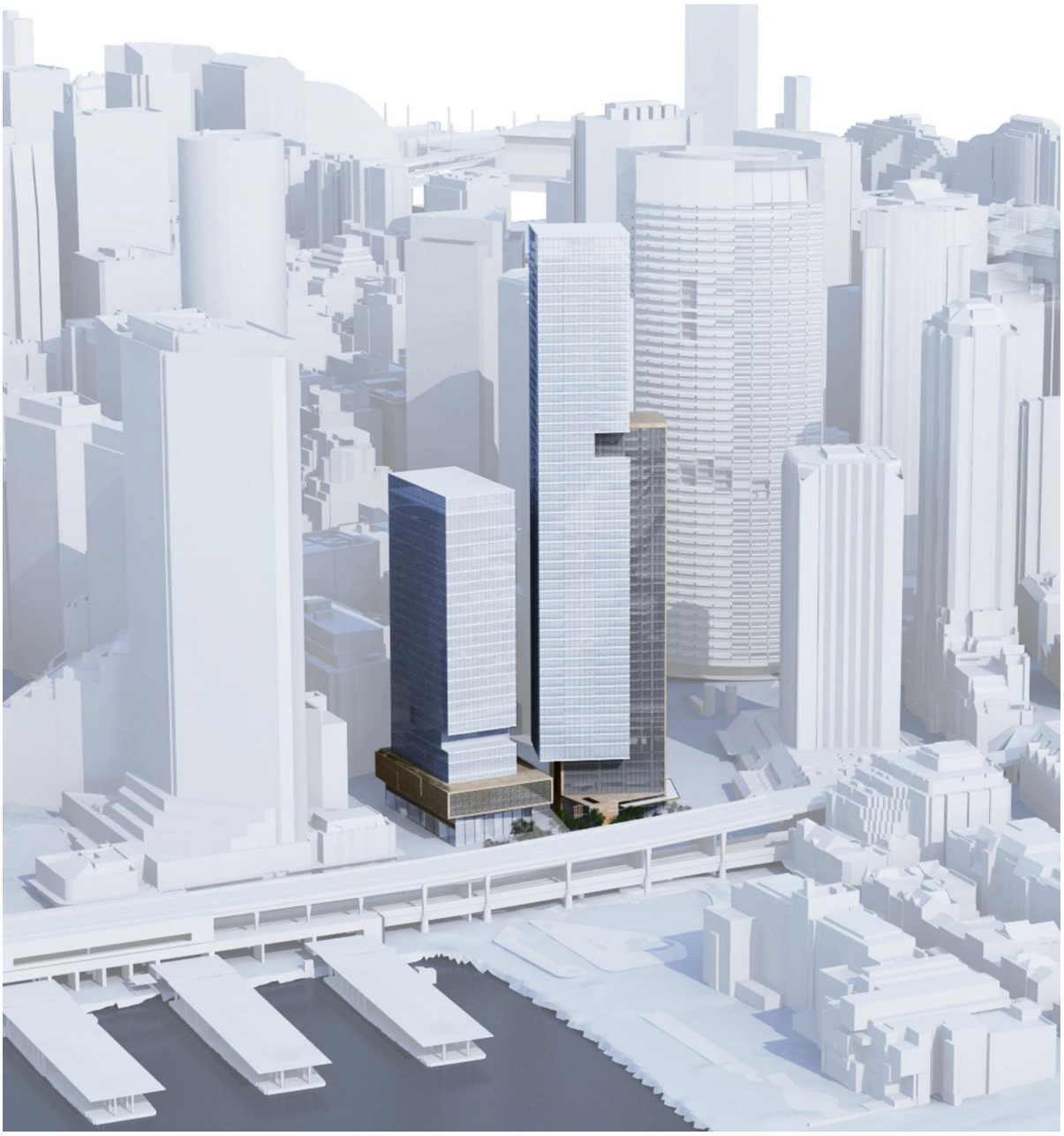
Sydney One Project
Crone Partners Pty Limited
02-Jul-2015
Doc No. 60430261-IMP-A

Building Services Infrastructure Management Plan

Sydney One Project, Sydney



Building Services Infrastructure Management Plan

Sydney One Project, Sydney

Client: Crone Partners Pty Limited

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Quality Information

Document Building Services Infrastructure Management Plan

Ref 60430261-IMP-A

Date 02-Jul-2015

Prepared by Adam Magee

Reviewed by Eoin Loughnane

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
A	2 July 2015	Final Issue	Adam Magee Principal Vertical Transportation Engineer	

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Project Appreciation

Sydney One Project located at 1 Alfred St, 19-31 Pitt St and 31A Pitt St, Sydney consists of two towers.

- Tower A - Residential Tower consisting of 56 Levels with 184 Apartments.
- Tower B - Hotel Tower consisting of 24 Levels with 168 bedrooms

Tower A is an amended Stage 2 DA and Tower B is a Stage 1 DA intended for a Design Competition.

This Report has been compiled to indicate connections to existing Services and captures integration with:

- Electrical and Communication Services and
- Hydraulic Services

For detailed services requirements please refer to the Sydney One Project, Building Services and Utility Report – Mech, Elec, Fire, Hyd & VT Dated 24th June 2015 Revision C

Applications to Ausgrid, NBN and Telstra have occurred and would be developed in future development phases. Connections for Hydraulic Services is detailed and based on connecting to existing infrastructure.

Known impact to associated modes of Transport and RMS is identified for reference. Our current known connections to in ground services has minimal if any impact on modes of Transport adjacent the development.

Should changes to any mode of Transport be advised it is intended they will be evaluated in future design development phases.

1.0 Infrastructure Impact

Transport Infrastructure	Hydraulic Services				Electrical Services	Communication Services
	Sewer	Stormwater	Potable Water	Gas	11kV	Copper & Fibre
Sydney Rail Easement for future Tunnel	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Cahill Expressway	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Sydney Rail	No Known Impact	No Known Impact	No Known Impact	No Known Impact	No Known Impact	No Known Impact
Sydney Light Rail	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
RMS Lighting & Traffic Lights	Landscape & Civil Design	Landscape & Civil Design	Landscape & Civil Design	Landscape & Civil Design	Landscape & Civil Design	Landscape & Civil Design

2.0 Electrical Services

2.1 Substation

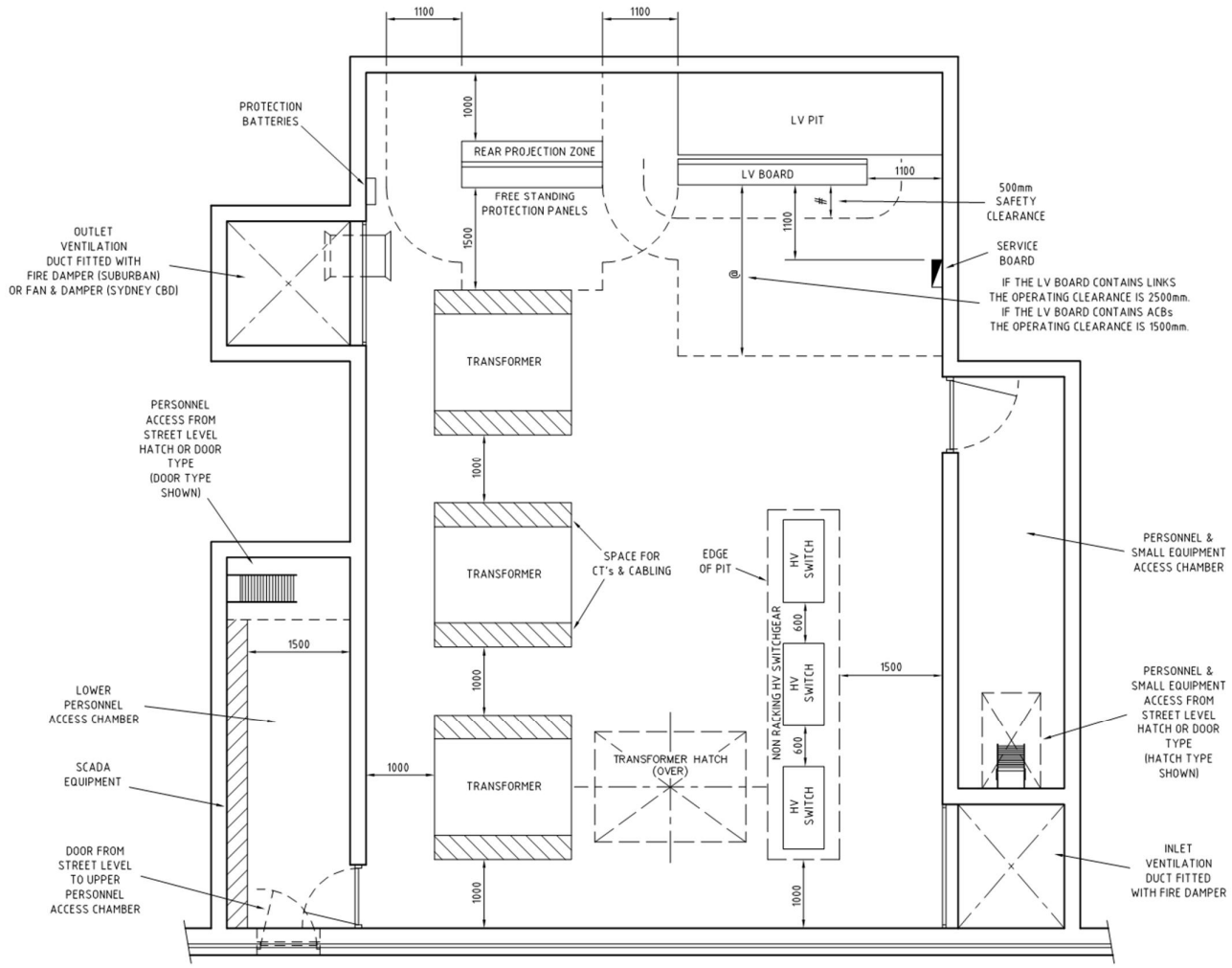
2.1.1 Requirements

The site maximum demand for the two towers is approximately 3MVA accounting for 10% spare capacity and a diversity factor of 0.8. This is calculated based on industry standard VA/m^2 with approximately 1.4 MVA drawn by Tower A and approximately 1.6MVA drawn by Tower B. It is proposed that a new Ausgrid triplex substation of 3x1.5 MVA transformers shall be provided and installed on Basement Level 1 of Tower B to convert the Ausgrid 11kV incoming voltage to 400V and power to the two towers. In addition to three 1.5MVA transformers, the substation shall house HV switchgear and the LV switchboard. The LV switchboard of the triplex substation shall have two separate busbars each rated at 3000A.

2.1.2 Configuration

Item	Location	Area	Comment
Substation			4.5 MVA firm rating comprising of 3x1.5MVA transformers **General Access Requirements:** Ausgrid personnel must have 24 hour access seven days a week through dedicated access ways which must be at least 1200 mm wide and 2400mm high No public or occupant access must be through the Ausgrid dedicated access ways. All access ways must be located to ensure egress and ingress from or onto a public street or an all-weather heavy-duty access roadway which complies with the BCA egress and ingress requirements.
Substation Basement Chamber	Basement	15m Long X 10m Wide X 4.5m High = ~150 m^2 + 2 X 4m^2 + 2 X 15 m^2	2 X 4m^2 ducts required for inlet and outlet ventilation 2 X 15 m^2 personnel access stairways **Personnel Access Requirements** Two separate dedicated means of access from an access roadway. To be approved by Ausgrid. Ausgrid Preferred Option: Each access way is through a separate doorway which is located at street level in an external wall of the building. Each door opens into an access chamber which leads to a descending stairway. At the foot of the stairway is another access chamber containing the doorway into the substation chamber. **Transformer Access Requirements** Transformer hatch must be in an unenclosed area accessible from the street with 24 hour seven day a week access by Ausgrid personnel. Transformer hatch and equipment handling area should be directly above the substation chamber. **This is the preferred approach electrically. See Figure 1**

Figure 1: Preferred Substation Configuration



2.2 Ausgrid

Evidence is provided below of our application to commence initial communication with Ausgrid. Ausgrid will require a Level 3 Designer to develop the design.

From: Alison Inkpen [mailto:ainkpen@ausgrid.com.au] On Behalf Of DataNorth
Sent: Wednesday, 17 June 2015 3:35 PM
To: Waldron, Aileen
Subject: 1 ALFRED ST SYDNEY 2000 NSW

Dear Connection Applicant

Premise Address:	1 ALFRED ST SYDNEY 2000 NSW
Reference Number: AP	800080420
Reference Number: MC	1900055189

We have received your "Connection Application" relating to the above mentioned address and have forwarded the application to our Contestability Section for consideration and approval. If you have any questions regarding approval, the Contestability Section may be contacted on –

Phone: 1800 051 017
or
(02) 9585 5761 and (02) 9585 5609 (Sydney South)
(02) 9663 9514 and (02) 9663 9517 (Sydney East)

Please allow at least 10 working days for the application to be initially processed.

Installation Data - Central Coast
Phone: 02-43998000
Fax: 1300 662 089
Email: datanorth@ausgrid.com.au

This e-mail may contain confidential or privileged information.
If you have received it in error, please notify the sender immediately via return e-mail and then delete the original e-mail.
If you are the intended recipient, please note the change of sender email address to @ausgrid.com.au.
Ausgrid has collected your business contact details for dealing with you in your business capacity. More information about how we handle your personal information, including your right of access is contained at http://www.ausgrid.com.au/

2.3 NBN

Evidence is provided below of AECOM's initial communication with NBN for application of telecommunications services to Tower A and B.

2.3.1 Tower A

From:	developerliaison@nbnco.com.au
Sent:	Thursday, 18 June 2015 11:24 AM
To:	Magee, Adam; Waldron, Aileen
Subject:	NBN Co: Development Registration received for Sydney One Project - Tower A - AYCA-29AED5
Attachments:	AYCA-29AED5.pdf

Development reference: **AYCA-29AED5**
Your development: **Sydney One Project - Tower A**
Your internal reference: **Tower A - Residential Tower**

Dear Adam Magee,

Thank you for your registration for Sydney One Project - Tower A.

Your unique development reference is **AYCA-29AED5**. Please retain your development reference as it will be required to complete the online Stage Application Form for each Stage of your Development.

Please ensure you apply for each stage, at least 3 months prior to the commencement of civil works for each stage.

A member of our Developer Liaison Team will assess your Development Registration and Stage application. Please allow 20 business days for your application to be processed.

If you have any questions, please call us on **1800 687 626** or email DeveloperLiaison@nbnco.com.au

Thank you and regards,
NBN Co Developer Liaison Team

2.3.2 Tower B

From:	developerliaison@nbnco.com.au
Sent:	Thursday, 18 June 2015 12:05 PM
To:	Magee, Adam; Waldron, Aileen
Subject:	NBN Co: Development Registration received for Sydney One Project - Tower B - AYCA-29AKWY
Attachments:	AYCA-29AKWY.pdf

Development reference: **AYCA-29AKWY**
Your development: **Sydney One Project - Tower B**

Dear Adam Magee,

Thank you for your registration for Sydney One Project - Tower B.

Your unique development reference is **AYCA-29AKWY**. Please retain your development reference as it will be required to complete the online Stage Application Form for each Stage of your Development.

Please ensure you apply for each stage, at least 3 months prior to the commencement of civil works for each stage.

A member of our Developer Liaison Team will assess your Development Registration and Stage application. Please allow 20 business days for your application to be processed.

If you have any questions, please call us on **1800 687 626** or email DeveloperLiaison@nbnco.com.au

Thank you and regards,
NBN Co Developer Liaison Team

2.4 Telstra

Evidence is provided below of AECOM's initial communication with Telstra for application of telecommunications services to Tower A and B.

2.4.1 Tower A

From: registration@telstrasmartcommunity.com
Sent: Thursday, 18 June 2015 12:55 PM
To: Waldron, Aileen
Subject: Application for Reticulation Confirmation - Sydney One - Tower A Stage 1 - Sydney 2000
Attachments: terms_buildings.html; 17356373.txt

THANKS FOR YOUR APPLICATION SUBMISSION
HERE ARE THE DETAILS

Hi Aileen Waldron,

Thanks for submitting your Application for Reticulation (AFR) on the Telstra Smart Community website for your development.

IMPORTANT NOTE

The construction of Telstra's network dates back over many years. Some of Telstra's pits and ducts were manufactured from asbestos-containing cement. You must take care in conducting any works in the vicinity of Telstra's pits and ducts. You must refrain from in any way disturbing and damaging Telstra's network infrastructure when conducting your works. We recommend that before you conduct any works in the vicinity of Telstra infrastructure that you ensure your processes and procedures eliminate any possibility of disturbing, damaging or interfering in any way with Telstra's infrastructure. Your processes and procedures should incorporate measures having regard to the nature of this risk.

Your AFR number is: 17356373. You can use it and your password to view, change or add details at any stage of your development.
Attached are the details provided with your application, which you might want to keep handy. They can also be viewed on the Telstra Smart Community website at
http://www.telstra.com.au/smartcommunity/developers.html

The details of the files attached with this development are as follows:

File Name, File Type, File Size

1: Wanda - Sydney One - Site Overview.pdf,Adobe PDF files,138.6Kb

2: Tower A Plans - LG To L57.pdf,Adobe PDF files,2.8Mb

3: Tower B Plans - B6 To G.pdf,Adobe PDF files,3.7Mb

2.4.2 Tower B

From: registration@telstrasmartcommunity.com
Sent: Thursday, 18 June 2015 1:11 PM
To: Waldron, Aileen
Subject: Application for Reticulation Confirmation - Sydney One - Tower B Stage 1 - Sydney 2000
Attachments: terms_buildings.html; 17356375.txt

THANKS FOR YOUR APPLICATION SUBMISSION
HERE ARE THE DETAILS

Hi Aileen Waldron,

Thanks for submitting your Application for Reticulation (AFR) on the Telstra Smart Community website for your development.

IMPORTANT NOTE

The construction of Telstra's network dates back over many years. Some of Telstra's pits and ducts were manufactured from asbestos-containing cement. You must take care in conducting any works in the vicinity of Telstra's pits and ducts. You must refrain from in any way disturbing and damaging Telstra's network infrastructure when conducting your works. We recommend that before you conduct any works in the vicinity of Telstra infrastructure that you ensure your processes and procedures eliminate any possibility of disturbing, damaging or interfering in any way with Telstra's infrastructure. Your processes and procedures should incorporate measures having regard to the nature of this risk.

Your AFR number is: 17356375. You can use it and your password to view, change or add details at any stage of your development.
Attached are the details provided with your application, which you might want to keep handy. They can also be viewed on the Telstra Smart Community website at
http://www.telstra.com.au/smartcommunity/developers.html

The details of the files attached with this development are as follows:

File Name, File Type, File Size

1: Tower B Plans - B6 To L25 - Part 1.pdf,Adobe PDF files,4.1Mb

2: Tower B Plans - B6 To L25 - Part 2.pdf,Adobe PDF files,3.8Mb

3: Wanda - Sydney One - Site Overview.pdf,Adobe PDF files,138.6Kb

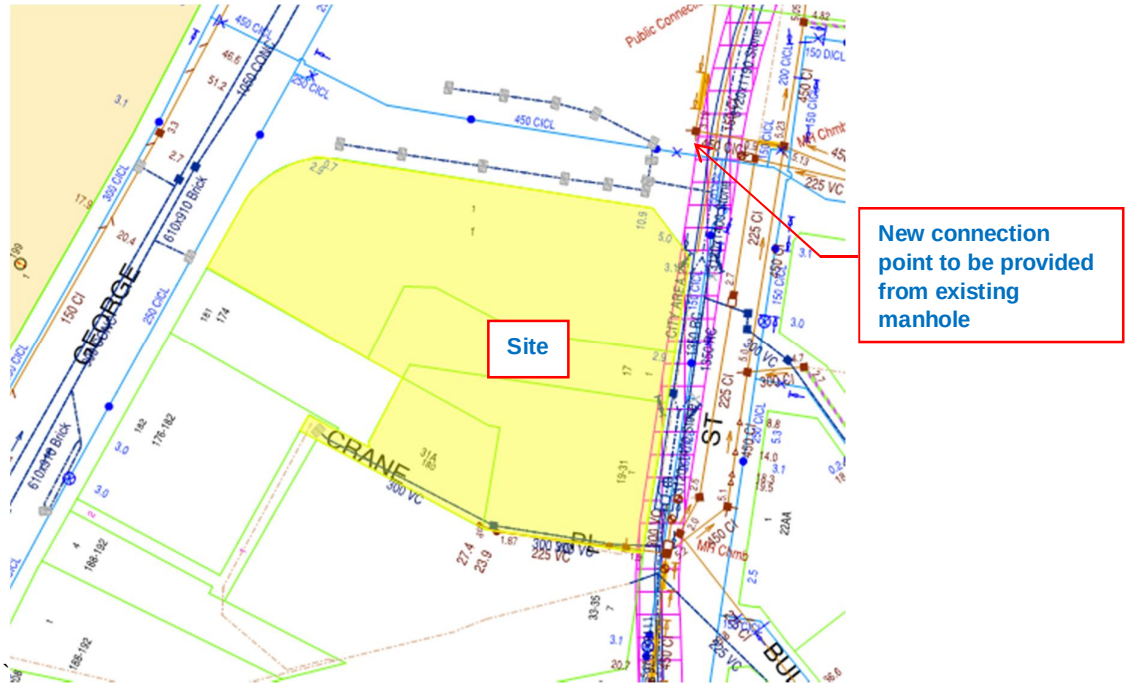
3.0 Hydraulic Services

3.1 Sanitary Plumbing and Sewer Drainage

3.1.1 Connection Point

Based on the Sydney Water Feasibility Letter 7th June 2010, the existing sewer drainage infrastructure does not have sufficient capacity to cater for the proposed development. The advice letter indicates that a new connection point will need to be provided from the existing manhole located in Albert St.

Figure 4.3: *Sewer Drainage Connection Point*



3.1.2 Basement Levels

A new site wide sewer drainage system shall extend from the new authority sewer connection point, complete with boundary trap and low/ high level vents. The site wide system will provide a gravity sewer drainage point for the two towers.

Two new sewer pumping stations (one for each tower) will be provided on basement level 6, to collect all discharges unable to gravitate to the connection point.

3.1.3 Tower A - Residential

All sanitary fixtures located within the residential tower will gravitate to the side wide system, via a fully vented modified sanitary drainage system.

Each commercial/ retail space will be provided with an Ø100mm sewer drainage turn- up (located at the back of the tenancy) for future extension by the tenant. The sewer drainage turn- up will gravitate to the side wide drainage system.

3.1.4 Tower B - Hotel

All sanitary fixtures located within the residential tower will gravitate to the side wide system, via a fully vented modified sanitary drainage system.

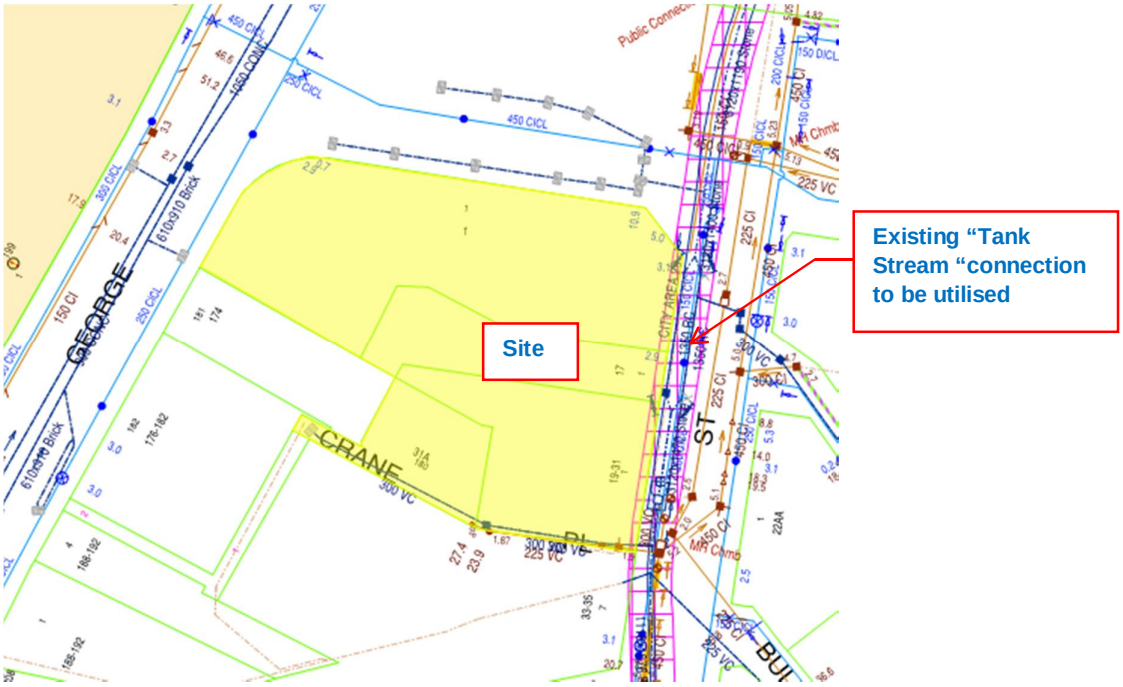
Each commercial/ retail space will be provided with an Ø100mm sewer drainage turn- up (located at the back of the tenancy) for future extension by the tenant. The sewer drainage turn- up will gravitate to the site wide drainage system.

3.2 Stormwater Drainage

3.2.1 Connection Point

Based on the Sydney Water Feasibility Letter 7th June 2010, the proposed development will not have to provide On-Site Detention (OSD). The advice letter indicates that an existing Ø300 connection point to the "Tank Stream" may be utilised.

Figure 4.5: *Stormwater Drainage Connection Point*



3.2.2 Basement Levels

All surface water from the basement levels areas shall discharge directly to the "Tank Stream", via the sub- soil pumping system

3.2.3 Tower A - Residential

Stormwater drainage from the residential tower shall be conveyed as follows:

- Roof areas shall be conveyed via conventional downpipes, to a common 20,000 litre above ground rainwater tank, complete with first flush device. The first flush device shall be capable of capturing the first 125 litres of run-off. The tank overflow shall be directed to Sydney Water's "Tank Stream "system, as described in 3.2.1 Connection Point
- Surface water from balconies, terraces and driveways shall discharge directly from to Sydney Water's "Tank Stream "system, via conventional downpipes.

3.2.4 Tower B - Hotel

As per residential tower.

3.3 Sub-soil Drainage

3.3.1 Connection Point

All sub- soil drainage shall be conveyed to Sydney Water's "Tank Stream "system, via the sub-soil pumping system.

3.3.2 Basement Levels

Sub- soil drainage to the car parking levels shall consist of:

- Above ground car parking levels collected via elevated stormwater drainage pipework.
- Seepage water to be collected via slotted pipe located around the perimeter of the lowest basement car park.
- Surface water collected via in-ground drainage pipe.
- All sub- soil drainage water shall be treated via a gross pollutant trap, prior to discharging to the pump out pit.

3.3.3 Tower A - Residential

No sub-soil drainage is required to the residential tower.

3.3.4 Tower B - Hotel

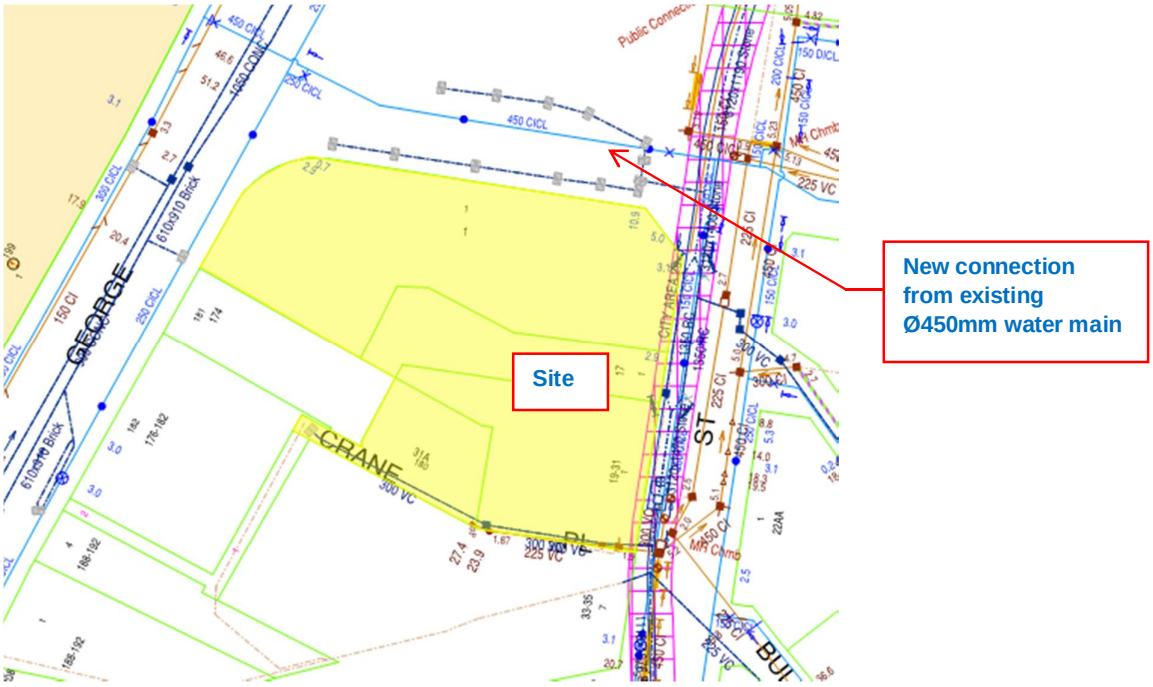
No sub-soil drainage is required to the hotel tower.

3.4 Potable Water Service

3.4.1 Connection Point

Based on the Sydney Water Feasibility Letter 7th June 2010, the existing water infrastructure does not have sufficient capacity to cater for the proposed development. The advice letter indicates that a new connection point will need to be provided from the Ø450mm water main on the southern side of Albert St.

Figure 4.7: *Potable Water Connection Point*



3.4.2 Metering

Potable water metering shall be provided as follows:

- Main authorities' residential meter
- Main authorities' hotel meter
- Main authorities' registered club
- Authorities' meter for each commercial tenancy
- Individual apartment sub-meters
- Residential hot water plant inlet sub- meter

3.4.3 Basement Levels

A new unassisted (subject to fire flow pressure test) site wide potable supply (metered) shall extend from the new connection point in Alfred St, complete with authorities water meter assembly and backflow prevention device. The site wide system will provide supply to the following areas:

- Tower A, Residential: domestic cold water storage tank, located on the roof top and intermediate plant room. Water is to be pumped to the intermediate plant room and then cascade up to the roof top tank from the authorities' water main, via a duplex transfer pumps.
- Tower B, Hotel- domestic cold water storage tank, located on the roof top plant room. Water is to be transferred to this tank from the authorities' water main, via a duplex transfer pump.
- All water consuming fixtures and outlets located in the basement areas.
- Commercial/ retail areas

3.4.4 Tower A - Residential

Potable water to each residential building shall be provided from the cold water storage tanks located on the intermediate and roof top plant rooms, via a triplex pressure booster pump set, and include:

- Individual apartment sub- meters located within the common corridors, in accordance with Sydney Water's metering policy.
- Zone pressure reducing valves set to 350kPa, to limit fixture outlet pressures. Preliminary calculations indicate that the sets will be required on levels 48, 37, 26 & 15.
- Apartments located below level 7 will require individual 350kPa pressure reducing valves, to limit fixture outlets pressures.

Each retail space will be provided with a capped Ø25mm potable water connection point for future extension by the tenant. The potable water service will extend from the unassisted site wide supply, complete with an authorities' sub-meter

3.4.5 Tower B - Hotel

Potable water to the hotel shall be provided from a cold water storage tank located on the roof top plant rooms, via a triplex pressure booster pump set, and include:

- Zone pressure reducing valves set to 350kPa, to limit fixture outlet pressures. Preliminary calculations indicate that the sets will be required on levels 19 & 11.

Each retail space will be provided with a capped Ø25mm potable water connection point for future extension by the tenant. The potable water service will extend from the unassisted site wide supply, complete with an authorities' sub-meter.

3.5 Potable Hot Water Service

3.5.1 Basement Levels

Each building shall be provided with potable hot water from a dedicated centralised gas fired system.

3.5.2 Metering

Potable hot water metering shall be provided as follows:

- Individual apartment sub-meters
- Individual sub- meters to common areas (i.e. garbage rooms)

3.5.3 Basement Levels

No potable hot water shall be provided to the basement car park and podium.

3.5.4 Tower A - Residential

Potable hot water to each residential apartment shall be provided from the dedicated centralised gas fired plant, via a flow and return loop, and include:

- Individual apartment sub- meters located within a cupboard, accessible via the common corridor
- Zone pressure reducing valves set to 350kPa, to limit fixture outlet pressures. Preliminary calculations indicate that the sets will be required on levels 48, 37, 26 & 15.
- Apartments located below level 7 will require individual 350kPa pressure reducing valves, to limit fixture outlets pressures. Individual electric hot water units, and secondary circulation pumps to recirculate hot water at the lower pressure zone
- Individual apartment thermostatic mixing valves to limit outlet temperatures to all fixtures to 50°C

3.5.5 Tower B - Hotel

Potable hot water to each hotel suite and sanitary outlets shall be provided from the dedicated centralised gas fired plant, via a flow and return loop, and include:

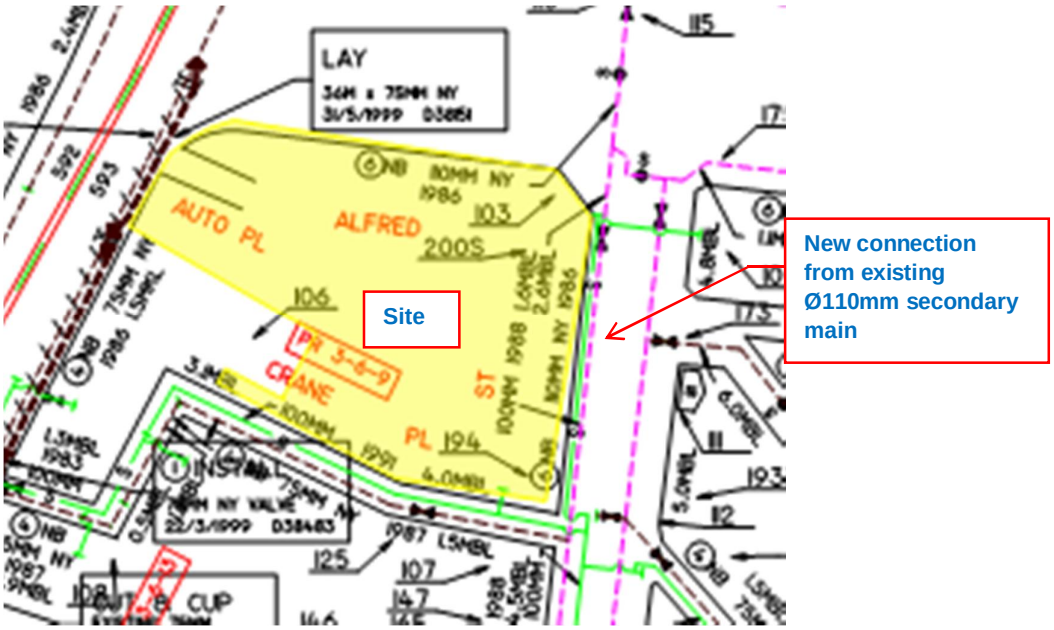
- Zone pressure reducing valves set to 350kPa, to limit fixture outlet pressures. Preliminary calculations indicate that the sets will be required on levels 19 & 11.

Localised hot water units will be provided to the Hotel's kitchen and back of house areas.

No potable hot water shall be provided to the retail areas.

3.6 Gas Services

Preliminary discussions obtained from Jemena indicate that the proposed development may be served from the existing Ø110mm 1500kPa secondary supply main, located in Pitt St. The suitability of the connection point will need to be confirmed with Jemena, via a formal application.



3.6.1 Basement Levels

A new site wide gas service shall extend from the authorities supply main in Pitt St, complete with authorities' gas metres. The site wide system will provide gas to the following areas:

- Each residential apartment
- Hot water units
- Hotel areas
- Registered Club
- Common areas.
- Retail areas

3.6.2 Metering

Authorities' gas meters shall be provided, for the following:

- Centralised hot water plants
- Each residential apartment
- Hotel
- Registered Club
- Each commercial tenancy (2 off)
- Common areas (i.e. BBQ facilities)

3.6.3 Tower A - Residential

A gas supply, complete with authorities meter, located in the common corridor is to be provided to each apartment to serve the following appliances:

- Gas cook top

A capped gas supply capable of providing 1000 mJ/hr is to be provided to each retail tenant, from the authorities'' gas meter. The tenant is to be responsible for extending the capped connection, as part of their fit-out works

3.6.4 Tower B - Hotel

A metered gas supply shall be provided to all gas consuming appliances located within the Hotel.

A metered gas supply shall be provided to all gas consuming appliances located within the Registered Club.

A capped gas supply capable of providing 1000 mJ/hr is to be provided to each retail tenant, from the authorities'' gas meter. The tenant is to be responsible for extending the capped connection, as part of their fit-out works