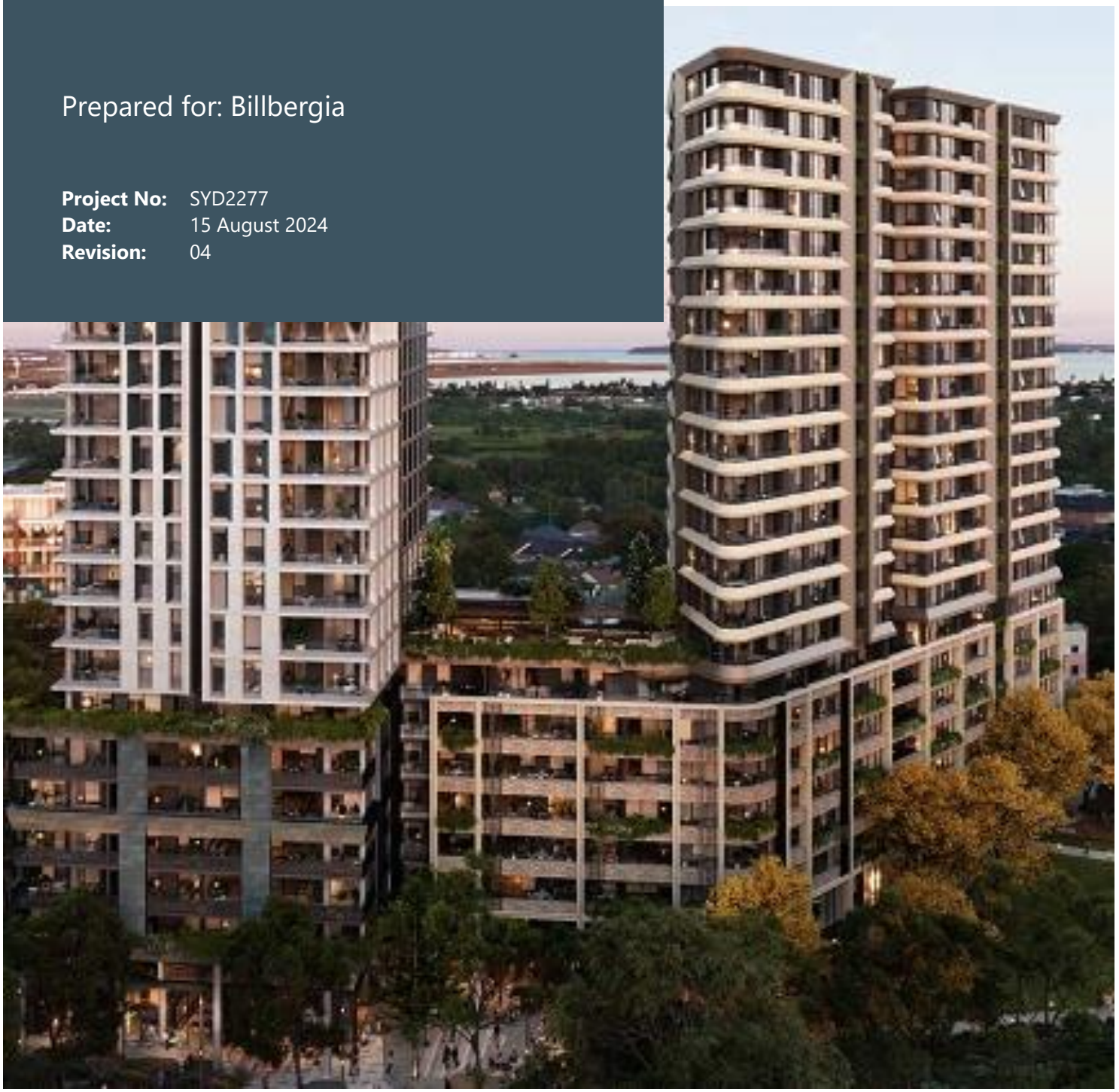
ADP Consulting : Engineering

25-27 Leeds St

Infrastructure Report

Prepared for: Billbergia

Project No: SYD2277
Date: 15 August 2024
Revision: 04



Project:	25-27 Leeds St
Location:	25-27 Leeds St Rhodes NSW 2138
Prepared by:	ADP Consulting Pty Ltd Level 6, 33 Erskine Street Sydney NSW 2000
Project No:	SYD2277
Revision:	**04**
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Rev	Date	Comment	Author	Signature	Technical Review	Signature	Authorisa-tion & QA	Signature
01	04/11/2022	For Comment	Various		Thai Nguyen	TN	Simon Bell	SB
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Project Team	
Client / Principal	Billbergia
Architect	SJB
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ADP
Consulting : Engineering

Contents

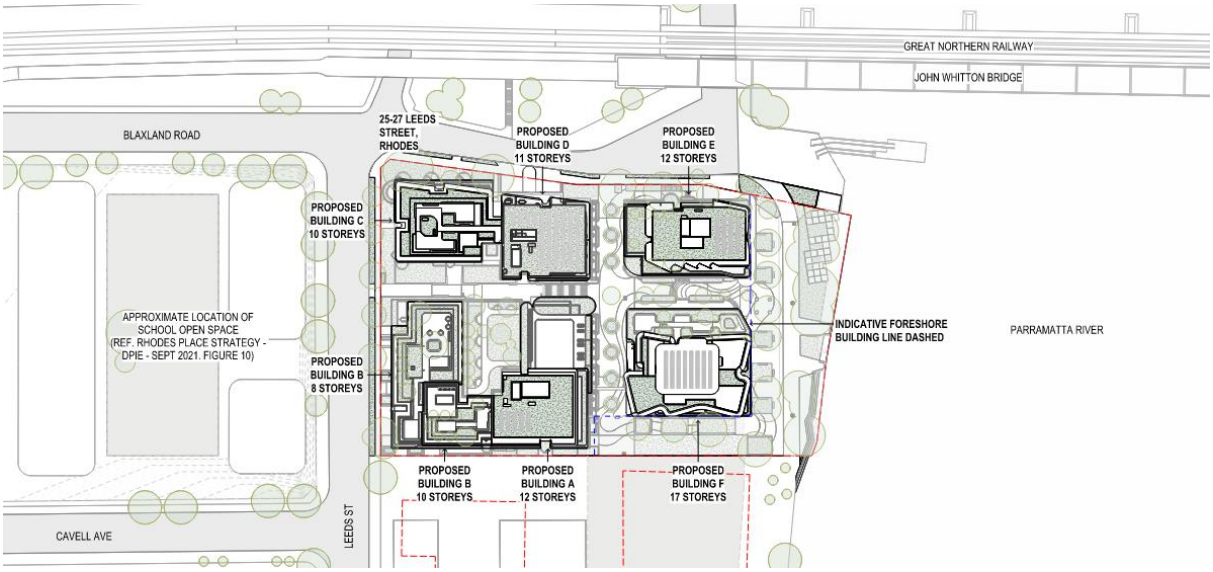
1. Executive Summary

This report provides a review of the existing in-ground infrastructure surrounding and serving the site 25-27 Leeds Street, NSW 2138. The site has an area of 11,692m^2 located on Lot A in DP329241 (25 Leeds St), Lot B in DP367132 (25 Leeds St) and 2 in DP1192949 (27 Leeds St). The site is owned by Fife Capital ("Owner") and the Principal. The site is bounded by Leeds St to the south, Blaxland Road to the west, the Parramatta River to the north and industrial properties to the east. The project involves demolishing a number of existing assets on the site and relocating infrastructure to allow the future development to be constructed.

In summary our desktop review has highlighted the following:

- The existing site requires a new indoor substation with two off 1500kVA transformers to suit the new electrical demands of the development. The overhead mains will need undergrounding and as a result, lighting restoration works will be required.
- The existing substation will need to be decommissioned and street supply is required to be restored as part of the development
- There are NBNCo, Telstra and Optus communication services located near the site which can be used for our project
- The existing Ø225 Cast Iron Sydney Water sewer main passing through the development will require to be deviated, triggering a Building Plan Approval – Out of Scope application
- The Ø150mm (CICL) water main located in Leeds Street is proposed to supply the cold water to the site via a meter and an approved backflow device.
- There is currently insufficient pressure for domestic cold-water supply, a dedicate domestic cold water pump will be required.
- A dual supply fire system is proposed to serve the site. The dual supply system is provided water from:
  - Ø150mm CICL(Cast Iron Cement Lined) water main located on the northern side of Leeds Street
  - 90kL Fire tank located on Basement 1
- The existing 75mm NY 210kPa gas pipework from Leeds Street is proposed to be extended along Blaxland Road to supply gas to retail stores. A boundary regulator shall be located at the frontage and within 100m of of the property boundary on Blaxland Road.

Figure 1 Proposed Site (SJB SSDA Architecture Set)



2. Introduction

2.1 Project Description

The subject site is located at 25-27 Leeds Street, NSW 2138. The site currently consists of a number of small retails and warehouse developments.

The proposed development shall consist of the following:

- Basement – Plant, storage space
- Level 1 - Plant, storage space
- Level 2 – Community centre and apartment floors
- Level 3 – Level 17 Apartment floors
- Community area Green Roof levels

This report reviews the existing infrastructure within the area, and the capacity to that this infrastructure has to support this project.

The following information sources have been utilised to prepare this report:

- Dial before you dig (DBYD) information packages
- SJB design package received 19th July 2024.

ADP have undertaken a desktop review of the information provided from the site Dial Before You Dig (DBYD) search. The report provides an overview of the following information relating to each service:

- Existing infrastructure surrounding and serving the site from the following in-ground services:
  - Water & Sewer (Sydney Water)
  - Power (Ausgrid)
  - Telecommunications (Telstra, NBN and Optus)
  - Gas (Jemena)
- Estimated new infrastructure works associated with the development.
- A summary of additional infrastructure items to be resolved as part of the project design.

3. Electrical Infrastructure

3.1 Existing Infrastructure

Based upon the DBYD and Ausgrid GIS information, there are existing Ausgrid transmission lines (132kV), HV (high voltage - 11kV), LV (Low voltage 415V) and street lighting (415V) networks running on Blaxland Rd & Leeds St, in front of the development boundary.

There are 2 off sets of Ausgrid UG 132kV transmission lines running on Blaxland Rd. Both set of transmission cables are likely running under the road (not under footpath).

There are multiple HV UG feeders running on Blaxland Rd & Leeds St at development front. As per Ausgrid Design Information Package (DIP) received on 25/09/2023, Concord; ZN874 PA25 running on Leeds St will supply the HV load to the new development.

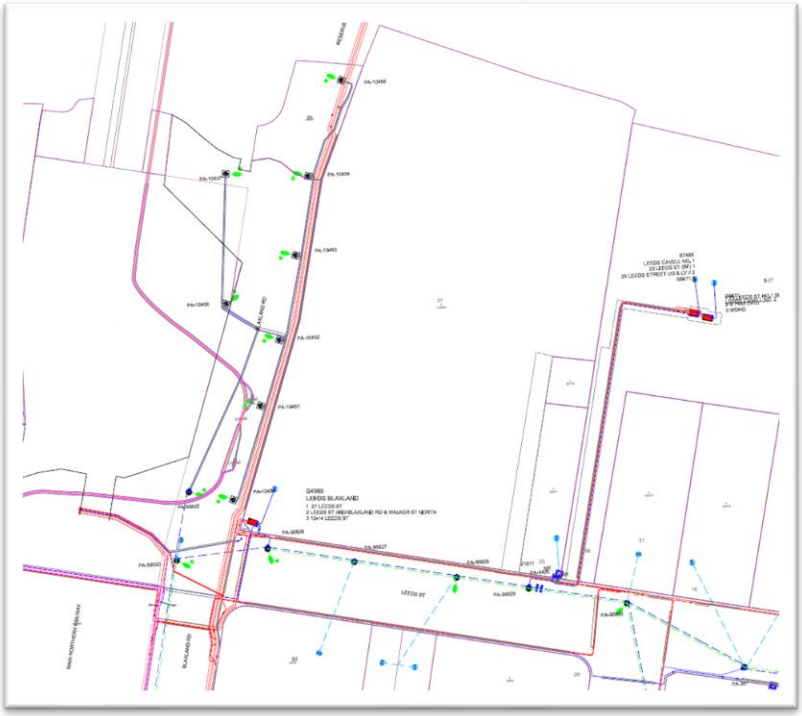
There is an Ausgrid existing kiosk type substation S.4369 located at the corner of Blaxland Rd & Leeds St, this substation has 3 LV distributors, Distributor 1 is supplying current site, Distributor 2 is supplying multiple residential customers on southern side of Leeds St, eastern side of Blaxland St and a council park on Mill Park St. Distributor 3 is currently supplying an industrial customer only at 12-14 Leeds St.

The existing Ausgrid overhead LV & SL network are mainly running on Leeds St. The OH LV network on Leeds St is part of substation S.4369 Distributor 2.

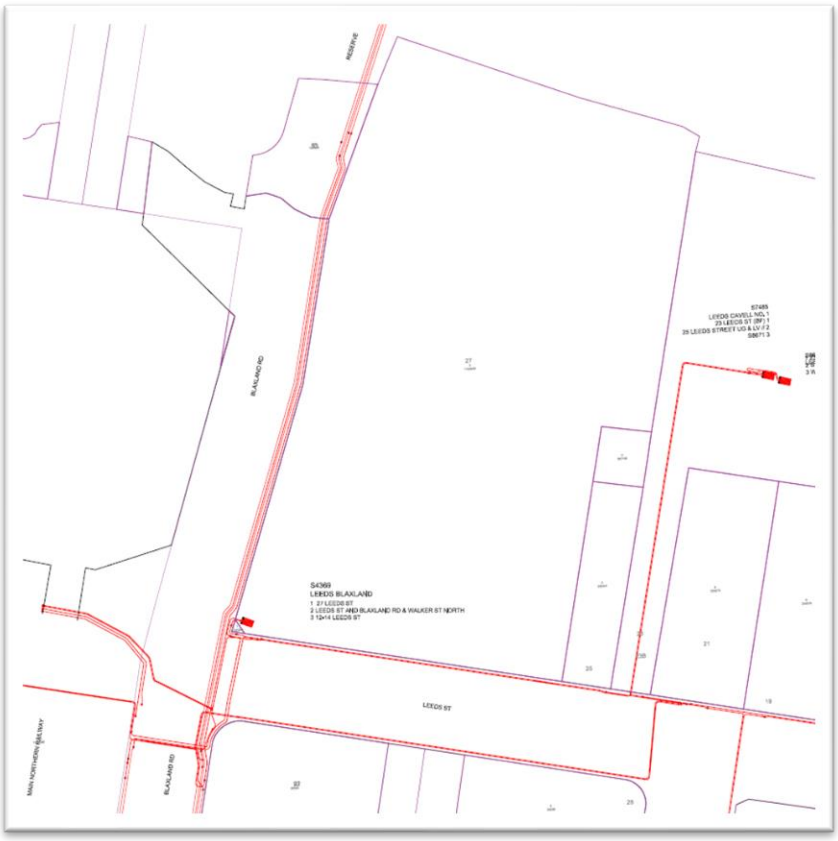
There is an Ausgrid public street lighting UG network running on Blaxland Rd, further investigation works are required to identify whether the current SL column location will clash with the new development driveway.

The Existing Ausgrid network GIS, HV and LV networks have been shown as below:

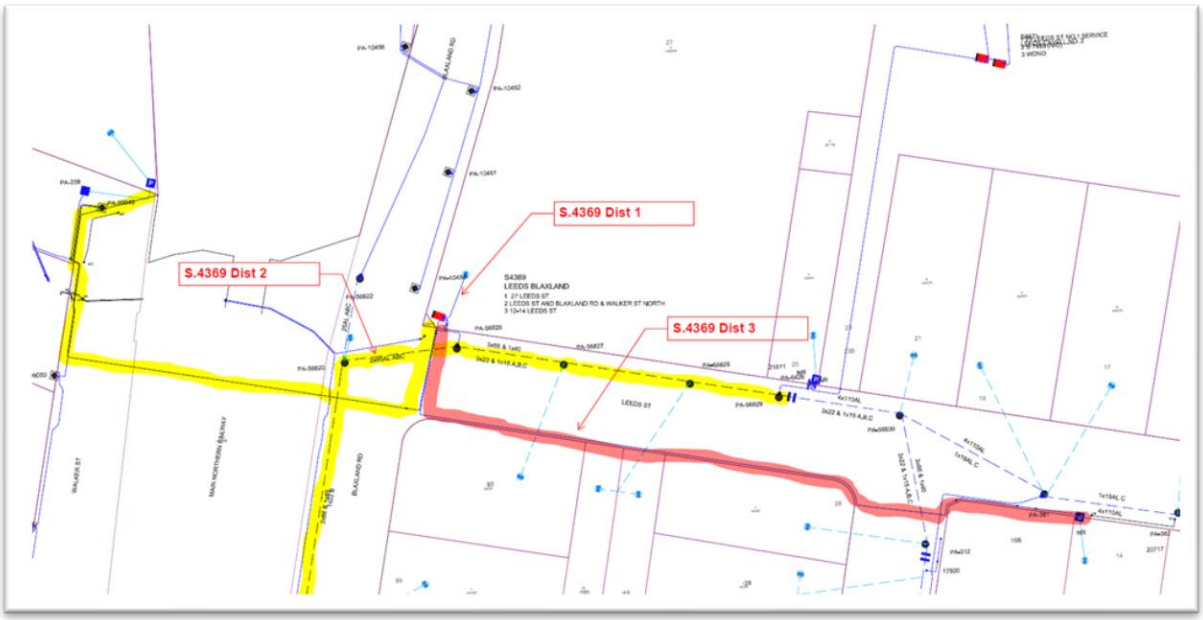
Figure 2 Existing Ausgrid GIS (Transmission; HV, LV & SL Network)



Existing Ausgrid HV Network



Existing Ausgrid LV Network



3.2 New Works Associated with Electrical Infrastructure

Based on Ausgrid network status and the proposed development architect plans, it is anticipated that below new electrical infrastructure works are likely to be required:

- New development permanent supply
- Existing kiosk substation S.4369 decommissioning and street supply restoration
- Overhead Mains Undergrounding and Street Lighting restoration on Leeds St

Based on ADP Building Services Electrical Engineering power maximum demand calculation, the maximum demand is at 2363kVA.

To supply the new loads, it is proposed to establish an Ausgrid chamber substation with 2 x 1500kVA transformers. This arrangement is not a standard design and will require custom design. Minimum room size 11m (frontage) x 7.1m (depth).

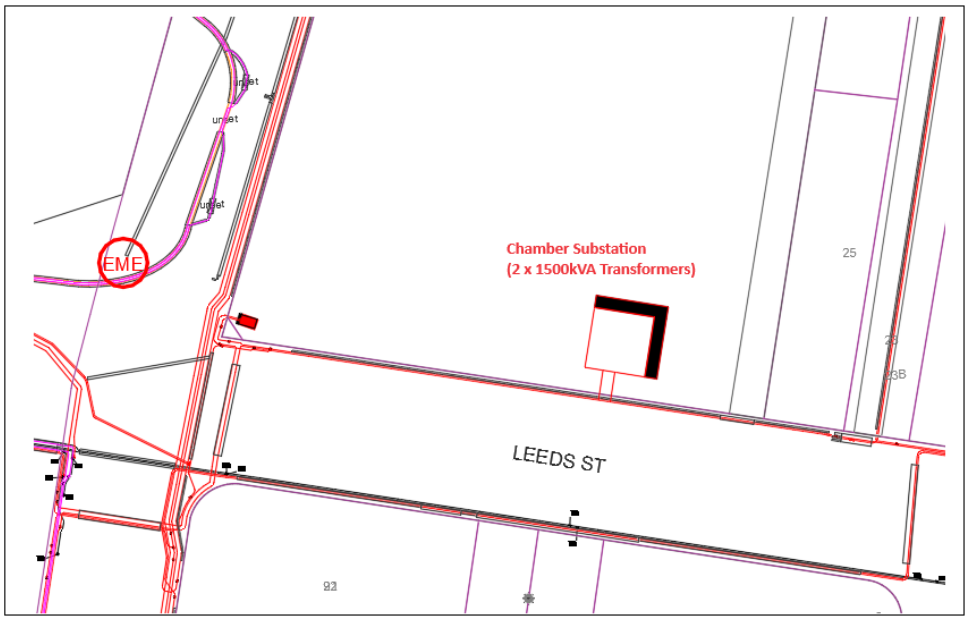
This substation will have capacity to be utilised for supplying existing load on kiosk substation S.4369.

3.2.1 Substation arrangement- Proposed chamber substation

Subject to the electrical building service maximum demand calculation result, and the current Ausgrid HV network status, ADP proposes one Ausgrid chamber substation with 2 x 1500kVA transformers.

Substation HV connection for the above-mentioned option has been shown indicatively as below:

Figure 3 Proposed substation HV connection diagram



Ausgrid do not have a standard drawing for double transformer chamber substation, and it will be a custom design complying Ausgrid standards.

3.2.2 Existing kiosk substation S.4369 Substation

In relation to the existing Ausgrid kiosk substation S.4369, the substation location has been identified outside the main building basement excavation zone. Hence it is recommended utilizing this kiosk substation LV Distributor 1 as the Temporary Builder Supply during construction phase and keeping this kiosk until development main building construction work finishes.

At the time of the new chamber substation has been energised, the existing kiosk substation S.4369 is to be decommissioned, and the street load on the kiosk substation is to be transferred to new substation/s.

3.2.3 Overhead Mains Undergrounding and Street Lighting restoration

Based on the earlier discussion with project management team, the estimated OH removal and undergrounding scope of work has been listed as below:

- Remove existing timber poles & OH mains on Leeds St at the front of development
- Undergrounding existing LV OH mains on Leeds St in front of development boundary (final undergrounding scope of work to be discussed further)
- Install new Ausgrid standard lighting columns & restore street lighting on Leeds
- Relocate two existing lighting columns on Blaxland Rd due to their clash with the development's new driveway. The Council may require these lights to be upgraded.
- Restore power supply to the existing residential customers on southern side of Leeds St

4. Telecommunications

The current DBYD information indicates that there are in-ground communication services which run along the Leeds St and Blaxland Road boundary of the development. The telecommunications services listed below are available to the development site:

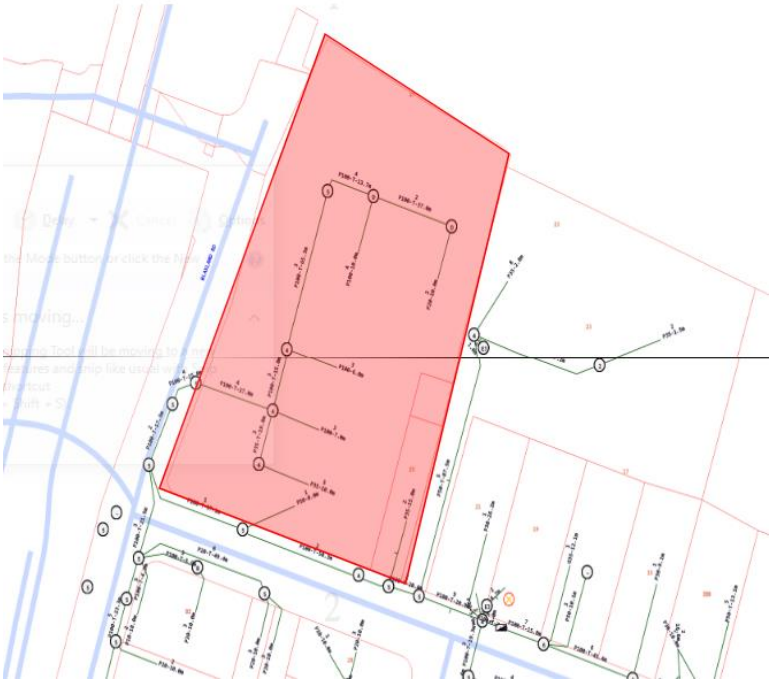
- NBNco
- Telstra
- Optus (Subject to Confirmation)
- TPG (Subject to Confirmation)

The dial before you dig has shown that there are several carriers within the area, including NBN, that could be extended to serve this site. The new development will require a new incoming telecommunications feed from Leeds Street subject to authority, consisting of lead-in conduits from the nearby NBN pits.

4.1 NBN Co

The current DBYD information indicates there are NBN Co in-ground communication services, consisting of from the nearby NBN pits that run along Leeds Street and Blaxland Road.

Figure 8 Existing NBN Infrastructure around site



Existing NBN Co assets are within the development site. Authorities need to be notified of any excavation/removal/relocation of their assets before the commencement of any works. Should the builder proceed with infrastructure removal ADP will submit a relocation application to carriers. Carriers will send the offer with the scope of work along with the invoice will be sent to the client to be accepted.

4.2 Telstra

Existing inground Telstra telecommunications assets in the development area are shown in Figure 9. All assets within the site are owned by other carriers, as shown by OC in the figure, but may be used to supply a Telstra connection subject to authorities.

Figure 9 Existing Telstra pit and pipe infrastructure

Existing assets are within the development site. Authorities need to be notified of any excavation/removal/relocation of their assets before the commencement of any works. Should the builder proceed with infrastructure removal ADP will submit a relocation application to carriers. Carriers will send the offer with the scope of work along with the invoice will be sent to the client to be accepted.

4.3 Optus

The Optus telecommunications assets may be available near the vicinity of the development along Blaxland Road and the end of Leeds Street as indicated by the red line. A connection point may be extended to the development, subject to authority. Existing pit locations are indicated by the black squares.

A connection may be available should the developer choose to select from alternate infrastructure providers.

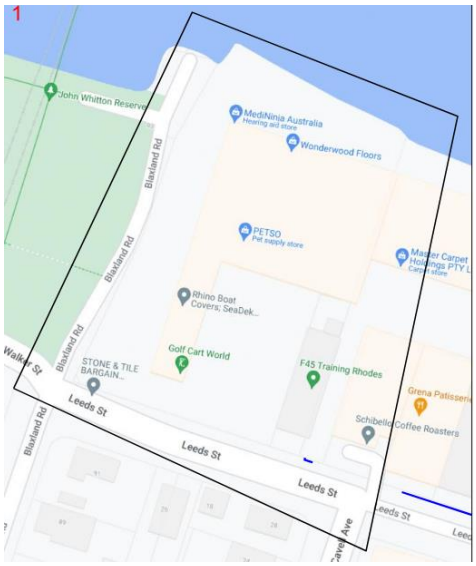
Figure 10 Optus Infrastructure

4.4 TPG

The TPG / Pipe Networks telecommunications assets may be available near the vicinity of the development along the Eastern end of Leeds Street, indicated by the blue line. A connection point may be extended to the development, subject to authority.

A connection may be available should the developer choose to select from alternate infrastructure providers.

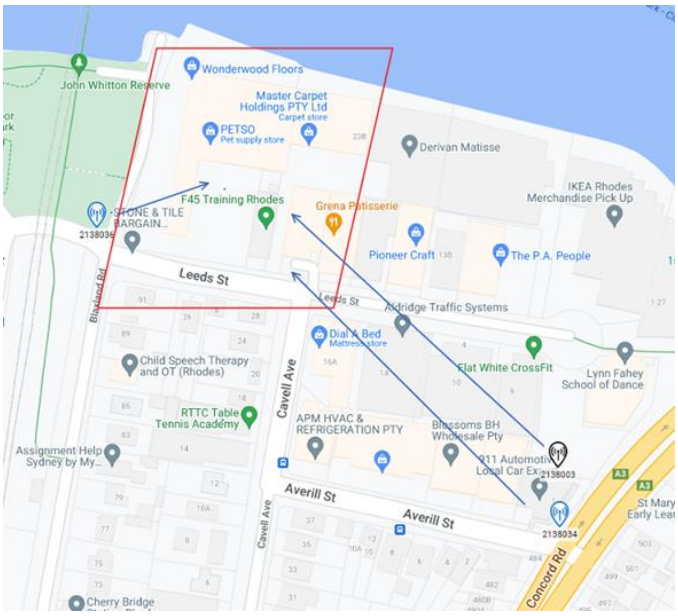
Figure 11 TPG Infrastructure



4.5 Carrier Cell Towers

There are the following carrier cell towers within the vicinity of development (within 300m) suggesting there will be good signal coverage for 3G, 4G and 5G signal within the outdoors areas. Further RF survey needs to be conducted to measure the signal strength on-site.

Figure 12 Mobile Telephony cell towers



4.6 Telstra - 5G Coverage

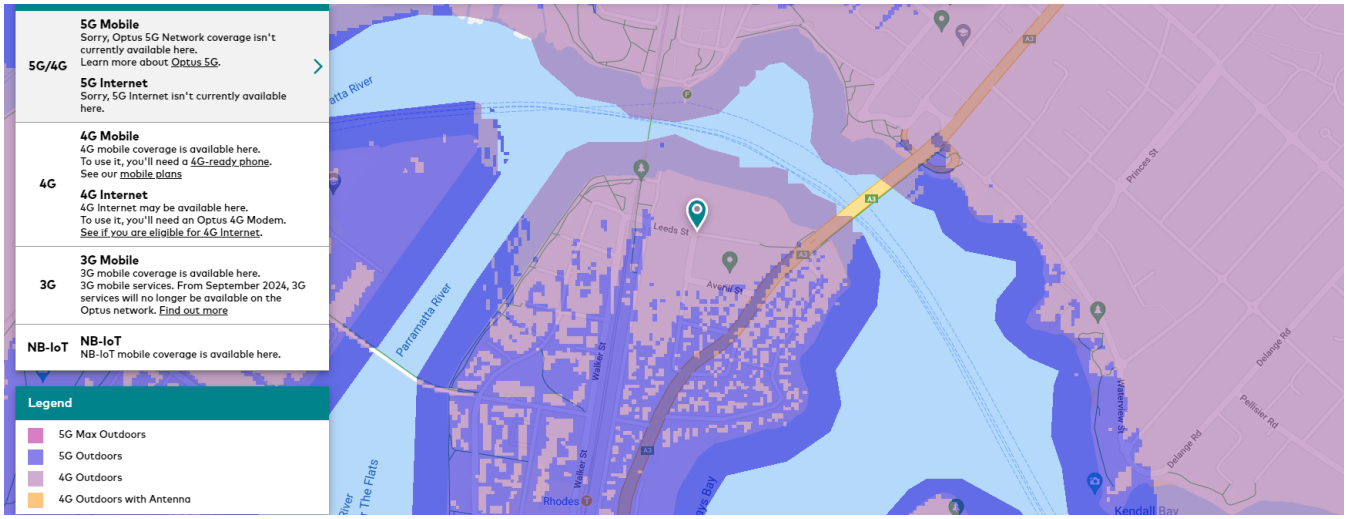
Additionally, it is predicted that Telstra 5G coverage shall be available in the area. The purple indicates the good 5G signal coverage within the outdoor areas.

Figure 13 Telstra – 5G

4.7 Optus - 5G Coverage

It is predicted that Optus 5G coverage shall not be available in the area. The purple indicates the good 5G signal coverage within the outdoor areas while pink indicates 4G.

Figure 14 Telstra – 5G



4.8 TPG - 5G Coverage

Additionally, it is predicted that Telstra 5G coverage shall be available in the area. The Blue indicates the good 5G signal coverage within the outdoor areas.

Figure 15 Telstra – 5G

4.9 New Works Associated with Telecommunications Infrastructure

The new development will require a new incoming telecommunications feed from the frontage of the development site.

The final connection point is up to the discretion of the telecommunications network operator.

Applications to telecommunications providers should always be made at the first convenience once the exact final requirements are further identified and confirmed to avoid potential delays

4.10 Risks

The following items will be required to be addressed as part of the electrical connection works to the site:

- An application will need to be submitted to NBN to ensure the capacity for this development is established in their network. NBN assign certain bandwidth on fibre infrastructure, allowing for a certain quantity of connections. Should there be limited capacity in the area, there is a risk that NBN may charge for the additional capacity, however, this risk is very low, and alternative options, such as embedded comms network providers, would negate this cost.
- Detailed location of existing conduits and cables would be required to ensure they run outside the site boundary.
- Additional applications to Telstra and NBN may be required to decommission and remove existing services.

5. Water & Sewer Infrastructure

5.1 Existing Infrastructure

5.1.1 Sewer

The DBYD information provided by Sydney Water indicates:

- A Ø225mm CI (Cast Iron) Sydney Water sewer main running from east to west through the development site.
  - This main connects to Blaxland Road at a sewer manhole and continues to run south
  - There is an existing sewer manhole within the site boundary
- A Ø150mm EW (Earthenware) Sydney Water sewer main runs along Leeds Street on the southern side of the street.
  - The sewer main is considered to be a sewer rehabilitation main
  - Numerous sewer manholes are located along the main

5.1.2 Water

The DBYD information provided by Sydney Water indicates a water main available to the site:

- A Ø150mm CICL (Cast Iron Cement Lined) water main located on the northern side of Leeds Street.
  - There are multiple potable water hydrants located along the main
- A Ø150mm CICL (Cast Iron Cement Lined) water main located on the eastern side of Blaxland Street connecting to the Ø150mm CICL Leeds water main.
- A Ø300mm DICL (Cast Iron Cement Lined) trunk water main located on the western side of Blaxland Street

Figure 3 Existing Sewer and Water Infrastructure surrounding site

5.2 New Works Associated with Sewer & Water Infrastructure

5.2.1 Sewer

The existing Ø225mm Sydney Water sewer main running across the site will need to be rediverted thus triggering a Building Plan Approval – Out of Scope application and major works on site. A Water Services Coordinator (WSC) has been engaged to liaise with Sydney Water during this process.

It is likely that the existing Ø225mm Sydney Water sewer main will be grout filled and the new sewer main will be up upsized and reticulated around the proposed buildings along the rear end of the site. The proposed rediverted main will also be concrete encased within basement 1.

The connection point will also be likely at the rear end and the north-eastern side of the property. The exact location of the sewer connection is subject to the Sydney Water Section 73 Notice of Requirements advice.

5.2.2 Water

The water main connection for the development is proposed to be to the Ø150mm (CICL) water main located in Leeds Street to supply the cold water to the site via a meter and an approved backflow device. A Sydney Water pressure and flow statement has been obtained for this main, see results below.

Statement of Available Pressure and Flow

Sydney WATER

ADP Consulting
3/8 Spring Street
Sydney, 2000

Attention: ADP Consulting Date: 18/04/2024

Pressure & Flow Application Number: 1861015
Your Pressure Inquiry Dated: 2024-04-04
Property Address: 27 Leeds Street, Rhodes 2138

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Leeds Street	Side of Street: North
Distance & Direction from Nearest Cross Street	40 metres East from Blaxland Road
Approximate Ground Level (AHD):	10 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	65 metre head
Minimum Pressure	33 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	33
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	10 15 20 25 30 40 50	37 37 36 35 34 31 27
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	10 15 20 25 30 40 50	32 31 30 29 27 24 20
Maximum Permissible Flow	52	19

(Please refer to reverse side for Notes)

Figure 4 Sydney Water Pressure and Flow Results

The pressure and flow enquiry on the Ø150mm CICL water main indicates that there is a maximum available pressure of 37m head @ 10L/s flow. As the tallest building within the development is approximately 51m, a domestic cold water booster pump assembly will be required to achieve adequate pressure at the most hydraulically disadvantaged fixture.

5.2.3 Recycled Water Main

The Sydney Water BYDA does not indicate that there is a recycled water main for connection of non-potable water services. Internal infrastructure provisions will be provided for future connection to the authority recycled water main. A non-potable cold water meter with an approved backflow device will need to be provided.

A Sydney Water pressure and flow statement will have to be obtained once the recycled water main is live.

5.2.4 Delivery and staging

It is anticipated that new water and sewer infrastructure works are likely to be required as per the following phases:

1. Section 73 – Site wide & individual developments
2. Building Plan Approval – Out of Scope

Section 73 applications will be required and will take between 4-6 weeks. As there are currently Sydney Water assets that run within the property boundary, it is anticipated that sewer protection and/or deviation works will be required by Sydney Water. Consideration as to how the Sydney Water assets will have to be redirected, protected and reticulated is required. This will likely trigger a building plan out-of-scope application under major works. The following will be required for an Out-of-Scope application:

1. Services protection report
2. Dilapidation survey report
3. Flood impact assessment
4. Building plans and structural details
5. Specialist Engineering Assessment (SEA) including;
    a. Geotechnical and structural reports
    b. Protective design details
    c. Instrumentation and monitoring plans,
    d. Work method statement and
    e. Contingency plans

5.3 Risks

The following items will need to be confirmed during the design development process to determine the development sewer drainage and water demand:

- Fixture and Loading Units for the proposed building
- Sewer drainage and water services demand for the development.
- Water Services Coordinator has been engaged to liaise with Sydney Water on Section 73 application and to advise sewer drainage and water services connection locations to the respective Sydney Water mains.
- A SEA via an out-of-scope application will be required due to the sewer main works as confirmed by the WSC. Where a SEA is required, all personnel providing input to the SEA must be competent. That is, possess appropriately relevant qualifications, knowledge, skills and experience to carry out their task successfully. The complexity and level of detail required for the SEA may be greater than for the design of the external activities. To analyse the ground/structure interaction necessary for Critical Assets, complex or high-risk assets, and understanding the risks to Sydney Water assets, requires Geotechnical, Civil and Structural engineers with appropriate qualifications, in-depth knowledge, high levels of skills and experience. Closely coordinated analysis and reporting is required between the various engineering disciplines.

6. Fire Protection

6.1 Existing infrastructure

The DBYD information provided by Sydney Water indicates a water main available to the site:

> A Ø150mm CICL(Cast Iron Cement Lined) water main located on the northern side of Leeds Street.

Pressure & Flow applications have been made to the Sydney Water Tap In portal for the towns main on Leeds Street yielding the following results:

Location	Size	Max Flow Rate (L/s) (Expected to be maintained 95% of the time)	Pressure (m head) (Expected to be maintained 95% of the time)
Leeds St	150mm	55	26

The DN150 connection to the town main on Leeds Street is proposed to be made for the sprinkler and hydrant system. Liaison with the Sydney Water, Water Services Coordinator (WSC) will confirm the main will be suitable for connection to serve the site, pending final confirmation from Sydney Water's Section 73 Notice of Requirements.

Figure 56 DBYD Water mains adjacent to the site

6.2 Proposed Works Associated with Fire Services Infrastructure

The proposed wet fire protection will have a separate sprinkler and separate hydrant system and be compliant to the National Construction Code (NCC) 2022 Volume 1.

> Sprinkler System to E1D4, E1D5, E1D6 of NCC 2022 and AS2118.1-2017 Amendment 2
> Hydrant system to E1D2, of NCC 2022, AS2419-2021.
> Fire hose reels to E1D3 of NCC2022 and AS2441-2005 Amendment 1.

As the development is greater than 25m in effective height, the sprinkler system will require a town main connection and on-site tank will be required to feed the sprinkler system to comply with dual water supply requirements.

> Primary water source: Town main Leeds Street

> Secondary water source: On-site tank with effective capacity of 120kL on level 1.

The sprinkler system shall be served by single stage fire pumps (diesel and electric) and located in a dedicated fire pump room with direct access to a road or open space via fire isolated stairway/passageway.

A fire concrete tank is required at lower mezzanine level, at the same RL as the fire pump room. The fire tank is required as a secondary water source and the effective capacity of the tank is required to be 120kL.

> Sprinkler system will be fed via sprinkler control assembly located in the fire pump room.

> A sprinkler booster assembly will be provided facing Leeds Street

The hydrant system shall be served by the town main in Leeds Street boosted by two standard diesel fire hydrant pumps and located in a dedicated fire pump room with direct access to a road or open space via fire isolated stairway/passageway.

> A hydrant booster assembly will be provided facing Leeds Street.

The proposed dry fire protection system for the development will comply with National Construction Code (NCC) 2022 Volume 1:

> Automatic fire detection and alarm system to E2D5 of NCC, Specification 19, Specification 20 and AS1670.1-2018.

> Emergency warning and intercom system to E4D9 of NCC and AS1670.4-2018

> Portable fire extinguisher to Clause E1D14 and AS2444-2001

The proposed development will have a main fire indicator panel and EWIS panel located in fire control centre at the designated building entry point.

7. Gas Infrastructure

7.1 Existing Infrastructure

The DBYD information provided by Jemena indicates:

> A 75mm Nylon, 210kPa medium pressure gas main along the northern side of Leeds Street

> A 75mm Nylon, 210kPa medium pressure gas main along the eastern side of Blaxland Road

Figure 6 Existing gas infrastructure

7.2 New Works Associated with Gas Infrastructure

The existing 75mm NY 210kPa gas main on Leeds Street should be sufficient to serve the proposed development. The gas main is to be extended along Blaxland Road and a property boundary regulator shall be at the street frontage and within 100m of the property boundary at Ground Level as per Jemena's Network Operator Rules.

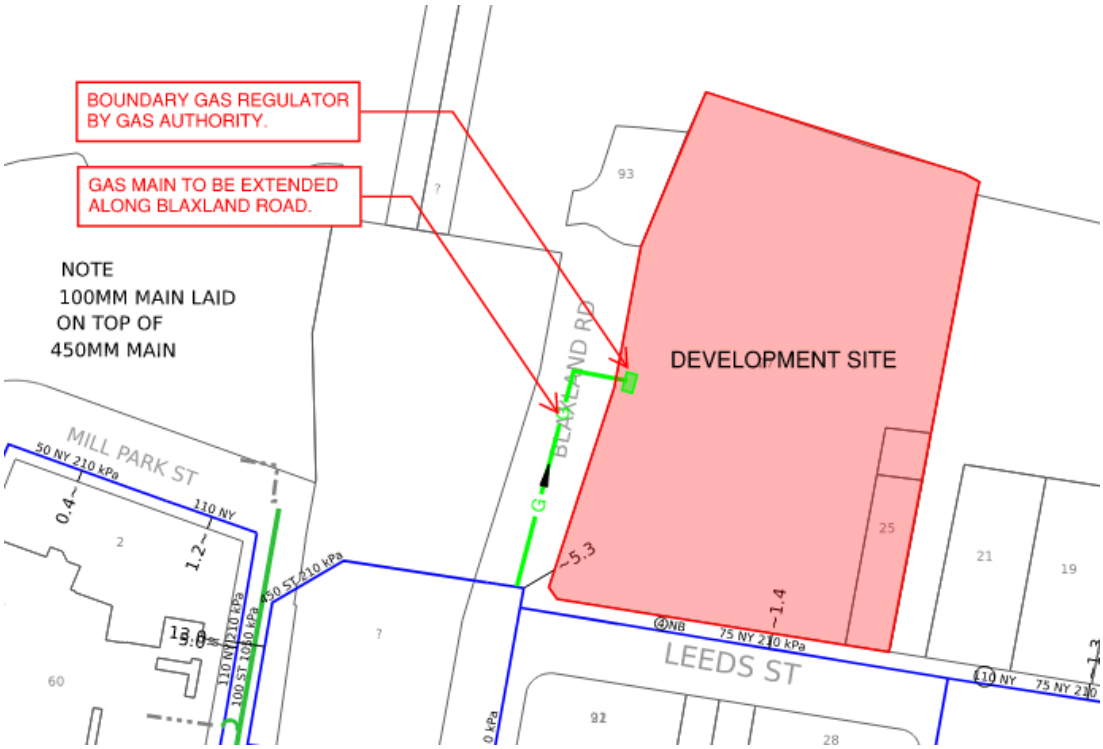


Figure 7 New works associated with gas infrastructure

7.3 Risks

The following items will need to be further developed during the design development process to determine the gas demand:

- Gas load (MJ/hr) for the proposed site (retail gas loads demand, special plant or equipment requiring gas, etc). Currently the load is estimated to be 3,600MJ/hr.
- Jemena yet to be notified of the new works via application.
- Location of the site boundary gas regulator shall be in accordance to "Jemena Network Operator Rules".