ARUP

NSW Health Infrastructure

Warrawong Community Health Centre

Site Services Infrastructure Report

Reference :

A | 26 October 2023

Job number 289887

Arup Australia Pty Ltd | ABN 76 625 912 665

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ARUP

Document Verification

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		Signature			

Issue Document Verification with Document ✓

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1. Introduction

This report is written in response to the REF Deliverables list for the Warrawong Community Health Centre (WCHC) project requesting the following:

Matter	Comment	Required Documentation/ Assessment
Utilities/ Services	Infrastructure design plans (concept level detail).	■ Infrastructure design plans (concept detail)
		■ Services design statements (water, sewer, comms, electrical, gas)
	Provide relevant services design statements (what is proposed, why it is needed, capacities available or needed, connections needed, consultation with service providers, broader headworks, confirm Australian Standards to be complied with, any mitigation measures needed).	

The project is located on the Port Kembla Hospital site, at the corner of Cowper Street and Fairfax Road. The existing building and supporting services are to be demolished and decommissioned to make space for the following spaces and services:

- Child and Family services including PKH Child Development Service
- Illawarra Early Childhood Nurses
- Domestic Family Violence and Sexual Assault Services
- Binji & Boori Child & Family Illawarra Aboriginal Services (AMHICH)*
- Ambulatory and Primary Health Care services including facilities offering Chronic Disease Prevention and Rehab Services such as the Aunty Jeans Program and Healthy Hearts program.
- District Wide Sexual Health Service.
- Drug and Alcohol Services, based in the community including Drug & Alcohol Needle & Syringe Program (First Step), and Counselling & Withdrawal Management.
- Community based Mental Health services.
- Allied Health (including Brain Injury Service).
- Ante-natal
- Equipment Loan Pool

1.1 Source of Information

The following sources of information have been used in preparation of this report:

- REF Architectural Set (provided on 25th October 2023), by COX+STH Architecture.
- Dial Before You Dig (DBYD)
- Utilities Survey prepared by Sure Search, dated 12/23-09-2022.

It is noted the sources of information used in the preparation of this report do not provide a complete set of documentation. During the further stages of design, Arup have provided recommendations as to further inspections and testing deemed necessary to develop a robust design outcome.

2. Existing Authority Infrastructure

2.1 Domestic Cold Water

Based on DBYD information, the existing Sydney Water water mains adjacent to the site are as follows:

- Cowper St – 150mm CICL main.
- Fairfax Rd – 100mm CICL main.

Both mains are of a sufficient size to serve the development.

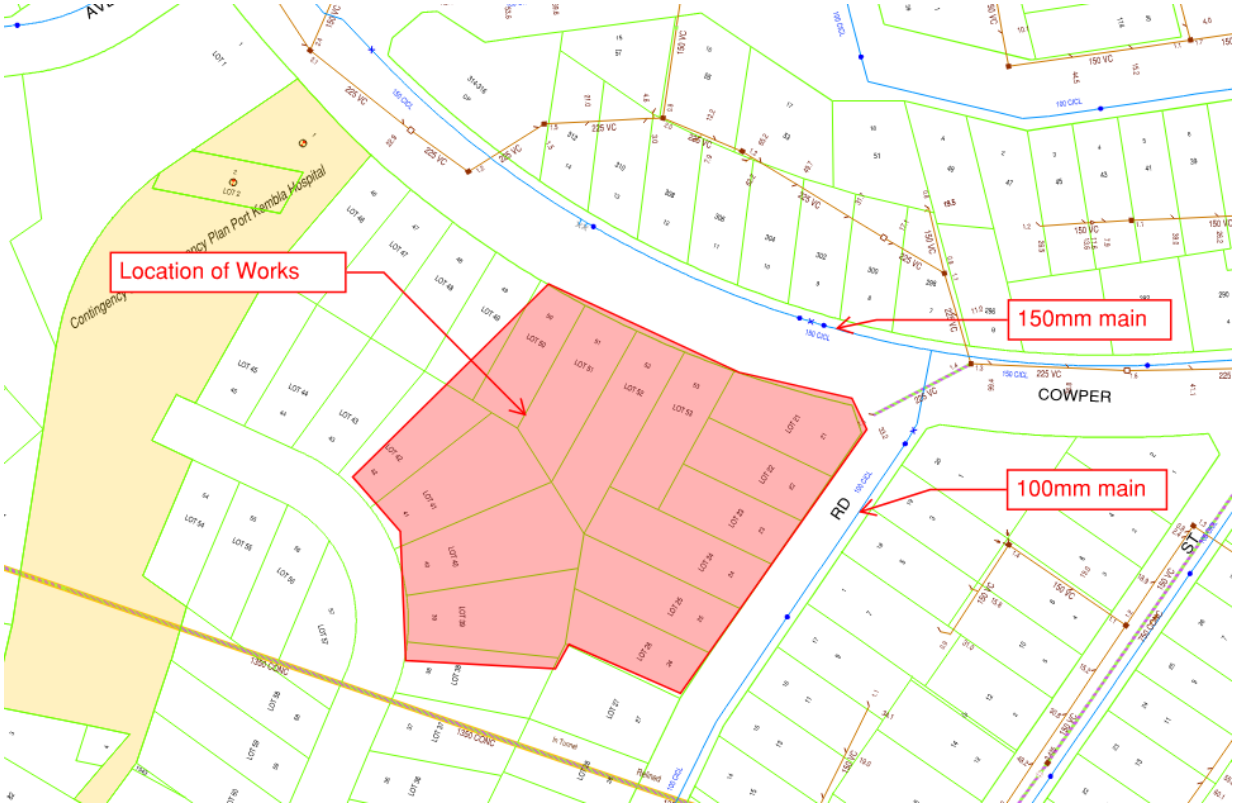


Figure 1 - Cold water authority infrastructure available to the site

2.2 Sewer Drainage

The existing Sydney Water sewer mains accessible to the site are as follows:

- At the intersection of Cowper St and Fairfax Rd- 225mm VC sewer main.
- Running west to east south of the building – 1350mm Concrete encased sewer main.

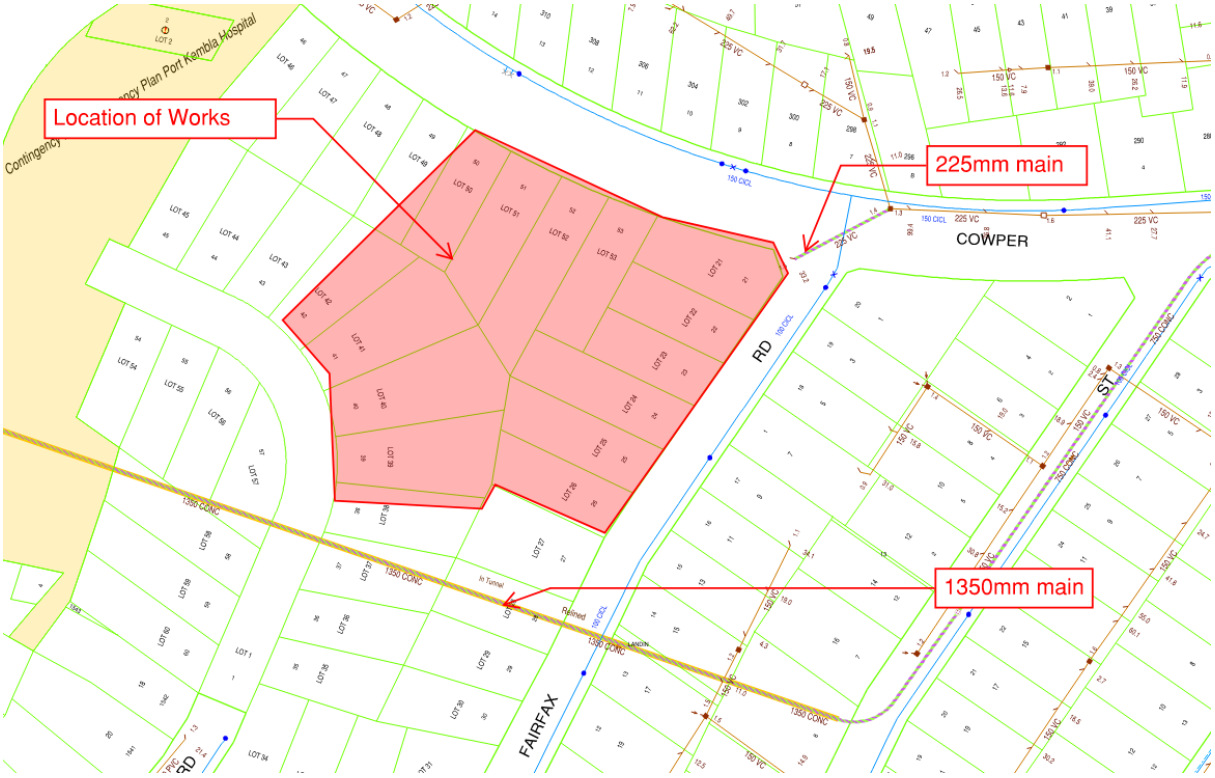


Figure 2 - Sewer drainage authority infrastructure available to the site

Connections to the large 1350mm concrete encased main south of the site are unlikely. This makes the 225mm sewer main that is closer to the site the more feasible option for connection.

2.3 Natural Gas

2.3.1 Existing Authority Infrastructure

Existing Jemena gas mains adjacent to the site are as follows:

- Cowper St – 63mm PE 210kPa main
- Fairfax Rd - 100mm 1050kPa

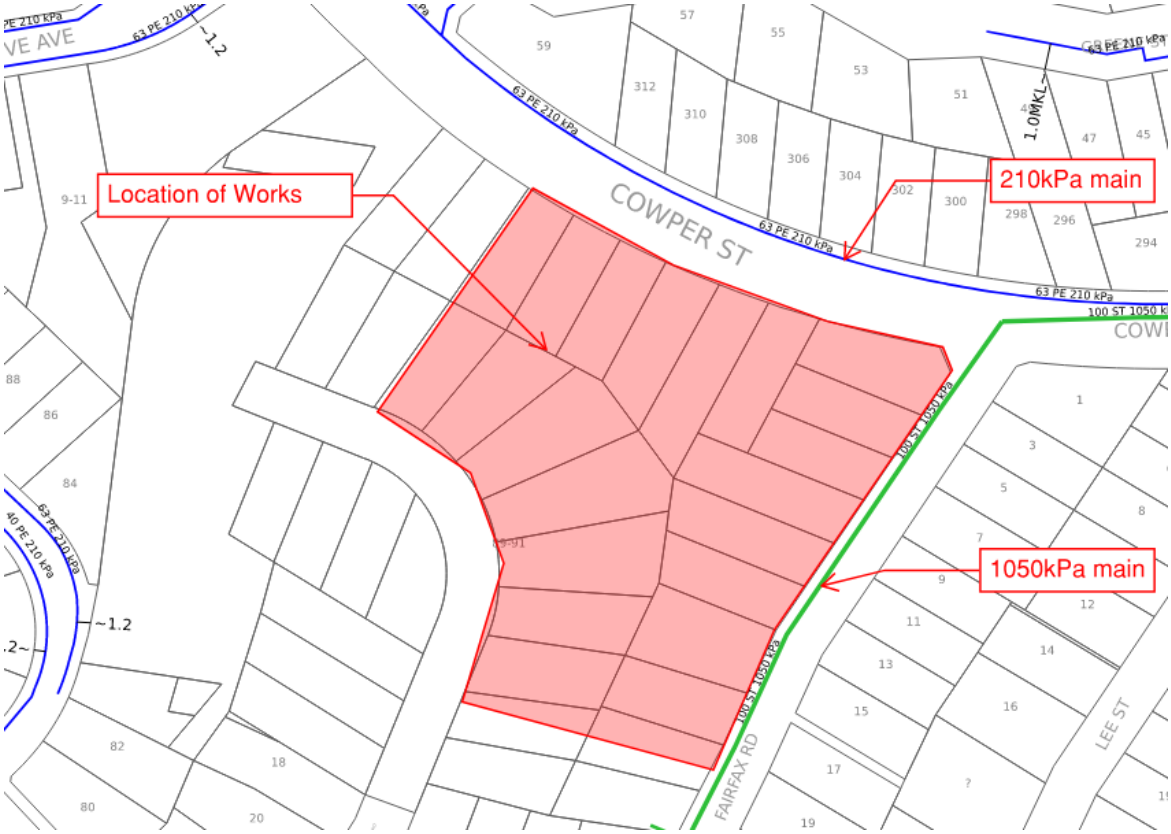


Figure 3 - Natural gas authority infrastructure available to the site

Due to the ESD and sustainability pathway to electrify the new building, no connection to the gas mains will be made. Any existing campus networks will remain as-is.

3. Proposed Site Services

It is proposed the new WCHC facility will be served from connections to the existing authorities mains.

It is anticipated that the existing mains will not require amplification or diversion as part of the project.

3.1 Domestic Water and Water for Fire Services

It is proposed that two connections shall be made to the water mains to separately serve the potable domestic services and fire services demand.

The domestic water connection shall be sized to serve the peak probable simultaneous demand (PSD). Calculations will be based on the estimated fixture numbers from the architectural REF set and fixture loadings from AS/ NZS 3500.1.

As the effective height of the building is not expected to exceed 25m and based on the current NCC building classification from the BCA, fire hose reels are not required.

Additionally, it has been agreed that fire sprinklers are not required.

The fire services connection shall be sized to serve the minimum required flow for the number of hydrants to flow simultaneously which will be 2 hydrants at 20L/s for the development based on requirements from AS2419.1.

The demands for the domestic and fire services have been calculated to be:

Type of use	Flow rate	Comments
Domestic Water	0.7 L/s	Peak demand
Fire Services	20 L/s	Minimum required flow rate for 2 hydrants flowing

Based on these requirements, it is recommended the domestic cold water (DCW) service will be supplied from a new connection off the Ø150mm authority mains on Cowper St, which has been selected based on it's capacity to serve the development and favourable on Sydney Water pressure and flow results, see A.1 Pressure and flow enquiry.

The incoming domestic cold water shall pass through a water meter assembly and backflow prevention device as per Sydney Water requirements.

With the authority Pressure and Flow Statements received, domestic cold water (DCW) storage tanks will not be required but pressure-boosting pumps will be provided to meet minimum operable pressures.

As stated previously, a separate fire services connection will be made to serve the fire hydrant system.

Based on the building requirements and review of the main's capacity, a fire brigade booster assembly and fire pump set connected in parallel shall be required. The booster shall be located within sight of the main entrance. The final location must be approved by fire brigade.

As there are works to the authority mains, a Water Services Coordinator (WSC) is required to engage with the authority and provide a Notice of Requirements with any additional installation details and finalised connection points to be provided.

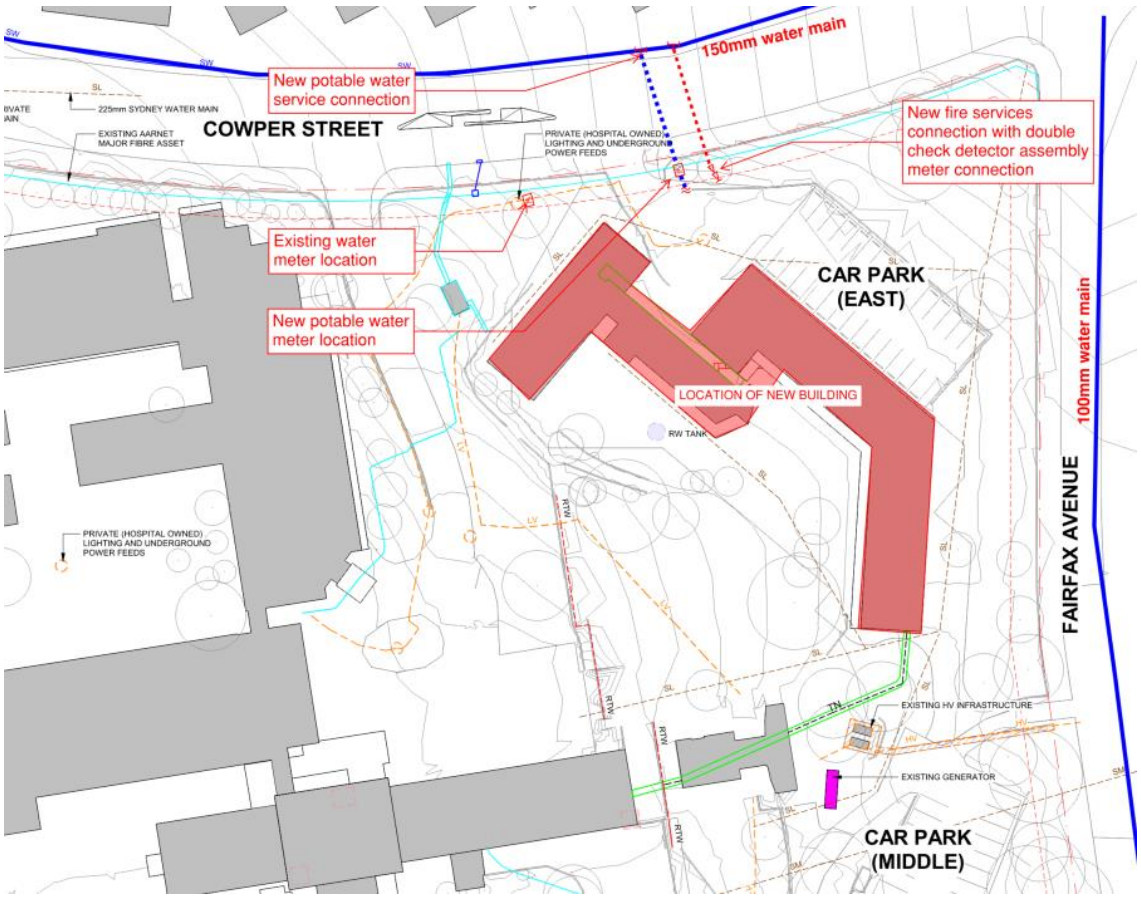


Figure 4- Proposed Water Connections

3.2

3.2 Rainwater Drainage System

Rainwater drainage will be required for the WCHC building and be comprised of the roof gutters regulating through downpipes to a rainwater tank. The stormwater overflow shall be directed to an in-ground stormwater system by Civil. The site-wide stormwater drainage and retention strategy is to be developed by the Civil Engineer.

The rainwater shall be treated and reused for irrigation to the building aiming to reduce potable water demand to the building and meeting ESD initiatives.

3.3 Natural Gas Services

No natural gas supply is expected to be required, as all heating demands are to be met by electric powered equipment. However, in the event that natural gas is required for any purposes, there are mains available on both Cowper St and Fairfax Rd.

3.4 Sewer and Sanitary Plumbing System

A connection to the authority sewer service is required to serve the development.

Based on total fixture amounts estimated from the architectural plans, a 100mm connection will be required to serve the new WCHC building.

It is proposed to connect to the 225mm sewer mains on Cowper St as this service is closer to the site and the mains invert level is below our estimated connection level meaning no sewer sump is required.

Where possible the existing reticulation and connection will be retained.

A plaster arrestor shall be provided as part of trade waste pre-treatment, else no other trade waste treatment will be required for the building.

No connections are to be made to the 1350mm sewer main running across the site, however there shall be some works to the carpark on top of the mains. This shall be considered by the WSC for their authority applications.

Final approval is subject to Water Services Coordinator and Section 73 requirements.

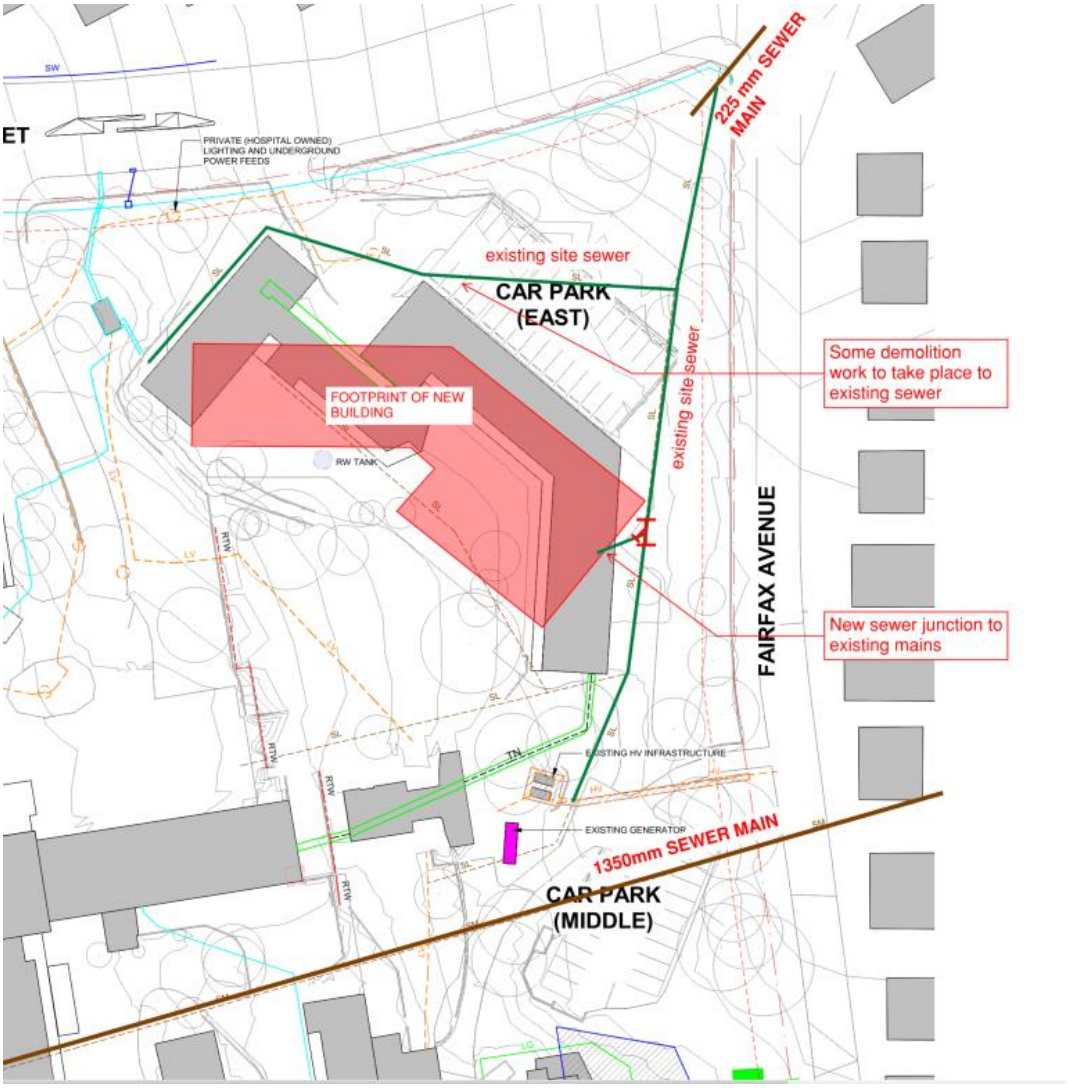


Figure 6- Proposed Sewer Connections

A.1 Pressure and flow enquiry

Statement of Available Pressure and Flow

Zee Qasim
151 Clarence St
Sydney, 2000

Attention: Zee Qasim Date: 14/09/2023

Pressure & Flow Application Number: 1722098
Your Pressure Inquiry Dated: 2023-08-28
Property Address: Cowper Street, Warrawong 2502

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: Cowper Street	Side of Street: North
Distance & Direction from Nearest Cross Street	30 metres West from Fairfax Street
Approximate Ground Level (AHD):	22 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	107 metre head
Minimum Pressure	49 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	49
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	10 15 20 25	56 56 55 55
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	10 15 20 25	49 49 48 48
Maximum Permissible Flow	30	48

(Please refer to reverse side for Notes)

For any further inquiries regarding this application please email :

hydraulicassessment@sydneywater.com.au

General Notes

This report is provided on the understanding that (i) the applicant has fully and correctly supplied the information necessary to produce and deliver the report and (ii) the following information is to be read and understood in conjunction with the results provided.

1. Under its Act and Operating Licence, Sydney Water is not required to design the water supply specifically for fire fighting. The applicant is therefore required to ensure that the actual performance of a fire fighting system, drawing water from the supply, satisfies the fire fighting requirements.

2. Due to short-term unavoidable operational incidents, such as main breaks, the regular supply and pressure may not be available all of the time.

3. To improve supply and/or water quality in the water supply system, limited areas are occasionally removed from the primary water supply zone and put onto another zone for short periods or even indefinitely. This could affect the supply pressures and flows given in this letter. This ongoing possibility of supply zone changes etc, means that the validity of this report is limited to one (1) year from the date of issue. It is the property owner's responsibility to periodically reassess the capability of the hydraulic systems of the building to determine whether they continue to meet their original design requirements.

4. Sydney Water will provide a pressure report to applicants regardless of whether there is or will be an approved connection. Apparent suitable pressures are not in any way an indication that a connection would be approved without developer funded improvements to the water supply system. These improvements are implemented under the Sydney Water 'Urban Development Process'.

5. Pumps that are to be directly connected to the water supply require approval of both the pump and the connection. Applications are to be lodged online via Sydney Water Tap in™ system -
Sydney Water Website – www.sydneywater.com.au/tapin/index.htm. Where possible, on-site recycling tanks are recommended for pump testing to reduce water waste and allow higher pump test rates.

6. Periodic testing of boosted fire fighting installations is a requirement of the Australian Standards. To avoid the risk of a possible 'breach' of the Operating Licence, flows generated during testing of fire fighting installations are to be limited so that the pressure in Sydney Water's System is not reduced below 15 metres. Pumps that can cause a breach of the Operating Licence anywhere in the supply zone during testing will not be approved. This requirement should be carefully considered for installed pumps that can be tested to 150% of rated flow.

Notes on Models

1. Calibrated computer models are used to simulate maximum demand conditions experienced in each supply zone. Results have not been determined by customised field measurement and testing at the particular location of the application.

2. Regular updates of the models are conducted to account for issues such a urban consolidation, demand management or zone change.

3. Demand factors are selected to suit the type of fire-fighting installation. Factor 1 indicates pressures due to system demands as required under Australian Standards for fire hydrant installations. Factor 2 indicates pressures due to peak system demands.

4. When fire-fighting flows are included in the report, they are added to the applicable demand factor at the nominated location during a customised model run for a single fire. If adjacent properties become involved with a coincident fire, the pressures quoted may be substantially reduced.

5. Modelling of the requested fire fighting flows may indicate that local system capacity is exceeded and that negative pressures may occur in the supply system. Due to the risk of water contamination and the endangering of public health, Sydney Water reserves the right to refuse or limit the amount of flow requested in the report and, as a consequence, limit the size of connection and/or pump.

6. The pressures indicated by the modelling, at the specified location, are provided without consideration of pressure losses due to the connection method to Sydney Water's mains.

A.2 Dial before you dig (DBYD)

A3

DBYD Address:
85-93 Cowper Street
Warrawong NSW 2502

DBYD Job No: 34977972

DBYD Sequence No: 229209010

Scale: 1:1500

Date of Production: 04/09/2023

Plan 1 of 1

N

0m 9m 18m 27m 36m

Guide to reading Sydney Water DBYD Plans

This guide will help you understand our plans and what our services are.

Symbol	Meaning	Symbol	Meaning
	Sewer main with flow arrow and size type text.		Sewer vertical
	Disuses sewer main This means the sewer has been disused but remains in the ground.		Sewer pumping station
	Sewer maintenance hole with upstream depth invert.		
	Sewer Sub-surface chamber		Pressure sewer main These are also found in Vacuum sewer areas.
	Sewer Maintenance hole with overflow chamber		Pressure sewer Pump unit Alarm, electrical cable and pump unit.
	Sewer Ventshaft EDUCT		Pressure sewer property valve boundary assembly
	Sewer Ventshaft IDUCT		Pressure sewer stop valve
	Sewer property connection point With chainage to downstream maintenance hole.		Pressure sewer reducer / taper
	Sewer concrete encased section		Pressure sewer flushing point
	Sewer Rehabilitation		Vacuum sewer division valve
	Sewer terminal maintenance shaft		Vacuum sewer vacuum chamber
	Sewer maintenance shaft		Vacuum sewer clean out pot
	Sewer rodding point		Stormwater pipe
	Sewer lamphole		Stormwater channel

Symbol	Meaning	Symbol	Meaning
	Stormwater gully		Potable water stop valves with Tapers
	Stormwater maintenance hole		Potable water closed stop valve
200 PVC	Watermain – potable drinking water With size type text.		
	Disconnected watermain potable drinking water This means the watermain has been disused but remains in the ground.		Potable water air valve
	Recycled watermain		Potable water valve
	Special supply conditions – potable drinking water		Potable water scour
	Special supply conditions – recycled water		Potable water reducer / taper
	Restrained joints – Potable drinking water		Potable water vertical bends
	Sewer concrete encased section		Potable water reservoir
	Restrained joints – Potable drinking water		Recycled water is shown as per potable above. Colour as indicated
	Potable water hydrant		Private potable water main
	Potable water maintenance hole		Private recycled water main
	Potable water stop valve		Private sewer main
	Potable water stop valve with By-pass		

Pipe types

PIPE TYPES		PIPE TYPES	
ABS	Acrylonitrile Butadiene Styrene	AC	Asbestos Cement
BRICK	Brick	CI	Cast Iron
CICL	Cast Iron Cement Lined	CONC	Concrete
COPPER	Copper	DI	Ductile Iron
DICL	Ductile Iron Cement (mortar) Lined	DIPL	Ductile Iron Polymeric Lined
EW	Earthenware	FIBG	Fibreglass
FL BAR	Forged Locking Bar	GI	Galvanised Iron
GRP	Glass Reinforced Plastics	HDPE	High Density Polyethylene
MS	Mild Steel	MSCL	Mild Steel Cement Lined
IPE	Polyethylene	PC	Polymer Concrete
PP	Polypropylene	PVC	Polyvinylchloride
PVC - M	Polyvinylchloride, Modified	PVC - 0	Polyvinylchloride, Oriented
PVC - U	Polyvinylchloride, Unplasticised	RC	Reinforced Concrete
RC-PL	Reinforced Concrete Plastics Lined	S	Steel
SCL	Steel Cement (mortar) Lined	SCL IBL	Steel Cement Lined Internal Bitumen
SGW	Salt Glazed Ware	SPL	Steel Polymeric Lined
SS	Stainless Steel	STONE	Stone
VC	Vitrified Clay	WI	Wrought Iron
WS	Woodstave		

DIAL BEFORE YOU DIG www.1100.com.au

Further Information

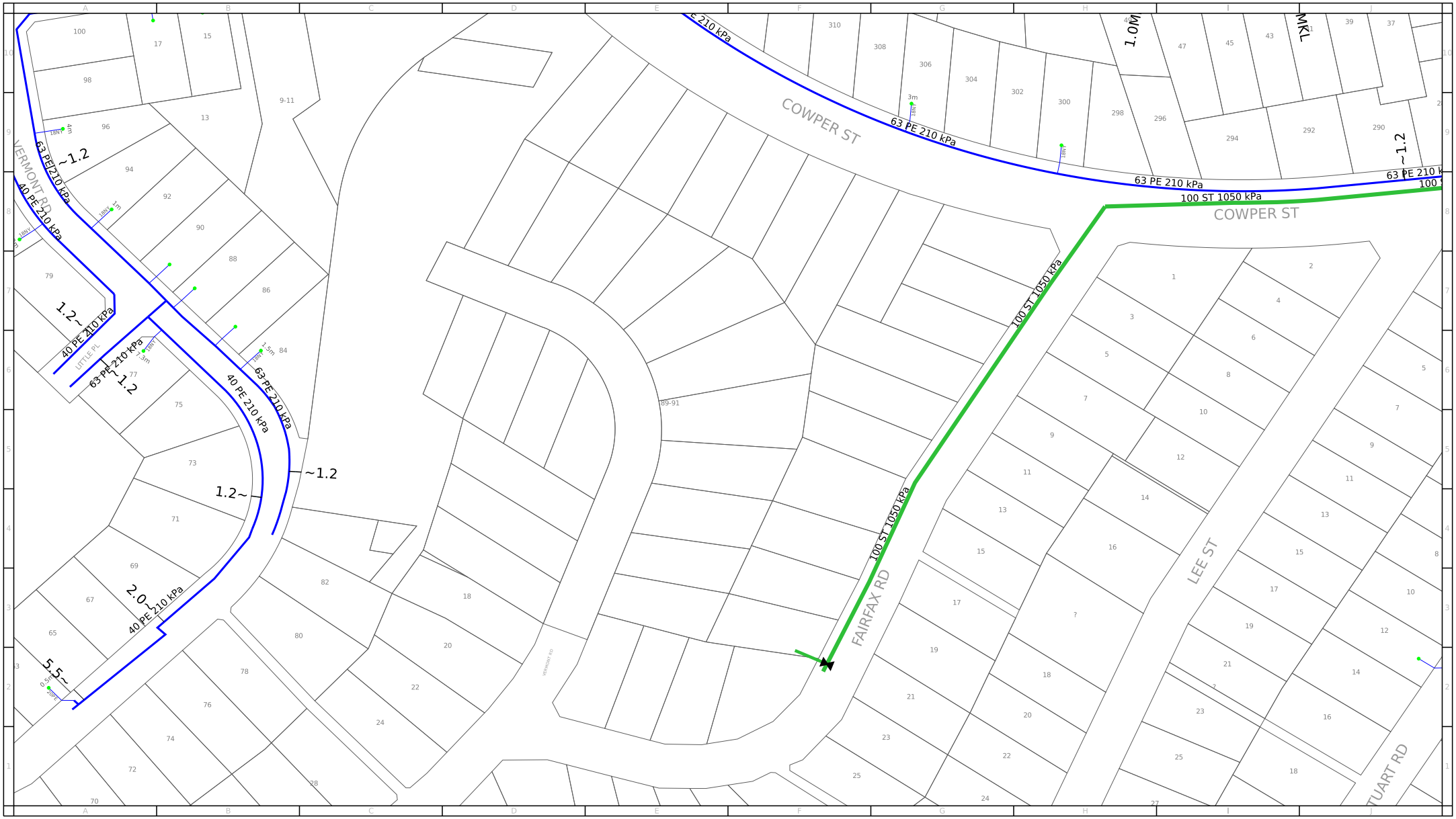
Please consult the Dial Before You Dig enquiries page on our website.

For general enquiries please call the Customer Contact Centre on 132 092

In an emergency, or to notify Sydney Water of damage or threats to its structures, call 13 20 90 (24 hours, 7 days)

BYDA Authority: Jemena Gas Networks (NSW)

BYDA Location: 85-93 Cowper Street Warrawong NSW, 2502



Jemena
ABN 87 003 004 322

For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.

Scale: 1:2000

Issue Date: 04/09/2023

BYDA Seq No: 229209007

BYDA Job No: 34977972

0m 10m 20m 30m 40m 50m 60m 70m 80m

WARNING: This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagramatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.

A.3 Survey Information

UTILITY ASSETS LEGEND

ELECTRICITY	x	EU-A-B-C-D
TRANSMISSION	x	ET-A-B-C-D
TELECOMMUNICATIONS	x	TN-A-B-C-D
OPTIC FIBRE	x	OU-A-B-C-D
LOW PRESSURE GAS	x	LG-A-B-C-D
HIGH PRESSURE GAS	x	HG-A-B-C-D
WATER MAIN	x	WM-A-B-C-D
FIRE MAIN	x	FH-A-B-C-D
SEWER MAIN	x	SM-A-B-C-D
STORMWATER	x	SW-A-B-C-D
UNKNOWN SERVICE	x	UP-A-D
PROPERTY BOUNDARY		
LIMIT OF SURVEY		
FENCE		
EASEMENT		

STOP VALVE		HYDRANT	WH
WATER METER		CABLE JUNCTION BOX	EJB
FIRE HYDRANT		SEWER LAMP HOLE	SLH
WATER TAP		SEWER MANHOLE	
TELEPHONE PIT		GAS PIPE MARKER	GP
TELEPHONE TWIN PIT		GAS VALVE BOX	
TELEPHONE LARGE SUMP		DRAINAGE DOWNPIPE	DP
LIGHT POLE		DRAINAGE GULLY PIT	
POWER AND LIGHT POLE		JUNCTION MANHOLE	
POWER POLE	EP	END OF TRACE	EOT
MAIN SUMP		END OF SCOPE	EOS
GATIC COVER	DAT	TOP OF SERVICE	TOS
UNIDENTIFIED SERVICE	?	SIGN	
		GATE	

DEPTH TO INVERT OF PIPE IL

DENOTES DEPTH TO SERVICE X±0.5m

NOTES

1. THIS PLAN SHOWS A REPRESENTATION OF THE DWG MODEL. THIS MODEL SHOULD BE VIEWED IN A CADD ENVIRONMENT TO INTERPRET THE INFORMATION.
2. THIS UTILITY PLAN IS VALID FOR 28 DAYS STARTING FROM THE DATE OF THE ISSUE, AS UNDERGROUND UTILITY WORKS ARE OFTEN UPDATED, SURESEARCH PLANS MUST ABIDE BY THE BYDA REGULATIONS TO PROTECT THEIR UNDERGROUND ASSETS.
3. THIS PLAN SHOULD NOT BE USED FOR EXCAVATION PURPOSES.
4. THIS PLAN HAS BEEN DRAWN TO SCALE, AND ANY REPRODUCTION OF THIS PLAN WILL NEED TO BE DRAWN IN COLOUR AND AT THIS SCALE TO ENSURE THAT ALL RELEVANT NOTES AND ENHANCEMENTS ARE SHOWN. FAILURE TO DO THIS WILL VOID ALL INFORMATION INDICATED FOR THIS JOB.
5. ALL SERVICES HAVE BEEN ELECTRONICALLY TRACED IN THE FIELD AND ARE SHOWN HERE FOR DIAGRAMMATIC PURPOSES ONLY. DEPTHS SHOWN ARE APPROXIMATE ONLY AND SHOULD BE VERIFIED PRIOR TO WORKS.
6. SERVICES SHOWN DIGITISED HAVE BEEN PLACED FROM RELEVANT AUTHORITY PLANS AND ARE SHOWN AS QL-D.
7. POTHOLING IS REQUIRED TO VERIFY UTILITY LOCATIONS AND DEPTHS ARE CORRECT, THAT IS QL-A, AND IS REQUIRED TO DETERMINE AND CONFIRM UNKNOWN ASSET CONFIGURATIONS.
8. ELECTRICITY IS HIGH VOLTAGE UNLESS OTHERWISE STATED, TO CONFIRM VOLTAGES ALONG THE LINE WOULD REQUIRE OBTAINING CONFIGURATION/ SCHEMATIC PLANS, NOT ALL ELECTRICITY CABLES ARE ENCLOSED IN CONDUITS OR MARKED WITH INDICATORS OF THEIR PRESENCE.
9. REFER TO THE UTILITY LOCATING DISCLAIMER INCLUDED WITH THE DELIVERABLES FOR A VISUAL REPRESENTATION OF SUB-SURFACE ACCURACY TOLERANCES AND IMPLIED CONFIDENCES.
10. THE CADASTRAL BOUNDARIES HAVE BEEN PROVIDED BY CLIENT - 214930 PKH BOUNDARY 1-250 KT.DWG - AND IS NOT THE RESPONSIBILITY OF SURESEARCH. THIS INFORMATION IS SHOWN FOR PLAN CONTEXT ONLY AND IS OF UNKNOWN ACCURACY OR QUALITY.
11. STANDBYS ARE REQUIRED FOR ALL EXCAVATIONS NEAR SECONDARY OR HIGHER GAS MAINS.
12. FURTHER INVESTIGATION IS RECOMMENDED VIA CCTV TO CLARIFY STORMWATER AND SEWER ASSETS, LEVELS WHERE PITS ARE FULL OF DEBRIS OR WATER THEY ARE APPROXIMATED ONLY.
13. ONLY PRIVATE SERVICES WERE FOUND AND LOCATED. LIMITED BYDA SERVICES SHOWN IN SCOPE OF WORKS. AS BUILT PLANS OBTAINED FROM HOSPITAL'S MAINTENANCE OFFICE SHOW SERVICES BUT NOT AS LOCATED AND SURVEYED.
14. LIMIT OF SURVEY HAS BEEN SHOWN AS PER REQUESTED SCOPE. FEATURES OUTSIDE THE LIMIT OF SURVEY HAVE BEEN INCLUDED FOR CLARIFICATION PURPOSES.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be properly managed.

Line work sample; ---EU-B--- Quality level represented within linework, Underground Electricity (Quality Level 'B').

QL-A: Information is the highest possible level of accuracy and is obtained by exposing the underground utility using a non-destructiveexcavation (pot holing) technique. The vertical information for this locating method is to the top or shallowest part of the located service. The 3D location is recorded by survey as an X, Y, Z coordinate.

QL-B: Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or flexi-trace, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

QL-C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Before-You-Dig-Australia plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three dimensional information. Electronically traced locate marks with poor scratchy signals are represented as QL-C.

QL-D: Information is the most basic level of utility locations using only information based on existing Before-You-Dig-Australia plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indication of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to it's origin point. Depths on GPR scan must be treated as indicative only.

REVISION PANEL

NO.	DATE	REVISION DESCRIPTION

ORIGIN OF SURVEY

PROVIDED BY CLIENT

A3 SCALES

NOT TO SCALE

LANDTEAM

JOB NO. 84956

PORT KEMBLA HOSPITAL - WARRAWONG

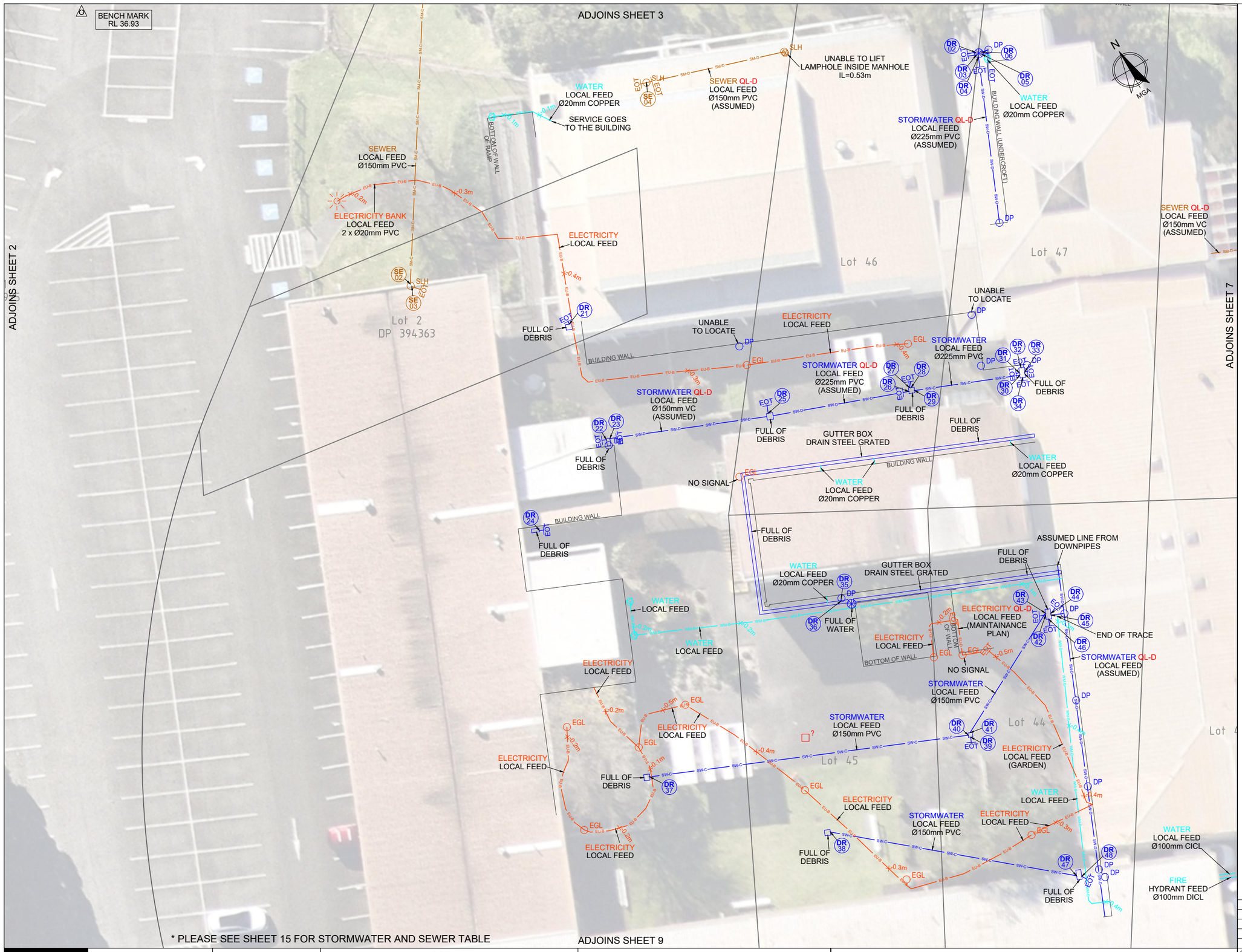
QL-B UTILITY INVESTIGATION

SURVEYED BY: HN	DATE: 12/23-09-2022
LOCATED BY: LH	DATE: 12/23-09-2022
COMPILED BY: AF	DATE: 14-10-2022
REVIEWED BY: JH/AS	DATE: 14-10-2022
ISSUED BY: JH	DATE: 14-10-2022

FILE NAME: 84956_ LandTeam_Warrawong_V1

MODEL NAME: 84956aa

SHEET 1 of 15 SHEETS



* PLEASE SEE SHEET 15 FOR STORMWATER AND SEWER TABLE

UTILITY ASSETS LEGEND

ELECTRICITY	EU-A-B-C-D	
TRANSMISSION	ET-A-B-C-D	
TELECOMMUNICATIONS	TN-A-B-C-D	
OPTIC FIBRE	OU-A-B-C-D	
LOW PRESSURE GAS	LG-A-B-C-D	
HIGH PRESSURE GAS	HG-A-B-C-D	
WATER MAIN	WM-A-B-C-D	
FIRE MAIN	FH-A-B-C-D	
SEWER MAIN	SM-A-B-C-D	
STORMWATER	SW-A-B-C-D	
UNKNOWN SERVICE	UP-A-D	
PROPERTY BOUNDARY		
LIMIT OF SURVEY		
FENCE		
EASEMENT		

STOP VALVE	HYDRANT	WH	
WATER METER	CABLE JUNCTION BOX	EJB	
FIRE HYDRANT	SEWER LAMP HOLE	SLH	
WATER TAP	SEWER MANHOLE		
TELEPHONE PIT	GAS PIPE MARKER	GP	
TELEPHONE TWIN PIT	GAS VALVE BOX		
TELEPHONE LARGE SUMP	DRAINAGE DOWNPIPE	DP	
LIGHT POLE	DRAINAGE GULLY PIT		
POWER AND LIGHT POLE	JUNCTION MANHOLE		
POWER POLE	EP	END OF TRACE	EOT
MAIN SUMP		END OF SCOPE	EOS
GATIC COVER	GAT	TOP OF SERVICE	TOS
UNIDENTIFIED SERVICE	?	SIGN	
		GATE	

DEPTH TO INVERT OF PIPE IL

DENOTES DEPTH TO SERVICE x0.5m

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SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be properly managed.

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REVISION PANEL

NO.	DATE	REVISION DESCRIPTION

ORIGIN OF SURVEY

PROVIDED
BY CLIENT

A3 SCALES

0 3 6 9 12 15

SCALE 1:300m

CERTIFIED LOCATOR www.dbydirector.com

BEFORE YOU DIG www.byda.com.au Zero Damage - Zero Harm

LANDTEAM

JOB NO. 84956
PORT KEMBLA HOSPITAL - WARRAWONG
QL-B UTILITY INVESTIGATION

SURVEYED BY: HN	DATE: 12/23-09-2022
LOCATED BY: LH	DATE: 12/23-09-2022
COMPILED BY: AF	DATE: 14-10-2022
REVIEWED BY: JH/AS	DATE: 14-10-2022
ISSUED BY: JH	DATE: 14-10-2022

FILE NAME:
84956_ LandTeam_Warrawong_V1

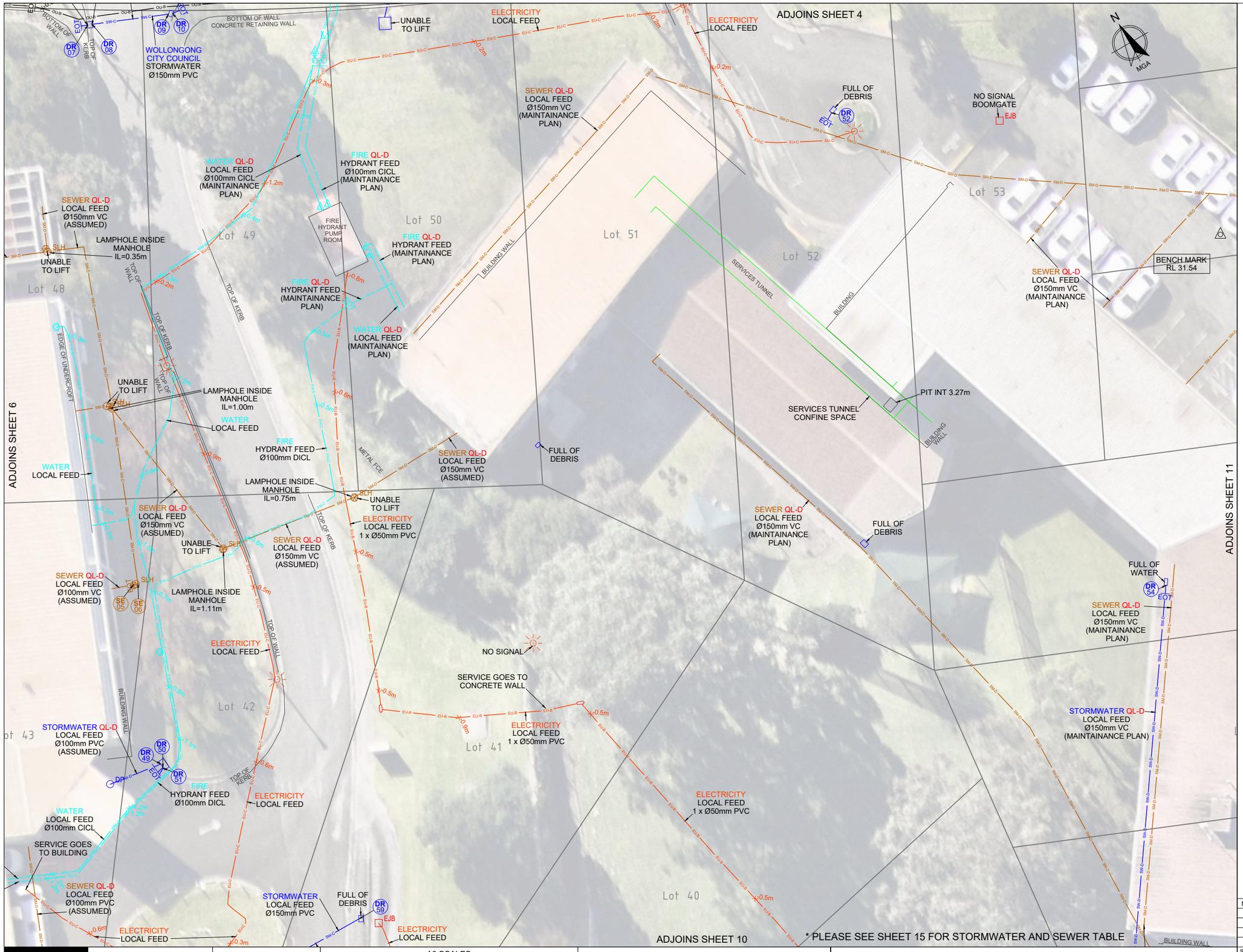
MODEL NAME:
84956aa

SHEET 6 of 15 SHEETS

SureSearch UNDERGROUND SERVICES

1300 884 520
www.suresearch.com.au

A3 Border version: July 2021



UTILITY ASSETS LEGEND

ELECTRICITY	EU-A-B-C-D	
TRANSMISSION	ET-A-B-C-D	
TELECOMMUNICATIONS	TN-A-B-C-D	
OPTIC FIBRE	OU-A-B-C-D	
LOW PRESSURE GAS	LG-A-B-C-D	
HIGH PRESSURE GAS	HG-A-B-C-D	
WATER MAIN	WM-A-B-C-D	
FIRE MAIN	FH-A-B-C-D	
SEWER MAIN	SM-A-B-C-D	
STORMWATER	SW-A-B-C-D	
UNKNOWN SERVICE	UP-A-D	
PROPERTY BOUNDARY		
LIMIT OF SURVEY		
FENCE		
EASEMENT		

STOP VALVE	HYDRANT	WH	
WATER METER	CABLE JUNCTION BOX	EJB	
FIRE HYDRANT	SEWER LAMP HOLE	SLH	
WATER TAP	SEWER MANHOLE		
TELEPHONE PIT	GAS PIPE MARKER	GP	
TELEPHONE TWIN PIT	GAS VALVE BOX		
TELEPHONE LARGE SUMP	DRAINAGE DOWNPIPE	DP	
LIGHT POLE	DRAINAGE GULLY PIT		
POWER AND LIGHT POLE	JUNCTION MANHOLE		
POWER POLE	EP	END OF TRACE	EOT
MAIN SUMP	END OF SCOPE	EOS	
GATIC COVER	DAT	TOP OF SERVICE	TOS
UNIDENTIFIED SERVICE		SIGN	
		GATE	

DEPTH TO INVERT OF PIPE IL -0.5m

DENOTES DEPTH TO SERVICE -0.5m

NOTES

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REVISION PANEL

NO.	DATE	REVISION DESCRIPTION

* PLEASE SEE SHEET 15 FOR STORMWATER AND SEWER TABLE

ORIGIN OF SURVEY

PROVIDED BY CLIENT

A3 SCALES

0 3 6 9 12 15

SCALE 1:300m

LANDTEAM

JOB NO. 84956

PORT KEMBLA HOSPITAL - WARRAWONG

QL-B UTILITY INVESTIGATION

SURVEYED BY: HN	DATE: 12/23-09-2022
LOCATED BY: LH	DATE: 12/23-09-2022
COMPILED BY: AF	DATE: 14-10-2022
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ISSUED BY: JH	DATE: 14-10-2022

FILE NAME: 84956_ LandTeam_Warrawong_V1

MODEL NAME: 84956aa

SHEET 7 of 15 SHEETS

UTILITY ASSETS LEGEND

ELECTRICITY	x	EU-A-B-C-D
TRANSMISSION	x	ET-A-B-C-D
TELECOMMUNICATIONS	x	TN-A-B-C-D
OPTIC FIBRE	x	OU-A-B-C-D
LOW PRESSURE GAS	x	LG-A-B-C-D
HIGH PRESSURE GAS	x	HG-A-B-C-D
WATER MAIN	x	WM-A-B-C-D
FIRE MAIN	x	FH-A-B-C-D
SEWER MAIN	x	SM-A-B-C-D
STORMWATER	x	SW-A-B-C-D
UNKNOWN SERVICE	x	UP-A-D
PROPERTY BOUNDARY		
LIMIT OF SURVEY		
FENCE		
EASEMENT		

STOP VALVE		HYDRANT	WH
WATER METER		CABLE JUNCTION BOX	EJB
FIRE HYDRANT		SEWER LAMP HOLE	SLH
WATER TAP		SEWER MANHOLE	
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POWER POLE	EP	END OF TRACE	EOT
MAIN SUMP		END OF SCOPE	EOS
GATIC COVER	DAT	TOP OF SERVICE	TOS
UNIDENTIFIED SERVICE	?	SIGN	
		GATE	

DEPTH TO INVERT OF PIPE IL

DENOTES DEPTH TO SERVICE x0.5m

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REVISION PANEL

NO.	DATE	REVISION DESCRIPTION

ORIGIN OF SURVEY

PROVIDED BY CLIENT

A3 SCALES

0 3 6 9 12 15

SCALE 1:300m

LANDTEAM

JOB NO. 84956

PORT KEMBLA HOSPITAL - WARRAWONG

QL-B UTILITY INVESTIGATION

SURVEYED BY:	DATE:	FILE NAME:	84956_ LandTeam_Warrawong_V1
HN	12/23-09-2022		
LOCATED BY:	DATE:	MODEL NAME:	84956aa
LH	12/23-09-2022		
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AF	14-10-2022		
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JH/AS	14-10-2022		
ISSUED BY:	DATE:		
JH	14-10-2022		

SHEET 8 of 15 SHEETS