INTEGRATED GROUP SERVICES

IGLU
80 – 88 Regent Street, Redfern

Engineering Services
Infrastructure Due Diligence

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VALUE | INNOVATION | TRUST

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1. INTRODUCTION

1.1 General

This State Significant Development Application (SSDA) seeks approval for the development of a new student accommodation facility. Specifically, the proposal involves:

- site preparation works;
- construction and use of an 18 storey building comprising:
  - 265 student accommodation beds within 185 units, arranged as follows:
    - 163 x studio units;
    - 6 x loft units; and
    - 16 x 6-bed cluster units.
  - communal student facilities including study areas, lounge rooms, laundry facilities and a rooftop terrace;
  - three ground floor retail tenancies;
  - a single commercial tenancy;
- landscaping works including terrace planting; and
- extension and augmentation of services and infrastructure as required.

The proposal will operate as an integrated campus with the adjoining Iglu facility adjacent at 66 Regent St Redfern which commenced operation in early 2018.

It is understood that the effective building height will be over 25m in height, therefore the building **will** require stair pressurisation, smoke management systems, EWIS, sprinklers, sprinkler/hydrant tanks, and emergency lifts (unless we can obtain benefit from connecting to the essential services of the next door building).

This Engineering Services Brief presents the following key components:

- Building services utility supply philosophies for the respective disciplines (sewer, gas, stormwater, towns mains, essential fire services mains).

1.2 The Site

The subject site is bounded by Regent Street, Marian Street and William Lane as illustrated in Diagram 1 below.

Figure 1

The site area is approximately 821.7m^2.

1.3 BCA Classification

BCA classification(s) of the development are as follows:

BCA Classification	Class 3 Student Accommodation Class 6 Retail
Rise in Storeys	18 storeys
Type of Construction	Type A Construction
Effective Height	Over 50m

1.4 Mandatory BCA Energy Efficiency Requirements

Mandatory BCA Energy Efficiency requirements are as follows:

- Part J1 – Building Fabric;
- Part J2 – External Glazing;
- Part J3 – Building Sealing;
- Part J5 – Air Conditioning and Ventilation;
- Part J6 – Lighting and Power;
- Part J7 – Hot Water Supply.

2. UTILITY ENGINEERING SERVICES

2.1 Utilities Services Review / Analysis

A utilities review has been carried out in consultation with the relevant local authorities to identify the existing utilities at the site.

Dial Before You Dig (DBYD) requests were submitted the 27 February 2018 to investigate the presence of existing utilities such as natural gas, water, stormwater, sewer and telecommunications and power.

The following utilities with interests/assets in the vicinity of the site were notified in this process:

Seq. No.	Authority Name	Phone	Status
69039490	AAPT / PowerTel, NSW	1800786306	NOTIFIED
69039492	Ausgrid	0249510899	NOTIFIED
69039486	City of Sydney (IMS)	0292659819	NOTIFIED
69039495	Jemena Gas South	1300880906	NOTIFIED
69039497	NBN Co, NswAct	1800626762	NOTIFIED
69039489	Nextgen, NCC - NSW	1800032532	NOTIFIED
69039494	Optus and/or Uecomm, Nsw	1800505777	NOTIFIED
69039491	PIPE Networks, Nsw	1800201100	NOTIFIED
69039488	RailCorp Central	0298489578 / 0413006517	NOTIFIED
69039487	Roads and Maritime Services	0288370285	NOTIFIED
69039496	Sydney Water	132092	NOTIFIED
69039493	Telstra NSW, Central	1800653935	NOTIFIED
69039498	Vocus Communications	0892446114	NOTIFIED

END OF UTILITIES LIST

The following assumptions have been made in carrying out this assessment:

- Site area, approximately 821.7m^2;
- Approximately 265 bed student housing facility;
- Peak water consumption for the site is approximately 50 kL/day;
- Population Equivalent (PE) is of 300 people (peak).

2.2 General

The proposed development does not appear to have any services that currently encumber the site.

Iglu intend to consolidate the development with the adjacent and recently completed Iglu site at 60-78 Regent Street (R1). This will involve re-using the spare capacity within the existing incoming services in 60-78 Regent Street to supply the new development as well.

2.3 Water

There is a 150mm water main on Regent Street and Marian Street. There is also a 450mm water Main on the eastern site of Regent Street. Refer to Sydney Water infrastructure map below in Figure 3:

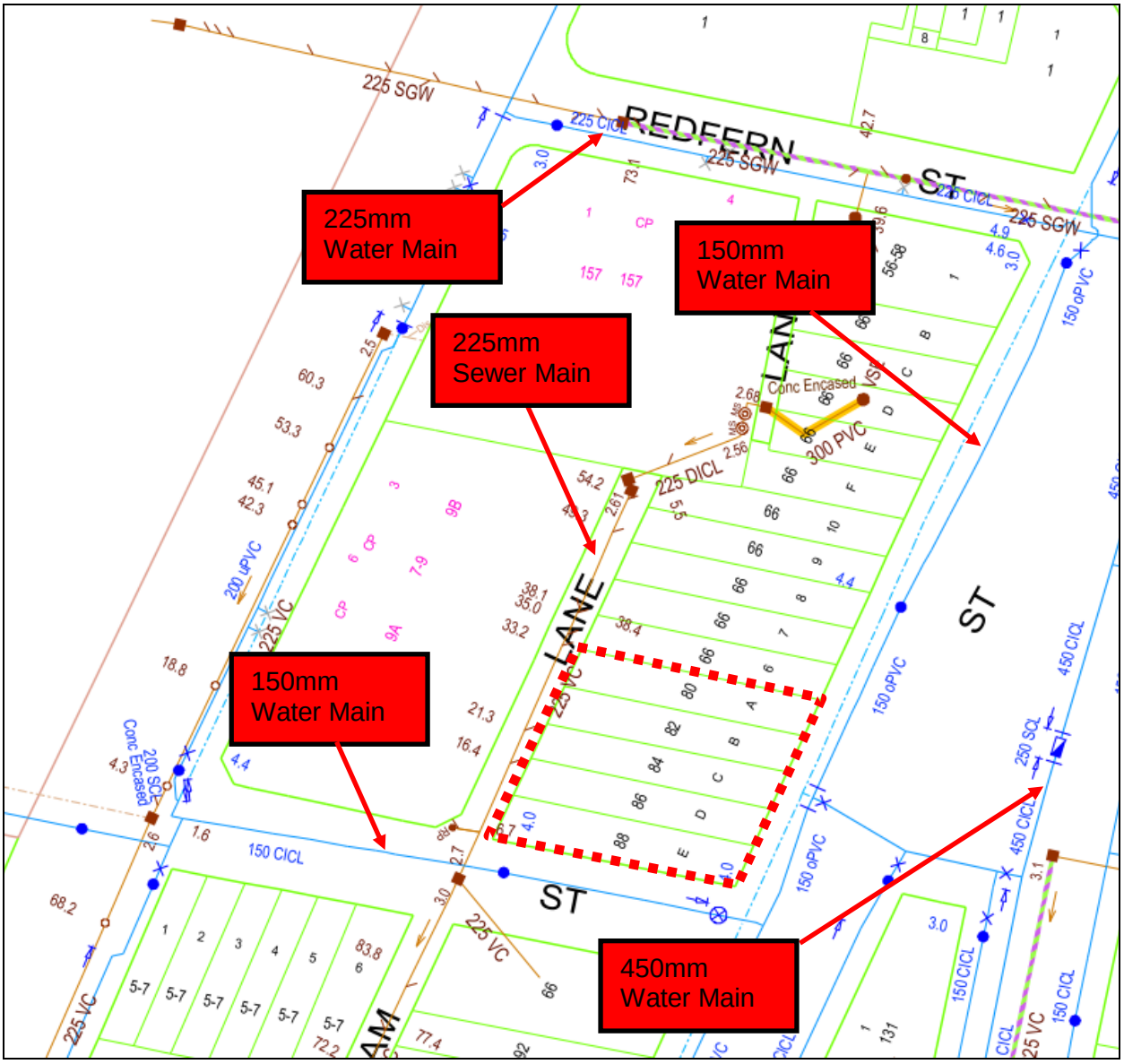

Figure 3

The existing infrastructure has sufficient capacity to cater for the existing and new development.

Connection into the water mains will be subject to a formal Section 73 application via Sydney Water.

2.4 Sewer

There is an active 225mm sewer main on William Lane as per Sydney Water map above. The 225mm sewer main should be sufficient for the development to connect into.

Connection into the main will be subject to a formal Section 73 application via Sydney Water. This works would be considered minor works.

2.5 Flooding

From our preliminary desktop review, this site/area does not appear to be subject to flooding. Although the site is not affected, it is possible that the site could be flood affected in the future. It could be impacted by localised flooding in extreme events. This can be caused by short term overloading of local stormwater drains caused by extreme rainfall.

The proposed residential floor levels are to be designed above the water level on neighbouring properties for the 100 year ARI flood event plus 500mm freeboard.

Any new development must seek to comply with the Council Development Control Plans, (in particular Stormwater Management).

Consequently, it is likely that the proposed development will require on-site detention (OSD) of stormwater. The DA plans adequately make provision for the OSD requirements.

2.6 Stormwater

The responsibility for the control of stormwater runoff in the vicinity of the site is with City of Sydney Council.

Review of service drawings obtained from Council show there are pipe network drains in the vicinity of the site. Refer to Figure 4 below:

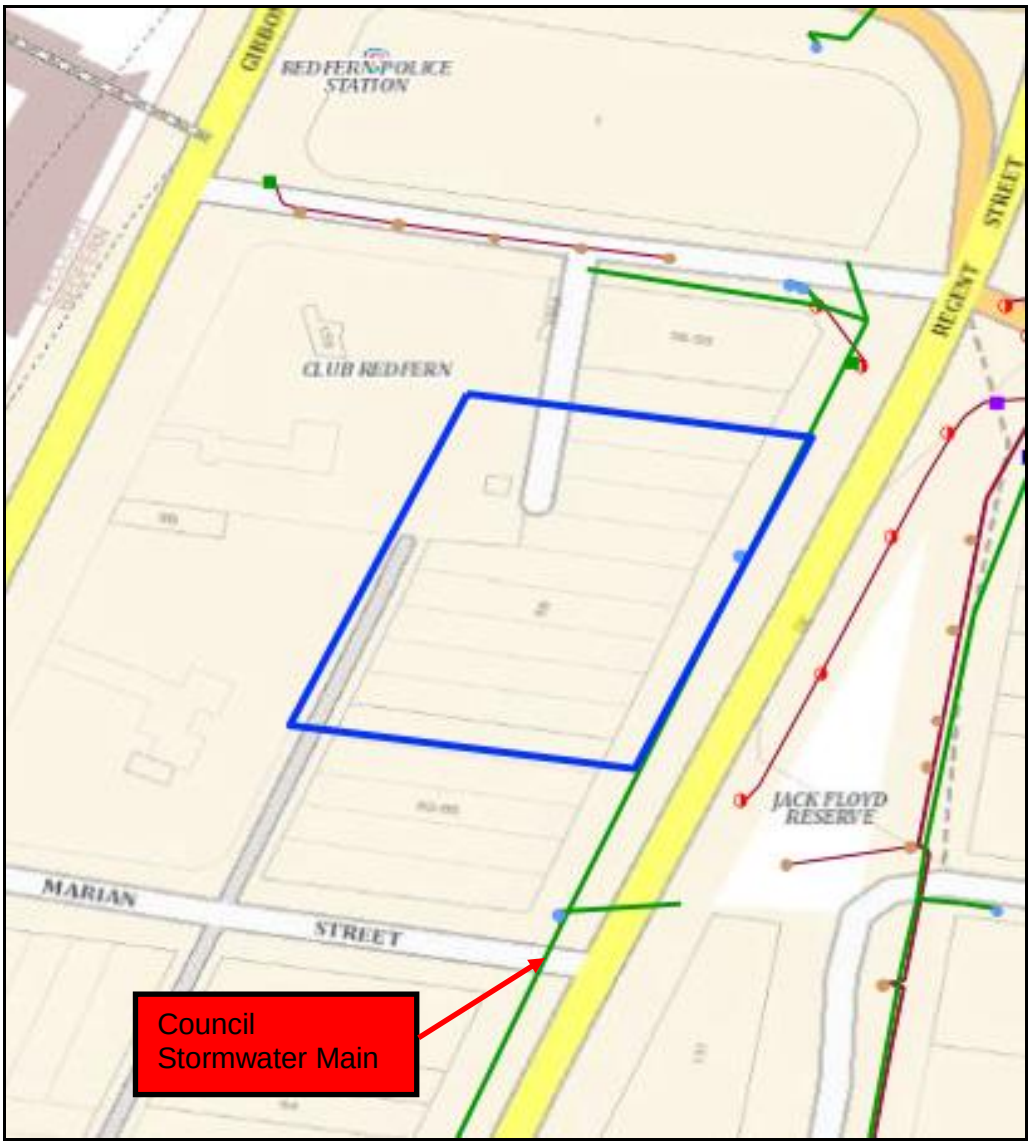

Figure 4

All future stormwater works at the site must seek to comply with Council Codes.

The maintenance obligations and costs will need to be integrated into the development of the property.

We understand that a new stormwater line was installed down the eastern side of William Lane that connects into a pit in Marian Street when the adjoining site was developed. This has not been updated yet on council records.

Consent for discharge was part of the Section 73 from Sydney Water to that new stormwater main for the adjoining site. The new development will most likely connect into this new stormwater main.

2.7 Gas

Based on preliminary desktop reviews there appears to be a 32mm, 210kPA gas mains on Regent Street and William Lane that both have adequate capacity to accommodate the consolidation of the existing and new proposed developments. Refer to Figure 5 below:

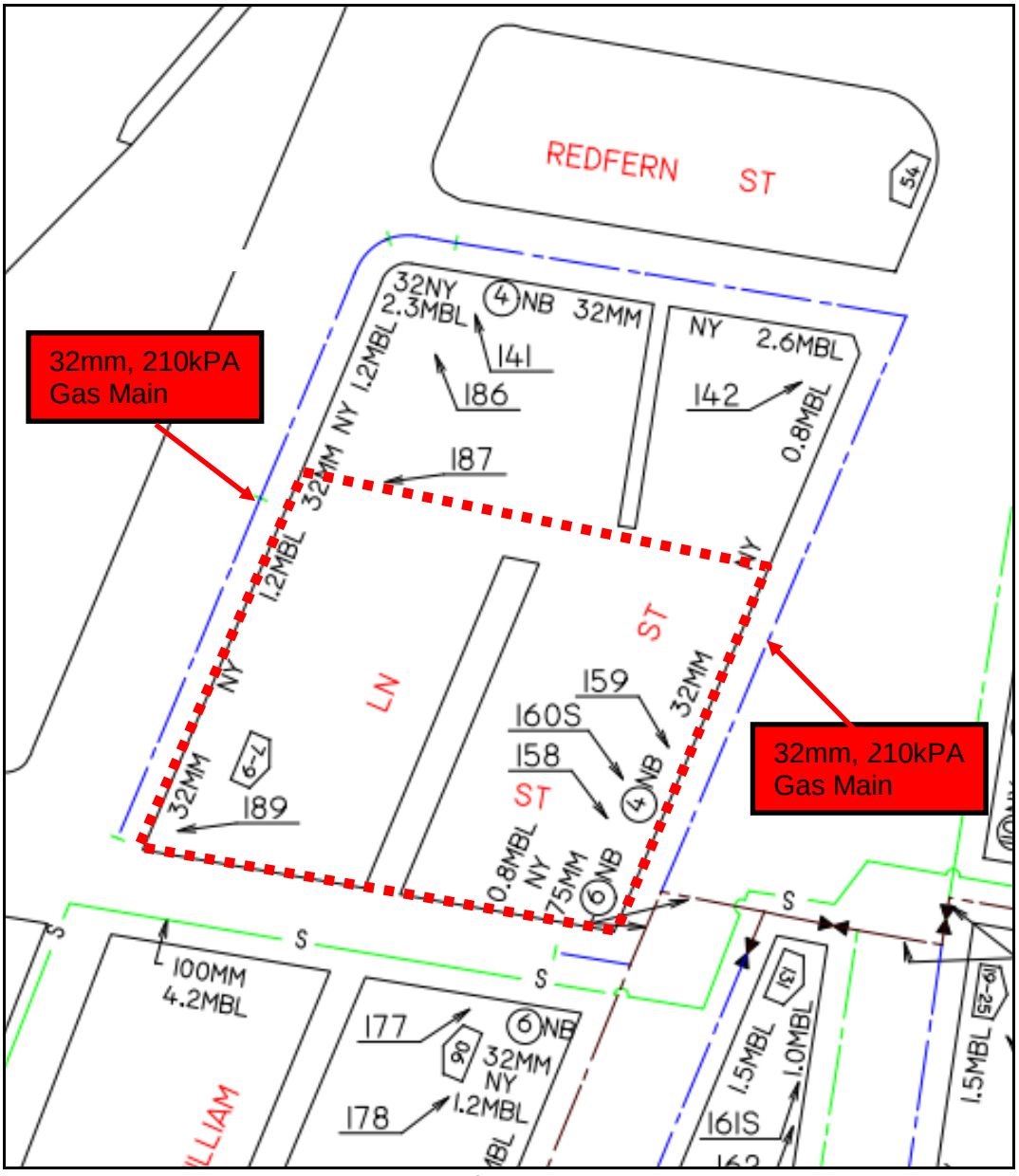

Figure 5

This will be subject to formal application to Jemena.

2.8 Electrical

It is estimated that the electrical loading of the proposed new development will be in the order of:

- 219kVA (312 Amps/Phase).

This is based on the maximum demand of 316kVA obtained from the Iglu project at 73 Albert Ave, Chatswood for the month of June (recorded 5 June 2017). Refer to Figure 6 below:

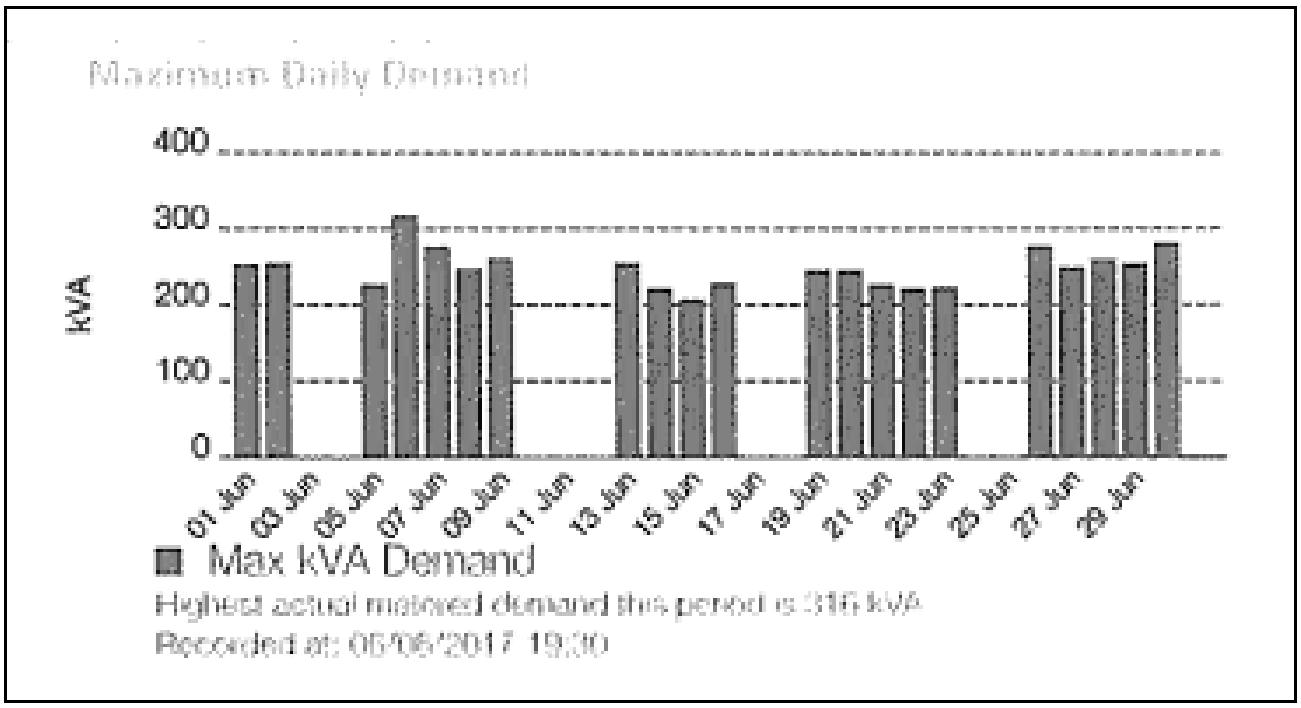

Figure 6

The Iglu Chatwood development has 395 beds compared to 265 at Redfern.

We therefore prorated the Chatswood maximum demand back to the new Redfern development and came up with 219kVA.

Based on preliminary desktop reviews of Ausgrid GIS information there appears to be High Voltage (HV) feeders reticulating along William Lane to the new substation installed in the adjacent IGLU development. Refer to Ausgrid GIS information below in Figure 7:

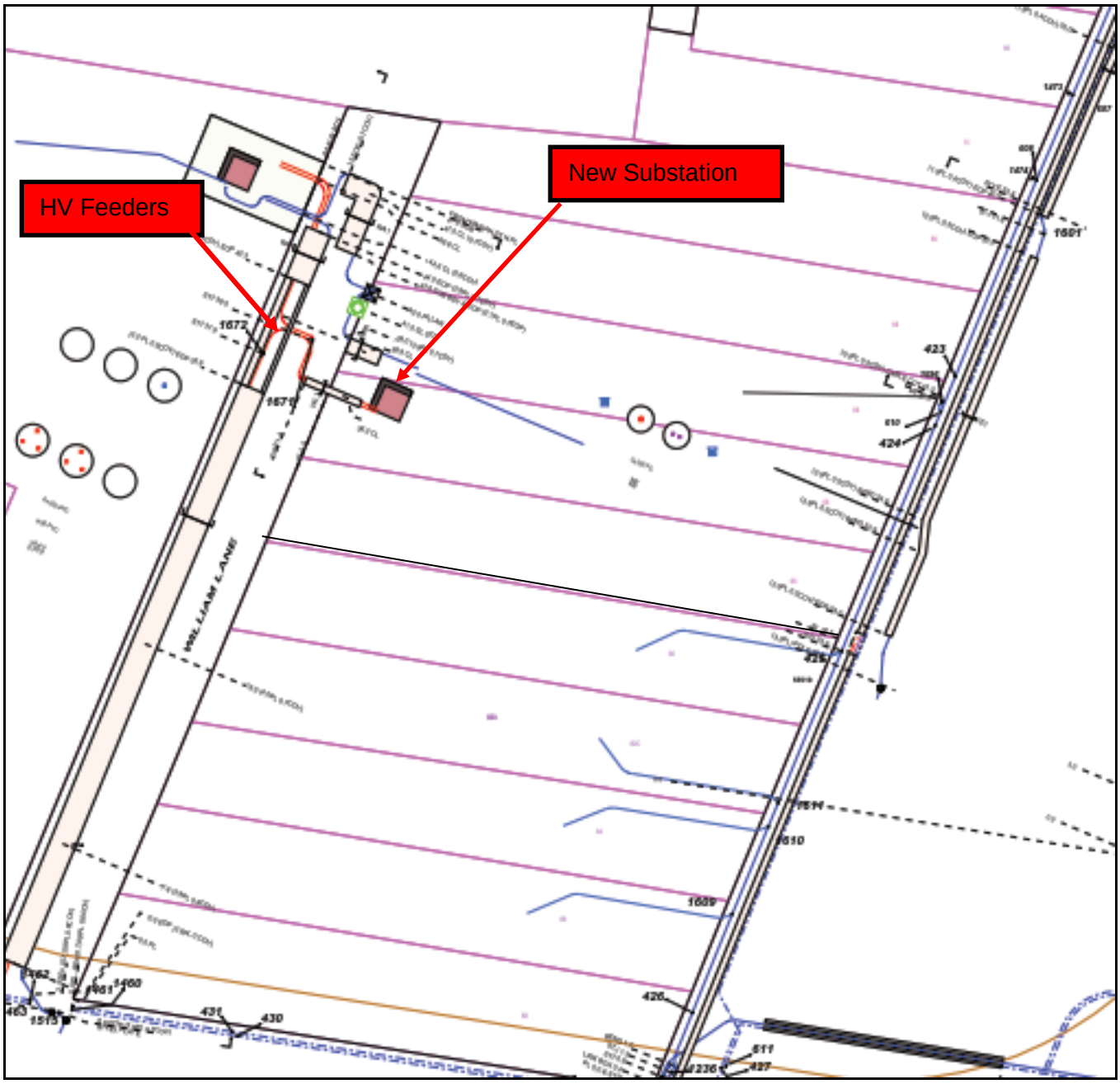

Figure 7

It will be likely that a new kiosk or mini substation will not be required to cater for the new development electrical load. The existing substation in R1 has adequate capacity to service the existing and new development.

There appears to be adequate infrastructure in the vicinity of the site to cater for the future development. This will be subject to a formal offer to Ausgrid.

Based on Iglu's intention to consolidate the new development with R1 then we propose to re-use the existing main switchboard within R1 and extend an unmetered supply to a new Main Distribution Board within the new development.

2.9 Telcommunications

Based on preliminary desktop reviews there appears to be sufficient telcommunications capacity in the vicinity of the site to service the proposed development.

There appears to be an NBN fibre service reticulating in Marian Street that can be utilised for the new development.

Refer to Figure 8 below:

Figure 8

We understand that NBN will likely not service the site as IGLU has a contract with Spirit to supply their projects. IGLU will be able to obtain commercial high broad band services from the telco infrastructure on Regent Street if required.

It is likely that IGLU will set up a 3G dual sim card system for all essential phone lines - FIP, lifts, security etc. as per their Melbourne City project.

APPENDICES

Appendix A

Pressure & Flow Enquiry

Statement of Available Pressure and Flow

Emma Miles
46a Macleay Street
Potts Point, 2011

Attention: Emma Miles Date: 06/04/2018

Pressure & Flow Application Number: 415421
Your Pressure Inquiry Dated: 2018-03-15
Property Address: 88 Regent St, Redfern 2016

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

ASSUMED CONNECTION DETAILS

Street Name: Marian Street	Side of Street: North
Distance & Direction from Nearest Cross Street	15 metres West from Regent Street
Approximate Ground Level (AHD):	28 metres
Nominal Size of Water Main (DN):	150 mm (Nominated Asset Number – 2568561)

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	57 metre head
Minimum Pressure	36 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	36
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15 20 26 30	39 38 37 36 33 31
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5 10 15 20 26 30	36 35 34 32 29 27
Maximum Permissible Flow	39	21

(Please refer to reverse side for Notes)

Statement of Available Pressure and Flow

Emma Miles
46a Macleay Street
Potts Point, 2011

Attention: Emma Miles Date: 06/04/2018

Pressure & Flow Application Number: 415437
Your Pressure Inquiry Dated: 2018-03-15
Property Address: 88 Regent St, Redfern 2016

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

ASSUMED CONNECTION DETAILS

Street Name: Regent Street	Side of Street: West
Distance & Direction from Nearest Cross Street	2 metres North from Marian Street
Approximate Ground Level (AHD):	28 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	47 metre head
Minimum Pressure	20 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	20
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15 20 26 30 40 50	21 21 21 21 20 20 20 20
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5 10 15 20 26 30 40 50	20 20 20 20 20 20 19 19
Maximum Permissible Flow	67	18

(Please refer to reverse side for Notes)

Appendix B

Indicative Spatial Requirements

Refer “Engineering Services Reverse Brief”