Collective engineering

SERVICES INFRASTRUCTURE REPORT

47382_SIR_03 - 177-183 Greenwich Rd, Greenwich

POWERED BY
neuron

Date 2024-12-17 - Revision 03.

Welcome

This report has been developed for Winten Property Group for the development of 177-183 Greenwich Rd, Greenwich into a new residential development.

The intent of this report is to outline the existing public utility provisions and describe the likely services infrastructure requirements to support this new development. In particular, it investigates the power, communications, sewer, water and gas connection implications based on the design inputs as advised by the client.

This report is based on the following sources of information:

- Dial Before You Dig information
- Publicly available information

Note at the time of this report, no discussions with the various supply authority groups have occurred. The intent is that this report outlines the high-level risks and opportunities for the project stakeholders with formal applications occurring later in the design process by others.

Revisions

Revision	Issue name	Issue date	Engineer
1	Preliminary for comment	2024-05-06	SYC
2	Inputs updated	2024-08-05	SYC
3	Final Isse	2024-12017	SYC

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EXECUTIVE SUMMARY

POWER

The preliminary maximum demand is 392amps. The site will likely require a new kiosk or chamber substation. The nearest HV available for substation loop-in runs along Greenwich Road.

COMMUNICATION SYSTEMS

There are communication providers within proximity of this site including NBN & Telstra.

There are no existing mobile base stations located on the site. There is a risk of some telstra carrier infrastructure running through the site and we recommend investigating what works may be required. Refer to the comms section for details.

WATER

There is an existing 150 mm water main running down Greenwich Road which may be sufficient to serve this development. A Sydney Water Coordinator should be engaged to begin the detailed assessment and design work. A pressure and flow enquiry has been submitted to assess fire infrastructure impact

GAS

Jemena has existing medium and high pressure gas mains running up around the existing site. There appear to be no Jemena assets running through the existing site.

SEWER

Key Issue: There is an existing 300mm sewer main running through the site that that will be appropriate to serve our site. Although there is no direct impact on this sewer, Sydney Water will need to be consulted to ensure their infrastructure isn't impacted. We strongly recommend that a Sydney Water Coordinator be engaged to begin preliminary investigations with Sydney Water in the form of a section 73 investigation. We recommended a Water Servicing Consultant be engaged to undertake a Building Plan Approval process to determine any impact that will affect the building structure in relation to structure..

BUDGET ESTIMATE

Refer to budget estimate assumptions and disclaimers within this report.

Connection type	Budget estimate ($AUD)	Comment
Power	$ 250,000 - $ 350,000	Incl. kiosk or chamber substation, excluding undergrounding works
Comms carrier lead-ins	$10,000	Pit Relocation excluded from cost
Water	$15,000 - $ 30,000	
Sewer	$20,000 -$30,000	
Gas	$ 0	All Electric assumed
Total	**$295,000 - $420,000**	Dependant on chosen connection options

Note: Estimates exclude:

- *Council fees*
- *Traffic management costs*
- *Road remediation costs*
- *Stormwater. To be advised by the civil engineer*
- *Developer contribution costs*
- *Contractor preliminaries*
- *Cointinguincy*
- *Road pavement reconstruction.*
- *Authority fees and charges*
- *Escalation*
- *Contaminated soil*

SITE OVERVIEW

The existing site is 177-183 Greenwich Road, Greenwich, NSW 2065. The site is proposed to be redeveloped into a 5-8 storey residential building with approximately 29 apartments.

Refer to the report inputs section of this report for the specific details of the proposed development used as the basis of this infrastructure assessment.

This report is based on the Winten document Amend to Conceptual Architectural Plans dated 5/12/2024 These drawings were used as the basis of this preliminary analysis.

ELECTRICAL INFRASTRUCTURE

EXISTING POWER INFRASTRUCTURE

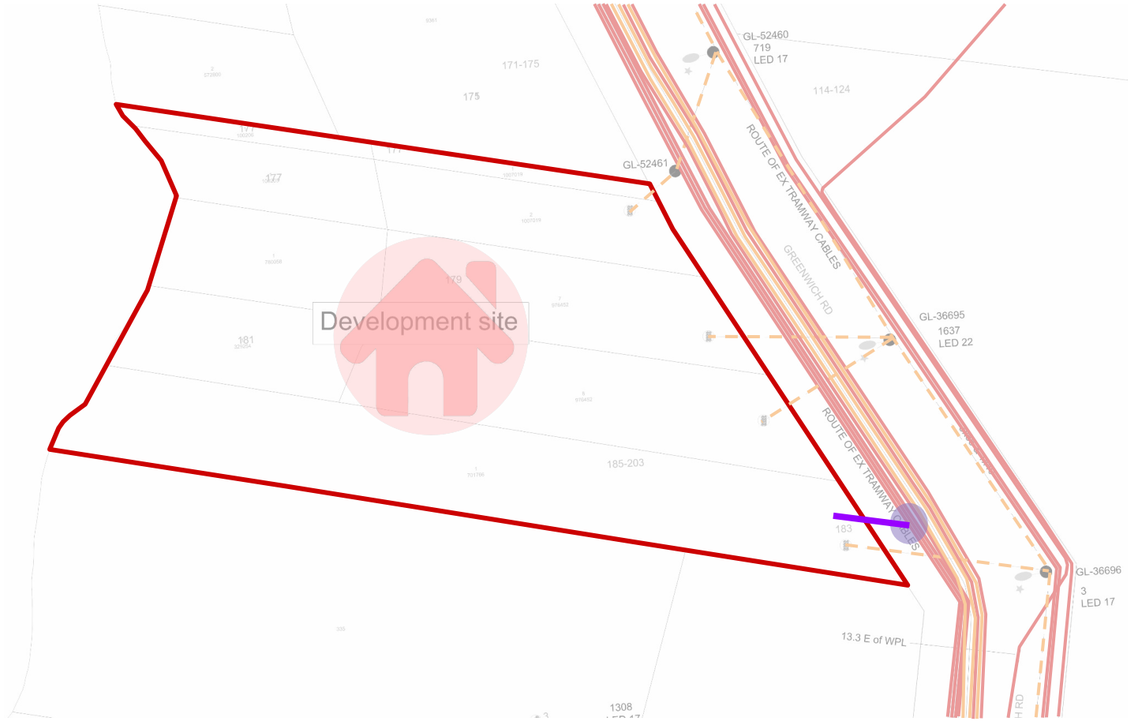
Neurons' Level 3 Accredited Services Provider (ASP) sub-consultant Aaron Russell from *Projen*, carried out an initial investigation to understand the existing electrical infrastructure for this site. The intent of this investigation is to determine the preliminary risks, opportunities and implications to provide power to the proposed development. Note a formal application to Ausgrid will be required to confirm the power connection strategy and requirements for this development.

The Ausgrid network maps indicate that the nearest High Voltage available for substation loop-in is adjacent to the site with connection opportunities along Greenwich Road.

The site is currently supplied from substation S.1960 located on Greenwich Rd. New street lighting may be required subject to the council's requirements. The existing overhead service connections to the site will need to be removed. This also may mean pole GL-52461 can likely be removed

We do note that there is a 33kV transmission main running along Greenwich Road. Any excavation work on Greenwich Road will require careful coordination with Ausgrid.

An ASP Level 03 design will be required to fully resolve the design requirements for this development.



Power Infrastructure Map

- Below Ground High Voltage Power
- Overhead High Voltage Power
- Below Ground Low Voltage Power
- Overhead Low Voltage Power
- Substation
- Development Location
- Proposed Power Connection Strategy

ELECTRICAL INFRASTRUCTURE

PROPOSED ELECTRICAL SERVICES

The preliminary maximum demand is 392 amps or 272 kVA in accordance with AS3000. AS3000 has been found to be typically conservative in nature when compared to actual site metered loads. Based on this, we have compared the data of various measured loads on electric sites and the data suggests the maximum demand could be diversified to 227 amps (158 kVA). The maximum demand will need to be monitored through detailed design to this diversified load.

The LV network is heavily loaded in this area. S.1960, the nearest substation, which the existing properties are connected to is 600 kVA and supplies around 148 customers. It is also an old KE type substation that can not be upgraded.

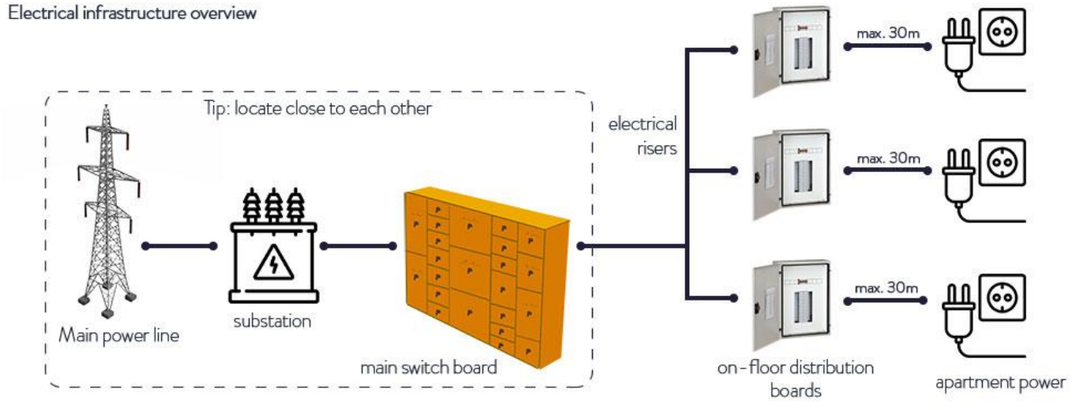
The site will likely require a new 1,000 kVA kiosk or mini chamber substation. A formal application to Ausgrid will be required to confirm.

The design guide outlines all of the major requirements for this substation.

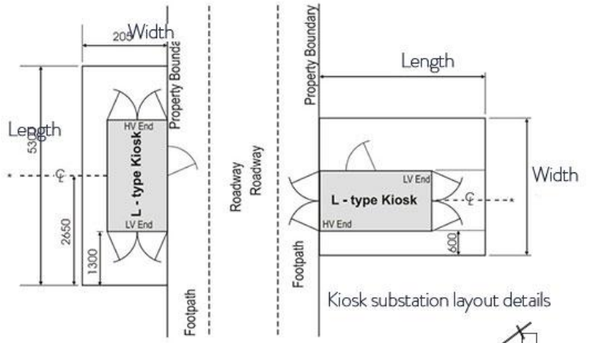
For further ASP L03 advice, you can contact Aaron Russell from Projen who can aid with the detailed ASP L03 design work if desired.

Contact:
Aaron Russell
PROJEN
PROJECT ENGINEERING & POWER DESIGN
aaronrussell@projen.com.au

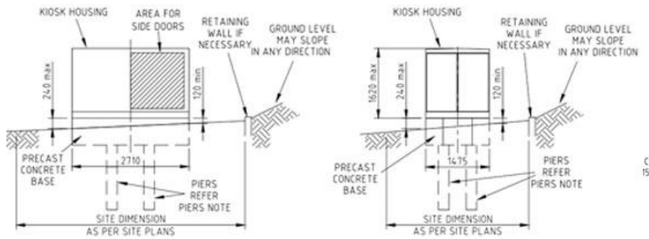
Electrical infrastructure overview



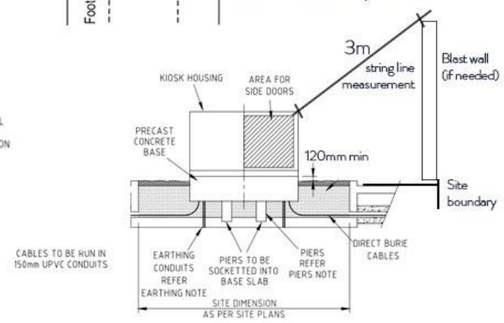
Kiosk substation image



Kiosk substation layout details



Installing kiosk substations on the ground



Installing kiosk substations over a supporting structure

COMMUNICATIONS INFRASTRUCTURE

The importance of connectivity to the digital world has never been more important to new developments than now. Your development will need a connection to one or more telecommunication providers within your area.

Connecting to NBN, Fibre to the Premises (FTTP) or similar is required to provide numerous phone and wifi capabilities to your building. The next step is to establish what are the available communication providers close to your site, what would be involved to connect up your proposed building physically, and if any communication infrastructure modifications are required to develop your building. This section outlines what available carrier services are in close proximity to your site. It also outlines any risks or costs associated with those connections.

Mobile base stations

There are no carrier mobile base stations located on this site.

Mobile Base Station Map

Existing Mobile Base Station

Development Location

COMMUNICATIONS INFRASTRUCTURE

NBN

The existing NBN carrier service infrastructure is illustrated below. As shown, there is a connection opportunity available for this site. We do note the central Pit appears like it may clash with the proposed entrance of the development, and there is a risk it may need to be relocated. Careful coordination with NBN is required to facilitate any modifications.

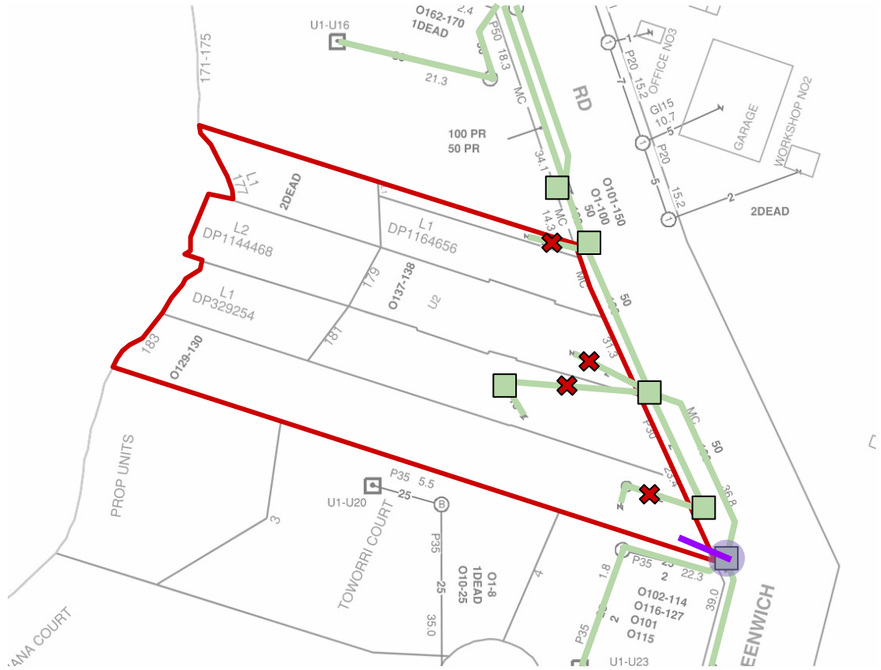
Fibre Infrastructure Map

NBN Fibre — Development Location

Proposed Fibre Connection Strategy — NBN Pit

Telstra

The existing Telstra carrier service infrastructure is illustrated below. As shown, there are connection opportunities available for this site. There is existing Telstra infrastructure already running through the site that will need to be removed. We do note the central Pit appears like it may clash with the proposed entrance of the development, and there is a risk it may need to be relocated. Careful coordination with Telstra is required to facilitate any modifications.



Fibre Infrastructure Map

Telstra Fibre — Development Location

Proposed Fibre Connection Strategy — Telstra Pit

WATER INFRASTRUCTURE

The proposed connection point and existing water mains are illustrated in the adjacent image. The site has an existing 150mm water mains running along Greenwich Road.

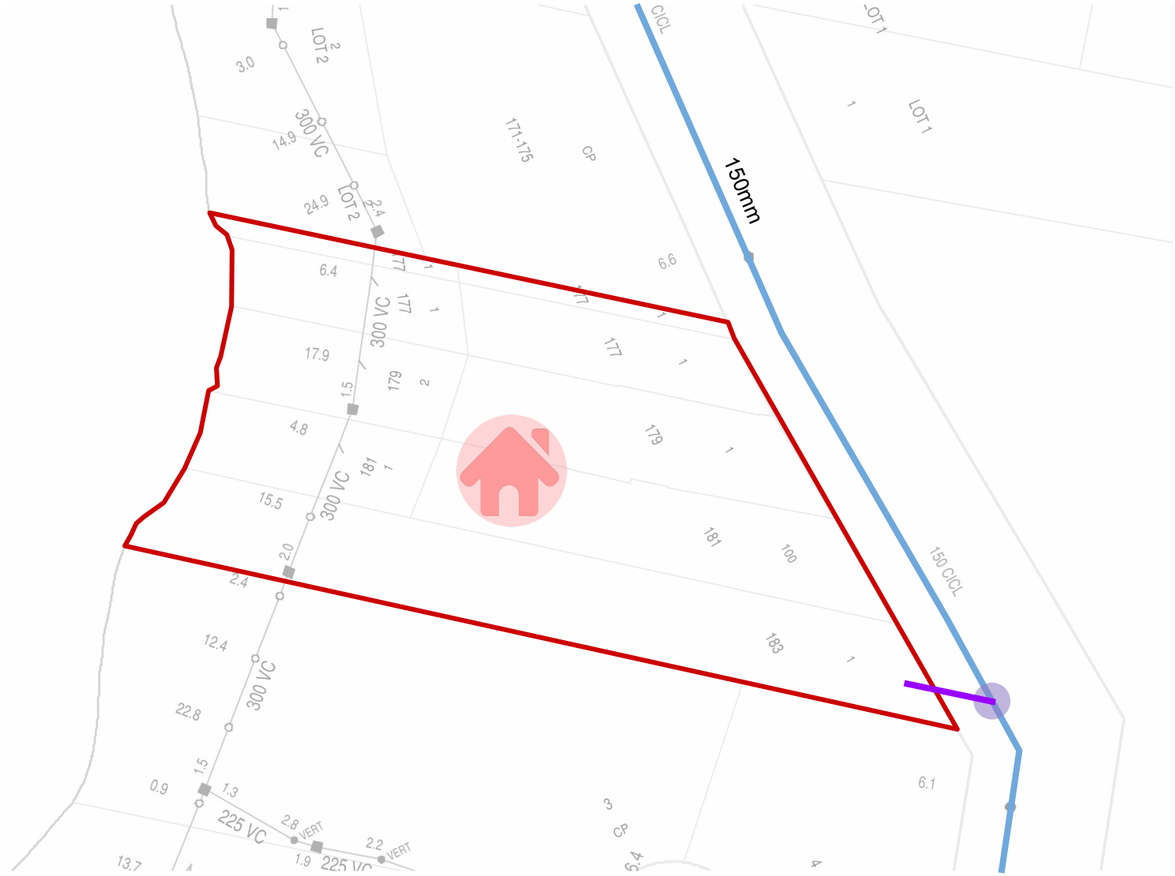
Based on the preliminary calculations, this site is likely to require a new 100mm mains water connection. The existing water supply on Greenwich Road should be sufficient to support this development and we recommend a new 100mm water main connection to the Greenwich Road connection point as illustrated in the adjacent image. Careful coordination with Sydney water will be required.

No other water-related infrastructure appears to run through this site.

Whilst the water main appears to have the capacity to supply potable water, the pressure and flow enquiry on the main has suggested there may not be capacity to serve our development. We would recommend a minimum 60KL fire tank, which allows for the main to have enough pressure to fill the tank. The booster will need to be a tank suction model. We do note an upgrade to the water main will be very expensive, as the nearest trunk is quite the distance away.

Due to the sloped site, we recommend getting BCA confirmation of the site's effective height, as this may have an impact on the fire water requirements of the development.

When you are ready to start your development, you must apply for a Section 73 Compliance Certificate. This certificate proves you meet Sydney waters requirements. We recommend engaging an accredited Sydney Water Coordinator early to help scope and manage these works.



Water Infrastructure Map

- Water Main
- Recycled Water Main
- Development Location
- Proposed Water Connection Strategy

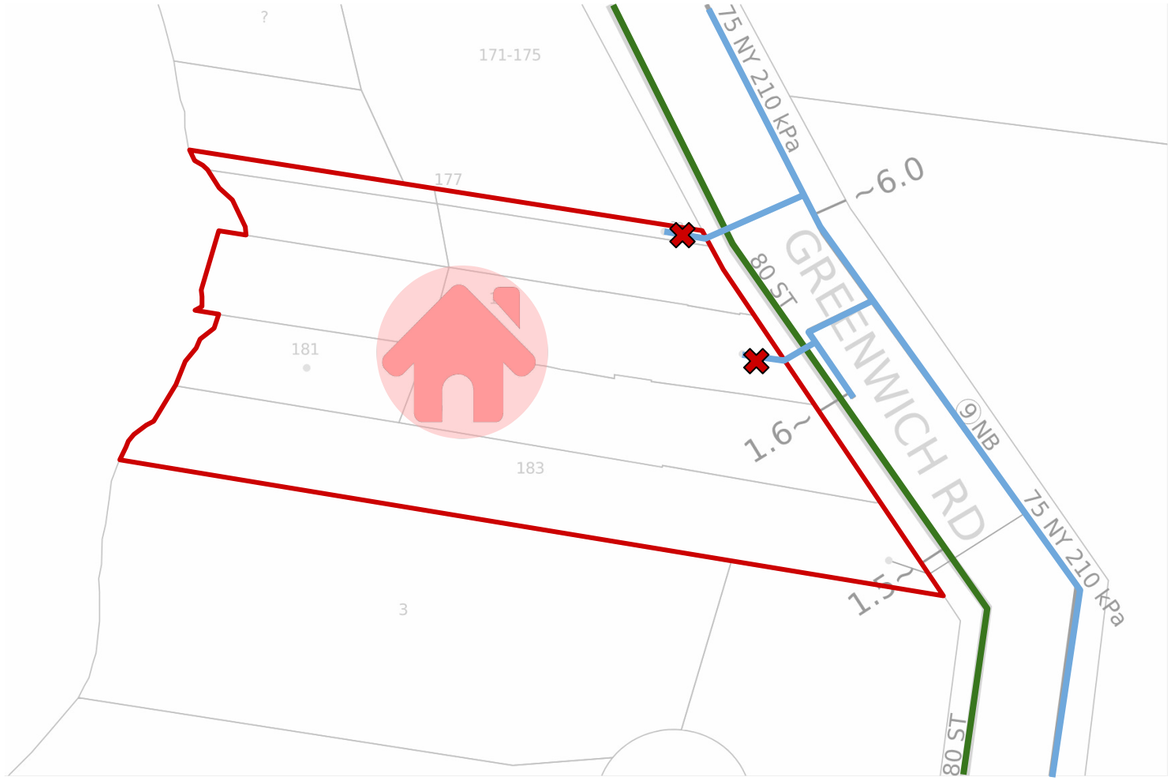
GAS INFRASTRUCTURE

There is a medium pressure 210 kPa and a high pressure 1050 kPa gas main running along Greenwich Road adjacent to the site as illustrated in the adjacent image.

We do understand that gas will not be utilised in this development, meaning a gas connection and gas regulator set will not be required.

Where gas is intended to use, there is a possibility of gas connection located on Greenwich Road subject to Jemena approval.

The existing service connections to the site will need to be removed.



Gas Infrastructure Map

- Low/Medium Pressure Gas Main
- High Pressure Gas Main
- Development Location
- Proposed Gas Connection Strategy

SEWER INFRASTRUCTURE

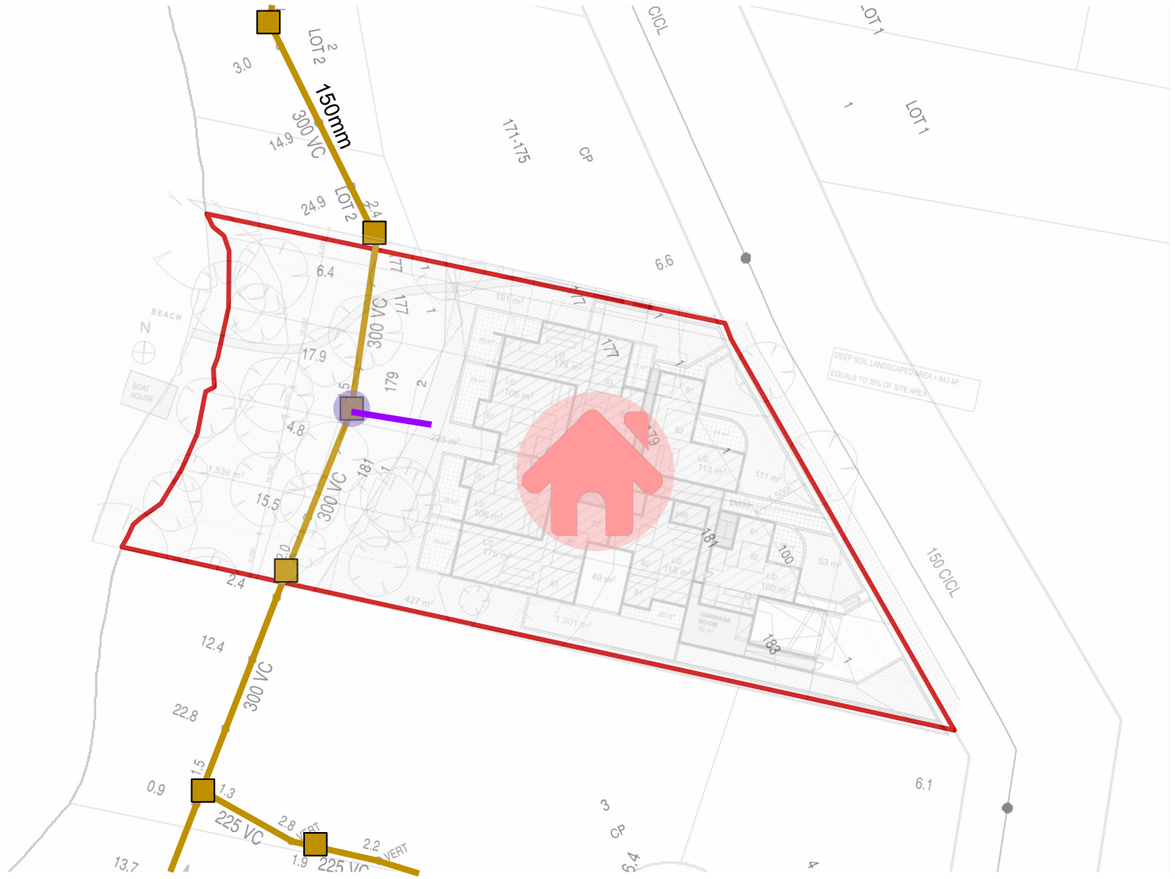
There is a 300mm sewer main running through the site serving the existing development, as shown in the adjacent image.

Based on the preliminary calculations, this site is likely to require a new 150mm mains sewer connection. The existing sewer main is a 300mm sewer main which may have capacity to serve this development. The connection point(s) are illustrated in the adjacent image.

Key Issue: There is a 300mm sewer main running through the site which currently serves the existing development as shown in the adjacent image. Based on the current design, this may not impact the proposed development. Whilst there is no direct impact on this sewer, there may be a program impact for building plan approvals. The main will also still exert a zone of influence, and may need to be considered structurally in the design of the building. We also note the two manholes currently within the site boundary. An access strategy will need to be developed, as Sydney Water will require 24/7 access to the manholes.

We recommend engaging a Sydney Water Coordinator, as building near this sewer main will likely take significant time to gain approval. Should the DA be lodged soon, you can submit a section 73 application to receive feedback from Sydney Water as to the preferred connection strategy. This application cannot be finalised without development consent or a complying development certificate. Therefore, if the DA submission is some time away, a preliminary Section 73 assessment can be completed to mitigate this project risk. An accredited Sydney Water Coordinator can help with this task if desired.

It is recommended that as the project detail progresses the location and placement of any retaining walls around the sewer main is reviewed by a WSC and the Hydraulic Engineer



Sewer Infrastructure Map

Sewer Main

Development Location

Proposed Sewer Connection Strategy

DESIGN INPUTS

Question	Answer
Number of apartments	28
Total building area	4580
Number of levels (above ground)	4
Total number of levels in the building (incl. any underground levels)	7
What is the buildings total effective height? (m)	17.1
Confirm building effective height is under 25m.	Yes
Do you know your apartment mix?	Yes
Number of 1 Bed 1 Bath apartments	3
Number of 2 Bed 1 bath apartments	0
Number of 2 Bed 2 Bath apartments	3
Number of 3 Bed 2 bath apartments	22
Maximum number of apartments per level	7
Number of stairwells above ground?	2
Is there a swimming pool in your development?	No
Type of development?	Mid-range
Is an external kiosk substation acceptable (recommended if possible)	Yes
Is centralised domestic hot water plant acceptable? (recommended)	Yes
Do you want natural gas in your development	No
Are air-conditioning condensers acceptable on balconies?	No
Are air conditioning condensers acceptable on the roof?	Yes
Air conditioning to both apartment bedrooms and living areas?	Both bedrooms and living areas
Preferred air-conditioning indoor unit type?	Fully ducted AC

Question	Answer
Does your building have an underground carpark?	Yes
Number of levels of underground car parking	3
Total area of underground carpark	1600
Total number of underground car parking?	71
Number of basement stairwells	2
Do you have specific details of the carpark?	No
Does your carpark have a loading dock that is more than 10m deep / from an external opening?	No
Are there retail tenancies in your development?	No