

NEXTDC Limited

NEXTDC S5 Data Centre

Infrastructure Requirements Report

Reference: S5-CO-00-000-REP-I-DVA-APP-INFRA REPORT

I | 10 March 2026



This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Executive Summary

This NEXTDC S5 Data Centre and Innovation Hub Back-up Generator Infrastructure Requirements report has been prepared by Arup on behalf of NEXTDC Limited to accompany a detailed State Significant Development Application (SSDA) for the data centre development at 269 Lane Cove Road. The legal description of the site is Lot 3 in Deposited Plan (DP) 1129811.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-63168959). This report concludes that the proposed data centre development is suitable and warrants approval subject to the implementation of the following mitigation measures:

- The S5 facility is designed to operate on the 33kV utility power supply, which has high reliability. The Macquarie Park Sub Transmission substation (132/33kV) is currently being upgraded by Ausgrid, with completion expected in December 2025. New 33kV feeders will be constructed, and it is assumed they will supply the S5 facility. The Macquarie Park Zone Substation is a highly reliable facility, and the proposed design for the S5 facility will also include a fully redundant 33kV utility power supply to further reduce the likelihood of needing the backup generators. This redundant 33kV supply enhances the reliability of the utility power supply, offering additional security, minimizing downtime, and limiting disruption to only parts of the facility.
- Ausgrid has analysed outage scenarios for other sub-transmission substations in their network, including Homebush, Willoughby, Port Hacking, and Alexandria, and has confirmed in writing that there have been no customer outages over the past 10 years for customers with similar redundant supplies.
- High electrical demand may impact the surrounding HV distribution network. To mitigate this, dedicated supply feeders will be provided from the Ausgrid Sub-transmission Substation, which is currently being negotiated with the supply authority.
- High noise levels may arise during the testing or operation of backup generators. To mitigate this, acoustic treatment measures will be implemented and assessed in accordance with the NSW Noise Policy for Industry.
- Fuel spills may occur during generator refuelling. To mitigate this, the tanks will be designed to comply with AS1940 requirements.
- Fire and explosion risks are associated with the generators. To mitigate this, the generators will be designed in accordance with AS 1940, with proper separation between fuel storage tanks.
- Fire and explosion risks are associated with the switching station. To mitigate this, the HV switching station will be designed by a Level 3 ASP designer, in compliance with the latest Australian Standards and relevant Industry Association Standards and Guidelines. The switching station will be located in secure, lockable plant rooms, ensuring only approved personnel have access to the area.
- Air pollution may occur when the generators are operational. To mitigate this, two separate mains supply routes are proposed, and the likelihood of mains failure has been assessed for the electrical supply. The failure rates for this arrangement are extremely low, meaning the generators will rarely be used. Additionally, the generators will be designed to accommodate emissions control measures that comply with Australian EPA requirements, should this be required in the future.
- Damage may occur to the redundant telecoms supply. To mitigate this, four PoE telecommunications pathways will be physically separated by at least 20 meters to reduce the risk of simultaneous damage to multiple pieces of telecommunications infrastructure.
- High demands may reduce the capacity of the estate or precinct's water and sewer networks. To mitigate this, measures have been implemented to minimize peak water demand on Sydney Water's potable water network. A preliminary water balance for the proposed site has been conducted, incorporating rainwater reuse tanks and the installation of fire and water storage tanks on site.

- Overtopping of rainwater harvesting/water storage tanks may happen. To mitigate this, any overtopping water from the rainwater tanks will be directed to the stormwater system. The discharged water will not contaminate the surrounding environment, as it will either come from the mains supply or roof-collected water that has passed through water quality treatment features.

Following the implementation of the above mitigation measures, the remaining impacts are considered appropriate and warrant approval.

1. Abbreviations and Glossary

Abbreviations	
Colo	A colocation facility, or colo, is a data centre facility in which a business can operate or rent space for servers and other computing hardware.
kL	Kilo-litre (1000l – equivalent to 1m3 volume)
MVA	Mega Volt Amp
MW	Megawatts
POEO	Protection of the Environment Operations Act
Proposal (the)	The purpose of the proposal is
SEARs	Secretary's Environmental Assessment Requirements
UGOH	Underground to Overhead
WSC	Water Services Co-ordinator
WWTP	Waste water Treatment Plant

2. Project Introduction

This report has been prepared to accompany a detailed SSDA for the proposed data centre development at 269 Lane Cove Road, Macquarie Park (SSD-63168959).

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 data centre development, ancillary facilities, and associated site works. The application also includes the delivery of internal roads and an urban plaza adjacent to the Macquarie Park Metro Station entrance.

Specifically, the Project comprises the redevelopment of the site as summarised below:

- Site preparation works including demolition and removal of existing structures, tree removal and bulk earthworks.
- Staged construction and operation of two connected data centre buildings (Building A and Building B) with a maximum height of 65 metres and a combined total gross floor area (GFA) of 47,285m² comprising 33,142m² of technical data hall floor space and 14,143m² of office, retail and innovation hub floor space.
- Building A will be delivered in Stage 1 and will comprise the following:
 - Basement parking for 51 car spaces including two accessible spaces and 10 EV spaces
 - Seven storeys of technical data floor space accommodating seven data houses: 16,571m²
 - Utilities including diesel generators (3MWe), above-ground water tanks for industrial water (600kL each), above-ground diesel storage tanks (100kL each) and an aboveground water tank for fire water (400kL each).
 - Business identification signage facing Waterloo Road and Land Cove Road.
 - Integrated 'Building O' component within Building A, comprising:
 - Two retail tenancies at ground level: 326m²
 - Lobby and innovation hub including auditorium and training rooms: 3,186m²
 - NEXTDC and ancillary office floor space on upper levels: 10,631m²
- Building B will be delivered in Stage 2 and will comprise the following:
 - Seven storeys of technical data floor space accommodating seven data halls: 16,571m²
 - Utilities including diesel generators (3MWe), above-ground water tanks for industrial water (600kL each), above-ground diesel storage tanks (100kL each) and an aboveground water tank for fire water (400kL each).
 - Business identification signage on the western and southern building facades.
- Landscaping across the site in accordance with the project staging, delivering a mix of native and endemic plant species, shrubs and grasses, including 139 additional trees within a total area of 4,959m² deep soil and a resultant tree canopy cover of 5,707m²
- Staged delivery of public domain works including:
 - Stage 1: construction of Road 13 within the subject site and urban plaza.

- Stage 2: construction of Road 6 (half-width) within the subject site, including provision for a future pedestrian/cycle overbridge (to be delivered by others), and works along Lane Cove Road.
- Delivery of 90 megawatts of power with a 33kV switching station on site, as well as other site services, including stormwater infrastructure.

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 8 November 2023 issued for the SSDA (SSD-63168959). Specifically, this report has been prepared to respond to the SEARS requirement issued below.

Table 1 SEARs Compliance

Item	Description of Requirement	Section Reference (this Report)
Infrastructure Requirements	An infrastructure delivery, management and staging plan that includes: – an assessment of impacts of the development on existing utility infrastructure and service provider assets surrounding the site. – a detailed written and/or graphical description of infrastructure required on the site, including any electrical substation/s and on-site switch yard/s. - details of the existing capacity of the site to service the proposed development and any extension or augmentation, property tenure or staging requirements for the provision of utilities, including arrangements for electrical network requirements, drinking water, wastewater and recycled water. - a description of how any upgrades will be co-ordinated, funded and delivered on time and be maintained to facilitate the development.	Section 6

2.1 The Site

The site is located at 269 Lane Cove Road, Macquarie Park and is legally described at Lot 3 in Deposited Plan (DP) 1129811. It is located on the corner of Lane Cove Road and Waterloo Road and is made up of a single rectangular lot and is approximately 22,381m² in size. An aerial photograph of the site is provided at Figure 1

The site is located in the City of Ryde Local Government Area (LGA) within the Macquarie Park corridor, an established employment precinct with a particular focus on innovation. Macquarie Park is a nationally significant research and employment centre and includes the head offices for some of Australia's leading companies including Foxtel, Optus and Siemens. The site is approximately 2km southeast of Macquarie University, and 1.5km southeast of Macquarie Shopping Centre.

Existing development includes a two-storey office furniture store (Work Arena) at the northern end of the site and offices and studios associated with Foxtel in the southern portion of the site. Scattered trees exist along the site boundaries, particularly within the western setback to Lane Cove Road, along the southern boundary and the eastern boundary.

Vehicle access to the site is currently provided from Waterloo Road with an internal driveway providing access to several at-grade parking areas. A further vehicle crossover has been constructed along the Lane Cove Road frontage; however, it is not currently in use and barriers have been installed prohibiting access.

The site is well serviced by public transport with several bus routes operating along Lane Cove Road and Waterloo Road. The entrance to Macquarie Park Metro Station is immediately to the north of the site. The site includes a lengthy frontage to Lane Cove Road which provides access to the M2 Hills Motorway and Epping Road.

Figure 1 Aerial Photograph of Site



Source: Urbis GIS 2023

2.1.1 Detailed Project Description

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

Table 2 Project Details

Descriptor	Project Details
Project Area	The site has a total area of approximately 22,381m ² . The entire site area will be disturbed as a result of the Project. The site does not contain any environmental constraints.
Proposed Use	Data centre with ancillary office and innovation space. Two retail premises at ground level.
Project Description	• Demolition of existing buildings and structures. • Site preparation works including tree removal, bulk earthworks, excavation and construction of retaining walls. • Staged construction of the data centre buildings including technical data hall floor space, ancillary office and innovation space and two ground floor retail premises. • Vehicle access via Waterloo Road with on-site car parking and loading within the building footprint. • Associated landscaping including extensive trees, shrubs and grasses. • Business identification signage. • Staged delivery of public domain works via a Planning Agreement, including construction of Road 13, Road 6 and an urban plaza between Building A and Waterloo Road. • Provision of required utilities, including an on-site switching station.
Gross Floor Area	Total GFA of 47,285m ² , broken down as follows: • Data halls/technical: 33,142m² • Lobby and innovation hub: 3,186m² • Office Building: 10,631m² • Retail including BOH: 326m² • Total number of data houses: 14 data houses
Building Height	• Building A: office and innovation hub – 49 metres over 10-storeys • Building A: data centre – 65 metres over nine-storeys • Building B: data centre – 60 metres over nine-storeys
Proposed Floor Space Ratio	2.11:1
Deep Soil Area	4,959m ² of deep soil area (22.16% of total site area, 35.6% of future site area)
Car Parking	51 parking spaces, including 10 EV's and 2 accessible spaces

Descriptor	Project Details
Motorbike Spaces	17 spaces
Bicycle Spaces	20 spaces
Utilities	• Provision of required utilities, combined for both buildings, including: • 48 x diesel generators (3MWe). • 16 x above-ground diesel storage tanks (100kL each). • Eight above-ground water tanks for industrial water (600kL each). • One 400kL above-ground water tank for fire water. • 33kV switching station.
Power Consumption	90MW
Operations and Management	The facility will be constructed and operated by NEXTDC. The site will be operated on a 24-hour, 7 day a week basis.
Existing Services and Infrastructure	The site is fully serviced; however, existing services and infrastructure will be extended, adapted and augmented to meet the demands of the Project. A new 33kV switching station will be required to provide power to the site in the event of an emergency blackout to facilitate power to the generators.
Staging/Phasing	The Project will be constructed in two stages: • Stage 1 will include the early works for the entire site, construction of Building A, the urban plaza and Road 13 within the subject site. • Stage 2 will include construction of Building B and Road 6 (half-width) within the subject site, including provision for a future pedestrian/cycle overbridge (to be delivered by others), and works along Lane Cove Road.

2.2 SEARs Response

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 8 November 2023 issued for the SSDA (SSD-63168959). Specifically, this report has been prepared to respond to the SEARS requirement issued below

Table 3 SEARs requirements for Services and Infrastructure

Item	Description of Requirement	Section Reference
Design options	Identify design options considered during the iterative process and demonstrate the proposed development has been optimized to provide an integrated landscape design and to minimize amenity impacts by having regard to the relevant evaluation criteria in Better Placed (Government Architect NSW, 2017)	Section 4 _Built Form and Design Strategies
Site Analysis	Explains and illustrates the proposed built form, including a detailed site and context analysis to justify the proposed site planning and design approach	Section 2 _Site Context & Analysis Section 3 _Site Design
Built Form	Demonstrates how the proposed built form (layout, height, bulk, scale, separation, setbacks, interface and articulation) addresses and responds to the context, site characteristics, streetscape and existing and future character of the locality	Section 3 _Site Design
Building and Facade Design	Demonstrates how the building design will deliver a high-quality development, including consideration of facade design, articulation, materials, finishes, colors, any signage and integration of services	Section 5 _Materiality and Facade
Better Placed	Demonstrates how the development will achieve good design in accordance with the seven objectives for good design in Better Placed (Government Architect NSW, 2017)	Section 7 _Better Placed
DDA	Assesses how the development complies with the relevant accessibility requirements.	Refer to SSDA Access Review Report

3. Project Vision

A new approach to Data and Innovation Centre Design

The S5 Innovation Centre is a true mixed-use facility and is unlike any other Data Centre. It takes a significantly different approach to standard industry security design for the sake of the public domain, landscape and active publicly accessible uses.

Within the facility are display areas for technology showcases such as: communications and security technology, advanced batteries and energy systems, computer cooling technology as well as new types of computers and microprocessors underpinning neural networks and artificial intelligence.

The auditorium and support spaces allow for industry seminars, conferences, workshops and other learning and training opportunities for tenants, clients, consultants and contractors as well as broader industry partners and stakeholders in government and universities.

The data halls and offices provide specially designed, resilient spaces for tenants and agencies which require guaranteed levels of uptime such as telecommunications, banking, commercial cloud, defence and disaster recovery.

With its broad glazed frontage to a large public forum, sky gardens, public transport integration, generous unfenced landscape curtilage, public streets and ways crossing the campus and retail shops embedded in the envelope, S5 Innovation Centre inverts the standard model of a ring-fenced fortress to deliver critical digital infrastructure in a way which is completely new, different and engaging.



4. Policy and planning context

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

4.1 Legislative context

4.1.1 Commonwealth Legislation

A number of Commonwealth legislative requirements to protect public utilities are noted below:

- Telecommunications Act 1997
- Security of Critical Infrastructure Act 2018

4.1.2 New South Wales Legislation

A number of NSW legislative requirements to protect public utilities are noted below:

- Protection of the Environment Operations Act 1997
- State Environmental Planning Policy (Infrastructure) 2007
- Electricity Supply Act 1995
- Gas Supply Act 1996
- Water Management Act 2000

4.1.3 Guidelines

- Fire safety guideline, Access for fire brigade vehicles and firefighters, ver 05.01, November 2020, Fire and Rescue NSW (FRNSW).
- Guidelines for Development Adjacent to the Upper Canal and Warragamba Pipelines, ver 3, February 2020, WaterNSW.
- Building over and adjacent to pipe assets, 2015, Sydney Water

5. 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.

5.1 Study area

The assessment area will be limited to the subject site (the site boundary).

5.2 Method of Assessment

To address the project SEARs and address points raised by public utility authorities the following methodology was developed:

- Collate and review available data on existing public utilities, including conducting a Dial-Before-You-Dig (DBYD) search.
- Assess proposed site layout against any existing public utility infrastructure within the proposal boundary and identify any necessary protection or diversion works required.
- Undertake demand assessment for each core utility serving the data centre.
- Develop a site plan considering key, on-site utility infrastructure required to serve the data centre.
- Consult with all relevant service providers to determine necessary off-site utility upgrades.
- Consult with estate developer in developing integrated, estate utility networks.
- Define preferred point of connection or servicing strategy for the development for each service.

6. Existing environment

The consented development design accounts for the various future developments proposed within the estate site boundary, including the proposed data centre. The baseline site will feature:

- Demolition of existing buildings and structures.
- Earthworks, excavation and retaining walls.
- Construction of two (2) nine level data storage centres with a maximum building height of 65 metres.
- Vehicle access will be provided via Waterloo Road.
- On-site car parking on ground floor and loading dock at level 1.
- Construction of Road 13 and Road 6 as per DCP requirements.
- Connection stubs/points to the wider estate utility networks.
- Graded earthworks platform with raised site levels which provides flood immunity.
- Sediment and erosion control measures to suit the graded platform.

Delivery of an urban plaza adjacent to Waterloo Road and the Macquarie Park Metro station entrance as per DCP requirements.

Existing utility provisions from DBYD searches and the consented estate design are described in sections 6.1 to 6.5. A copy of maps acquired from the DBYD search is contained within Appendix A.

The following utility providers have been identified (but not limited to) as known to have assets located in broader proximity to the estate area:

Table 4 Schedule of Utility Providers with assets in the near proximity of the estate

Utility Provider	Utility Type
Ausgrid	Electricity
Jemena	Gas
NBN Co	Communications
Sydney Water	Water supply / Sewerage / Stormwater
Telstra	Communications
NEXTGEN	Communications
UECOMM	Communications
Optus	Communications
VOCUS	Communications

6.1 Electrical Services

Within the subject site boundary, there are 3no. substations serving the existing buildings with their associated underground incoming cables from Lane Cove Road and Waterloo Road.

Existing underground electrical ducts run along Waterloo Road into the site with 4.5m easement, based on DBYD information from Endeavour Energy (Refer to Appendix A)

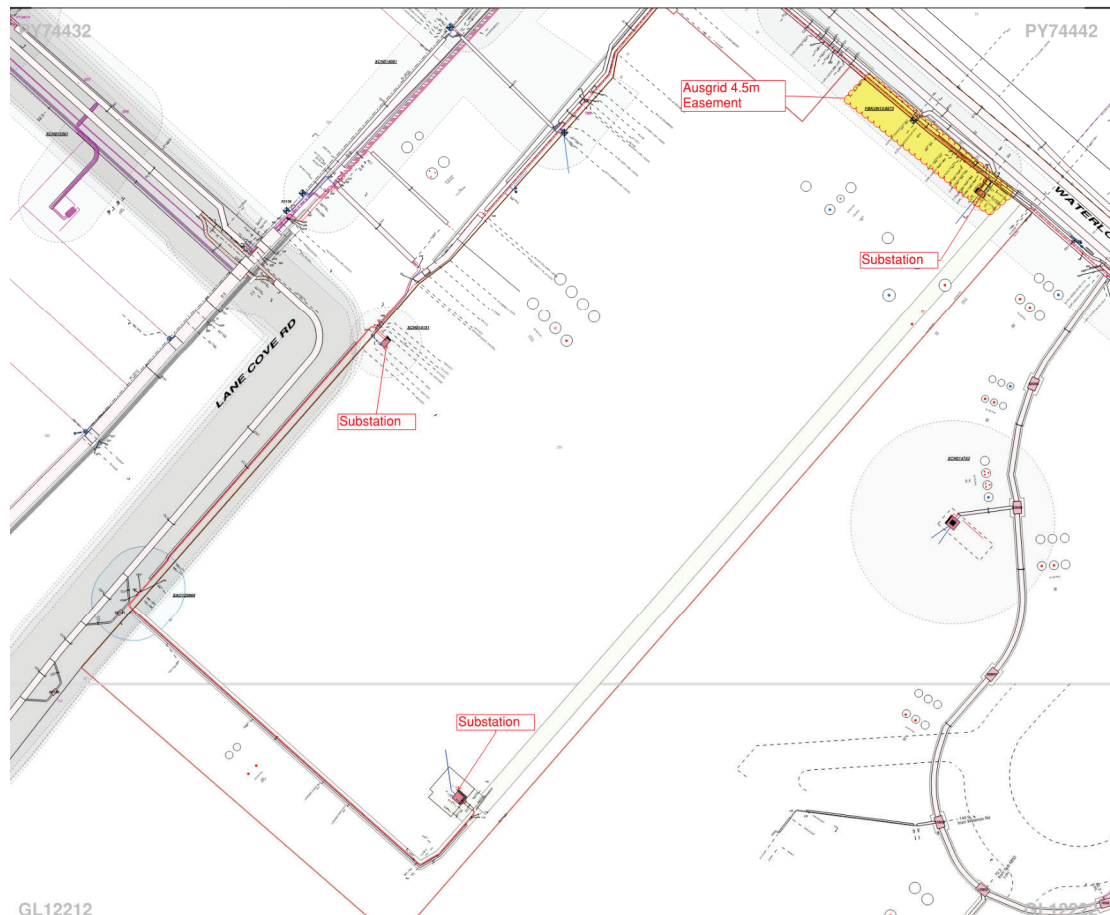


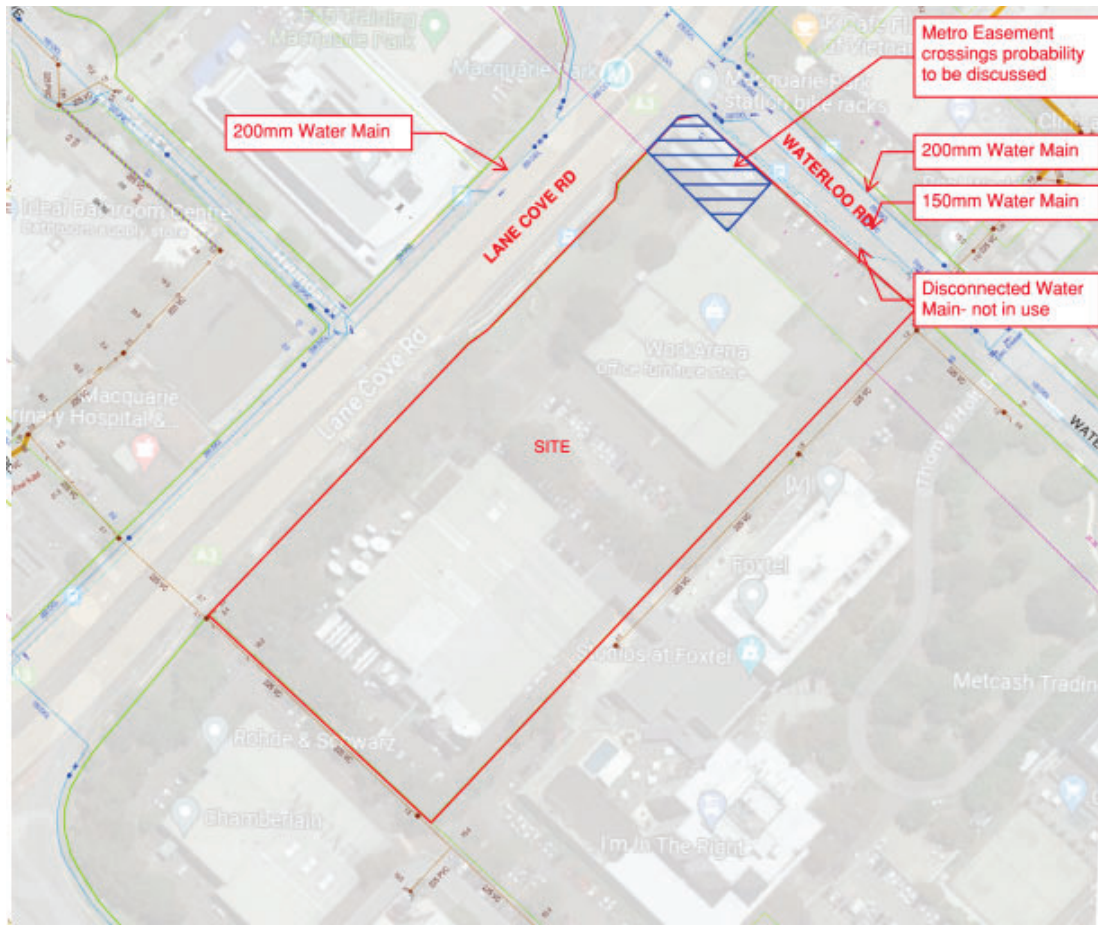
Figure 2 - Ausgrid DBYD

6.2 Water Services

The site is unencumbered of utility water mains and the site appears to be suitably serviced in its existing form. The existing Sydney Water' water mains infrastructure consists of water mains around the north and western boundaries, as illustrated in **Figure 3 Sydney Water - Water Asset Locations** and include:

- 200mm Cast Iron Cement Lined (CICL) trunk main along Lane Cove Rd
- 200mm DICL main along Waterloo Rd
- 150mm Polyvinylchloride, Unplasticised (uPVC) main along Waterloo Rd
- Disconnected water mains along Waterloo Rd

The site shares the northern boundary with the Macquarie Park Metro and discussions are on-going in regard to the easement and location of infrastructure to service the site.



6.3 Sewer Services

There are number of Sydney Water sewer mains around the boundary of the site, illustrated in **Figure 4 Sydney Water Sewer Asset Locations** that can be extended to service the site including:

- 225mm Vitrified Clay (VC) mains crossing Waterloo Rd
- 225mm VC main running along the access road to on the eastern boundary of the site connecting to the Waterloo Rd mains
- 225mm VC mains on the southern boundary of the site connecting to mains on Lane Cove Rd

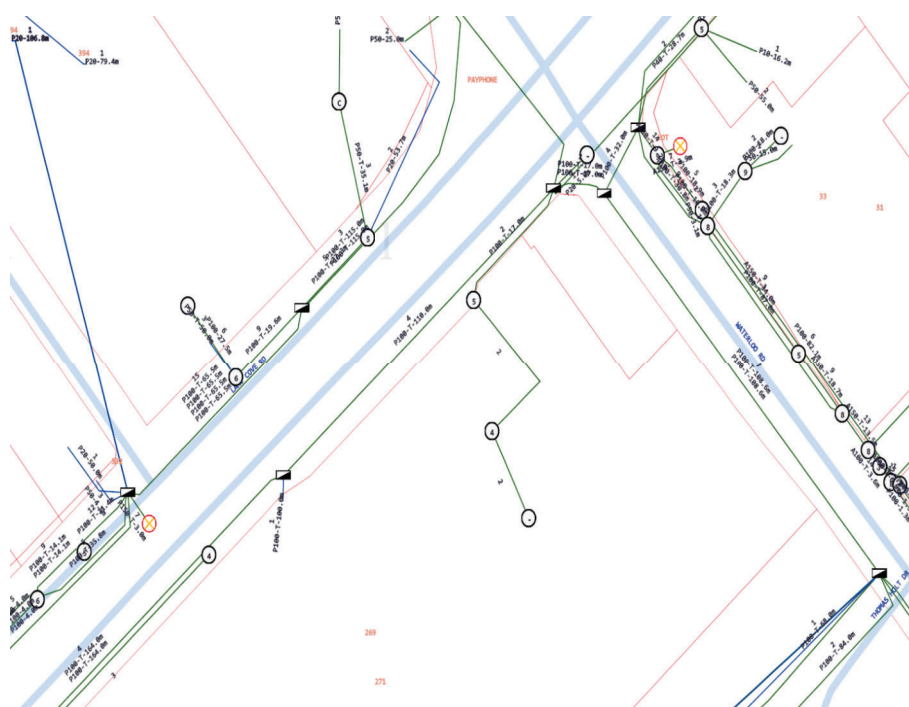
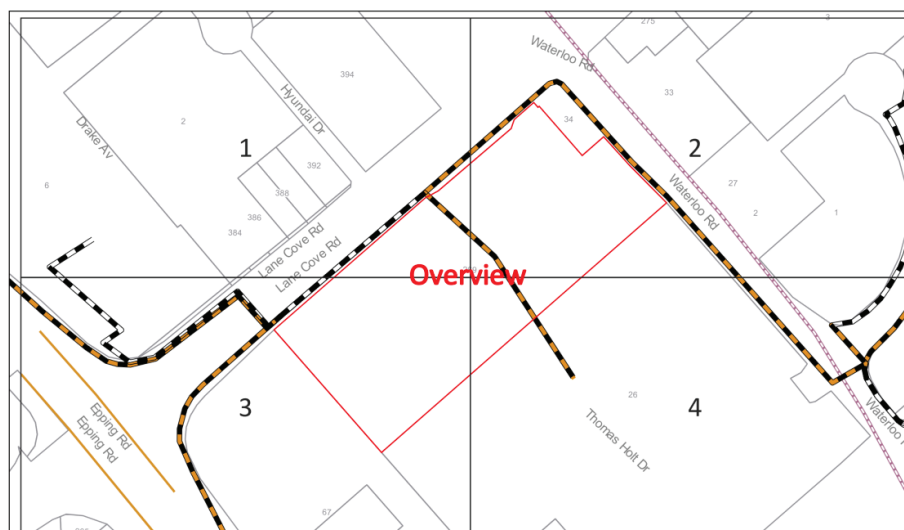


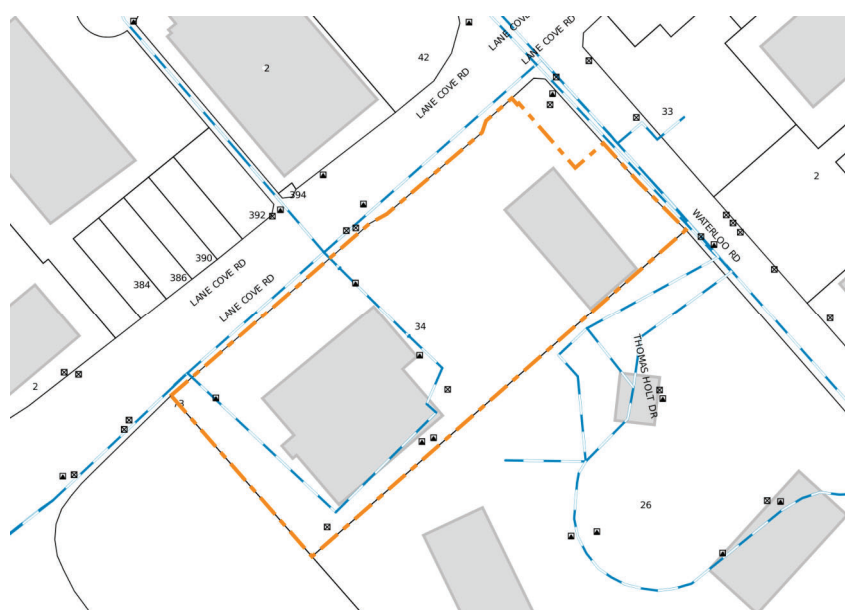
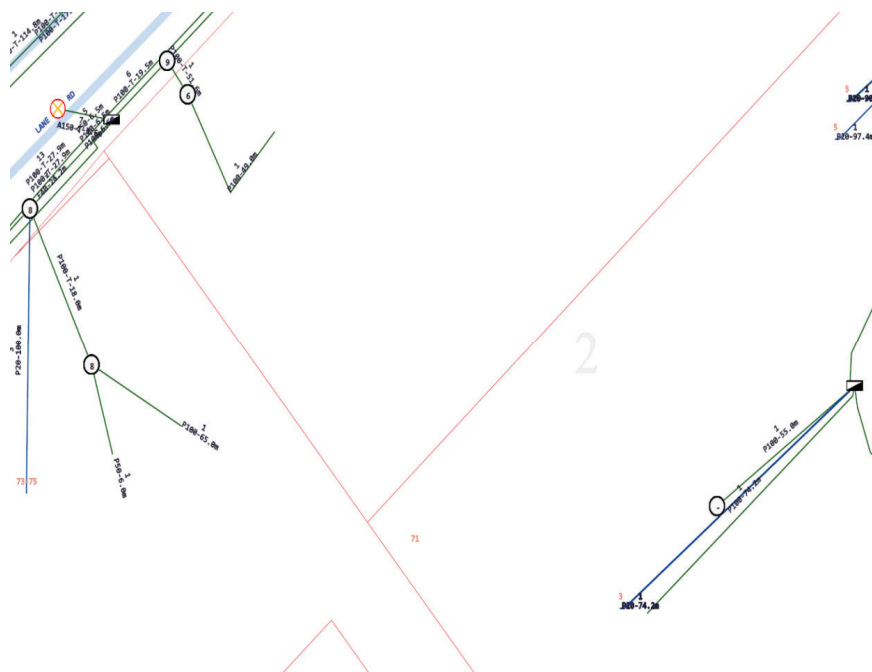
Figure 4 Sydney Water Sewer Asset Locations

6.4 Communications Services

There are telecommunication services serving the proposed site existing building from Lane Cove Road and Waterloo Road. From DBYD survey, the following telecommunication conduits are reticulating to the site:

- NEXTGEN
- NBN
- UECOMM
- OPTUS
- TELSTRA
- VOCUS





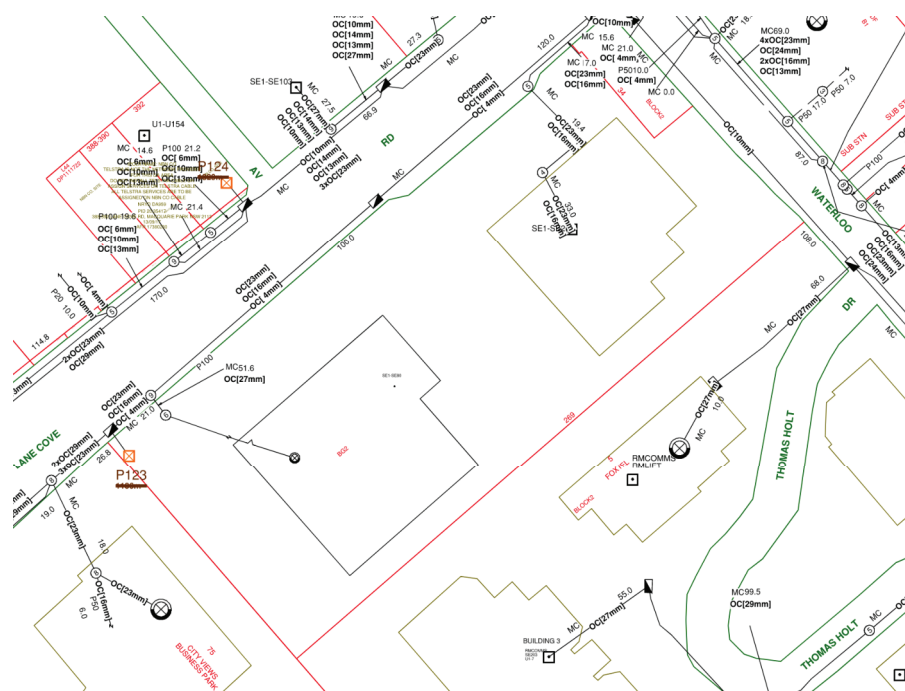
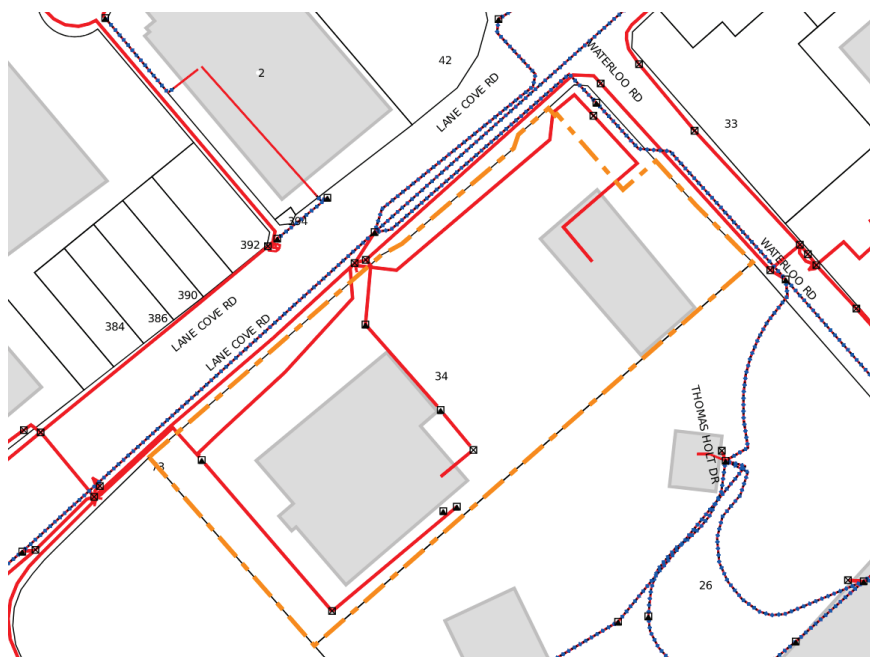


Figure 10 – Telstra

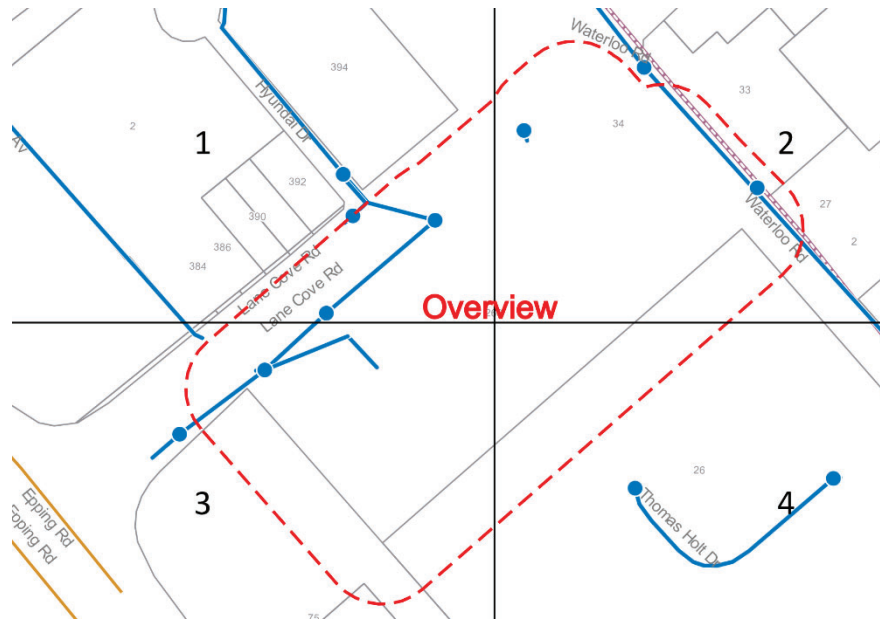


Figure 11 – VOCUS

6.5 Gas Services

No natural gas supply is expected to be required, as all heating demands are to be met by electric powered equipment to meet electrification intent for ESG requirements.

In the event that natural gas is required, authority gas mains are available at the following locations and shown in Figure 12:

- 150mm Steel, 1050kPa high pressure mains on Waterloo Rd
- 75mm Nylon, 210kPa medium pressure mains on Lane Cove Rd
- 50mm Nylon, 210kPa medium pressure mains on Lane Cove Rd

An existing gas connection of unknown size is currently provided to the Foxtel Building. It is proposed to disconnect this connection, as it is not being utilized.

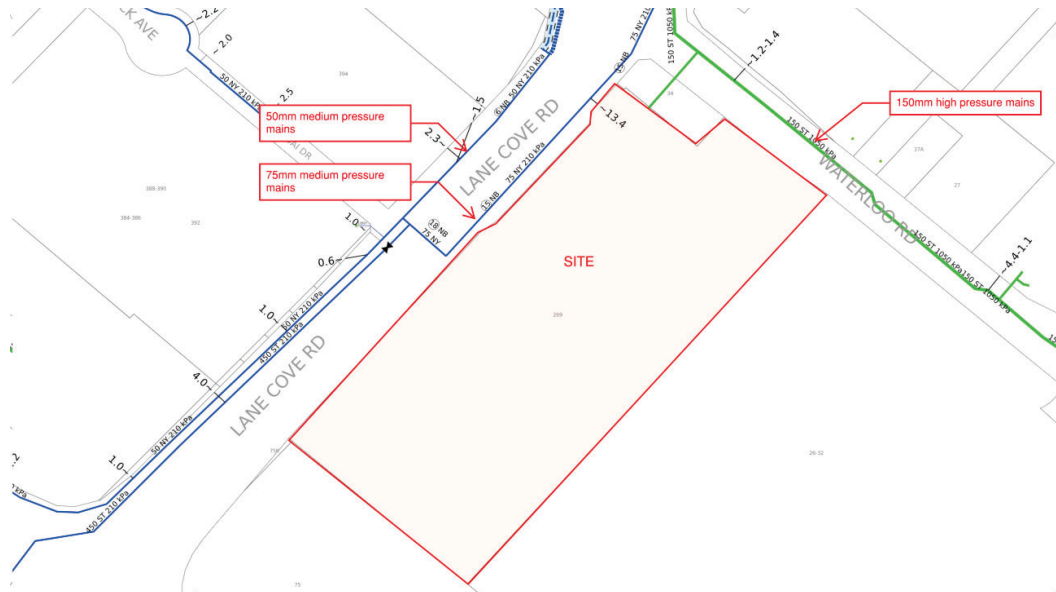


Figure 12 Jemena Gas Authority Infrastructure

7. Servicing Strategies

This Chapter describes the service demands and details the proposed servicing strategies for the development.

Data centres require to maintain a controlled temperature environment to safely operate the high density of equipment contained within the data halls. The outcome of this is a significant electrical and water demand which varies throughout the year depending on the ambient temperature. A large number of telecommunication conduits are also required to support a data centre.

Key on-site utility infrastructure required to serve the data centre are shown on the overall site layout identifying Ausgrid Room, Interconnect Room, Fire tanks and Potable water tank.

Include:

- HV switching station & control room
- Back-up electrical generators
- Potable and industrial water tanks
- Rainwater capture for re-use
- Fire tanks and pump

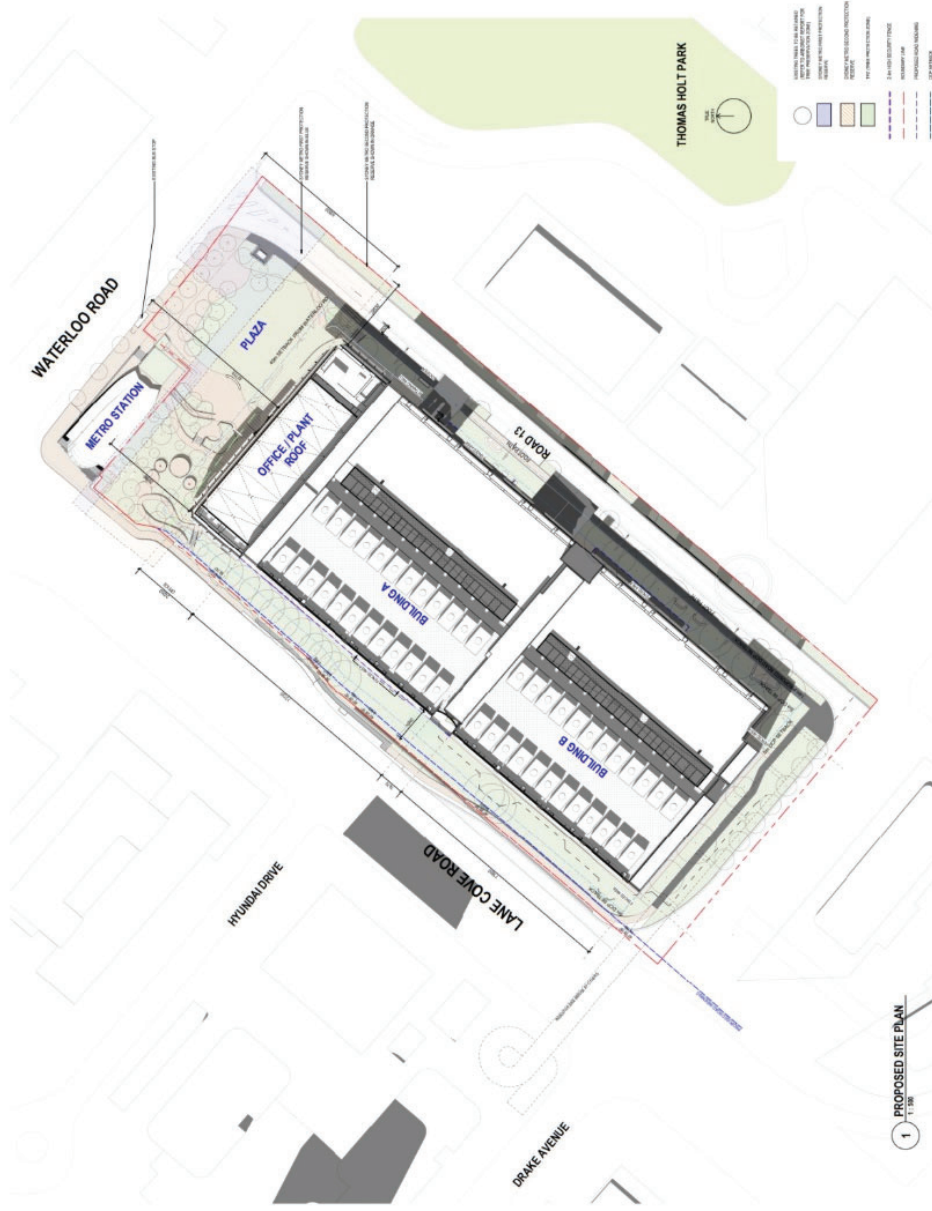
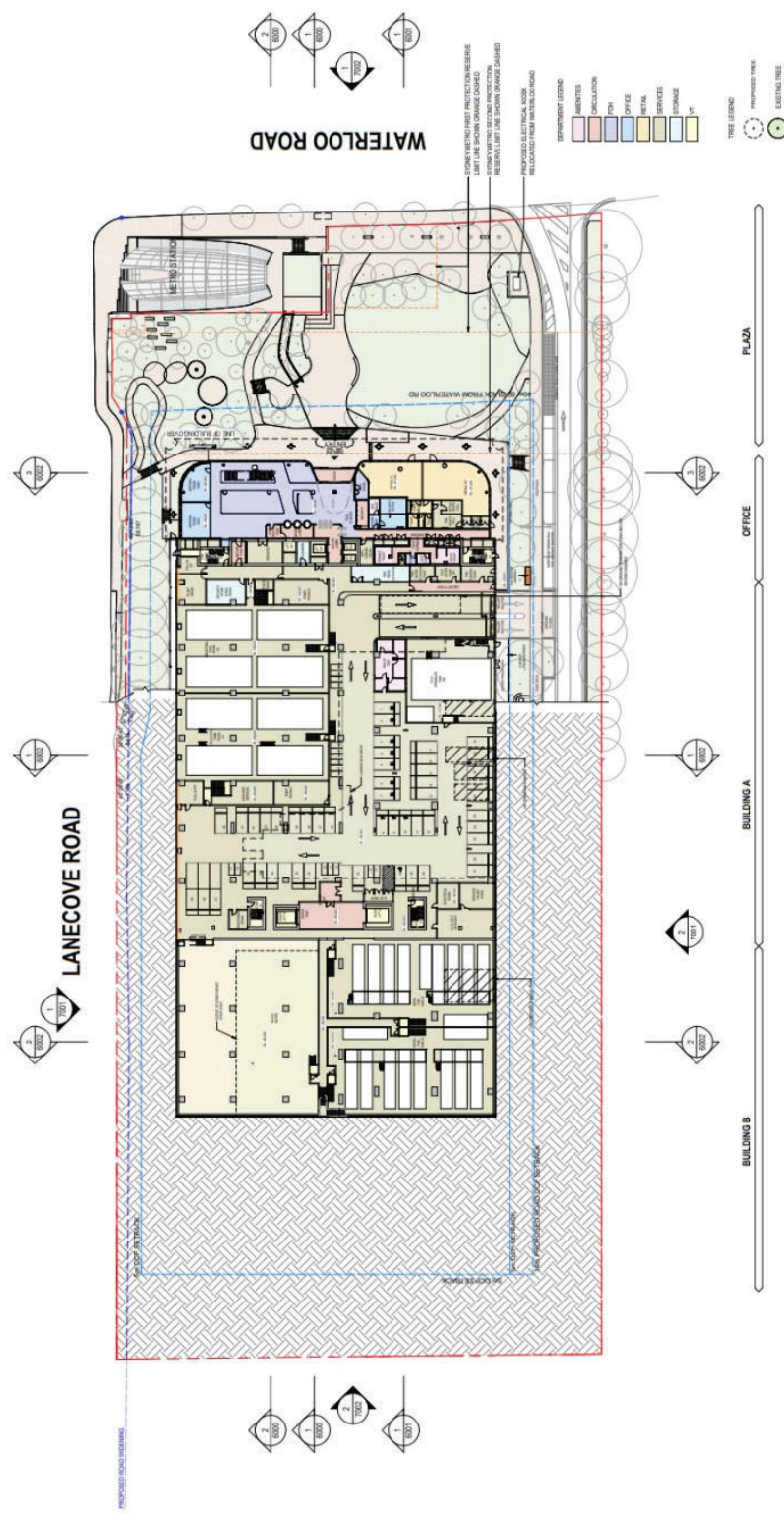


Figure 13 Site Plans



PARKING SPACES LEGEND:

NUMBER OF CAR SPACES (INCLUDING 10 EV'S
AND 1 ACCESSIBLE CAR SPACES) = 48 SPACES

NUMBER OF EV'S = 10 SPACES

NUMBER OF MOTORCYCLES (MB) = 11 SPACES

NUMBER OF BICYCLES = 20 SPACES



To suit demand, construction of the data centre will be phased. The exact ramping programme will be subject to end client occupation. With the number of data halls increasing over a period of time, the increase in utility demand will be ramped-up to meet the load demand.

The assessment and information presented in the following sections reflect the final arrangement however information is presented on key intermediate steps. Table 5 presents a high-level construction staging of the data centre.

Table 5 Construction Staging of the data centre

Stage	Built Form	Key Utility Provision
Phase 1 – Initial Construction	S5 Building A including: 2no. 2.5MW IT load Enterprise Data Hall and 5no. 7MW IT load Hyperscale Data Hall. (Fit-out staging of Data Halls will be subject to end client.) S5 fit out of Admin Space.	2x 33kV feeders to Building A to be negotiated with Ausgrid. Water and sewer connections to estate networks. Telecom connections to wider public networks. Fire water, potable water and rainwater harvesting tanks to the proposed site. Internal generators to suit fit out staging.
Phase 2	S5 Building B including: 2no. 2.5MW IT load Enterprise Data Hall and 5no. 7MW IT load Hyperscale Data Hall. (Fit-out staging of Data Halls will be subject to end client.)	2x 33kV feeders to each building to be negotiated with Ausgrid. Telecom connections to wider public networks External generators to suit fit out staging. Additional fire water, potable water and rainwater harvesting tanks to suit later stages.

7.1 Electrical Infrastructure and Back-Up Generators

The data centre is an office facility and therefore requires back up emergency power generation. The site is designed for a total of 48 no. low voltage 3MW diesel generators rated to supply the data centre critical loads, admin load and life safety loads. All generators will be inside an acoustic treated indoor plantroom with local 1000 litre day tank fed from bulk fuel tanks located on lowest level of the building to comply with AS1940.

A typical floor layout for the electrical plantroom is depicted in Figure 14. The generators have spatial allowance for catalytic converters,, should this be required in the future due to the advancement of thinking in relation to air quality risks from standby generators, which has the potential to lead to changes in regulations or expectations of decision-makers in the future.

The Data Hall critical IT load is served by electrical plantrooms lineups. Each lineup consists of high voltage transformers, UPS with associated switchgear complemented by emergency standby generators, should utility not be available.

Table 6 - Generator Quantity

Location	Data Hall	Generator	Quantity
Data Centre Building A	Hyperscale and Enterprise Data Hall & Admin + Life Safety	3MWe Generators	Total of 24 Generators
Data Centre Building B	Hyperscale and Enterprise Data Hall & Admin + Life Safety	3MWe Generators	Total of 24 Generators

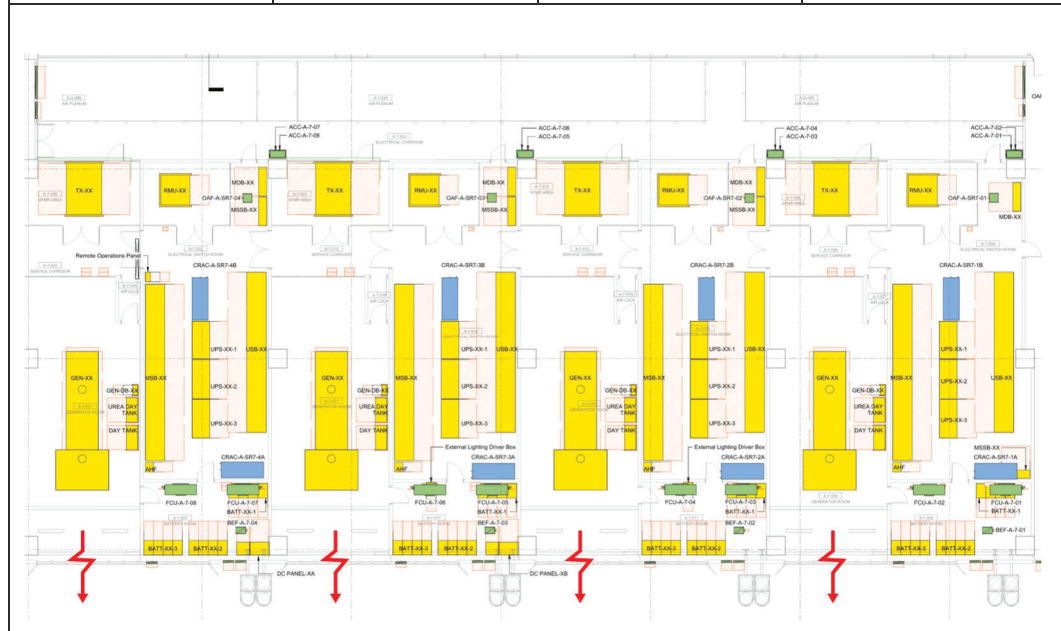


Figure 14 Typical Electrical Plantroom Arrangements

The following alternative commercially available technologies have been considered for standby generators:

Technology	Consideration	Technology Availability	Feasibility	Comment
Gas Turbine Diesel Generators	Reduce footprint compared to traditional diesel generator.	Yes	Gas turbine takes much longer to start and more suitable at medium voltage network.	Not feasible for this project due to slow start to pick-up the critical load.
Hydrogen Cell	Not considered due to lack of real estate space.	Yes	Very large real estate space required for Data Centre load requirement.	Not feasible for this project due to lack of real estate space in urban areas.

Technology	Consideration	Technology Availability	Feasibility	Comment
Solar Panels with large scale battery storage	Not considered due to lack of real estate space.	Yes	Very large real estate space required for Data Centre load requirement.	Not feasible for this project due to lack of real estate space in urban areas.
HVO (2 nd gen biofuel)	Shelf-life comparable to diesel No additional space required. No special storage required	Yes	Lack of HVO availability in Australia.	HVO can offer reduced GHG, NOx, PM, CO and Greenhouse gases compared to diesel. NEXTDC can install generators with HVO capability at day one and utilise HVO as it becomes more readily available. For some suppliers performance and rating of generators are different to diesel when operated with HVO that will need to be considered during detail design stage. HVO currently not feasible for large scale applications due to lack of large scale production and storage.
Biodiesel	Not considered due to reduced shelf-life.	Not tested by suppliers	Not feasible due to reduced shelf-life and not tested by suppliers.	
Selective Catalytic Reduction (SCR)	Spatial allowance for Selective Catalytic Reduction (SCR) with supporting UREA day tank and bulk tank.	Yes	Spatial allowance for SCR with supporting UREA day tank and bulk tank.	Space provision allowed for all site diesel generators to reduce emission with UREA bulk tank to support. Noting this is not required for this development as the air quality impact assessment demonstrates compliance.

7.1.1 Demand Estimate

The maximum demand is indicated in Table 7 below, the calculated demand for the proposed site is approximately 90MW.

The generators will support the entire building load.

Table 7 Site Electrical Maximum Demand

Site Electrical Load Summary Result		
	Total Load	Unit
IT Load Building A	40	MW
IT Load Building B	40	MW
Total IT Load	80	MW
Target PUE	1.35	
Total Load	88.8	MW
Admin Load	1.2	MW
Total Load	90	MW
Power Factor	0.985	
Total Load	91.4	MVA

7.1.2 On site Electrical Infrastructure

The electrical infrastructure for the proposed data centre includes:

- A new 33kV Ausgrid switching station to cater for the required N+1 feeders redundancy for the ultimate supply.
- Both A and B Data Centre building will be provided with two 33kV main switch rooms on Level-1.

The infrastructure in the 33kV main switch rooms will be owned by the Proponent and includes:

- 33kV switchgear for control of the incoming 33kV feeders, and protection and distribution.
- 33kV switchgear to allow for protection, control, and distribution of power around the site via a 33kV Proponent owned network
- Additional miscellaneous equipment relating to monitoring system, protection, control, and operation of the substation.

Site MV (33kV) reticulation will be by means of underground cabling to the 33kV main switch room, and cabling within fire rated compartment when distributing within the building.

7.1.3 Consultation

Consultation is currently being undertaken with the following stakeholders:

- Ausgrid
- Environment Protection Authority

The information in Table 8 provides a full record of all consultation carried out. All the records are attached to Appendix A.

Table 8 Consultation Record

Stakeholders	Date	Outcomes/activities
NEXTDC	14 th March 2023	Submit a formal enquiry for 22.5MVA with ultimate load of 90MVA.
Ausgrid	21 st August 2023	Ausgrid acknowledged of formal enquiry and currently investigating connection option.
NEXTDC	20 th December 2023	Submit the connection application. Engagement with Ausgrid to explore connection options.
Ausgrid	28 th August 2024	Ausgrid provided the system planning advice.

7.1.4 Connection Strategies

The 33kV feeders supply routes are outside the subject site boundary and will be approved under the utility authority's own permitted development rights. The supply routes to the site from Ausgrid Sub-transmission Substation will be subject to Ausgrid enquiry and designs will be developed during later design stages.

7.1.4.1 Ultimate Supply

NEXTDC has been in discussion with Ausgrid about the project and possible electrical supply options which is currently under enquiry with Ausgrid. Ausgrid will advise the supply and route options from the Macquarie Park Sub-transmission Substation to the proposed site.

7.1.4.2 Operation

The data centre is an office facility and therefore requires back up emergency power generation. The site is designed for a total of 48 no. low voltage 3MW generators rated to supply the data centre critical loads, admin load and life safety loads. All generators will be inside an acoustic treated indoor plantroom with local 1000 litre day tank fed from bulk fuel tanks located on lowest level of the building to comply with AS1940.

The generators will serve as a standby power supply in the event of a mains failure. The connection enquiry with Ausgrid is for N+1 33kV feeders, providing fully rated supplies for the building's load. The failure rates for an N+1 supply in this configuration are extremely low, as each feeder is sourced from a diverse bus section of the Ausgrid substation and is capable of supporting the building's full load independently.

Although it is not possible to predict the exact duration of power outages or damage requiring standby generator operation over a year, historical data provides useful insight. According to the Ausgrid Distribution and Transmission Annual Planning Report Summary (DTAPR, December 2023), the average unplanned System Average Interruption Duration Index (SAIDI) over the past 10 years (2013/14 to 2022/23) is 74.5 minutes per year per customer (total cumulative unplanned outage events). This represents a likelihood of occurrence of less than 0.01% per year. Ausgrid network and operations covers Sydney, the Central Coast and Hunter regions of New South Wales.

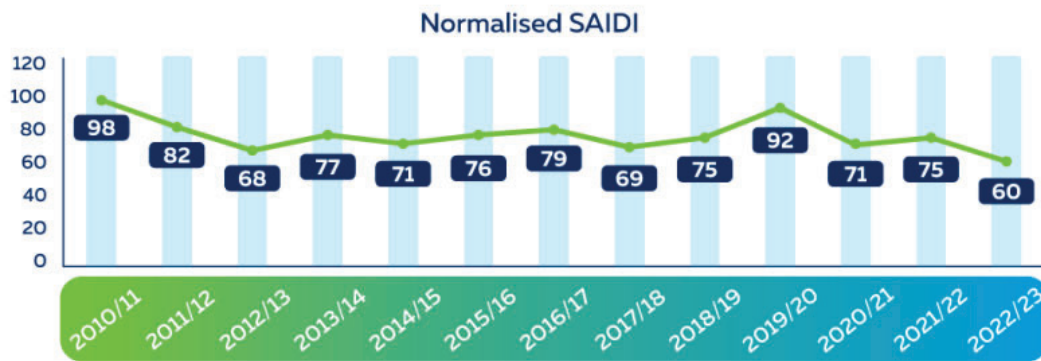


Figure 15 - Ausgrid graph of normalised SAIDI data in the past 13 years (Source: Ausgrid, 2023)

Each generator will be housed in a generator plantroom at each level with 1000 litre day tank and bulk fuel tank at lowest level of the building with 24hour + 24hour autonomy. Fuel tanks will be designed to comply with AS1940. Preliminary fuel calculations are shown in the table below.

Table 9 Fuel Calculations

General Design Assumptions				
Generator: CAT C175-20				
Fuel Consumption per Generator				
Rating: 3120 kWel				
Load:	100%	83%	75%	50%
L/hr:	818	706	650	449
Day Final Generator Quantity (per Building)				
Total LV Strings:	24			
Generator to LV String Ratio	1:1			
Total No. Generators	24			
Day 1 Generator Quantity (per Building)				
Total LV Strings:	6			
Generator to LV String Ratio	1:1			
Total No. Generators	6			
Day Final: Generator loading, fuel consumption & storage (per Building)				
Normal Operation	24 Gens @ 83%	16936 L/Hr		
String Failure / Generator Failure	20 Gens @ 100%	16354 L/Hr		
Fuel Storage Autonomy	24 hrs			
Total Fuel Capacity Required Per (A/B System)	406 kL			
Bulk Fuel Tank Capacity (Gross)	113 kL			
Bulk Fuel Tank Capacity (Useable)	102 kL			
Min. Bulk Fuel Tank Qty Req.	4			
Day 1: Generator loading, fuel consumption & storage (per Building)				
Normal Operation	6 Gens @ 83%	4234 L/Hr		
String Failure / Generator Failure	5 Gens @ 100%	4089 L/Hr		
Fuel Storage Autonomy	48 hrs			
Total Fuel Capacity Required	203 kL			
Tank Qty per A & B System (based on Day Final size)	2			

Notes:

1. Tank quantities noted are for a single data hall building
2. 48 hours fuel autonomy shall be split across separated A & B systems equally
3. Useable volumes noted assume 90% tank efficiency
4. Maximum bulk fuel tank capacity based on AS1940:2017 requirements

7.1.5 Maintenance

For standby generators to be ready to operate should an unexpected interruption to mains power occur, a regular maintenance schedule is required. The proposed standby generator testing schedule is provided in Table 11. It is understood that the testing schedule in

Table 11 excludes plant cooldown period considered to be exempted from the POEO (Clean Air) Regulation Standard of Concentrations, as part of the *start-up/shutdown* period exemption.

Maintenance testing of standby generators is anticipated to occur during the daytime period (the period from 7 am to 6 pm (Monday to Saturday) and 8 am to 6 pm (Sundays and public holidays¹).

Table 10 – The proposed standby generator maintenance testing regime

Test	Run Time (Minutes)	Cooldown (excluded from Runtime)	No of Gens	Generator Per Test	Total Run Times (Minutes)	Description ^{a, b}
Quarter 1	40	10	48	1	1920	Operational Run – Tested under 55% minimum load
Quarter 2	40	10	48	1	1920	Maintenance Run – Tested under 50% load
Quarter 3	40	10	48	1	1920	Operational Run – Tested under 55% minimum load
Quarter 4	90	10	48	1	4320	Maintenance – Tested under 100% load
Total					10080	168 hours
Note: a. Generator tested under low load is to be undertaken such that the emissions do not exceed the POEO (Clean Air). The generator loading should be re-confirmed once the final generator selection has been finalised. b. Generator loads are +/- 5% load.						

Based on the proposed maintenance testing schedule in Table 11, there would be up to one generator tested at any given time in either Building A or Building B. Generators will be tested under a load where emissions comply with the Standard of Concentrations requirements for non-scheduled premises under the POEO (Clean Air).

The preliminary generator testing schedule in Table 11 shows a proposed cumulative total hours of testing of 168 hours, not more than the 200-hour exemption limit in Schedule 1 Clause 17 of the NSW POEO Act 1997, as well as Part 5, Division 6, Clause 73 of the POEO (Clean Air) Regulation 2022, and therefore generator emissions are exempt from Schedule 2 Part 2 of the Standard of Concentrations in the POEO (Clean Air) Regulation 2022.

Table 11 Fuel required for Testing Produces

	Data Hall Generator	
Generator Fuel Consumption - No Load	No Data	L/hr
Generator Fuel Consumption – 50% Load	450	L/hr

¹ NSW EPA, 2017. Noise Policy for Industry.

	Data Hall Generator	
Generator Fuel Consumption – 75% Load	650	L/hr
Generator Fuel Consumption – Full Load	820	L/hr
Annual Fuel Consumption for Generator Test across the site	158,560	L

The fuel consumption includes generators running during cooldown period.

7.1.6 Design Status at Submission

Ausgrid are providing connection options to NEXTDC as part of the formal enquiry. Detailed design of the HV supplies will be undertaken by an accredited Level 3 Accredited Service Provider as part of later design stages.

7.2 Water Services

The building within the site will be provided with both potable and rainwater re-use water supplies. Potable water will be supplied to the administration and bathroom areas as well as hose taps surrounding the site and industrial water tanks as a back-up supply.

Industrial water via the potable water network will supply the mechanical evaporative cooling system serving the data halls heat rejection requirements. In addition, the potable water supply will back up the industrial water tank fed supplies. All tanks and pipework within the subject site will be owned and operated by the Proponent.

The fire services connection shall serve a combined fire hydrant and sprinkler system aggregate demand. Due to the effective height of the development, dedicated on-site fire pumps and storage tanks infrastructure will be required. Design of an efficient system will be subject to operational input, insurers requirements and coordination with Fire & Rescue New South Wales (FRNSW) and Fire Engineering to provide performance based solutions via negotiation with FRNSW through the FSS and FER process.

7.2.1 Points of connection

It is noted that Road 13 is a portion of the site that is to be handed over to Council and the water mains reticulation within this roadway will be designed and installed to the WSAA Sydney Water Edition guidelines by the project civil engineer to ultimately become Sydney Water assets.

It is proposed to utilise two (2) water connections to provide dual resilient water supply to the domestic and industrial services to ensure redundancy to the site should one supply require maintenance. Additionally, a single connection will be made to furnish the fire services. These connections shall be made from the 150mm and 200mm mains on Waterloo Rd. Refer to **Figure 17** for locations.

These connections shall be reticulated through the access road to authority meters and fire booster assemblies located to the east of the site. Locations shall be as per Australian standards, design guidelines and site architectural master planning options.

The buildings within the site shall be supplied with both potable and industrial water supplies. Potable water shall be supplied to the industrial water tanks (providing a break

from instantaneous flows from the potable network), administration and amenities areas as well as hose taps surrounding the site.

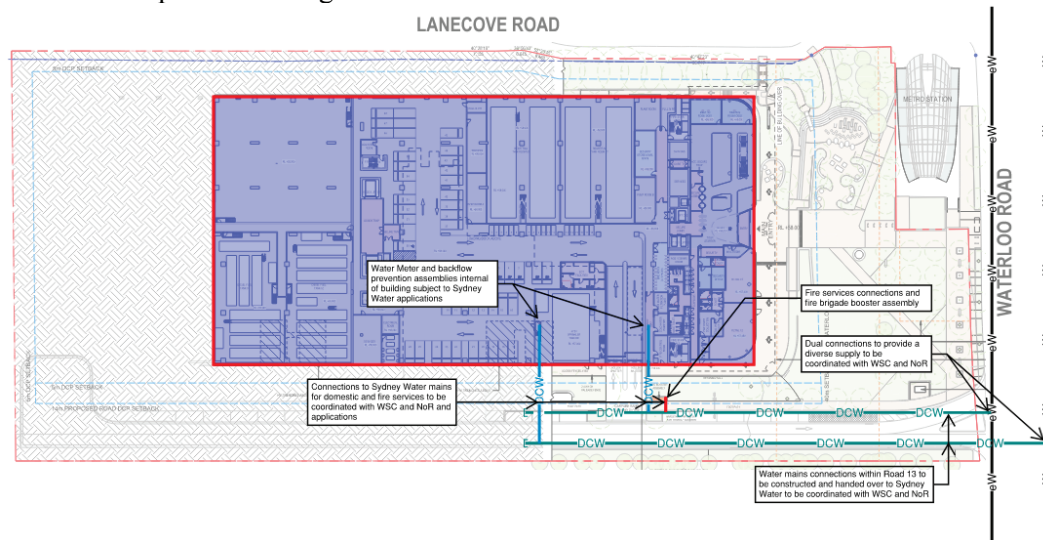


Figure 16 Proposed Water Connections

7.2.2 Pressure and Flow Results

Sydney Water Pressure and Flow Enquiries have been made to the mains on Waterloo Rd to identify the capacity of the mains to service the site, with the results shown in Figure 18.

The Pressure and Flow results have been received and indicate:

- Fixed on-site fire hydrant protection system pumps and tanks are required for the multi-story architectural concept.
- This assessment is based on building height of >25m with maximum allowable system losses of 150kPa as per AS.2419 requirements to achieve minimum unassisted supply of 10L/s (each) @ 250kPa supply at the most disadvantaged outlet(s) and the aggregate demand of hydrants required simultaneously as per AS.2419.1 requirements.
- Similarly, pressure boosting pumps shall be required to service the potable and industrial water demands.

The overall capacity of the water network must be assessed by Sydney Water via a **Section 73** application submitted by the Water Services coordinator following submission of the SSDA.

As multiple connections are proposed, a Water Services Coordinator (WSC) has engaged with the authority to undertake modelling to confirm the capacity of the mains to service the development. These works can be completed as part of a Sydney Water modelling Study which shall provide approval and any additional installation details required.

ASSUMED CONNECTION DETAILS

Street Name: Waterloo Road	Side of Street: South
Distance & Direction from Nearest Cross Street	70 metres East from Lane Cove Road
Approximate Ground Level (AHD):	55 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	52 metre head
Minimum Pressure	41 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	41
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	10	42
	15	41
	20	41
	25	41
	30	40
	60	37
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	10	41
	15	40
	20	40
	25	39
	30	39
	60	35
Maximum Permissible Flow	67	34

Figure 17 P&F Results for 150mm main on Waterloo Rd**7.2.3 Specific Site Demand****7.2.3.1 Fire Water Supply**

The site fire water supply will be provided from the authorities' water main on the Waterloo Road frontage. The site will also have fire water storage tanks sized to provide 90 mins water supply during a fire event. The estimated site fire water storage to be approximately 400kL for a dual supply accounting for full fire sprinkler volumes.

The following demand in Table 12 has been calculated for the fire services flow.

Table 12 Fire Services Demand

System	Site Requirement
Fire Hydrant Flow	Fire Hydrant Flow rate per hydrant = 10 L/ at 700kPa assisted or 20 L/s @ 250Kpa unassisted Number of hydrants operating simultaneously = 2 Total flow rate required 20L/s
Fire Sprinkler Flow	NFPA / FMDS_5-33 protection for battery energy storage systems (BESS) 12.2mm design density / 230m2 area of operation Total flow rate required 46.8 L/s + 20% = 56.5 L/s
Combined Fire Flow	Total flow rate required 76.5 L/s

7.2.3.2 Water Demand Estimate

Initial calculations indicate that a **3,462,764L/day** total water demand and 52.6 L/s peak flow will be required to service the S5 development. Refer to Table 13 for demand values at proposed stages of work.

Table 13 Estimated Water and Sewer Demand

	Water and sewer loads based on stage					
	Day 1 (2027)	Day 2 (2029)	Day 3 (2031)	Day 4 (2033)	Day final	Peak
Wastewater kL/day	9.3	83.9	222.4	360.9	568.7	745.8
Potable water kL/day	56.8	510.9	1,354.2	2,197.6	3,462.7	4,541.2
Fire Hydrant Flow L/s	76.5					

7.2.4 Waste Water Recycling Facility (Sewer mining recycled water)

An onsite facility is no longer proposed following negotiation with Sydney Water via the Section 73 and network modelling process. The building footprint remains unchanged

7.2.4.1 Industrial Water

The industrial water system will supply the mechanical evaporative cooling system required for heat rejection from the data halls. The industrial water being treated and utilised for the cooling system is of potable supply quality and can reduce overall water consumption by recirculating water ~8-10 cycles prior to discharge reducing the net water demand in comparison to a reticulated non-potable system achieving only ~5 cycles.

The industrial water system will be supplied primarily from recycled water feeds into the 24hr peak buffer storage dedicated industrial water tanks located in the Ground level of the site. An industrial water reticulation network independent of the potable water supply internally will be installed, serving each building independently.

The reticulation network will be designed in a ring main configuration to provide an N+1 redundancy to the system.

The industrial water system will be supplied from the following sources;

- Potable water from the authority's water mains.
- Harvested and treated rRainwater.

The industrial water system will draw its water source in sequence as follows;

- Harvested and treated rainwater,
- Potable water

The industrial water supply will be filtered with automatic back wash filters and automatically chemically dosed to prevent legionella growth prior to being supplied to the evaporative cooling towers.

Water supplied to the evaporative cooler will be retained within the coolers' sump. Water within the sump will be pumped up to cooling pad and be partially evaporated to cool the supply air stream. To minimise water usage, the non-evaporated water will be recirculated from the sump to the cascade down the cooling tower to be cooled/evaporated. This recirculation process will occur until adequate evaporation process has taken place such that the concentration of solids within the sump water reaches eight times the incoming water – achieving 8 cycle of concentrations.

7.2.4.2 Water balance

In the final configuration, when all data halls are operational, peak water demand days in hot periods of the year the data centre are estimated to use 2,270 kL/ peak day per stage, 4,541 kL/ peak day total for both buildings in the final state.

7.2.5 Consultation with Authority

A Section 73 notice of anticipated requirements (NoAR) application was made to Sydney Water in September 2024 providing anticipated maximum water and sewer demands, based on the peak operating day for the fully developed data centre.

The Proponent has appointed a Water Services Co-ordinator (WSC) and will continue to liaise with Sydney Water during the design process. A formal Section 73 notice of requirements (NoR) can be lodged once conditions of consent instrument have been received.

7.3 Sanitary Drainage

The site will be serviced by sanitary drainage system that will gravity drain to both sewer connections provided by the estate developer. The sanitary drainage will be separated into soil waste and wastewater drainage systems within the data halls.

It is noted that Road 13 is a portion of the site that is to be handed over to Council and the sewer reticulation within this roadway will be designed and installed to the WSAA Sydney Water Edition guidelines by the project civil engineer to ultimately become Sydney Water assets

7.3.1 Points of connection

It is proposed to make Two (2) sewer connections to service the site. Additionally, these connections shall be made from the 225 sewer main on Waterloo Rd.

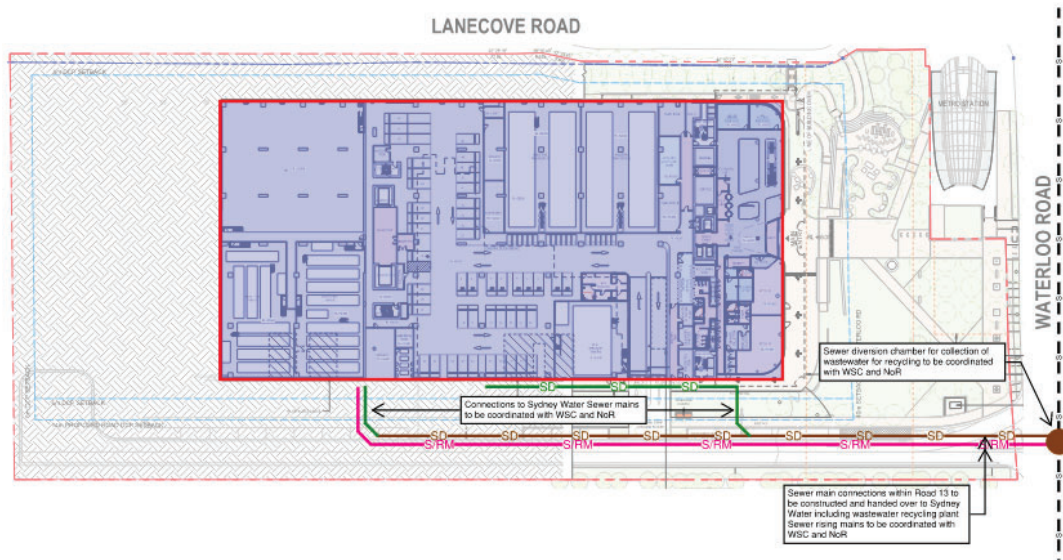


Figure 18 Proposed Sewer connection

7.3.2 Soil waste

The soil waste drainage will collect all sanitary fixtures within the administration buildings and the data halls. This drainage system will run separately to the wastewater

system throughout the data halls and will merge prior connecting to the sewer connection located at the east of the boundary of the subject site.

7.3.3 Industrial Wastewater

The wastewater system will collect all the evaporated cooling system bleed off wastewater as well as all floor waste and tundishes within the data halls via gravity. The wastewater drainage systems shall run separately to the soil waste systems throughout the data halls and will merge to the site's sanitary drainage system prior to site discharge via the sewer connection located within Road 13.

7.3.4 Demand Estimate

The site's primary sewer discharge is from the wastewater generated by the mechanical evaporative cooling system. The soil waste discharge will be minimal due to relatively low staff number in relation to the size of the facility.

The ultimate wastewater discharge forecast is detailed below in Table 13

Initial calculations indicate that a **568,721L/day** sewer discharge demand and 8 L/s peak day flow will be required to service the final S5 development. Refer to Table 13 for demand values at proposed stages of work.

A trade waste provision has not been provided to the building facility as there is no requirement for pre-treatment devices. Provision for sampling of industrial wastewater shall be integrated into the development in accordance with Sydney Water requirements.

As detailed on the calculations above the forecast at the ultimate load when the site is fully developed at the hottest times of year in January will on average 745 kl / day with a peak discharge flow rate of 8 l/sec.

Sewer demands are significantly lower than peak water demands as industrial water is recirculated eight times prior to discharge from the cooling equipment to the wastewater system. In the initial earlier years of operation, the sewer demands will be significantly lower than those presented in Table 13.

7.3.5 Consultation

A Section 73 feasibility application was made to Sydney Water in September 2024 providing anticipated maximum water and sewer demands, based on the peak operating day for the fully developed data centre.

The Proponent has appointed a Water Services Co-ordinator (WSC) and will continue to liaise with Sydney Water during the design process. A formal Section 73 can be lodged once conditions of consent instrument have been received.

7.3.5.1 Permanent Configuration

In the permanent configuration, sewer flows will continue to drain from the site to estate sewer system designed to WSAA Sydney Water edition for the subject site. The estate network will then drain directly into Sydney Water's precinct network and ultimately be handed over to Sydney Water as utility assets.

7.3.6 On-Site Reticulation

The soil waste drainage and waste drainage systems for S5 will reticulate in the south site road and merge prior to discharge to the 225mm sewer connection stub located at the eastern corner of the site.

7.4 Telecommunications

7.4.1 Connection Strategy

Four (4) entry points are proposed for each building and each entry is 20m apart or fire segregated, as shown in Figure . These entry points are separate to the 6 x 100mm diameter telecom conduits within the wider estate.

Each entry point will be provided with 10x100mm and 10x50mm conduits.

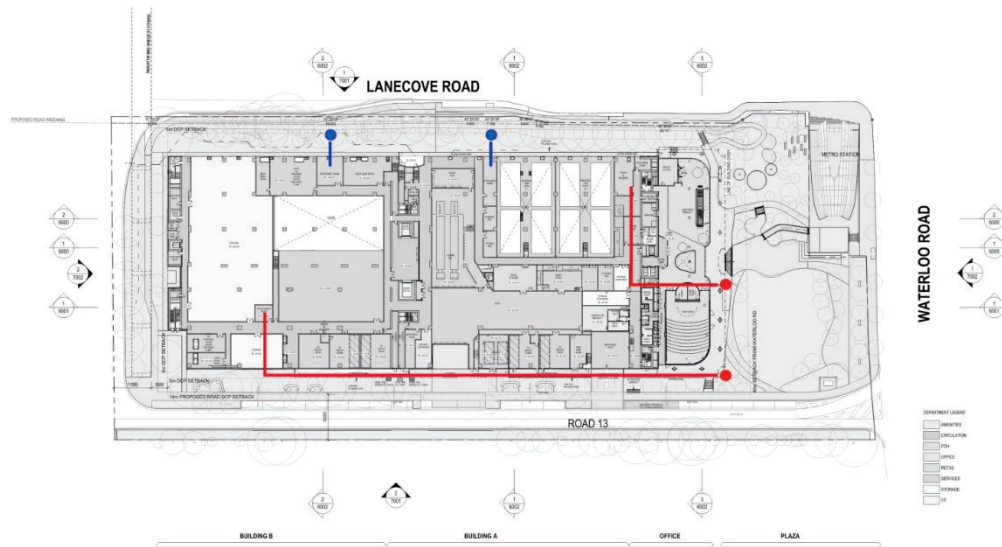


Figure 19 Proposed Telecom Connection Strategy

Carriers will likely provide connectivity to the entry points from the public roads around the site. It is also anticipated that incoming carrier conduits will run under Road 13.

The proponents are in ongoing negotiations with their carriers of choice to finalise routes to the site.

7.4.2 On-Site Reticulation

Within the site, containments will reticulate at high level to support telecommunications lead-in cabling and distribution pathways.

Each PoE communications pathways always retain a minimum of 20m separation or fire segregation to minimise risk of concurrent damage to multiple pieces of telecommunications infrastructure.

7.5 Gas

No gas supply is proposed to serve the data centre facility. All power supplies will be from electrical sources with auxiliary supply from diesel generators.

An existing gas connection of unknown size is currently provided to the Foxtel Building. Disconnection of this service is currently being coordinated with Jemena.

8. Assessment of potential construction impacts

This chapter presents potential construction impacts on existing utility infrastructure within the subject site.

As discussed in Section 7, construction works will be undertaken in stages over a period of time.

8.1 Electricity

Existing development includes a two-storey office furniture store (Work Arena) at the northern end of the site and offices and studios associated with Foxtel in the southern portion of the site. There are 3no. substation shown on the Ausgrid DBYD serving the existing buildings.

There are 4.5m Ausgrid cable easement at Waterloo Road side of the proposed highlighted in yellow.

During construction stages, measures will be implemented to avoid damage to electrical services and infrastructure constructed during initial stages of work. Any demolition of the building will also allow for removal of any incoming supply from Ausgrid with ASPL3 designer.

Refer to Appendix A for DYBD information.

8.2 Water Supply

In the baseline condition there is no water infrastructure within the subject site. Therefore, construction works within the subject site will cause no impacts to water infrastructure.

During later construction stages, measures will be implemented to avoid damage to water services constructed during initial stages of work within Road 13.

8.3 Sewerage

In the baseline condition there is no sewer infrastructure within the subject site. Therefore, construction works within the subject site will cause no impacts to sewer infrastructure.

During later construction stages, measures will be implemented to avoid damage to sewer services constructed during initial stages of work within Road 13.

During the sewer diversion pit construction for the wastewater recycling plant, the staging and works shall be coordinated with Sydney Water for all additional works required for any diversions or mains adjustments without interruption to the upstream network.

8.4 Telecommunications

Existing development includes a two-storey office furniture store (Work Arena) at the northern end of the site and offices and studios associated with Foxtel in the southern portion of the site. See below existing telecommunication services going through the site.

During construction stages, measures will be implemented to avoid damage to electrical services and infrastructure constructed during initial stages of work. Any demolition of

the building will also allow for removal/rerouting of any conduits in coordination with the service provider.

Refer to Appendix A for DYBD information.

8.5 Gas

No gas supply is proposed to serve the data centre facility. All power supplies will be from electrical sources with auxiliary supply from diesel generators.

An existing gas connection of unknown size is currently provided to the Foxtel Building. Disconnection of this service is currently being coordinated with Jemena.

9. Assessment of potential operational impacts

Section 9 presents potential operational impacts that the development could have on the surrounding environment and public utility networks.

9.1 Electricity

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

- High electrical demand impacting the surrounding HV distribution network.
- 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.

Refer to below section 10 for mitigation measure.

9.2 Water and Sewerage

Potential operational impacts of the water and sewer infrastructure include:

- High demands reducing the capacity of the estate or precinct water and sewer networks if the recycled water treatment plant is offline for extended periods beyond 24 hours.
- Sewer mining within the building to minimize the wastewater load on the authority's treatment infrastructure increasing the Sydney Water treatment facility by a further 4ML/day

9.3 Telecommunications

The key operational issue for the Proponent is that the facility can operate in the event one telecoms route is offline. The facility will be serviced by separate telecom supply routes to ensure path diversity.

9.4 Gas

No gas supply is proposed to serve the data centre facility. All power supplies will be from electrical sources with auxiliary supply from diesel generators.

An existing gas connection of unknown size is currently provided to the Foxtel Building. Disconnection of this service is currently being coordinated with Jemena.

Therefore, it is anticipated that there will be no potential risks during the operational and maintenance phases.

10. Environmental management measures

Table 15 details the proposed management and mitigation measures proposed as part of the design for utility impacts.

Table 14 Environmental Management Measures for Utility Impacts

ID	Impacts	Mitigation	Responsibility	Timing
IR1	High electrical demand impacting the surrounding HV distribution network.	Proposals are to have data centre specific electrical supply. Electrical authorities have acknowledged the formal request and currently providing connection options to the client.	Proponent/Electrical Authority	Design
IR2	High noise levels when testing or operating back-up generators.	Generators are indoor acoustically treated. The noise level of generator testing will be assessed against NSW Noise Policy for Industry. Likely 24 generators will operate at any one time.	Proponent/Contractor	Design and Operation
IR3	Fuel spills when filling generators.	Fuel tanks will be designed to comply with AS1940. Each fill point will have all ancillaries to meet requirements of AS1940.	Proponent/Contractor	Design and Operation
IR4	Fire and explosion risks associated with the generators.	Generators fuel system will be designed in accordance with AS 1940 which defines location in the building and separation between the tanks. Generators and bulk fuel tanks located inside a secure plantrooms only approved personnel can access this area.	Proponent/Contractor	Design and Operation
IR5	Fire and explosion risks associated with the switching station.	HV switching station will be designed by a certified Level 3 ASP designer in accordance with relevant current version of Australian Standards and Industry Associations Standards and Guidelines. Switching station located inside secure plantroom area only approved personnel can access this area.	Proponent/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	Proponent	Design and Operation

ID	Impacts	Mitigation	Responsibility	Timing
		for a supply in this arrangement are extremely low meaning the generators will rarely be used. Generators will include specific emissions control measures to Australian EPA requirements. Likely 24 generators will operate at any one time.		
IR7	High demands reducing the capacity of the estate or precinct water and sewer networks.	To minimise the peak water demand on Sydney Water's potable water network, the preliminary water balance of the proposed site has been undertaken through the use of Sewer mining for treatment and re-use, rainwater re-use tanks and the provision of fire and water storage tanks on site. Consultation with Sydney Water through the design process has confirmed that the precinct wide water and sewer networks will be designed to cater for peak day flows from the final configuration of the data centre with integration of sewer mining.	Proponent / Sydney Water	Design / Construction
IR8	Overtopping of rainwater harvesting/water storage tanks.	Water overtopping from the rainwater tanks will discharge to the stormwater system. Discharged water will not contaminate the surrounding environment as it will be from either mains supply or roof collected which has passed through water quality treatment features.	Proponent	Design / Operation
IR9	Redundant telecoms supply	Each of the administration buildings is concurrently connected to the Eastern and Western Points of Entry, providing the operator with the ability to utilise a physically diverse service in the event of failure. All telecommunications pathways are physically separated by a minimum of 20m to minimise risk of concurrent damage to multiple pieces of telecommunications infrastructure.	Proponent	Design / Operation

11. Summary of residual impacts

This section provides a summary of the construction and operational risks both pre-mitigation and any residual impacts remaining after the implementation of the management measures describe in Section 7. Pre-mitigation and residual impacts are summarised in Table 16.

Table 15 Summary of pre-mitigation and residual impacts

Potential pre-mitigation adverse impact	Relevant management measures	Potential residual impact after implementation of management measures	Comment on how any residual impacts would be managed
Operation			
High noise levels when testing or operating back-up generators.	Generators are standby acoustically treated units which include noise attenuation features. Generators will only operate in the unlikely event that both electrical supplies 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 when filling generators.	Each fill point will have all ancillaries to meet requirements of AS1940. The fuel parking truck area will be bundled to contain any spillage. The generator room will have 1000 litre day tank with the whole room bundled.	Risk of accidental spills when fuelling.	Operator to prepare a management plan detailing safe method of work for filling bulk fuel tanks. Supplier to have spill kits available at the time of filling.
Fire and explosion risks associated with the generators.	Generators are located indoor fire rated plantrooms. Suitable separation provided between fuel storage tanks (“belly tanks”) and generators. Access to generators or bulk fuel tanks limited to approved personnel.	Low risk of fire and explosion.	Operator to implement monitoring and maintenance plan. Generator area to be kept clean and free from flammable materials. Generators to be frequently inspected for faults/defects.

Potential pre-mitigation adverse impact	Relevant management measures	Potential residual impact after implementation of management measures	Comment on how any residual impacts would be managed
Fire and explosion risks associated with the switching station.	HV switching station will be designed by a certified Level 3 ASP designer in accordance with relevant current version of Australian Standards and Industry Associations Standards and Guidelines	Low risk of fire and explosion.	Operator to implement monitoring and maintenance plan. Switching station to be kept clean and free from flammable materials. Switching station to be frequently inspected for faults/defects.

12. 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.

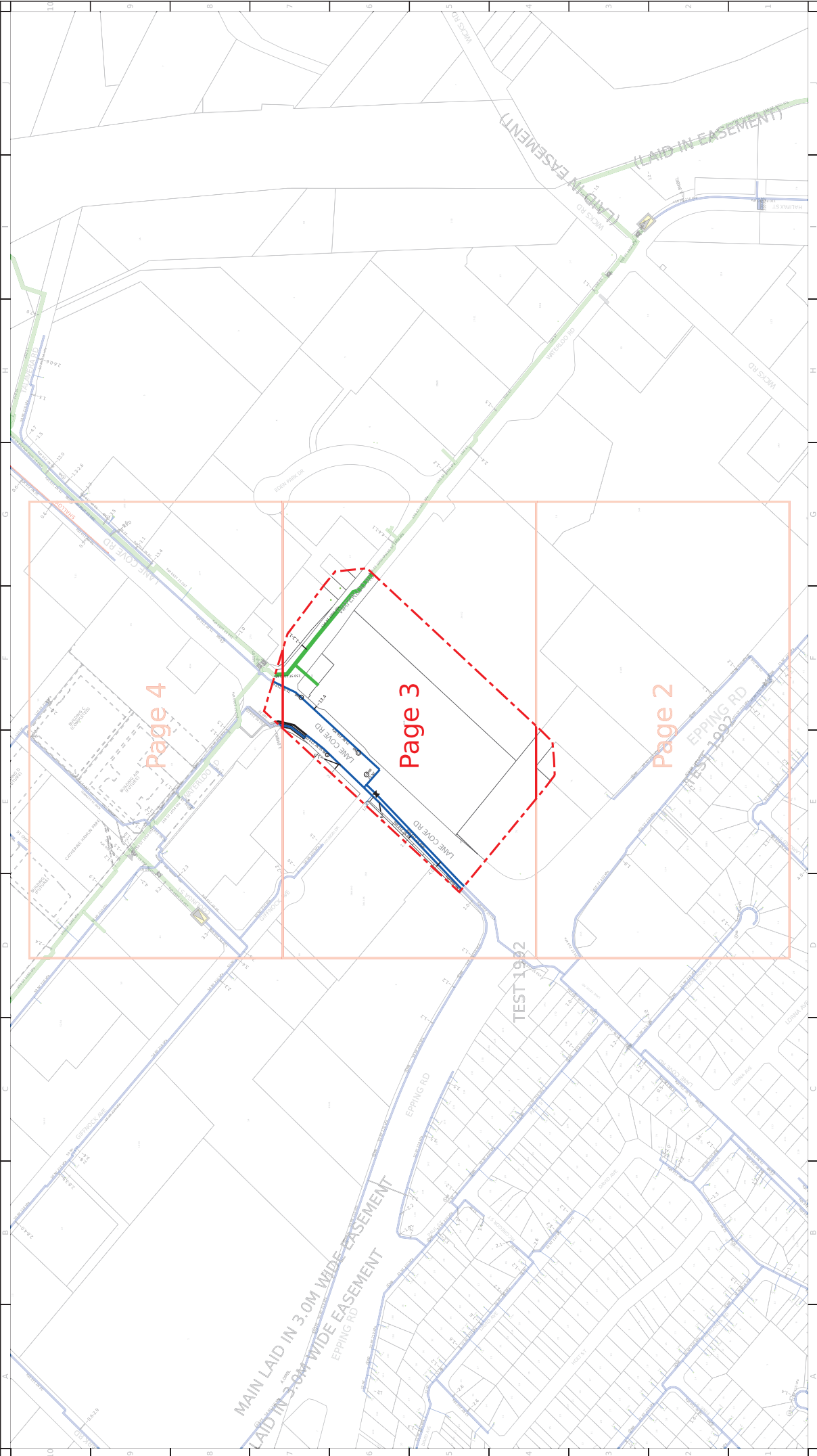
NSW Government, 2007. State Environmental Planning Policy (Infrastructure).

Appendix A

Dial Before You Dig (DBYD)

A.1 Ausgrid

A.2 Jemena

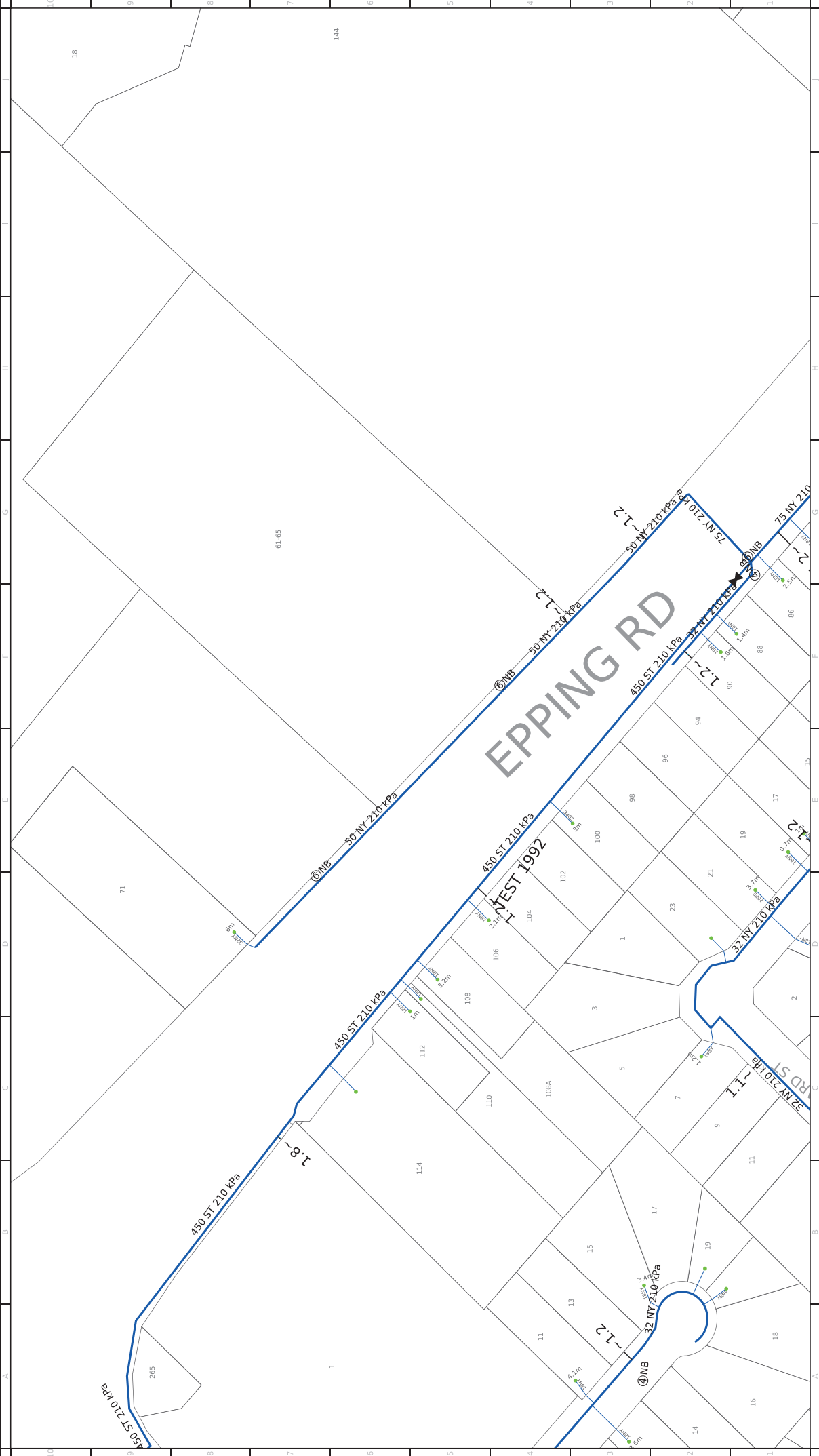


For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.



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Issue Date: 19/12/2023
BYDA Seq No: 233496748
BYDA Job No: 35699465
Overview Page:



Issue Date: 19/12/2023

BYDA Seq No: 233496748

BYDA Job No: 35699465

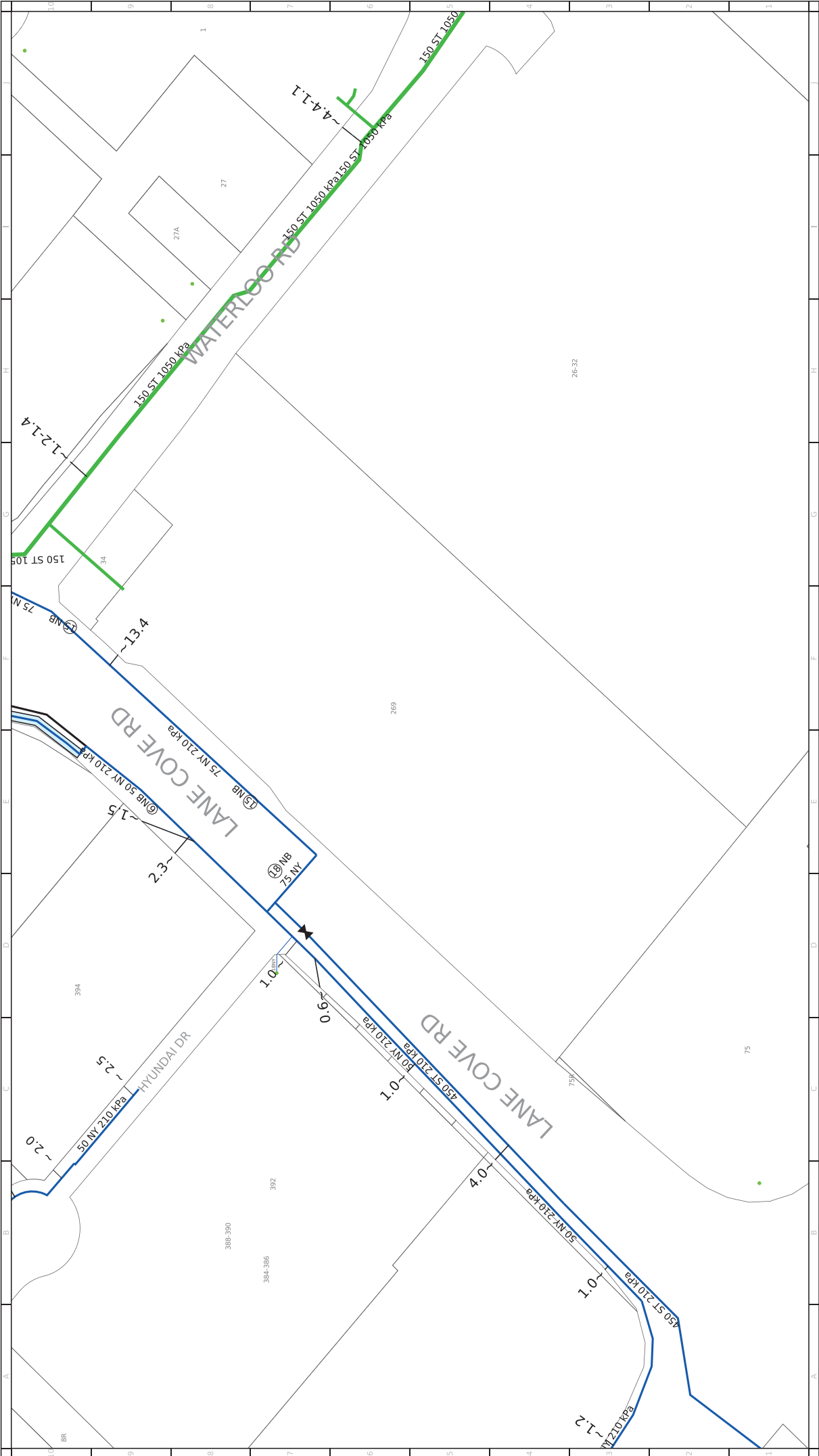
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For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.

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



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

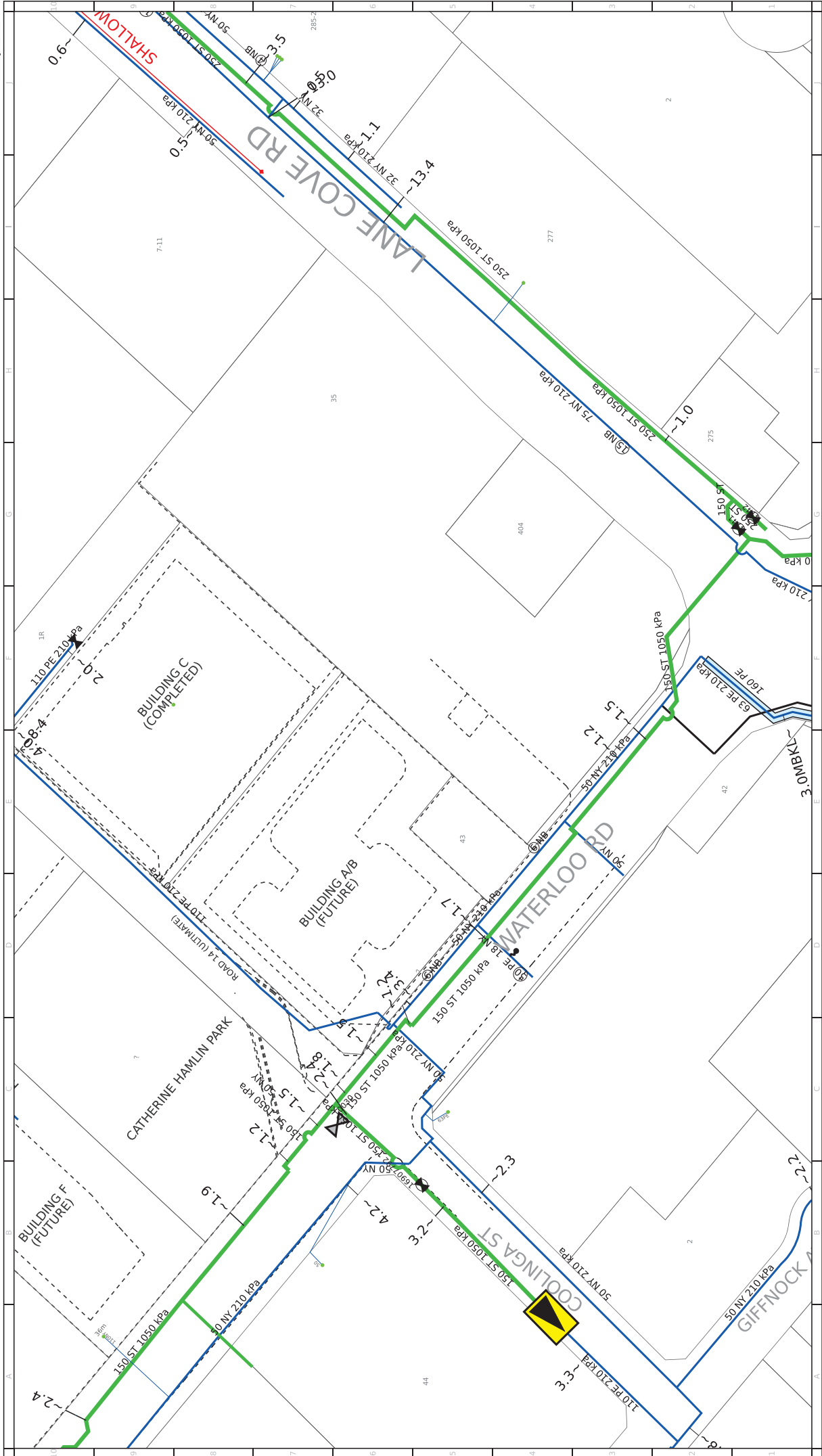


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BYDA Seq No: 233496748
BYDA Job No: 35699465



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



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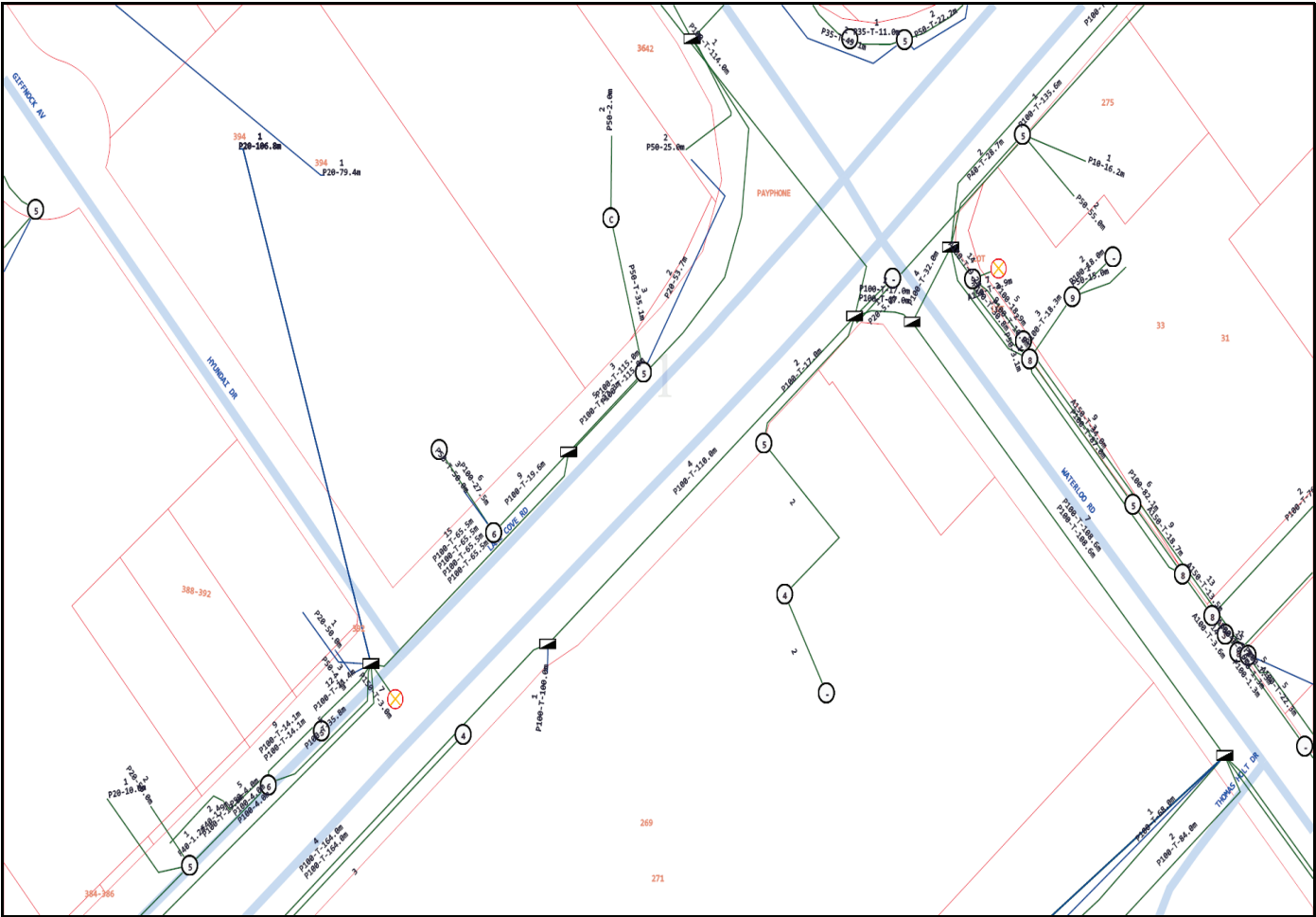
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BYDA Job No: 35699465

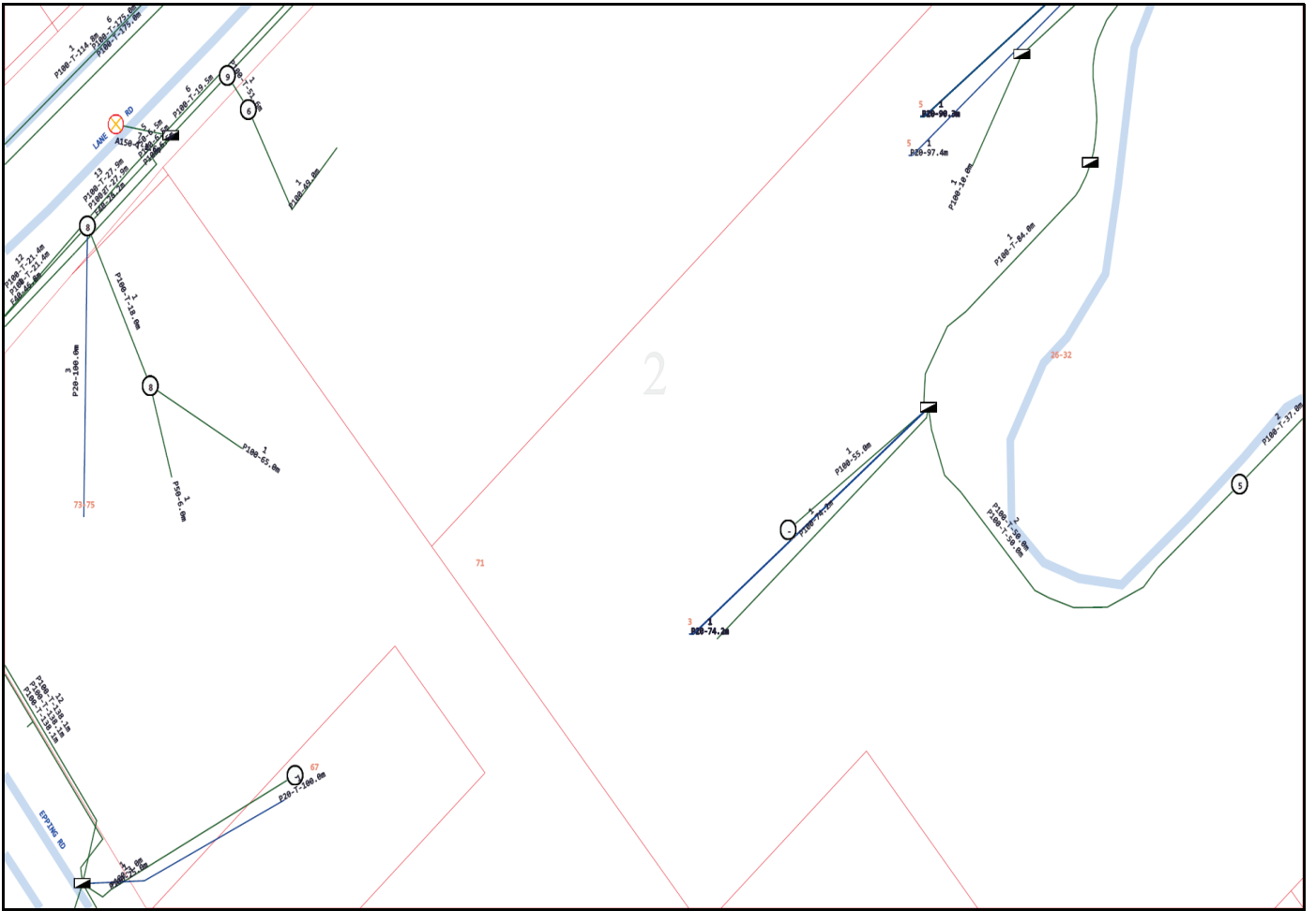


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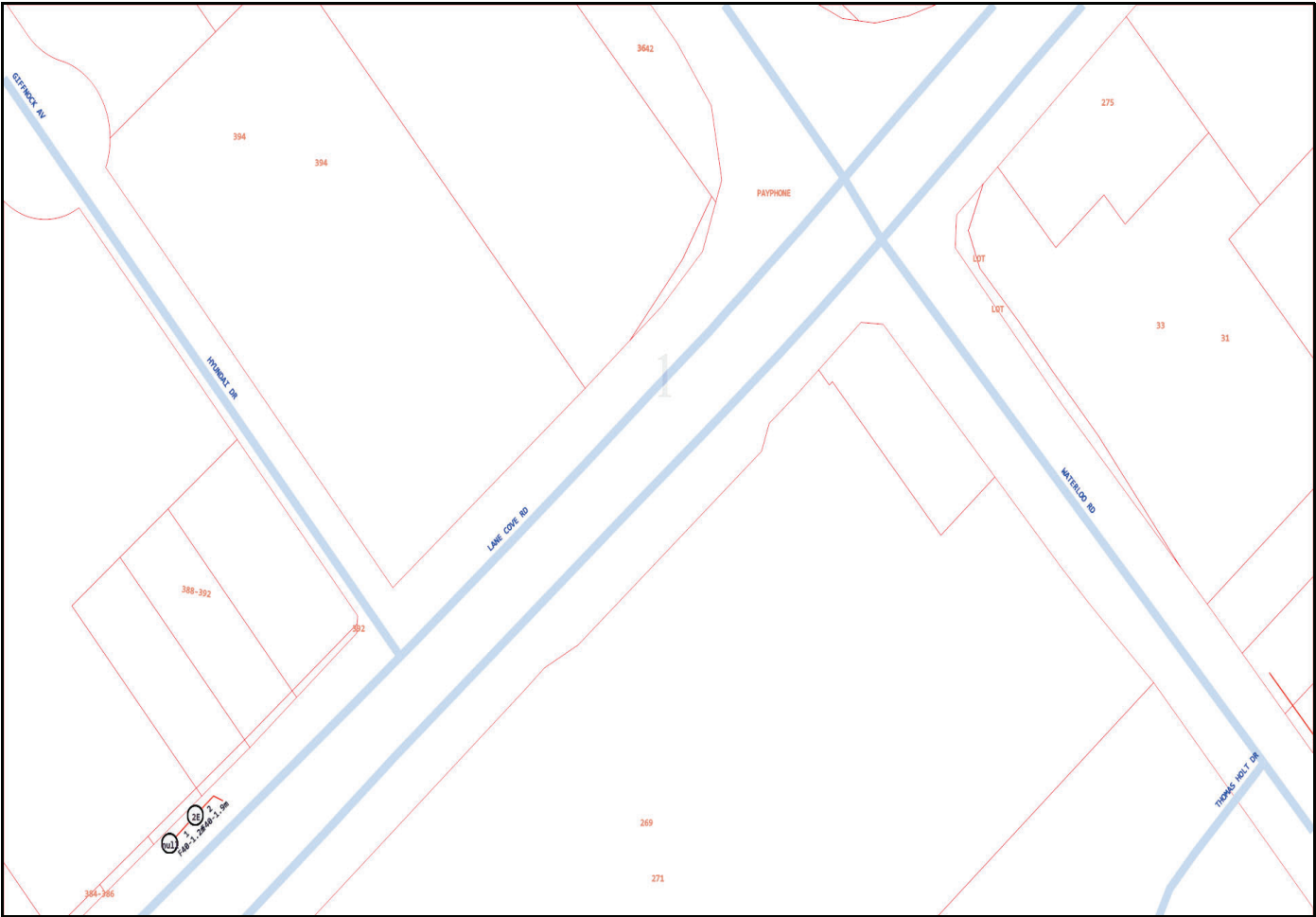
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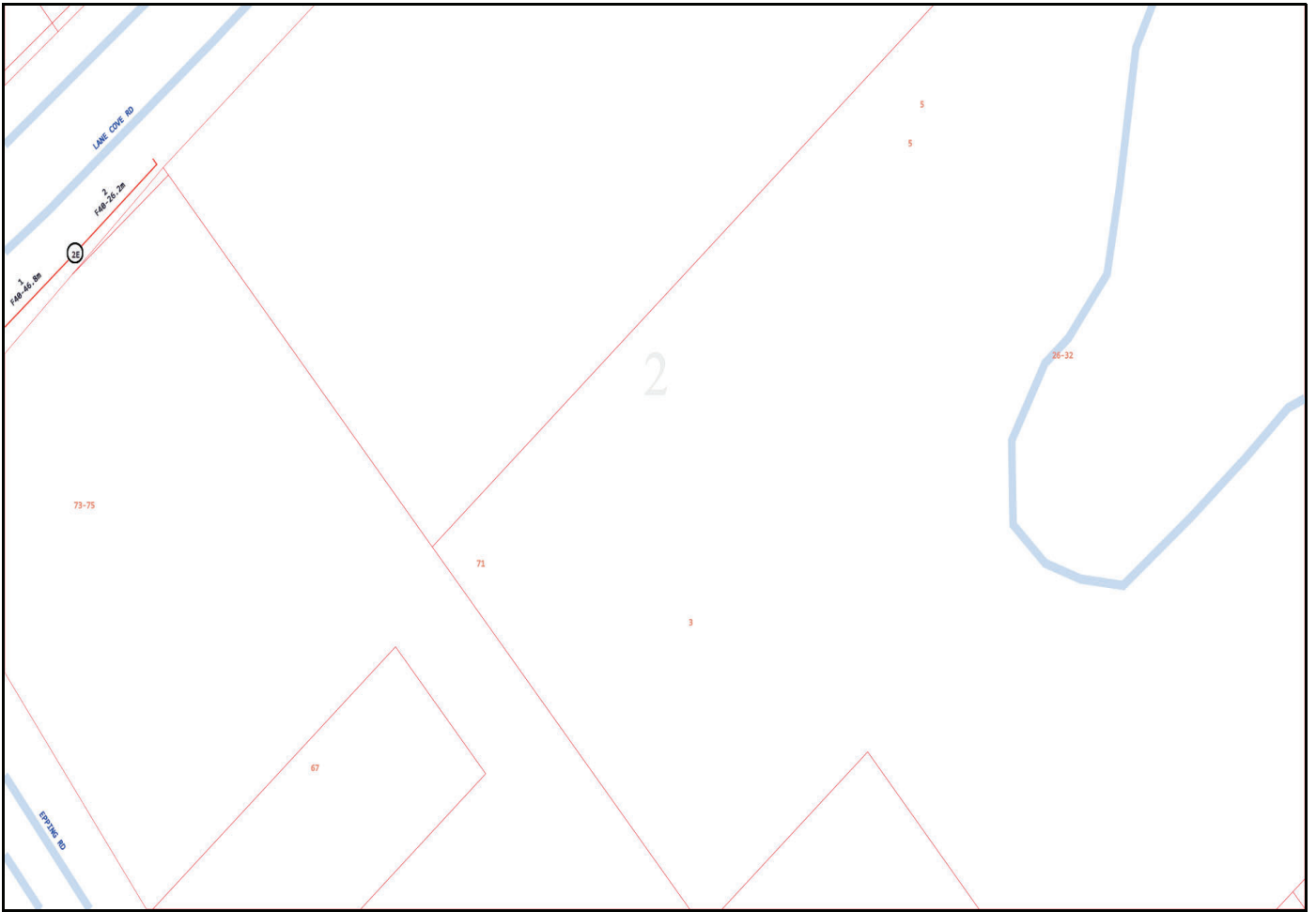




Emergency Contacts

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

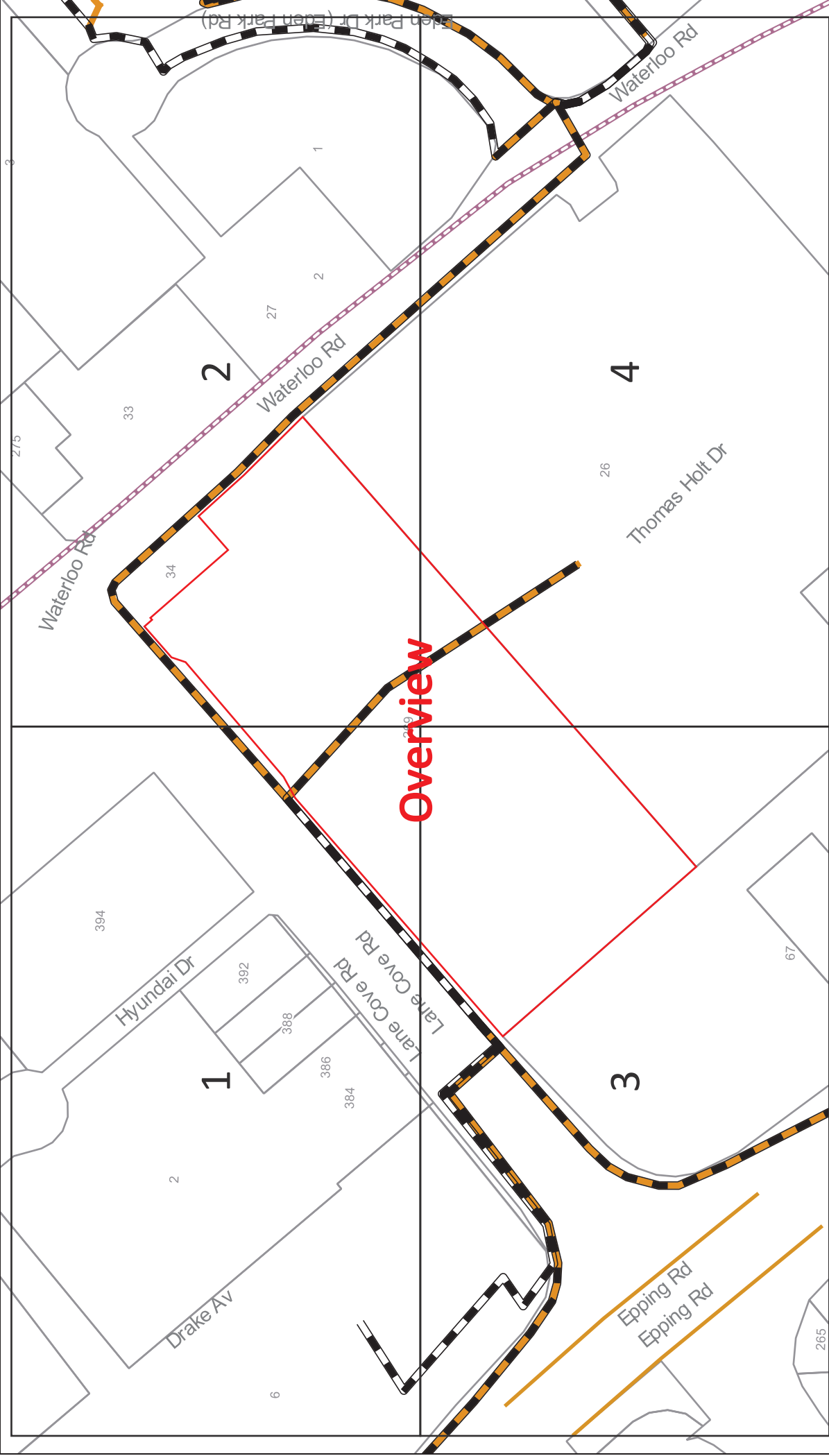




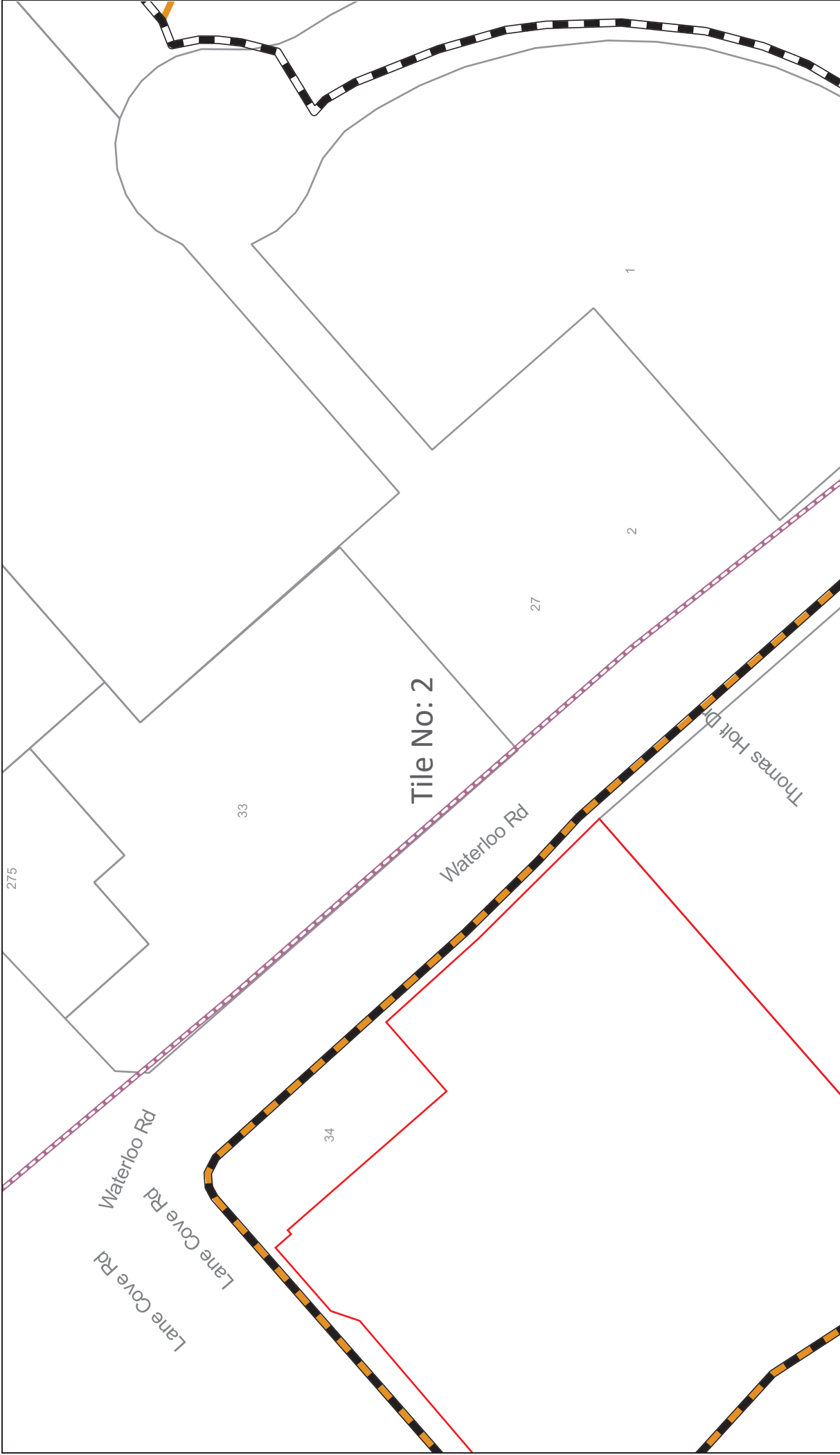
Emergency Contacts

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

A.4 NEXTGEN



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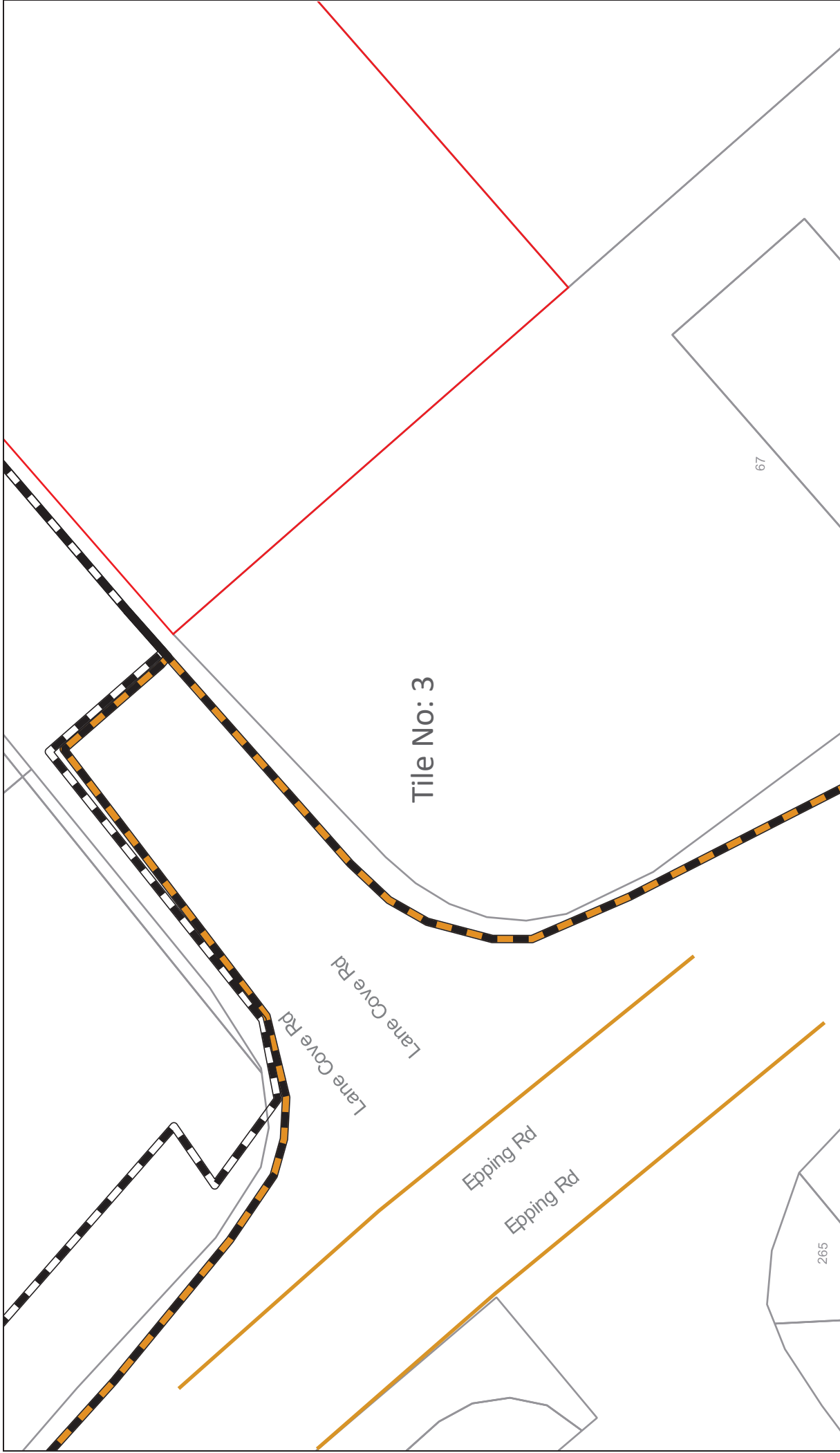
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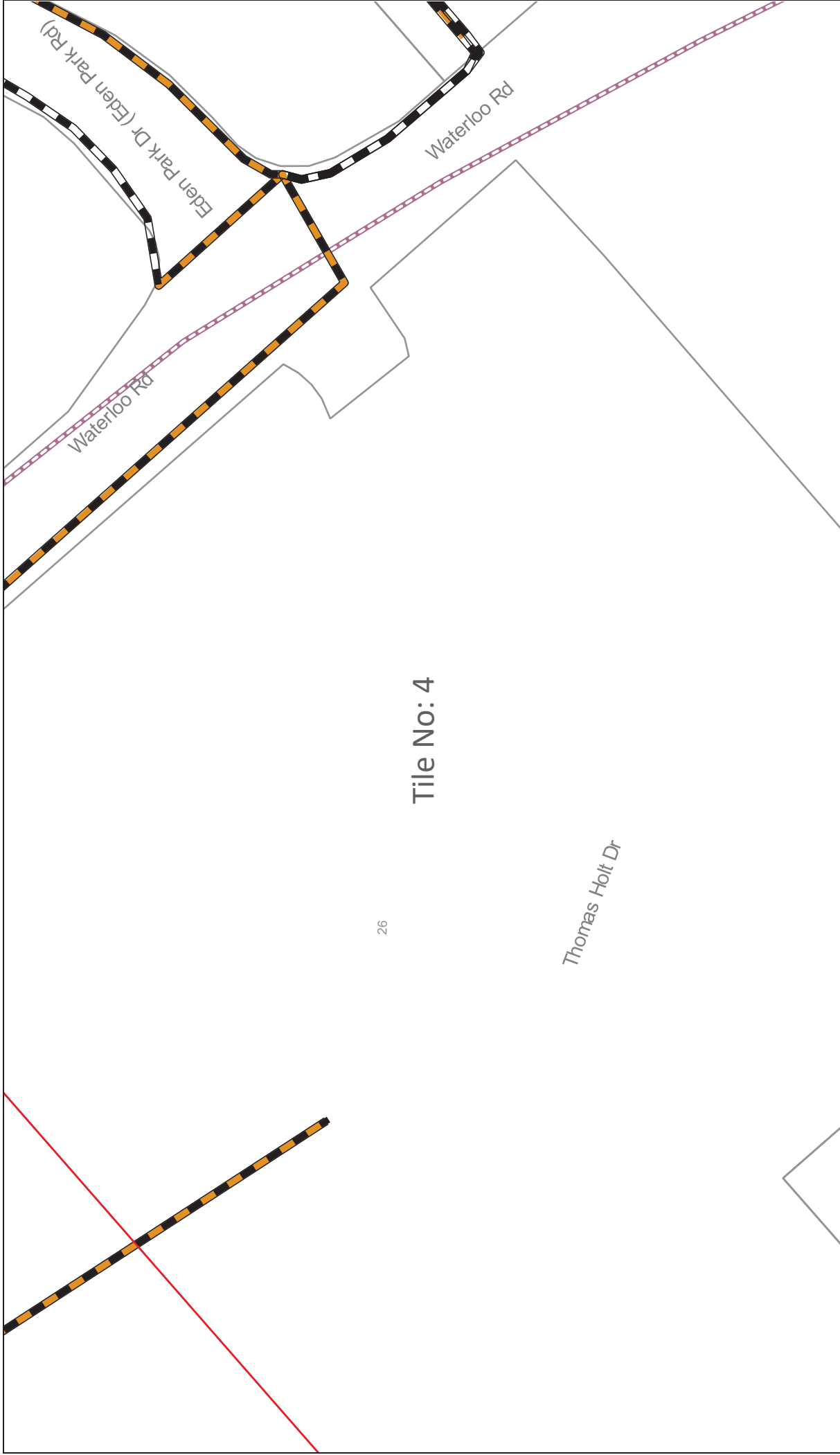
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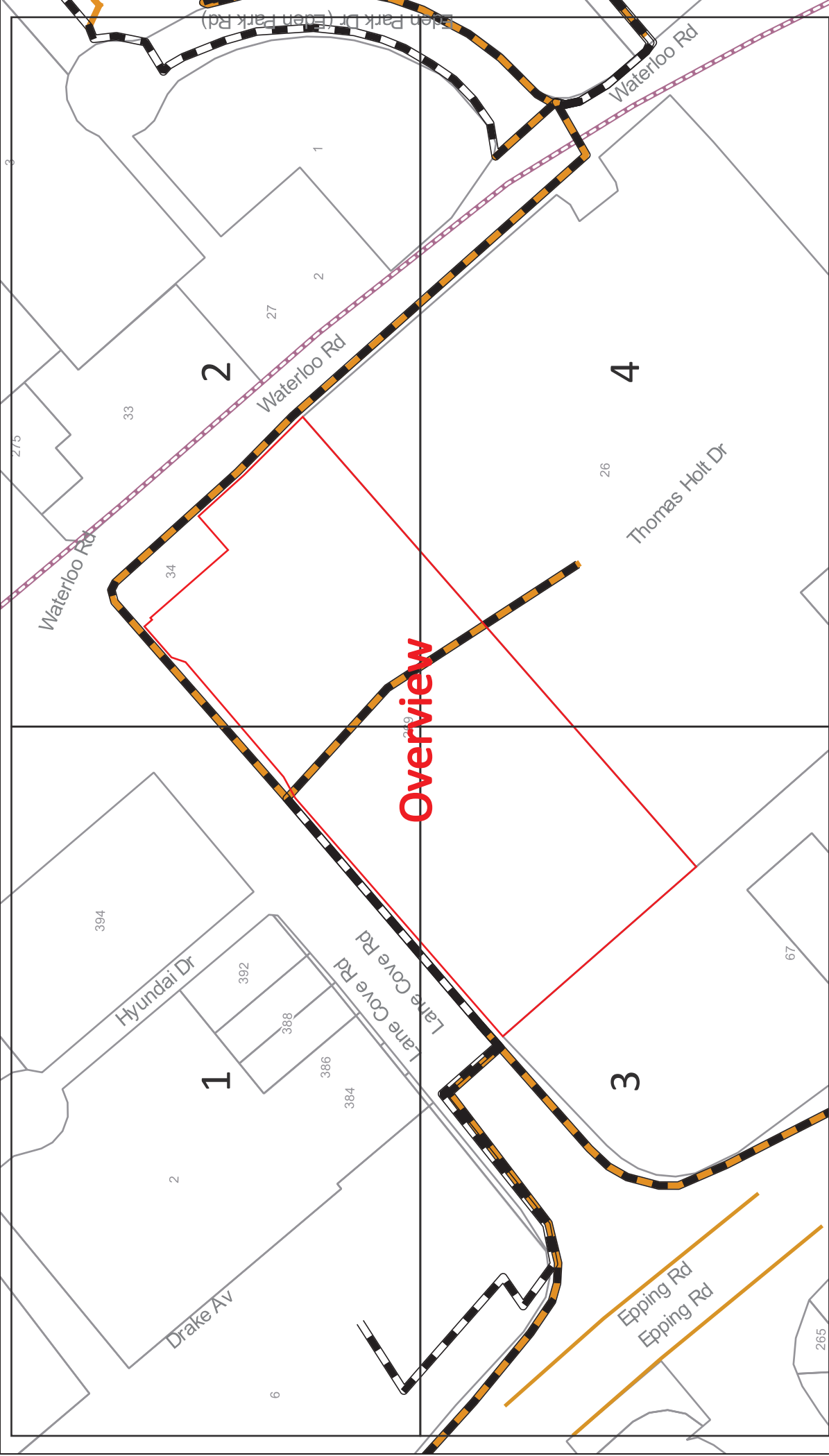
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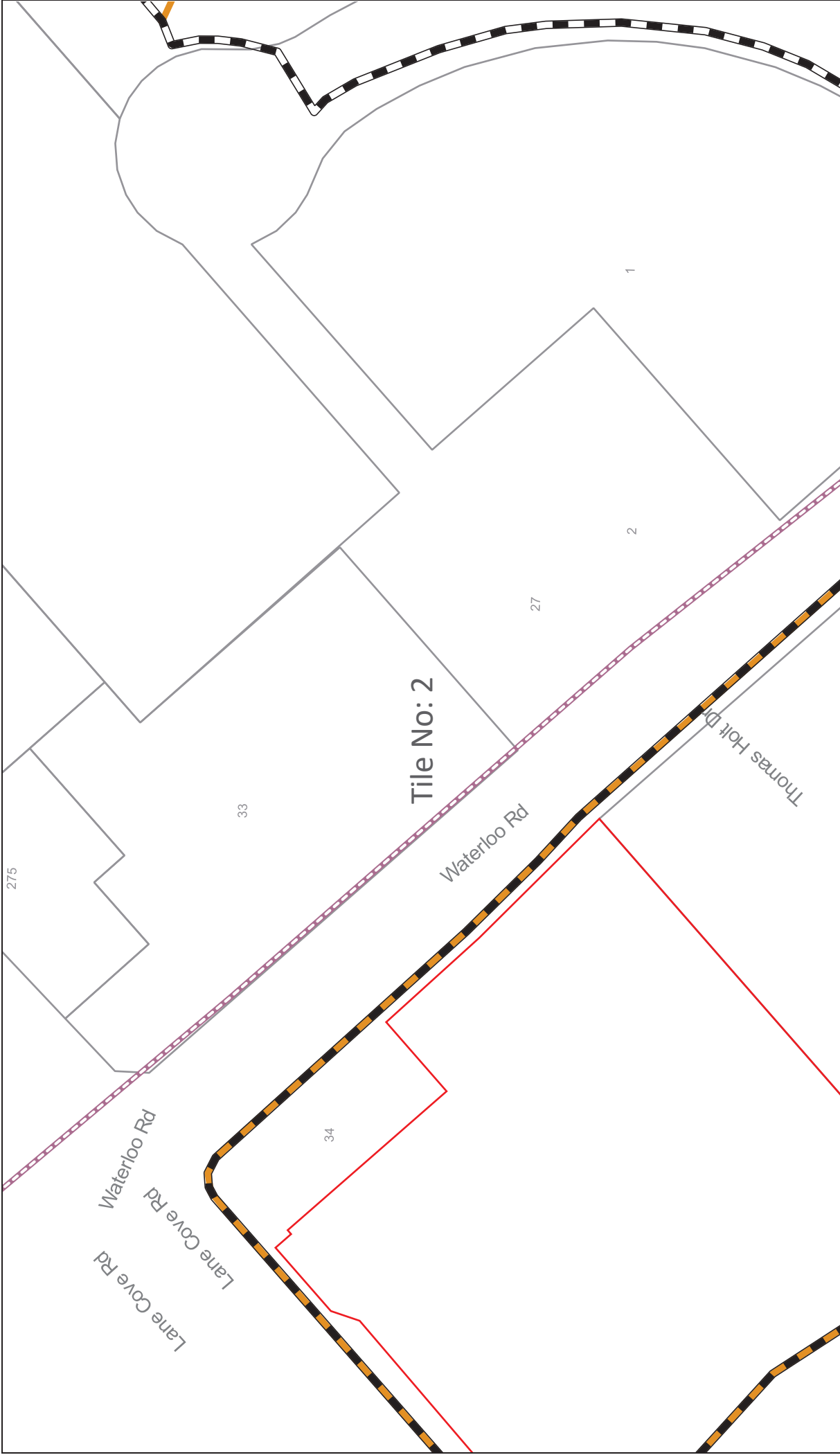
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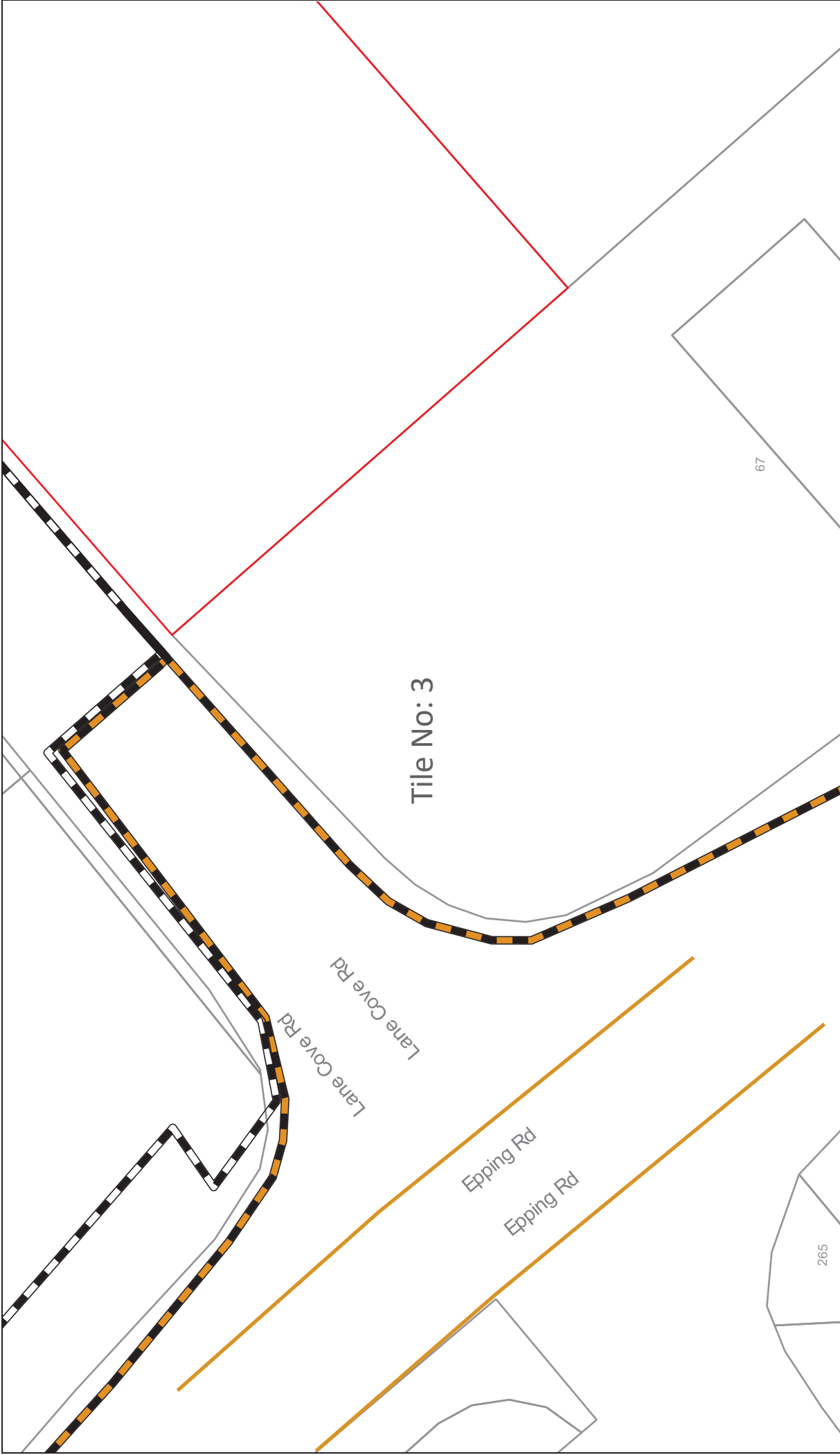
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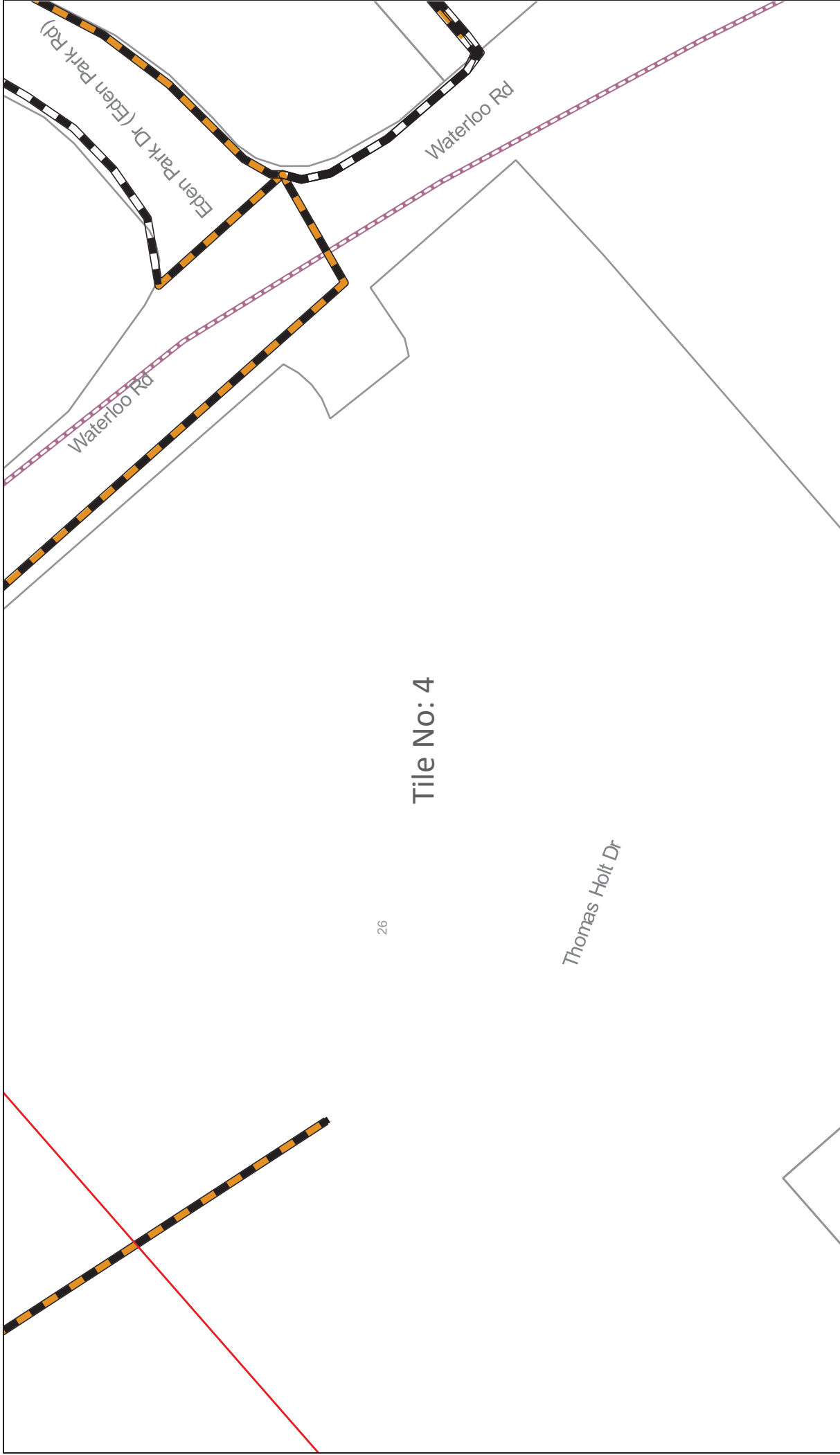
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Tile No: 4

Thomas Holt Dr

Sequence Number: 233496759

Date: 19/12/2023

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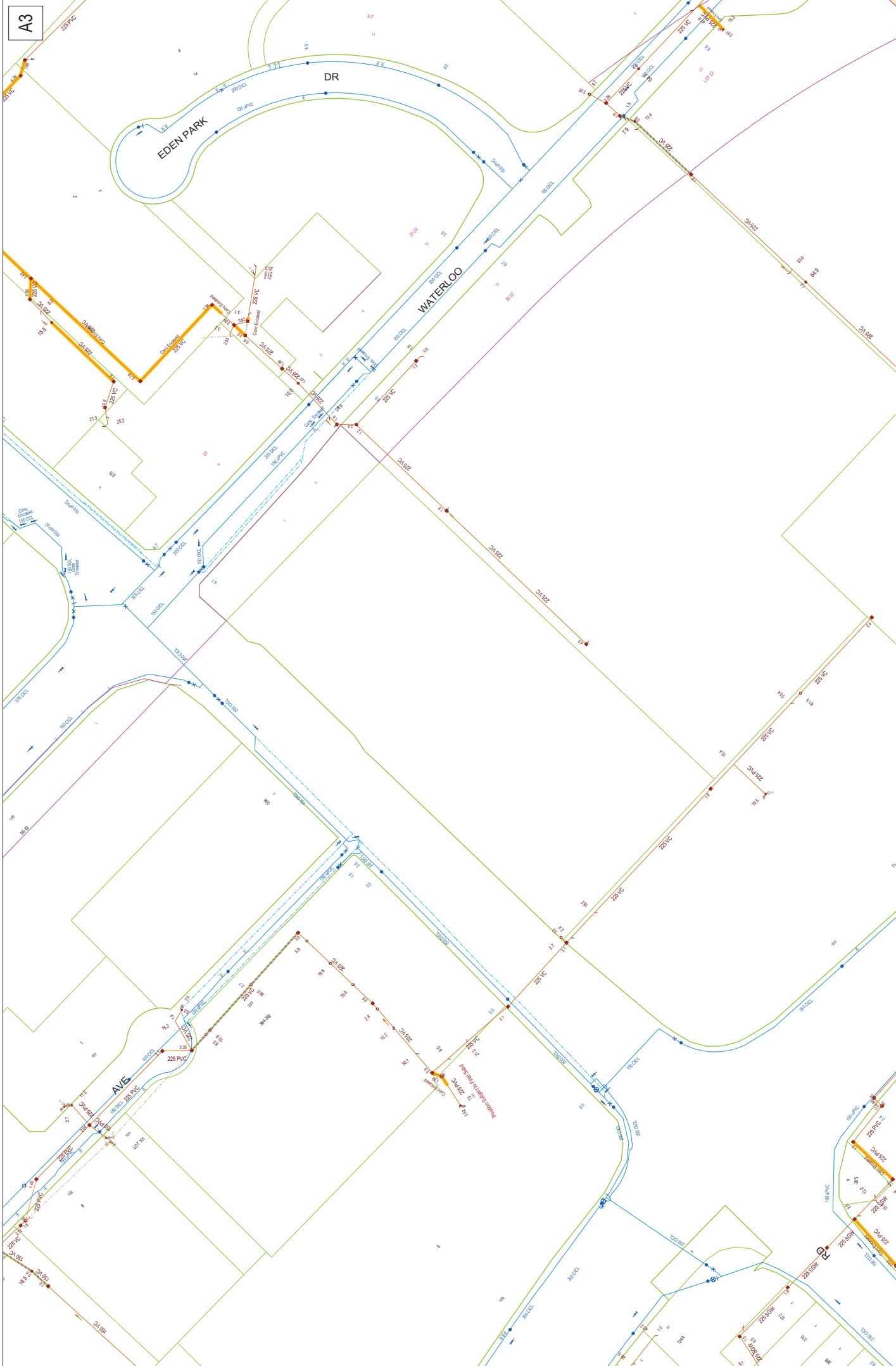


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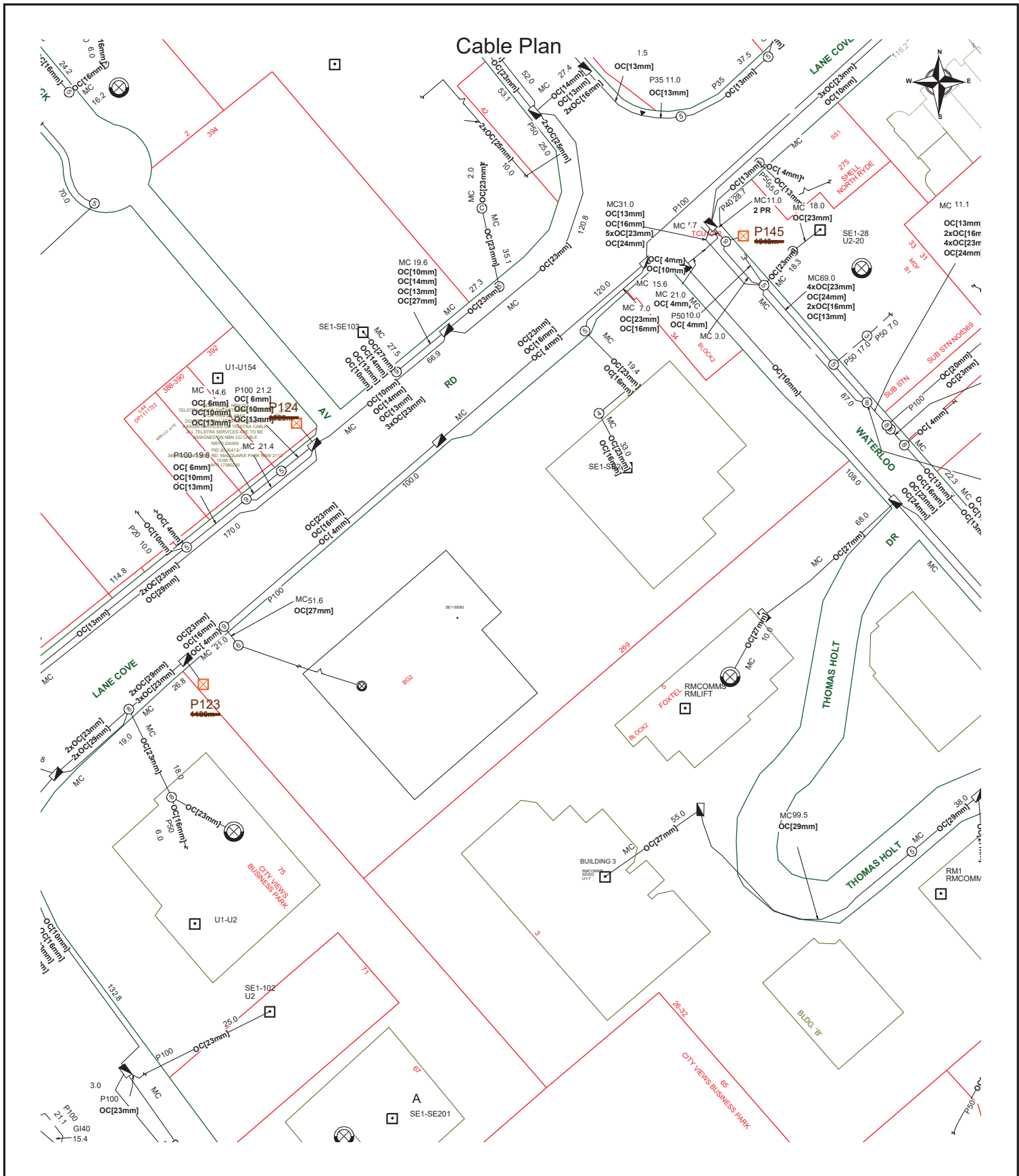
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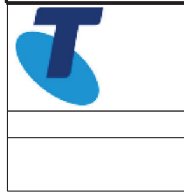
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A.6 Telstra



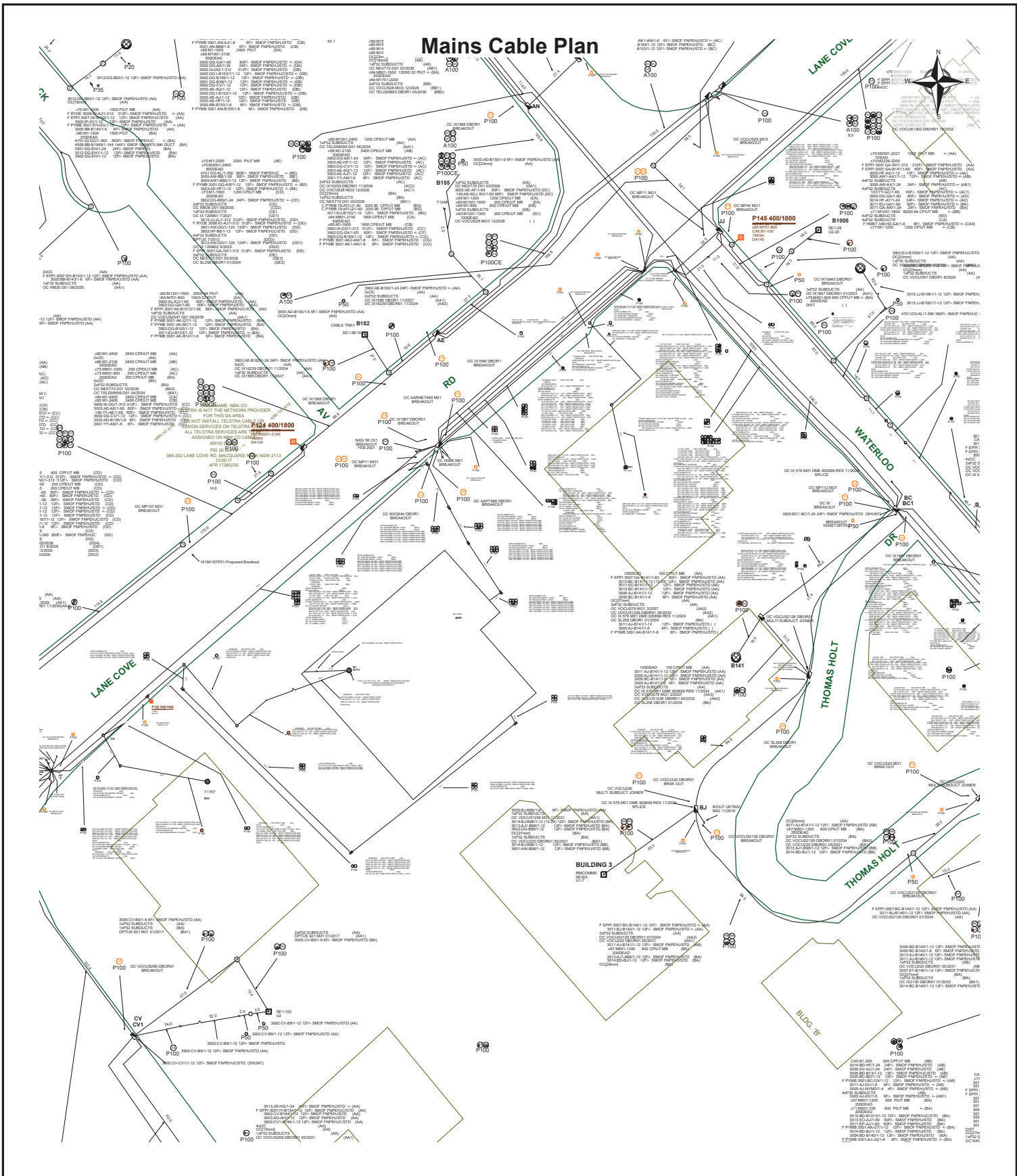
	Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment Ph - 13 22 03 Email - Telstra.Plans@team.telstra.com Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries TELSTRA LIMITED A.C.N. 086 174 781 Generated On 19/12/2023 10:57:42	Sequence Number: 233496755 CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.
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The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING

Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy. Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work. A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.



	Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment Ph - 13 22 03 Email - Telstra.Plans@team.telstra.com Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries TELSTRA LIMITED A.C.N. 086 174 781 Generated On 19/12/2023 10:57:50	Sequence Number: 233496755 CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.
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WARNING

Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy. Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work. A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Page 2 of 2

A.7 TPG Telecom

Date: 19/12/2023

Enquirer Name: Javad noori
Enquirer Address: 135-151 Clarence Street Level 5
Email: javad.noori@arup.com
Phone: +61293209773

Dear Javad noori

The following is our response on behalf of each of the TPG carriers (listed below) to your Before You Dig Australia enquiry – Sequence 233496756

It is provided to you on a confidential basis under the following conditions and must be shredded or securely disposed of after use.

Assets Affected: 269 Lane Cove Rd Macquarie Park

Carriers (each a “TPG carrier”) and assets affected:

AAPT/PowerTel, PIPE Networks

Location:

According to our records, the underground assets in the vicinity of the location stated in your enquiry are **AFFECTED**. Please read the below information and disclaimers in addition to the any attached plans provided prior to any construction activities.

IMPORTANT INFORMATION

- The information provided is valid for 30 days from the date of this response. If your work site area changes or your construction activity is beyond 30 days please contact Before You Dig Australia on 1100 or www.1100.com.au to re-submit a new enquiry.
- Due to the nature of underground assets and the age of some assets and records, our plans are indicative of the general location only and may not show all assets in the location. You should not solely rely on these plans when undertaking construction works. It is also inaccurate to assume depth or that underground network conduit and cables follow straight lines, and careful on-site investigations are essential to locate an asset's exact position prior to excavation. It is your responsibility to locate and confirm the exact location of our infrastructure using non-destructive techniques. We make no warranty or guarantee that our plans are complete, current or error free, and to the maximum extent permitted by law we exclude all liability to you, your employees, agents and contractors for any loss, damage or claim arising out of or in connection with using our plans.
- Please note that some of our conduits carry electrical cables and gas pipes. Please exercise extreme care when working within the vicinity of these conduit and take into account the minimum clearance distances under Duty Of Care below.
- You (and your employee and contractors) must not open, move, interfere, alter or relocate any of our assets without our prior approval.
- Note** It is a criminal offence under the *Criminal Code Act 1995 (Cth)* to tamper or interfere with communication facilities owned by a carrier. Heavy penalties may apply for breach of this prohibition, and any damages suffered, or costs incurred by us as a result of such unauthorised works may be claimed against you.

DAMAGE

- You must report immediately any damage to our network on **1800 786 306** (24hrs). We will hold you liable and seek compensation for any loss or damage to our network, our property and our customers that is caused by or arises out of your activities.

DUTY OF CARE

You have a duty of care to carefully locate, validate and protect our assets when carrying out works near our infrastructure. For construction activities that may impact on or interfere with our network, you will need to call us on **1800 786 306** to discuss a suitable engineering solution, lead time and cost involved. The below precautions must be taken when working in the vicinity of our network:

- Contact us on **1800 786 306** to discuss and obtain relevant information and plans on our infrastructure in a particular location if the information provided in this response is insufficient.
- Physically locate and mark on-site our network infrastructure using non-destructive techniques i.e. pot holing or hand digging every 5 metres prior to commencing any construction activities. Assets located must be marked to AS5488 standard. **NO CONSTRUCTION WORK IS ALLOWED UNTIL THIS STEP IS COMPLETED.** You must use an approved telecommunications accredited locator, or we can provide a locator for you at your expense. If we provide you with a locator, and this locator attended the site and is proven to be grossly negligent in physically locating and marking our infrastructure, then to the extent any TPG carrier is liable for this locator's negligence, acts and omissions, the total liability aggregated for all TPG carriers is limited, at our option, to attend the site and re-mark the infrastructure or to pay for a third party to re-mark the infrastructure.
- If you require us to locate or monitor our infrastructure, please allow five business days' notice for us to respond.
- Ensure all information, including our network requirements and any associated plans provided by us are kept confidential and remain on-site throughout your construction works.

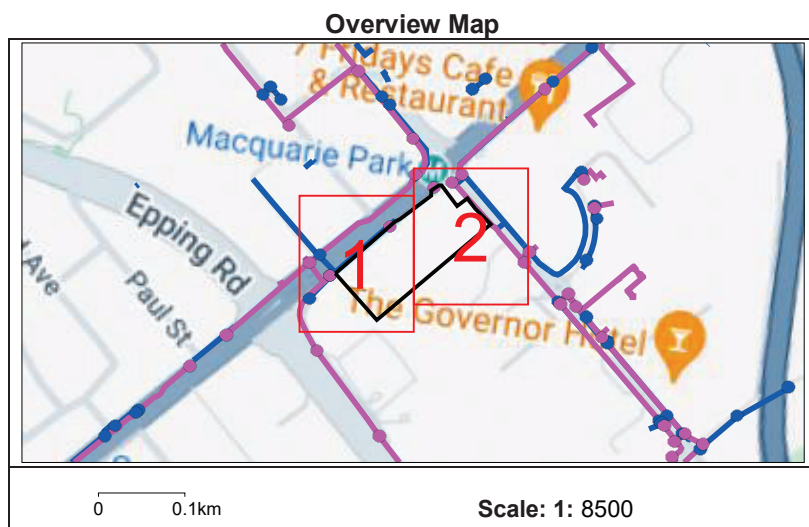
- Use suitably qualified and supervised professionals, particularly if you are working near assets that contain electricity cables or gas pipes.
- Ensure the below minimum clearance distances between the construction activities and the actual location of our assets are met. If you need clearance distances for our above ground assets, or if the below distances cannot be met, call **1800 786 306** to discuss.

Minimum assets clearance distances.

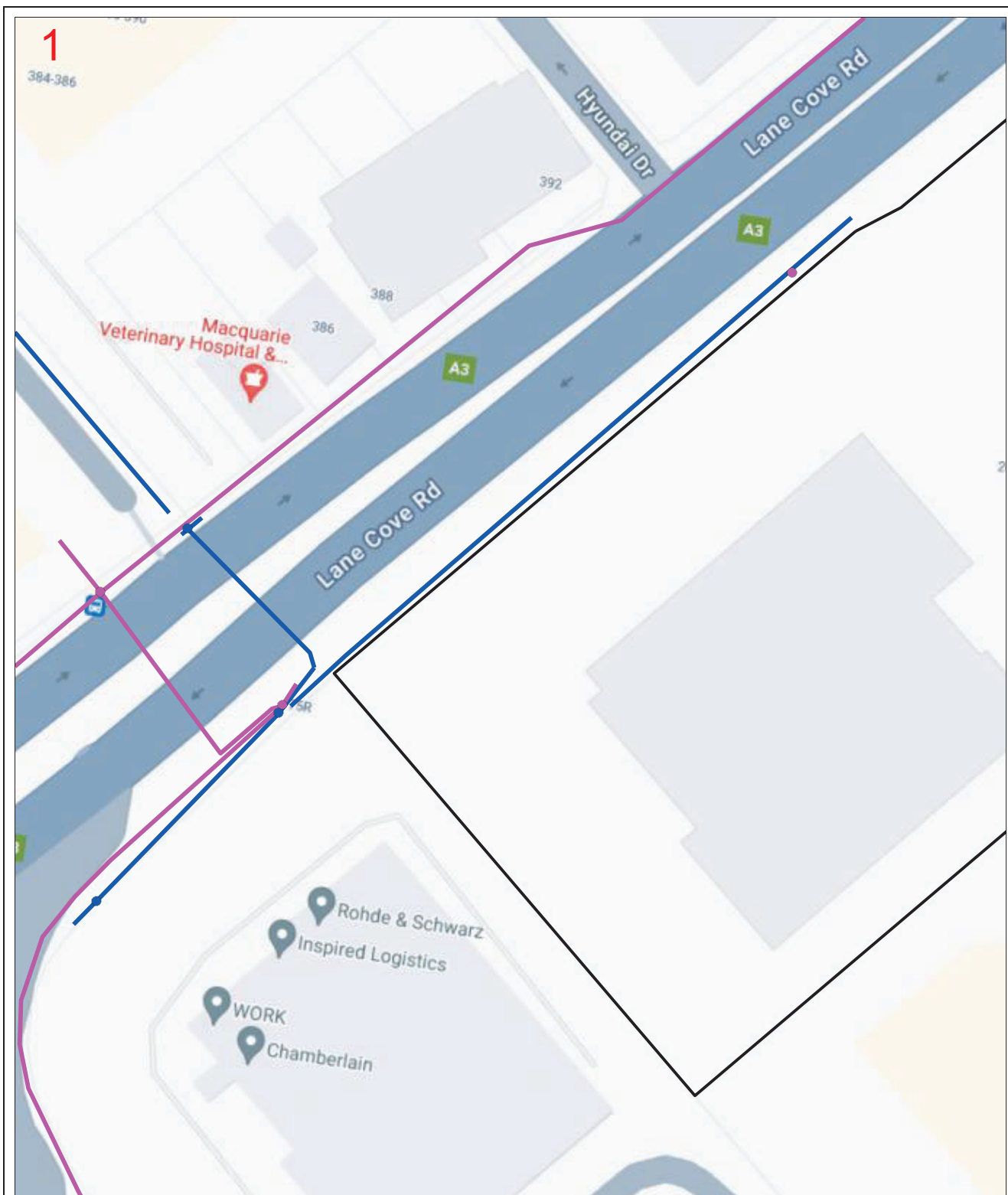
- 300mm when laying asset inline, horizontal or vertical.
 - 1000mm when operating vibrating equipment. Eg: vibrating plates. No vibrating equipment on top of asset.
 - 1000mm when operating mechanical excavators or jackhammers/pneumatic breakers.
 - 2000mm when performing directional bore in-line, horizontal and vertical.
 - No heavy vehicle over 3 tonnes to be driven over asset with less than 600mm of cover.
- Reinstate exposed TPG network infrastructure back to original state.

PRIVACY & CONFIDENTIALITY

- Privacy Notice – Your information has been provided to us by Before You Dig Australia to respond to your Before You Dig Australia enquiry. We will keep your personal information in accordance with TPG's privacy policy, see www.tpg.com.au/about/privacy.
- Confidentiality – The information we have provided to you is confidential and is to be used only for planning and designing purposes in connection with your Before You Dig Australia enquiry. Please dispose of the information by shredding or other secure disposal method after use. We retain all intellectual property rights (including copyrights) in all our documents and plans.



TPG Telecom Limited



Enquiry Number: 233496756

Map Sheet: 1

Scale: 1: 750

0 0.008km



LEGEND

BYDA Work Area



AAPT/PowerTel Pit



AAPT/PowerTel Duct



DDA Pit



DDA Duct



Agile/Adam Pit



Agile/Adam Duct



TransACT Pit



TransACT Duct



SOUL Pattinson Telecoms Pit



SOUL Pattinson Telecoms Duct



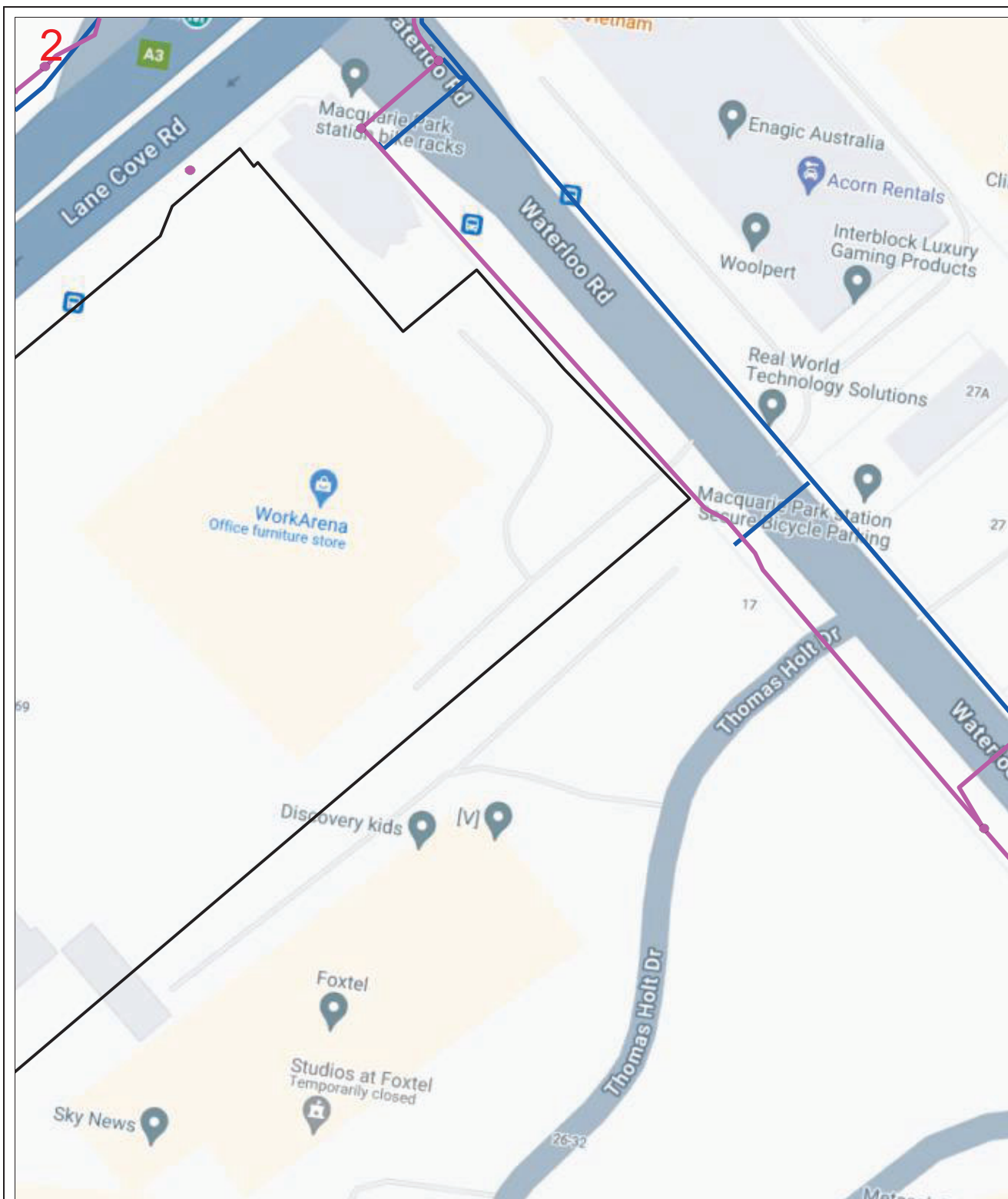
PIPE Networks Pit



PIPE Networks Duct



DISCLAIMER: No responsibility/liability is taken by TPG Telecom Limited for any inaccuracy, error, omission or action based on the information supplied in this correspondence. © 2022 TPG Telecom Limited.



Enquiry Number: 233496756

Map Sheet: 2

Scale: 1: 750

0 0.008km



LEGEND

BYDA Work Area



AAPT/PowerTel Pit



AAPT/PowerTel Duct



DDA Pit



DDA Duct



Agile/Adam Pit



Agile/Adam Duct



TransACT Pit



TransACT Duct



SOUL Pattinson Telecoms Pit



SOUL Pattinson Telecoms Duct



PIPE Networks Pit

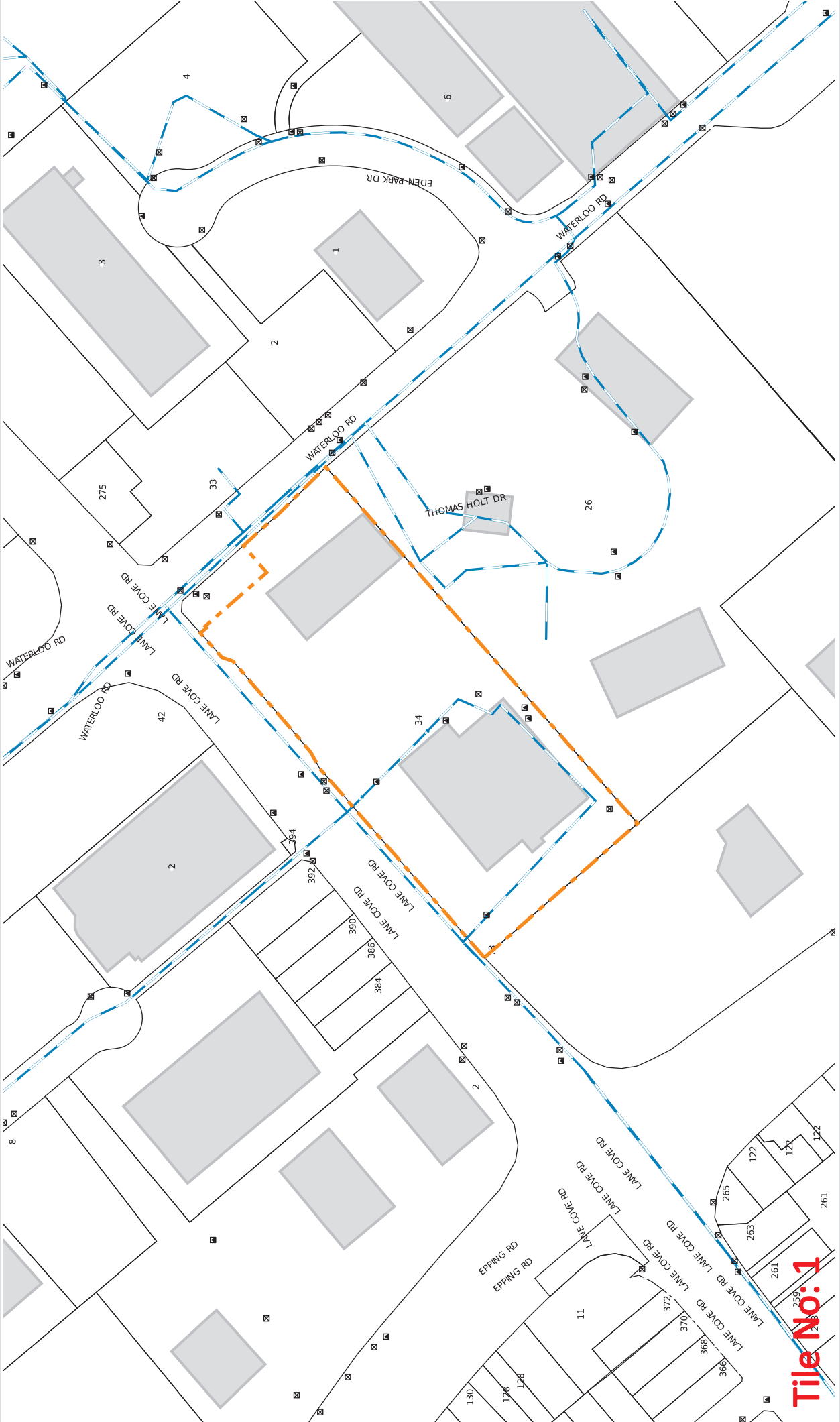


PIPE Networks Duct



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A.8 UECOMM



Tile No: 1

Uecomm Underground Cable

Scale: 1:2500

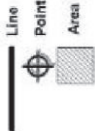
Printed on: 19 Dec 2023

Sequence Number: 233496760

Location: 269 Lane Cove Rd, Macquarie Park, NSW 2113



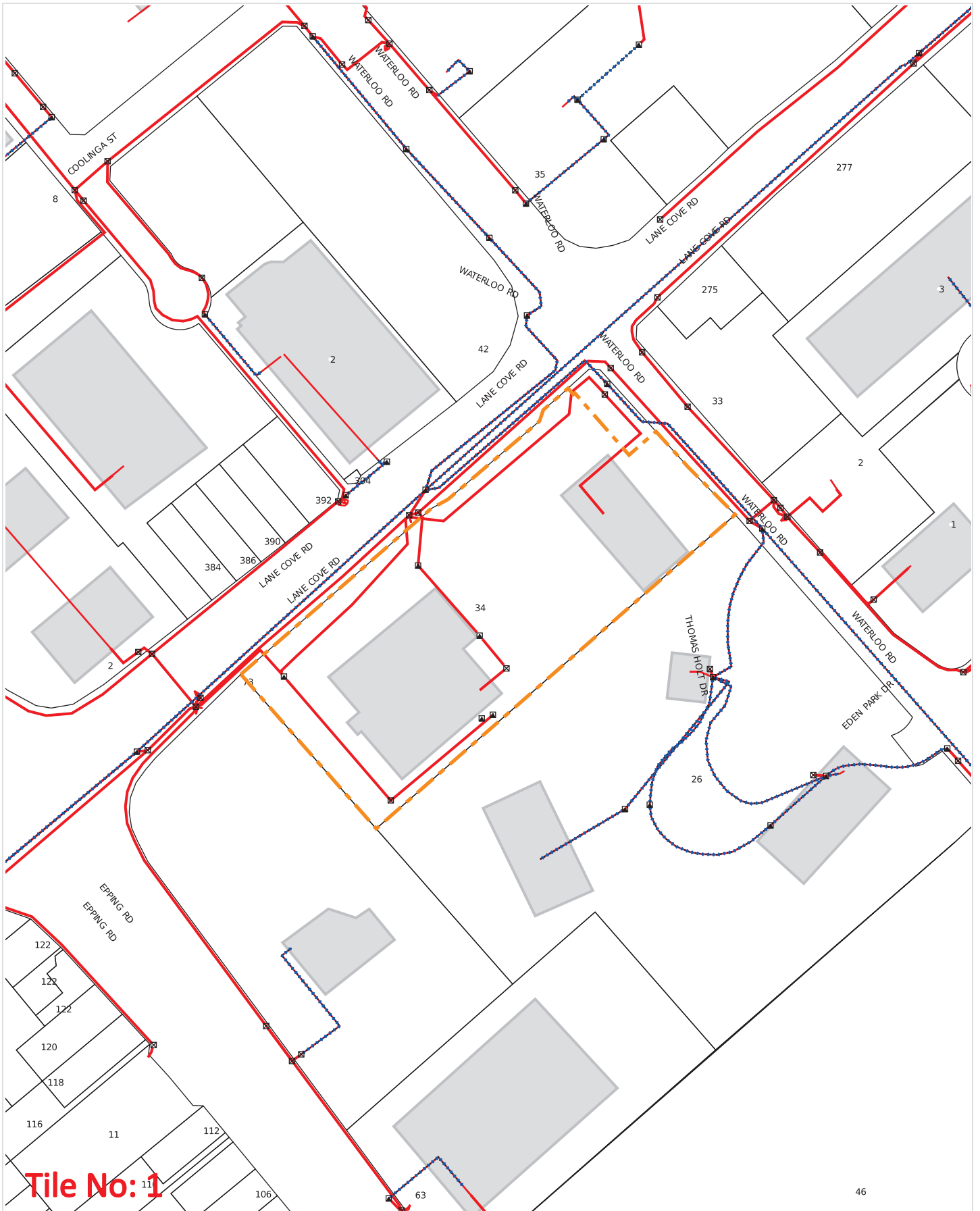
Job Location



Underground Asset



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Sequence Number: 233496760

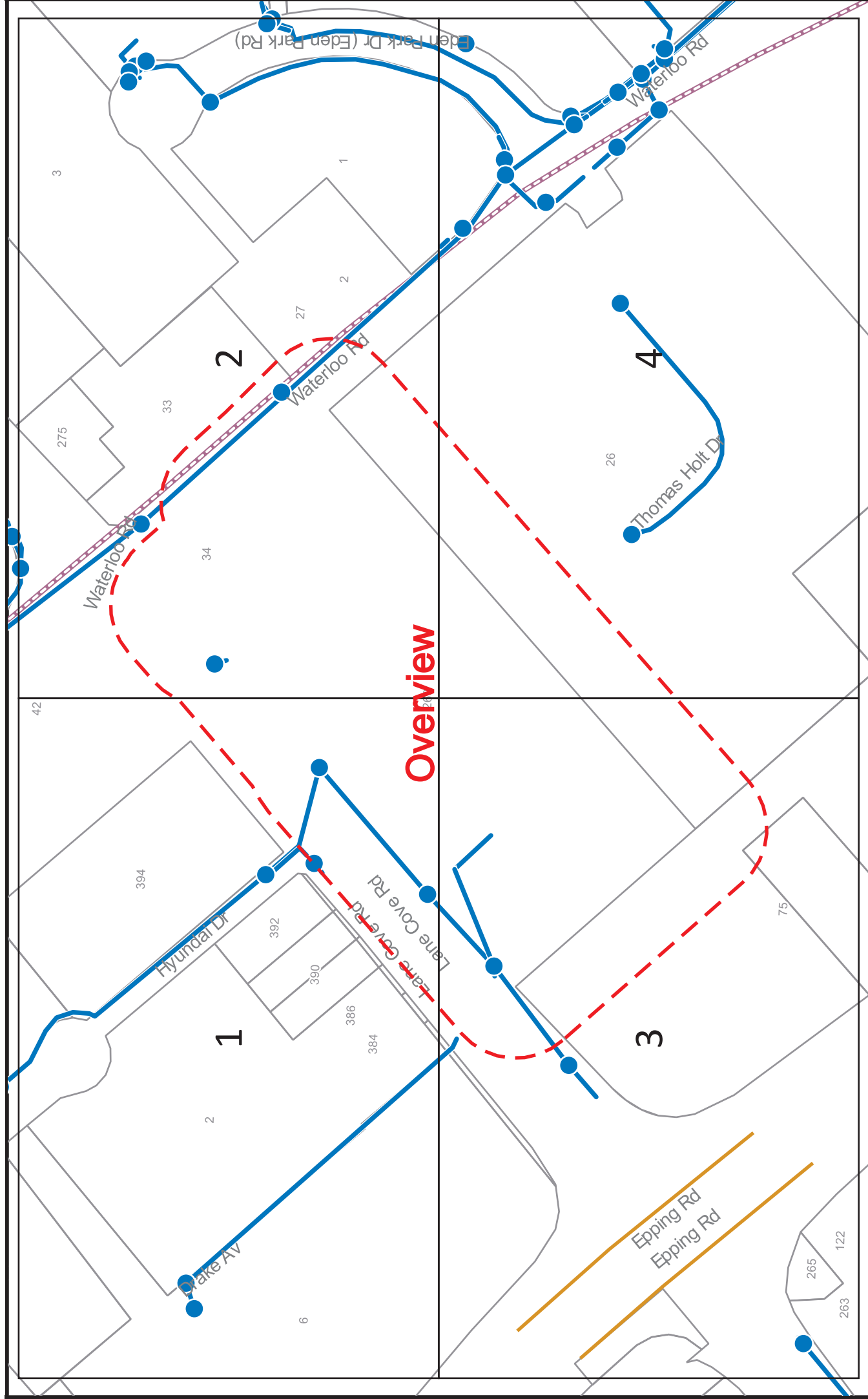
Date Generated: 19 Dec 2023



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



A.9 VOCUS

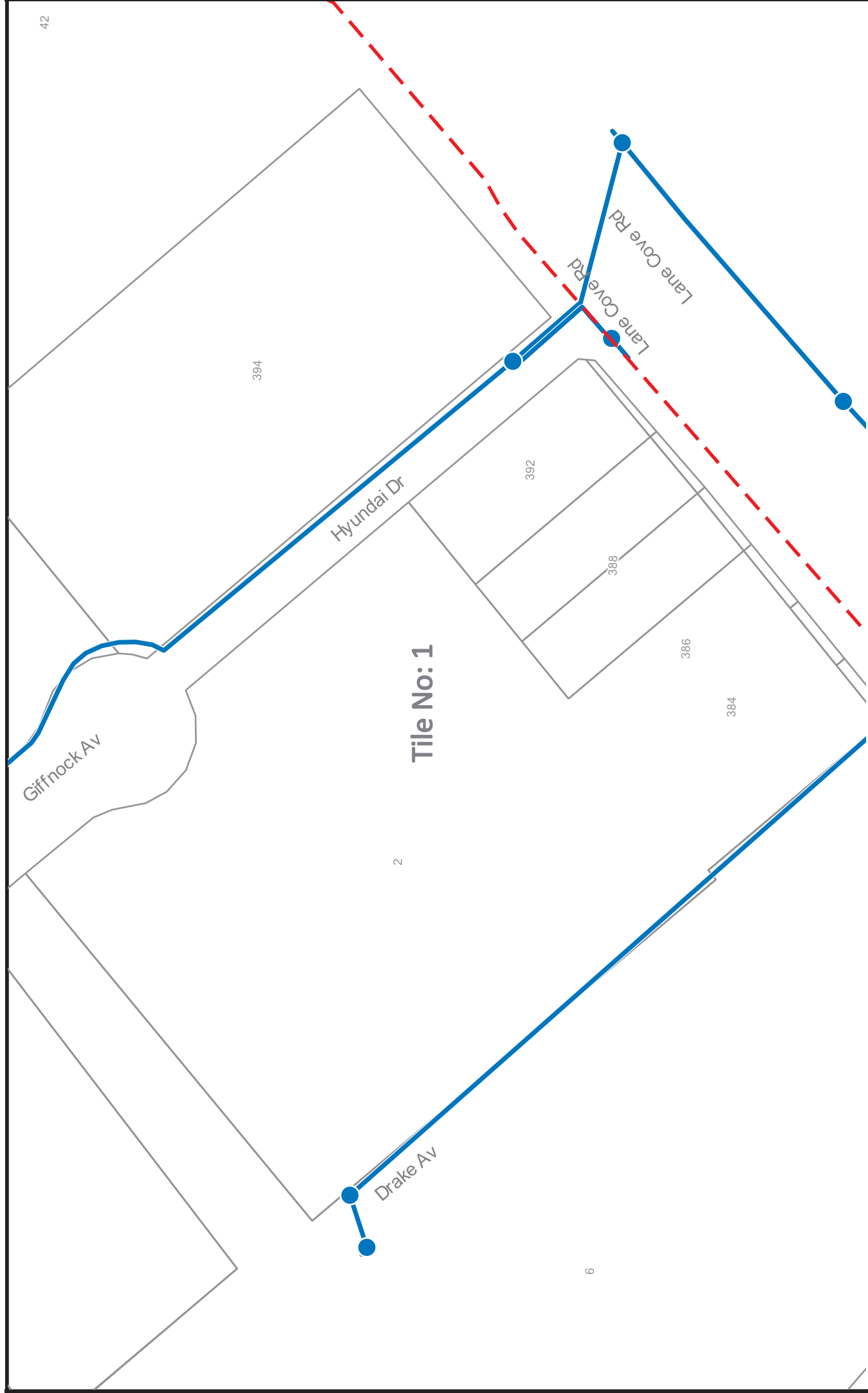


SEQUENCE NUMBER: 233496761
JOB NUMBER: 35699465
ADDRESS: 269 Lane Cove Rd, Macquarie Park, NSW 2113

LEGEND

- Vocus Group Pit
- Vocus Group Conduit

SCALE: 1:2050



SEQUENCE NUMBER: 233496761
JOB NUMBER: 35699465
ADDRESS: 269 Lane Cove Rd, Macquarie Park, NSW 2113

LEGEND
● Vocus Group Pit
— Vocus Group Conduit

SCALE: 1:1000



Tile No: 2



SEQUENCE NUMBER: 233496761

JOB NUMBER: 35699465

ADDRESS: 269 Lane Cove Rd, Macquarie Park, NSW 2113

LEGEND



Vocus Group Pit

Vocus Group Conduit

SCALE: 1:1000

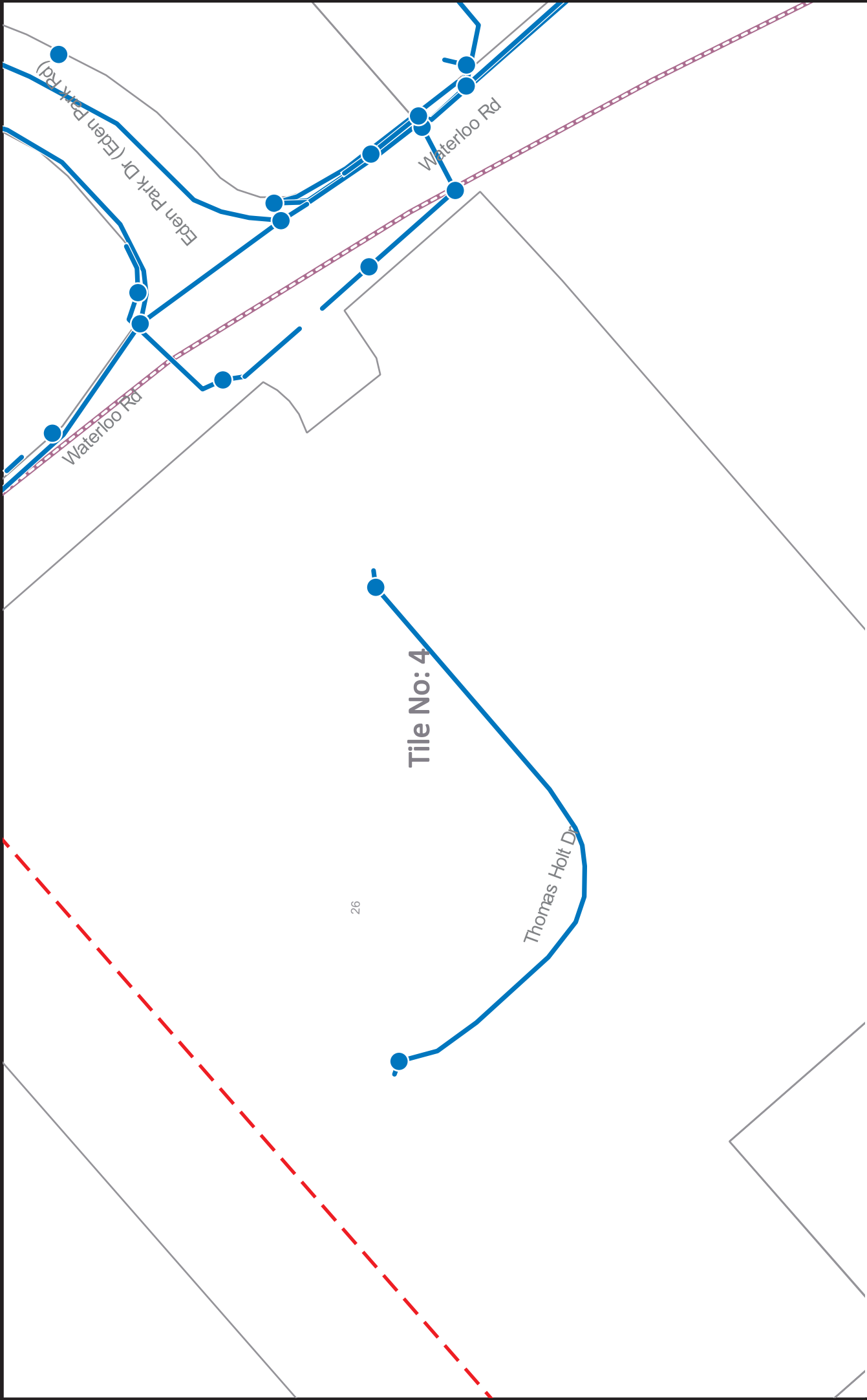


SEQUENCE NUMBER: 233496761
JOB NUMBER: 35699465
ADDRESS: 269 Lane Cove Rd, Macquarie Park, NSW 2113

LEGEND

- Vocus Group Pit
- Vocus Group Conduit

SCALE: 1:1000



SEQUENCE NUMBER: 233496761
JOB NUMBER: 35699465
ADDRESS: 269 Lane Cove Rd, Macquarie Park, NSW 2113

LEGEND
● Vocus Group Pit
— Vocus Group Conduit

SCALE: 1:1000

A.10 Sydney Metro

OFFICE USE ONLY

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

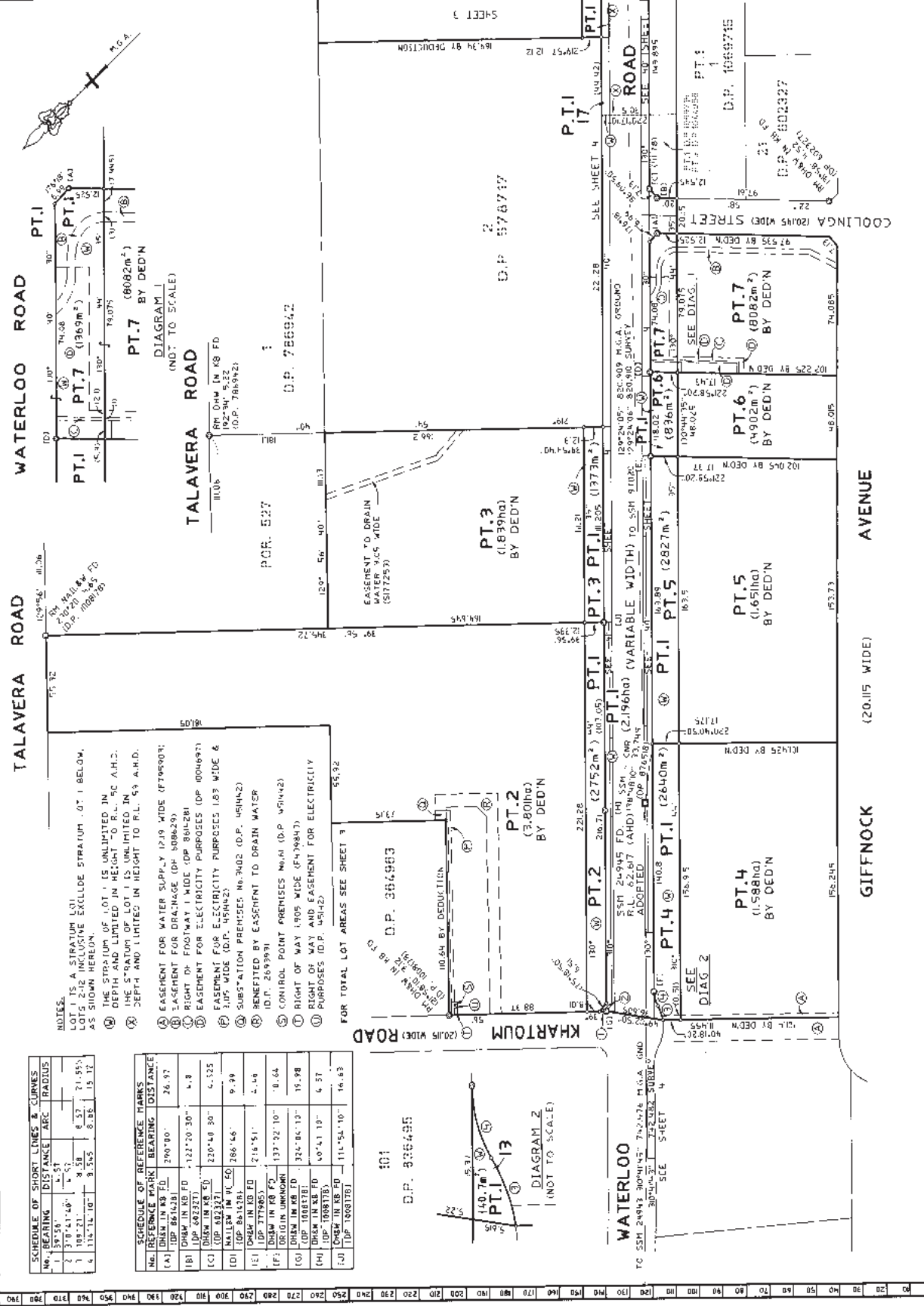
PLAN FORM 3

SCHEDULE OF SHORT LINES & CURVES			
No.	BEARING	DISTANCE	RADIUS
1	3° 58' 58"	5.51	
2	3° 04' 40"	8.37	74.98%
3	110° 14' 10"	9.795	0.88
4	110° 14' 10"	9.795	0.88

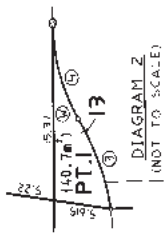
SCHEDULE OF REFERENCE MARKS			
No.	REFERENCE MARK	BEARING	DISTANCE
(A1)	TOP 821438	270° 00'	26.97
(B1)	DOWN IN KB FD	112° 20' 30"	4.8
(C1)	DOWN IN KB FD	220° 40' 30"	4.525
(D1)	NAIL IN PL 50	286° 46'	9.39
(E1)	DOWN IN KB FD	216° 51'	4.46
(F1)	DOWN IN KB FD	137° 32' 10"	0.64
(G1)	DOWN IN KB FD	334° 06' 13"	15.98
(H1)	DOWN IN KB FD	60° 41' 10"	4.37
(J1)	DOWN IN KB FD	111° 54' 10"	16.63

- NOTES:
- LOT 1 IS A STRATUM LOT. LOTS 2-12 INCLUSIVE EXCLUDE STRATUM LOT 1 BELOW.
 - THE STRATUM OF LOT 1 IS UNLIMITED IN DEPTH AND LIMITED IN HEIGHT TO 10' A.H.D. AS SHOWN HEREON.
 - THE STRATUM OF LOT 1 IS UNLIMITED IN DEPTH AND LIMITED IN HEIGHT TO 10' A.H.D. AS SHOWN HEREON.
 - DEPT 4 AND LIMITED IN HEIGHT TO 10' A.H.D. AS SHOWN HEREON.
 - EASEMENT FOR WATER SUPPLY 12.19' WIDE (FT09003)
 - EASEMENT FOR DRAINAGE (OP 008420)
 - RIGHT OF FOOTWAY 12' WIDE (OP 80420)
 - EASEMENT FOR ELECTRICITY PURPOSES (OP 000497)
 - EASEMENT FOR ELECTRICITY PURPOSES 1.83' WIDE & 3.05' WIDE (D.P. 45142)
 - SUBSTATION PREMISES No. 3002 (D.P. 45142)
 - RECEIVED BY EASEMENT TO DRAIN WATER (D.P. 269393)
 - CONTROL POINT PREMISES No. 61 (D.P. 45142)
 - RIGHT OF WAY 19.05' WIDE (FT1984)
 - RIGHT OF WAY AND EASEMENT FOR ELECTRICITY PURPOSES (D.P. 45142)

FOR TOTAL LOT AREAS SEE SHEET 3



101
D.P. 836495



D.P. 1043041
Registered: 11 02.2005
Drawn: 17.02.2005, 19.02.2005, 19.02.2005
Checked: 17.02.2005, 19.02.2005, 19.02.2005
Survey: Registered under Survey Act 1977
This is a plan of the land of the Surveyor General of the State of New South Wales.
This plan is subject to the provisions of the Survey Act 1977.
Control: State
Reduction: N.T.M. 1950
SURVEYOR'S REFERENCE: 290040P10/1

PLAN FORM 3

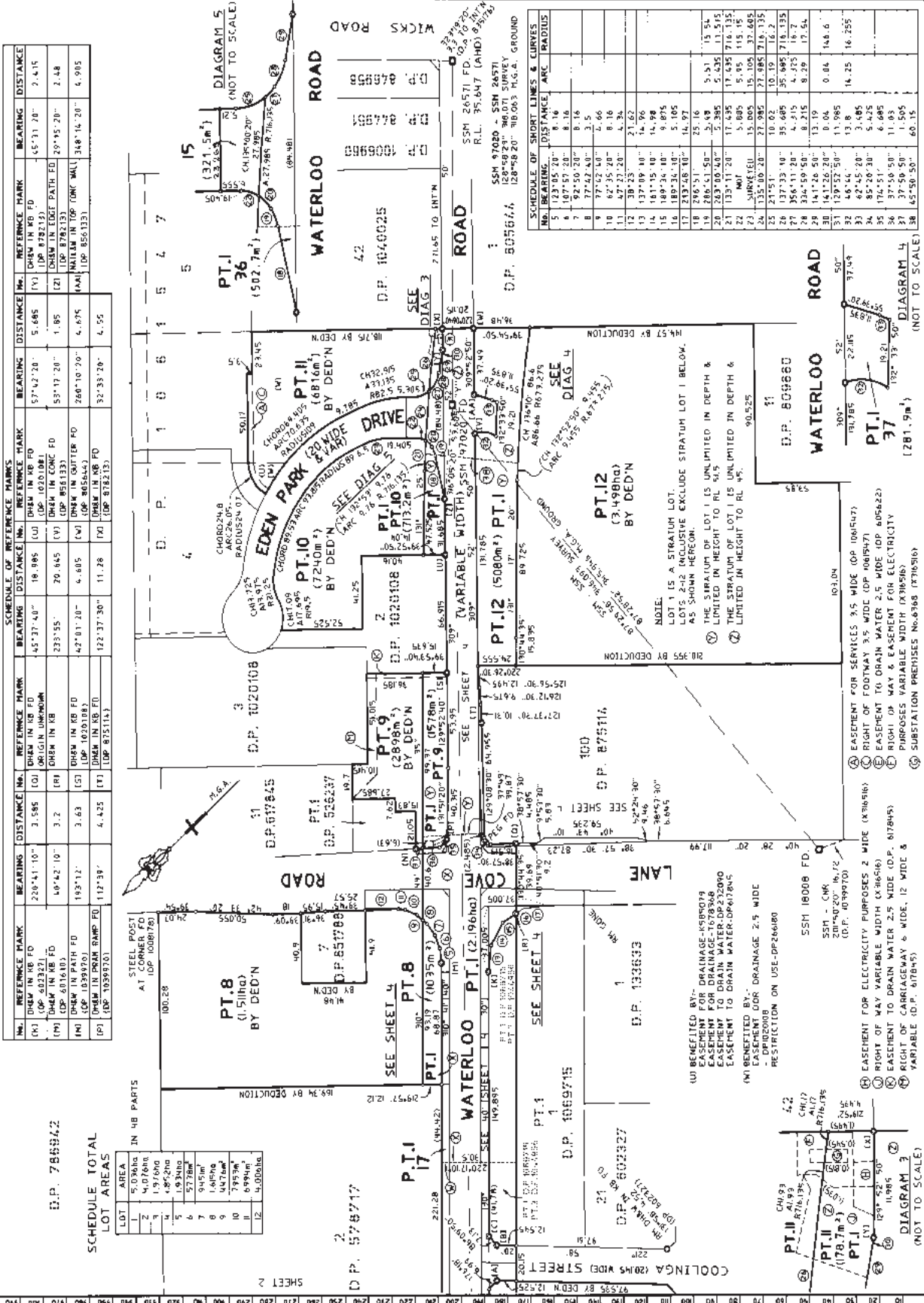
WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

SCHEDULE OF REFERENCE MARKS			
NO.	REFERENCE MARK	BEARING	DISTANCE
(1)	CH24 IN RB FD (D.P. 602327)	220°41'10"	3.585
(2)	CH24 IN RB FD (D.P. 602327)	45°27'40"	18.985
(3)	CH24 IN RB FD (D.P. 602327)	233°35'	70.445
(4)	CH24 IN RB FD (D.P. 602327)	42°11'20"	6.405
(5)	CH24 IN RB FD (D.P. 602327)	122°37'30"	11.28
(6)	CH24 IN RB FD (D.P. 602327)	32°33'20"	4.55

SCHEDULE TOTAL LOT AREAS

LOT	AREA
1	5.076ha
2	4.076ha
3	1.976ha
4	4.872ha
5	1.934ha
6	5.778ha
7	9.450ha
8	4.876ha
9	1.934ha
10	7.782ha
11	6.996ha
12	4.006ha

D.P. 785524.2



SCHEDULE OF SHORT LINES & CURVES			
NO.	BEARING	DISTANCE	RADIUS
1	123°05'20"	8.16	
2	107°57'20"	8.16	
3	92°50'20"	8.16	
4	77°42'40"	3.5	
5	77°42'40"	4.66	
6	62°35'20"	8.16	
7	27°27'20"	4.36	
8	39°22'10"	21.62	
9	131°15'10"	14.96	
10	189°34'10"	9.895	
11	189°34'10"	5.105	
12	213°48'10"	14.97	
13	296°51'	25.16	
14	286°51'50"	2.49	
15	283°00'40"	5.385	
16	133°11'20"	17.435	
17	113°15'10"	5.885	
18	113°15'10"	5.885	
19	113°15'10"	5.885	
20	113°15'10"	5.885	
21	113°15'10"	5.885	
22	113°15'10"	5.885	
23	113°15'10"	5.885	
24	113°15'10"	5.885	
25	113°15'10"	5.885	
26	113°15'10"	5.885	
27	113°15'10"	5.885	
28	113°15'10"	5.885	
29	113°15'10"	5.885	
30	113°15'10"	5.885	
31	113°15'10"	5.885	
32	113°15'10"	5.885	
33	113°15'10"	5.885	
34	113°15'10"	5.885	
35	113°15'10"	5.885	
36	113°15'10"	5.885	
37	113°15'10"	5.885	
38	113°15'10"	5.885	

Reduction Ratio 1:500

Plan Drawing only. In appear in site space

D.P. 1043041

Registered:  11 02 2005

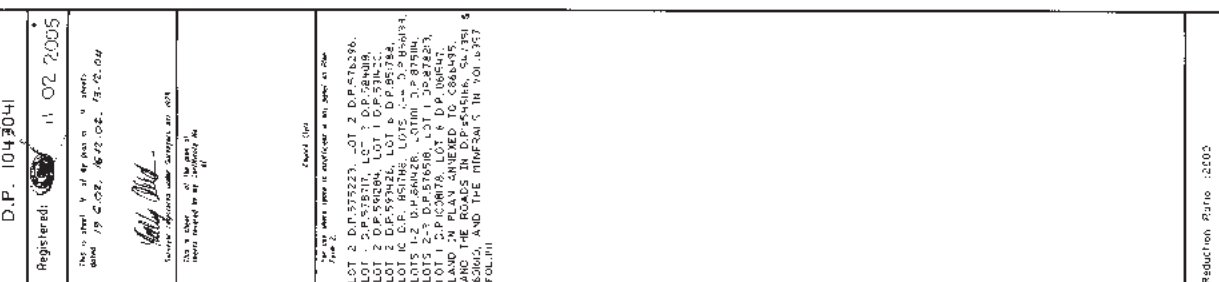
This is true & of full force & effect
dated 19 02 08, 1642.02, 13.02.08

Willy Wild

Signature of the Seller:  08

This is true & of full force & effect
dated 19 02 08, 1642.02, 13.02.08

State of New York



SURVEYING REGULATION 2004 CLAUSE 61			
M.G.A. COORDINATES			
MARK	EASTING	NORTHING	ZONE CLASS (ORDER)
SSM 18008	372 582 850	6 259 019 118	5A
SSM 25025	372 221 918	6 259 735 646	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A

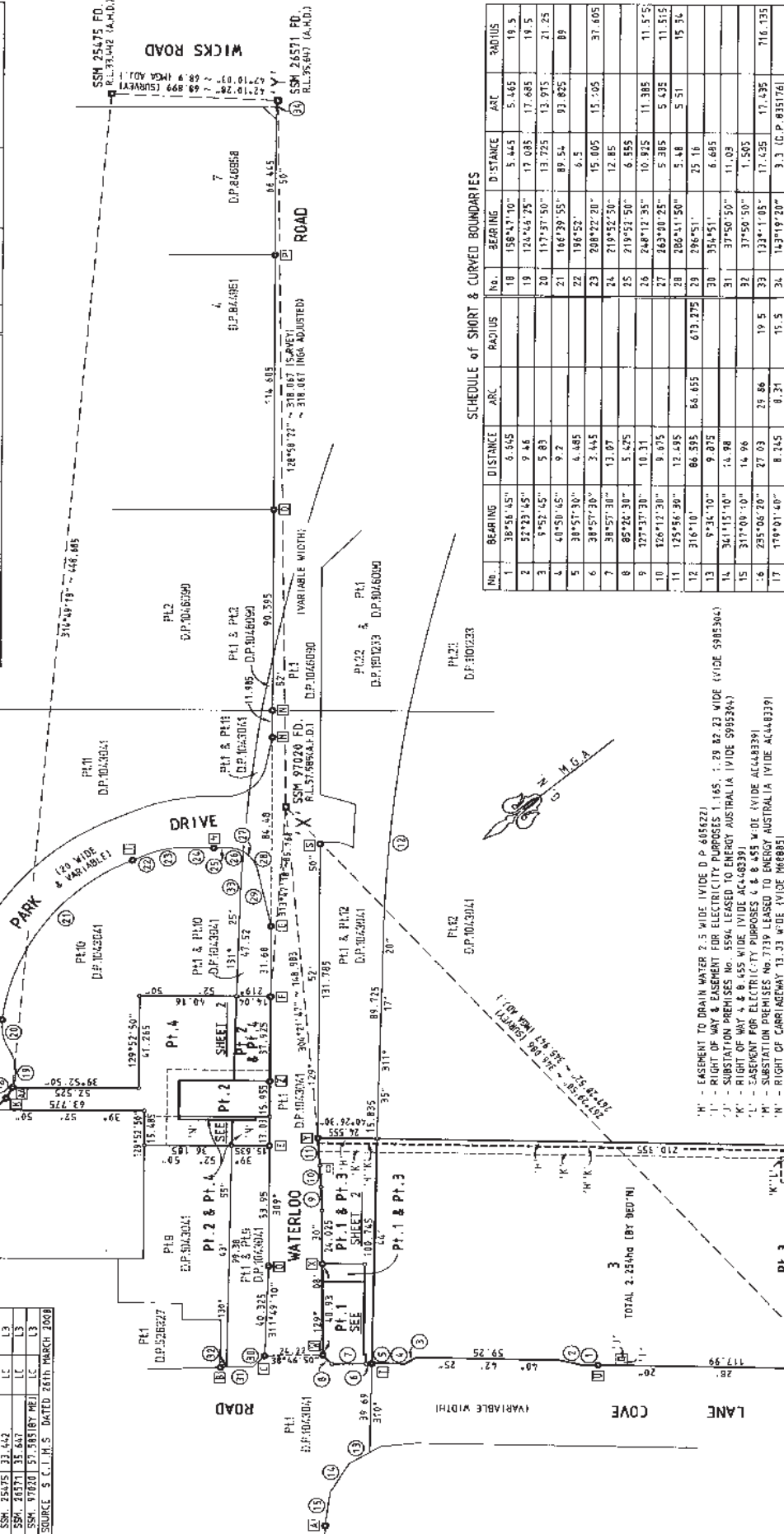
COMBINED SCALE FACTOR 0.99994

SOURCE: S.C.I.M.S. DATED 26TH MARCH 2008

SURVEYING REGULATION 2004 CLAUSE 62			
M.G.A. COORDINATES			
MARK	EASTING	NORTHING	ZONE CLASS (ORDER)
SSM 25025	372 221 918	6 259 735 646	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A
SSM 26571	372 175 928	6 259 726 580	5A

SOURCE: S.C.I.M.S. DATED 26TH MARCH 2008

REFERENCE MARKS			
No.	BEARING	DISTANCE	DESCRIPTION
A	220°41'10"	3.585	D.H. & WING FD. (D.P. 1023171)
B	192°12'12"	3.63	D.H. & WING FD. (D.P. 1034910)
C	112°39'12"	4.475	D.H. & WING FD. (D.P. 1034910)
D	35°49'38"	2.685	D.H. & WING FD. (D.P. 1034910)
E	42°01'20"	4.605	D.H. & WING FD. (D.P. 1023171)
F	57°42'20"	5.685	D.H. & WING FD. (D.P. 1023171)
G	28°15'20"	2.48	D.H. & WING FD. (D.P. 1023171)
H	300°53'15"	32.8	D.H. & WING FD. (D.P. 1023171)
I	284°52'35"	32.8	D.H. & WING FD. (D.P. 1023171)
J	232°15'45"	4.425	D.H. & WING FD. (D.P. 1023171)
K	84°44'	3.885	D.H. & WING FD. (D.P. 1023171)
L	44°18'	1.78	D.H. & WING FD. (D.P. 1023171)
M	45°31'40"	2.405	D.H. & WING FD. (D.P. 1023171)



SCHEDULE OF SHORT & CURVED BOUNDARIES

No.	BEARING	DISTANCE	ARC	RADIUS	No.	BEARING	DISTANCE	ARC	RADIUS
1	38°58'45"	6.565			18	158°47'10"	5.445		18.5
2	52°23'45"	9.46			19	124°44'25"	17.085		18.5
3	8°52'45"	5.89			20	117°37'50"	13.915		21.25
4	40°50'45"	9.2			21	166°39'55"	89.54		89
5	38°57'30"	4.485			22	116°52'	6.5		
6	38°57'30"	3.445			23	208°22'20"	15.005		31.605
7	38°57'30"	13.07			24	219°52'30"	12.85		
8	85°28'30"	5.425			25	248°12'35"	10.905		11.575
9	127°31'30"	10.31			26	248°12'35"	10.905		11.575
10	128°11'30"	9.075			27	249°00'25"	5.385		11.515
11	128°11'30"	12.495			28	286°41'50"	5.48		15.56
12	316°11'0"	86.595			29	296°45'1"	25.16		
13	8°34'10"	9.075			30	354°45'1"	6.685		
14	301°11'50"	14.96			31	37°50'50"	11.09		
15	317°09'10"	14.96			32	37°50'50"	1.505		
16	235°06'20"	27.03			33	133°41'05"	17.435		216.135
17	179°01'40"	8.245			34	143°19'20"	3.3		(D.P. 875114)

W - EASEMENT TO DRAIN WATER 2.5 WIDE (VIDE D.P. 605222)
 T - RIGHT OF WAY & EASEMENT FOR ELECTRICITY PURPOSES 1.65, 1.29, 82.23 WIDE (VIDE 5985304)
 S - SUBSTATION PREMISES NO. 5594 LEASED TO ENERGY AUSTRALIA (VIDE 5993364)
 K - RIGHT OF WAY & 8.455 WIDE (VIDE AC448339)
 K - EASEMENT FOR ELECTRICITY PURPOSES 4 & 8.455 WIDE (VIDE AC448339)
 K - SUBSTATION PREMISES NO. 7739 LEASED TO ENERGY AUSTRALIA (VIDE AC448339)
 N - RIGHT OF CARRIAGEWAY 13.33 WIDE (VIDE M68851)

Surveyor: GRAHAM JOHN HALL
 Date of Survey: 26th APRIL 2008
 Surveyor's Ref: 28008

PLAN OF ACQUISITION OF LOTS 1 & 2 AFFECTING
 LOT 100 IN D.P. 875114 & LOT 2 IN D.P. 1020108

LGA: RYDE
 Locality: MACQUARIE PARK
 Subdivision No.
 Lengths are in metres. Reduction Ratio 1:1256

Registered
 4-9 2008

DP1129811 P

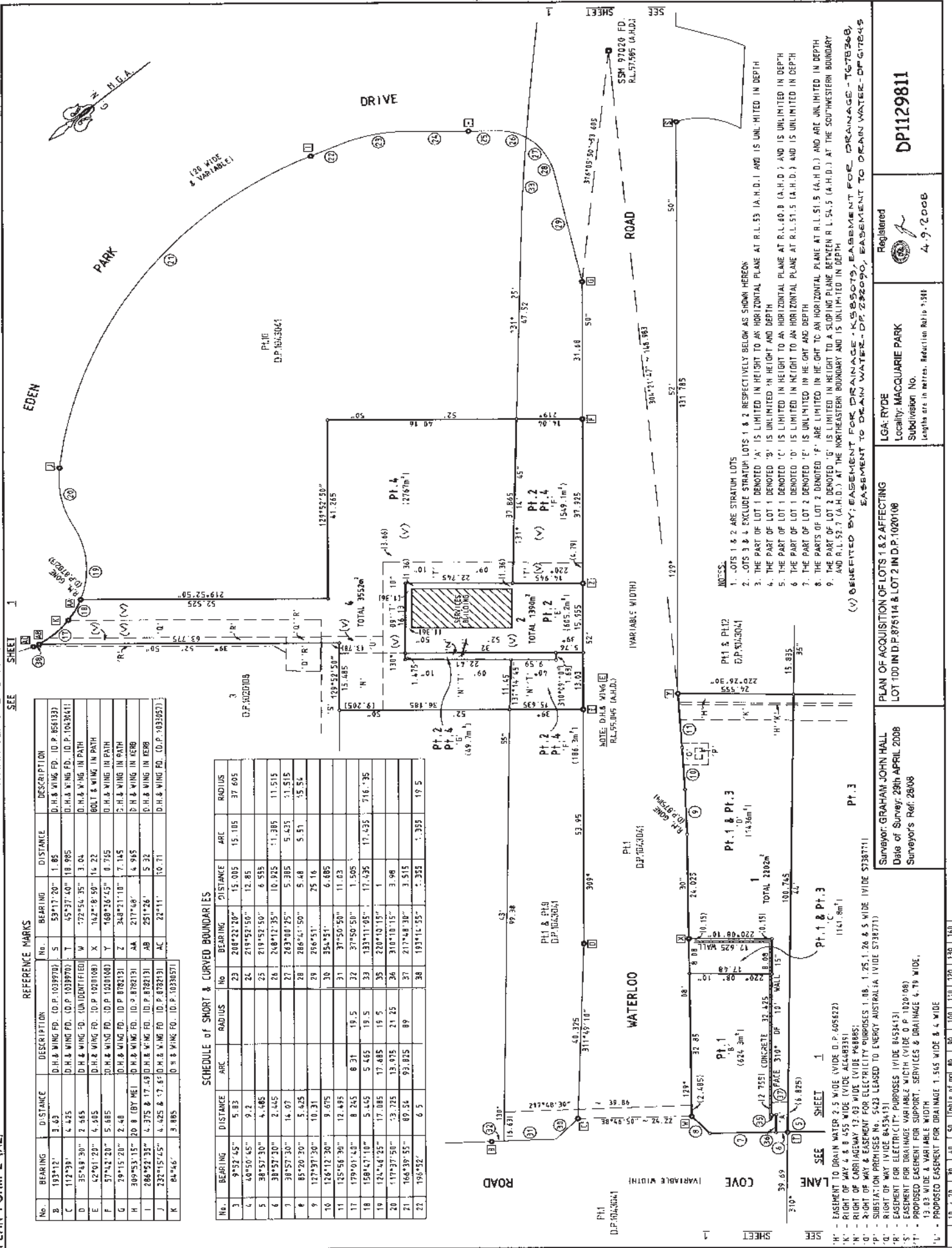
E

REFERENCE MARKS

No.	BEARING	DISTANCE	DESCRIPTION
B	193°12'	3.43	D.H. & WING FD. (D.P. 1039770)
C	112°39'	4.425	D.H. & WING FD. (D.P. 1039770)
D	35°49'30"	2.565	D.H. & WING FD. (D.P. 1039770)
E	42°01'20"	4.905	D.H. & WING FD. (D.P. 1039770)
F	57°42'20"	5.685	D.H. & WING FD. (D.P. 1039770)
G	29°15'20"	2.48	D.H. & WING FD. (D.P. 1039770)
H	309°53'15"	20.8	D.H. & WING FD. (D.P. 1039770)
I	284°52'35"	4.375	D.H. & WING FD. (D.P. 1039770)
J	324°15'45"	4.425	D.H. & WING FD. (D.P. 1039770)
K	84°46'	3.885	D.H. & WING FD. (D.P. 1039770)

SCHEDULE OF SHORT & CURVED BOUNDARIES

No.	BEARING	DISTANCE	ARC	RADIUS	No	BEARING	DISTANCE	ARC	RADIUS
1	9°32'45"	5.83			23	208°22'20"	13.005	15.105	37.605
2	4°40'50"	9.2			24	219°52'50"	12.85		
5	38°57'30"	4.485			25	219°52'50"	6.555		
4	38°57'30"	2.445			26	248°12'35"	10.725	11.385	11.515
3	38°57'30"	16.07			27	248°10'25"	5.385	5.435	11.515
6	85°20'30"	5.425			28	286°41'50"	5.48	5.51	15.54
7	127°37'30"	10.31			29	286°51'	25.16		
8	126°12'30"	9.675			30	354°51'	6.685		
9	125°56'30"	12.495			31	37°50'50"	11.63		
11	179°01'40"	8.245	6.31	19.5	32	37°50'50"	1.505		
18	158°47'10"	5.445	5.445	19.5	33	133°11'05"	17.435	17.435	216.35
19	124°46'25"	17.085	17.085	19.5	35	220°10'15"	1		
20	117°37'50"	13.725	13.725	21.25	36	310°10'15"	3.98		
21	168°39'55"	49.54	93.825	89	37	217°48'30"	3.515		
22	196°42'	6.5			38	193°11'55"	2.355	3.95	19.5



DP1129811

Registered
4.9.2008

LGA: RYDE
Locality: MACQUARIE PARK
Subdivision No.
Lengths are in metres. Reduction Ratio is 1:500

PLAN OF ACQUISITION OF LOTS 1 & 2 AFFECTING
LOT 100 IN D.P. 875114 & LOT 2 IN D.P. 1020108

Surveyor: GRAHAM JOHN HALL
Date of Survey: 29th APRIL 2008
Surveyor's Ref: 2808

Surveyor: GRAHAM JOHN HALL
Date of Survey: 29th APRIL 2008
Surveyor's Ref: 2808

Surveyor: GRAHAM JOHN HALL
Date of Survey: 29th APRIL 2008
Surveyor's Ref: 2808

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Date of Survey: 29th APRIL 2008
Surveyor's Ref: 2808

Surveyor: GRAHAM JOHN HALL
Date of Survey: 29th APRIL 2008
Surveyor's Ref: 2808

PLAN FORM 6

WARNING: Creasing or folding will lead to rejection

DEPOSITED PLAN ADMINISTRATION SHEET Sheet 1 of 1 sheet(s)

SIGNATURES, SEALS AND STATEMENTS of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

IT IS INTENDED TO ACQUIRE LOTS 1 & 2 FOR RAILWAY PURPOSES



DP1129811 S

Registered:  4.9.2008
Title System: TORRENS
Purpose: ACQUISITION

PLAN OF
ACQUISITION OF LOTS 1 & 2 AFFECTING
LOT 100 IN D.P.875114 & LOT 2 IN
D.P.1020108

LGA: RYDE
Locality: MACQUARIE PARK
Parish: FIELD OF MARS
County: CUMBERLAND

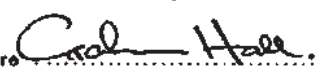
Surveying Regulation, 2006

of GRAHAM JOHN HALL
of CRAIG & RHODES PTY LTD
LEVEL 4, 16-18 CAMBRIDGE ST. EPPING 2121

a surveyor registered under the Surveying Act, 2002, certify that the survey represented in this plan is accurate, has been made in accordance with the Surveying Regulation, 2006 and was completed on: 29th APRIL 2008

The survey relates to LOTS 1 & 2

(specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)

Signature  Dated 18/7/08
Surveyor registered under the Surveying Act, 2002

Datum Line: 'X'-'Y'

Type: Urban/Rural-

Plans used in preparation of survey /-compilation-

D.P.605622 D.P.1043041
D.P.617845 D.P.1044956
D.P.700942 D.P.1049708
D.P.851788 D.P.1061547
D.P.856133 D.P.1062905
D.P.875114 D.P.1069715
D.P.878213
D.P.1020108
D.P.1033057
D.P.1039970

(If insufficient space use Plan Form 6A annexure sheet)

SURVEYOR'S REFERENCE: 28/08

Use PLAN FORM 6A

for additional certificates, signatures, seals and statements

Crown Lands NSW/Western Lands Office Approval

.....In approving this plan certify
(Authorised Officer)
that all necessary approvals in regard to the allocation of the land shown herein have been given.

Signature:.....

Date:.....

File Number:.....

Office:.....

Subdivision Certificate

I certify that the Provisions of s.108J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to:

the proposed set out herein
(insert 'subdivision' or 'new road')

x Authorised Person/General Manager/Accredited Certifier

Consent Authority:.....

Date of Endorsement:.....

Accreditation no:.....

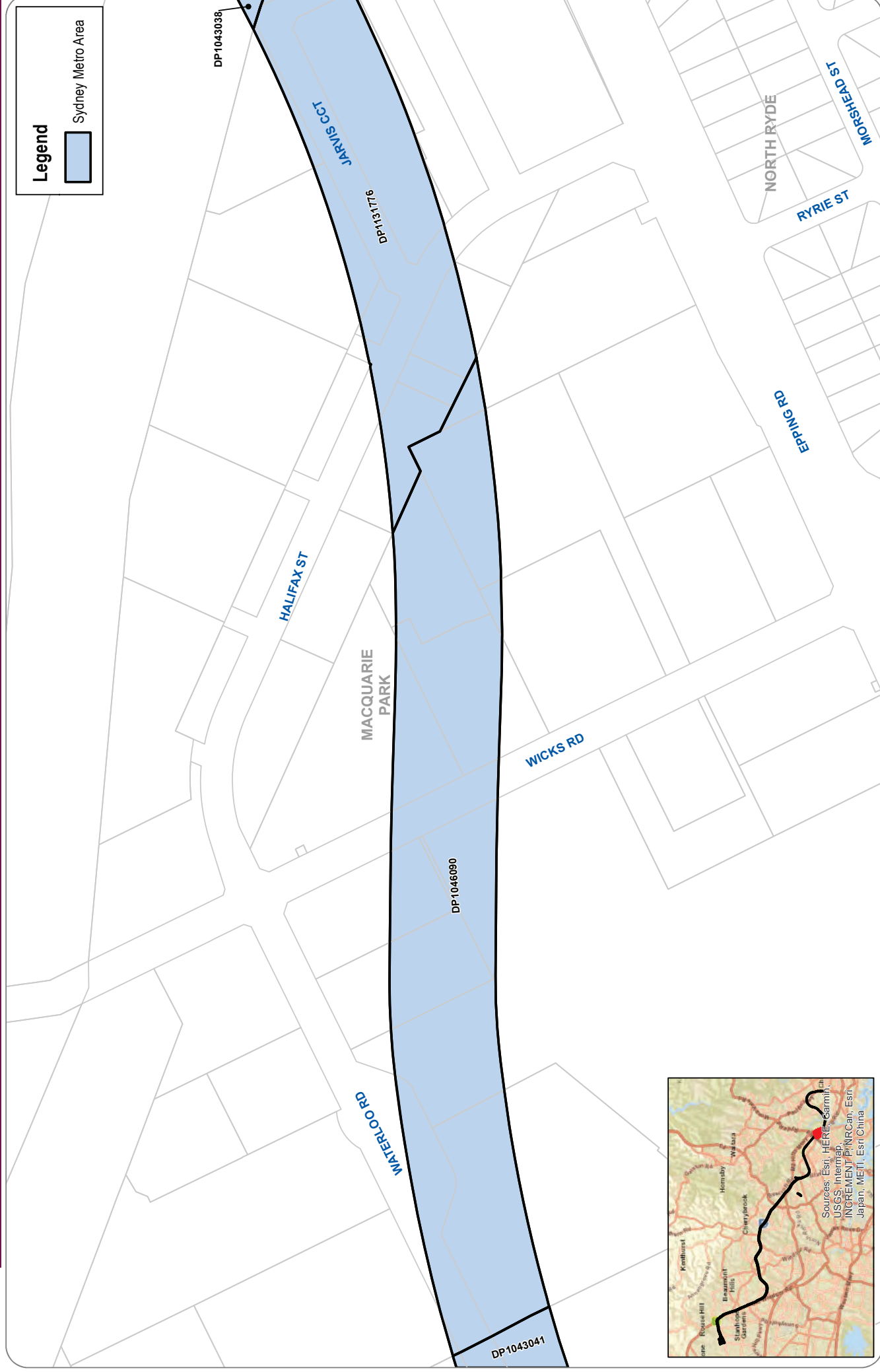
Subdivision Certificate no:.....

File no:.....

xDelete whichever is Inapplicable

*OFFICE USE ONLY

CAD REF. 2808S1



PREPARED FOR:



Revision Details		INI
No.	Date	
B	30-06-2020	SAS
Areas Updated		
A	25-11-2019	SAS
Initial Version		

CHECKED BY/DATE:	MGJ/30-06-2020	CO-ORDS:	MGJ 94
APPROVED BY/DATE:	MGJ/30-06-2020	DATE:	N/A
SIS REF:	PR142446	NRPL Extent of DB/D	20200630
JO8 REF:	PR142466	2020	DATE OF PLAN: 23-11-20



1:2,000 @ A3

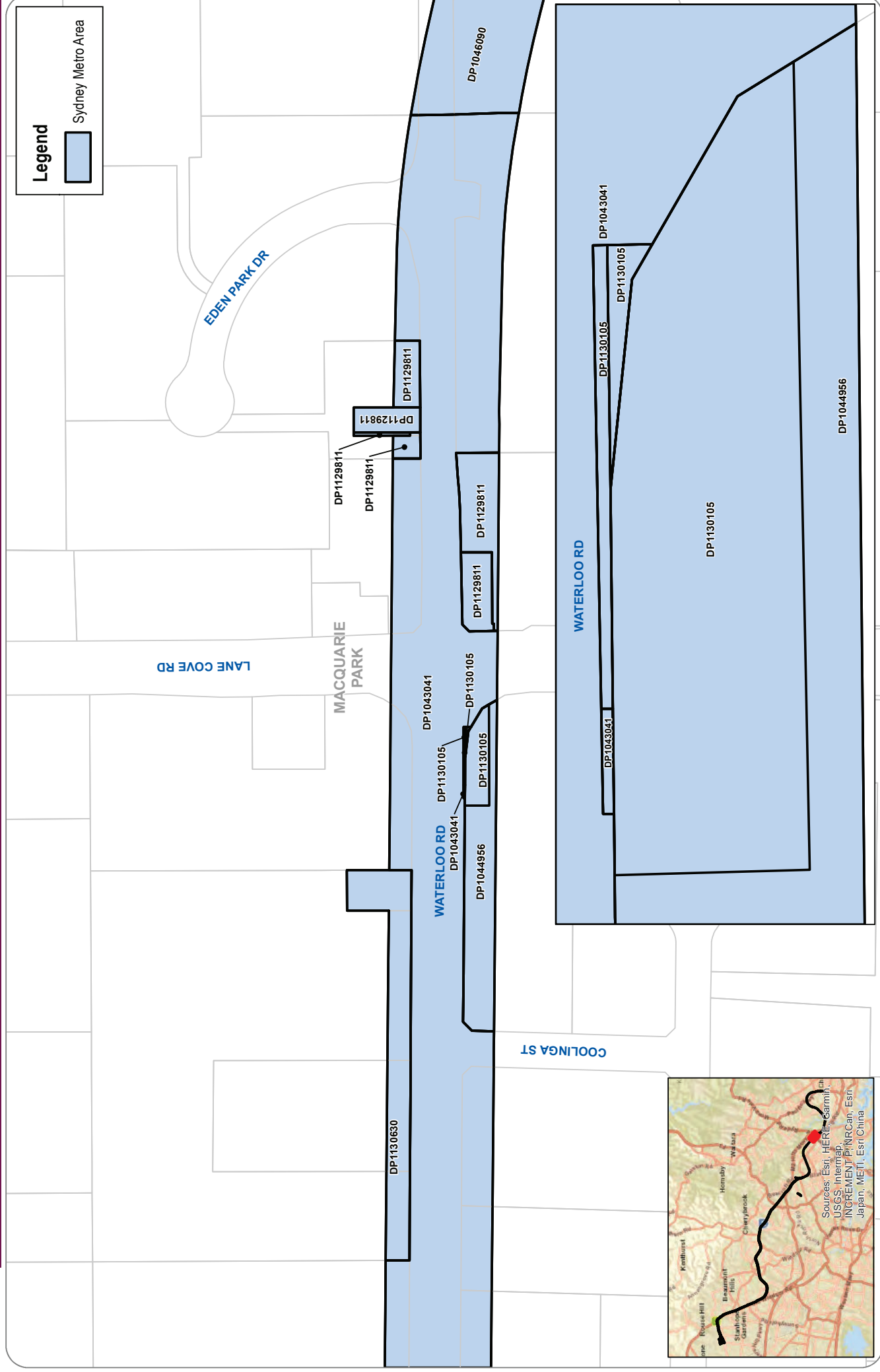
Metres

EXPLANATORY NOTES:

1. Digital Cadastral Database © Sep 2019 NSW Government
2. DCDB at the investigation areas has been updated
3. This DYD data set includes both project lands and easements using registered DP's
4. Diagrams are not to scale

NOTE:

THIS PLAN IS A GRAPHICAL REPRESENTATION OF THE SMNW CORRIDOR.
REFER TO REGISTERED PLANS AS HELD BY LRS NSW FOR DEFINITION OF THE SMNW CORRIDOR LANDS AND EASEMENTS.



PREPARED FOR:



Revision Details		INI
No.	Date	
B	30-06-2020	SAS
A	25-11-2019	SAS

CHECKED BY/DATE:

CHECKED BY/DATE:

GIS REF:

GIS REF: 100 REF:

CO-ORDS: MGA 94

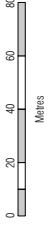
CO-ORDS: MGA 94

DATE: 20200630

DATE OF BIRTH: 20200630



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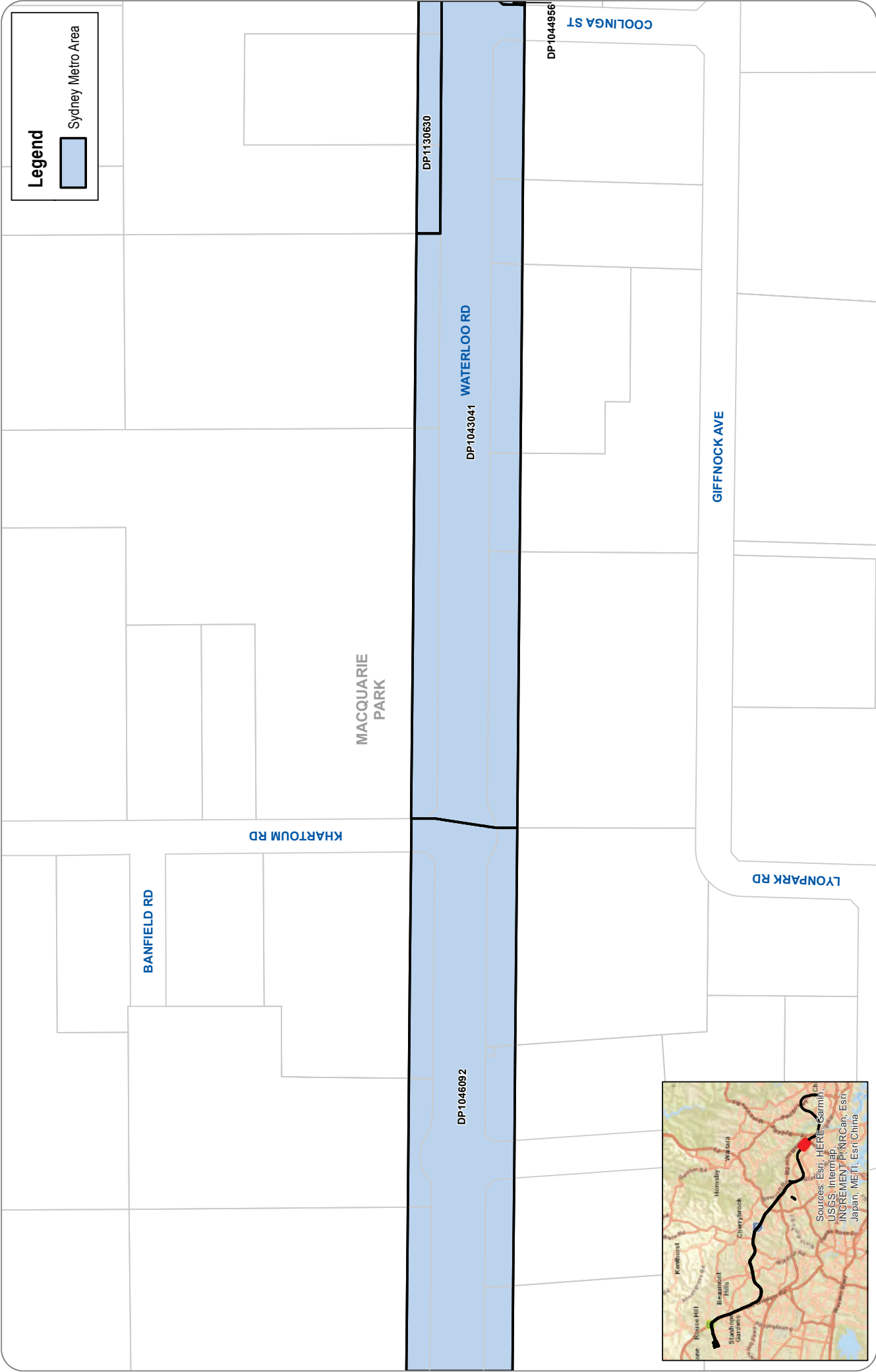


EXPLANATORY NOTES:

1. Digital Cadastral DataBase © Sep 2019 NSW Government
2. DCDB at the investigation areas has been updated using registered DP's
3. This DBVD data set includes both project lands and easements declared as operational assets
4. Diagrams are not to scale

NOTE:

THIS PLAN IS A GRAPHICAL REPRESENTATION OF THE SWNW CORRIDOR.
REFER TO REGISTERED PLANS AS HELD BY LRS NSW FOR DEFINITION OF THE SWNW CORRIDOR LANDS AND EASMENTS.

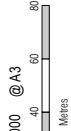


PREPARED FOR:



No.	Date	Revision Details	SAC	INI
B	30-06-2020	Area Updated	SAC	
A	25-11-2019	Initial Version	SAC	

CHECKED BY/DATE:	MSL/30-06-2020	CO-ORDS:	MCA 94
APPROVED BY/DATE:	MSL/30-06-2020	DATUM:	N/A
GIS REF:	PR142446_NWRL_Extent of DBYD 20200630		
JOB REF:	PR142446-220	DATE OF PLAN:	23-11-2019



OPTIONARY NOTES:

1. Digital Cadastral Database: © Sep 2019 NSW Government
2. DCD at the investigation areas has been updated using registered DP's
3. This DBYD data set includes both project lands and easements at the time of operational assets
4. Diagrams are not to scale

NOTE:

THIS PLAN IS A GRAPHICAL REPRESENTATION OF THE SMNW CORRIDOR.
REFER TO REGISTERED PLANS AS HELD BY LRS NSW FOR DEFINITION OF THE SMNW CORRIDOR LANDS AND EASEMENTS.