Illoura Place, 28 Elizabeth St, Liverpool

Hydraulics & Electrical

Services Infrastructure Report_DA submission

Prepared for: Altis Bulky Retail Pty Ltd ATF Trustee for Altis ARET Sub Trust 20 (Altis)

Attention: Nick Murdoch

Date: 29 October 2021

Prepared by: Antonio Lo Monte

Ref: 301350263

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Revision

Revision	Date	Comment	Prepared By	Approved By
001	5.10.21	Pre-DA Issue	ALM	ALM
002	29.10.21	Pre-DA Issue	ALM	ALM

Contents

1. Introduction

28 Elizabeth Street, Liverpool, known as Illoura Place is being developed by Altis Bulky Retail Pty Ltd ATF Trustee for Altis ARET Sub Trust 20 (Altis).

As an overview, the Project consists of the following:

Site area	3,609m2
Proposed GFA	36,000m2
Building Height	~128m
Stories	33 Stories
Residential Units	312 Units
Parking	411 Residential
	100 commercial
	31 Retail
	65 Com bicycle
	312 Res Bicycle
	29 Motorcycle

This document outlines the existing services available to the site and the proposed engineering allowances and checks that have been allowed.

This information contained within this report has been based on the following documents received to date:

- Client documents
- Turner Architectural documents
- Multiple design meetings and client discussion and coordination
- NCC 2019 Amendment 1
- Relevant codes and design standards for electrical, fire, hydraulic and mechanical services
- DBYD Existing Services
- Preliminary Services Calculations

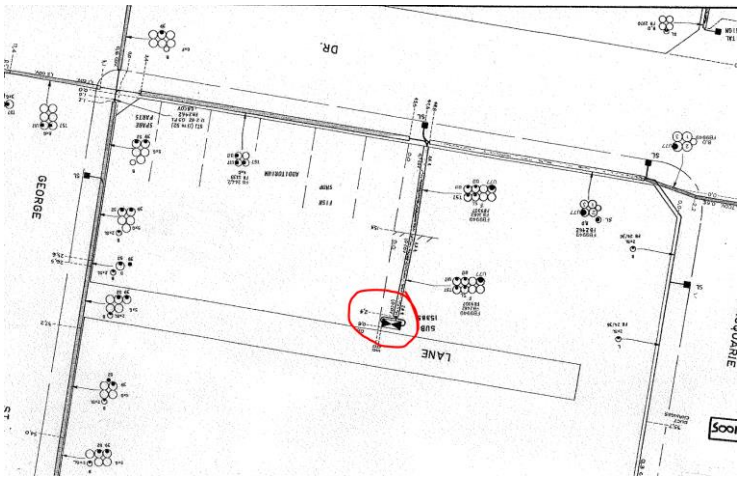
Electrical Services

1.1 Existing Electrical Infrastructure

1.1.1 Power

The Supply Authority for the site is Endeavour Energy.

A search on DBYD indicates that the site does not currently contain any substations, and that a substation is located adjacent within site 26 Elizabeth Street, however Google maps indicates that the entire block is demolished.

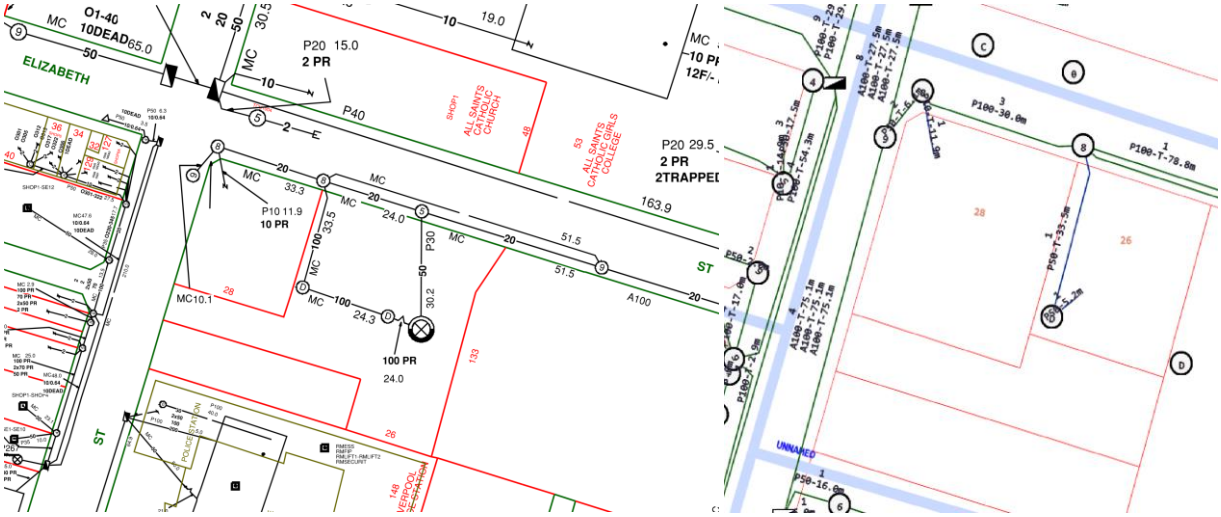


Endeavour Energy DBYD showing substation is adjacent site

Google Streetview showing that the existing block has been demolished.

1.1.2 Communications

A search on DBYD indicates that the site currently has various pit and pipe infrastructure servicing communication to the site, however these existing services will be removed as part of the demolition/basement excavation for the new development.



Telstra and NBN maps indicating existing provisions for the site

Based on the above, all new infrastructure will be required for the new development.

1.2 Proposed Supply Infrastructure

1.2.1 Substations

A preliminary maximum demand calculation for the new development has been calculated at around 6300A (~4400kVA).

MAXIMUM DEMAND CALCULATION DATE 01.10.2021

PROJECT NO 301350263

28 Elizabath Street Liverpool

AS/NZS 3000:2007 Wiring Rules Appendix C1

TABLE C1

			Actual No
		Number of Units	311
		Number of Units per Phase	104

	1	2	3	4	5	
LOAD GROUP	**DESCRIPTION**	**Single Domestic electrical installation**	**2 to 5 Units per Phase**	**6 to 20 Units per Phase**	**21 or more Units per Phase**	**LOAD**
Ai	Lighting	3A for 1 to 20 points + 2A for each additional 20 points or part thereof	6A	5A + 0.25 per unit	0.5 per unit	52
Aii	Outdoor lighting	75% of connected Load	No assessment for purpose			0
Bi	Socket Outlets not exceeding 10A	10A for 1 to 20 points + 5A for each additional 20 points or part thereof	10A + 5A per living unit	15A +3.75A per living unit	50A + 1.9A per living unit	247.6
Bii	Socket Outlets not exceeding 10A (SSO above 2.3m, perm installed heatering or combination SSO) in Buildings with Permanent heating/cooling	10A				0
Biii	Socket Outlets exceeding 10A (SSO above 2.3m or combination)	15A				
C	Appliances for cooking, instant water heaters, heating and cooling	50% of connected load	15A	2.8A per living Unit		291.2
		1 FULLL LOAD BURNER X25 % UNSE AT THE SAME TIME				339.1304348
D	Fixed space heating or air conditioning equipment, saunas or socket outlets rated at more than 10%	75% of connected load				1040
E	Instantaneous water heaters	33.3% of connected load	6A per living Unit		100A + 0.8A per unit	183.2
F	Storage water heaters	33.3% of connected load	6A per living Unit		100A + 0.8A per unit	0
G	Swimming Pools. Spas	75% of largest spa, plus 75% of largest swimming pool, plus 25% of remainder				0
Loading not associated with individual units - connected to each phase (communal lighting, laundry, lifts, motors etc)						
H	Communal Lighting	N/A	Full connected load			
I	Socket outlets not included in groups J and M below. Permanently connected electrical equipment not exceeding 10A	N/A	2A per point, up to maximum of 15A			
Ji	Appliances rated at more than 10A : Clothes dryers, water heaters, self heating washing machines	N/A	50% of connected load			
Jii	Appliances rated at more than 10A : Fixed space heating, air conditioners	N/A	50% of connected load			
Jiii	Appliances rated at more than 10A : Spa and swimming pool heaters	N/A	75% of largest spa plus 75% of largest swimming pool, plus 25% of remainder			
K	Lifts	Largest lift motor : 125%, nest largest lift : 75%, Remaining lift motors : 50%				259
		Residential lift	4	63 A each		
		Commercial lift	3	36 A each		
		Basement lift (garbage)	1	32 A each		
L	Motors	Largest motor : 125%, next motor : 75%, Remaining motors : 50%				
M	Appliances, including socket outlets other than those set out in groups A to L above	Connected load 10A or less : no assessment ; Connected load over 10A : By assessment	Connected load 10A or less : no assessment ; Connected load over 10A : By assessment			
Others	Carpark (B1-B2) general lighting & power)	20700	20 VA/m2			600.00
	Carpark (B1-B2) general lighting & power)	20700	20 VA/m2			600.00
	Commercial area (lighting & power)	10000	100 VA/m2			1449.28
	Commercial, Retail & share amenities HWU	By estimation (electric cooking and hot water unit)				250.00
	Retail on Ground (food & beverage)	1100	400 VA/m2			637.68
	Communal Power & Lighting	10746				351.23
				Total		**6300.32**

The max demand of the project assumes the following:

- Electrical Cooktop & HWU
- Limited to 600A for EV charging provision and on load management control
- Retail 400vA/m² (food and beverage) - subject to confirmation from Altis / Murdoch
- Commercial 100VA/m² - subject to final system selection and design, to be confirmed further as design progresses
- Total Mech loads: TBC - to be confirmed further as design progresses
- Total Hyd loads: TBC - to be confirmed further as design progresses
- Total Fire loads: TBC - to be confirmed further as design progresses

In order to service the expected max demand 3 off 1500kVA transformers are required and located within chamber substations around the site. In order to cater for future flexibility in supply and overcome any potential power restrictions on the site, we understand that the preference is to allow space for 4 transformer substations.

Refer to Appendix A for Endeavour Energy drawing showing the chamber substations. The final design/requirements of the substation shall be advised by the Level 3 ASP designer.

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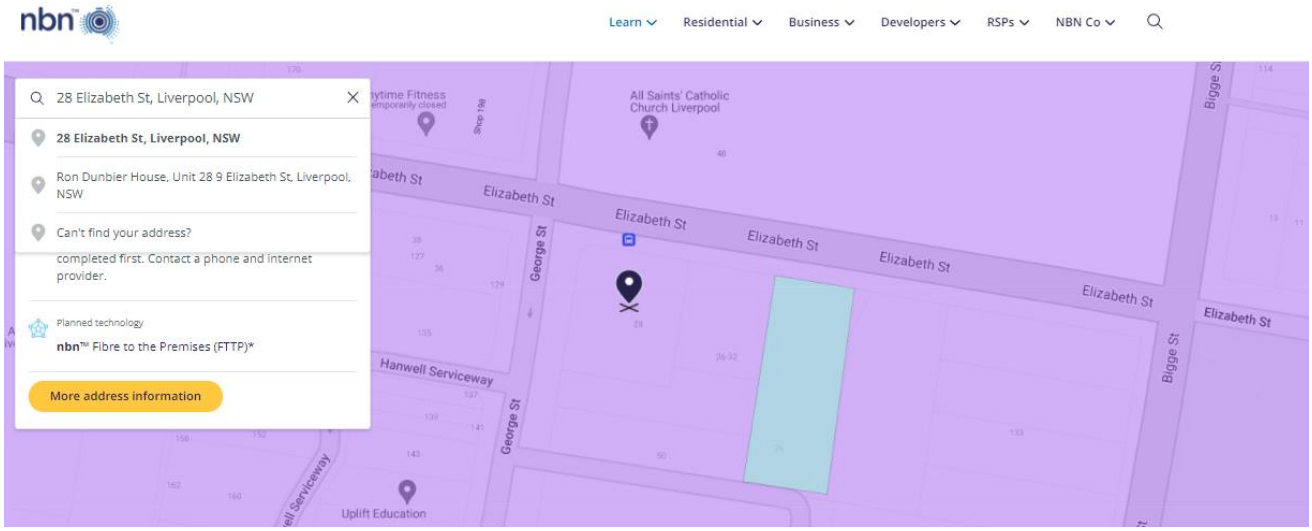
1.3 Proposed Communications Infrastructure

A check on the NBNco website has confirmed that NBN infrastructure has been rolled out in the area, and that the technology being used will likely be Fibre-To-The-Premises (ie. fibre will be provided to each tenant/apartment).

This is subject to approval following the NBN Application process.



An application to NBN will be made in due course.

Specific requirements for the provision of NBN fibre to the new development are outlined in the NBN Building Design Guide – New Developments document. We have summarised these requirements below however the reader shall refer to the NBN document for specific requirements regarding the NBN installation.

Client shall confirm if NBN is the preferred communication provider or an alternative Integrated Communications Network Provider (eg Opticomm, LBNCo etc)

1.3.1 Lead-in Fibre

Similar to the new consumers mains, new lead-in NBN / other fibre operator fibre shall enter the new development at basement level from the streets from 2 locations (1 from Elizabeth Street and 1 from George Street) as a grade A office building requirement. The lead-in fibre cable shall be reticulated to the Main Comms Room via a P100 lead-in telecommunications conduit laid on new cable tray/duct to the Main Comms Room as required. The telecommunications

conduit shall run to the nearest NBN/Telstra pit in the road reserve and stop inside the private property with a marker to indicate the location.

NOTE: the lead-in pit location is required to be confirmed as part of the detailed design phase

2. Hydraulic Services

2.1 Site Infrastructure Services

2.1.1 Sewer Services

There is currently a 300mm vitreous clay sewer servicing the site we will be connecting to this sewer connections

The 300mm sewer main traversing through the site will be classified as 'Asset Affected' by Sydney Water as it is passing through the building footprint and excavation zone. A WSC is engaged to design the deviation around the site and as part of that design a sewer connection will be provided for connection to our internal sewer reticulation in the south east corner of the site. See Image 1

We anticipate the site will utilise 2x225mm connections, final locations and details to be determined in liaison with Sydney Water. The suitability of these connections will be validated by Sydney Water within the Notice of Requirements (NoR).

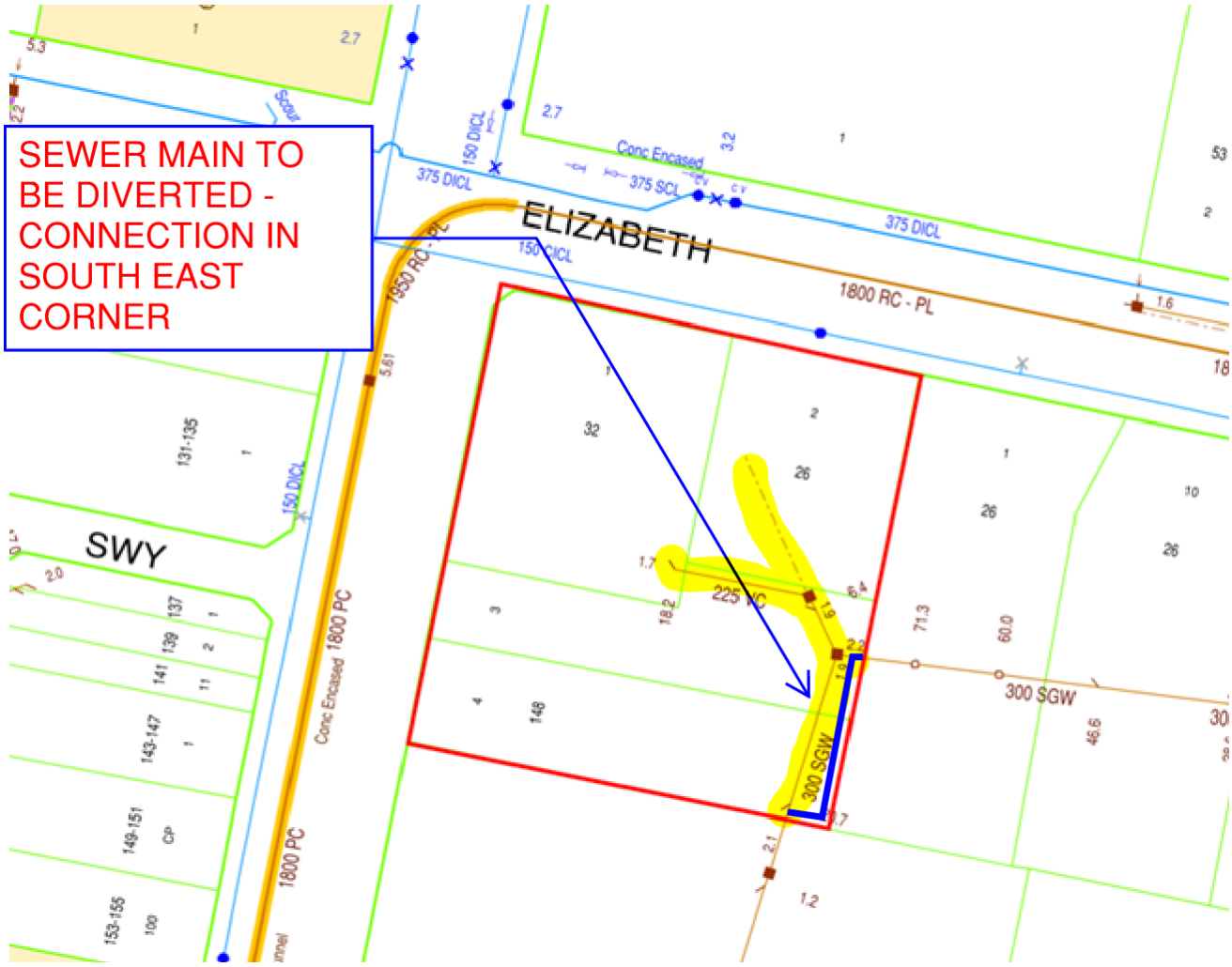


Image 1: Sewer intruding on site boundary: Source: DBYD

2.1.2 Water Services – Fire Services Water Supply

- A 150mm combined potable and fire connection will be main into the water 300mm water main located within Elizabeth St. The connection will be a new connection at the corner of Elizabeth and George Street to the proposed master water meter and fire hydrant booster assembly. See image 2.
- An RPZD (Reduced Pressure Zone Device) backflow prevention device will be required on the new incoming supply. Supplementary backflow prevention devices – RPZD's are to be provided in accordance with AS3500.1 requirements including hair dressing salon and dirty utility areas.
- Final connection details to be co-ordinated as apart of Section 73 process with Sydney Water

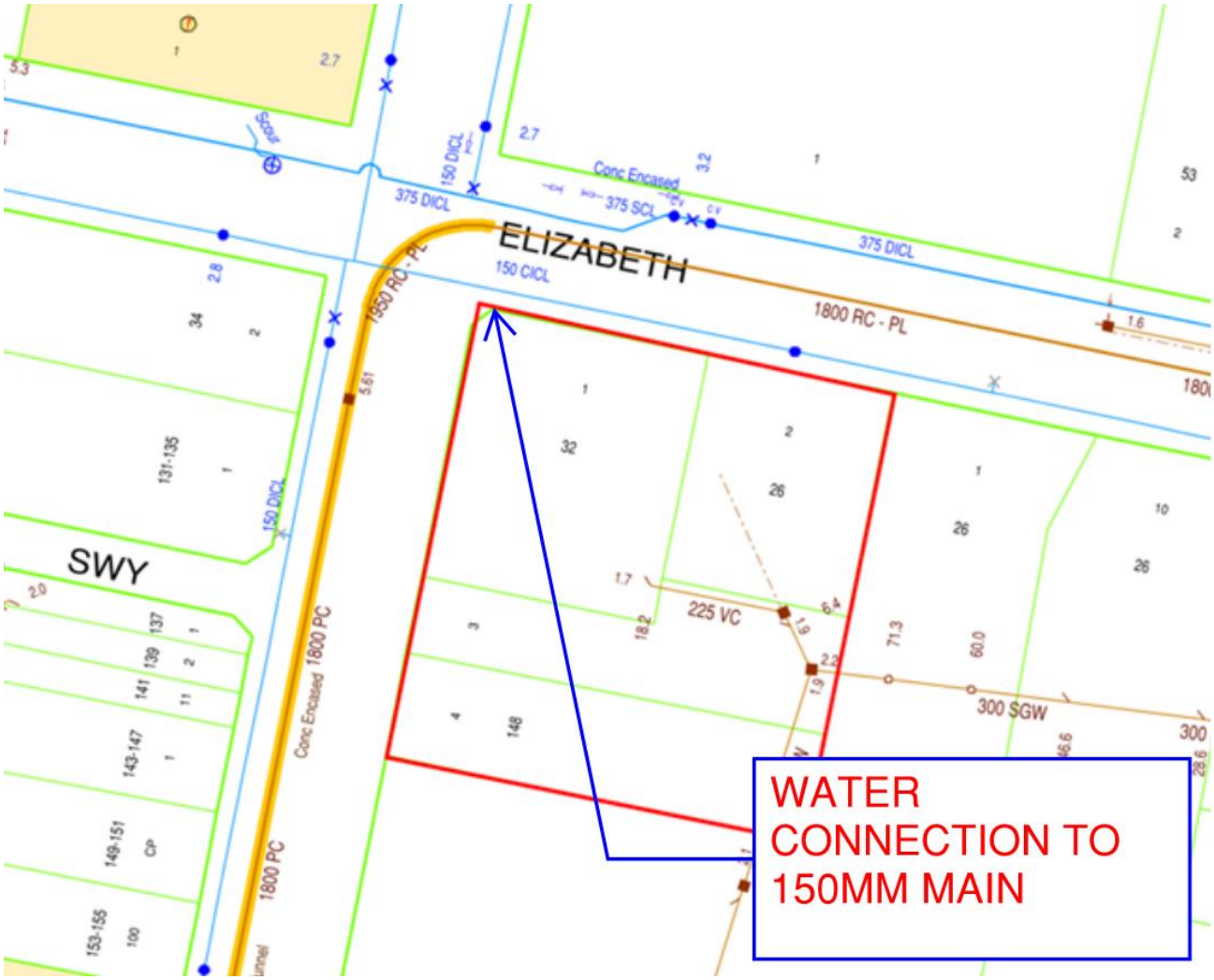


Image 2: **Available water main: Source: DBYD**

2.1.3 Gas Services

There is a 75dia, 7kPa network main owned and operated by Jemena within Elizabeth St. Current discussions with Jemena. A formal enquiry to Jemena has determined that there is no capacity to extend gas through to the building services, gas supply will be supplied to the retail tenancies only will be provided.

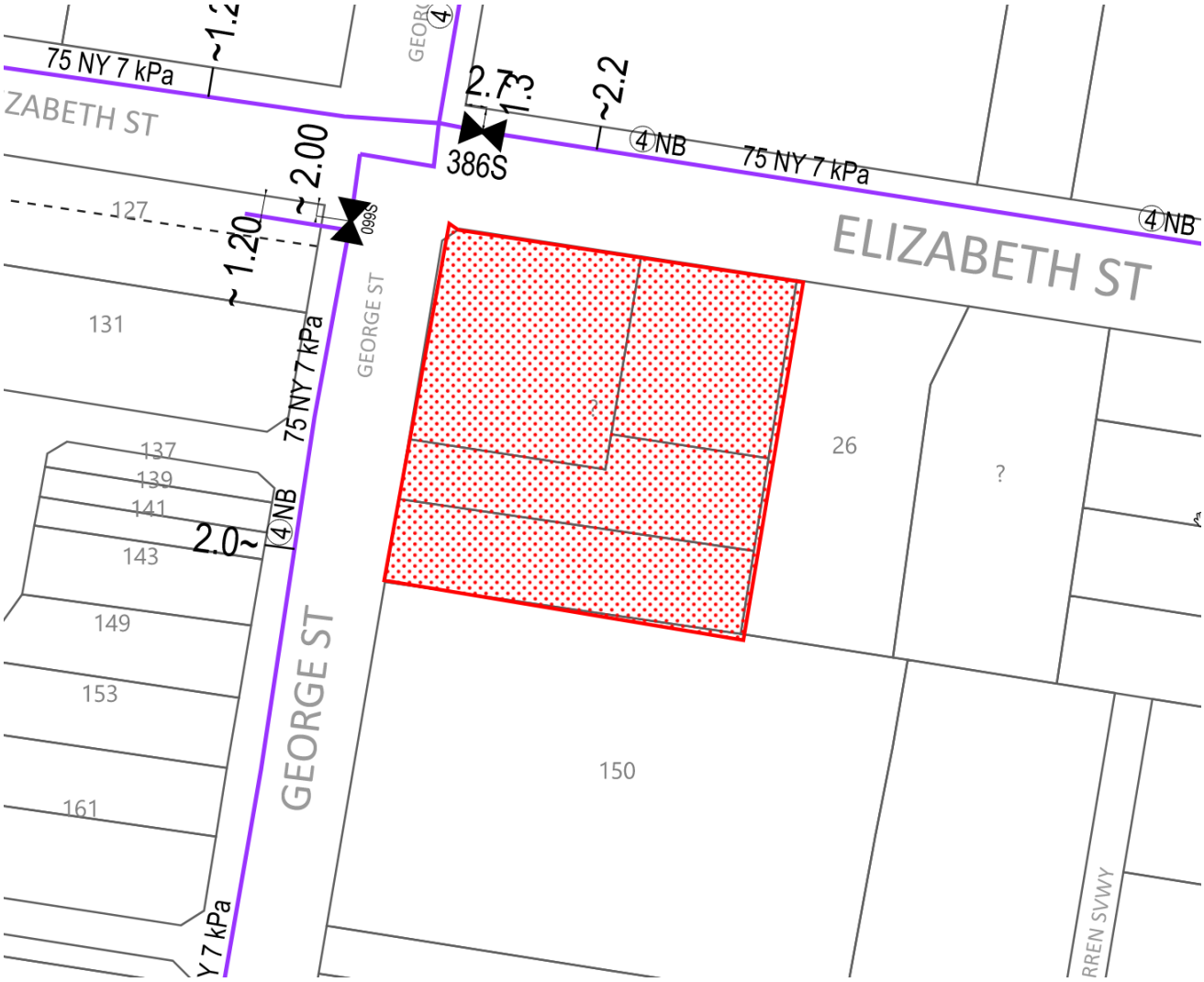


Image 3: **Available gas main: Source: DBYD**

3. Appendix 1 - Endeavour Energy Substation

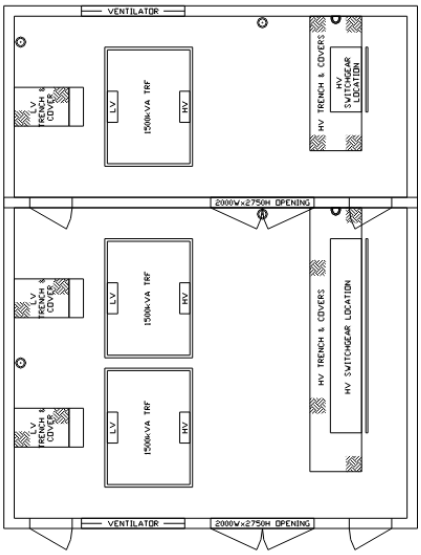


Figure 1:
Three (3) transformer substation

Figure 2:
Four (4) transformer substation

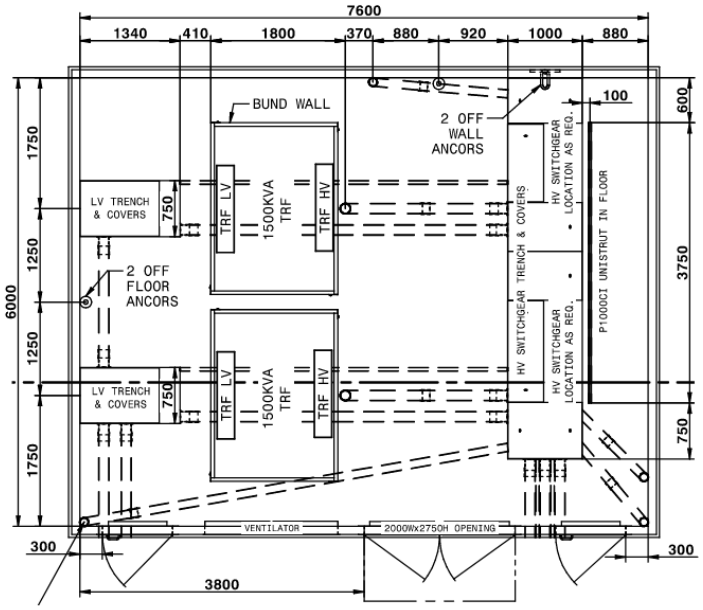


Figure 3 :
Two (2) transformer substation

Typical sizes for transformers and HV switchgear in one (1) room			
No. of transformers	Minimum internal room size, mm (approx.)		
	Width	Depth	Height
1	5700	4600	2700
2	6000	7600	2700
3 (Dry only)	8500	7600	2700
4 (Dry only)	11000	7600	2700

4. Appendix 2 – Sydney Water Pressure and Flow

Statement of Available Pressure and Flow

Sydney WATER

Catherine Jones
207 Pacific Highway
St Leonards, 2065

Attention: Catherine Jones Date: 26/04/2021

Pressure & Flow Application Number: 1094131
Your Pressure Inquiry Dated: 2021-03-19
Property Address: Elizabeth Street, Liverpool 2170

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: Elizabeth Street	Side of Street: South
Distance & Direction from Nearest Cross Street	20 metres East from George Street
Approximate Ground Level (AHD):	14 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	51 metre head
Minimum Pressure	39 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	39
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15 20 26 30 40 50	41 41 41 40 40 40 39 38
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main) Maximum Permissible Flow	5 10 15 20 26 30 40 50 67	39 39 39 39 38 38 37 36 34

(Please refer to reverse side for Notes)

For any further inquiries regarding this application please email :

swtapin@sydneywater.com.au

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For more information please visit
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