Warren Smith & Partners

6 MAY 2020

CIVIL ENGINEERING SERVICES

Liverpool Civic Place

UTILITY SERVICES REPORT

DOCUMENT CONTROL

01	6th May 2020	Draft	Current
Rev #	**Date**	**Description of Change**	**Status**

APPROVALS

01	David Barcal *Civil Engineer – Civil & Water Engineering*	Michael Cahalane *Director – Civil & Water Engineering*	Michael Cahalane *Director – Civil & Water Engineering*
Rev #	**Author**	**Reviewer**	**Approver**

PREPARED BY:

WARREN SMITH & PARTNERS PTY LTD

Consulting Engineers

ACN 002 197 088 **ABN** 36 300 430 126

Level 9, 233 Castlereagh Street

Sydney 2000 NSW Australia

T 61 2 9299 1312

PREPARED FOR:

BUILT

Level 7, 343 George Street, Sydney

Sydney NSW 2000

Warren Smith & Partners

CONTENTS

APPENDIX

CIVIL ENGINEERING SERVICES

1. INTRODUCTION

This Utility Service Report is submitted to Liverpool City Council (Council) in support of a Concept Development Application for a Concept Proposal (Concept Proposal) for a new mixed use precinct known as Liverpool Civic Place at 52 Scott Street, Liverpool (the site). This application sets out a Concept Proposal for the development of the site under Section 4.23 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

This Concept Proposal seeks approval for a mixed use concept comprising the following key components and development parameters:

- A building envelope containing 5 storeys accommodating an information and education facility (public library) use.
- A building envelope containing 15 storeys accommodating a public administration building use.
- A building envelope containing 24 storeys with the ability to accommodate either (or a combination of) commercial premises, retail premises, educational establishments, tourist and visitor accommodation or boarding house (student accommodation) uses.
- A landscaping and public domain concept including the provision of a public through-site link connecting Scott Street to the north through to Terminus Street to the south; and
- Concept building envelope for a three level shared basement car park across the entire site to accommodate parking for all future uses, and a public car park.

No physical works are proposed as part of this Concept Proposal. The subject application will seek approval for maximum building envelopes, land uses and GFA. It is emphasised that the proposed building envelopes set the maximum vertical and horizontal parameters of building lines and the proposed GFA will be accommodated within the building envelopes. The building envelopes are deliberately designed with sufficient volume to allow for design excellence to be achieved through the detailed building design and articulation.

A reference design has also been submitted which illustrates one of the ways a detailed design could be facilitated within the proposed building envelopes. However, approval is not sought for the reference design. The final design will be resolved in subsequent staged 'detailed proposal' DAs. Following this, each individual tenant will seek development consent for the fit out and use of their respective tenancy.

1.1 SITE LOCATION

The site is located at 52 Scott Street, Liverpool within the Liverpool City Council Local Government Area (LGA) as illustrated at Figure 1-1. The site is located at the southern fringe of the Liverpool CBD. The site is approximately 300m south west of the Liverpool Railway Station and is also in the vicinity of a number of regionally significant land uses and features including Liverpool Hospital, Westfield Liverpool, Western Sydney University Liverpool Campus, the Georges River and Biggie Park public open space as illustrated at Figure 1-1.

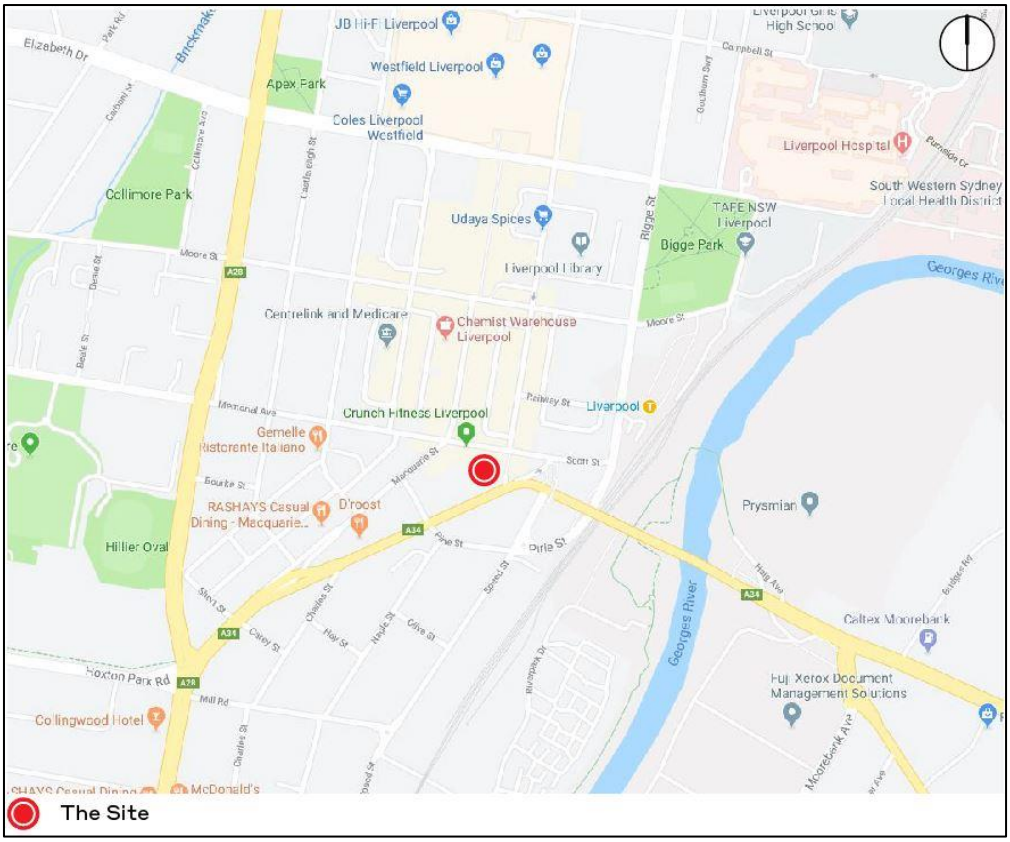


Figure 1-1 Liverpool Civic Place Site Location

1.2 SITE DESCRIPTION

This site is irregular in shape and comprises 12 lots legally described below and identified in Figure 1-2.

- Lot 1 in DP 514817;
- Lot 2 in DP 229979;
- Lot 17 in DP 81842;
- Lot 3 in DP 229979;
- Lot 11 in DP 522284;
- Lot 201 in DP1224084;
- Lot 100 in DP 877435;
- Lot 12 in DP 657056;
- Lot 1 in DP 507070;
- Lot 22 in DP 441010;
- Lot 23 in DP 441010; and
- Lot 1 in DP 229979.

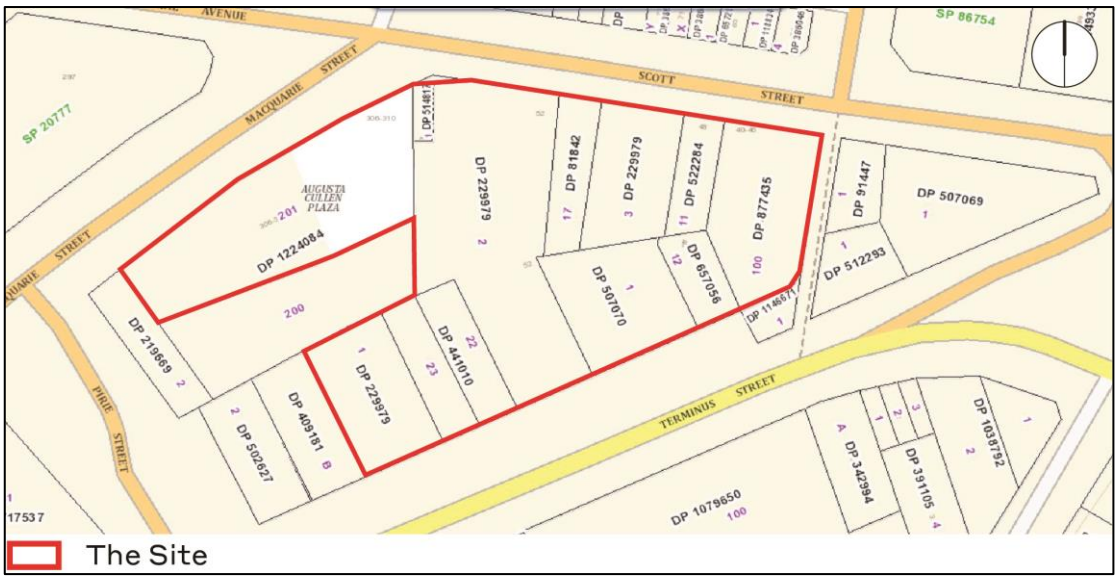


Figure 1-2 Site Lot Boundaries

The site has a total area of 9348.33m^2 and has three road frontages, including a primary frontage to Scott Street (98m frontage) to the north, George Lane (40m frontage) to the east and Terminus Street (115m frontage) to the south. The site is currently occupied by a two storey commercial building with a large frontage to Scott Street. The commercial building is provided with an above ground car parking structure at the rear with a frontage to Terminus Street. The eastern portion of the site is occupied by a two storey retail building with an adjoining car park at the rear. The two existing building are divided by a central vacant lot. An aerial photograph of the site is shown at Figure 1-3 below.

Figure 1-3 Site Aerial

2. ABBREVIATIONS AND DEFINITIONS

AEP	Annual Exceedance Probability
AHD	Australian Height Datum
ARI	Average Recurrence Interval
DN	Diameter (mm)
EY	Exceedances per Year
IFD	Intensity-Frequency-Duration
L/s	Litres per second
m/s	Metres per second
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
OSD	On-Site Detention
PSD	Permissible Site Discharge
RCP	Reinforced Concrete Pipe
RWT	Rainwater Reuse Tank
SID	Safety In Design
SSR	Site Storage Requirement
WSC	Water Services Coordinator
WSUD	Water Sensitive Urban Design

The Use of Must, Shall & Should:

In accordance with the international Organization for Standardisation (ISO) Directives, the word “shall” is used to state that a requirement is strictly to be followed in order to conform to a Performance Requirement. Consequently, there can be no deviation from that requirement, other than a specific tolerance.

It is noted that in legislation and specifications it is common to use the word “must” to express a requirement. The word “shall” in this document should be considered as equivalent to “must” in the legislation.

The word “should” introduces a suggestion or recommendation that is not a requirement. It is not necessary that such recommendations or suggestions be followed in order to comply with the Performance Requirement.

3. CONNECTIONS

A Dial Before You Dig (DBYD) search was obtained to determine the existing infrastructure and potential connection points in the project's vicinity. The DBYD is suitable for the purpose of this report, however a detailed survey and site potholing are recommended to be undertaken for detailed design.

3.1 SYDNEY WATER – WATER MAIN CONNECTION

As part of the DBYD, a Sydney Water (SWC) utility map of the area was provided and can be viewed in Appendix B. The water main location can be seen in Figure 3-1.

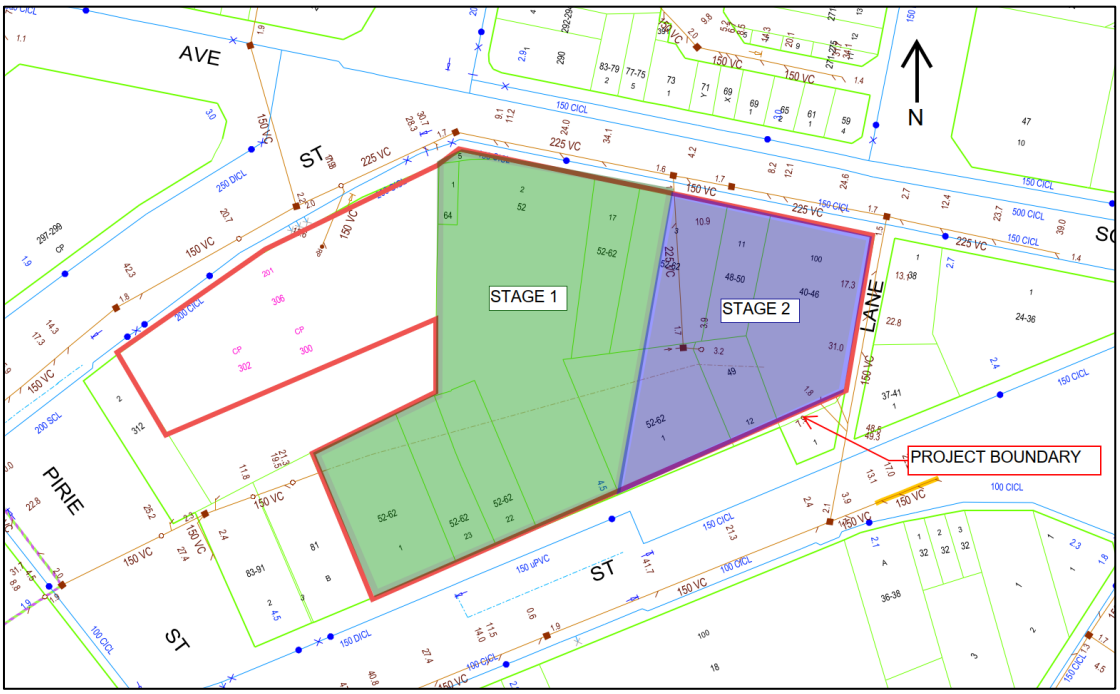


Figure 3-1 Existing SWC Trunk Watermain

3.2 SYDENY WATER – SEWER CONNECTION

There is a DN225 VC (DO37259) gravity sewer line located in Scott Street that appears to be a suitable connection point for the project. An existing sewer line fall within the site, a DN225 VC (WO99181) that will require to be removed and properly capped to SWC standards. In addition, there is a disused sewer line that runs through the site that will need to be removed for construction. The sewer line locations can be seen in Figure 3-2 below.

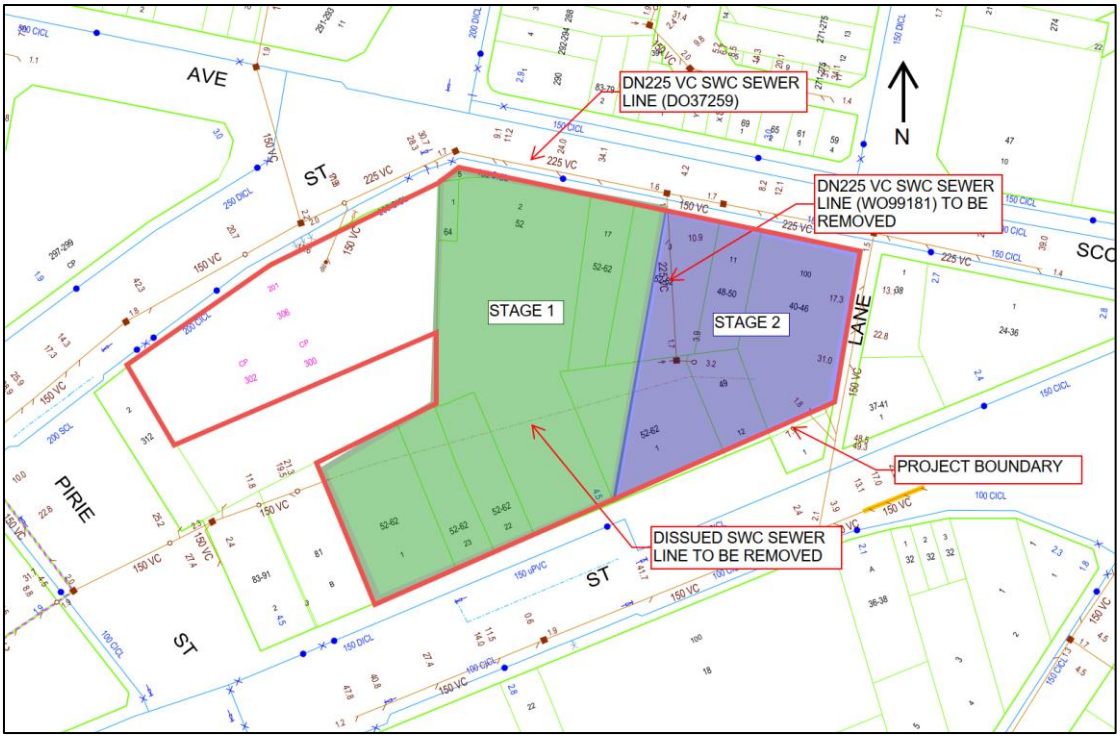


Figure 3-2 SWC Sewer Line Locations

3.3 STORMWATER

There are a number of existing council stormwater pits located in Scott Street for potential connections points. Location of the council pits can be seen in Figure 3-3 below.

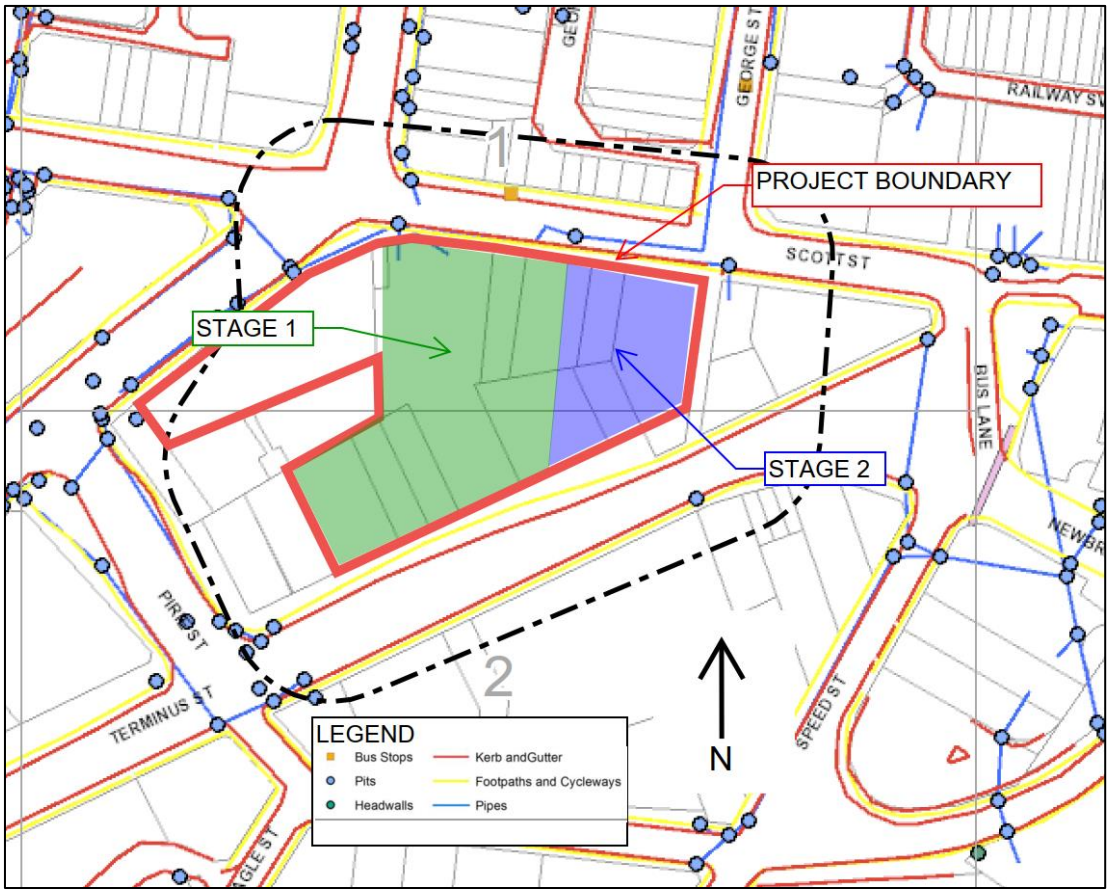


Figure 3-3 Existing Stormwater Infrastructure

3.4 RECYCLED WATER

The project is currently in preliminary discussions with Sydney Water in relation to a recycled water network through the Liverpool CBD. An assessment of the area is being undertaken to understand potential demand to enable Sydney Water to compile a business case for a recycled water network.

3.5 GAS

The gas infrastructure available in the Liverpool area and surrounding the site are considered low pressure (7kpa). Jemena do not ensure 7kpa will always be available and could range between 7kpa and 3kpa. This places a risk on the mechanical and hydraulic equipment that requires a 5kpa operational pressure. Unless Jemena have planned amplification of the gas infrastructure WS+P recommends undertaking an application process during the master planning phase to mitigate risk. This is an online process that has no application fees. The development partnership will be updated as these progress. The existing Jemena gas lines in the project vicinity are shown below in Figure 3-4.

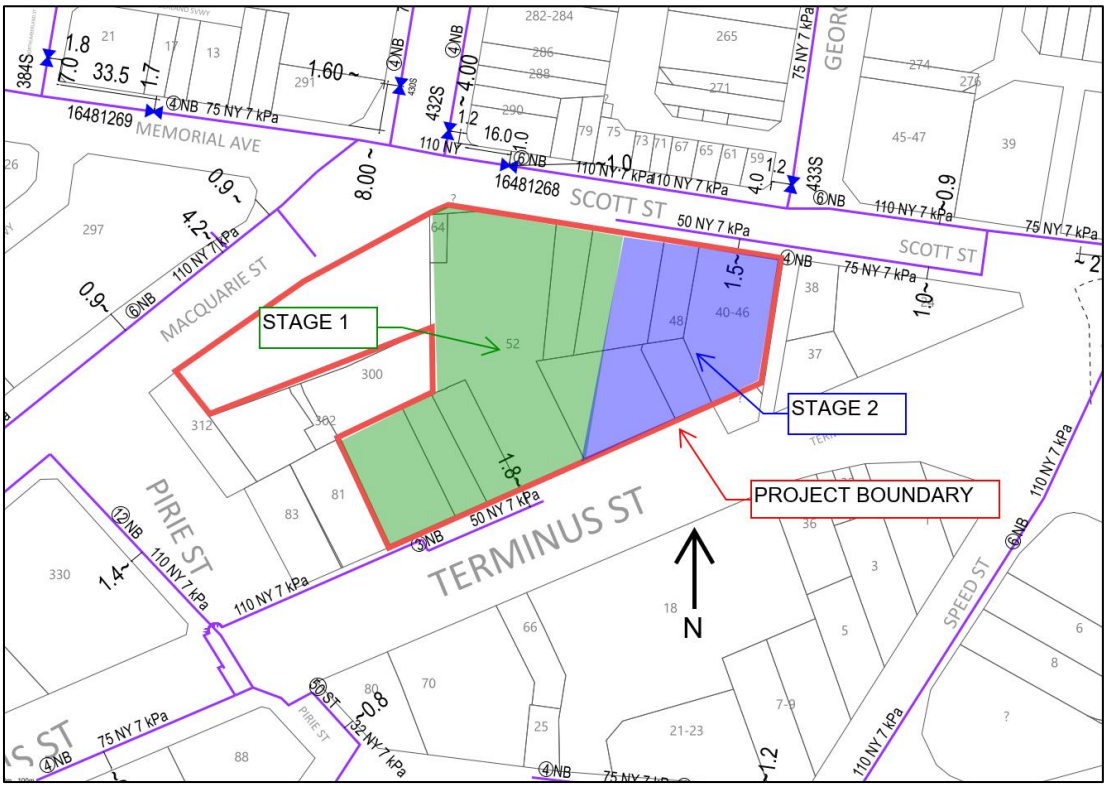


Figure 3-4 Existing Jemena Gas Lines

3.6 ELECTRICAL (PROVIDED BY LCI CONSULTANTS)

Estimated Maximum Demand

The estimated maximum demand for the site can be summarisd as follow:

	Stage 1 - Council Building	Stage 1 - Library	Stage 2 – Commercial	Stage 2 - Hotel
Total GFA-Car Park	16,782 sqm	Nil	6,954 sqm	Nil
Total GFA – Functional Space (admin/commercial, retail, library, Hotel)	18,215 sqm	5,010 sqm	24,460 sqm	3,017 sqm
Estimated Maximum Demand	2,200kVA	600kVA	2,600kVA	500kVA

Proposed Low Voltage Distribution

Based on the estimated maximum demand, it is envisaged that:

- Stage 1 will comprise of a standalone chamber substation (3MVA capacity)
- Stage 2 will comprise of a standalone chamber substation (to be kept to 3MVA capacity, but subject to future validation)

Level 3 ASP Design

The Level 3 ASP Design will be undertaken by Altura Solutions for Stage 1, as well as the application to Endeavour Energy.

Incoming Infrastructure Arrangement

The proposed development site is bounded by Pier Street, Terminus Street, Scott Street, and Macquarie Street. Preliminary assessment of the existing infrastructure confirms that there are two (2) existing HV feeders interconnected to the existing power infrastructure network (refer to Figure 3-5).

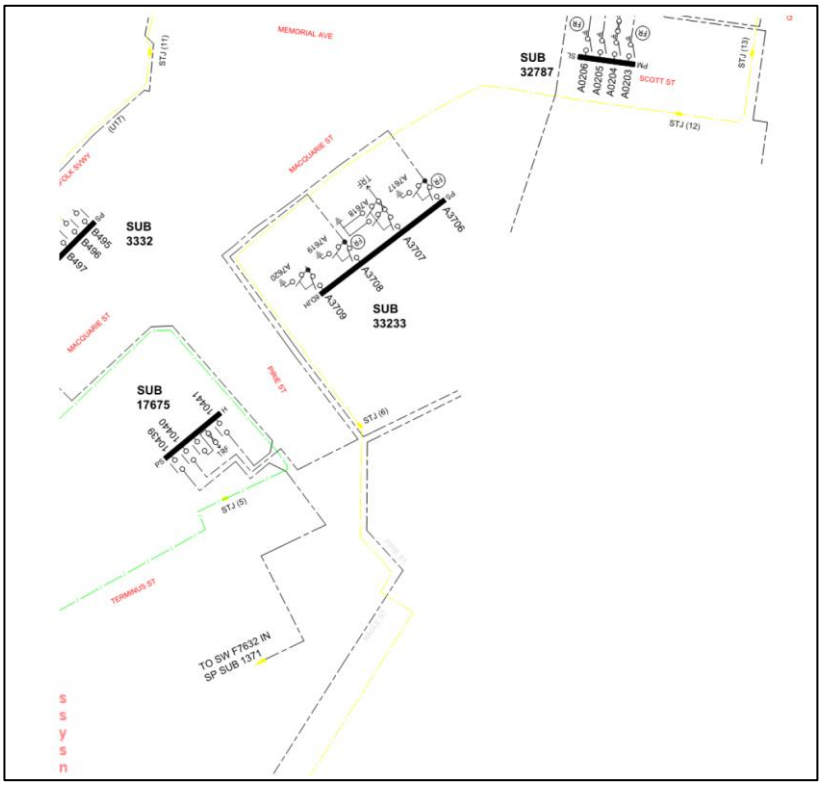


Figure 3-5 Existing HV Network Around Adjoining Lots

Stage 1 substation is located along Terminus Street, and it would be the intention to bring the HV feeder into the new 3MVA chamber substation from Terminus Street. The final arrangement is subject to the Endeavour Energy Design Information Pack (DIP) and network study/assessment.

3.7 COMMUNICATIONS SERVICES

Development Main Building Distributor

The proposed development will comprise of Main Building Distributor in:

- Stage 1 – Council Building (located in Basement 2), which will in turn provide a back-bone link the Library building
- Stage 2 – Commercial and Hotel (separate lead-in connection subject to future validation)

Existing Authority Asset

Based on preliminary inquiry, we can confirm the availability of existing Communications Asset along Terminus Street (refer to Figure 3-6).

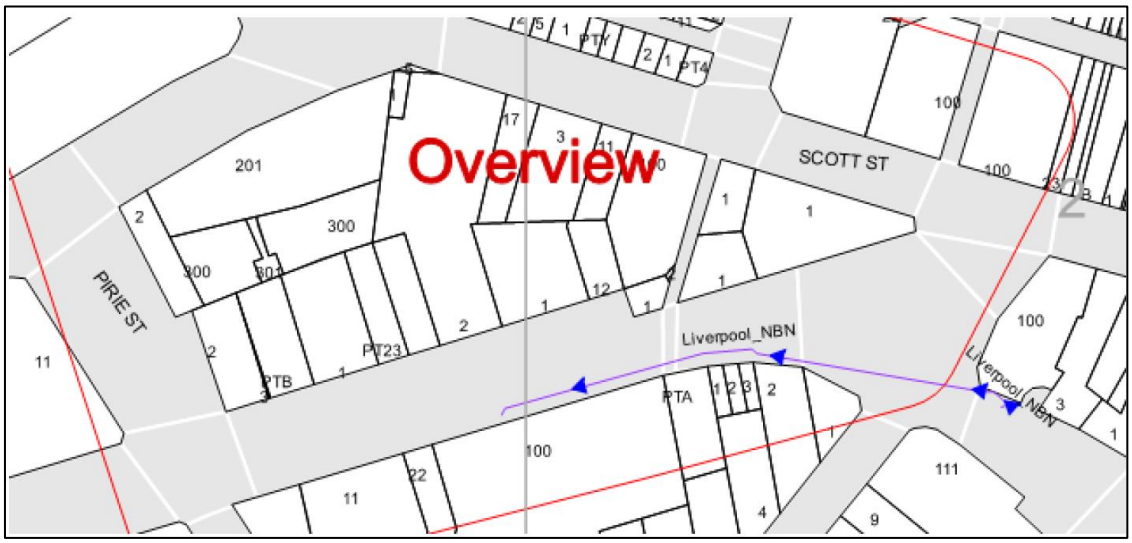


Figure 3-6 Existing Telecommunications Assets Around Adjoining Lots

Application for connection will be sought for incoming lead-in to be brought into the Stage 1 development from Terminus Street.

Stage 2 lead-in connection will be subject to future application and future validation.

4. DEMAND CALCULATIONS

4.1 WATER DEMAND CALCULATIONS

Water demands are to be determined.

4.2 SEWER DEMAND CALCULATIONS

Sewer demands are to be determined.

4.3 GAS DEMAND CALCULATION

Gas demands are to be determined.

5. GROUND WATER CONTAMINATION

The Golder geotechnical and environmental investigation report, received on 6/4/20, has demonstrated that the groundwater contains PFAS in three of the four boreholes undertaken. The presence of PFAS requires pre-treatment of the groundwater prior to disposing to stormwater networks. There are two options during construction being considered for the disposal of contaminated ground water:-

- Install a treatment plant on site and treat prior to disposal to stormwater
- Tank the collected water on-site, provide treatment and export off site

Discussions with treatment specialists are being undertaken and will update once further information is received. We will also need to review the permanent requirements for the groundwater as the basement is not designed to be tanked.

6. FLOOD ASSESMENT

A flood assessment was undertaken for the Liverpool Council regarding Liverpool CBD area by GHD. From the report, it can be seen that a portion of Scott Street/Memorial Avenue that front the proposed development experiences flood depths of 0.0-0.2m in the 100 year storm event. Refer to Figure 6-1.

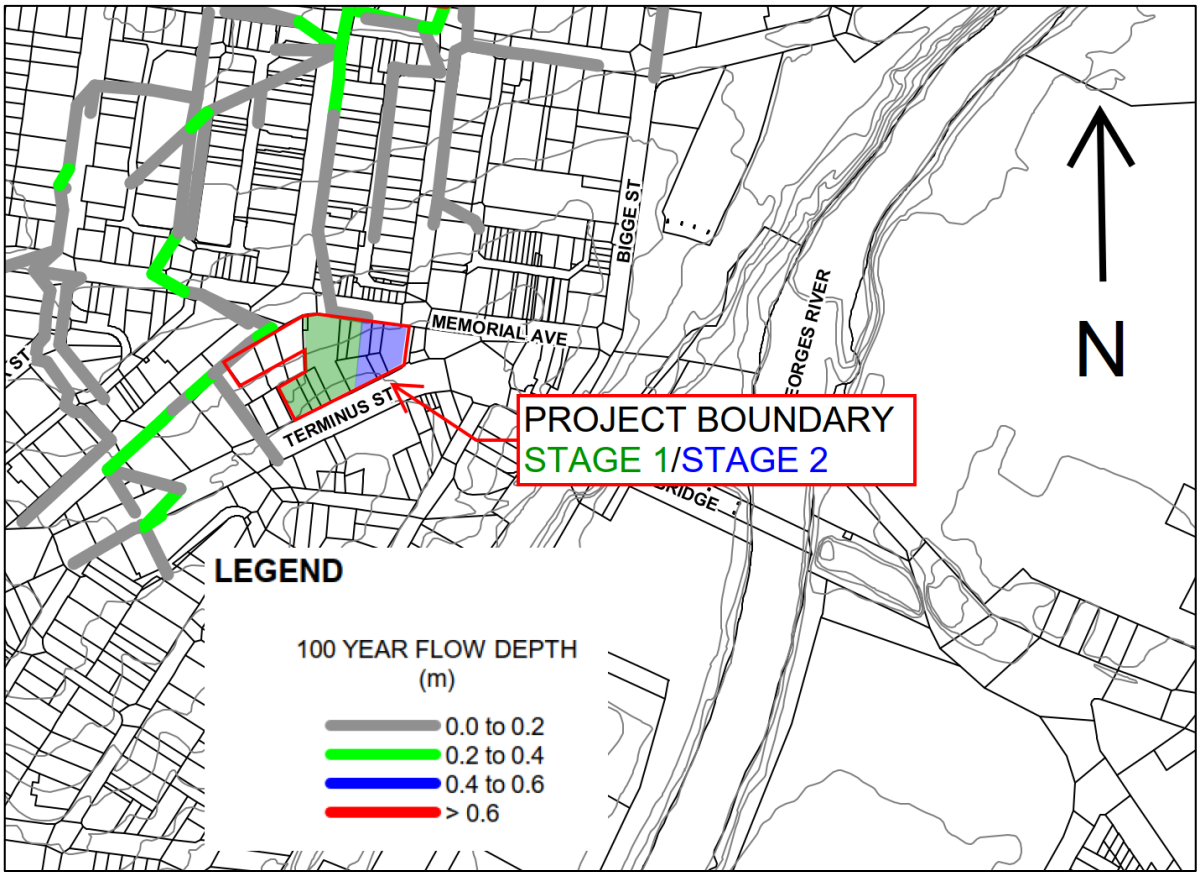


Figure 6-1 100 Year Flood Depths

7. ONSITE STORMWATER DETENTION (OSD)

As per the Liverpool Council On-site detention policy, an OSD will not be required where it can be shown that:

- the increased discharge for all storms up to and including a 100 year event can be accommodated by the existing stormwater pipe system; or
- a building addition or internal alteration is within the footprint (plan area) of the existing building; or
- the additional impervious surfaces (e.g. roof, driveway, paving) total is less than 30 square metres in plan area. (NOTE: the designer is advised to confirm with Council engineer first to ensure that the cumulative total of previous and future additions still remains less than 30 square metres, otherwise OSD will apply); or
- the sub-division of an existing development does not change the buildings or the impervious areas of the site.
- Sites substantially inundated by flooding. (This is to be confirmed by Council's engineer)

The site will not require an OSD if the proposed development maintains the current discharge levels and if the proposed site does not increase the existing impervious area.

8. WATER SENSITIVE URBAN DESIGN (WSUD)

Liverpool Council requires that developments of land greater than 2,000m^2 are to submit a stormwater quality management assessment demonstrating that necessary water quality improvements targets are achieved. The water quality targets when compared to the pre-development levels are as follows:

- 45% reduction in the baseline annual pollutant load of total nitrogen (TN);
- 65% reduction in the baseline annual pollutant load of total phosphorus (TP);
- 85% reduction in the baseline annual pollutant load of total suspended solids (TSP); and,
- 90% reduction in the baseline annual pollutant load of litter and vegetation larger that 5mm, through provision of GPT;

APPENDIX A SYDNEY WATER AVERAGE DAILY WATER USE BY PROPERTY TYPE

Sydney WATER

Average daily water use

By property development type

Water Supply Code of Australia

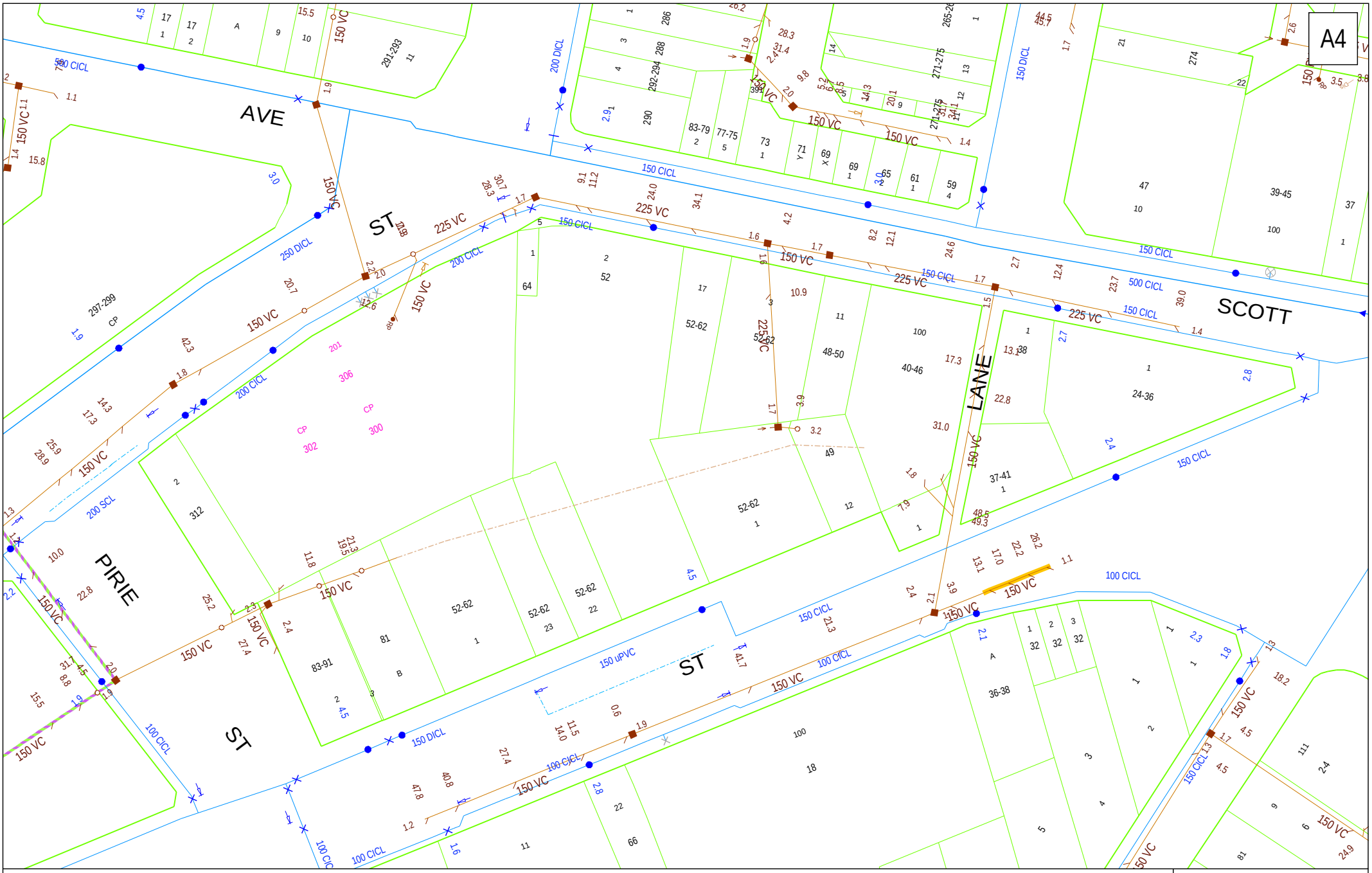
MWH/PB Flow Study Report

Water usage survey

Development Type	Development Sub-Type	Key Metric	Metric Unit	Average Demand (L/Metric unit/Day)
Residential	Single Lot Torrens	Dwelling	Each dwelling	623.00
	Flats Torrens	Net floor area	Square metre	2.36
	High Rise Units	Net floor area	Square metre	3.34
	Single Lot Community	Dwelling	Each dwelling	623.00
Mixed	Residential / Commercial	Combined floor area	Each dwelling / Square metre	Use separate rates for each component
	Commercial / Industrial	Combined floor area	Square metre	Use separate rates for each component
Commercial	Aged Accom - Self Care	Net floor area	Square metre	2.50
	Aged Accom - Hostel	Bed	Each bed	271.00
	Aged Accom - Full Care	Bed	Each bed	271.00
	Childcare	Net floor area	Square metre	3.60
	Hotel / motel / serviced apartments	Room	Each room	359.94
	Office	Net floor area	Square metre	2.27
	Shopping Centre	Net floor area	Square metre	3.00
	Laundry / Dry Cleaner	Net floor area	Square metre	10.50
	Café / Fast Food / Butcher / Deli	Net floor area	Square metre	2.48
	Retail Units	Net floor area	Square metre	2.48
	Medical / Veterinary	Net floor area	Square metre	2.48
	Mechanical Repair	Net floor area	Square metre	2.48
	Car / Boat Sales	Net floor area	Square metre	2.48
	Car Wash	Net floor area	Square metre	9.40
	Club	Net floor area	Square metre	3.77
Industrial	Heavy Process	As required		
	Chemical Manufacturing	As required		

	Printing Manufacturing	As required		
	Beverage Manufacturing	As required		
	Light Factory Unit	Developed floor area	Square metre	2.82
	Warehousing	Developed floor area	Square metre	2.82
	Transport / Bus depot	Site area	Square metre	0.91
Special Uses	University	Student	Each student	20.00
	School	Student	Each student	20.00
	Hospital	Bed	Each bed	271.00
	Religious assemblies	Developed floor area	Square metre	1.30
	Government depot	Site area	Square metre	0.91
	Community Centre / Library	Floor area	Square metre	1.84
	Sports Fields with amenities	As required		
	Parks & Reserves	As required		
	Services: Police, Ambulance, etc	Floor area	Square metre	1.40

APPENDIX B SYDNEY WATER DBYD MAP



DBYD Address:
n/a Macquarie Street
Liverpool NSW 2170

DBYD Job No: 19290124

DBYD Sequence No: 96267477

SYDNEY WATER CORPORATION

Scale: 1:1000

Date of Production: 31/03/2020

Plan 1 of 1

N

0m 5m 10m 15m 20m