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Sydney Metro

Pitt Street South Over Station Development

Hydraulic Infrastructure Report

PREPARED FOR:

Pitt Street Developer South Pty Ltd.

SMCSWSPS-CJA-OSS-PL-REP-000002

DESIGN · SCIENCE · LANDSCAPE · CIVIL · MODELLING · HYDRAULICS

Issue for SSD DA	
Revision:	C
Date:	19/05/2020

DOCUMENT HISTORY

Revision	Prepared By	Verified By	Date
P1	JP	WB	02/12/2019
A	JP	WB	16/01/2019
B	JP	WB	07/02/2020
C	LW	WB	19/05/2020

Job Number: 14365

Prepared by Hallmark Quest (Australia) Pty Ltd trading as CJ Arms & Associates

Quality Approved ISO 9001 | Environmental Approved AS/NZS ISO 14001 | Safety Approved AS/NZS 4801

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1. INTRODUCTION

This report has been prepared to accompany a detailed State Significant Development (SSD) development application (DA) for a residential Over Station Development (OSD) above the new Sydney Metro Pitt Street South Station. The detailed SSD DA is consistent with the Concept Approval (SSD 17_8876) granted for the maximum building envelope on the site, as proposed to be modified.

The Minister for Planning, or their delegate, is the consent authority for the SSD DA and this application is lodged with the NSW Department of Planning, Industry and Environment (NSW DPIE) for assessment.

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 28 October 2019.

The detailed SSD DA seeks development consent for the construction and operation of

- New residential tower with a maximum building height of RL 171.6, including residential accommodation and podium retail premises, excluding station floor space
- Use of spaces within the CSSI 'metro box' building envelope for the purposes of:
  - *Retail tenancies;*
  - Residential communal facilities, residential storage, bicycle parking, and operational back of house uses
  - Shared vehicle loading and service facilities on the ground floor
  - Landscaping
  - *Utilities and services provision.*
  - *Stratum subdivision (Station/OSD).*

- *Integration with the approved CSSI proposal including though not limited to:*
  - *Structures, mechanical and electronic systems, and services; and*
  - *Vertical transfers;*

1.1 The Site

The site is located within the Sydney CBD, on the corner of Bathurst Street and Pitt Street. It has two separate street frontages, Pitt Street to the west and Bathurst Street to the north. The area surrounding the site consists of predominantly residential high-density buildings and some commercial buildings, with finer grain and heritage buildings dispersed throughout.

The site has an approximate area of 1,710sqm and is now known as Lot 10 in DP 1255507. The street address is 125 Bathurst Street, Sydney.

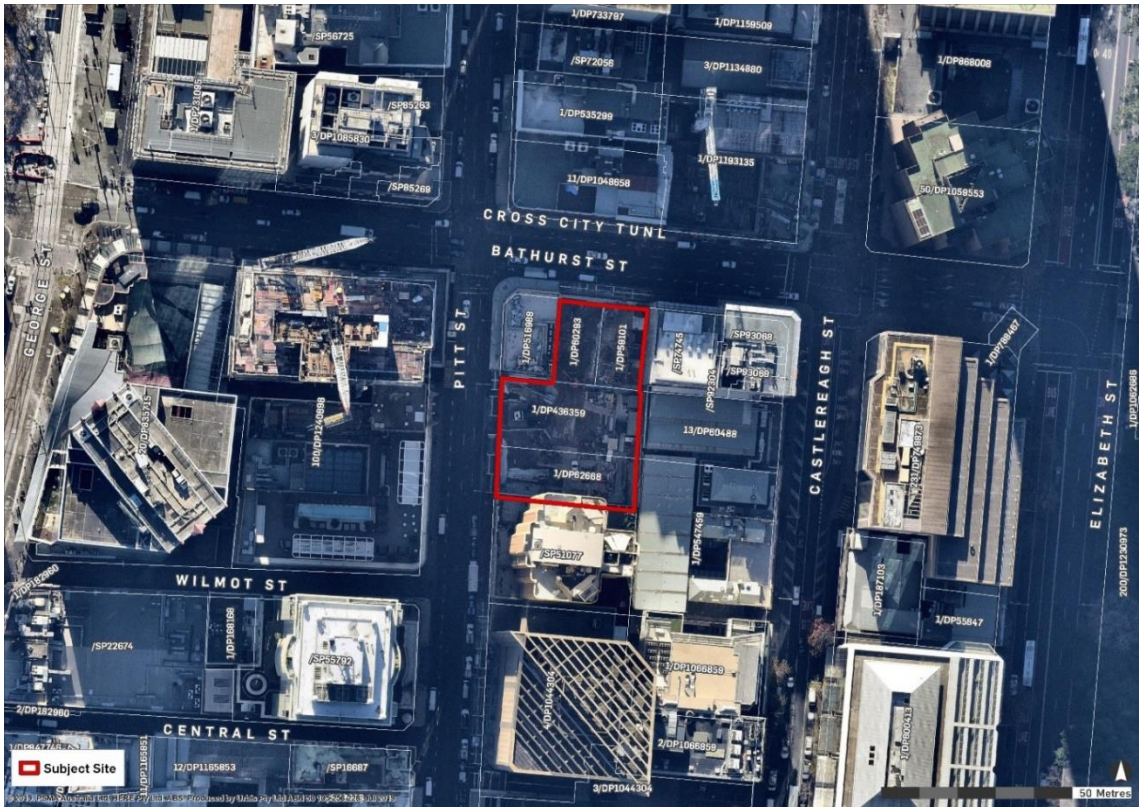


Figure 1 Location Plan

1.2 Sydney Metro Description

Sydney Metro is Australia's biggest public transport program. A new standalone railway, this 21st century network will revolutionise the way Sydney travels.

There are four core components:

- **Sydney Metro Northwest (formerly the 36km North West Rail Link)**

This project is now complete and passenger services commenced in May 2019 between Rouse Hill and Chatswood, with a metro train every four minutes in the peak. The project was delivered on time and $1 billion under budget.

- **Sydney Metro City & Southwest**

Sydney Metro City & Southwest project includes a new 30km metro line extending metro rail from the end of Metro Northwest at Chatswood, under Sydney Harbour, through new CBD stations and southwest to Bankstown. It is due to open in 2024 with the ultimate capacity to run a metro train every two minutes each way through the centre of Sydney.

Sydney Metro City & Southwest will deliver new metro stations at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo and new underground metro platforms at Central Station. In addition it will upgrade and convert all 11 stations between Sydenham and Bankstown to metro standards.

In 2024, customers will benefit from a new fully-air conditioned Sydney Metro train every four minutes in the peak in each direction with lifts, level platforms and platform screen doors for safety, accessibility and increased security.

- **Sydney Metro West**

Sydney Metro West is a new underground railway connecting Greater Parramatta and the Sydney CBD. This once-in-a-century infrastructure investment will transform Sydney for generations to come, doubling rail capacity between these two areas, linking new communities to rail services and supporting employment growth and housing supply between the two CBDs.

The locations of seven proposed metro stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock and The Bays.

The NSW Government is assessing an optional station at Pyrmont and further planning is underway to determine the location of a new metro station in the Sydney CBD.

- **Sydney Metro Greater West**

Metro rail will also service Greater Western Sydney and the new Western Sydney International (Nancy Bird Walton) Airport. The new railway line will become the transport spine for the Western Parkland City's growth for generations to come, connecting communities and travellers with the rest of Sydney's public transport system with a fast, safe and easy metro service. The Australian and NSW governments are equal partners in the delivery of this new railway.

The Sydney Metro Project is illustrated in the figure below.

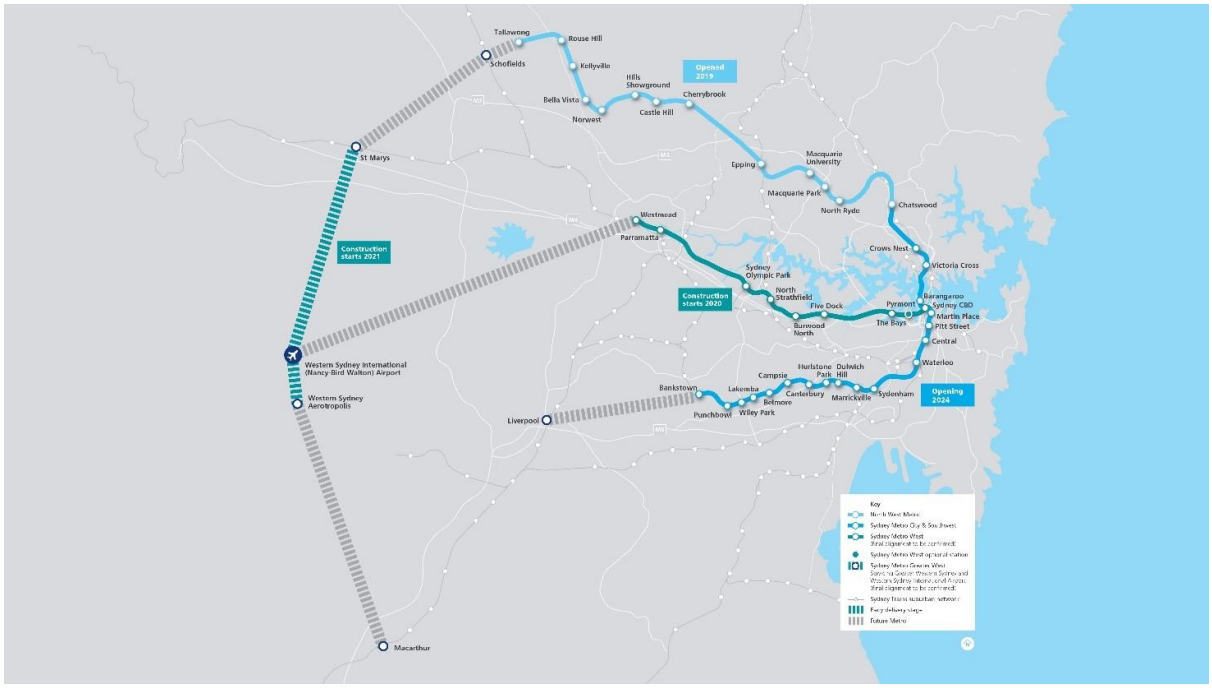


Figure 2 Sydney Metro Alignment Map

Source: Sydney Metro

On 9 January 2017, the Minister for Planning approved the Sydney Metro City & Southwest - Chatswood to Sydenham project as a Critical State Significant Infrastructure project (reference SSI 15_7400) (CSSI Approval). The terms of the CSSI Approval includes all works required to construct the Sydney Metro Pitt Street Station, including the demolition of existing buildings and structures on both sites (north and south). The CSSI Approval also includes construction of below and above ground works within the metro station structure for appropriate integration with over station developments.

The CSSI Approval included Indicative Interface Drawings for the below and above ground works at Pitt Street South Metro Station site. The delineation between the approved Sydney Metro works, generally described as within the “metro box”, and the Over Station Development (OSD) elements are illustrated below. The delineation line between the CSSI Approved works and the OSD envelope is generally described below or above the transfer slab level respectively.

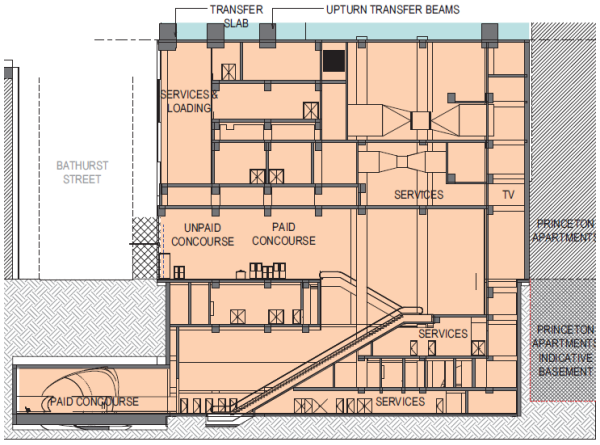


Figure 3 Pitt Street Station (North-South Section)

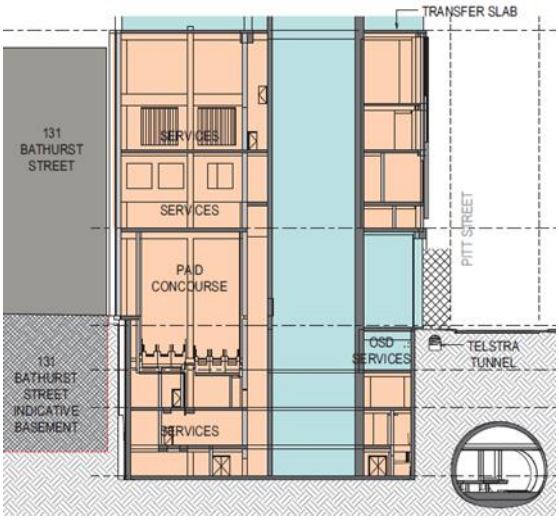
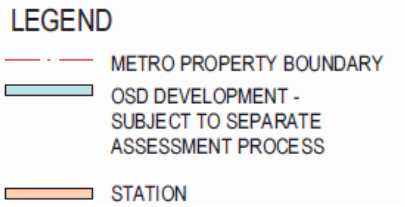


Figure 4 Pitt Street Station (East-West Section)



Source: CSSI Preferred Infrastructure Report (TfNSW)

The Preferred Infrastructure Report (PIR) noted that the integration of the OSD elements and the metro station elements would be subject to the design resolution process, noting that the detailed design of the “metro box” may vary from the concept design assessed within the planning approval.

As such in summary:

- The CSSI Approval provides consent for the construction of all structures within the approved "metro box" envelope for Pitt Street South.

- The CSSI Approval provides consent for the fit out and use of all areas within the approved "metro box" envelope that relate to the ongoing use and operation of the Sydney Metro.

- The CSSI Approval provides consent for the embellishment of the public domain, and the architectural design of the "metro box" envelope as it relates to the approved Sydney Metro and the approved Pitt Street South Station Design & Precinct Plan.

- Separate development consent however is required to be issued by the NSW DPIE for the use and fit-out of space within the "metro box" envelope for areas related to the OSD, and notably the construction and use of the OSD itself.

As per the requirements of clause 7.20 of the Sydney Local Environmental Plan 2012, as the OSD exceeds a height of 55 metres above ground level (among other triggers), development consent is first required to be issued in a Concept (formerly known as Stage 1) DA. This is described below.

1.3 Pitt Street South Over Station Development (OSD)

Development consent was granted on 25 June 2019 for the Concept Development Application (SSD 8876) for Pitt Street South OSD including:

- A maximum building envelope, including street wall and setbacks for the over station development.

- A maximum building height of RL171.6.

- Podium level car parking for a maximum of 34 parking spaces.

- Conceptual land use for either one of a residential or commercial scheme (not both). NO maximum Gross Floor Area was approved as part of SSD 8876.

The building envelope approved within the Concept SSD DA provides a numeric delineation between the CSSI Approval "metro box" envelope and the OSD building envelope. As illustrated in the figures below, the delineation line between the two projects is defined at RL 58.25 (Level 7).

For the purposes of the Detailed (Stage 2) SSD DA, it is noted that while there are two separate planning applications that apply to the site (CCSI and SSD DA), this report addresses the full development across the site to provide contextual assessment.

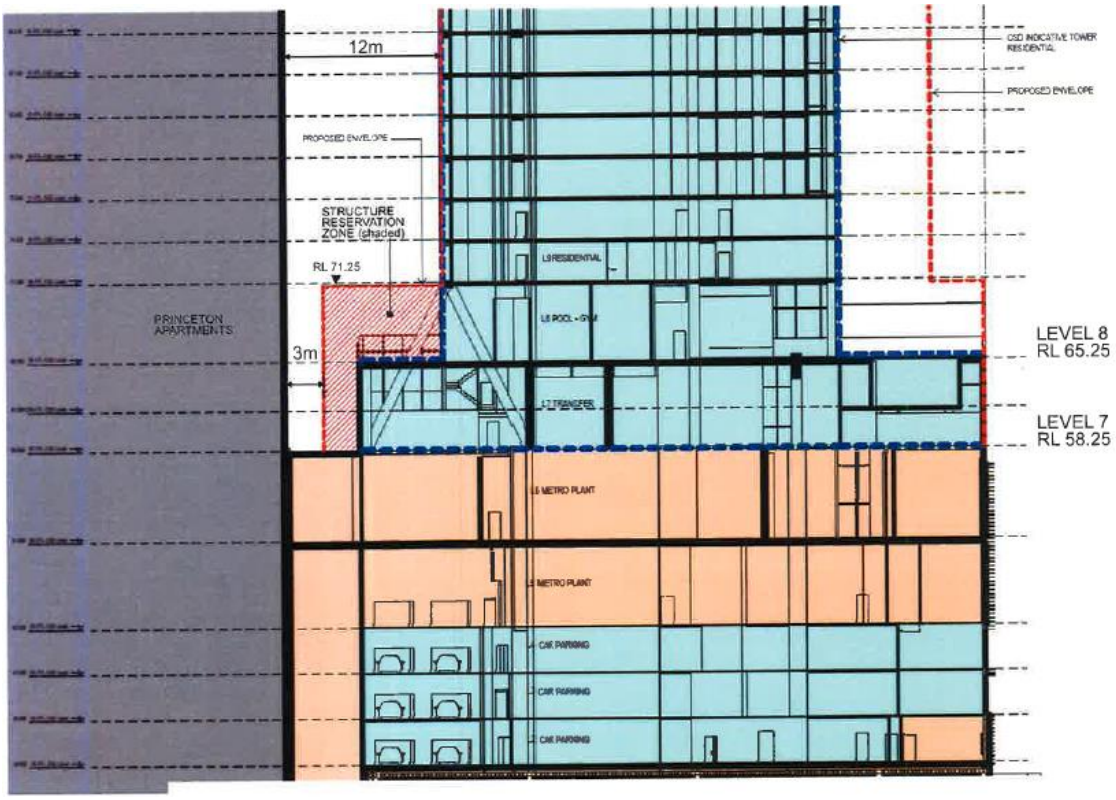


Figure 5 Pitt Street South Concept SSD DA – Building Section

Source: SSD 8876 Concept Stamped Plans

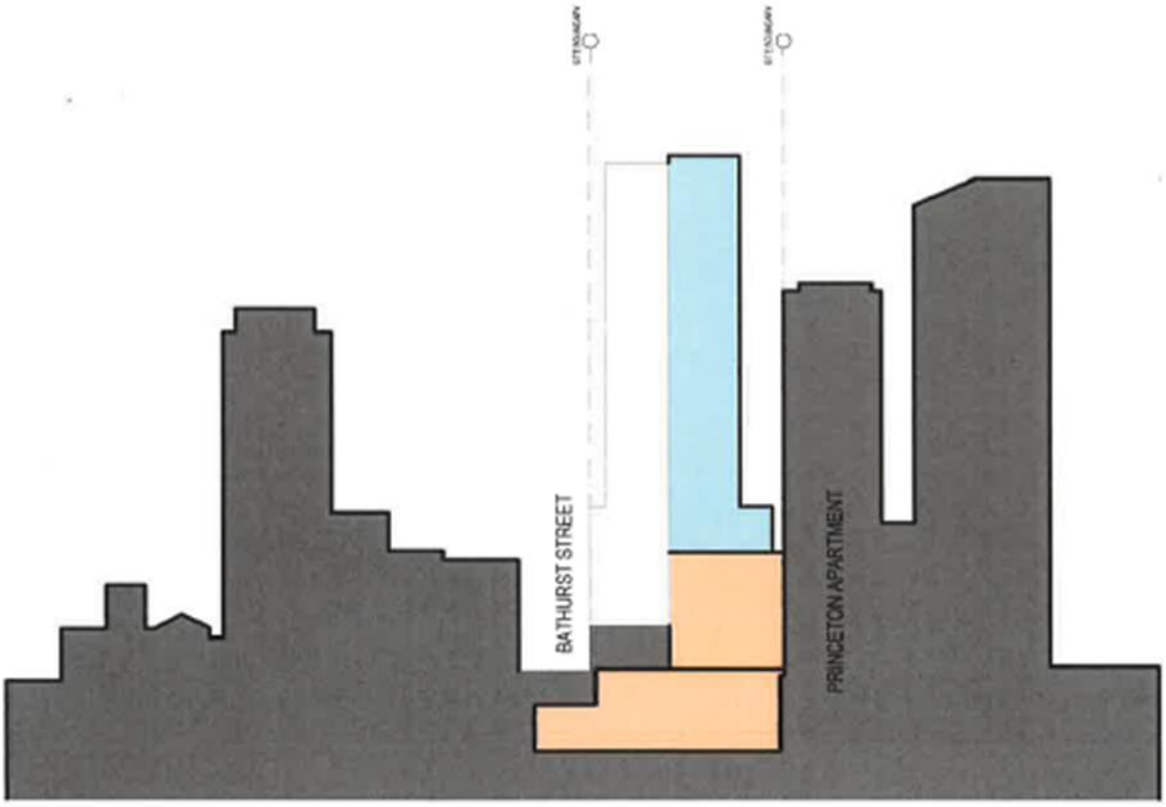


Figure 6 Pitt Street South Concept SSD DA – North South Section

Source: SSD 8876 Concept Stamped Plans

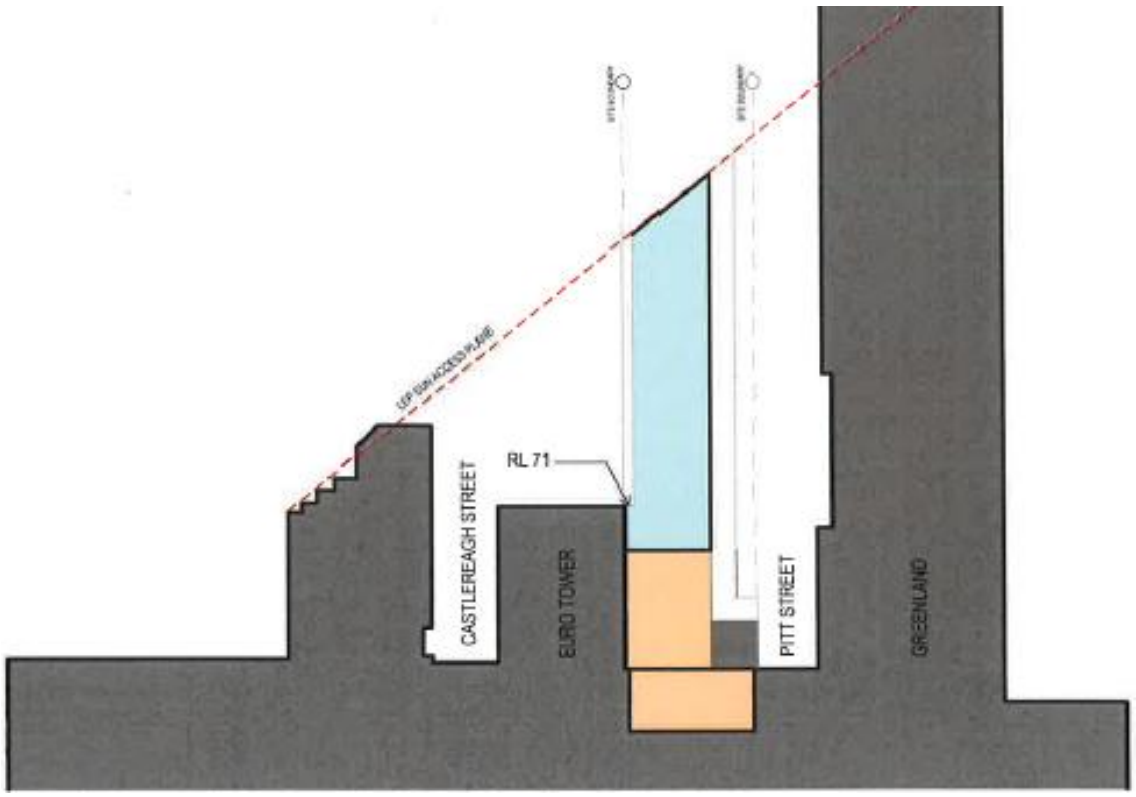


Figure 7 Pitt Street South Concept SSD DA – East West Section

Source: SSD 8876 Concept Stamped Plans

1.4 Extent of Services

This Site Infrastructure Brief is limited to the following hydraulic or gravity systems:

- Stormwater (connection to City of Sydney kerb)
- Potable Water
- Sewer Drainage
- Natural Gas

1.5 Feasibility Application To Sydney Water

A Feasibility Application was submitted to Sydney Water by Warren Smith & Partners on 25th August 2017 (reference no. 5694000) to ascertain the suitability for connection to Sydney Water assets for stormwater, potable water and sewer.

Sydney Water subsequently provided a Feasibility Letter in response to the application on 6th November 2017 highlighting Sydney Water's requirements for the development for stormwater, potable water and sewer if a Section 73 Application were made. The information provided in the Feasibility Letter is relevant for the application day only. The associated application is appended to this report.

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARS) Dated 28 October 2019. Specifically, this report has been prepared to respond to the SEARS requirements summarised in Table 1

Item	Description of Requirement	Section Reference
SEARS 12	a) Identify and address the existing capacity to service the development proposed and any augmentation requirements for utilities in consultation with relevant agencies. B) Identify any potential impacts of the proposed construction and operation on the existing utility infrastructure and service provider assets, and demonstrate how these will be protected, or impacts mitigated.	Section 2 – Section 5

Table 1 SEARs Requirements

This report has also been prepared in response to the following Condition of Consent for the State Significant Development Concept (SSD 8876) for the OSD summarised in Table 2.

Table 1

Item	Description of Requirement	Section Reference (this report)
DC B19	Address the existing capacity and any augmentation requirements of the development for the provision of utilities, including staging of infrastructure through the preparation of an infrastructure / utility management plan in consultation with relevant agencies and services providers.	Section 2 – Section 5
DC B19	(b) Detailed stormwater and drainage design documentation including overland flow assessment and maintenance.	Refer CJA Stormwater Management Plan SMCSWSPS-CJA-OSS-PL-REP-000001 and Aurecon Flood Impact Assessment – Stormwater and Flood Impact Assessment - SMCSWSPS-AUR-OSS-PL-REP-000003

Table 2 Concept Approval and Conditions of Consent

2. STORMWATER

2.1 AVAILABLE INFORMATION

Preliminary stormwater authority information was obtained via Sydney Water's Asset Maps (28/10/2019). These plans show approximate location and pipe/culvert size of the stormwater network surrounding the site. Further consultation on infrastructure surveys will be required further in the detailed design.

2.2 EXISTING CONDITIONS

The site is currently serviced by a series of stormwater connections to the kerb per lot area (refer Figure 8). The existing site was divided into smaller lot areas which allowed for multiple kerb and gutter outlets. Stormwater is then discharged onto the kerb and into an existing council pit.

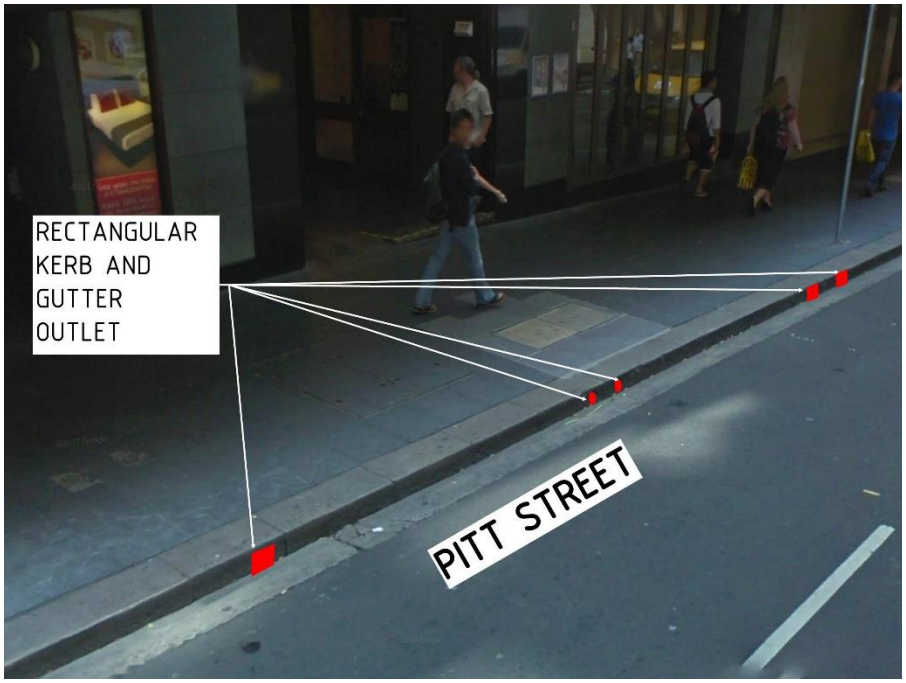


Figure 8: Existing Site Kerb Connections (Google Streetview)

2.2.1 Sydney Water Feasibility Advice

Sydney Water provided the following response to the stormwater connection proposal for the station in the Feasibility Letter Section 4.3 dated 6th November 2017 (ref. no. 5694000).

"Any direct stormwater connection to Sydney Water's stormwater system is to be the last option at this location. The proponent is required to investigate the possibility of discharging stormwater into the kerb and gutter or any available council stormwater system."

Sydney Water's preference for the site stormwater connection is to connect to the nearest council asset (stormwater pit), or via the kerb and gutter system.

2.3 PROPOSAL

Sydney Water have advised that the existing heritage drain on Bathurst St cannot be connected directly into.

City of Sydney Council have permitted the construction of a new council stormwater pit located to the north of the development subject to detailed survey of existing asset. This will allow flows of up to a Q100 event. A new stormwater pipe is to subsequently connect to an existing council pit.

All new council pits are to be constructed in accordance with City of Sydney specifications and requirements. Refer Figure 9 for details.

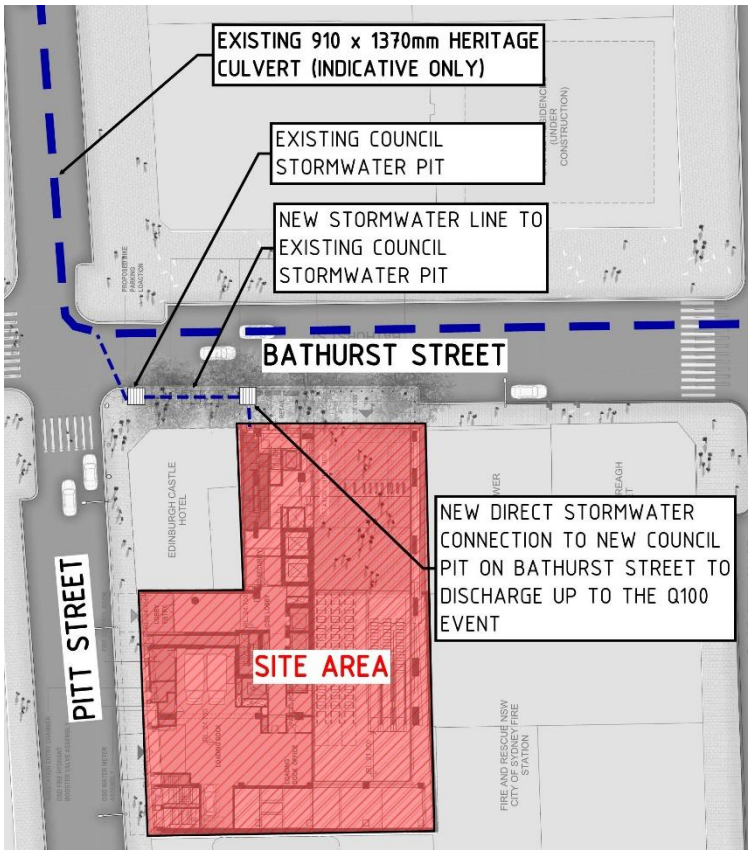


Figure 9: Site Stormwater Connection

3. POTABLE WATER

3.1 AVAILABLE INFORMATION

Preliminary potable water authority information was obtained via Sydney Water's Asset Maps. These plans show approximate location and pipe size of the water mains surrounding the site. Further consultation on infrastructure surveys will be required further in the design phase.

3.2 EXISTING CONDITIONS

The amalgamated lot is currently serviced by the water mains on the north and western edges:

- 1 no. 375mm authority water main on Bathurst Street
- 1 no. 250mm authority water main on Pitt Street

3.3 SYDNEY WATER FEASIBILITY ADVICE

Sydney Water have indicated via the Feasibility Letter Section 4.2 dated 6th November 2017 (ref. no. 5694000) that the 250mm water main on Pitt Street is suitable for connection of the potable water supply.

3.4 PROPOSAL

The current design is to provide 2 no. new cold water tappings to the existing 250mm authority water main on Pitt Street:

- 1 no. 100mm tapping for Wet Fire Services
- 1 no. 100mm tapping for Domestic Cold-Water Services

All new tappings are to be designed to Sydney Water connection and authority meter requirements. Refer Figure 10 for details:

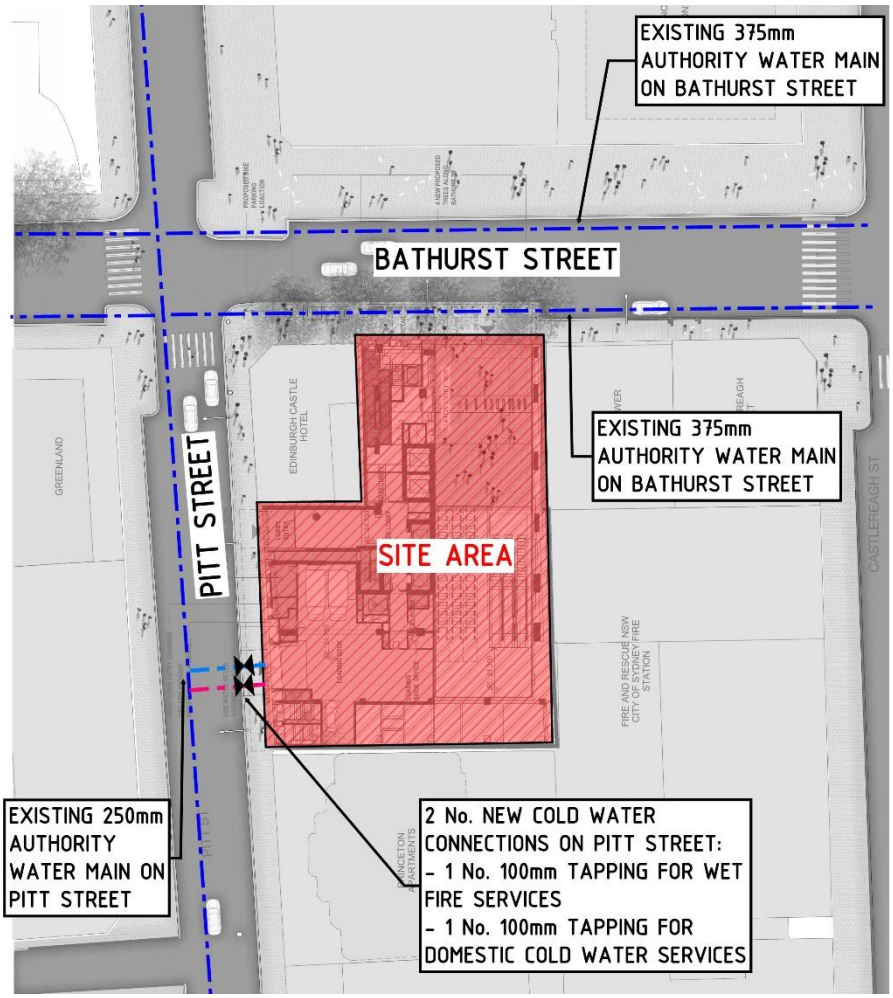


Figure 10: Site Cold Water Connection

4. SEWER DRAINAGE

4.1 AVAILABLE INFORMATION

Preliminary sewer drainage authority information was obtained via Sydney Water's Asset Maps. These plans show approximate location and pipe size of the sewer mains surrounding the site. Further consultation on infrastructure surveys will be required further in the design phase.

4.2 EXISTING CONDITIONS

The existing lots making up the developed site are currently serviced by the sewer mains on the north and western edges:

- 1 no. 300mm VC authority sewer main on Pitt Street
- 1 no. 225mm VC authority sewer main on Bathurst Street.

4.3 SYDNEY WATER FEASIBILITY ADVICE

Sydney Water have indicated via the Feasibility Letter Section 4.2 dated 6th November 2017 (ref. no. 5694000) that the 300mm VC authority sewer main on Pitt Street is suitable for site drainage connection for the station.

4.4 PROPOSAL

The current design is to provide a new 225mm site sewer connection to the existing 300mm VC authority sewer main on Pitt Street.

The site sewer produced is to flow to a new 225mm boundary trap located on the western end of the site inside the boundary all in accordance with Sydney Water requirements, drawings and specifications. Refer Figure 11 for details.

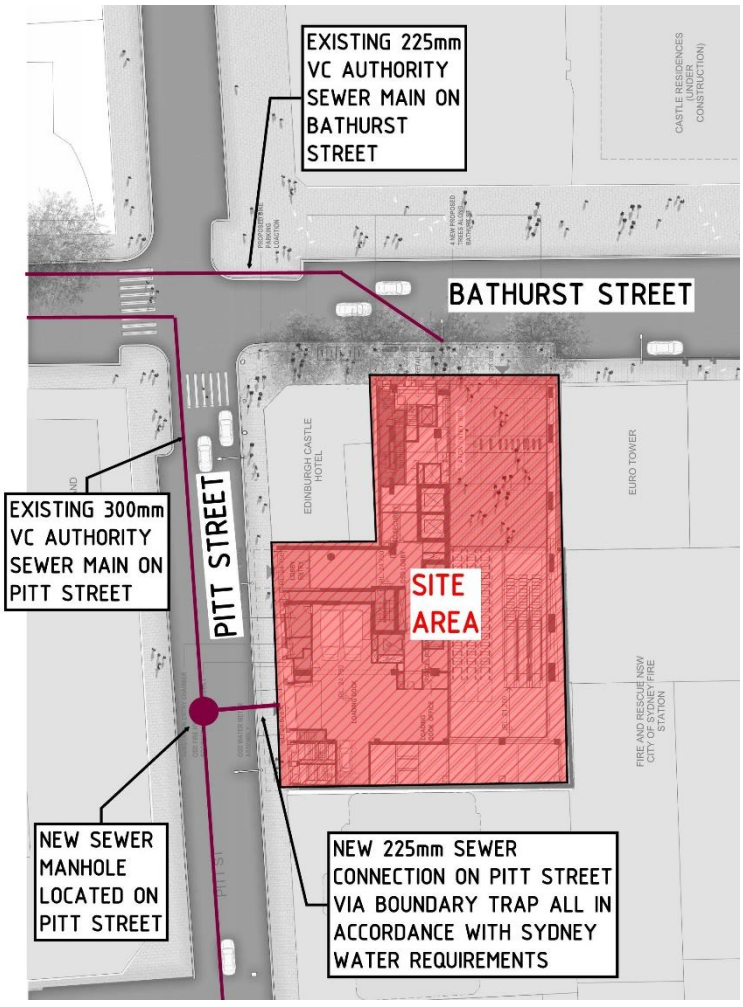


Figure 11 Site Sewer Drainage Connections

5. NATURAL GAS

5.1 AVAILABLE INFORMATION

Preliminary natural gas authority information was obtained via Jemena's Asset Maps. These plans show approximate location and pipe size of the gas mains surrounding the site. Further consultation on infrastructure surveys will be required further in the design phase.

5.2 EXISTING CONDITIONS

The site is currently serviced by the gas mains on the north and western edges:

- 1 no. 110mm 7kPa NY authority gas main on Pitt Street
- 1 no. 110mm 7kPa NY authority gas main on Bathurst Street

5.3 JEMENA FEASIBILITY ADVICE

Jemena have indicated via the 'Sydney Metro Station Servicing Assessment' Section 4.2 that the existing main servicing Pitt St South was adequate to service the development, however we believe the assessment undertaken by Jemena was incorrect. The response refers to splitting the 310 apartments across both Pitt Street North and Pitt Street South. Subsequently, they may have undertaken an assessment with only half the anticipated load. CJ Arms are in the process of obtaining updated feasibility advice from Jemena.

5.4 PROPOSAL

The current design is to provide a new 100mm site gas connection to the existing 110mm 7kPa NY authority gas main on Pitt Street.

The site is to provide gas meter sets for main building demands including domestic hot water and mechanical base building in accordance with Jemena requirements, drawings and specifications. Refer Figure 12 for details. CJ ARMS have sought further advice from Jemena on the feasibility of this proposal with the latest development gas loads.

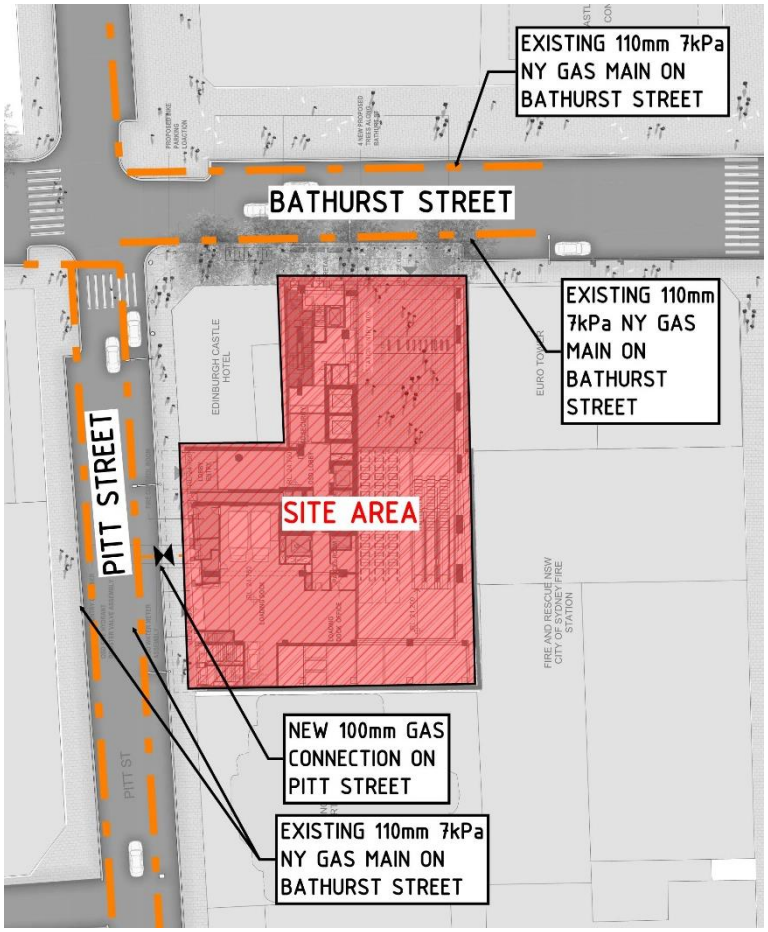


Figure 12: Site Gas Connection

6. APPENDIX – AUTHORITY FEASIBILITY ADVICE

Case Number: 165998

6 November 2017

TRANSPORT FOR NSW
c/- WARREN SMITH & PARTNERS PTY LTD

FEASIBILITY LETTER

Developer:	**TRANSPORT FOR NSW**
Your reference:	**5694000**
Development:	**300 PITT ST, Sydney being Lot 1 DP436359, Lot 1 DP436359, Lot 1 DP60293, Lot 1 DP59101, Lot 1 DP68635, Lot 1 DP229635, Lot 2 DP900055, Lot 3 DP74952, Lot 1 DP74367, Lot 1 DP982663, Lot 2 DP982663, Lot 2 DP509611, Lot 3 DP61187, Lot 1 DP62688, Lot 1 DP596474, Lot 17 DP1095869, Lot CP SP68274**
Development Description:	**Construction of Pitt Street Over Site Development for Sydney Metro.**
Your application date:	**1 September 2017**

Dear Applicant

Thank you for providing us with the opportunity work with you on the concept design for the construction of Pitt Street Station Over Site Development as a part of the Sydney Metro. This Feasibility Letter (Letter) is a guide only. It provides general information about what Sydney Water's requirements may be when you apply to us for a Section 73 Certificate (Certificate) for your proposed development. **The information is accurate at today's date only.**

When you obtain development consent for this development we will require you to apply to us for a Section 73 Certificate. You will need to submit a new application (and pay another application fee) to us for that Certificate by using your current or another Water Servicing Coordinator (Coordinator).

Sydney Water will then send you either a:

- Notice of Requirements (Notice) and Developer Works Deed (Deed) or
- Certificate.

These documents will be the definitive statement of Sydney Water's requirements.

There may be changes in Sydney Water's requirements between the issue dates of this Letter

and the Notice or Certificate. The changes may be:

- if you change your proposed development eg the development description or the plan/ site layout, after today, the requirements in this Letter could change when you submit your new application; and

- if you decide to do your development in stages then you must submit a new application (and pay another application fee) for each stage.

What You Must Do To Get A Section 73 Certificate In The Future.

To get a Section 73 Certificate you must do the following things. You can also find out about this process by visiting www.sydneywater.com.au > Plumbing, building & developing > Developing > Land development.

1. **Obtain Development Consent from the consent authority for your development proposal.**

2. **Engage a Water Servicing Coordinator (Coordinator).**

   You must engage your current or another authorised Coordinator to manage the design and construction of works that you must provide, at your cost, to service your development. If you wish to engage another Coordinator (at any point in this process) you must write and tell Sydney Water.

   For a list of authorised Coordinators, either visit www.sydneywater.com.au > Plumbing, building & developing > Developing > Providers > Lists or call **13 20 92.**

   The Coordinator will be your point of contact with Sydney Water. They can answer most questions that you might have about the process and developer charges and can give you a quote or information about costs for services/works (including Sydney Water costs).

3. **Developer Works Deed**

   It would appear that your feasibility application is served from existing mains and does not require any works to be constructed at this time. Sydney Water will confirm this with you after you have received Development Approval from Council and your Coordinator has submitted a new Development application and Sydney Water has issued you with a formal Notice of Requirements.

4. **Water, Sewer and Stormwater Works**

   4.1 **Water**

   Your development must have a frontage to a water main that is the right size and can be used for connection.

   Based on the indicated drinking water demand of 210kLs/day and the current network

configuration, Sydney Water has assessed your application and found that:

- The existing 250mm CICL watermain in Pitt Street and the 250mm CICL main in Castlereagh Street will service the northern and southern stations of your development respectively.
- Your development must have its own connection to that water main and a water service and meter.
- Please see the paragraphs below on Multi-level individual metering requirements, Private Water Services Connection and Metering, Large Water Service Connection and Fire Fighting for additional information.

4.2 Sewer

Your development must have a sewer main that is the right size and can be used for connection.

Based on the indicated wastewater flow of 190kLs/day and the current network configuration, Sydney Water has assessed your application and found that:

- The existing 300mm VC sewer main in Pitt Street and existing 225mm VC sewer main in Castlereagh Street will service the northern and southern stations of your development respectively.
- The sewer must also have a connection point outside, but as close as practically possible to the development boundary, behind the kerb and gutter.
- Please note, if you intend to pump your wastewater to Sydney Water's wastewater main, you will be required to lodge an application with Sydney Water's Tap In™.

4.3 Stormwater

On-site Stormwater Detention (OSD)

The proposed development will require an OSD system to offset stormwater run-off. To determine the required On Site Detention and Permissible Site Discharge (PSD), the following site specific information is required to be submitted:

- Total site area (m^2)
- Existing pre-development impervious area (m^2)
- Proposed post-development impervious area (m^2)

Discharged Stormwater Quality Targets

Stormwater run-off from the site should be of appropriate quality before discharged into a Sydney Water asset or system. Developments must demonstrate stormwater quality improvement measures that meet the following specified stormwater pollutant reductions:

Pollutant	Pollutant load reduction objective (%)
Gross Pollutants (>5mm)	90
Total Suspended Solids	85
Total Phosphorus	65
Total Nitrogen	45

You may use our tool, through the website below, to determine whether your development is Deemed to Comply. In some cases though, we may request an eWater MUSIC model before approving your connection.

Stormwater connections to Sydney Water's Stormwater Channel

You are required to investigate the possibility of discharging stormwater into the kerb and gutter or any available council stormwater system. Any direct stormwater connection to Sydney Water's stormwater system is to be the last option at this location.

In the event, the direct stormwater connection to Sydney Water's stormwater system is unavoidable, then the following requirements would apply:

If you have intention to make direct stormwater connection to Sydney Water's stormwater system, then the connection is to be carried out according to the Asset Creation Process. Further details regarding this process can be obtained from the Water Servicing Coordinator. The applicant is advised of the following:

- For pipes with a diameter 300mm or more the connection angle is to be no greater than 30 degrees in the direction of the channel flow.
- Proposed connections that are 300mm or more in diameter require a qualified structural engineer to design the connection. A structural engineer's certificate is to be attached with the design drawings.
- Proposed connections that are less than 300mm in diameter can use Sydney Water's standard drawings to design the connection drawings.
- All drawings are to be submitted in AutoCad to the Water Servicing Coordinator. Water Servicing Coordinator is required to transfer these drawings on to the Sydney Water's template prior to submit as design drawing.

5. Ancillary Matters

5.1 Asset adjustments

After Sydney Water issues this Notice (and more detailed designs are available), Sydney Water may require that the water main/sewer main/stormwater located in the footway/your site needs to be adjusted/deviated. If this happens, you will need to do this work as well as the extension we have detailed above at your cost. The work must meet the conditions of this Notice and you will need to complete it **before we can issue the Certificate**. Sydney Water will need to see the completed designs for the work and we will require you to lodge a security. The security will be refunded once the work is completed.

5.2 Entry onto neighbouring property

If you need to enter a neighbouring property, you must have the written permission of the relevant property owners and tenants. You must use Sydney Water's **Permission to Enter** form(s) for this. You can get copies of these forms from your Coordinator or the Sydney Water website. Your Coordinator can also negotiate on your behalf. Please make sure that you address all the items on the form(s) including payment of compensation and whether there are other ways of designing and constructing that could avoid or reduce their impacts. You will be responsible for all costs of mediation involved in resolving any disputes. Please allow enough time for entry issues to be resolved.

6. Multi-level individual metering requirements

Your development must either allow for or provide individual metering. This means that you must:

1. comply at all times and in all respects with the requirements of Sydney Water's "Multi-level Individual Metering Guide" (version 7 dated 28 October 2016);

2. provide and install plumbing and space for individual metering in accordance with Sydney Water's "Multi-level Individual Metering Guide";

3. if and when you implement a strata/ stratum plan (or strata/ stratum subdivide) you must:
    a. engage an Accredited Metering Supplier ("**AMS**") to provide individual metering in accordance with the "Multi-level Individual Metering Guide" and meet the cost of the meters and metering system;
    b. transfer the meters and metering system to Sydney Water once the Testing Certificate has been issued by Sydney Water to the AMS and the AMS has confirmed that payment for the meters and metering system has been paid in full.

Before the Section 73 Certificate can be issued, you must sign the attached undertaking to show that you understand and accept these metering requirements and associated costs.

All the details about this requirement are available on Sydney Water's website at www.sydneywater.com.au.

OTHER THINGS YOU MAY NEED TO DO

Shown below are other things you need to do that are NOT a requirement for the Certificate. They may well be a requirement of Sydney Water in the future because of the impact of your development on our assets. You must read them before you go any further.

Approval of your building plans

Please note that the building plans must be approved when each lot is developed. This can be done at Sydney Water Tap in™. Visit www.sydneywater.com.au > Plumbing, building & developing > Building > Sydney Water Tap in™.

This is not a requirement for the Certificate but the approval is needed because the

construction/building works may affect Sydney Water's assets (e.g. water, sewer and stormwater mains).

Where a Sydney Water stormwater channel, pipe or culvert is located within ten (10) metres of your development site it must be referred to Sydney Water for further assessment.

Your Coordinator can tell you about the approval process including:

- Possible requirements;
- Costs; and
- Timeframes.

Note: You must obtain our written approval before you do any work on Sydney Water's systems. Sydney Water will take action to have work stopped on the site if you do not have that approval. We will apply Section 44 of the *Sydney Water Act 1994.*

Soffit Requirements

Please be aware that floor levels must be able to meet Sydney Water's soffit requirements for property connection and drainage.

Private Water Services Connection and Metering

To provide domestic water to the total development you will need to connect to the Sydney Water main. You must lodge an application for this connection at Sydney Water Tap in™. We will then tell you about any requirements you need to meet. Visit www.sydneywater.com.au > Plumbing, building & developing > Building > Sydney Water Tap in™ to find out more.

Visit www.sydneywater.com.au > Plumbing, building & developing > Plumbing > Meters & metered standpipes to find out more about our metering requirements for your development.

Large Water Service Connection

A water main is available to provide your development with a domestic supply. The size of your development means that you will need a connection larger than the standard domestic 20 mm size.

To get approval for your connection, you will need to lodge an application with Sydney Water Tap in™. You, or your hydraulic consultant, may need to supply the following:

- A plan of the hydraulic layout;
- A list of all the fixtures/fittings within the property;
- A copy of the fireflow pressure inquiry issued by Sydney Water;
- A pump application form (if a pump is required);
- All pump details (if a pump is required).

You will have to pay an application fee.

Sydney Water does not consider whether a water main is adequate for fire fighting purposes for your development. We cannot guarantee that this water supply will meet your Council's fire fighting requirements. The Council and your hydraulic consultant can help.

Fire Fighting

Definition of fire fighting systems is the responsibility of the developer and is not part of the Section 73 process. It is recommended that a consultant should advise the developer regarding the fire fighting flow of the development and the ability of Sydney Water's system to provide that flow in an emergency. Sydney Water's Operating Licence directs that Sydney Water's mains are only required to provide domestic supply at a minimum pressure of 15 m head.

A report supplying modelled pressures called the Statement of Available pressure can be purchased through Sydney Water Tap in™ and may be of some assistance when defining the fire fighting system. The Statement of Available pressure, may advise flow limits that relate to system capacity or diameter of the main and pressure limits according to pressure management initiatives. If mains are required for fire fighting purposes, the mains shall be arranged through the water main extension process and not the Section 73 process.

Disused Water Service Sealing

You must pay to disconnect all disused private water services and seal them at the point of connection to a Sydney Water water main. This work must meet Sydney Water's standards in the Plumbing Code of Australia (the Code) and be done by a licensed plumber. The licensed plumber must arrange for an inspection of the work by a NSW Fair Trading Plumbing Inspection Assurance Services (PIAS) officer. After that officer has looked at the work, the drainer can issue the Certificate of Compliance. The Code requires this.

Disused Sewerage Service Sealing

Please do not forget that you must pay to disconnect all disused private sewerage services and seal them at the point of connection to a Sydney Water sewer main. This work must meet Sydney Water's standards in the Plumbing Code of Australia (the Code) and be done by a licensed drainer. The licensed drainer must arrange for an inspection of the work by a NSW Fair Trading Plumbing Inspection Assurance Services (PIAS) officer. After that officer has looked at the work, the drainer can issue the Certificate of Compliance. The Code requires this.

Trade Wastewater Requirements

If this development is going to generate trade wastewater, the property owner must submit an application requesting permission to discharge trade wastewater to Sydney Water's sewerage system. You must wait for approval of this permit before any business activities can commence.

The permit application should be emailed to Sydney Water's Business Customer Services at businesscustomers@sydneywater.com.au

It is illegal to discharge Trade Wastewater into the Sydney Water sewerage system without permission.

A **Boundary Trap** is required for all developments that discharge trade wastewater where arrestors and special units are installed for trade wastewater pre-treatment.

If the property development is for Industrial operations, the wastewater may discharge into a sewerage area that is subject to wastewater reuse. Find out from Business Customer Services if this is applicable to your development.

Backflow Prevention Requirements

Backflow is when there is unintentional flow of water in the wrong direction from a potentially polluted source into the drinking water supply.

All properties connected to Sydney Water's supply must install a testable **Backflow Prevention Containment Device** appropriate to the property's hazard rating. Property with a high or medium hazard rating must have the backflow prevention containment device tested annually. Properties identified as having a low hazard rating must install a non-testable device, as a minimum.

Separate hydrant and sprinkler fire services on non-residential properties, require the installation of a testable double check detector assembly. The device is to be located at the boundary of the property.

Before you install a backflow prevention device:

1. Get your hydraulic consultant or plumber to check the available water pressure versus the property's required pressure and flow requirements.
2. Conduct a site assessment to confirm the hazard rating of the property and its services. Contact PIAS at NSW Fair Trading on **1300 889 099**.

For installation you will need to engage a licensed plumber with backflow accreditation who can be found on the Sydney Water website:
http://www.sydneywater.com.au/Plumbing/BackflowPrevention/

Other fees and requirements
The requirements in this Notice relate to your Certificate application only. Sydney Water may be involved with other aspects of your development and there may be other fees or requirements. These include:

- plumbing and drainage inspection costs;
- the installation of backflow prevention devices;
- trade waste requirements;
- large water connections and
- council fire fighting requirements. (It will help you to know what the fire fighting requirements are for your development as soon as possible. Your hydraulic consultant can help you here.)

No warranties or assurances can be given about the suitability of this document or any of its provisions for any specific transaction. It does not constitute an approval from Sydney Water and to the extent that it is able, Sydney Water limits its liability to the

reissue of this Letter or the return of your application fee. You should rely on your own independent professional advice.

END

Sydney Metro Station Servicing Assessment

1. PURPOSE

The aim of this document is to provide a preliminary assessment of Jemena's existing infrastructure and outline Jemena Gas Network's capacity to service the new developments around Sydney Metro Stations. Where there is insufficient capacity to service the development then a gas reinforcement is specified. All gas loads were supplied by TfNSW for the Sydney Metro Stations; Victoria Cross, Pitt Street, Crows Nest and Marrickville Stabling Yards. Recommendations on route selection and reinforcements are subject to change with a detailed review of the proposed gas supply options.

2. COMMERCIAL FEASIBILITY

Natural Gas is available in the vicinity of these developments and may be able to supply these proposals.

Our policy is to supply all developments wherever possible, depending upon economic viability.

In consideration of our shareholders' interests and under NSW regulation, Jemena Gas Networks (NSW) Ltd is required to ensure that any connection to the natural gas distribution system is commercially viable and therefore must assess each request for supply on an individual basis.

Upon the provision of the final layout and load configurations for the developments a full economic evaluation can be undertaken to determine the viability of supplying natural gas to the site, as a contribution may be required to assist in the economic viability of the proposal.

There will costs associated with disconnections and any relocation works that are required.

To assist in the planning of supply to the development I can confirm that;

- The sites to be developed are currently reticulated with gas.
- Where the existing network in an area does not have sufficient capacity to supply the additional load a network reinforcement will be required. A contribution may be required.
- Costs will be associated with any works that require Jemena to relocate the existing gas network.
- See attached for proposed network reinforcements.

3. VICTORIA CROSS

3.1 GAS LOADS

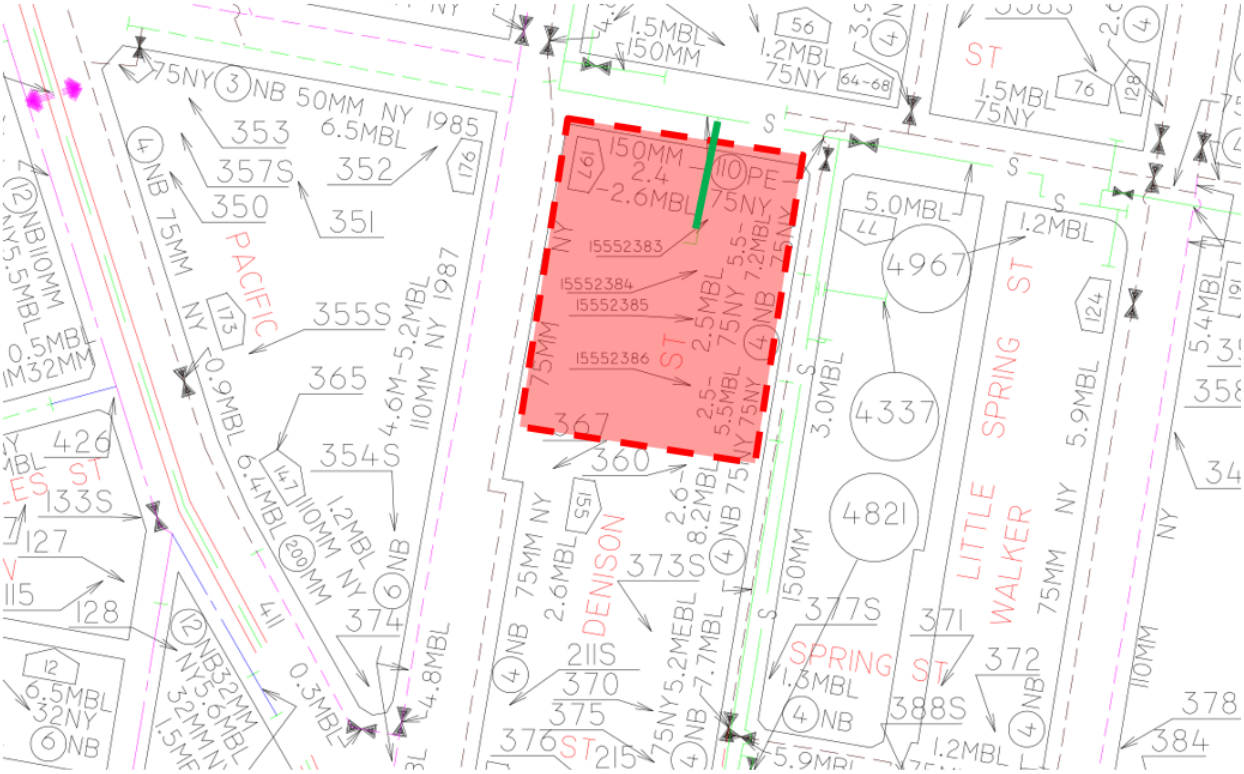
The Gas loads were provided by TfNSW and used in modelling the loads at Victoria Cross Station in Miller Street, North Sydney.

Building	Gas Load (MJ)		Total
	Domestic Hot Water	Mechanical Plant	
EOT Hot Water	5740	0	5740
Tower Hot Water	49200	0	4920
Mech Use	0	17500	17500
Retail x 17	8500	0	8500
Total	19160	17500	36660

3.2 PROPOSED CONNECTION STRATEGY

The load was modelled on the low pressure and secondary pressure networks. The low pressure network does not have sufficient capacity to support the development. There is sufficient capacity on the secondary network and a secondary service already exists to the site (Figure 1). No reinforcement is required.

Figure 1: Secondary service connection to Victoria Cross (Service already existing)



4. PITT STREET SOUTH

4.1 GAS LOADS

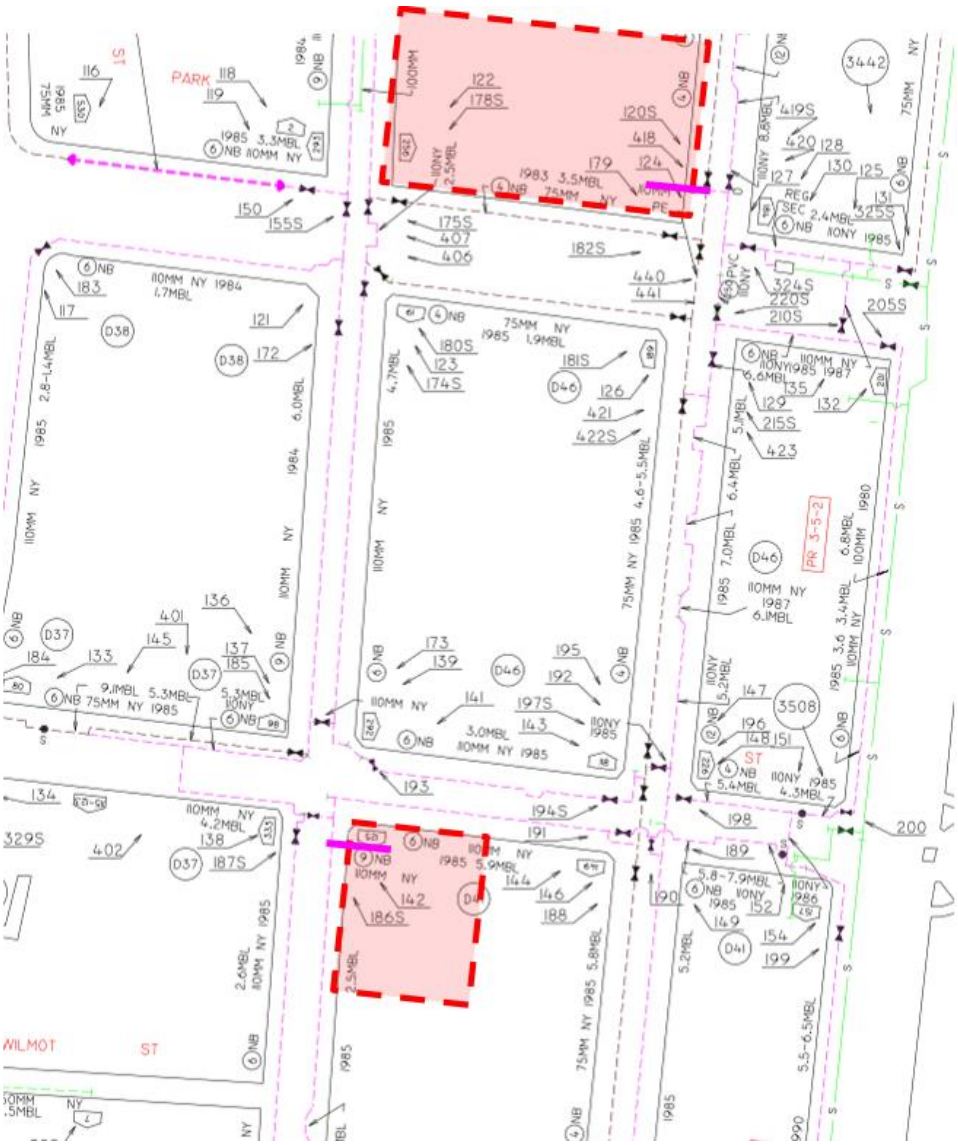
There will be a total of 310 apartments. The Gas Demand Preliminary Calculation supplied by TfNSW did not specify which site (North or South) the apartments were located, therefore for this analysis the load was split evenly across both sites.

4.2 PROPOSED CONNECTION STRATEGY

Pitt St South: The redevelopment is located in the low pressure 7 kPa network. There is sufficient capacity for the low pressure network to support the new developments at Pitt St South, with service connections to the existing 110mm PE main.

Pitt St North: Assuming a gas load of 310 apartments, there is insufficient capacity to meet the proposed demand. As part of the Sydney Light Rail an additional conduit was supplied across George St, South of Bathurst St. In order to meet load demand a 110mm PE main is to be inserted into the conduit and tied into the existing network (Figure 3).

Figure 2: Low pressure service connections of 110mm PE to both highlighted sites



5. CROWS NEST

5.1 GAS LOADS

There are 3 towers to be built around Crows Nest station with the following gas loads

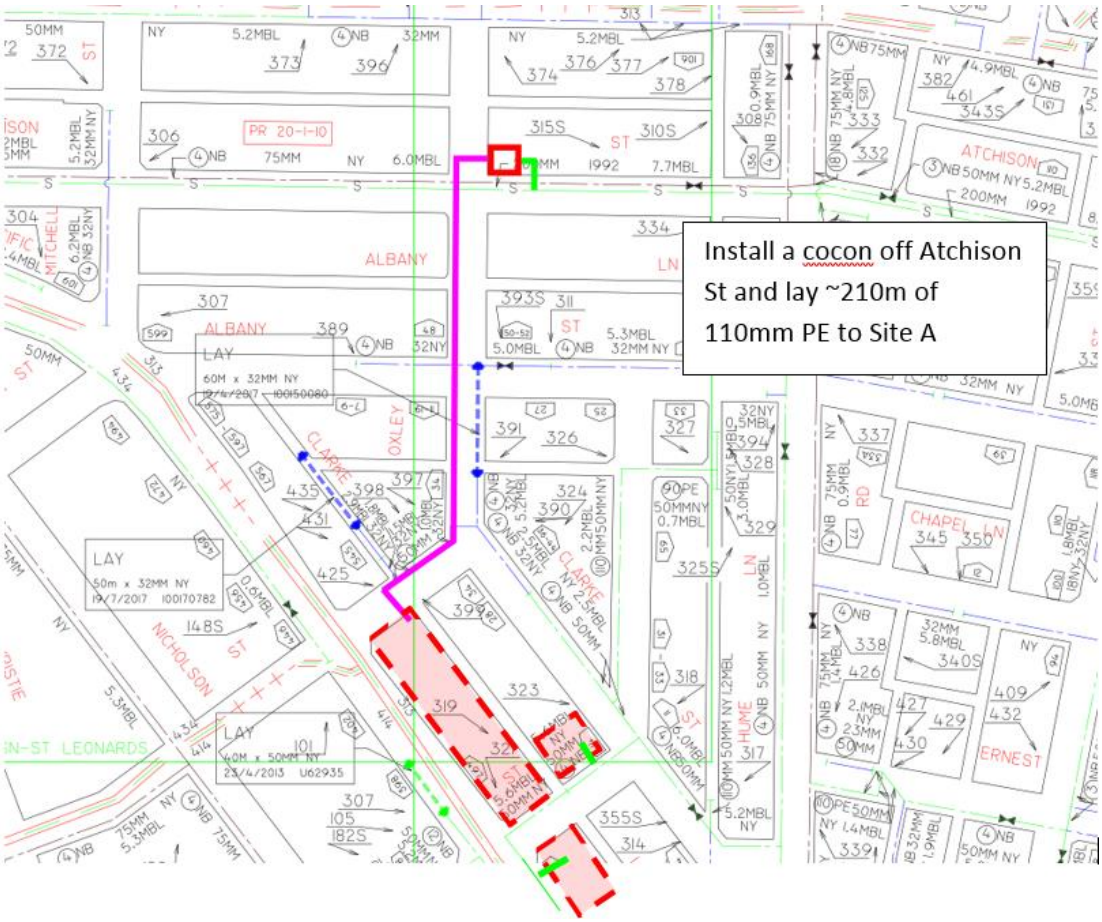
Building	Gas Load (MJ)		Total
	Domestic Hot Water + Cooktops	Mechanical Plant	
Tower A North	26240	11000	37240
Tower A South	4000	3000	7000
Tower B	19680	6500	26180
Site C	400	500	4500
Retail x 6	6000	0	6000
Total	59920	21000	80920

5.2 PROPOSED CONNECTION STRATEGY

Due to the inherent large load required to service this development, reinforcement is required to provide sufficient capacity to the site. The reinforcement option is as follows:

Install one Cocon on Atchison St and lay ~ 210m of 110mm PE from the outlet of the Cocon down Oxley Steet to Site A. Site B and C can be fed off the 50mm NY main (Figure 3).

Figure 3: Medium pressure services with an additional Cocon on Atchison St and mains extension



6. MARRICKVILLE STABLING YARD

6.1 GAS LOADS

The redevelopment of the Marrickville Stabling Yard consists of 15 commercial buildings with 6 retail outlets and 1 café. The total load equates to 7000 MJ/h.

6.2 PROPOSED CONNECTION STRATEGY

There are two options for connection either off the medium or secondary networks, option 1 is the preferred option.:

1. Medium pressure network: A mains extension of ~300m of 50mm NY will be required to get gas to the site (as shown in Figure 3).

2. Secondary pressure network: A secondary service is already present at the site and will provide enough capacity. The alternative option is to supply the site with a secondary service.

Figure 4: Medium pressure service connection to proposed site