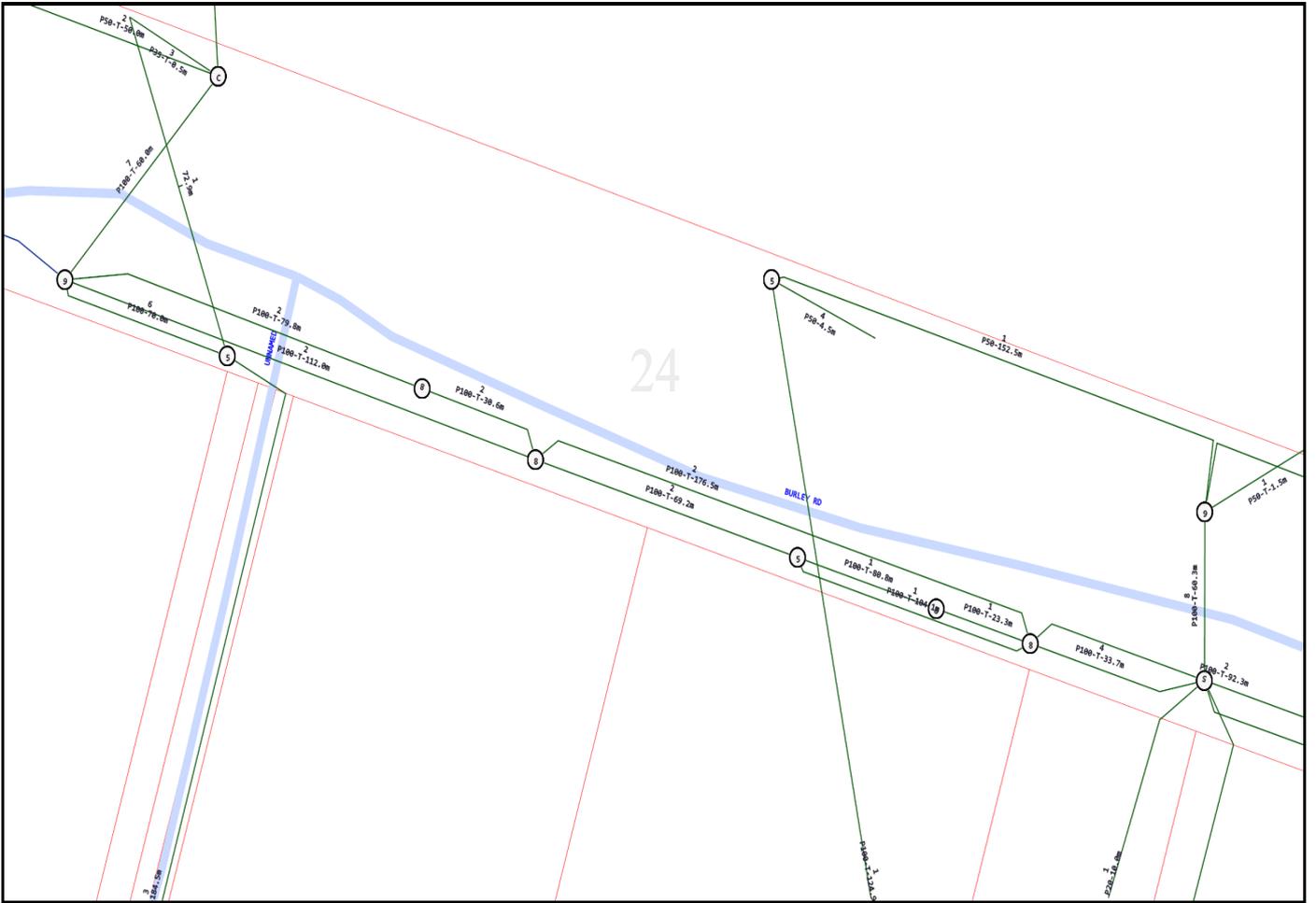
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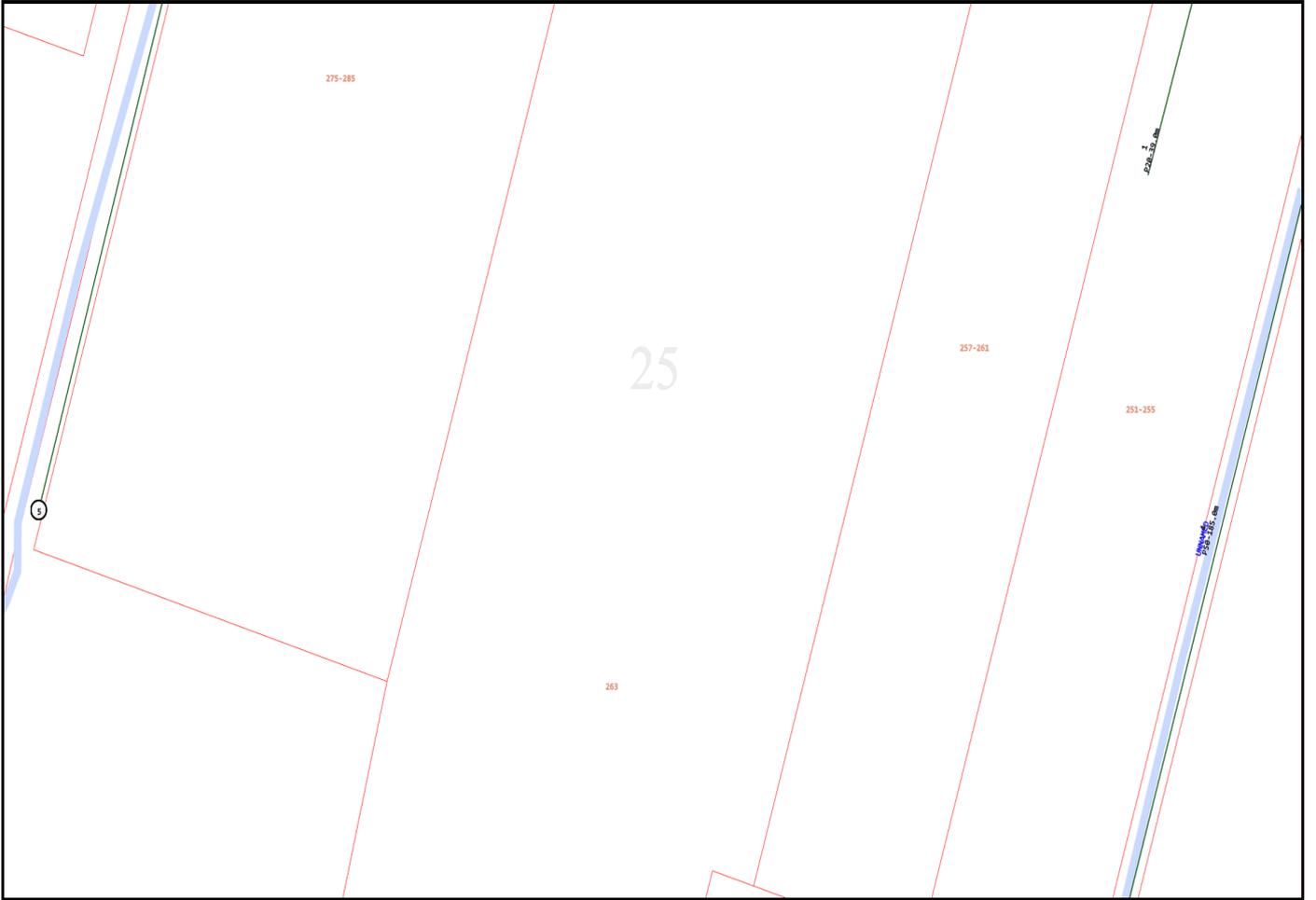


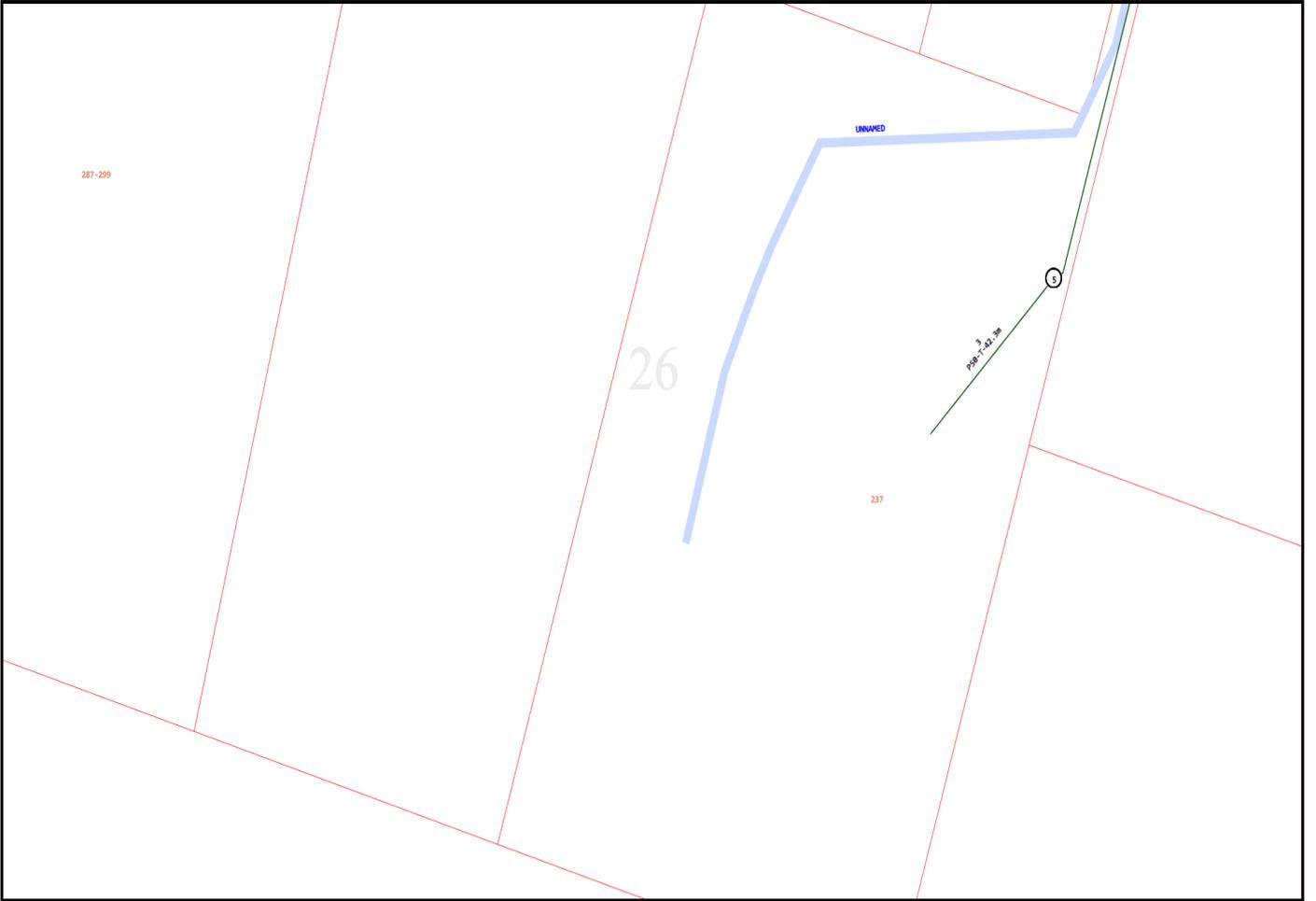


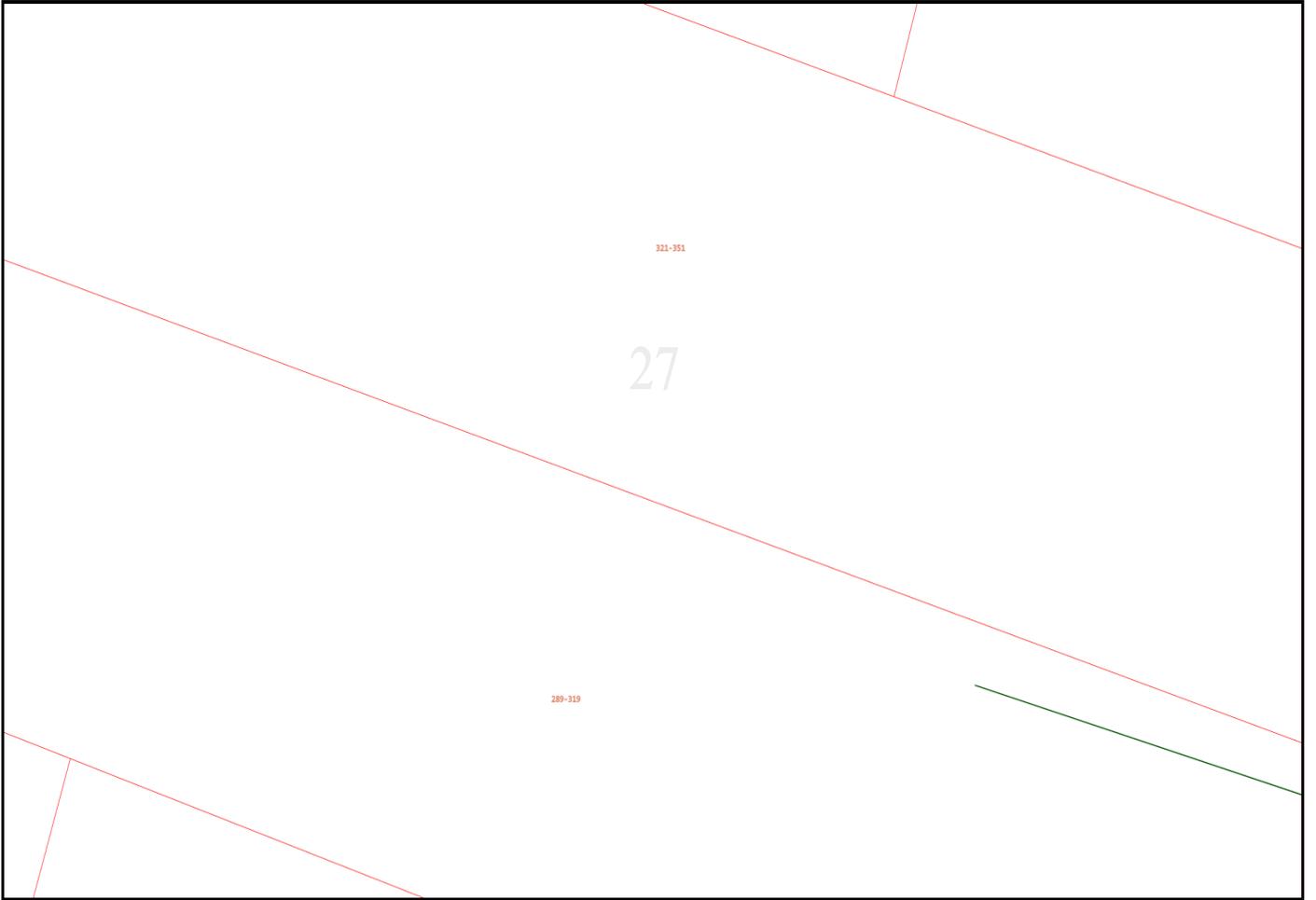
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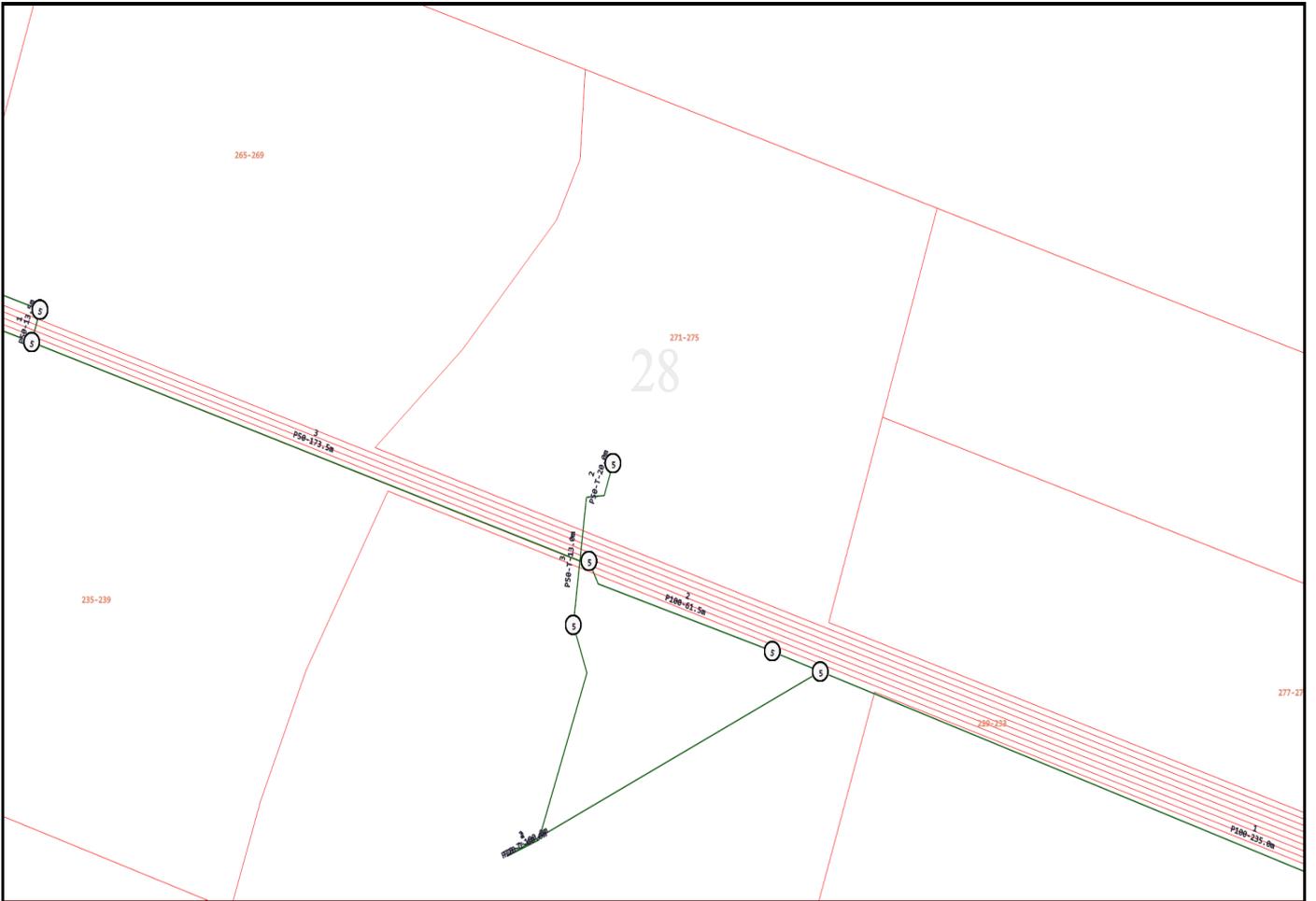












Emergency Contacts

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.

To: Steven Sam
Phone: Not Supplied
Fax: Not Supplied
Email: steven.sam@aurecongroup.com

Dial before you dig Job #:	31359964	
Sequence #	207939295	
Issue Date:	09/02/2022	
Location:	327 Burley Road , Horsley Park , NSW , 2175	

Information

The area of interest requested by you contains one or more assets.

nbn™ Assets	Search Results
Communications	Asset identified
Electricity	No assets

In this notice **nbn™ Facilities** means *underground fibre optic, telecommunications and/or power facilities, including but not limited to cables, owned and controlled by nbn™*

Location of nbn™ Underground Assets

We thank you for your enquiry. In relation to your enquiry at the above address:

- **nbn's** records indicate that there **ARE nbn™** Facilities in the vicinity of the location identified above ("Location").
- **nbn** indicative plan/s are attached with this notice ("Indicative Plans").
- The Indicative Plan/s show general depth and alignment information only and are not an exact, scale or accurate depiction of the location, depth and alignment of **nbn™** Facilities shown on the Plan/s.
- In particular, the fact that the Indicative Plans show that a facility is installed in a straight line, or at uniform depth along its length cannot be relied upon as evidence that the facility is, in fact, installed in a straight line or at uniform depth.
- You should read the Indicative Plans in conjunction with this notice and in particular, the notes below.
- You should note that, at the present time, the Indicative Plans are likely to be more accurate in showing location of fibre optics and telecommunications cables than power cables. There may be a variation between the line depicted on the Indicative Plans and the location of any power cables. As such, consistent with the notes below, particular care must be taken by you to make your own enquiries and investigations to precisely locate any power cables and manage the risk arising from such cables accordingly.
- The information contained in the Indicative Plan/s is valid for 28 days from the date of issue set out above. You are expected to make your own inquiries and perform your own investigations (including engaging appropriately qualified plant locators, e.g DBYD Certified Locators, at your cost to locate **nbn™**

Facilities during any activities you carry out on site).

We thank you for your enquiry and appreciate your continued use of the Dial Before You Dig Service. For any enquiries related to moving assets or Planning and Design activities, please visit the [nbn Commercial Works](#) website to complete the online application form. If you are planning to excavate and require further information, please email dbyd@nbnco.com.au or call 1800 626 329.

Notes:

1. You are now aware that there are **nbn**TM Facilities in the vicinity of the above property that could be damaged as a result activities carried out (or proposed to be carried out) by you in the vicinity of the Location.
2. You should have regard to section 474.6 and 474.7 of the *Criminal Code Act 1995 (CoA)* which deals with the consequences of interfering or tampering with a telecommunications facility. Only persons authorised by **nbn** can interact with **nbn**'s network facilities.
3. Any information provided is valid only for **28 days** from the date of issue set out above.

Referral Conditions

The following are conditions on which **nbn** provides you with the Indicative Plans. By accepting the plans, you are agreeing to these conditions. These conditions are in addition, and not in replacement of, any duties and obligations you have under applicable law.

1. **nbn** does not accept any responsibility for any inaccuracies of its plans including the Indicative Plans. You are expected to make your own inquiries and perform your own investigations (including engaging appropriately qualified plant locators, e.g DBYD Certified Locators, at your cost to locate **nbn**TM Facilities during any activities you carry out on site).
2. You acknowledge that **nbn** has specifically notified you above that the Indicative Plans are likely to be more accurate in showing location of fibre optics and telecommunications cables than power cables. There may be a variation between the line depicted on the Indicative Plans and the location of any power cables.
3. You should not assume that **nbn**TM Facilities follow straight lines or are installed at uniformed depths along their lengths, even if they are indicated on plans provided to you. Careful onsite investigations are essential to locate the exact position of cables.
4. In carrying out any works in the vicinity of **nbn**TM Facilities, you must maintain the following minimum clearances:
 - 300mm when laying assets inline, horizontally or vertically.
 - 500mm when operating vibrating equipment, for example: jackhammers or vibrating plates.
 - 1000mm when operating mechanical excavators.
 - Adherence to clearances as directed by other asset owner's instructions and take into account any uncertainty for power cables.
5. You are aware that there are inherent risks and dangers associated with carrying out work in the vicinity of underground facilities (such as **nbn**TM fibre optic, copper and coaxial cables, and power cable feed to **nbn**TM assets). Damage to underground electric cables may result in:
 - Injury from electric shock or severe burns, with the possibility of death.
 - Interruption of the electricity supply to wide areas of the city.
 - Damage to your excavating plant.
 - Responsibility for the cost of repairs.
6. You must take all reasonable precautions to avoid damaging **nbn**TM Facilities. These precautions may include but not limited to the following:
 - All excavation sites should be examined for underground cables by careful hand excavation. Cable cover slabs if present must not be disturbed. Hand excavation needs to be undertaken with extreme care to minimise the likelihood of damage to the cable, for example: the blades of hand equipment should be aligned parallel to the line of the cable rather than digging across the cable.
 - If any undisclosed underground cables are located, notify **nbn** immediately.

- All personnel must be properly briefed, particularly those associated with the use of earth-moving equipment, trenching, boring and pneumatic equipment.
 - The safety of the public and other workers must be ensured.
 - All excavations must be undertaken in accordance with all relevant legislation and regulations.
7. You will be responsible for all damage to **nbn**TM Facilities that are connected whether directly, or indirectly with work you carry out (or work that is carried out for you or on your behalf) at the Location. This will include, without limitation, all losses expenses incurred by **nbn** as a result of any such damage.
 8. 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.
 9. Except to the extent that liability may not be capable of lawful exclusion, **nbn** and its servants and agents and the related bodies corporate of **nbn** and their servants and agents shall be under no liability whatsoever to any person for any loss or damage (including indirect or consequential loss or damage) however caused (including, without limitation, breach of contract negligence and/or breach of statute) which may be suffered or incurred from or in connection with this information sheet or any plans(including Indicative Plans) attached hereto. Except as expressly provided to the contrary in this information sheet or the attached plans(including Indicative Plans), all terms, conditions, warranties, undertakings or representations (whether expressed or implied) are excluded to the fullest extent permitted by law.

All works undertaken shall be in accordance with all relevant legislations, acts and regulations applicable to the particular state or territory of the Location. The following table lists all relevant documents that shall be considered and adhered to.

State/Territory	Documents
National	Work Health and Safety Act 2011
	Work Health and Safety Regulations 2011
	Safe Work Australia - Working in the Vicinity of Overhead and Underground Electric Lines (Draft)
	Occupational Health and Safety Act 1991
NSW	Electricity Supply Act 1995
	Work Cover NSW - Work Near Underground Assets Guide
	Work Cover NSW - Excavation Work: Code of Practice
VIC	Electricity Safety Act 1998
	Electricity Safety (Network Asset) Regulations 1999
QLD	Electrical Safety Act 2002
	Code of Practice for Working Near Exposed Live Parts
SA	Electricity Act 1996
TAS	Tasmanian Electricity Supply Industry Act 1995
WA	Electricity Act 1945
	Electricity Regulations 1947
NT	Electricity Reform Act 2005
	Electricity Reform (Safety and Technical) Regulations 2005
ACT	Electricity Act 1971

Thank You,

nbn DBYD

Date: 09/02/2022

This document is provided for information purposes only. This document is subject to the information classification set out on this page. If no information classification has been included, this document must be treated as UNCLASSIFIED, SENSITIVE and must not be disclosed other than with the consent of nbn co. The recipient (including third parties) must make and rely on their own inquiries as to the currency, accuracy and completeness of the information contained herein and must not use this document other than with the consent of nbn co.

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Date: 09 Feb 2022
To: Steven Sam
Company: Aurecon
Address: 116 Military Road
Neutral Bay, NSW 2089

ENQUIRY DETAILS

Location: 327 Burley Road, Horsley Park, NSW 2175
Sequence No.: 207939299
DBYD Reference: 31359964

In relation to your enquiry concerning the above location, Optus advises as follows:

Optus records indicate that there ARE underground Optus FIBRE OPTIC TELECOMMUNICATIONS ASSETS in the vicinity of the above location as per the attached drawing(s).

PLEASE NOTE that any interference with these assets may be considered an offence under the Criminal Code Act 1995 (Cth). Optus reserves the right to seek compensation for loss or damage to its assets including consequential loss.

This reply is valid for a period of 30 days from the date above.

IMPORTANT INFORMATION

Asset location drawings provided by Optus are reference diagrams and are provided as a guide only. The completeness of the information in these drawings cannot be guaranteed. Exact ground cover and alignments cannot be provided with any certainty as these may have altered over time. Depths of telecommunications assets vary considerably as do alignments. It is essential to identify the location of any Optus assets in the vicinity prior to engaging in any works.

All Optus assets in the vicinity of any planned works will need to be electronically located to ascertain their general location. Depending on the scope of planned works in the vicinity, the assets may also need to be physically located.

YOU MUST ENGAGE THE SERVICES OF ONE OF THE OPTUS ASSET ACCREDITED LOCATORS TO CARRY OUT ASSET LOCATION (REFER LIST OF ACCREDITED LOCATORS AT THE END OF THIS OPTUS RESPONSE).

Unless otherwise agreed with Optus, where an on-site asset location is required, the requestor is responsible for all costs associated with the locating service including (where required) physically exposing the Optus asset.

DUTY OF CARE

When working in the vicinity of telecommunications assets you have a legal "Duty of Care" and non-interference that must be observed.

It is your responsibility as the requesting party (as a landowner or any other party involved in the planned works) to design for minimal impact to any existing Optus asset. Optus can assist at the design stage through consultation.

It is also your, as the requesting party (or your representative's), responsibility to:

- Obtain location drawings (through the Dial Before You Dig process) of any existing Optus assets at a reasonable time before any planned works begin;
- Have an Optus Accredited Asset Locator identify the general location of the Optus asset and physically locate the asset where planned works may encroach on its alignment; and
- Contact Optus for further advice where requested to do so by this letter.

DAMAGE TO ANY OPTUS ASSET MUST BE REPORTED TO 1800 500 253 IMMEDIATELY

You, your head contractor and any relevant subcontractor are all responsible for any Optus asset damage as a result of planned activities in the vicinity of Optus assets.

This applies where works commence prior to obtaining Optus drawings, where there is failure to follow instructions or during any construction activities.

Optus reserves the right to recover compensation for loss or damage to its assets including consequential loss. Also, you, your head contractor and any relevant subcontractor may also be liable for prosecution under the Criminal Code Act 1995 (Cth).

ASSET RELOCATIONS

You are not permitted by law to relocate, alter or interfere with any Optus asset under any circumstance. Any unauthorised interference with an Optus asset may lead to prosecution under the Criminal Code Act 1995 (Cth). Enquiries relating to the relocation of Optus assets must be referred to the relevant Optus Damages and Relocations Team (refer to "FURTHER ASSISTANCE").

APPROACH DISTANCES

On receipt of Optus asset location drawings and prior to commencing any planned works near an Optus asset, engage an Optus Accredited Locator to undertake a general location of the Optus asset.

Physical location of the Optus asset by an Optus Accredited Locator will also be required where planned works are within the following approach distances of the general location of the Optus asset:

- a) In built up metropolitan areas where road and footpaths are well defined by kerbs or other features a minimum clear distance of 1 meter must be maintained from the general location of the Optus asset.
- b) In non-established or unformed metropolitan areas, a minimum clear distance of 3 meters must be maintained from the general location of the Optus asset.
- c) In country or rural areas where wider variations may exist between the general and actual location of an Optus asset may exist, then a minimum clear distance of 5 meters must be maintained from the general location of the Optus asset.

If planned works are parallel to the Optus asset, then the Optus asset must be physically located by an Optus Accredited Locator at a minimum of 5 meter intervals along the length of the parallel works prior to work commencing.

Under no circumstances is crossing of any Optus asset permitted without physical location of the asset being carried out by an Optus Accredited Locator. Depending on the asset involved an Optus representative may be required onsite.

The minimum clearances to the physical location of Optus assets for the following specific types of works must be maintained at all times.

Note: Where the clearances in the following table cannot be maintained or where the type of work differs from those listed then advice must be sought from the relevant Optus Damages and Relocations Team (refer to "FURTHER ASSISTANCE").

Type of Works	Clearance to Physical Location of Optus Asset
Jackhammers / Pneumatic Breakers	Not within 1 meter.
Light duty Vibrating Plate or Wacker Packer type compactors (not heavy road construction vibrating rollers etc.)	500mm compact clearance cover before a light duty compactor can be used over any Optus conduit. No compaction permitted over Optus direct buried cable without prior approval from Optus.
Boring Equipment (in-line, horizontal and vertical)	Not within 5 meters parallel of the Optus asset location without an Accredited Optus Asset Locator physically exposing the Optus asset and with an Optus representative onsite. Not to cross the Optus asset without an Accredited Optus Asset Locator physically exposing the Optus asset and with an Optus representative onsite.

Type of Works	Clearance to Physical Location of Optus Asset
Heavy vehicle Traffic (over 3 tonnes)	<p>Not to be driven across Optus conduits with less than 600mm of cover.</p> <p>Not to be driven across Optus direct buried cable with less than 1.2 meters of cover.</p> <p>Once off crossings permitted, multiple crossing (e.g. road construction or logging) will require Optus approval.</p> <p>Accredited Optus Asset Locator to physically expose the Optus asset to verify actual depth.</p>
Mechanical Excavators, Farm Ploughing, Vertical Hole installation for water bore or fencing etc.	<p>Not within 1 meter.</p> <p>Accredited Optus Asset Locator to physically expose the Optus asset to verify actual location.</p>

ASSET CLEARANCES AFTER COMPLETION OF WORKS

All Optus pits and manholes must be a minimum of 1 meter from the back of any kerb, 3.5 meters of the road surface without a kerb or not within 15 meters of street intersection.

In urban areas Optus conduit must have the following minimum depth of cover:

- Footway 600mm;
- Roadway 1 meter at drain invert and at road centre crown.

In rural areas Optus conduit must have a minimum depth of cover of 1 meter and direct buried cable 1.2 meters.

In cases where it is considered that the above clearances cannot be maintained at the completion of works, advice must be sought from the relevant Optus Damages and Relocations Team (refer "Further Assistance").

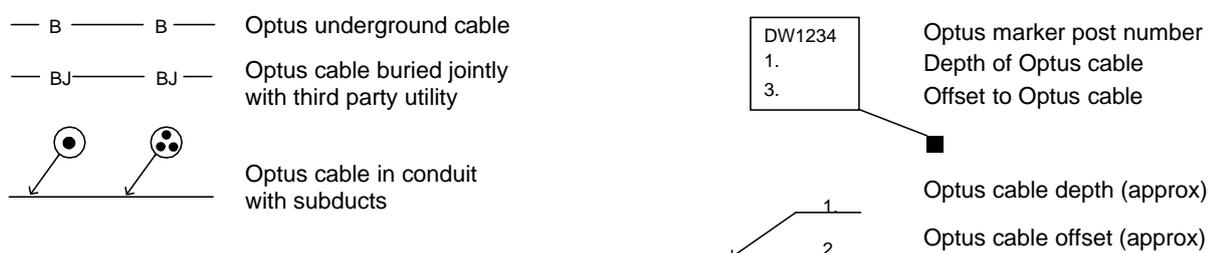
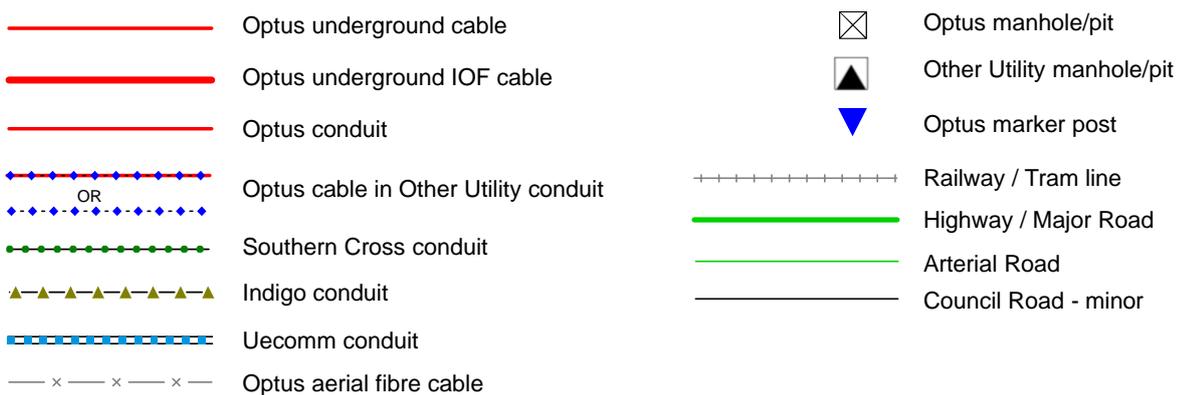
FURTHER ASSISTANCE

Further assistance on asset clearances, protection works or relocation requirements can be obtained by contacting the relevant Optus Damages and Relocations Team on the following email address:

NFODamages&RelocationsDropbox@optus.com.au

Further assistance relating to asset location drawings etc. can be obtained by contacting the Optus Network Operations Asset Analysis Team on 1800 505 777.

OPTUS ENGINEERING DRAWING SYMBOLS





Optus Accredited Asset Locators

Name	Company Name	Phone	Email	State	Region/Service Area
Alan Cordner	Alcom Fibre Services Pty Ltd	0400 300 337	alcomfibre@bigpond.com	NSW/ACT	Sydney
Brad McCorkindale	Bradmac Locating Services	0434 157 409	brad.mac@bigpond.com	NSW/ACT	All
Troy Redden	On Point Utility Locating	1300 6676 468	troy@onpointlocating.com.au	NSW	Sydney Only
Shane Buckley	Cable & Pipe Locations	0408 730 430	sabuckley@bigpond.com	NSW/QLD	Armidale, Casino, Coffs Harbour, Dorrigo, Glenn Innes, Grafton, Inverell, Kempsey, Lismore, Nambucca, Port Macquarie, Tamworth, Taree, Tenterfield, Yamba
Philip Pegler	Down Under Detection Services (DUDS)	0418 267 964	apegler@duds.net.au	NSW	All
Tina Stanhope	SureSearch Underground Services	1300 884 520 0418 920 245	tina.stanhope@suresearch.com.au	NSW/ACT QLD	NSW, Sydney, Northern NSW, Canberra, QLD, South East QLD.
Leonard McGowan	Pipesure Australia	1300 411 811	len@pipesure.com.au	NSW	Sydney
Bruce Whittaker	Optical Fibre Technologies	0402 354 322	opticaltek1@aol.com	NSW	Sydney/Wollongong
Darryl Smith	Darryl Smith Electrical	02 6642 3731	office@dsmithelectrical.com.au	NSW	Grafton
George Koenig	Downunder Locations NSW Pty	0438 243 856	Downunderlocations@gmail.com	NSW	Tweed Heads, Gold Coast, Brisbane
Michael Grant	M&K Grant Bega Bobcats Pty Ltd	0427 260 423	zzbobcat@bigpond.net.au	NSW	Bega, Far South Coast
Antony Critcher	Geotrace Pty Ltd	0417 147 945	antony@geotrace.com.au	NSW	All Areas, Sydney, Wollongong, Newcastle, ACT
Anthony Lane	Hydro Digga	0447 774 000	locator@hydrodigga.com	NSW	All of NSW, ACT & South East Qld
Joshua Payne	Australian Utilities Management Pty Ltd	0427 833 222	aine@ausutilities.net.au	NSW	Sydney Metro
Nathan Ellis	Utility Locating Services	0404 087 555	nathan@utilitylocatingservices.com.au	NSW	Sydney

Rodney Pullen	Provac	0450 268 012	rod@provac.net.au	NSW /QLD	South East QLD, Northern NSW
Rodney Pullen	One Find Cables	0451 268 012	rod@provac.net.au	NSW /QLD	South East QLD, Northern NSW
Drew Misko	Australian Subsurface Pty Ltd	0427 879 600	admin@australiansubsurface.com	NSW/ACT	All of NSW/ACT
Scott O'Malley	Coastal Cable Locators Pty Ltd	0427 975 777	skomalley@bigpond.com	NSW	South Coast- Snowy Mountains-Southern Highlands
Liam Bolger	Brandon Construction Services	0438 044 008	liam.bolger@hotmail.com	NSW	Sydney
Brett Pickup	All About Pipes	02 8763 4200	Brett.Pickup@allaboutpipes.com.au	NSW / VIC	All
Karen Joyce	Durkin Construction Pty Ltd	02 9712 0308	karen@durkinconstruction.com.au	NSW	Sydney
Timothy Laidler	Locate & Map	0431 191 669	tim@locateandmap.com.au	NSW	Sydney, Central Coast
Ken Brown	Riteway Traffic Control Pty Ltd	0419 212 969	kbrowne@ritewaytc.com.au	NSW	Central Coast, Hunter
Walter R Johansen	Steger & Associates	02 6296 4089	enquiries@steger.com.au	ACT/NSW	Canberra
Jean-Max Monty	Civilscan	0416 068 060	civilscan@bigpond.com	NSW	Sydney – Central Coast – Newcastle – Wollongong – Hunter Valley – Blue Mountains
Alan Hunter	Hunter Ground Search	02 4953 1244 0418 684 819	huntergroundsearch@bigpond.com	NSW	Newcastle, Central Coast, Hunter Valley, Mid North Coast, Liverpool Plains, Central West NSW.
Gilbert J Cook	Datateks Communications Specialists	0408 693 660	datateks@datateks.com.au	NSW	Southern NSW
Damien Black	Mid North Coast Hydro Digging	0418 409 465	dblack1@bigpond.com	NSW	Newcastle- foster-Taree- Wauchope -Port Macquarie - Kempsey -Coffs harbour
Neil Blenkinsop	Utility Mapping Pty Ltd	0427 318 681	nblenkinsop@utilitymapping.com.au	NSW	Sydney
Daniel Fox	Epoca Environmental Pty Ltd	02 4739 2465 0433 100 642	daniel@epocaenvironmental.com.au	NSW	All NSW, ACT
Rod Shaw	Cable Find	0478 887 073	rod@cablefind.com.au	NSW	Northern Rivers
Danny Carter	Online Pipe & Cable Locating	1300 665 384	danny@onlinepipe.com.au	NSW	Sydney, Newcastel, Canberra, Blue Mountains
Sam Romano	Locating Services	0403 065 510	sam.romano@locatingservices.com.au	NSW	NSW All
Scott Allison	Crux Surveying Australia	02 9540 9940	sydneyoffice@cruxsurveying.com.au	NSW	Sydney Metro & Surrounding Areas

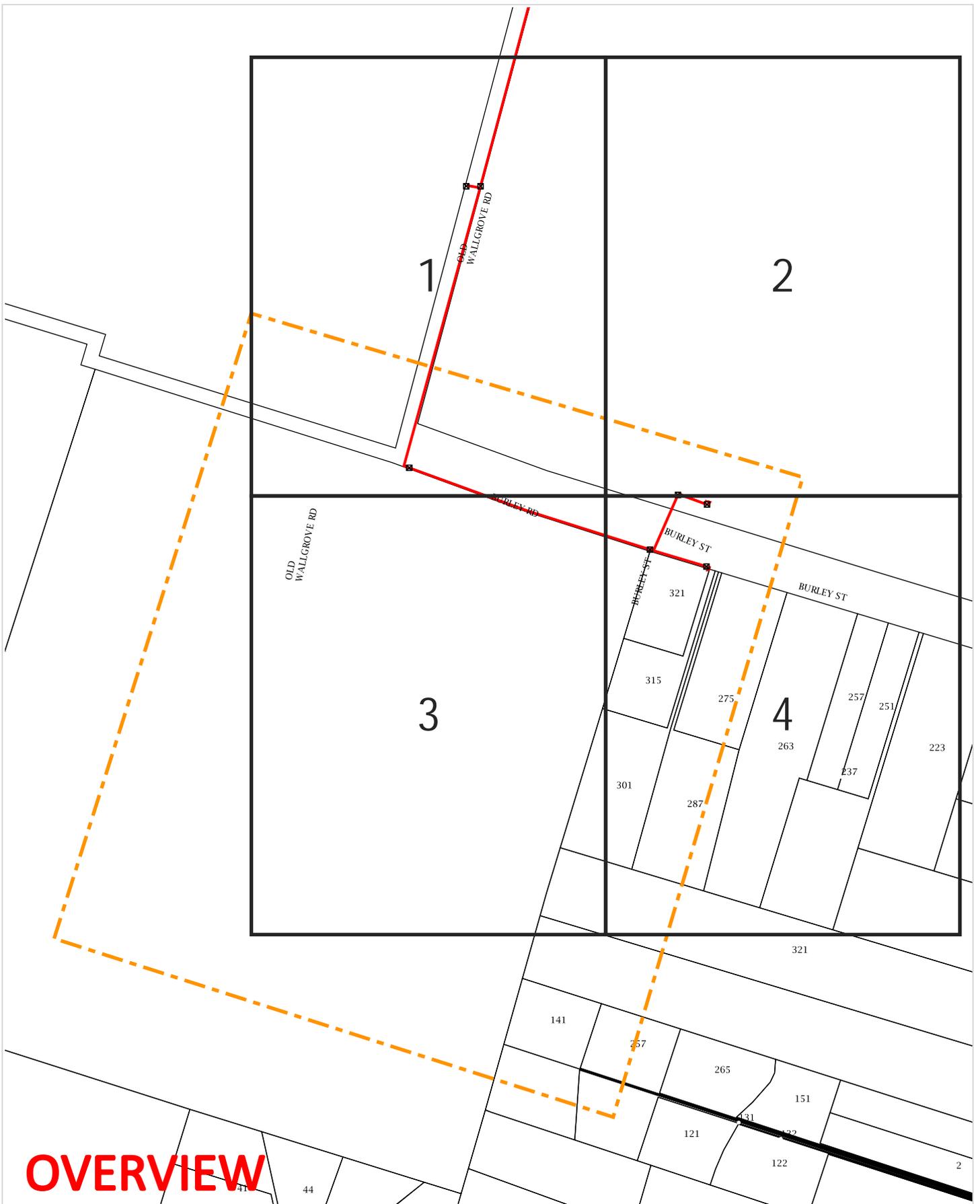
Ian Brown	Peter Ellsmore & Associates	0439 423 708	ian.brown@ellsmore.com.au	NSW	Wollongong, Illawarra, South Coast, Southern Highlands, Macarthur & Sydney
Donna Wullaert	Commence Communications Pty Ltd	02 6226 3869 0428 595 620	admin@commencecomms.com.au	NSW	Canberra, Yass, Bungendore, Goulburn and Surrounding regional Areas
Stephen Fraser	Advanced Ground Locations	02 4930 3195 0412 497 488	steve_agl@hotmail.com	NSW	Newcastle, Hunter Valley, Central Coast, Taree & Surrounding Areas
Andrew Findlay	LiveLocates	0429 899 777	info@livelocates.com.au	NSW	South Coast/ACT, Snowy Mountains
Graeme Teege	Armidale Electrical	02 6772 3702	office@armidale-electrical.com.au	NSW	Armidale
Myles Green	Australian Locating Services	1300 761 545	myles@locating.com.au	NSW	Sydney
Brett Wallin	Utility Scan	0426 354 051	brett@utilityscan.net	NSW	Sydney CBD and Regional areas
Daniel Hudson	One Search Locators	1300 530 420	daniel@onesearchlocators.com.au	NSW	All NSW, ACT
Tim Galaz	Utec Solutions	02 9389 0040	office@utecsolutions.com.au	NSW/QLD/VIC	All areas, NSW, QLD, VIC
Gary Laneyrie	Laneyrie Electrical	0412 079 079 0413 048 048	bindy@laneyrielectrical.com.au	NSW	Illawarra, South Coast, Hunter Region
Reece Gainsford	East Coast Locating Services	0431 193 111	eastcoastlocating@hotmail.com	NSW	Sydney, Maitland, Newcastle, Hunter, Port Stephens, Central Coast
Allan Clarke	The Control Group Pty Ltd	0421 960 017	allan@thecontrolgroup.com.au	NSW	Northern NSW
Simon Cook	Douglas Partners	0431 507 667	simon.cook@douglaspartners.com.au	NSW	NSW All
Samual Boesen	Rubicof Cable & Pipe Locators	0403 285 352 0418 103 369	rubicof@optusnet.com.au	NSW	Cessnock
Craig Vallely	Aqua Freeze & Locate Pty Ltd	0458 774 440	service@aquafreeze.com.au	NSW	Sydney
Josiah Chapman-Hunter	Suk Truk Services Pty Ltd	0419 125 551 0478 004 606	services@suktruk.com.au	NSW	Hunter / Newcastle
Laurence Mead	Veris Australia	0419 770 560	i.mead@veris.com.au	NSW	Sydney
Jason Vane	Smartsan Locators PTY Ltd	0498 025 210	Admin@sslocators.com.au	NSW	Sydney
Alex Farcash	Newcastle Locating Services Pty Ltd	0410 698 599	Admin@newcastlelocatingservices.com.au	NSW	Newcastle, Hunter Valley, Central Coast, Taree & Surrounding Areas
Amer El Chami	Site Scan Pty Ltd	0449 992 520	office@sitescan.net.au	NSW	Sydney
Kaisar sefian	Australian Utility Search Pty Ltd	0424 841 888	kaisar@aususearch.com.au	NSW/ACT	All NSW, ACT

Ian Brown	A1 Locate Services	0400 484 828	ian.brown@a1locate.com.au	NSW/ACT	All NSW, ACT
Alexander Bogdanoff	Expert Service Locating	0420 346 477	info@expertservicelocating.com.au	NSW/QLD	Brisbane, Gold Coast, Sunshine Coast Northern Rivers NSW
Justin Joseph S. Martinez	FJA Locating	0401 749 007	j.martinez@fjalocating.com.au	NSW, ACT, QLD, VIC	All regions
Rhiannon Kemps	Geoscope Utility Detection Services Pty Ltd	0432 296 323	simon@geoscopelocating.com.au	NSW	All regions
Laurence Mead	Astrea Pty Ltd	0413 849 666	admin@astrea.com.au	NSW	Sydney Metro & Surrounding Areas
Bobby Friesz	VAC Group Operations (T/A Earth Radar)	0447 837 267	Bobby.Friesz@vacgroup.com.au	NSW	Sydney
Chris Hall	D C Locators Pty Ltd	0419 679 741	dcloc@powerup.com.au	QLD	Brisbane, Ipswich
Jeff Trackson	J.R & L.M Trackson Pty Ltd	0417 600 978	jtrackson@tracavoid.com.au	QLD	All
Benji Lee	LADS	0478 915 237	benji@ladsqld.com.au	QLD	South East QLD
Andrew Watson	Lambert Locations Pty Ltd	07 5562 8400	admin@lambertlocations.com.au	QLD	South East QLD & Northern NSW
Ross Clarke	FNQ Cable Locators Pty Ltd	0428 775 655	onlineco@bigpond.net.au	QLD	Far North QLD, Cape York & Peninsula
Col Greville	Bsure Locators	0488 520 688	admin@bsurelocators.com.au	QLD	Wide Bay Burnett and Central Qld
Mikael White	All Asset Locations	0478 846 025	allassetlocations@gmail.com	QLD	Sunshine Coast
Simon Griffin	Pensar Utilities	0458 800 267	sgriffin@pensar.com.au	QLD	Brisbane, Gold Coast, Sunshine Coast
Andrew Cowan	VAC Group Operations (T/A Earth Radar)	0447 008 806	andrew.cowan@vacgroup.com.au	QLD	South East and Central QLD
Jimmy Wilkins	GeoRadar Australia	0425 677 227	jimmy@georadar.net.au	QLD	Emerald, Bundeaberg
Beaumont Blake	PipeHawk CCTV	0435 558 533	accounts@pipehawkcctv.com.au	QLD	South East QLD & Northern NSW
Craig Waite	C Locate	0437 808 444	clocate@bigpond.com	QLD	South East QLD
QLD Operations	Utility Location Services	0499 775 095 07 3807 3552	qldops@utilitylocationservices.com.au	QLD	SouthEast QLD, Northern NSW
Andrew Watson	RPS AUS East	0408 839 723	andrew.watson@rpsgroup.com.au	QLD	Brisbane
Luke Steadman	Utility Mapping Pty Ltd	0472 867 197	lsteadman@utilitymapping.com.au	QLD	All
Robert Reed	All Asset Locations Pty Ltd	0478 846 025	allassetlocations@gmail.com	QLD	Sunshine Coast
Jenny Dziduch	1300 Locate Pty Ltd	1300 562 283	admin@1300locate.com.au	QLD	All Queensland, Northern NSW

Sam Hazel	Utility ID Underground Service Locators	0401 202 515	sam@utilityid.com.au	QLD	Southern QLD
Brendon Smith	Dynamic Hydro Excavations	1300 822 878	admin@dynamicexcavation.com.au	QLD	QLD, NSW, VIC
Marty Carlson	Surveywerx Pty Ltd	0488 842 110	mike@surveywerx.com	QLD	South East QLD
Ran Gledhill	Safe Dig Services	0408 944 228	rgsafedig@gmail.com	QLD	Brisbane / North Queensland
Ben Stephens	Electroscan (DTS Group)	0434 140 556	ben.s@electroscanqld.com.au	QLD	All
Adam Lloyd	Aussie HydroVac Services	07 3287 7818	adam.lloyd@aussiehydrovac.com.au	QLD	All
Gary Poppi	Ace Cable Locations	0431 517 837	garypoppi@bigpond.com	QLD	Wide Bay Burnett
Andrew McKenna	Taylros Development Strategists	03 95012800	a.mckenna@taylorlds.com.au	VIC/SA/TAS	Victoria
Olivier Davies	Central Locating PTY LTD	0439 995 894	Ollie@centrallocating.com.au	VIC/SA/TAS	Melbourne Surfcoast Ballarat
Tina Brereton	D-Tech Ground & Overhead Services	0421 697 090	tina@d-tech.net.au	VIC	Victoria
Josh Taylor	Advanced Locations Victoria	0427 846 716	josh@advancedlocationsvic.com.au	VIC	All
Ben Minutoli	Geelong Cable Locations	1800 449 543	ben@geelongcablelocations.com.au	VIC	Melbourne, Geelong, Country Victoria
Mick McGoldrick	Cavan Constructions	0404 241 679	mick@locatecables.com	VIC	Western Victoria
David Kelleher	Construction Sciences	03 9553 7236	utilities@constructionsciences.net	VIC	Victoria
Stuart Miles	ELS Environmental Location Systems	03 8795 7461	accounts@radiodetection.com.au	VIC	Victoria
Darren Dean	Asset Survey Solutions	1300 035 796	darren.dean@assetsurvey.com.au	VIC	Victoria
Alex Jones	Utility Mapping Pty Ltd	0417 413 353	ajones@utilitymapping.com.au	VIC	Victoria
Adam Linford	Gippsland Pipe & Cable Locations	0409 386 817	gippspac@hotmail.com	VIC	Gippsland
Thomas Pitt	Access Utility Engineering (AUE)	03 9580 0440	info@accessue.com.au	VIC	Victoria
Bernie Acabal	Taylor's Development Strategists	03 9501 2800 0419 758 794	b.acabal@taylorlds.com.au	VIC	Victoria
Philong Nguyen	Asset Detection Services Pty Ltd	0413 949 400	phi.nguyen@assetdetection.com.au	VIC	VIC, NSW, TAS All areas
Maurice Tobin	Drain Solutions	1300 546 348	info@drainsolutions.com.au	VIC	Melbourne Metro
Nathan Kelleher	Seeker Utility Engineering	0439 691 840	nathan.kelleher@seekerutility.com.au	VIC	Melbourne
Jeffrey Ramos	VAC Group Operations (T/A Earth Radar)	0436 635 011	Jeffrey.ramos@earthradar.com.au	VIC	All

Ben Zurak	Veris Australia	03 7019 8400	melbourne@veris.com.au	VIC	All
Courtney Marson	CSA Specialised Service Pty Ltd	1300 859 829	courtney@csasepcialised.com.au	VIC/SA/TAS	All
Paul Murray	Able Pipe, Cable & Leak Location Services	0418 318 186	paul.murray6@bigpond.com	VIC	All
Infrastructure Civil Services	Trenchless Pipelaying Contractors (TPC)	08 8376 5911	tpc@trenchlesspipelaying.com.au	SA	All
Sean Nemeth	Enerven Energy Infrastructure Pty Ltd	0488 167 772	sean.nemeth@enerven.com.au	SA	Adelaide
SADB	SADB Civil Construction & Trenchless	08 8168 7200	reception@sadb.com.au	SA	Adelaide
Tony Simpson	Utility Mapping Pty Ltd	0438 630 146	tsimpson@utilitymapping.com.au	SA	All
Deninis Stray	Pinpoint Services Mapping	0428 917 020	dstray@pinpointsm.com.au	SA	All
JohnnyMcGlynn	Pinpoint Services Mapping	0447 185 231	jmcglynn@alexander.com.au	SA	All
Liam Gill	Michael Grear Surveys	08 82788732	ugsl@mgsurveys.com.au	SA	SA
Stefan Forsyth	Adelaide Pipeline Maintenance Services	08 84272525	stefan@streamlinesa.com.au	SA	all NT, WA, QLD
Galen Shanahan	VAC Group Operations (T/A Earth Radar)	0447 837 000	Galen.Shanahan@vacgroup.com.au	SA	All
Marilyn Dentice	Cable Locates & Consulting	08 9524 6600	admin@cablelocates.com.au	WA	Metro & Country
Lisa Scofield	Abaxa	08 9256 0100	accounts@abaxa.com.au	WA	All
Derek McShane	Subterranean Service Locations	0420 862 426	Derek@sslwa.com.au	WA	Midwest/Gascoyne
Ben Upton	TerraVac Vacuum Excavation	0427 531 119	locations@terravac.com.au	WA	All
Dale Shearsmith	Subtera Subsurface Locating	1300 046 636	dale@subtera.com.au	WA	All
Liam Davies	Bunbury Telecom Service Pty Ltd	08 9726 0088	liam@btswa.com.au	WA	South West WA
Tammy Thorp	B.C.E Spatial	08 9364 6408	admin@bcespatial.com.au	WA	Perth Metro & Regional
Alex Jones	Utility Mapping Pty Ltd	0417 413 353	ajones@utilitymapping.com.au	WA	All
Chris Lee	Pulse Locating	0437 289 861	enquiries@pulselocating.com.au	WA	Perth
Morgan O'Connor	Kier Contracting	1300 543 728	morgan@kier.com.au	WA	Perth Metro & Greater region, Regional WA
Nigel Nunn	CCS Group / Utility Locating Solutions	08 9385 5000	enquiry@ccswa.com.au	WA	Perth
Paul Stevenson	Geographe Underground Services	0427 523 811	paul.stevenson@geographeunderground.com.au	WA	All

Jeremy Brown	Spotters Asset Locations Pty Ltd	0459 130 677	jeremy@spottersassetlocations.com.au	WA	All
Reece Topham	Prime Locate	0400 888 406	reece@primelocate.com.au	WA	All
Mark Docherty	RM Surveys	08 9457 7900	mark.docherty@rmsurveys.com.au	WA	All
Jonathon Sylva	Advance Scanning Services	1300 738 118	bookings@advancescanning.com.au	WA	All
Tim Daws	Award Contracting	0411 878 895	info@awardcontracting.com.au	WA	City & Regional
Dave Turner	Anywair Pipe & Cable	0418 890 071	dave@anywair.com.au	NT	All NT, WA, QLD
Steve Gault	Northern Comms	0407 904 319	steve@northerncomms.net.au	NT	All
Wayne Parslow	Danisam	0417 089 865	danisam@westnet.com.au	NT	Darwin NT and Surrounds
Elizabeth Young	Archers Underground Services Locations (AUS Locations)	03 6245 1298	admin@auslocations.com.au auslocations@bigpond.com	TAS	All
Patrick Monaghn	Paneltec Group	0447 797 544	patrick@paneltec.com.au	TAS	All
Scott Richardson	AJ Water & Leak Detection	0457 710 680	admin@ajwater.com.au	TAS	All



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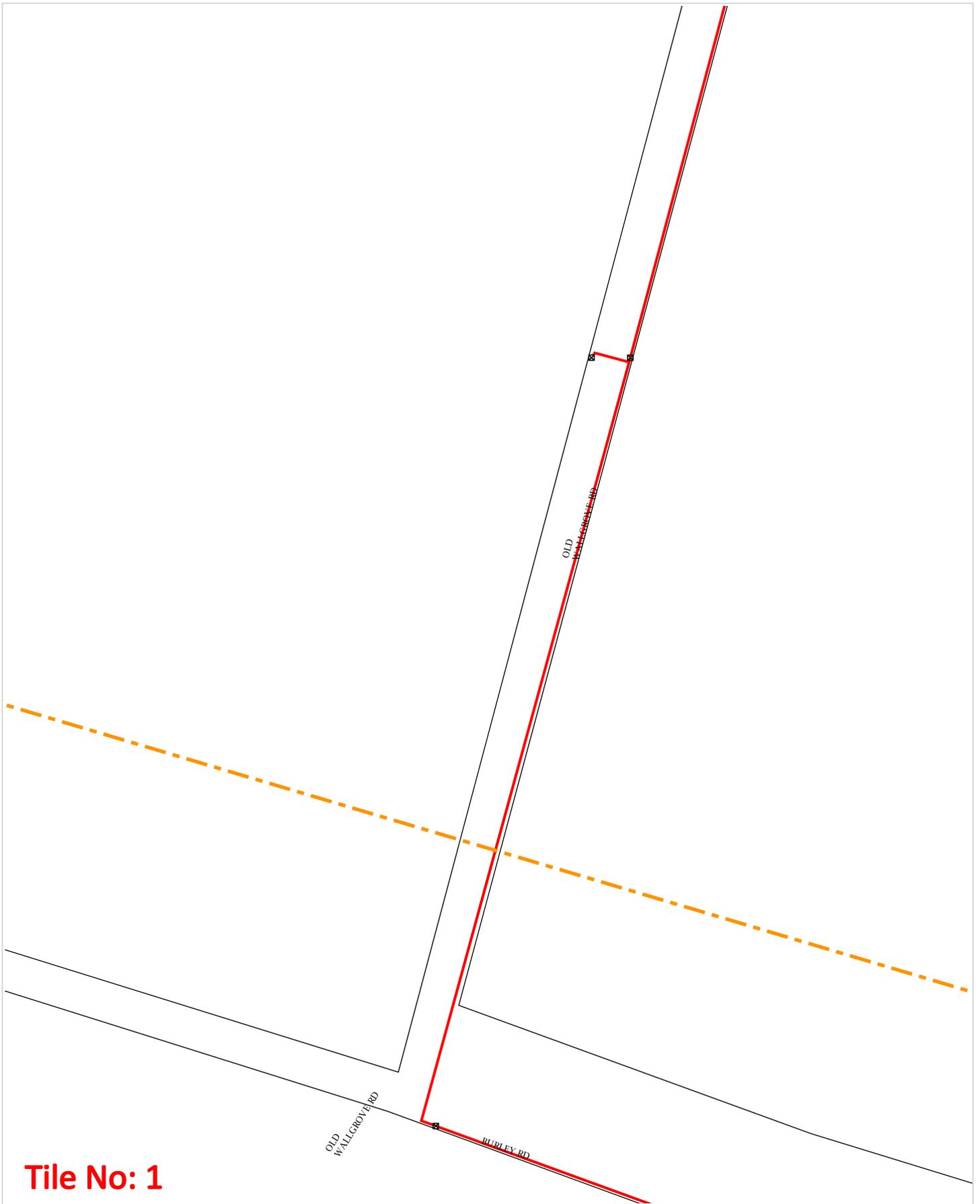
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Date Generated: 09 Feb 2022



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





Tile No: 1

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OLD
WALLCROVE RD

BUNNETT RD

Tile No: 3

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 For urgent onsite assistance contact 1800 505 777
 Optus Limited ACN 052 833 208



Guide to reading Sydney Water DBYD Plans



This guide will help you understand our plans and what our services are.

Symbol	Meaning	Symbol	Meaning
	Sewer main with flow arrow and size type text.		Sewer vertical
	Disuses sewer main This means the sewer has been disused but remains in the ground.		Sewer pumping station
	Sewer maintenance hole with upstream depth invert.		Pressure sewer main These are also found in Vacuum sewer areas.
	Sewer Sub-surface chamber		Pressure sewer Pump unit Alarm, electrical cable and pump unit.
	Sewer Maintenance hole with overflow chamber		Pressure sewer property valve boundary assembly
	Sewer Ventshaft EDUCT		Pressure sewer stop valve
	Sewer Ventshaft IDUCT		Pressure sewer reducer / taper
	Sewer property connection point With chainage to downstream maintenance hole.		Pressure sewer flushing point
	Sewer concrete encased section		Vacuum sewer division valve
	Sewer Rehabilitation		Vacuum sewer vacuum chamber
	Sewer terminal maintenance shaft		Vacuum sewer clean out pot
	Sewer maintenance shaft		Stormwater pipe
	Sewer rodding point		Stormwater channel
	Sewer lamphole		



Symbol	Meaning	Symbol	Meaning
	Stormwater gully		Potable water stop valves with Tapers
	Stormwater maintenance hole		Potable water closed stop valve
	Watermain – potable drinking water With size type text.		Potable water air valve
	Disconnected watermain – potable drinking water This means the watermain has been disused but remains in the ground.		Potable water valve
	Recycled watermain		Potable water scour
	Special supply conditions – potable drinking water		Potable water reducer / taper
	Special supply conditions – recycled water		Potable water vertical bends
	Restrained joints – Potable drinking water		Potable water reservoir
	Sewer concrete encased section		Recycled water is shown as per potable above. Colour as indicated
	Restrained joints – Potable drinking water		Private potable water main
	Potable water hydrant		Private recycled water main
	Potable water maintenance hole		Private sewer main
	Potable water stop valve		
	Potable water stop valve with Bypass		



Pipe types



PIPE TYPES		PIPE TYPES	
ABS	Acrylonitrile Butadiene Styrene	AC	Asbestos Cement
BRICK	Brick	CI	Cast Iron
CICL	Cast Iron Cement Lined	CONC	Concrete
COPPER	Copper	DI	Ductile Iron
DICL	Ductile Iron Cement (mortar) Lined	DIPL	Ductile Iron Polymeric Lined
EW	Earthenware	FIBG	Fibreglass
FL BAR	Forged Locking Bar	GI	Galvanised Iron
GRP	Glass Reinforced Plastics	HDPE	High Density Polyethylene
MS	Mild Steel	MSCL	Mild Steel Cement Lined
IPE	Polyethylene	PC	Polymer Concrete
PP	Polypropylene	PVC	Polyvinylchloride
PVC - M	Polyvinylchloride, Modified	PVC - O	Polyvinylchloride, Oriented
PVC - U	Polyvinylchloride, Unplasticised	RC	Reinforced Concrete
RC-PL	Reinforced Concrete Plastics Lined	S	Steel
SCL	Steel Cement (mortar) Lined	SCL IBL	Steel Cement Lined Internal Bitumen
SGW	Salt Glazed Ware	SPL	Steel Polymeric Lined
SS	Stainless Steel	STONE	Stone
VC	Vitrified Clay	WI	Wrought Iron
WS	Woodstave		



Further Information

Please consult the Dial Before You Dig enquiries page on our website.

For general enquiries please call the Customer Contact Centre on 132 092

In an emergency, or to notify Sydney Water of damage or threats to its structures, call 13 20 90 (24 hours, 7 days)



09/02/2022

Steven Sam
Aurecon
116 Military Road
Neutral Bay NSW 2089

Dear Steven Sam

DIAL BEFORE YOU DIG - JOB: 31359964 SEQ: 207939298

Thank you for your request regarding the location of telecommunication services. You requested the information for the below area:

Enquiry Date: 09/02/2022
Address: 327 Burley Road
Suburb: Horsley Park
State: NSW, 2175

Additional Information:

STOP

According to our records your enquiry with the following details impacts our infrastructure. A detailed Plan is normally attached to this response, however due to the large area, a single overview plan has been provided.

In order to have your enquiry response adequately assessed, you are required to contact damage.relocations@vocus.com.au to discuss your works in more detail.

IMPORTANT INFORMATION

Drawings and Plans provided by the Vocus Group are reference diagrams which were correct at the time the asset was built. Exact ground cover and alignments cannot be provided with any certainty, as these may alter over time. Depths of Telecommunications plant vary considerably as do alignments. The plans provided are to be used as a guide only. It is essential to uncover / pothole the asset and positively identify the assets exact location.

Yours sincerely,
Vocus Group DBYD Team

EMERGENCY CONTACT: 1800 262 663

Vocus Level 12, 60 Miller Street

North Sydney NSW 2060

T: 1300 88 99 88

E: info@vocus.com.au

The Vocus Group includes related bodies corporate of Vocus Communications Limited ACN 084 115 499

DUTY OF CARE

When working in the vicinity of telecommunications plant, you have a legal “Duty of Care” that must be observed. The following points must be considered:

It is the responsibility of the constructor to design for protection and minimal impact of the Vocus Group plant. The Vocus Group will provide free plans showing the presence of its network to assist at the design stage. It is the constructors’ responsibility to:

- a. Request plans of the Vocus Group plant for a particular location at a reasonable time before construction begins through Dial Before You Dig.
- b. Visually locate the Vocus Group plant by vacuum excavation (potholing) where construction activities may damage or interfere with the Vocus Group plant (see “Clearances for work in the vicinity of the Vocus Group Plant” section for more information).
- c. Contact the Vocus Group (see below for details) if the Vocus Group plant is wholly or partly located near planned construction activities.

NOTE: Plans are provided free of charge up to 1 Km radius. Larger plans may incur a cost.

DAMAGE

ANY DAMAGE TO VOCUS GROUP NETWORK MUST BE REPORTED TO 1800 262 663 IMMEDIATELY

The constructor is responsible for all plant damage when works commence prior to obtaining the Vocus Group plans, or failure to follow instructions.

The Vocus Group reserves all rights to recover compensation for loss or damage to its cable network or other property including consequential losses.

ASSET RELOCATIONS

You are not permitted to relocate or alter any Vocus Group assets or network under any circumstance.

For all enquiries relating to the relocation of Vocus Group assets please email Damage.Relocations@vocus.com.au

ON SITE LOCATION

Region	Onsite Locations Contact	Phone	Mobile	Fax	After Hours
NSW - Sydney	QC Communications	(02) 9620 2407		(08) 9620 1701	
NT – Alice Springs	Chambers Engineering	(08) 8955 5022	0418 837 833 0418 897 332	(08) 8955 5322	
NT – Darwin	Anywair Electrics	(08) 8988 1658	0418 890 071	(08) 8988 4654	0418 890 071
NT – Darwin	Northern Communications Services		0407 904 319		(08) 8927 3994
QLD - Brisbane	Optilinx	Scheduling (07) 3901 7353	After Hours or Emergency 0404 010 658	(07) 3901 7352	
SA – Adelaide	Trenchless Pipe-Laying Contractors	(08) 8376 5911		(08) 8376 5944	
VIC – Melbourne	Linktech	Scheduling (03) 8805 0300			
WA – Perth	Abaxa / WH Location Services	Scheduling 1300 369 642	After Hours or Emergency 0411 746 657 - Boyd	(08) 9256 2922	

The Vocus Group accepts no liability for the information provided to the Constructor by the Locators provided above. Further, the Constructor acknowledges that the Locator is the agent of the Constructor and that the Vocus Group takes no responsibility for the locators' acts or omissions.

**If any of the above numbers are uncontactable and your call is urgent,
please call the Vocus National Service Desk on 1800 262 663**

- For all work within 2.5 metres of nominal location, the Constructor is required to prove the actual location of the plant by potholing and exposing before commencing work.
- Potholing to expose and locate the Vocus Group plant is required before work commences, at least every 3 metres where the Constructors works are parallel to the Vocus Group plant.
- The Constructor is responsible for all plant damages when works commence without the Vocus Group plans or by failure to follow advice and/or instructions from the Vocus Group.

NOTE: No machinery shall be used within 1 metre of the Vocus Group plant until the actual location has been determined by potholing using hand tools.

NOTE: No heavy earth working machinery shall be used within 5 metres of the Vocus Group plant until the actual location has been determined by potholing using hand tools.

CLEARANCES FOR WORK IN THE VICINITY OF VOCUS GROUP PLANT

These figures represent the minimum clear cover to be maintained over the Vocus Group plant. Please note that the actual cover over existing plant might be greater or less than recommended figures. Exact alignment and depths cannot be given with certainty as such levels can change over time.

Footpath and Verge Areas	450mm
Roadways	600mm

These figures represent the minimum clearance between construction and actual location of the Vocus Group plant.

Jackhammers / Pneumatic Breakers	Not within 2.5 metres of actual location
Vibrating plate or Wacker Packer compactors	Not within 500mm of actual location
Heavy Vehicle Traffic	Not to be driven across Vocus Group plant with less than 600mm cover. The constructor is to check the depth by potholing using hand tools.
Mechanical Excavators	Not within 1 metre of actual location. The constructor is to pothole and expose plant using hand tools.
Boring Equipment (in-line, horizontal and vertical)	Not within 2.5 metres of actual location. The constructor is to pothole and expose plant.

Access to the Vocus Group pits must remain accessible and at ground level at all times.

Any information provided is valid only for 30 days from the date of issue of this document. If the work operations extend beyond this period, or if the designs are altered in any way, you are requested to re-submit your proposal for re-assessment by contact Dial Before You Dig.

Phone 1100 or check the website for more details <http://www.1100.com.au>

RESOLUTION OF POINTS OF CONFLICT

Should plant location and potholing reveal points of conflict between the Constructors planned works and the existing Vocus Group plant, the constructor should contact the Vocus Group for advice and to discuss possible solutions. The contact details are;

Fibre Operations

Phone: 1800 262 663

Email: support@vocus.com.au

Or Urgent enquiries after business hours contact 1800 262 663

ASSESSMENT OF RISK AND PROTECTIVE ACTIONS

Where protective works are required around existing Vocus Group plant, the details will be worked out on a case by case basis. Protective works are the responsibility of the Constructor.

Where relocation or protection of Vocus Group plant is part of an agreed solution, the costs of these works will be the responsibility of the Constructor. The Vocus Group will provide an estimated cost for works. Work by the Vocus Group will not commence until a Purchase Order is received.

Schedule	The Criminal Code
Chapter 10	National infrastructure
Part 10.6	Telecommunications Services
Division 474	Telecommunications offences

474.6 Interference with facilities

(1) A person is guilty of an offence if the person tampers with, or interferes with, a facility owned or operated by:

- (a) a carrier; or
- (b) a carriage service provider; or
- (c) a nominated carrier.

Penalty: Imprisonment for 1 year.

(2) For the purposes of an offence against subsection (1), absolute liability applies to the physical element of circumstance of the offence, that the facility is owned or operated by a carrier, a carriage service provider or a nominated carrier.

(3) A person is guilty of an offence if:

(a) the person tampers with, or interferes with, a facility owned or operated by:

- (i) a carrier; or
- (ii) a carriage service provider; or
- (iii) a nominated carrier; and

(b) this conduct results in hindering the normal operation of a carriage service supplied by a carriage service provider.

Penalty: Imprisonment for 2 years.

(4) For the purposes of an offence against subsection (3), absolute liability applies to the following physical elements of circumstance of the offence:

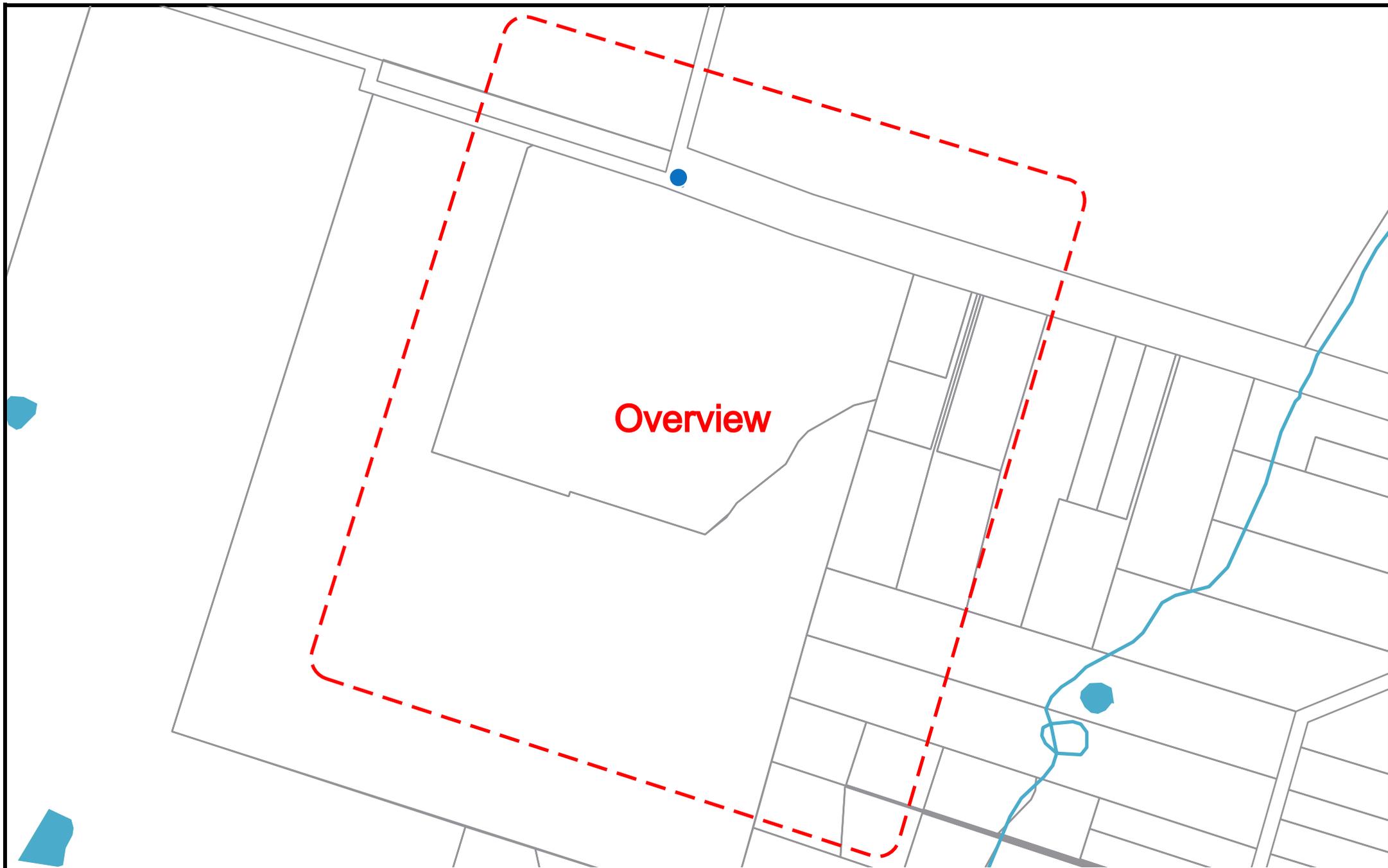
- (a) that the facility is owned or operated by a carrier, a carriage service provider or a nominated carrier;
- (b) that the carriage service is supplied by a carriage service provider.

(5) A person is guilty of an offence if:

(a) the person uses or operates any apparatus or device (whether or not it is comprised in, connected to or used in connection with a telecommunications network); and

(b) this conduct results in hindering the normal operation of a carriage service supplied by a carriage service provider.

Penalty: Imprisonment for 2 years.



SEQUENCE NUMBER: 207939298
JOB NUMBER: 31359964
ADDRESS: 327 Burley Road, Horsley Park, NSW 2175

LEGEND ● Vocus Group Pit
— Vocus Group Conduit

SCALE: 1:6629

Appendix B – Electrical Utility Consultations

Sylvester Kourie

From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>
Sent: Monday, 4 December 2023 11:13 AM
To: Ting Lei
Cc: Jason Cosford; Andrew Macdonald; John Psarologos
Subject: RE: NEXTDC S4 Site Substation Prelim Layout for land planning - Power Transformer Request for Information [Official]
Attachments: SR23670433_Part 3.1 Technical Specification Rev_00 - Access Road.pdf

Hi Ting,

Thank you for the updates and we look forward to receive information.

Please see below response to your earlier query.

As mentioned during meeting, S4 Substation has not gone through concept design or market testing loop yet. So, please see below response based on typical information and previous experience.

- Transformer Weight :
Unable to provide a typical Transformer weight – We attach typically used Access road requirements for substation access – this provides the requirements to enable the Transformer delivery.
Previously supplied TX Delivery combinations were – for information only, not to be taken as intent for the NextDC Substation project:
 - 2 x 14 axle Nicolas
 - Up to 3 HD Prime movers (2 at front, 1 push truck)
 - LV Police escorts
 - LV Pilot escorts

As noted earlier, please note that Transgrid has NOT performed any market engagement for the NEXTDC Transformers. Hence, the information is subject to detail design and specification.

- Accepted transformer termination arrangement (primary & secondary)
Unable to provide a typical Transformer termination arrangement. Please note that Transgrid has NOT performed any market engagement for the NEXTDC Transformers.
- Transformer drawings and datasheets are subject to change, hence unable to release it for now
Unable to provide the information at this stage, please note that Transgrid has NOT performed any market engagement for the NEXTDC Transformers.

Thank you.

Best Regards,
Akanksha

Akanksha Tiwari
Senior Proposal Coordinator
0436 861 716

Data Classification: Official

From: Ting Lei Ting.Lei@aurecongroup.com
Sent: Friday, December 1, 2023 4:10 PM
To: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Cc: Jason Cosford <Jason.Cosford@nextdc.com>; Andrew Macdonald <andrew.macdonald@nextdc.com>
Subject: RE: NEXTDC S4 Site Substation Prelim Layout for land planning - Power Transformer Request for Information [Official]

Hi Akanksha,

We are in progress of doing a few final refinements in house. Will send through the:

- Native file for the S4 site plan with allocated substation area
 - Revised preliminary conceptual sketches (SLD, site plan, proposed easement, etc.)
- early next week.

Thank you!

Best Regards,

Ting Lei

Lead Electrical Engineer, Aurecon

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DISCLAIMER

From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Sent: Thursday, 30 November 2023 12:41 PM

To: Ting Lei <Ting.Lei@aurecongroup.com>

Cc: Jason Cosford <Jason.Cosford@nextdc.com>; Andrew Macdonald <andrew.macdonald@nextdc.com>

Subject: RE: NEXTDC S4 Site Substation Prelim Layout for land planning - Power Transformer Request for Information [Official]

Hi Tin, Let me check this info and get back to you. Quickly wanted to check if you can share the dimensional info around 330kV cable route and easement ASAP ?

Thank you and Best regards,
Akanksha

Akanksha Tiwari

Senior Proposal Coordinator

0436 861 716

Data Classification: Official

From: Ting Lei <Ting.Lei@aurecongroup.com>

Sent: Thursday, November 30, 2023 9:39 AM

To: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Cc: Jason Cosford <Jason.Cosford@nextdc.com>; Andrew Macdonald <andrew.macdonald@nextdc.com>

Subject: NEXTDC S4 Site Substation Prelim Layout for land planning - Power Transformer Request for Information

Thank you Akanksha,

Could you please advise for the Lumea's preferred / approved power transformer product? This is for us to perform a prelim transportation assessment for the S4 site, for Lumea's substation access.

Transformer: 330/33kV 170MVA (Auxiliary supply proposed to be from 33kV buses instead of the tertiary winding)

Information requesting:

- Transformer Weight
- Lumea / TransGrid's transformer transportation vehicle type.

- Lumea / TransGrid's transformer crane requirement.
- Accepted transformer termination arrangement (primary & secondary).
- [if available] A copy of transformer shop drawings and datasheet.

Your speedy response is much appreciated.

Thank you!

Best Regards,

Ting Lei

Lead Electrical Engineer, Aurecon

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DISCLAIMER

From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Sent: Tuesday, 28 November 2023 4:29 PM

To: Jason Cosford <Jason.Cosford@nextdc.com>; Andrew Macdonald <andrew.macdonald@nextdc.com>; Ting Lei <Ting.Lei@arecongroup.com>

Cc: John Psarologos <John.Psarologos@lumea.com.au>; Chris Amos <Chris.Amos@arecongroup.com>

Subject: RE: (Placeholder) NEXTDC S4 Site Substation Prelim Layout for land planning [Official]

Hello Jason, Tin , fixing some text in **red** below email for precise messaging.

Thank you and Best regards,
Akanksha

Akanksha Tiwari

Senior Proposal Coordinator
0436 861 716

Data Classification: Official

From: Akanksha Tiwari

Sent: Tuesday, November 28, 2023 2:54 PM

To: Jason Cosford <Jason.Cosford@nextdc.com>; Andrew Macdonald <Andrew.Macdonald@nextdc.com>; Ting.Lei@arecongroup.com

Cc: John Psarologos <John.Psarologos@lumea.com.au>; Chris.Amos@arecongroup.com

Subject: RE: (Placeholder) NEXTDC S4 Site Substation Prelim Layout for land planning

Hi Jason, Tin,

Following our discussion last week, quickly wanted to follow up on details available :

- 1) Stage-1: NEXTDC confirmed 330kV cable route update where 330kV UG enter site from Old Wallgrove Road instead of Burley Rd.
Lumea to update the design route in the firm e price proposal for 'in progress' work at the moment.
Likely duration of the delay in contract finalisation will be confirmed following receipt of all customer inputs and internal design feedback. The contract was anticipated to be finalised by Feb'24 for 2x bays within Sydney West Substation.
Action Item: NEXTDC to confirm easement dimensions and confirm use of the easement land allocated for specific purposes. Lumea / Transgrid team will check design and asset management's acceptance criteria based on NEXTDC proposal.
- 2) Stage-2 : NEXTDC has confirmed that Substation at customer is to be owned and operated by Lumea and concept design will need to commence, to assist NEXTDC with required design inputs.

Substation Main Access Path and Yard Area allocated inclusive of 33kV switchgears.

Action Item: Following the high level inputs provided by Lumea last year, minimum footprint requirements are approx.. 160x 110 mtrs (as per attached annexure B interpreting the boundary with bufferzones)

- NEXTDC to confirm substation footprints
- NEXTDC to share latest kmz file, noise study reports, SLD and GA if the basis of design has changed.
- Based on inputs from NEXTDC, Lumea / Trasngrid project team will work with design teams to confirm the requirements.

Thank you and Best regards,
Akanksha

Akanksha Tiwari
Senior Proposal Coordinator
0436 861 716

-----Original Appointment-----

From:

Sent: Wednesday, November 15, 2023 4:36 PM

To: Akanksha Tiwari; Maki Okamura; Najah Shukur; Mohsen Ahmadi; Jason Cosford; Andrew Macdonald;
Ting.Lei@arecongroup.com; Chris.Amos@arecongroup.com; Tim Knight

Cc: John Psarologos; Patrick Allan; Rawan Abdo

Subject: (Placeholder) NEXTDC S4 Site Substation Prelim Layout for land planning

When: Wednesday, 22 November 2023 1:00 PM-1:45 PM (UTC+10:00) Canberra, Melbourne, Sydney.

Where: Microsoft Teams Meeting

Hello All,
Putting placeholder to confirm time and availability.

Attendee:

- 1) Lumea and TG Project team
- 2) NEXTC Project Team
- 3) NEXTDC Design Consultant (Aurecon)

Agenda items below as provided by Auerecon

Please find attached sketch for the recent updates for your information & we can talk in details during the meeting, in summary:

- 330kV cable route update: enter site from Old Wallgrove Road instead of Burley Rd.
- Substation Main Access Path allocated.
- Substation Yard Area allocated and note the inclusive of 33kV switchgears.

Microsoft Teams meeting

Join on your computer, mobile app or room device

[Click here to join the meeting](#)

Data Classification: Official

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"COVID-19 UPDATE: TransGrid office personnel have transitioned to working remotely, staying home to keep our people and community safe while working to ensure that we continue to provide the support you need during these uncertain times. We appreciate staying connected is important so while face-to-face meetings have been suspended due to physical distancing requirements, we offer other ways for you to contact us, meet with us and access the people, information and resources you require." Please consider the environment before printing this e-mail.

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10. Transport and Access Road

10.1 Preparation for Transport

Preparations for transport is not limited to directions as detailed in SDM – Equipment – Common Requirements.

10.2 Transport of Transformer to Substation sites

No plant shall be dismantled after test and inspection and made ready for shipment until written approval has been given by The Principal.

Before commencing delivery to Site, the Contractor shall contact The Principal's Site Representative in order to ensure the availability of the Site for erection. Notification periods shall be in accordance with project specifications.

Prior to the delivery to any Site, the Contractor will be deemed to have made themselves familiar with any Site conditions relevant to transport, delivery, unloading and erection.

The Contractor must be responsible for the transport and delivery to Site of all material provided by him including loading, unloading, storage, un-crating and disposal of packaging. All costs for this transport must be included in the appropriate rate for erection, installation or construction.

The transformer shall be suitable for transport by road vehicles presently available and properly licensed for road transport of such transformers.

Suitable means shall be provided on the sides and the ends of the main tank, near its top, for attachment of lashing down chains.

The Contractor shall submit a detailed proposal for the method of transporting the transformers (including drawing of proposed transporter) from their works in Australia, or the port of entry, to the transformer compound at Site, including but not limited to route plans, traffic management plans etc.

The Contractor is recommended to apply for a preliminary transport permit during early stage of project to identify any constraints to the transport activity (such as bridges unable to sustain the load). Alternatively, if the Contractor deems the risk of transport to be low and a Contract is subsequently placed, a permit application is required to be applied for upon placement of contract in line with dates reflected in the project specific contract/agreement schedule.

The Contractor shall review the transport route for the project. With this information, the Contractor shall arrange for the protection and strengthening of roads, bridges, culverts, and all other public utility services and any other services laid in, under or over the routes to be traversed by the plant transporter.

For the final portion of the transport, where the access road to substation site has not been constructed yet (e.g. greenfield locations). Alternatively, if the access road specification is provided with the project specific contract/agreement, the Contractor shall ensure the proposed transporter is compliant.

Some Sites do not have a transformer runway available and the Contractor shall take this into consideration when proposing transport arrangements.

The Contractor shall therefore note that no allowance is to be included in the contract price for charges to be borne by The Principal in regard to protection and strengthening, unless otherwise agreed with The Principal.

The Contractor shall give indemnities as required by public utilities except that The Principal will, if the public utilities shall so require furnish to the public utilities concerned any indemnities required by such utilities. The Contractor shall reimburse any payment made by The Principal under any such indemnities. The Principal will not agree to make any such payment without first consulting with the Contractor in relation thereto.

For the duration of transport from the manufacturing location to the final installation location at The Principal's nominated Site, the Contractor shall be responsible for the installation and recording of maximum impact recorder readings in the vertical, longitudinal and lateral planes of the transformer. Upon completion of transport the Contractor shall supply a copy of the data from the impact recorder. Acceptable maximum impact values during transport shall be provided to The Principal.

10.3 Access Road / Track Requirements of the Transporter

The Principal offers the following base requirements of the access track or road between the public road intersection and the substation construction site.

This data is provided to construction contractors for the access track to the construction site.

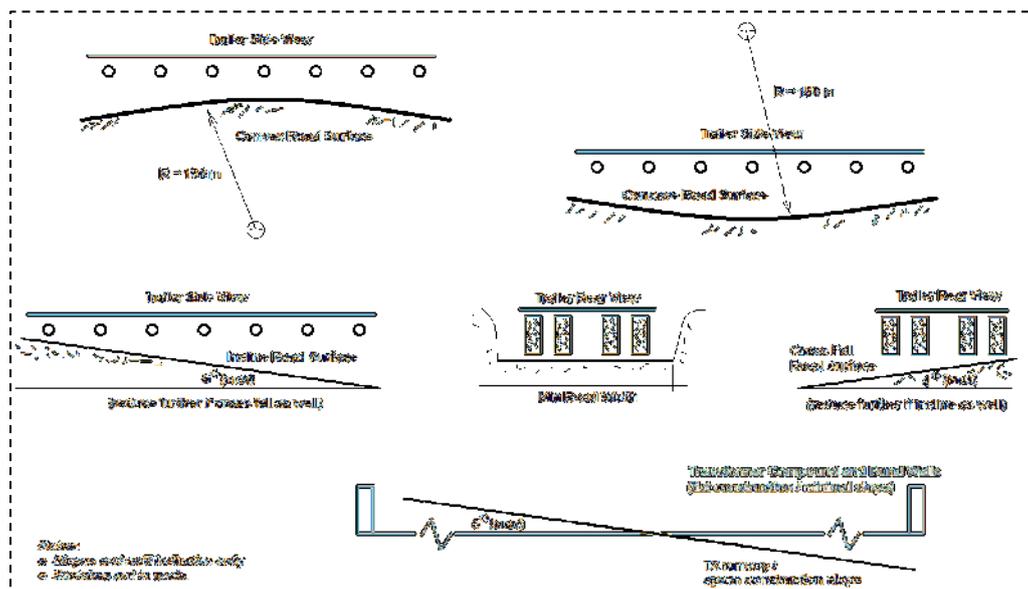
Item	Specification	
	Platform Trailer	Beam Set
Surface	Sealed or Unsealed formed gravel road	
Road width (straight sections)	5.5 m minimum	6.0 m minimum
Road width (curves)	6.5 m minimum *	12 m minimum *
Inclines – New causeways	Maximum: 8 degrees (or 14%) Preferred: 5 degrees (or 9%) Cross-fall: 4 degrees (or 7%)	Maximum: 5 degrees (or 9%) Cross-fall: 4 degrees (or 7%)
	When both gradient and cross-fall occur (usually on corners in hill areas) then allowances must be made to reduce tolerances accordingly	
Longitudinal radii - convex	R 150 m minimum	R 250 m minimum
Longitudinal radii - concave	R 150 m minimum	R 250 m minimum
Horizontal radii – New causeways	R 35 m minimum (on inside) ^	R 14 m minimum (on inside) ^

	– for R(outside), add road width (curves).	– for R(outside), add road width (curves).
Maximum axle load	14 tonnes per axle for 4 x dual tyres @ 1.8m centres	12 tonnes per axle for 4 x dual tyres @ 1.8m centres
Unloading of transformer from transporter to compound/bund	The internal roadway could have a longitudinal grade of up to 5% along its entire length. The gap between the internal road and the transformer compound (also referred to as the “transformer runway”) will meet the same technical specifications as for the remainder of the bench and is typically comprised of a compacted granular fill with a minimum CBR of 15% and bearing capacity 110kPA. The slope of this area will match the slope of the internal road.	
Maximum distance between platform / beam set arrangement and the service location within the Transformer Compound (where jack/skate is used). This indicates the skating distance.	18 m Note that at the time of delivery there may be low level obstructions in the apron / runway area between the internal road and the compound. The Principal expects that dunnage may be required in this area to support the skate beams, and has nominated the above pressure bearing capacity for the apron area for this dunnage.	

Notes:

- * It's expected that this number reduces when horizontal radii increases
- ^It's expected this number increases when road width at curves reduces.

The following definitions are offered to clarify references from the table. The slopes, inclines and cross falls shown may apply in any direction and are intended for definition purposes only.



Where the Tenderers transporter is considered unlikely to achieve these requirements, the Tenderer is required to indicate this in the Technical Comments.

10.4 Transport and Mounting within Substation

The Contractor shall safely manage the unloading of transformer from the transport vehicle into the final position in the compound.

The transformer shall be suitable for transport by skates. The transformer base shall be designed to locate the skates on the underside pads having minimum dimensions of 400 mm x 400 mm.

The transformer base shall be mounted on anti-vibration pads for noise reduction.

The base structures shall be adequately protected against corrosion.

The Contractor shall supply the anti-vibration mounting pads. They shall be of oil and weather-resisting synthetic rubber or other approved material, capable of operation at temperatures from -5°C to 100°C. The unloaded thickness of the anti-vibration material shall be between 25 mm and 40 mm. When loaded to the same pressure as in service, the material shall give (at normal ambient temperature) vibration attenuation at 100 Hz of not less than 32 dB (assuming an infinite ground impedance value).

Sylvester Kourie

From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>
Sent: Tuesday, 13 February 2024 12:22 PM
To: Jason Cosford; Andreas Laubi; Neil Donald; Chris Amos
Cc: Anand Fernando; Najah Shukur; Tim Knight; John Psarologos; Andrew Macdonald; Ting Lei
Subject: RE: Lumea and NEXTDC - Discussion of the DNA Option for Substation and UG cable [Official] [Sensitive] [Official] [Sensitive]
Attachments: 20240205_Lumea NEXTDC Meeting Minutes.docx; Connections - template DNA Access Policy.doc

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Hi Jason, Andreas, Chris,

Thank you, @Andreas Laubi for checking. Your interpretation is correct. DNA can be 'opted in' by proponent if less than 30km in cable length (as per page 3 of the meeting note under DNA section).

To Summarise:

- Current NEXTDC S4 Connection Enquiry includes DCA aspect with Point of Connections at TG's Sydney West Sub.
Hence, as noted in action item, if moving to DNA is preferred by NEXTDC, a formal request will need to be submitted to TG connection team who will update relevant technical specification and harmonic polygon. The latest documents will also reflect DNA boundary point at TG Sydney West Sub and Connection points at Customer's Substation at 33kV Feeder level, as discussed. This typically takes around 8 weeks from customer submission date.
- If proponent opts for DCA, it's a dedicated assets for NextDC; where Lumea could Build, Own, Operate and Maintain the asset for duration of the connection agreement.
- If proponent opts for DNA, the asset would form part of the Transmission Network asset and need to be operated and maintained by the TNSP - Transgrid. Lumea could still build and own the asset for duration of the connection agreement, but DNAs will need to have AER and TNSP approved access policy to deal with future connections.
- The DNA is not an "open access" facility. The DNA has been funded by the Foundation Users, NEXTDC in this instant, who have contractual rights to the Capacity the foundational user. However, foundation member is unable to 'pick and choose' who connects on the connection.
- Under the Access Policy, new Applicants can request access to Spare Capacity or to fund New Capacity, but have no entitlement to access services or Capacity contracted to existing Users.

Thank you and look forward to hearing back from you about project capacity and DCA / DNA.
Please let me know if you have further queries or require more clarification.

Best Regards,
Aknaksha

Akanksha Tiwari
Senior Proposal Coordinator
0436 861 716

From: Jason Cosford <Jason.Cosford@nextdc.com>

Sent: Tuesday, February 13, 2024 9:36 AM

To: Andreas Laubi <Andreas.Laubi@aurecongroup.com>; Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>; Neil Donald <neil.donald@area3.com.au>

Cc: Anand Fernando <Anand.Fernando@transgrid.com.au>; Najah Shukur <Najah.Shukur@transgrid.com.au>; Tim Knight <Tim.Knight@transgrid.com.au>; John Psarologos <John.Psarologos@lumea.com.au>; Chris Amos <Chris.Amos@aurecongroup.com>; Andrew Macdonald <Andrew.Macdonald@nextdc.com>; Ting Lei <Ting.Lei@aurecongroup.com>

Subject: RE: Lumea and NEXTDC - Discussion of the DNA Option for Substation and UG cable [Official] [Sensitive]

Thanks Andreas,

Looping in Neil Donald, NEXTDC's PM for his visibility.

Jason Cosford

Lead HV Engineering Manager

Mobile: +61 412 901 602

From: Andreas Laubi <Andreas.Laubi@aurecongroup.com>

Sent: Monday, February 12, 2024 4:24 PM

To: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>; Jason Cosford <Jason.Cosford@nextdc.com>

Cc: Anand Fernando <Anand.Fernando@transgrid.com.au>; Najah Shukur <Najah.Shukur@transgrid.com.au>; Tim Knight <Tim.Knight@transgrid.com.au>; John Psarologos <John.Psarologos@lumea.com.au>; Chris Amos <Chris.Amos@aurecongroup.com>; Andrew Macdonald <Andrew.Macdonald@nextdc.com>; Ting Lei <Ting.Lei@aurecongroup.com>

Subject: RE: Lumea and NEXTDC - Discussion of the DNA Option for Substation and UG cable [Official] [Sensitive]

Hi Akanksha,

Thank you for the minutes. We note that in the table on page 2 of the minutes it is stated that "DNAs are essentially DCAs that are at least 30km in length [...]". I found that confusing, as it does not apply for the S4 330/33kV substation.

However, Chris has pointed out that the NER says that it can also be "less than 30 kilometres where the owner of those assets has entered into a network operating agreement in respect of those assets [...]".

So overall, that 'or' option puts it back into the picture (albeit that is not included in that table in the minutes).

Regards,

Andreas.

Andreas Laubi FIEAust CPEng NER
Technical Director, Energy, Aurecon
M +61 423 782325

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From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Sent: Tuesday, February 6, 2024 10:30 AM

To: Jason Cosford <Jason.Cosford@nextdc.com>; Andreas Laubi <Andreas.Laubi@aurecongroup.com>

Cc: Anand Fernando <Anand.Fernando@transgrid.com.au>; Najah Shukur <Najah.Shukur@transgrid.com.au>; Tim Knight <Tim.Knight@transgrid.com.au>; John Psarologos <John.Psarologos@lumea.com.au>; Chris Amos

<Chris.Amos@aurecongroup.com>; Andrew Macdonald <andrew.macdonald@nextdc.com>; Ting Lei <Ting.Lei@aurecongroup.com>

Subject: Lumea and NEXTDC - Discussion of the DNA Option for Substation and UG cable [Official] [Sensitive]

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Hi Jason, Chris and Aurecon team,

Thank you so much for your time yesterday.

Please find attached meeting minutes summarising our discussion.

As next step, looking forward to hearing from you and Chris if you have any further notes or queries. Also, please let me know if I have missed to capture any action item in minutes as attached.

As discussed, if DNA - Access Policy will need to be put in place in accordance with clause 5.2A.8 of the Rules.

I have attached a template for this Access Policy based on the Riverina Access Policy (Riverina Access Policy can be found [here](#)). AER decision outcome could be found [here](#).

Thank you.

Best Regards

Akanksha

Akanksha Tiwari

Senior Proposal Coordinator

0436 861 716

Data Classification: Official

From: Jason Cosford <Jason.Cosford@nextdc.com>

Sent: Monday, February 5, 2024 11:49 AM

To: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>; Andreas Laubi <Andreas.Laubi@aurecongroup.com>

Cc: Anand Fernando <Anand.Fernando@transgrid.com.au>; Najah Shukur <Najah.Shukur@transgrid.com.au>; Tim Knight <Tim.Knight@transgrid.com.au>; John Psarologos <John.Psarologos@lumea.com.au>; Chris Amos <Chris.Amos@aurecongroup.com>; Andrew Macdonald <Andrew.Macdonald@nextdc.com>; Ting Lei <Ting.Lei@aurecongroup.com>

Subject: RE: [Placeholder] Lumea and NEXTDC - Discuss DNA Option for Substation and UG cable [Official]

Thanks Akanksha.

Andreas, I want to explore the options with Chris and Lumea. It's a free discussion, likely with Lumea explaining the framework as they understand it – as well as current direction.

Looking for your input around substation spatial to support Ting.

Regards,

Jason

Jason Cosford

Lead HV Engineering Manager
Mobile: +61 412 901 602

From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Sent: Monday, February 5, 2024 10:46 AM

To: Andreas Laubi <Andreas.Laubi@arecongroup.com>

Cc: Anand Fernando <Anand.Fernando@transgrid.com.au>; Najah Shukur <Najah.Shukur@transgrid.com.au>; Tim Knight <Tim.Knight@transgrid.com.au>; John Psarologos <John.Psarologos@lumea.com.au>; Chris Amos <Chris.Amos@arecongroup.com>; Jason Cosford <Jason.Cosford@nextdc.com>; Andrew Macdonald <Andrew.Macdonald@nextdc.com>; Ting Lei <Ting.Lei@arecongroup.com>

Subject: RE: [Placeholder] Lumea and NEXTDC - Discuss DNA Option for Substation and UG cable [Official]

Hi Andreas,

Thank you for checking.

Couple of weeks ago, we had a discussion with NEXTDC about S4 33kV feeder as metering points to keep the asset usage open for future connections which moves existing asset categorisation from DCA to DNA.

The proposed placeholder is to discuss/workshop around categorisation and what are the pathways to move forward.

I think we can summarise the discussion in 30-35 minutes. Chris Amos is invited for this meeting as requested by Jason.

Thank you and Best Regards,
Akanksha

Akanksha Tiwari

Senior Proposal Coordinator
0436 861 716

Data Classification: Official

From: Andreas Laubi <Andreas.Laubi@arecongroup.com>

Sent: Monday, February 5, 2024 11:25 AM

To: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Cc: Anand Fernando <Anand.Fernando@transgrid.com.au>; Najah Shukur <Najah.Shukur@transgrid.com.au>; Tim Knight <Tim.Knight@transgrid.com.au>; John Psarologos <John.Psarologos@lumea.com.au>; Chris Amos <Chris.Amos@arecongroup.com>; Jason Cosford <Jason.Cosford@nextdc.com>; Andrew Macdonald <andrew.macdonald@nextdc.com>; Ting Lei <Ting.Lei@arecongroup.com>

Subject: RE: [Placeholder] Lumea and NEXTDC - Discuss DNA Option for Substation and UG cable

Hi Akanksha,

Thank you for this meeting invite. What is the agenda of this meeting?

Regards,

Andreas.

Andreas Laubi FIEAust CPEng NER
Technical Director, Energy, Aurecon
M +61 423 782325

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-----Original Appointment-----

From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Sent: Thursday, 1 February 2024 10:11

To: Akanksha Tiwari; Andreas Laubi; Anand Fernando; Najah Shukur; Tim Knight; John Psarologos; Chris Amos; Jason Cosford; Andrew Macdonald; Ting Lei

Subject: [Placeholder] Lumea and NEXTDC - Discuss DNA Option for Substation and UG cable

When: Monday, 5 February 2024 13:00-14:00 (UTC+10:00) Canberra, Melbourne, Sydney.

Where: Microsoft Teams Meeting

-----Original Appointment-----

From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Sent: Tuesday, January 30, 2024 10:53 AM

To: Akanksha Tiwari; Anand Fernando; Najah Shukur; Tim Knight; John Psarologos; Chris Amos; Jason Cosford; Andrew Macdonald; Ting Lei

Subject: [Placeholder] Lumea and NEXTDC - Discuss DNA Option for Substation and UG cable

When: Monday, 5 February 2024 1:00 PM-2:00 PM (UTC+10:00) Canberra, Melbourne, Sydney.

Where: Microsoft Teams Meeting

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Microsoft Teams meeting

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to ensure that we continue to provide the support you need during these uncertain times. We appreciate staying connected is important so while face-to-face meetings have been suspended due to physical distancing requirements, we offer other ways for you to contact us, meet with us and access the people, information and resources you require." Please consider the environment before printing this e-mail.

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Designated Network Access Policy

[Project] DNA

DRAFT

#	Item	Detail
1	Definitions	<p>(a) The definitions are set out in Schedule 1.</p> <p>(b) Italicised terms have the meaning given to them in the National Electricity Rules or <i>Rules</i>.</p>
2	Context	<p>(a) Lumea is the owner of the DNA.</p> <p>(b) The DNA was developed by Lumea to connect the <i>facilities</i> of the Foundation Users to the <i>transmission network</i>.</p> <p>(c) The DNA is a <i>designated network asset</i> and Lumea is therefore required, under the Rules, to have an access policy in relation to <i>DNA services</i> provided by it, including granting access to the DNA.</p> <p>(d) Pursuant to clause 5.2A.8(b) of the <i>Rules</i>, Lumea publishes this Access Policy for Applicants to obtain DNA Services.</p> <p>(e) This Access Policy is effective from the date of its approval by the <i>AER</i> as set out in Schedule 2.</p> <p>(f) Schedule 3 contains a record of approved variations to this Access Policy.</p> <p>(g) The requirements of the <i>Rules</i> prevail in the event of any inconsistency between this Access Policy and the requirements of the <i>Rules</i>, and Lumea may update this policy as may be contemplated or required by the <i>Rules</i> from time to time.</p> <p>(h) Nothing in this Access Policy or the <i>Rules</i> will be taken as imposing an obligation on Lumea to provide any service to the <i>Applicant</i>.</p>
3	DNA information	<p>(a) A description of the DNA's technical characteristics, route, tenure arrangements and main components, the facilities currently connected to the DNA and other information is set out in Schedule 2.</p> <p>(b) The Applicant may request such further information about the DNA or DNA Services as is reasonably required to enable it to prepare for an Access Enquiry.</p> <p>(c) The DNA is not an "open access" <i>facility</i>. The DNA has been funded by the Foundation Users, who have contractual rights to the Capacity.</p> <p>(d) Under this Access Policy, Applicants can request access to Spare Capacity or to fund New Capacity, but have no entitlement to access services or Capacity contracted to existing Users of the DNA.</p>
4	Scope	<p>(a) This Access Policy applies to requests from Applicants for DNA Services.</p> <p>(b) It does not apply to:</p>

#	Item	Detail
		<ul style="list-style-type: none"> (i) an amendment to an existing Access Agreement; and (ii) a request for DNA Services that would mean the DNA would no longer constitute a <i>designated network asset</i>. (c) Applicants may request access to DNA Services in accordance with the processes set out in this Access Policy. (d) Additional technical requirements may apply for connection of another <i>designated network asset</i> to the DNA. (e) The <i>AER</i> has the function of enforcing compliance with this Access Policy.
5	Access overview	<ul style="list-style-type: none"> (a) The contractual arrangements for providing access to DNA Services, and the pricing methodology for those DNA Services, will depend on the nature of the Applicant's <i>facilities</i> and technical configuration and, in particular, the location of the Applicant's connection point and the <i>Rules</i> applicable at the time of the Access Request. (b) An Applicant will be required to satisfy the technical requirements under the <i>Rules</i> applicable to the Applicant's <i>facilities</i>, including <i>access standards</i> and any requirements resulting from any <i>system strength impact assessment</i>.
6	Access Enquiry	<ul style="list-style-type: none"> (a) A person who wishes to make an Access Request must first make an enquiry by advising Lumea of the type, magnitude and timing of the proposed <i>facilities</i> to be connected to the DNA (Access Enquiry). (b) Within 20 business days of receipt of the request under paragraph (a), Lumea must notify the Applicant if the information provided in the Access Enquiry is inadequate to process the enquiry and advise the Applicant what other relevant information is required.
7	Response to Access Enquiry	<ul style="list-style-type: none"> (a) Lumea must within 40 business days after receipt of the Access Enquiry and all such additional information (if any) advised under clause 6(b), provide the following information in writing to the Applicant: <ul style="list-style-type: none"> (i) whether Spare Capacity has become available for the Applicant's <i>facilities</i> (noting the comments on capacity in Item 12); if there is likely to be insufficient Spare Capacity, the ability to augment the DNA to increase its capacity and the likely timing of any such augmentation, or confirmation that the DNA cannot be augmented to increase its capacity; (ii) if there is likely to be sufficient Spare Capacity, a preliminary program showing proposed milestones for connection and access activities; (iii) to the extent then available, any technical requirements of TG and <i>AEMO</i> relating to the connection of the Applicant's facilities to and through the DNA to the <i>transmission network</i>; (iv) the amount of the application fee payable on lodgement of an Access Request; and (v) information that Lumea would require to process an Access

#	Item	Detail
		Request if made which may include technical data and creditworthiness.
8	Access Request	<p>(a) A person who has made an Access Enquiry under clause 6 may, following receipt of the response to the Access Enquiry, make an Access Request in accordance with this clause 8.</p> <p>(b) To be eligible for connection, an Applicant must submit the Access Request containing the information specified in the response to the Access Enquiry and pay the relevant application fee to Lumea.</p>
9	Access Offer	<p>(a) If the Access Request satisfies the technical requirements of TG and AEMO, and there is or will be sufficient capacity on the DNA, Lumea must prepare an Access Offer.</p> <p>(b) Within 40 Business Days of an Access Request that satisfies paragraph (a) and clause 8, Lumea must make an Access Offer to the Applicant which offer includes:</p> <ul style="list-style-type: none"> (i) the proposed prices for DNA Services requested which must be consistent with the Negotiating Principles; (ii) details of any interface equipment to provide the DNA Services; (iii) details of any augmentation or extension required to connect the proposed <i>facilities</i>; (iv) any limitations to the provision of DNA Services, and the nature and an estimate of the amount of costs and compensation to be borne by the Applicant, having regard to the Negotiating Principles; and (v) the Access Agreement which must be consistent with the requirements of this Access Policy and capable of acceptance by the Applicant. <p>(c) Unless otherwise agreed, the Access Offer must be consistent with the Negotiating Principles.</p> <p>(d) Lumea must use reasonable endeavours to provide an Access Offer consistent with the Access Request.</p> <p>(e) Lumea is not required to prepare an Access Offer or negotiate with an Applicant if it reasonably forms the view that the Applicant will not be likely to be able to meet its payment or other material obligations under an Access Agreement.</p> <p>(f) The Access Offer may contain different access options.</p> <p>(g) The Access Offer must be open for acceptance for at least 20 business days.</p> <p>(h) The Applicant may negotiate the Access Offer.</p>
10	Access Agreement	<p>(a) If the Applicant accepts an Access Offer, Lumea and the Applicant must negotiate an Access Agreement in good faith.</p> <p>(b) An Access Agreement may be conditional on the consent of Lumea's</p>

#	Item	Detail
		<p>financiers where the DNA is debt financed. Lumea will use reasonable endeavours to obtain financier consent.</p> <p>(c) Within 20 business days of execution of an Access Agreement which includes <i>access standards</i>, the parties must jointly notify AEMO of the agreement, the <i>access standards</i>, the proposed <i>metering installation</i> and other information required by AEMO.</p> <p>(d) If the DNA is debt financed, Lumea may also require the Applicant to enter into a tripartite deed with the financiers. Lumea and the Applicant must negotiate the terms of tripartite deed in good faith.</p>
11	Dispute	<p>(a) Disputes in relation to an Access Request or Access Offer if not resolved may be referred to commercial arbitration in accordance with clause 5.5 of the <i>Rules</i>.</p>
12	Pricing methodology	<p>(a) [Pricing methodology to be prepared and inserted] [Drafting note: To be developed by Lumea in accordance with the clause 5.2A.8(b1) of the Rules.]</p> <p>(b) A scoping study will be undertaken to determine the feasibility and develop a solution to upgrade the DNA to accommodate the new connection. The scoping study will develop a connection solution as well as set out the operation, maintenance and capital costs. The scoping study will take into consideration factors including capacity, technology type and whether it is a generator, load or BESS.</p> <p>(c) An annual service fee will be calculated for the connection to the DNA and may include some or all of the following cost components:</p> <ul style="list-style-type: none"> (i) scoping study costs; (ii) financing costs; (iii) capital costs incurred for the increase in the capacity or alteration to the existing DNA including the moving of metering and other related equipment, to provide <i>DNA services</i>; (iv) any lost revenue incurred during an upgrade of, or alteration to the existing DNA; (v) any changes in revenue incurred by the existing connected party resulting from changes to its marginal loss factor caused by the subsequent connection to the DNA; (vi) any increase in operation and maintenance costs caused by the subsequent connection to the DNA; (vii) increase in the costs of any charges for use of system services incurred by the existing connected parties caused by the subsequent connection to the DNA; and (viii) commercial internal rate of return. <p>(d) The above cost components will be based on standard commercial conditions including but not limited to liability and indemnity caps and any credit support requirements.</p>

#	Item	Detail
		(e) An annual service fee will be payable for the term of the connection, of generally 20-30 years. Note that this excludes fees for any IUSA associated with the connection which, together with <i>generator performance standard</i> requirements, would be undertaken under the normal <i>connection application</i> process under Chapter 5 of the Rules.
13	Confidentiality	<p>(a) Subject to paragraph (b) and clause 13, Lumea and the Applicant will keep the contents of any Access Enquiry and Access Request and the terms of any Access Agreement entered into confidential, unless the consent of the other party is provided for its disclosure.</p> <p>(b) Lumea may disclose information provided by the Applicant or relating to the Applicant's <i>facilities</i> to TG and AEMO.</p>
14	Existing Users	<p>(a) Subject to paragraph (b), Lumea will notify existing Users if it receives an Access Enquiry or Access Request from an Applicant and will consult with each existing User in relation to any potential impacts of a proposed Access Enquiry, Access Request or Access Offer on that existing User.</p> <p>(b) Lumea may disclose information provided by the Applicant or relating to the Applicant's <i>facilities</i> to existing Users to the extent reasonably necessary to comply with paragraph (a). Lumea will consult with the Applicant before disclosing any such information identified as confidential and will use reasonable endeavours to procure existing Users enter into reasonable confidentiality arrangements with the Applicant.</p> <p>(c) To the extent Lumea recovers from a future User an amount on account of the lost revenue or increased cost of an existing User referred to in clauses 12(c)(iv), 12(c)(v) or 12(c)(vii) above, Lumea shall pass on such amount to the existing User once the amount is recovered from the future User,</p>

Schedule 1

Definitions

Capitalised terms in this Access Policy have the following meanings:

Access Agreement means an agreement to provide certain DNA Services between Lumea, a User and any third party (if any) (irrespective of whether Lumea also provides other services under that agreement).

Access Enquiry means an enquiry under clause 6.

Access Offer has the meaning described in clause 9.

Access Policy means this Access Policy, as amended by Lumea from time to time.

Access Request means a request for DNA Services under clause 8.

Applicant means a person seeking DNA Services pursuant to this Access Policy.

Avoided Cost has the meaning given in Schedule 5.12(1) of the *Rules*.

Capacity means the capacity of the DNA as set out in Schedule 2.

DNA means the *designated network assets* described in Schedule 2.

DNA Services means services provided by Lumea that relates to:

- (a) providing access to the DNA (but does not include a requirement for Lumea to extend or replicate the DNA);
- (b) providing information regarding the DNA;
- (c) undertaking cut-in works to the DNA; and
- (d) undertaking upgrades to existing assets that comprise the DNA or increasing the capacity of the DNA,

as amended by Schedule 3.

Foundation User means those persons listed in Item 8 of Schedule 2.

Lumea means Lumea Pty Limited (ACN 626 136 865) as trustee for Lumea Trust (ABN 94 121 353 950).

Negotiating Principles means the negotiating principles set out in schedule 5.12 of the *Rules*.

New Capacity means additional Capacity (above that set out in Item 3 of Schedule 2) resulting from an augmentation of the DNA.

Spare Capacity means the Capacity which is not contracted to a User under an Access Agreement.

TG means NSW Electricity Networks Operation Pty Limited (ACN 609 169 959) as trustee for NSW Electricity Networks Operations Trust (ABN 70 250 995 390).

User means a person who has entered into an Access Agreement with Lumea in respect of the DNA.

Schedule 2

DNA information schedule

1	Name of DNA	TBC
2	Location and route	TBC
3	Capacity (including any limitations to increasing capacity)	TBC
4	Voltage	TBC
5	Rating	TBC
6	Tenure Arrangements	TBC
7	Description of components	TBC
8	Foundation Users	TBC
9	Foundation Capacity	TBC
10	Facilities connected to DNA	TBC
11	Limitations relating to the development, operation, upgrade to existing assets or increase in the capacity of the DNA	TBC

Schedule 3

Variation record

Schedule 4

[Project] DNA

Meeting Agenda

Meeting subject

Meeting title:	Lumea-NEXTDC - S4 Data Centre – Monthly Project Update	Date:	5 February 2024
Location:	Virtual	Time:	1.00 – 2.00
Chairperson:	Akanksha Tiwari		
Attendees:			

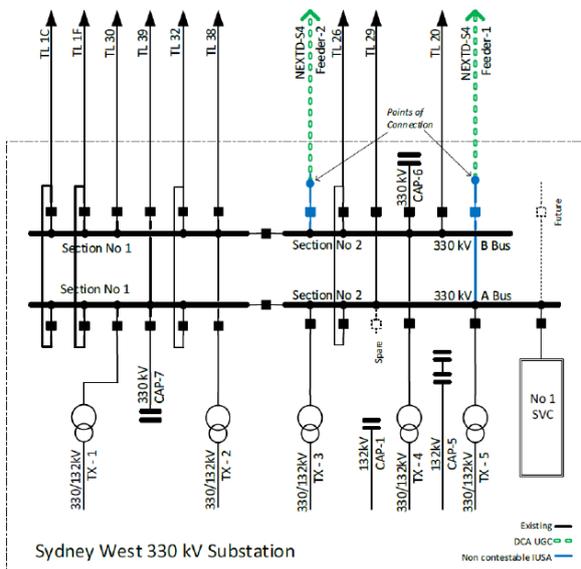
<p>NEXTDC</p> <ul style="list-style-type: none"> - Andrew Macdonald and Jason Cosford – NEXTDC's S4 Project Team - Aurecon - <p>Lumea</p> <ul style="list-style-type: none"> - John Psarologos and Akanksha Tiwari – Lumea S4 Project Team <p>Transgrid</p> <ul style="list-style-type: none"> - Anand Fernando – Network Planning - Najah and Tim Knight - Project Development 	<p>Apologies</p>
--	-------------------------

Background

NEXTDC Limited is developing S4 Hyperscale Data Centre in Western Sydney's Horsley Park area. The 500MVA Data Centre to be connected to Transgrid's 330kV Sydney West Substation. The scope of works covers bundled scope i.e. negotiated scope within Transgrid's 330/132KV Sydney West substation and contestable scope at data centre site by including:

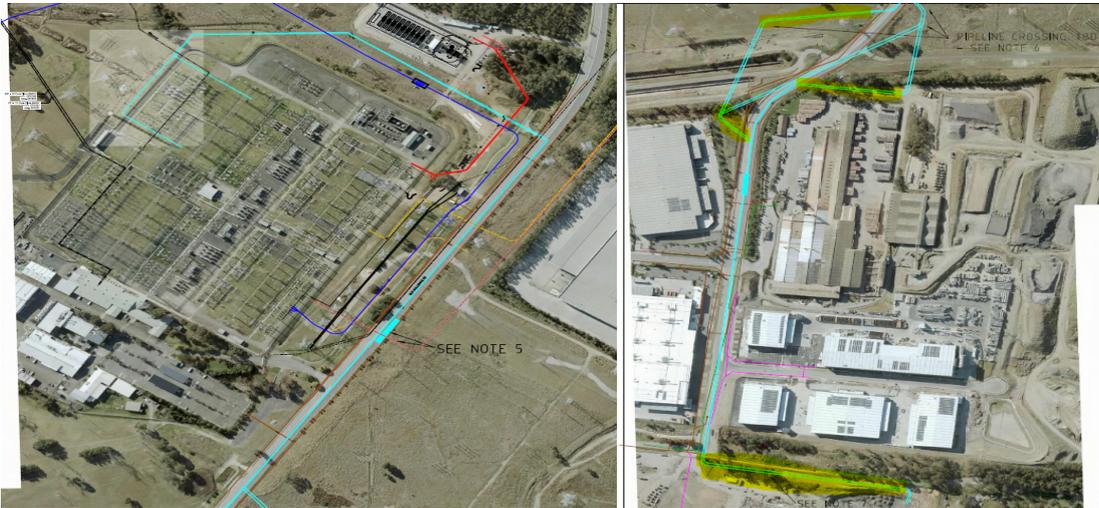
- Negotiated scope:**
(in existing development and pricing phase with change)
- Two new 330kV switch bays at Sydney West Substation
 - All required secondary systems work

Figure 1 – Indicative connection arrangement for the project



**Contestable Scope Stage-1 as Dedicated Connection Assets
(in existing development and pricing phase with change of design proposed in Dec'23 by NEXTDC)**

- 2 x 330kV underground cables from Sydney West to Project Substation

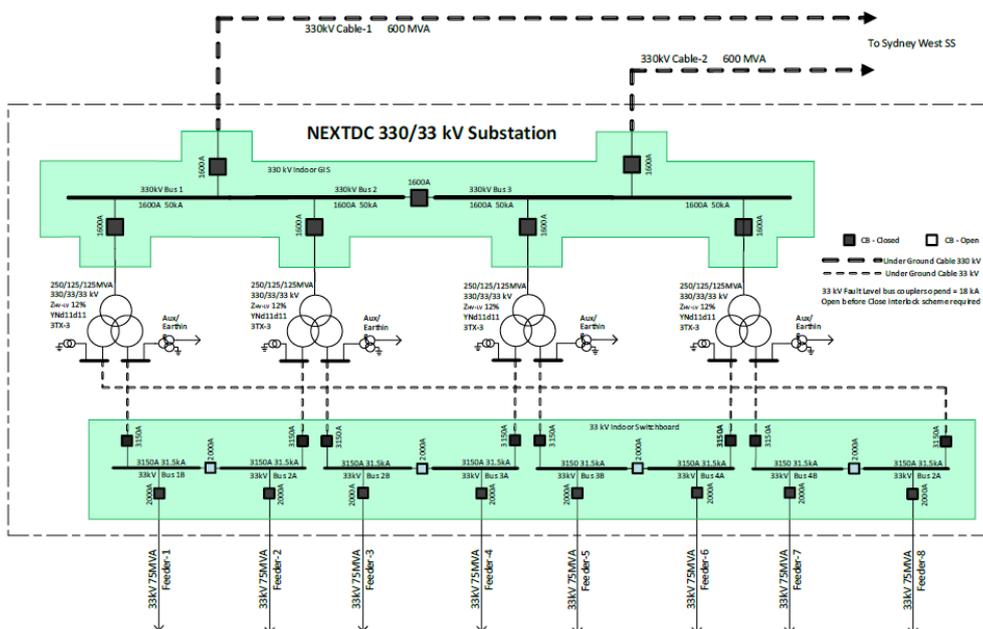


Contestable Scope Stage-2 as Dedicated Connection Assets

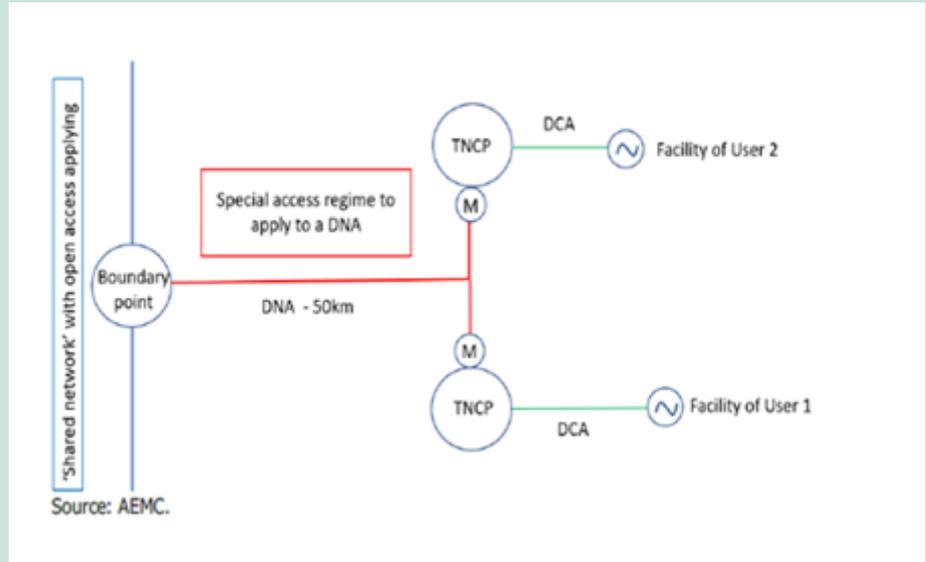
- 330/33kV gas insulated substation including 4 x 170MVA power transformers
- All associated control building and auxiliary systems

Please note figure below is used for illustration only, to show previously proposed arrangement (N-1). This is superseded now and is subject to change based on NEXTDC design and detail designing.

Figure 2 – Indicative connection arrangement for the 330/33 kV Substation



Connection class	Key features
<p>Identified User Shared Asset (IUSA) – part of shared network as electricity flows cannot be isolated from shared network</p>	<p>All third party IUSA owners must enter into a Network Operating Agreement (NOA) with the Primary TNSP (TransGrid)</p> <ul style="list-style-type: none"> - NOA addresses operation, maintenance and control of the IUSA - Term must be at least equal to the term of the longest connection agreement associated with that IUSA - TNSP (TransGrid) retains complete control - Forms part of the overall Transmission network
<p>Dedicated Connection Asset (DCA) – isolatable from shared network and wholly contestable (unregulated)</p>	<p>All services (detailed design, construction and ownership, operation and maintenance) provided to DCAs are contestable and non-regulated transmission services</p> <ul style="list-style-type: none"> - Able to ‘pick and choose’ who connects, based on both feeders being exercised from energisation - DCAs are fully contestable - Connect a user to the transmission network at a single connection point - Can be isolated from the transmission network through disconnection at the TNCP - Isolatable, providing greater flexibility <div data-bbox="533 837 1299 1384" data-label="Diagram"> </div>
<p>Designated Network Asset (DNA) – introduced later in 2021, replacing ‘large DCAs’; part of shared network</p>	<p>DNAs are essentially DCAs that are at least 30km in length or for which the parties have ‘opted in’ to the DNA regime. Introduced</p> <ul style="list-style-type: none"> - Access regime needs to be determined at commencement – unable to be changed - Unable to ‘pick and choose’ who connects on the connection - essentially DCAs that are at least 30km in length or for which the parties have ‘opted in’ to the DNA regime - Unlike DCAs, DNAs form part of the transmission network operated by the Primary TNSP - Each facility connected to a DNA has its own connection point - Operation and maintenance of the DNA by the relevant TNSP - Introduced through AER with the express purpose of allowing multiple users over a long distance (over 30km) - DNA needs to determine access approach, an Access Policy will need to be put in place for the DNAs in accordance with clause 5.2A.8 of the Rules.



(TNCP is Transmission Network Connection Point)

Action items from the meeting

item	Description	Person responsible
1	<p>DCA vs DNA:</p> <p>Based on discussion in meeting, DNA is viewed as potential pathway to move forward. As DNA connection, NEXTDC would prefer 33kV feeder as metering points to keep the asset usage open for future connection. NEXTDC and design consultant, Aurecon, would share future usage capacity (Existing application is for 500MVA) and yearly usage for project staging.</p>	Akanksha and Jason
2	Lumea to share latest templates and Access Policy for Riverina BESS	Akanksha
3	If DNA confirmed, NEXTDC to send email notification to connections@transgrid.com.au advising updates from DCA to DNA. With intended capacity at various stages of the project.	Jason

Sylvester Kourie

From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>
Sent: Monday, 26 February 2024 11:43 AM
To: Ting Lei; Jason Cosford
Cc: Andrew Macdonald; Sylvester Kourie; Andreas Laubi; John Psarologos; Najah Shukur
Subject: RE: Lumea and NEXTDC Design Discussion - Substation Footprint and easement [Official]
Attachments: Overlay- NextDC Site.zip; NDS-PYD-SKT-100001- 01 - SLD.pdf

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Hi Ting,

By way of update confirming key discussions that TG design group had last week. Requesting your input per below:

- Please see attached site layout (Overlay – Next DC Site .zip) with the sub equipment/building overlaid. Are you able to review and make any necessary amendments please ?
- Please note that the buffer zone is measured perpendicular from the centreline of the perimeter security fence, around the perimeter of the substation to allow for:
 - Maintenance access
 - Earthwork and drainage
 - Earthing system transferred potential to neighbouring properties.
 - Bushfire/fire protection of the substation asset.
 - The extent of the buffer zone is typically 20m however this is to be confirmed on a site-specific design basis for NEXTDC

The buffer zone will be part of the substation and only TG personnel can access it.

While I wait for some more inputs from asset management group, we need would like to understand what is the critically of the adjacent building. Are there any potentially explosive items such as batteries and inflammable materials? What is the fire rating of the buildings?

Thank you and looking forward for your response.

Best Regards,
Akanksha

Akanksha Tiwari
Senior Proposal Coordinator
0436 861 716

Data Classification: Official

From: Ting Lei <Ting.Lei@aurecongroup.com>
Sent: Friday, February 16, 2024 10:25 AM
To: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>; Jason Cosford <Jason.Cosford@nextdc.com>
Cc: Andrew Macdonald <andrew.macdonald@nextdc.com>; Sylvester Kourie <Sylvester.Kourie@aurecongroup.com>; Andreas Laubi <Andreas.Laubi@aurecongroup.com>; John Psarologos <John.Psarologos@lumea.com.au>
Subject: RE: Lumea and NEXTDC Design Discussion - Substation Footprint and easement [Official]

Hi Akanksha,

As per our discussion and your request, please find:

- For the '10m exclusion zone' around substation been raised by TransGrid, the definition and requirement is not clear to us:
 - o We'd like to request Lumea / TransGrid to provide a specification / relevant documentation on the:
 - Definition of the exclusion zone.
 - Requirements and conditions.
- Preferably if requirement and conditions can be reviewed case based on the S4 development.

For example

- Is the exclusion zone primarily be required for clearance of movement, restricted access or transformer safety clearance, etc? can it be waived with GIS substation development?
 - Access requirement:
 - Is the exclusion zone required not to be accessible other than authorised persons?
 - Can the exclusion zone overlap with non-accessible area (in operational stage).
 - Property requirement / land ownership
- o **Attached** information on S4 SSSA proposed plan with my markup summarises the proposed asset 10m around the substation – for your information.
- Single Line Diagram – **Attached**, this SLD is proposed for coordination purpose and is currently the basis for the preliminary site layout plans.
 - o Please note assumptions were made when proposing this single line diagram, depending on the connection arrangement model project could be proceeding, SLD is subject to changes.
 - o We'd like to understand if TG has any specific preferences.
 - Site layout – there is no further adjust from what been shared on 31st Jan – please refer **attached email**.

Thank you for organising the fortnightly meeting, and please keep up supporting with the TG coordinating to confirm the acceptance of the overall substation footprint ASAP.

Best Regards,

Ting Lei

Lead Electrical Engineer, Aurecon

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From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Sent: Thursday, February 15, 2024 10:20 AM

To: Ting Lei <Ting.Lei@aurecongroup.com>; Jason Cosford <Jason.Cosford@nextdc.com>

Cc: Andrew Macdonald <andrew.macdonald@nextdc.com>; Sylvester Kourie

<Sylvester.Kourie@aurecongroup.com>; Andreas Laubi <Andreas.Laubi@aurecongroup.com>; John Psarologos <John.Psarologos@lumea.com.au>

Subject: RE: Lumea and NEXTDC Design Discussion - Substation Footprint and easement [Official]

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Hi Ting, Jason,

Apologies for last minute cancelation for design coordination meeting as couple of the team members are away today.

Ting as discussed:

- Please share details of exclusion zone and categorisation.
- Please share latest substation Single Line Diagram and GA details to check if there are any updates to last provided version.

- Lumea /TG is engaging GIS supplier for their design inputs.
At the moment, we have to extend response timeframe to end of March as we are relying upon feedback of GIS supplier to confirm the footprint/provide tentative GA.
In the meantime, I will arrange fortnightly meeting, to discuss update and design inputs.

Thank you for your support.

Best Regards,
Akanksha

Akanksha Tiwari
Senior Proposal Coordinator
0436 861 716

Data Classification: Official

From: Akanksha Tiwari
Sent: Thursday, February 8, 2024 12:04 PM
To: Ting Lei <Ting.Lei@arecongroup.com>
Cc: Jason Cosford <Jason.Cosford@nextdc.com>; Andrew Macdonald <andrew.macdonald@nextdc.com>; Sylvester Kourie <Sylvester.Kourie@arecongroup.com>; Andreas Laubi <Andreas.Laubi@arecongroup.com>; John Psarologos <John.Psarologos@lumea.com.au>
Subject: RE: Lumea and NEXTDC Design Discussion - Substation Footprint and easement

Hi Ting,

Thank you for your call yesterday and for sharing the information in email earlier.
As discussed, I just have sent meeting invite to lock in some time with design group next week.

We discussed in last week's meeting that exclusion zone requirements are typically around 20mtr as per TG asset standards.
However, in this instance design group has confirmed requirements of minimum 10mtr exclusion zone. Are you able to confirm that this can be integrated in design ?

Also, please note that we are trying to contact GIS supplier to gauge their inputs and clearance/ size requirements; so that a high-level GA or footprint confirmation could be provided for S4 substation. Unfortunately, the process would take longer than expected.
I will be able to share exact timeframes once we have initial feedback from all design groups, let me get back to you on that.

Thank you.

Bests Regards,
Akanksha

Akanksha Tiwari
Senior Proposal Coordinator
0436 861 716

Data Classification: Official

From: Ting Lei <Ting.Lei@arecongroup.com>
Sent: Wednesday, January 31, 2024 3:13 PM
To: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>
Cc: Jason Cosford <Jason.Cosford@nextdc.com>; Andrew Macdonald <andrew.macdonald@nextdc.com>; Sylvester

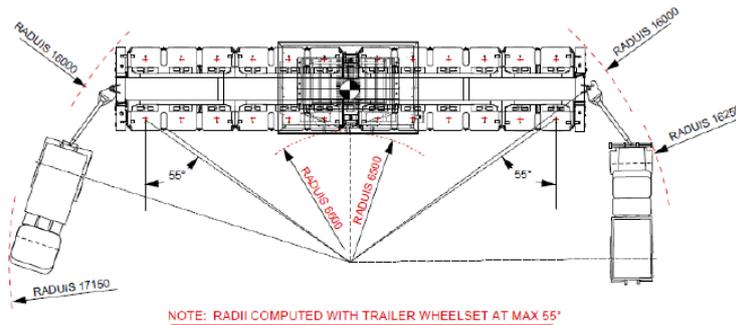
Kourie <Sylvester.Kourie@aurecongroup.com>; Andreas Laubi <Andreas.Laubi@aurecongroup.com>
Subject: RE: Lumea and NEXTDC Design Discussion - Substation Footprint and easement

Hi Akanksha,

Thank you for organising this meeting, great to meet the team and had the constructive discussions.

Follow up today's meeting, please find attached as requested:

- S4 Power Supply Substation Prelim Sketches – amended with visualisation on 330kV GIS, power transformers, 33kV switchgears, aux & earthing tx, measurements, etc.
- [SK-101.zip](#) - .dwg file of the above. TG designer can work on & try different site arrangement.
- SK04.dwg - Preliminary swept path analysis we performed – we assumed with the vehicle setup below for 118 tones tx.



I will wait for you to confirm & come back with a list of action plans (by TG or by Aurecon) on the topic discussed today.

At the meantime, I'll coordinate and come back to you with more information on site conditions 10m around the substation fence & we can discuss further around the exclusion zones.

Thank you!

Best Regards,

Ting Lei
Lead Electrical Engineer, Aurecon

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-----Original Appointment-----

From: Akanksha Tiwari <Akanksha.Tiwari@lumea.com.au>

Sent: Wednesday, January 31, 2024 12:27 PM

To: Jason Cosford; Andrew Macdonald; Najah Shukur; Tim Knight; Mohsen Ahmadi; Maki Okamura; Paul Harvey; Patrick Allan; John Psarologos; Ting Lei; .MR SO180 L2.05; .MR SO180 L2.08 Michael Drew | Exec Priority Room; .MR SO180 L2.07 Gordon Taylor | Exec Priority Room; .MR SO180 L9.07

Cc: Dharmendra Yoga; Yong Kiat Pang; Carl Schmidt; Lara Vochteloo; Sylvester Kourie

Subject: Lumea and NEXTDC Design Discussion - Substation Footprint and easement

When: Wednesday, 31 January 2024 12:30 PM-1:00 PM (UTC+10:00) Canberra, Melbourne, Sydney.

Where: Microsoft Teams Meeting; .MR SO180 L9.08

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Hi NEXTDC and Lumea/ TG team,

Putting time in diary to discuss Design issues associated with NEXTDC Substation. A separate discussion around DCA vs DNA will be proposed.

Transgrid / Lumea feedback on the footprint:

the footprint dedicated for the substation is not adequate, even if we assume the size of GIS building shown in their drawing is correct.

The major issues are as follows:

- There will be GIL (Gas Insulated Line) connections between the GIS building and the transformers. The area in the proposed GA seems to be insufficient for that.
- 4 Auxiliary/Earthing transformers are required. There is no room for them in the proposed GA.
- The proposed GA assumed Cable Box connection for the 33kV side of the transformers. This is not a standard TG practice and should be avoided.
- The ASB(control room building) is not shown in the proposed GA. This means they have assumed it would be part of the GIS building. The validity of this assumption can not be confirmed at this stage as this must be checked with the GIS manufacturer, Civil designer, and Secondary team during detail design stage.
- Running 33 kV cable and conduits between the transformers and the proposed location of the 33kv building is risky due to the quantity of the conduits, soil contamination, the location of the GIS building and potential ground level differences.
- A minimum 20m exclusion zone shall be considered around the substation fence. This is more important in this case since there are critical facilities adjacent the substation.
- Feasibility of transport, offloading and installation of the transformers Must be checked by relevant stakeholders.
- I haven't provided with a CAD file of the proposed GA or a PDF version with full measurements. Therefore, I cannot check the TX runway width and 33kv buildings' size.

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Akanksha Tiwari

Senior Proposal Coordinator

Lumea | 180 Thomas Street, Sydney, NSW, 2000
(02) 9284 3882 | 0436 861 716
Akanksha.Tiwari@lumea.com.au
lumea.com.au



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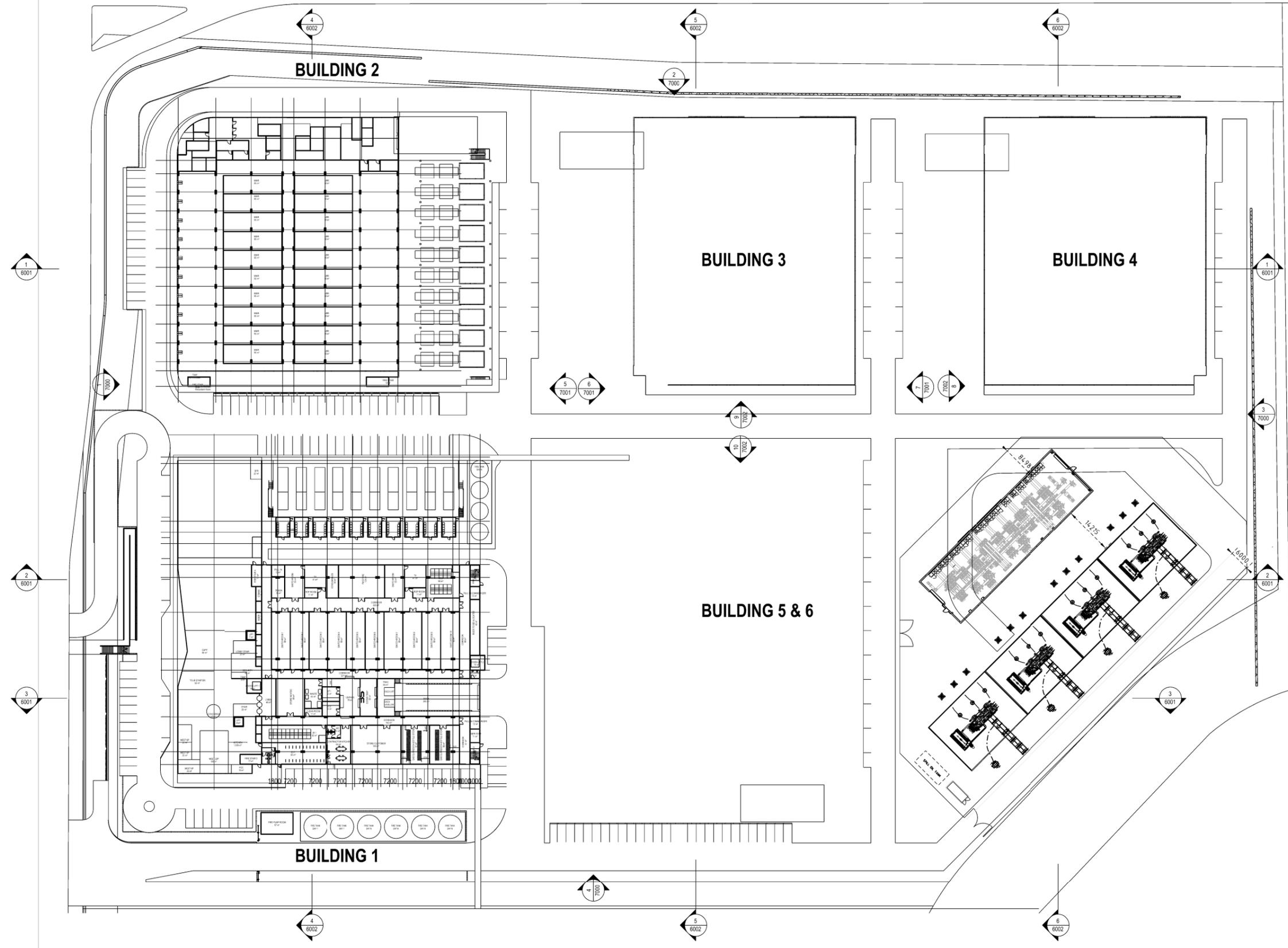
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