

Frasers Property Australia & Dexu
Funds Management Limited.

**Western Gateway Sub-Precinct
Proposal: Block B**

Infrastructure Analysis Report

HDP-Arup-Civil-Infrastructure Analysis

Issue 04 | 9 October 2019

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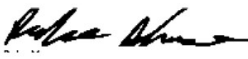


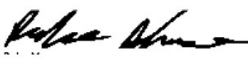


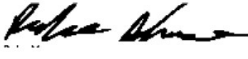

Arup
Arup Australia Projects Pty Ltd ABN 57 625 911 711

Arup
Level 5
151 Clarence St
Sydney NSW 2000
Australia
www.arup.com

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1 Introduction

Preamble

This investigative report looks at the utilities infrastructure in and around Block B. It has been produced to provide commentary on the services that exist, the loads associated with the development and the ability or otherwise of the services to support the development.

Dexus CPA Pty Ltd (Dexus) and Frasers Property Australia (Frasers Property) (the Consortium) is seeking to build “*a vibrant new business district and revitalise the face of Sydney’s busiest transport interchange*” (*Project Vision*) at 14-30 Lee Street, Haymarket, otherwise known as the Site or Block B within the Western Gateway Sub-Precinct, as illustrated in Figure 1.



Figure 1 – Central Station SSP Boundary

The Western Gateway sub-precinct is made up of three landholdings as illustrated in Figure 2:

- Block A – land predominately occupied by the YHA Hostel;

- Block B – the Dexu / Frasers Property site subject of this report;
- Block C – land on which the Adina Hotel and Henry Deane Plaza are located.

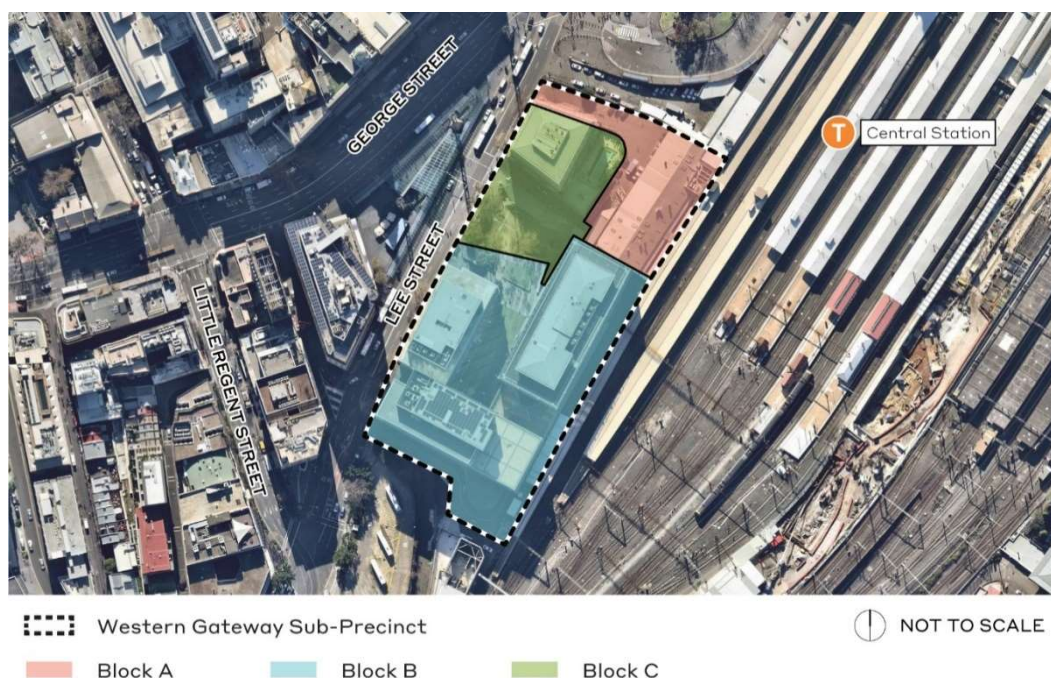


Figure 2 - Western Gateway landholdings

To facilitate redevelopment of the Western Gateway sub-precinct, the existing planning controls are required to be amended. This report supports a submission to the Secretary of the Department of Planning, Industry and Environment ('the DPIE') which seeks to amend the height and density controls within the *Sydney Local Environmental Plan 2012* (Sydney LEP 2012).

The request to amend the planning controls follows the Minister for Planning and Public Spaces recent declaration identifying the Central Station Precinct as a State Significant Precinct (SSP). The Western Gateway, located within the Central Precinct SSP, is earmarked as a sub-precinct within the proposed SSP boundary for early consideration for rezoning.

Transport for New South Wales (TfNSW) is developing a vision for the growth and development of this precinct and is preparing a Strategic Framework to guide future detailed planning of the Central Precinct. The Strategic Framework will be placed on exhibition for public comment concurrently with the rezoning of the Western Gateway.

1.1 Project Objectives

The proposed rezoning forms part of a broader planning process being pursued by the Consortium to realise a shared vision and set of objectives for the Western Gateway and the Central Precinct more broadly. The overall Project objectives for Block B is to:

- High tech jobs – Deliver creative workspace that builds the Sydney Innovation and Technology Precinct and underpins Sydney’s enduring global competitiveness.
- Transport connectivity – Redefine the experience of over 20 million pedestrians who walk through Henry Deane Plaza every year with world class public realm and connectivity.
- A revitalised precinct – Transform Central into an exciting place with lively retail and dining options, supporting Sydney’s day and night time economy.
- Infrastructure for the future – Enable wider renewal of Central by delivering underground smart building services, waste and utility infrastructure necessary for an integrated and sustainable precinct.



Figure 3 - Block B within the Western Gateway Sub-Precinct (existing)

1.2 The Project

The Consortium intends to develop up to 155,000m² of commercial and retail GFA within a podium, two towers, lower and upper ground plane over a three level basement. The Project comprises:

- Two commercial towers comprising 46,000m² and 42,000m² located above the podium with floorplates of approx. 1,850 m² and 2,000m² GFA;
- 61,500m² of commercial office space located within the podium which provide flexibility and campus style / large floorplates approx. 6,200m² GFA,
- A retail offering of approx. 5,500m² accessible from lower and upper ground levels, including food and beverage catering to station, visitors and Western Gateway commercial occupants providing an activated frontage and interface to Henry Deane Plaza. This includes an activated Lee Street frontage and lobby located at upper ground level, providing access to the commercial office podium levels and towers above.
- Three levels of basement car parking to accommodate:
 - 48 service vehicle and loading dock parking and distribution area within an Integrated Distribution Facility (IDF)

- Service vehicle, loading dock and distribution area for all stakeholders within the Western Gateway;
- Provision for emergency, maintenance and service vehicle parking and distribution area for future Central Over Station Development (OSD within the IDF);
- 121 parking spaces for Block B occupants;
- Provision for Block A and C vehicle access via the Block B;
- Bicycle parking and end of trip facilities for staff;
- Bicycle parking spaces for customers/visitors;
- Podium and tower rooftops designed for passive activation and gatherings for occupants of the Project to utilise and appreciate the views of the city and harbour;
- Redeveloped public space and stairs from Block B to future Central Precinct Over Station Development (OSD) providing an east-west pedestrian connection to and from the Western Gateway Sub-Precinct;
- Integration with a redeveloped Henry Deane Plaza to accommodate the increased pedestrian movement from existing and future pedestrian connections to various modes of transport;

To prepare Block B for future development, an increase in building height and floor space controls is sought. These proposed amendments to the Sydney LEP 2012 align with State, regional and local strategic planning objectives and initiatives.

This report should be read in conjunction with the Planning Statement prepared by MG Planning, and the other appended technical reports.

1.3 Site Ownership

The Consortium's Proposal relates to land located at 14-30 Lee Street, Haymarket. It is legally described as Lots 12, 14 and 15 in DP 1062447. Legal descriptions of each parcel within Block B are detailed below:

Title Details	Legal Description
Lot 12 in DP 1062447	The proprietor of the fee simple is Rail Corporation of New South Wales. The proprietor of the leasehold estate of the land and the buildings on the land created by lease AA651830 expiring on 30 June 2099 is Dexus CPA Pty Ltd A.C.N. 160 685 156.
Lot 14 in DP 1062247	The proprietor of the fee simple is Rail Corporation of New South Wales. The proprietor of the leasehold estate of the land and the buildings on the land created by lease AA651832 expiring on 30 November 2100 is Henry Deane Building Nominees Pty Ltd A.C.N. 081 941 951
Lot 15 in DP 1062447	The proprietor of the fee simple is Rail Corporation of New South Wales. The proprietor of the leasehold estate of the land and the buildings on the land created by lease AA651833 expiring on 31 March 2101 is Gateway Building Nominees Pty Ltd A.C.N. 081 951 822.

1.4 Site Location

Located close to Central Station, Block B comprises land fronting Lee Street, Haymarket and is bounded by Henry Deane Plaza to the north, the railway corridor to the east, the Sydney Buses layover to the south and Lee Street and Railway Square to the west. Together it constitutes an area of approximately 9,632m² at ground level, with a dimension from north to south of approximately 103-143 metres and approximately 74-81 metres from east to west (Figure 4).

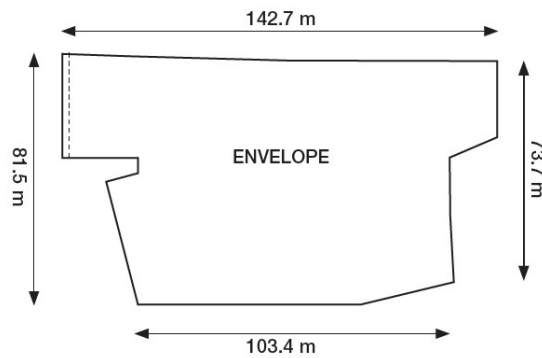


Figure 4 - Block B site boundary Source: Woods Bagot & SOM architects

Henry Deane Plaza (located on the lower datum) is centrally located within the Western Gateway and primarily funnels pedestrians between Devonshire Street tunnel, accessed from the Site's eastern boundary, and Lee Street tunnel, Railway Square, and tertiary institutions to the west.

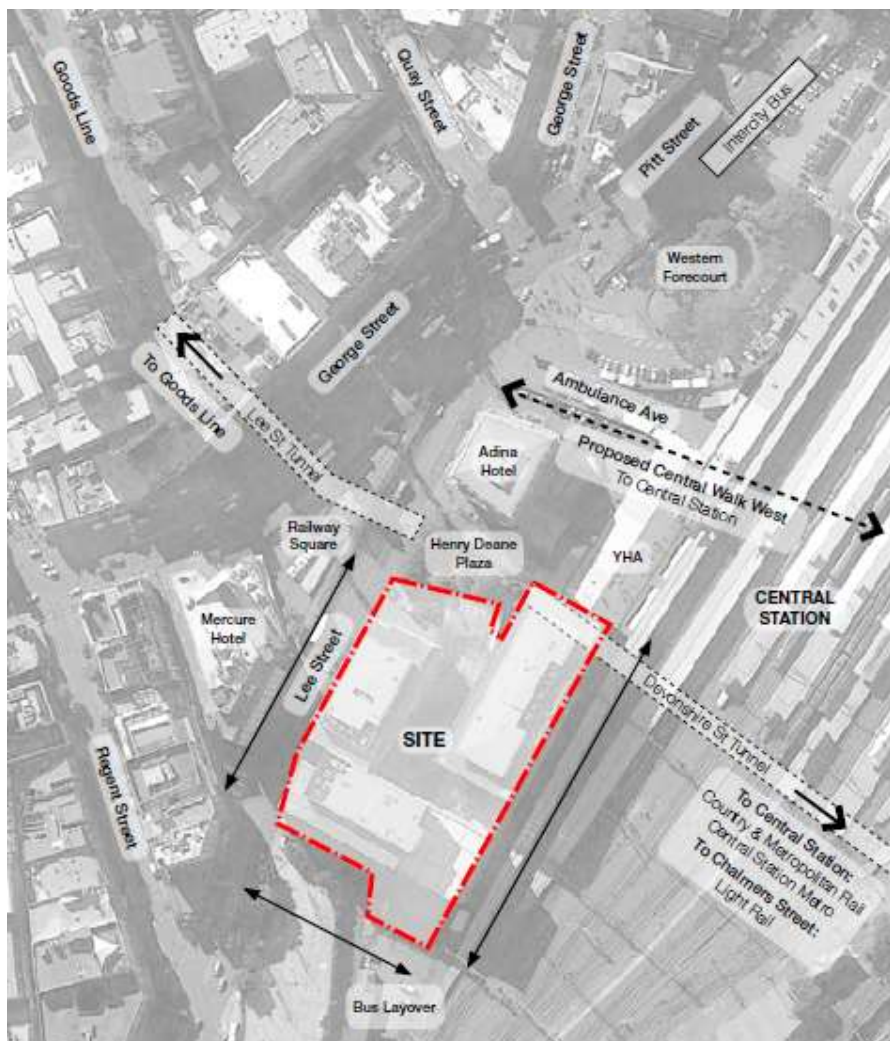


Figure 5 - Block B site boundary Source: Woods Bagot & SOM architects

The upper level of Block B flanks Henry Deane Plaza to the north and south (part of Block C). A range of food and beverage outlets and service retail tenancies are located across both the lower and upper levels across the Western Gateway precinct.

2 Development Proposal

The proposed development of the precinct will see a new basement constructed directly below Block B providing under ground pedestrian and vehicular access links to adjoining properties including the YHA (Block A), Adina (Block C) and future Over Station Development..

This basement will be used to service the whole precinct as an integrated distribution centre including services for a new 155,000m² commercial development on Block B as well as the YHA (Block A), Adina Hotel (Block C), and future Over Station Development.

The desire is to revitalise the whole precinct and improve the station entry experience while supporting the above operations including the adjoining properties forming part of the State Significant Central Precinct..

2.1 Purpose of this Report:

This report assesses the utility services in the vicinity of the development and comments on the ability of these to serve the project, comprising 155,000m² of non-residential GFA. The indicative scheme assumes a makeup of the following elements;

- Retail – 5,500m²
- Podium Tech/start-up – 61,500m²
- Tower 1 Commercial - 46,000m²
- Tower 2 Commercial - 42,000m²

. The utilities assessed in this assessment include;

- Water Supply
- Sewer
- Storm water (Council and Sydney Water
- Communications
- High Voltage power
- Natural Gas
- Fire fighting demands

3 Building Loads

In order to assess the capabilities of the surrounding infrastructure Arup have undertaken a preliminary load take down assessment for the precinct.

The takedown is based on the development being primarily commercial tenancy space with retail and food and beverage offerings at plaza level. Typical occupancy densities of between $1/10\text{m}^2$ and $1/8\text{m}^2$ have been applied in establishing these loadings which have been benchmarked against similar developments in the CBD.

Our estimates of the demands imposed upon different existing utilities by the proposed development based upon the areas and uses within 3.1 above are as follows:

3.1 Tower 1 and Podium

Table 2 provides Tower 1 and Podium utility services and load estimates:

Table 1 - Tower 1 and Podium - Load estimates for utility services

Tower 1 and Podium	
Utility Service	Load Estimate
Potable Water Supply	32 L/s (Inc Cooling)
Gas	13MW
Sewer	25.5 L/s
Power	11.3 MVA
General Stormwater;	To BCA Roofs 1:100 year ARI to be piped (270 mm/hr approx. 405 L/s)
Fire Services	To BCA 40 L/s to 60L/s

3.2 Tower 2

Table 2 provides Tower 2 utility services and load estimates:

Table 2 - Load estimates for utility services

Tower 2	
Utility Service	Load Estimate
Potable Water Supply	20.4L/s (Inc Cooling)
Gas	5.85 MW
Sewer	17.6 L/s
Power	4.5 MVA
General Stormwater;	To BCA Roofs 1:100 year ARI to be piped (270 mm/hr approx. 120L/s)
Fire Services	To BCA 40 L/s to 60L/s

3.3 Combined Tower 1, Podium and Tower 2

Table 3 provides Combined Tower 1, Tower 2 and Podium utility services and the relevant load estimates:

Table 3 - Combined Tower 1, Podium and Tower 2 - Load estimates for utility services

Combined Tower 1, podium and 2	
Utility Service	Load Estimate
Potable Water Supply	45 L/s (Inc Cooling)
Gas	18.85 MW
Sewer	29.7L/s
Power	15.8 MVA
General Stormwater;	Roofs 1:100 year ARI to be piped (270 mm/hr approx. 525L/s)
Fire Services	To BCA 40 L/s to 60L/s

The above loads are based on the current planning documents and uses. They are representative of a development of this scale and function. The final loads will be respond to the final development scheme and these loads will be refined as the design progresses, they are not expected to alter significantly where function remains the same.

4 Utilities Services

The following provides an outline of the existing services available to the precinct and identifies any required alterations to serve the proposed development.

Details of the existing services through the 'dial before you dig' (DBYD) service indicate the existence of the following services serving or traversing Block B:

Electricity Supply – Ausgrid:

- Chamber substation on Lee St
- Chamber Substation below the Block C
- HV draw ways and pits below the Henry Deane Plaza immediately south of the Block C

Communications Services – Telstra, NBN, Optus, Primus Telecom, Nextgen Network, AAPT:

- Various fibre, broadband and mobile services

Water Services - Sydney Water:

- Cold water, sewer and stormwater

Gas Supply – Jemena:

- Natural gas supply

Communication with utilities for this early stage has been limited to the receipt of DBYD information. This has provided information on utility sizes and proximity. At this early stage we have judged the capabilities of these services in writing this report. As the design progresses discussions with the utilities will be required to assist in confirming the extent of infrastructure upgrades required.

4.1 Electricity Supply

The DBYD information shows HV cabling, draw pits and substations in the vicinity of Block B as well as within. The next section describes these services.

4.1.1 Existing Services

The existing services are described as follows.

- The existing chamber substation S 6260 within Block B boundary on Lee St.
- Draw ways and pits beneath Henry Deane Plaza on the Devonshire Street Tunnel alignment.
- The existing substation beneath the Block C.

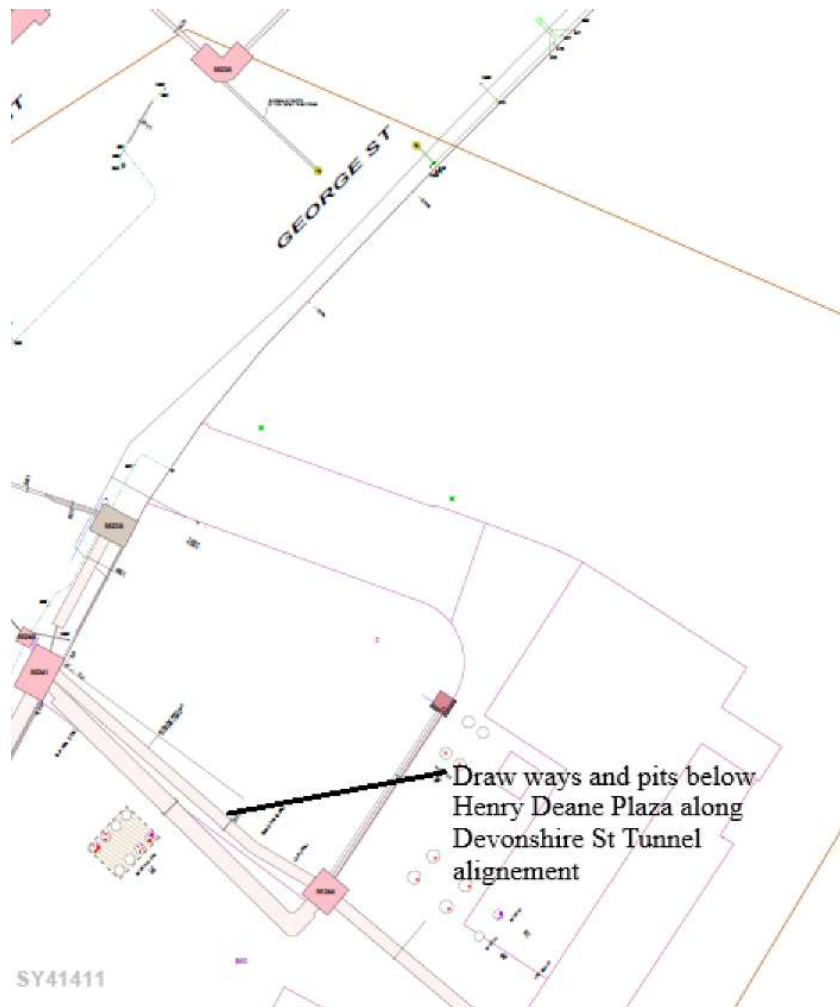


Figure 6 – Existing Services, Draw Ways and pits below Henry Deane Plaza

4.1.2 Required Alterations

New Power supplies to Block B

The new development will require new substations to support the increased loads across Block B and the existing substation S6260 will need to be relocated to allow the basement planning.

It is envisaged that the precinct will be served with the following

- 4 new basement chamber substations
- 2 new elevated substations one in each tower
- 2 new control points for the new elevated substations.

Substation S 6260

The existing substation S6260 will require decommissioning prior to demolition as it sits within the proposed new basement and cannot remain in place due to it being undermined by deeper basements. Any existing feeds to adjacent properties will need to be reallocated by Ausgrid as part of an early enabling works package.

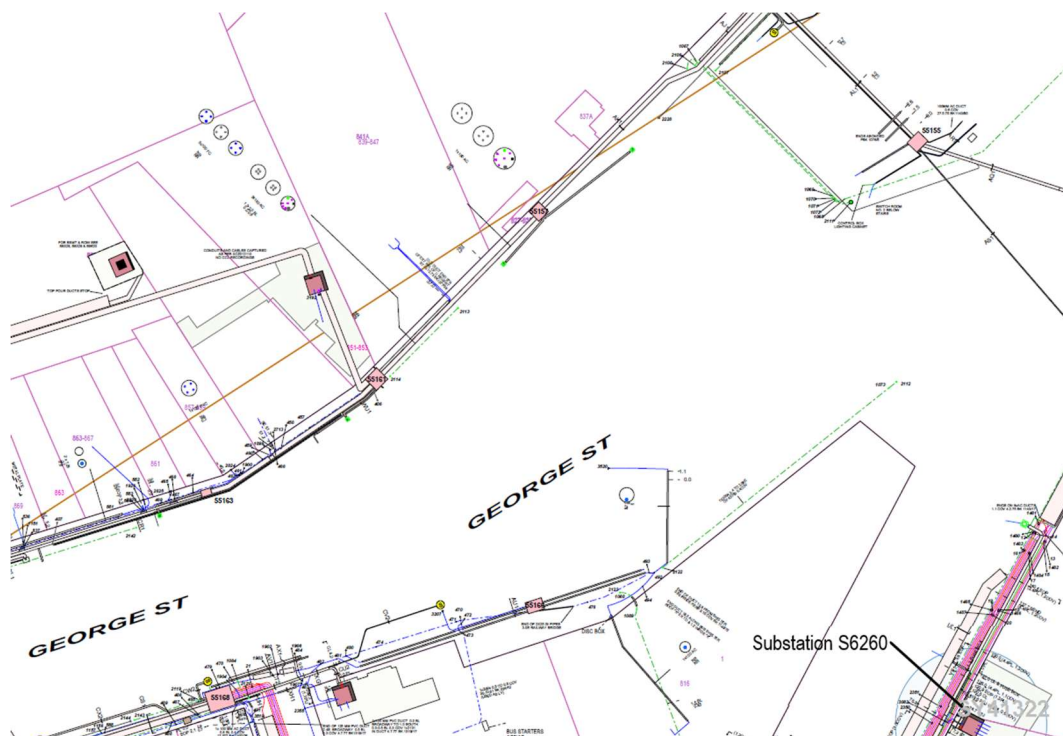


Figure 7 – Existing Services, Substation S6260

Early discussions should be initiated with Ausgrid to inform the designs of the incoming electrical supplies and substations.

4.2 Communications

4.2.1 Existing Services

The following communications services networks exist within or in proximity of the boundary of the development zone based on our interpretation of the DBYD information. Further discussions are required with the service providers to confirm existing arrangements. The utility communications cabling is generally installed direct buried and in underground conduits on street verges with regular access points through manholes or pits. No major carrier appears to be crossing Block B although providers do have services entering Block B to serve the existing buildings. The following identifies the providers in the area;

Optus

Optus cables along Lee St both direct buried (Shown in Red below) and within Conduits (Shown in red and blue below) The Incoming services to the existing buildings will need to be decommissioned prior to demolition.

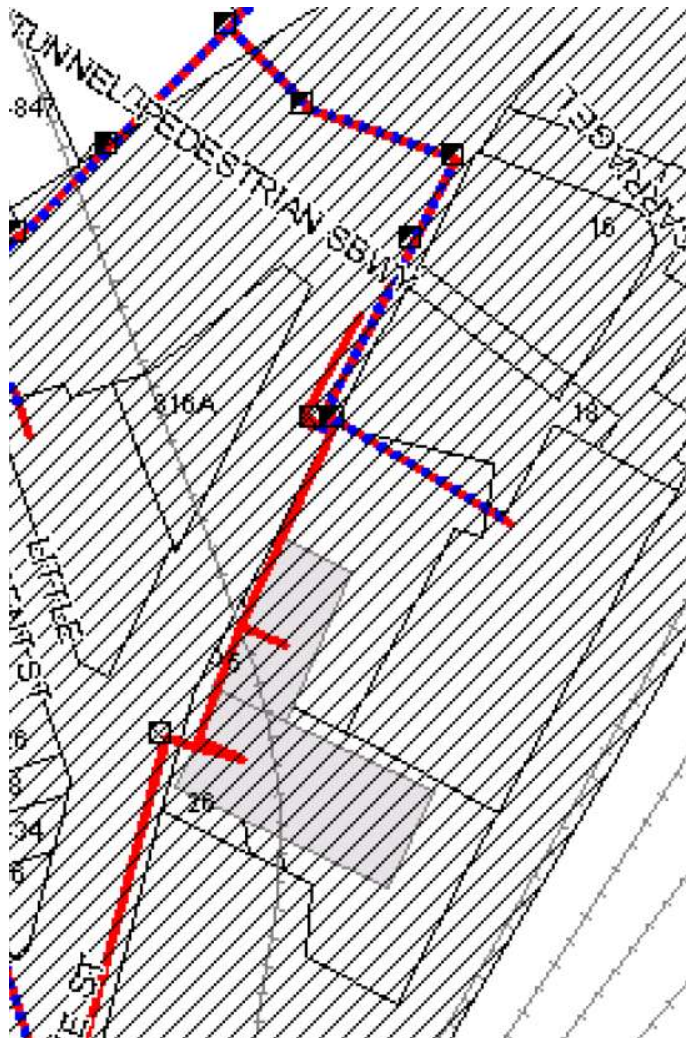


Figure 8 - Optus Cables along Lee Street

AAPT

AAPT cables run along Lee St in conduits, refer to figures below.

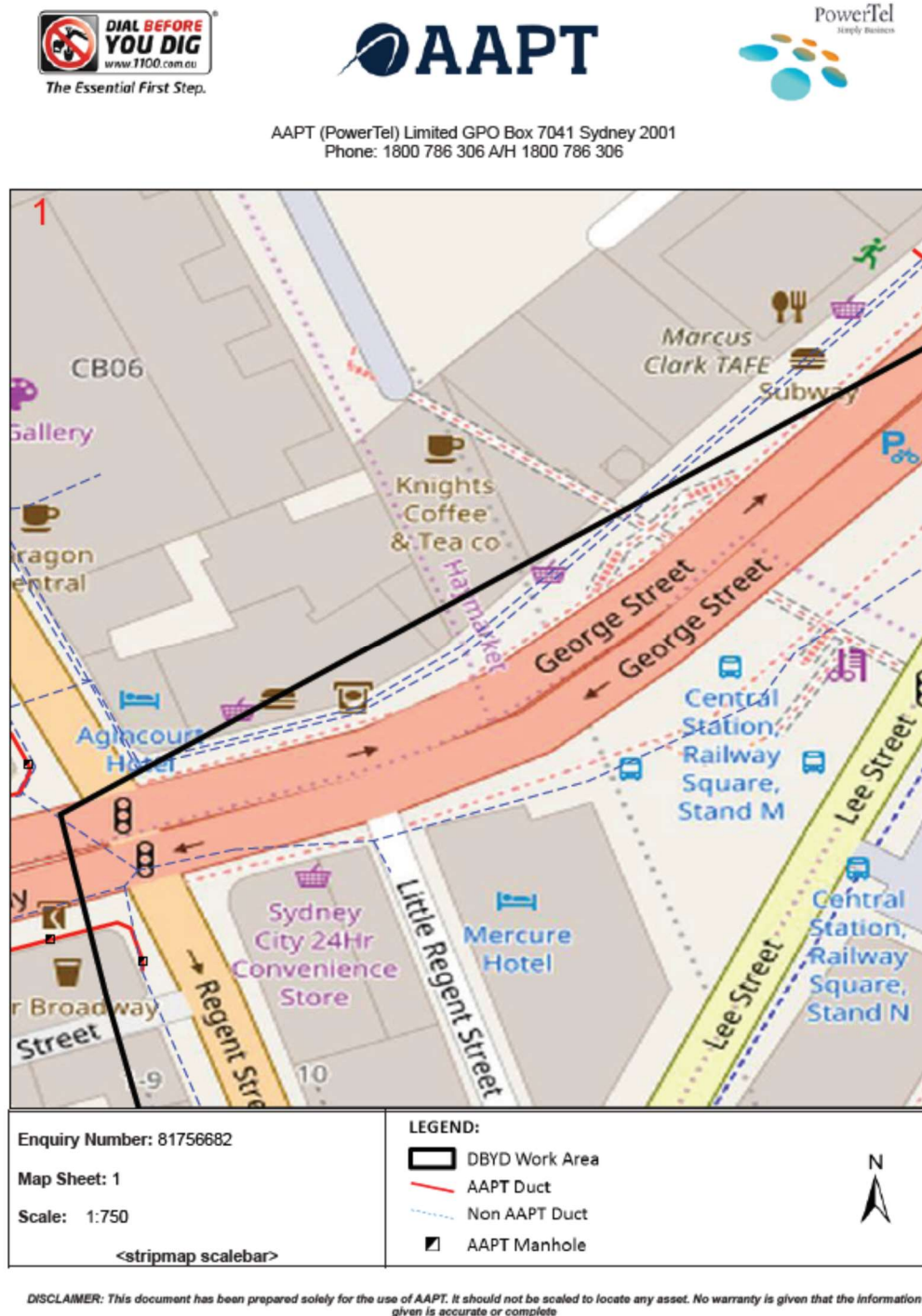
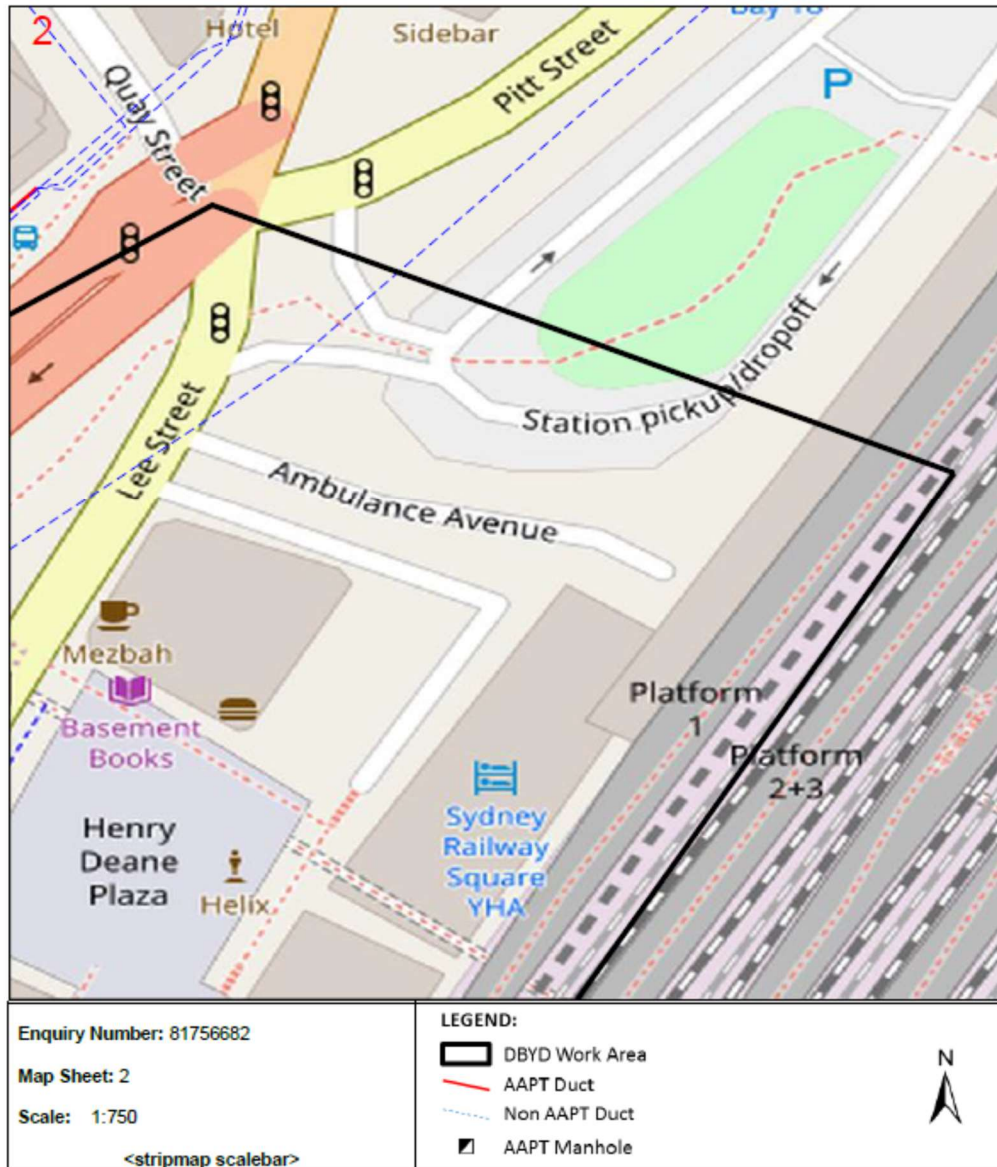


Figure 9 – AAPT Cables along Lee Street in Conduits



AAPT (PowerTel) Limited GPO Box 7041 Sydney 2001
Phone: 1800 786 306 A/H 1800 786 306



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Figure 10 - AAPT Cables along Lee Street in Conduits

NBN

NBN services run along Lee St within ducts as shown below. The Incoming services to the existing buildings will need to be decommissioned prior to demolition.

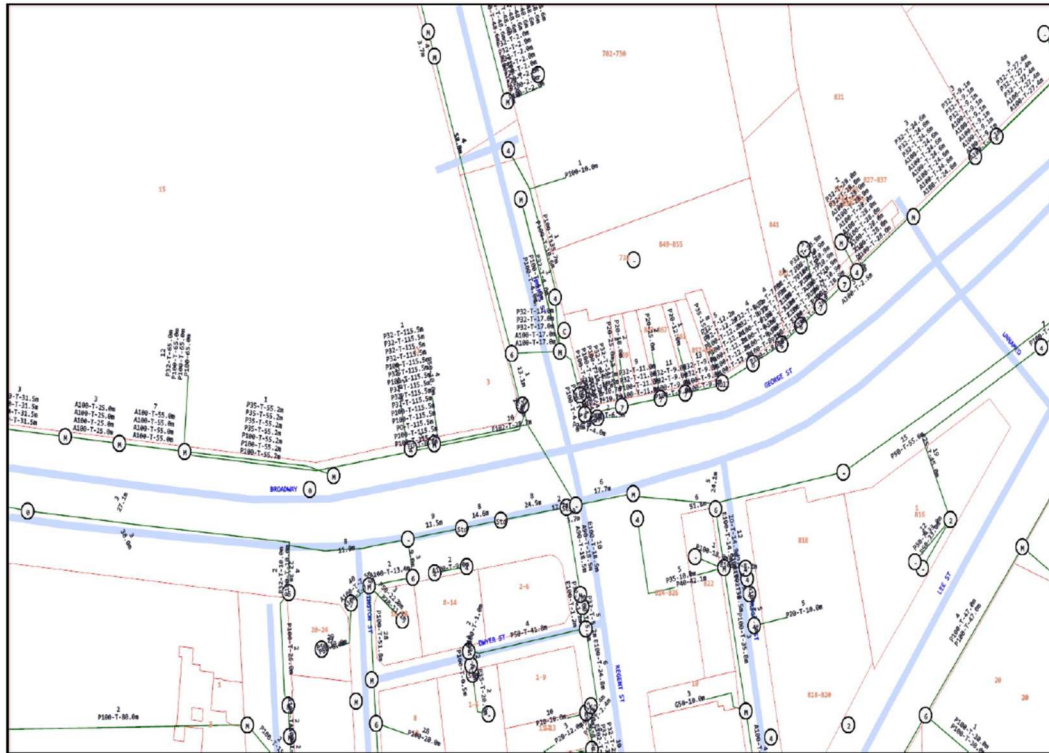


Figure 11 - NBN Services along Lee St within Ducts

Next Gen

Next Gen appear to have services running in a north easterly direction a short way from Block B, refer to figure below.

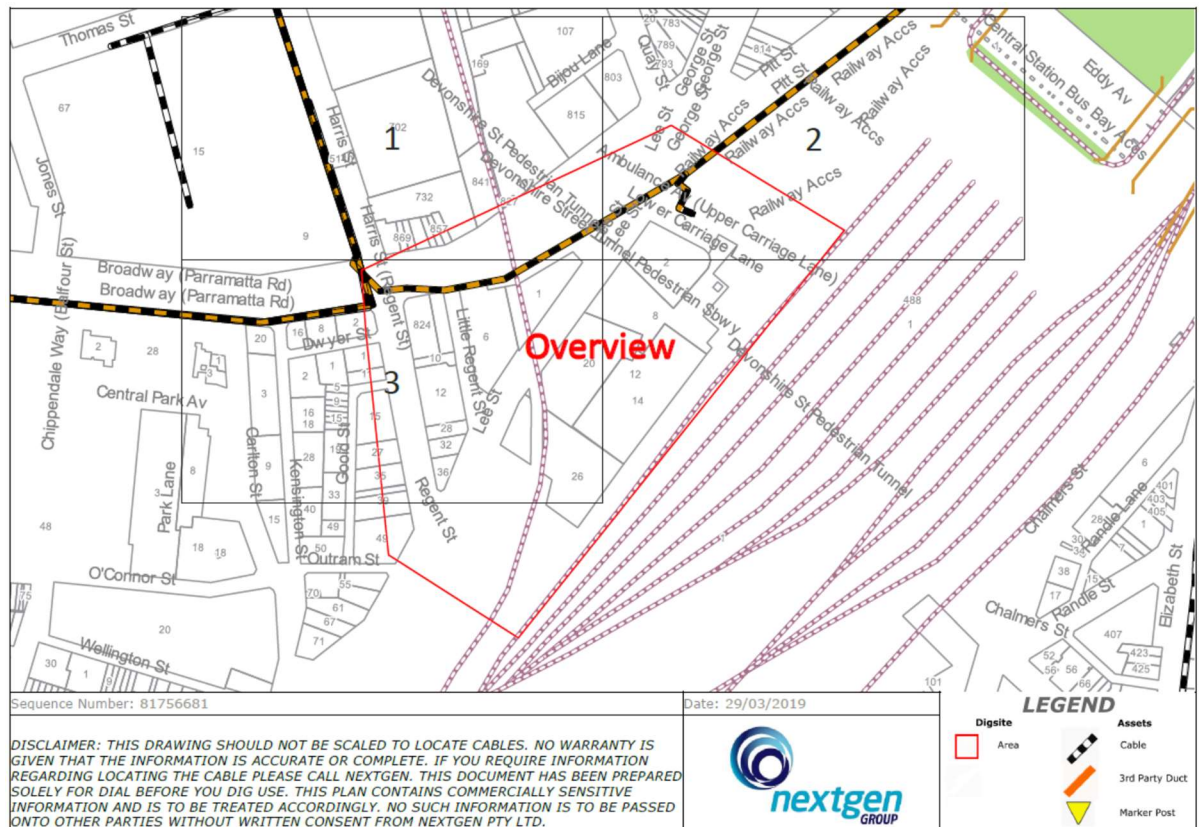


Figure 12 - Next Gen Services

Primus Telecom

Primus appear to have services running in a north easterly direction a short way from Block B, refer to diagram below.

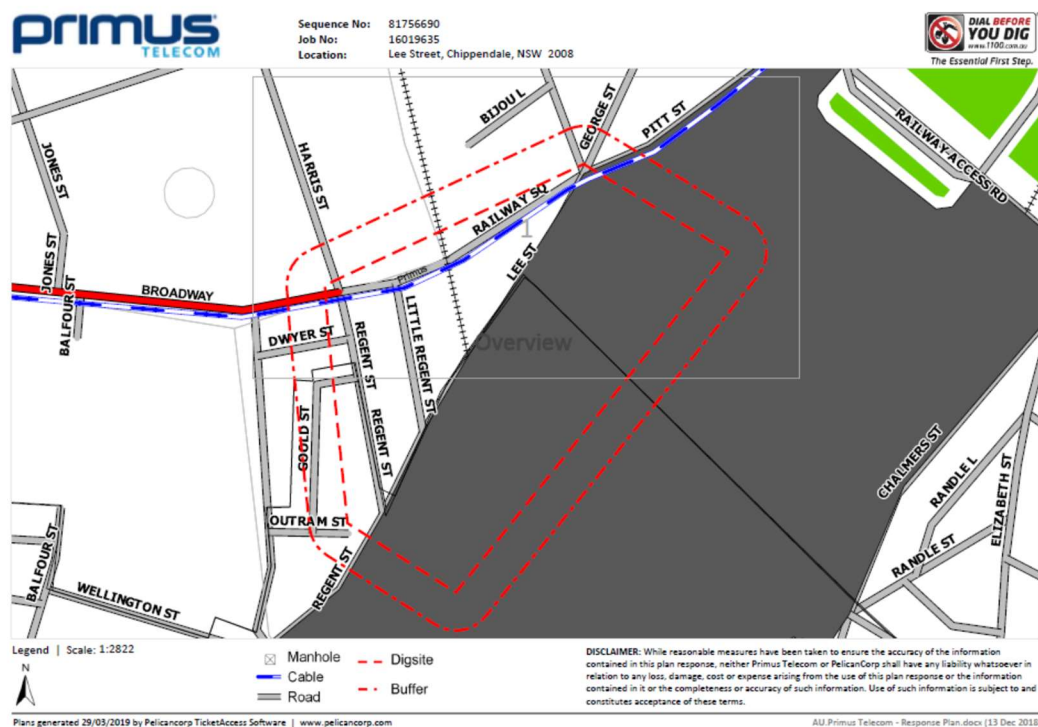


Figure 13 - Primus Telecom Services

Mobile coverage is currently provided to the precinct from various service providers.

4.2.2 Required Alterations

Those services in the street or footpaths will require protection during excavation and from any rock anchors proposed. Those service connections to Block B will need to be decommissioned and taken offline prior to demolition.

The planning of the new development will drive those new comms services required to enter the precinct. At present it is assumed that new intakes will be required via diverse pathways for each of the towers on Block B.

There are many comms providers in the street and it is not anticipated that coverage and capacity will not be achieved in the future as Block B is redeveloped.

4.3 Water, Sewer and Stormwater

The design team has interrogated the DBYD information and summarises below the Sydney Water assets surrounding Block B.

4.3.1 Existing Services

The existing services are described as follows.

Cold water

A 150 diameter Cast Iron Cement lined cold water main runs within Lee St.

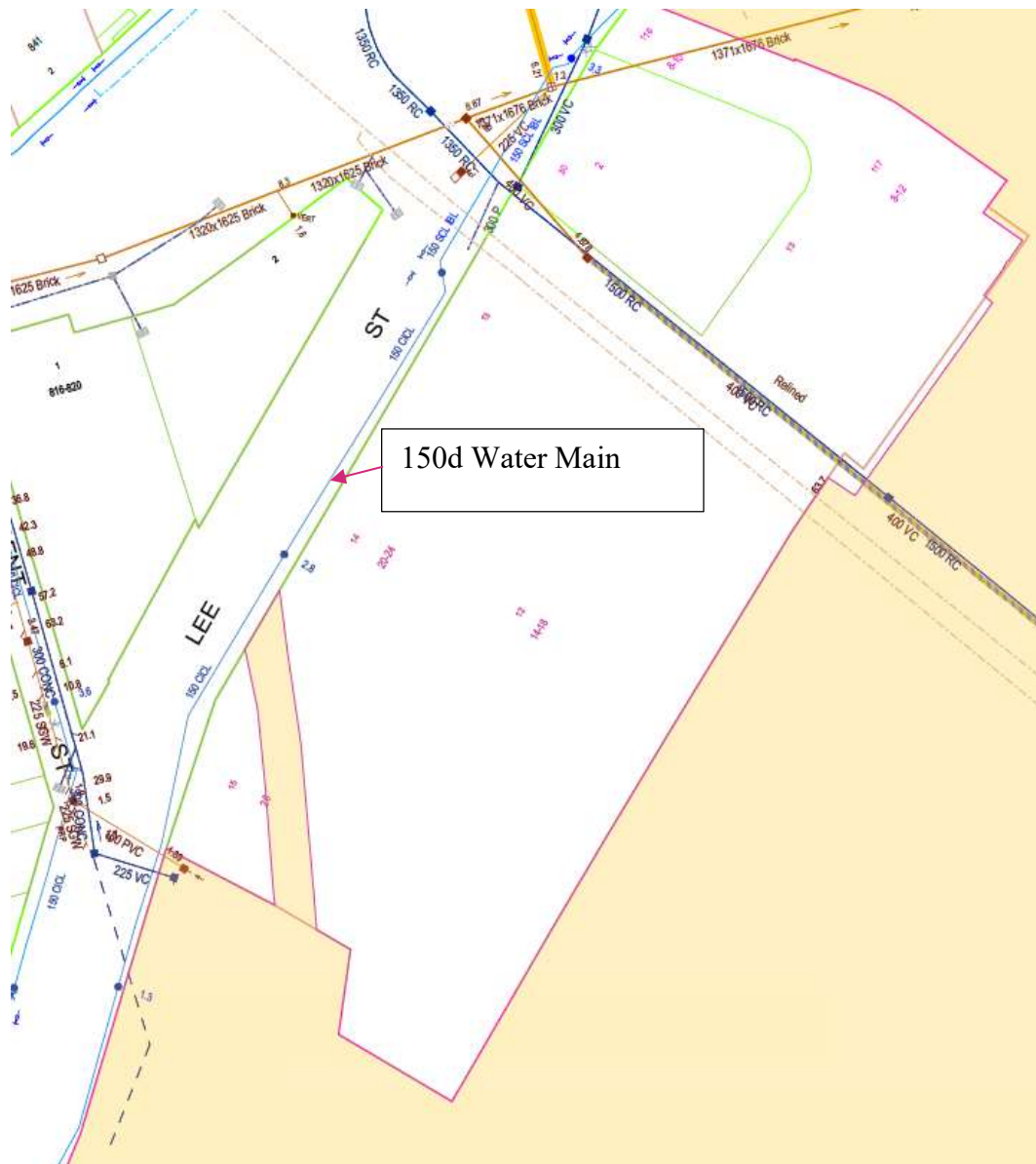


Figure 14 - 150 diameter Water Main

The predicted loads are towards the upper limit of a 150 diameter mains capability however it is possible that such will be able to support the expanded precinct. An early feasibility should be progressed with Sydney Water to confirm the networks capabilities both for domestic and fire fighting supply.

Sewer

No sewer mains exist within Lee St. The precincts sewer discharge will need to be directed to the 400 dia VC sewer running beneath the Henry Deane Plaza on the Devonshire St tunnel alignment.

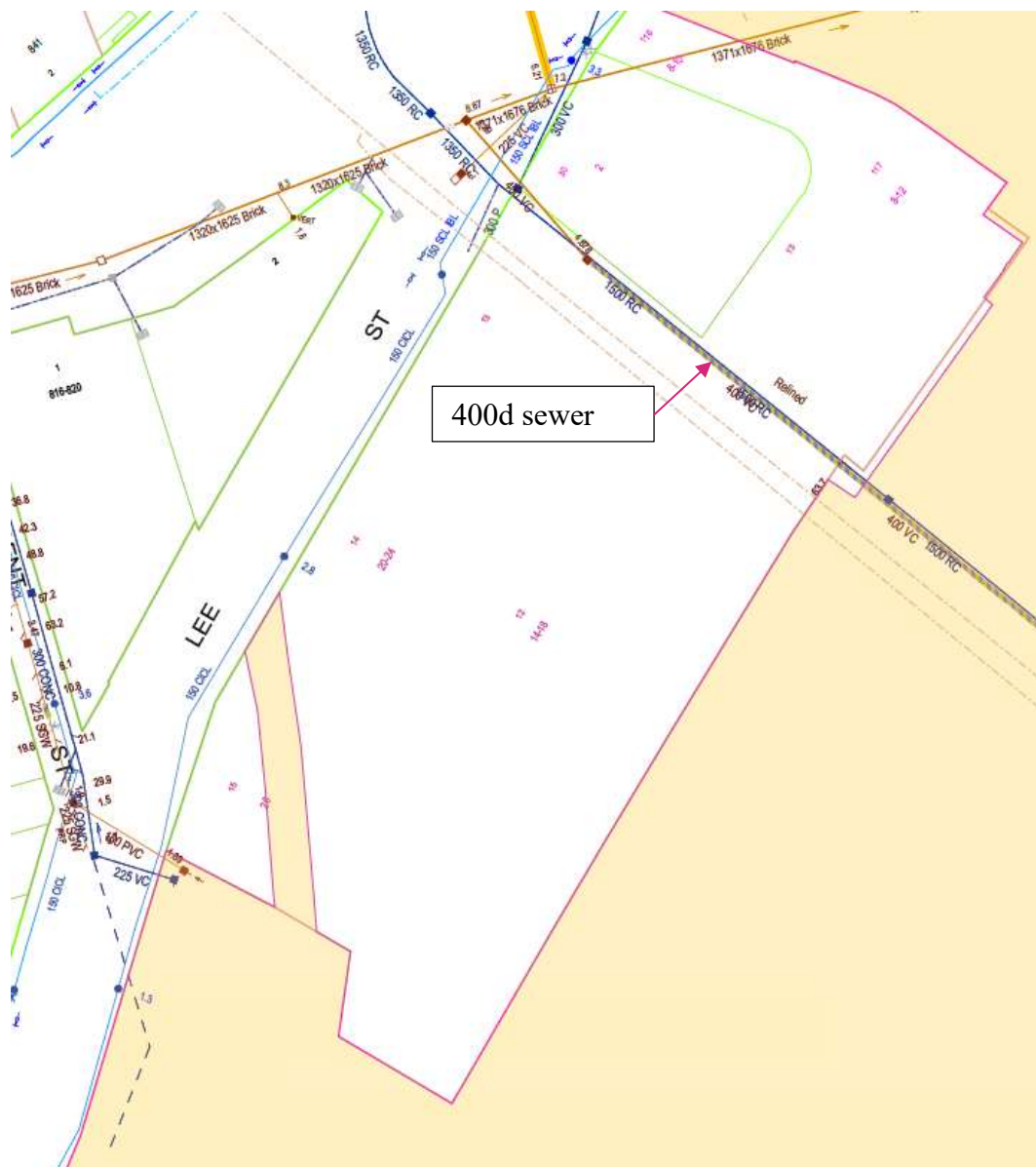


Figure 15 - 400 diameter Sewer

No Sydney Water stormwater assets exist within Lee St. The 1500 dia reinforced storm line traversing Block B along the Devonshire St Tunnel alignment will serve Block B. The total impermeable area of the new Block B is unchanged and the stormwater infrastructure is expected to be able to serve the new development.

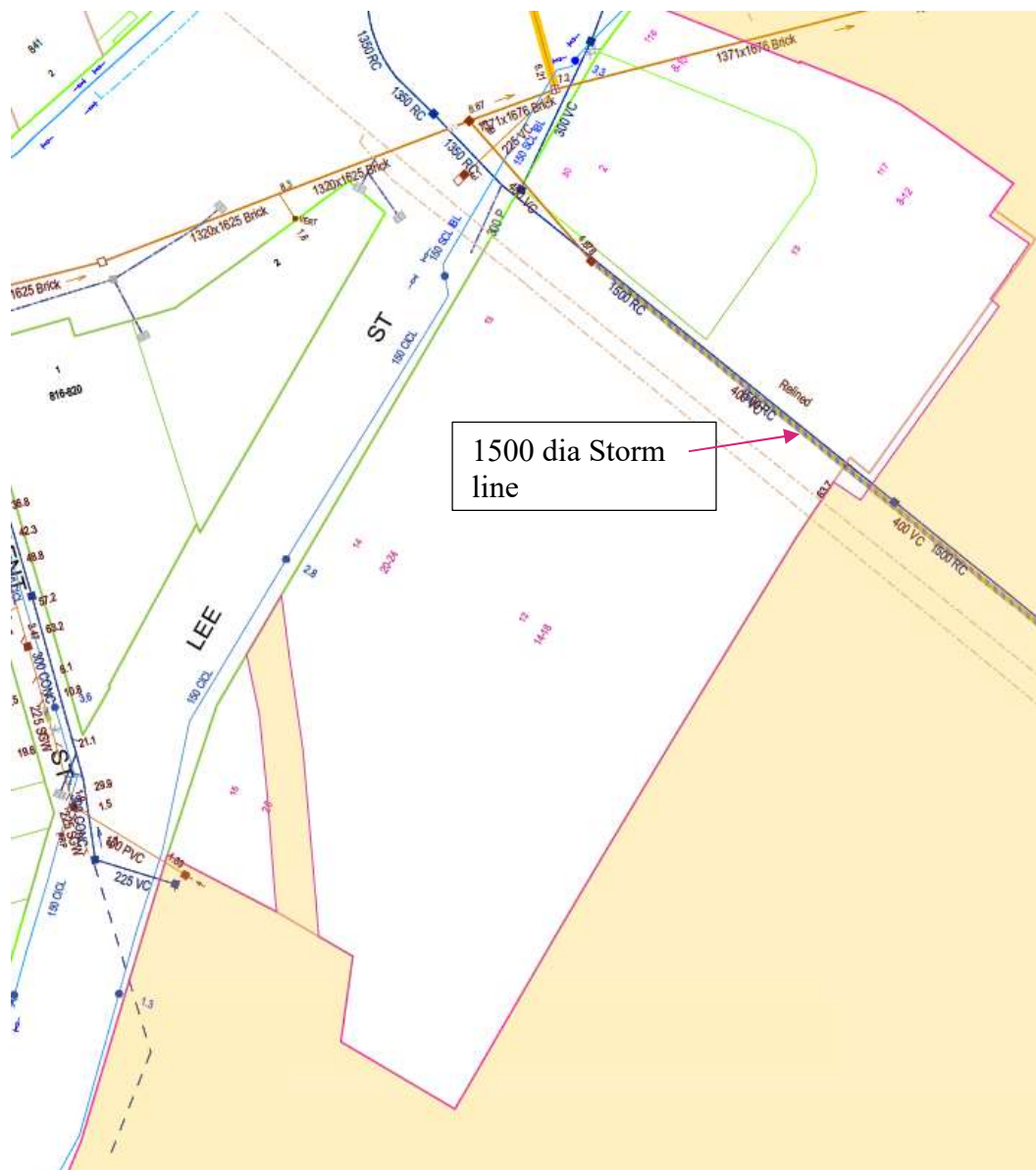


Figure 16 - 1500 diameter Storm Line

Sydney Water have confirmed that no on site detention is required for this precinct. The final form of the connections will develop through detailed design.

No Council stormwater mains have been identified through the dial before you dig searches. These may or may not exist in the area and their existence may help with the draining of minor catchments such as canopies along Lee St.

4.3.2 Required Alterations

Cold water

At present, we anticipate an increase in cold water demand over and above the existing Block B supplies. The supply requirements and connection point location(s) will need to be confirmed with Sydney Water as part of the Section 73 application.

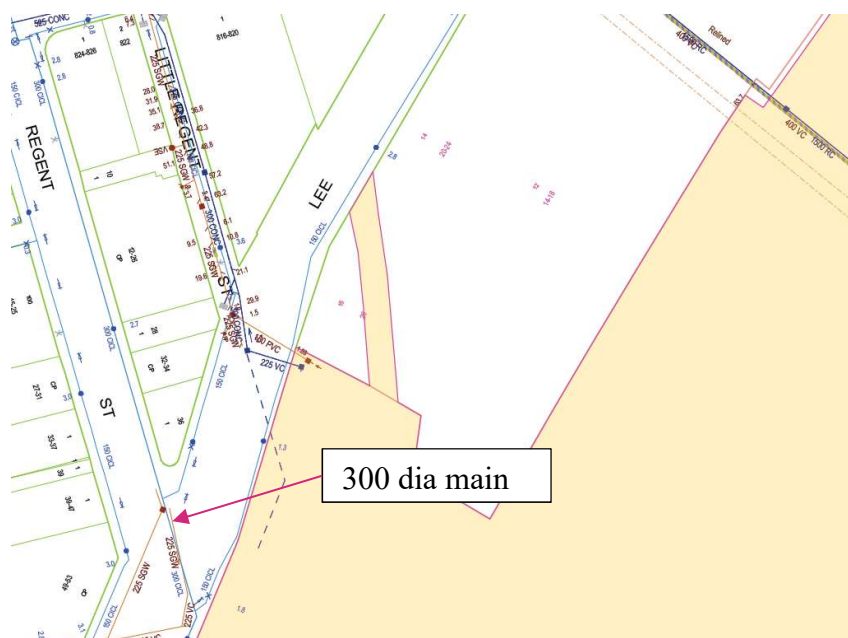


Figure 17 - 300 diameter Water Main

The water supply infrastructure within the Sydney CBD is considered a critical asset by Sydney Water. The mains are heavily interconnected and served from multiple reservoirs. The mains therefore are very reliable and are maintained to a high degree by Sydney Water commensurate with their critical asset status. Sydney Water has management plans in place to redirect supplies should failures occur resulting in a high degree of security for the developments served from this infrastructure.

The predicted loads are however towards the upper limit of a 150 dia mains capability however it is possible that such will be able to support the expanded precinct. An early feasibility should be progressed with Sydney Water to confirm the networks capabilities both for domestic and fire fighting supply.

The main in Lee St connects to a larger 300 dia main in Regent St just to the south of Block B and this may need to be extended if the 150 proves to be insufficient.

main at 210kpa will not normally be able to support Block B, combined gas load of 19MW and enhancement will be required.

4.4.1 Required Alterations

Jemena's low and medium pressure networks are coming under stress in the CBD and consumers with high demands are encouraged to connect to high pressure services with a local gas pressure reduction valve within Block B.

The nearest high-pressure service is located to the North in Barlow St and to the west in Quay/Thomas St.

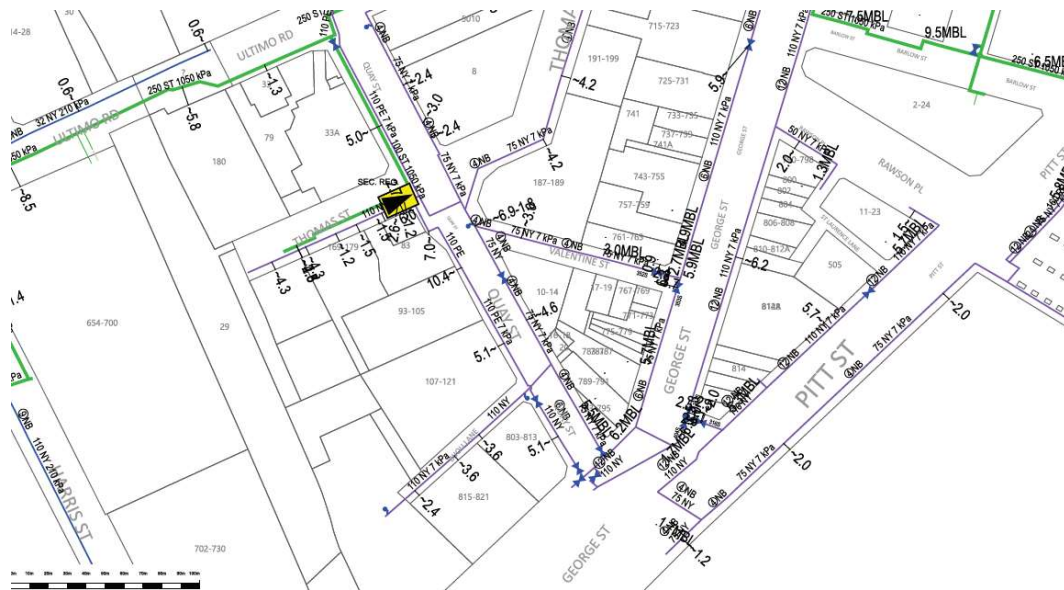


Figure 19 – High-pressure Service

It is expected that the high-pressure network will need to extend to service the development.

Early discussions with Jemena will be required to ascertain the favoured connection location.

5 Conclusion

The investigations have identified the services located around the precinct and those that require further detailed assessments and discussions with the utility provider. It is recommended that these initial discussions take place in the near future. The following table identifies the utility and the next steps.

Table 4 – Utility Type and Next Steps

Utility	Next steps
Electrical	Early discussions with Ausgrid on proposals for Block B to establish way forward for substation design and support of the development
Gas	Early discussion with Jemena on logistics for extension and connection of high pressure gas to Block B.
Water/Sewer/Storm	Undertake early feasibility with Sydney Water to confirm the way forward for the hydraulic utilities.
Comms	Block B expected to be supported from local infrastructure. Approach for feasibility studies at an appropriate time in the future.

The analysis undertaken has utilised the loads assessments for the Henry Deane Plaza redevelopment. The report comments on the ability of the surrounding infrastructure to support these loads. Overlaying the loads from the proposed surrounding developments will not see a pro rata increase in the above calculated loads as diversity can be applied. The capabilities of the utilities should be assessed against this diversified load for the greater precinct as these become available.