Utilities Impact Statement

Western Sydney University - Lang Walker AO Medical Research Building - Macarthur

Revision Information

Project	Macarthur Medical Research Centre (MMRC)
Title	Utilities Impact Statement
Client	BVN
Prepared By	**LCI Consultants** L4, 73 Walker Street North Sydney 2060
Author	LCI

Revision Schedule

Revision	Date	Issue Name	Author	Authorised
00	16.07.19	Draft Issue	JS/PDG/AT	LEP
01	27.08.21	Revised Issue	JS/PDG/AT	LEP
02	07.10.21	Revised Issue	JS/PDG/AT	LEP
03	14.10.21	Revised Issue	JS/PDG/AT	LEP

Contents

1 Introduction

LCI has been commissioned by BVN to prepare this report in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the SSDA for the Macarthur Medical Research Centre (MMRC) development at Campbelltown Hospital.

The MMRC is a new world-class health research facility which will support the needs of the local Campbelltown & Macarthur population.

Specifically, this report addresses the following SEARs:

SEARs Requirements	Report Reference
17. Utilities Impact Statement • **In consultation with relevant service providers:** ○ assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site. ○ identify any infrastructure upgrades required off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained. ○ outline the process for managing trade wastewater generated during operations. ○ provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the development.	• Electrical - Section 2.1 • Comms – Section 2.2 • Hydraulics – Section 2.3

1.1 Description of the Site

The site is currently utilised as a helipad serving the Campbelltown Hospital Campus. The allotment is characterised by slopes from the south-east corner to the north-west corner, with a cross fall of approximately 30 metres towards Marsden Park. The site itself is locally elevated to accommodate the existing helipad.

Owner's consent has been granted for the application, and no transfer of land ownership is required.

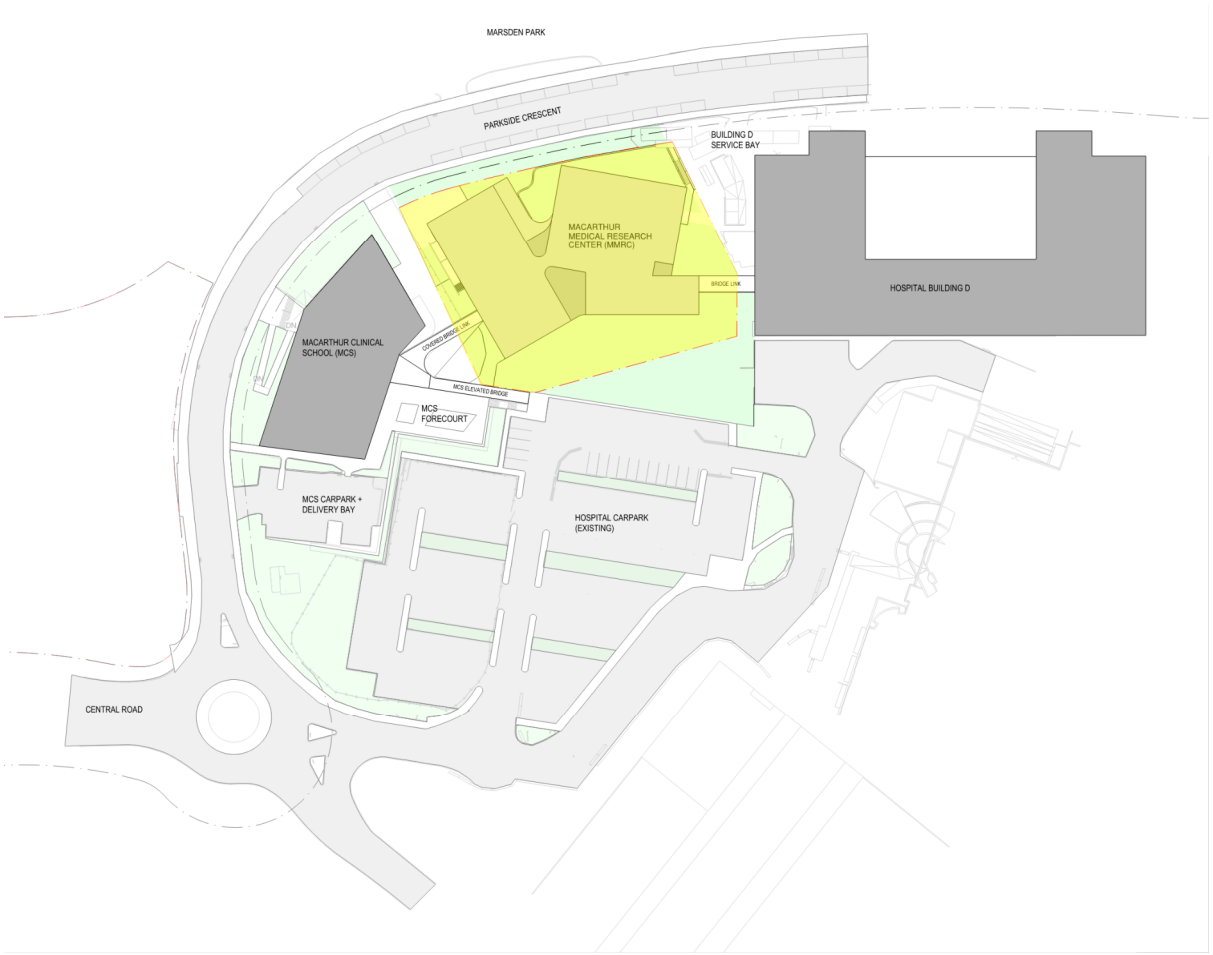


Figure 1 – Macarthur Medical Research Centre Site plan

The Site has an area of approximately 3,385sqm.

1.2 Site and Surrounding Context

The Site is positioned between Macarthur Clinical School and Building D along Parkside Crescent. This places the site at the western end of the Campbelltown Hospital Precinct.

The Campbelltown Hospital master plan includes future plans for a Village Green/Common area, which would front the MMRC on its eastern side.

The site is serviced by and in close proximity to transport services and key road links including the M5 Southwestern Motorway off Appin Road. The site is located between Campbelltown and Macarthur railways stations, the closest being Macarthur, which is within walking distance approximately 1.2km northwest of the site.

The site can be accessed from both Parkside Crescent at the west, and from the future Village Green/Common at the east, which sits approximately 7m higher in the elevation.

Numerous carparks are located across the hospital campus including dedicated areas for public and staff.

Figure 2 - Campbelltown Hospital Campus & Surrounding

1.3 Project Description

The proposed SSDA will facilitate the development of a new world-class health research facility which will support the needs of the local Campbelltown & Macarthur population. The Macarthur Medical Research Centre (MMRC) will be a shared facility brining together the following partner organisations:

- Western Sydney University (WSU);
- South Western Sydney Local Heath District (SWSLHD);
- Ingham Institute for Applied Medical Research (IIAMR);
- University of New South Wales (UNSW); and
- Health Infrastructure (HI).

Embedding the Macarthur Medical Research Centre (MMRC) within the existing Hospital Campus will enable opportunities for translational research outcomes directly improving the heath outcomes for the local population to be realised.

Five key research themes have been identified for the site:

- Diabetes/Obesity,
- Mental Health,
- Paediatrics and Adolescents,
- Indigenous Heath, and
- Addiction to medicine.

The Macarthur Medical Research Centre (MMRC) will become an important linking piece on the Campus, with proposed bridge connections into Building D and the Macarthur Clinical School, helping to facilitate an interconnected internal pedestrian network and strengthening relationships between clinical, research and educational spaces.

The functional spaces include the following:

- Shared Public,
- Dry Research,
- Shared Support and Research Assessment Zone, and
- Logistics and support.

1.4 Glossary

1.5 Glossary of Key Terms

Term	Definition
Development Site	The proposed Macarthur Medical Research Centre (MMRC) location.
Building D	Building on Adjoining land immediately to the northeast of the development site, Figure 1.
Macarthur Clinical School	Building on adjoining land immediately to the south of the development site, Figure 1.
Campbelltown Hospital Campus	The entire Campbelltown Hospital Campus as depicted in Figure 1.
Parkside Crescent	Road running adjacent to the western boundary of the site. Figure 1.

1.6 Abbreviations

Abbreviation	Meaning
A	Ampere
AS	Australian Standard
ASP 1	Accredited Level 1 Service Provider (High Voltage Construction)
ASP 3	Accredited Level 3 Service Provider (High Voltage Design)
ASS	Acid Sulphate Soils
BC Act	Biodiversity Conservation Act 2016
BCA	Building Code of Australia
CMP	Conservation Management Plan
CPTED	Crime Prevention Through Environmental Design
CPTMP	Construction Parking and Traffic Management Plan
DAS	Distributed Antenna Service
DBYD	Dial Before You Dig
DES	Design Excellence Strategy
DN	Diameter Nominal
DPC	NSW Department of Premier and Cabinet
DPIE/Department	NSW Department of Planning, Industry and Environment
DP	Deposited Plan
DSI	Detailed Site Investigation
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EPBC	Act Environment Protection and Biodiversity Conservation Act 1999
ESD	Ecologically Sustainable Development
FDB	Functional Design Brief
FRNSW	Fire Rescue New South Wales
GANSW	NSW Government Architect's Office
GFA	Gross Floor Area (as defined under the Sydney Local Environmental Plan 2012)
HIS	Heritage Impact Statement
HV	High Voltage
Infrastructure Strategy	State Infrastructure Strategy 2018-2038
kPa	kilo Pascal
kVA	kilo Volt Amp
LGA	City of Sydney Local Government Area
L/s	Litre per second
LSPS	Draft Sydney Local Strategic Planning Statement
LV	Low Voltage
m	Metre
MCF	Mobile Carriers Forum
MCS	Western Sydney University Macarthur Clinical School
mm	Millimetre
NBN	National Broadband Network
NIA	Noise Impact Assessment
OEH	NSW Office of Environment and Heritage
OLS	Obstacle Limitation Surface
OWMP	Operational Waste Management Plan
PSI	Preliminary Site Investigation
Region Plan	A Metropolis of Three Cities – Greater Sydney Region Plan
RAP	Remediation Action Plan

RAPs	Registered Aboriginal Parties
RMS	Roads and Maritime Services
RTTC	Radar Terrain Clearance Chart
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 55	State Environmental Planning Policy No.55 – Remediation of Land
SEPP Infrastructure	State Environmental Planning Policy (Infrastructure) 2007
SEPP SRD	State Environmental Planning Policy (State and Regional Development) 2011
sqm	Square Metres
SREP SH	Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
SSD	State Significant Development
SSDA	State Significant Development Application
TIA	Transport and Accessibility Impact Assessment
The Minister	The Minister for Planning, Industry and Environment
The Regulation	Environmental Planning and Assessment Regulation 2000
VA/m2	Volt Amps per square meter
VIA	Visual Impact Assessment
WSAA	Water Service Code of Australia
WSC	Water Services Coordinator

1.7 Reference Design Documentation

This report has been prepared for the Macarthur Medical Research Centre (MMRC) development project based on the concept architectural design drawings by BVN Architects, available project survey data and Dial before You Dig information provided by:

- AARNET
- Endeavour Energy
- Jemena Gas South
- NBN Co
- Nextgen
- Optus
- Sydney Water
- Telstra
- TPG

2 Building Utilities – Site Services

This utility report considers the various network authorities that may need to be consulted for connection of the new Macarthur Medical Research Centre (MMRC) .

The following infrastructure will be provided to the development:

- Electricity supply and reticulation (derived from Endeavour Energy feeders)
- Telecommunications (subject to commercial and technical considerations, the building users may procure services from AARNET, Telstra, Optus, TPG, NBNCo, or other telcos)
- Water services (Sydney Water)
- Sewer services (Sydney Water)
- Gas Services (Jemena)

The consultant team have proactively worked with the local authorities above, undertaking preliminary applications to assess the existing capacity and future requirements of the development. The staging of infrastructure will be developed in the detailed design and approvals proves with the relevant authorities.

The investigation undertaken to date have progressed discussions with the relevant authority where augmentation, upgrades or consideration of adjacent assets has been determined.

Negotiations with the relevant authorities are progressing, with a clear understanding of the next steps presented within this report to facilities the proposed development.

2.1 Electrical

The Distribution Network Service Provider of the existing Macarthur Clinical School (MCS) is Endeavour Energy. The new building will be supplied from the existing MCS low voltage network. The MCS building is supplied by the 1MVA Endeavour Energy padmount Substation No. 34577, which is located in the carpark area at the south side of the Macarthur Clinical School (MCS) building. The associated main switchboard, which is located in Lower Ground 1 of the MCS building, has an estimated maximum demand of 247kVA (358A). The capacity of the main switchboard is limited by its service protection device, which is a circuit breaker rated at 1000A.

The estimated maximum demand of the development site is approximately 403kVA (584A). This is based on the electrical demand allowances in Table 1.

Table 1 - Electrical Demand VA/m² Allowances

Area Type	**VA/m² Allowance**
Shared Public	85
Dry Research / Shared Administration / Shared Collaboration	90
Clinical Research	90
Research Assessment	90
Logistics / Support	60
Travel	60
Engineering Services (Plant)	30

Applying a conservative diversity factor of 0.9, the total diversified maximum demand of the new and existing buildings is estimated at 585kVA (884A). There is sufficient spare capacity in the existing substation and main switchboard to support the development. An Application for Connection has been submitted to Endeavour Energy in order to verify that the proposed increased load can be supported by the existing Endeavour Energy infrastructure. Endeavour Energy have responded with a Connection Offer, dated 30 August 2021, confirming the suitability of supplying the new load from the existing substation.

Shutdowns to the Macarthur Clinical School (MCS) main switchboard will be required in order to install switchgear and make the necessary terminations of submains cabling to supply the new building. These shutdowns will require careful coordination with Western Sydney University (WSU).

Figures 3 depicts the proposed approximate cable route from the MCS MSB to the new development switchroom. The exact cable route will be determined during the detailed design of the project.

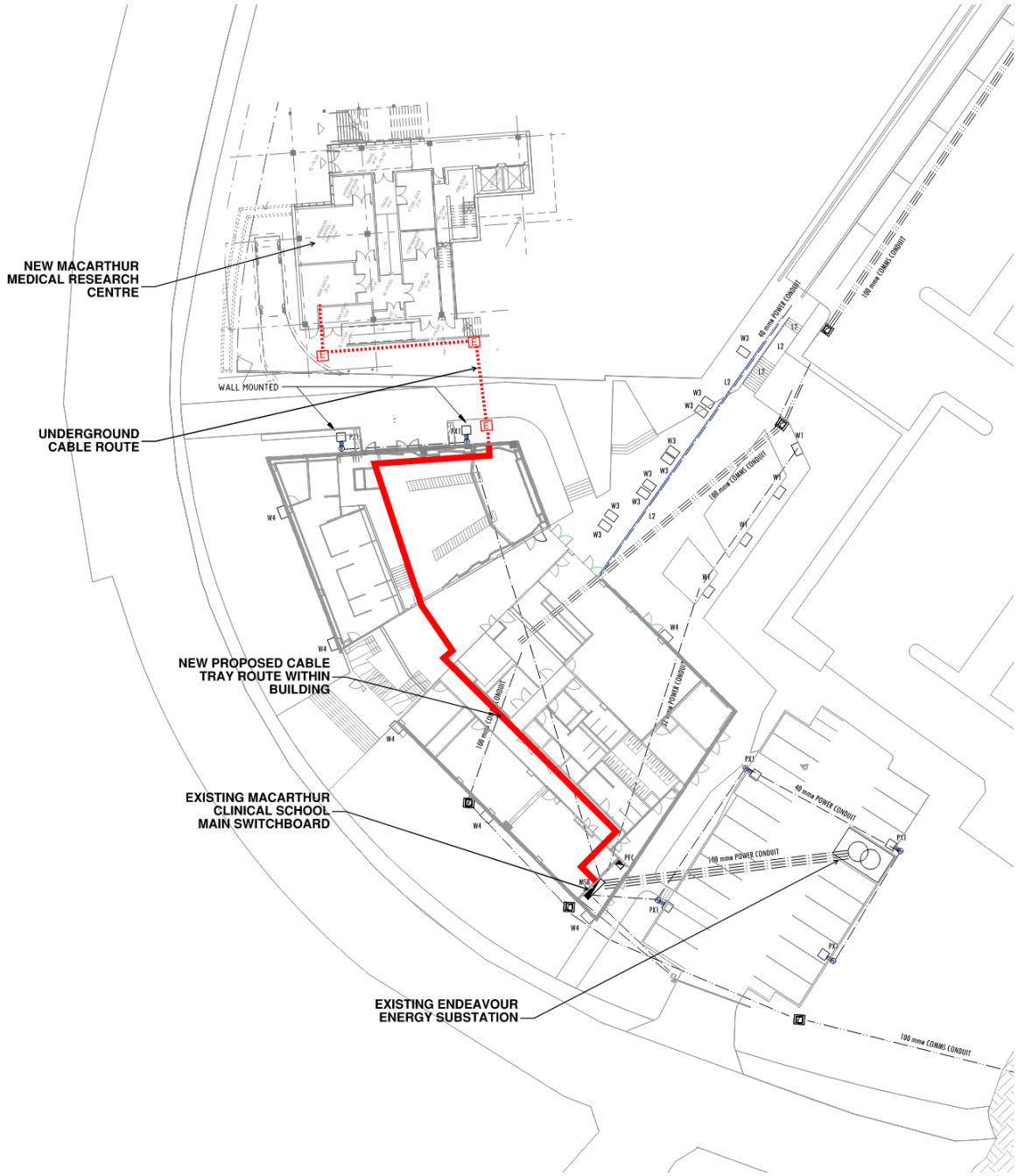


Figure 3 – Preliminary Proposed Cable Route Plan View

2.2 Communications

New communications services may be derived from existing neighbouring buildings on site and/or from new utility services connections.

Conduits will be run from the building to the property boundary to enable the connection of telco carrier services to support the development and to enable future augmentation.

Network carriers with services in the vicinity of the site include:

- NBN (Figure 4)
- TPG (Figure 5)
- AARNet (Figure 6)
- Optus (Figure 7)
- Telstra (Figure 8)

A distributed antenna system (DAS) will be provided within the building in order to support in-building 3G, 4G and 5G services. The detail of this system is dependent on the status of the MCF specification, which is presently in draft form and is expected to be finalised in 2021. It is anticipated that a Multiple Input, Multiple Output (MIMO) system will be installed in the new building to provide sufficient mobile coverage and capacity.

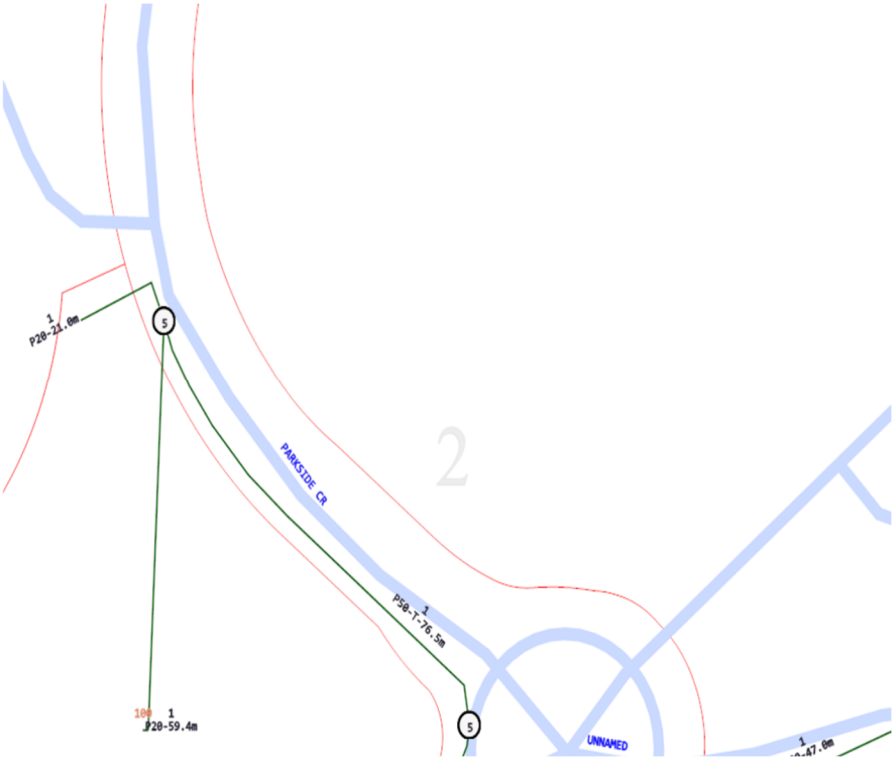


Figure 4 - NBN Existing Services

Figure 5 - TGP Existing Services

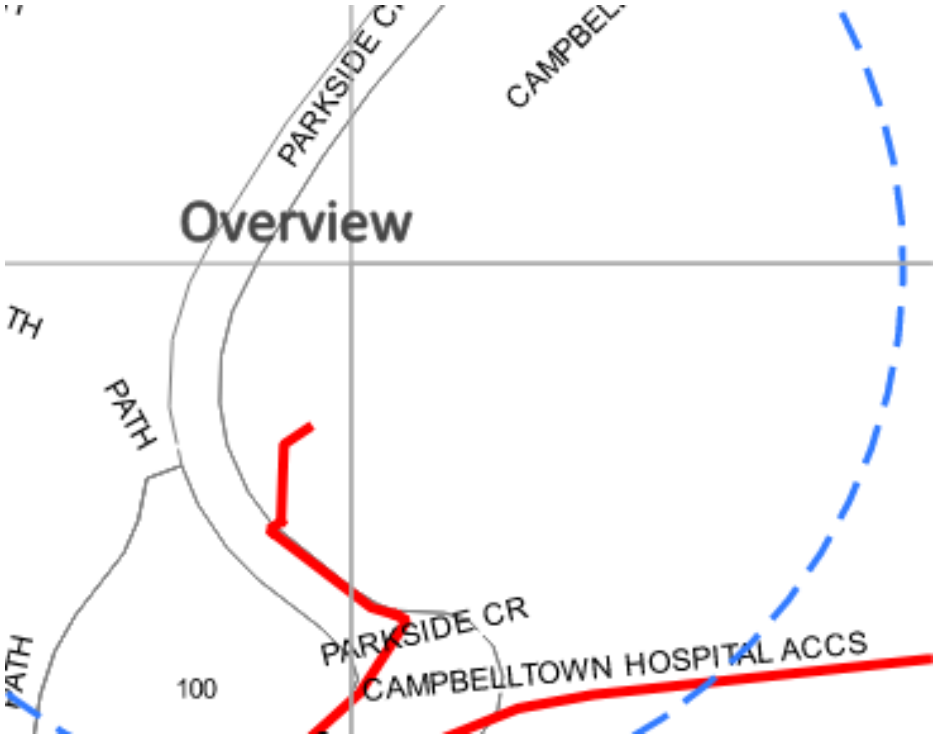


Figure 6 - AARNet Existing Services

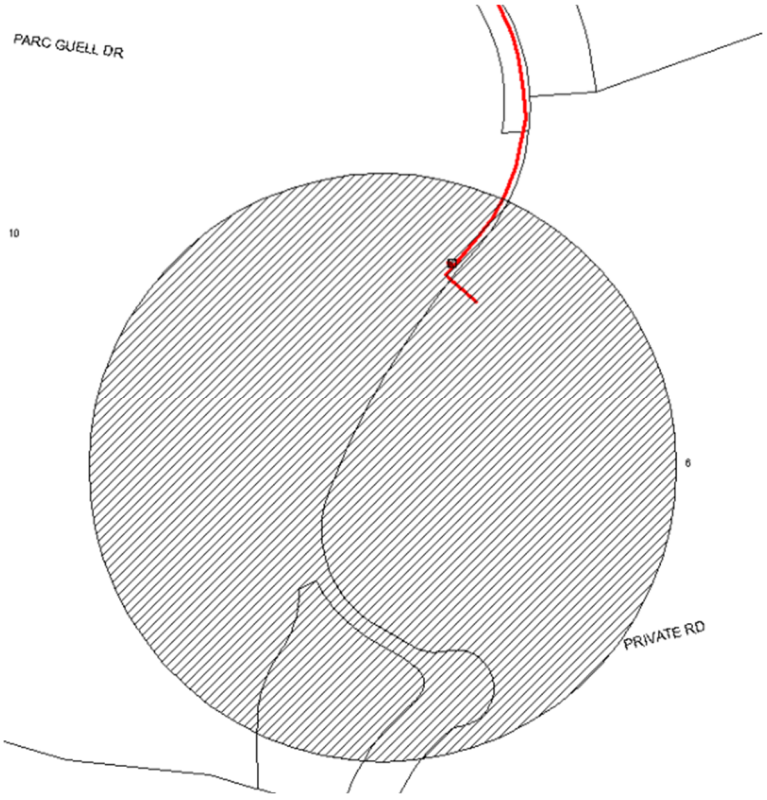


Figure 7- Optus Existing Services

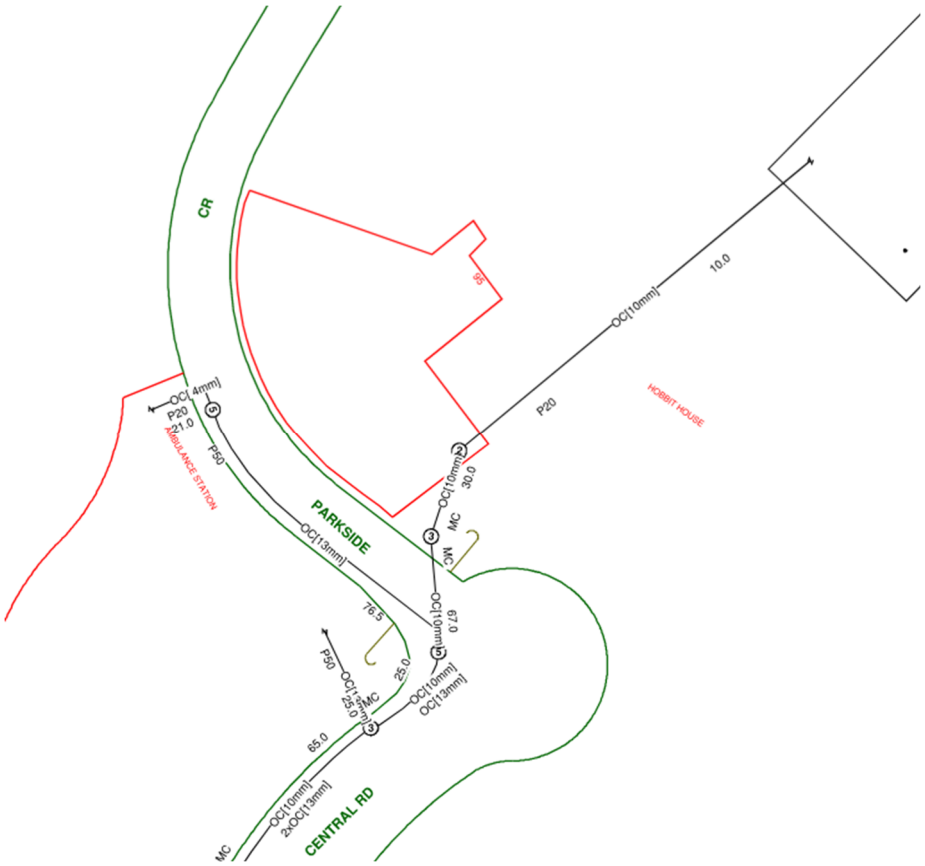


Figure 8- Telstra Existing Services

2.3 Hydraulics

2.3.1 Authority Engagement

SYDNEY WATER – Preliminary Building Plan Approval (BPA) Application

A preliminary 'Building Plan Approval' application based on the Architectural SD80% building scheme had been lodged to Sydney Water for them to assess if the proposed building's footprint will impact any of their inground water, sewer and stormwater assets.

The initial application returned from Sydney Water as referred and highlighted the application would need to be processed by an accredited WSC as an 'Out-of-Scope' type application. LCI engaged RARI to assist with the resubmission of the BPA application to Sydney Water.

RARI had assessed and deemed the development footprint deemed the authority's assets will not be affected as per RARI's certificate below.

BUILDING PLAN APPROVAL: ASSET NOT AFFECTED
(RAR APPROVAL)

Tap In Ref: 1190310	Property Number: N/A
Property Location:	Appin Road, Campbelltown
Building/Structure Description:	Medical Research
Building Plan No:	2011004AR-BVN-AR-B10 B1-00 Issue.03 09/07/2021

Sydney Water's Tap In system has referred the application to a Water Servicing Coordinator (WSC) for assessment. As a certified WSC, RAR have assessed the Building Plan Approval request and determined the proposed building/structure is **APPROVED** to be constructed **OVER/ADJACENT** to a Sydney Water asset:

1. The Service Protect Report (Peg-out) / Work-as-Constructed plan reveals the building/structure is outside the Zone of Influence. This is deemed Asset Not Affected and no special precautions required under Sydney Water Technical Guidelines October 2015.

RAR have stamped the plans associated with this approval.

APPROVED BY	
WSC Company Name:	Rose Atkins Rimmer (Infrastructure) Pty Ltd
Name of Key Personnel:	Alex Haggett
Signature of Key Personnel:	
Date:	11/08/2021

Another BPA application will need to be submitted to Sydney Water based on the DA approved architectural building scheme, during the detailed design phase.

SYDNEY WATER – Feasibility Section 73 Application

As the project is currently in the pre-DA phase, a Feasibility Section 73 application was submitted to Sydney Water for them to assess what impact the development's estimated daily water and sewer loads will have on their infrastructure mains, and to advise if any amplifications work to their water and sewer mains would be required.

LCI received the feasibility letter (Case No. 193052) back from Sydney Water on 13th of September 2021.

Relevant sections from the feasibility letter relating to how Sydney Water's Sewer and Water infrastructure will service the proposed development have been extracted and noted below.

> **4.1 Water**
>
> Your development must have a frontage to a water main that is the right size and can be used for connection.
>
> We've assessed your application and found that:
>
> - There is capacity within the existing DN150 watermain in Parkside Crescent to serve the proposed building within the Campbelltown Hospital precinct. This advice is based on the flow data provided by the WSC.
>
> **4.2 Sewer**
>
> Your development must have a sewer main that is the right size and can be used for connection. That sewer must also have a connection point within your development's boundaries.
>
> We've assessed your application and found that:
>
> - The existing wastewater connection will continue to serve your development.
> - Please note: Pending subdivision requirements will depend on wastewater services. Major works may be required. This will be determined at the review of the DA application.

A formal Section 73 application will be submitted to Sydney Water the detailed design phase.

SYDNEY WATER – Approval to discharge Trade waste

A 'Approval to discharge Trade waste' application was submitted to Sydney Water as a feasibility assessment to gain advice on what operations within the development the authority deemed to be generating trade waste and the type of pre-treatment devices that were required.

Sydney Water have advised that the teaching kitchen facilities will require a grease arrestor. As the cafe kiosk will not be serving hot food no pre-treatment will be required. Refer to below correspondence:

RE: [External] RE: TapIn Application - 1190598

CT CARRUTHERS, TROY <TROY.CARRUTHERS@sydneywater.com.au>
To Alex Tamras
You forwarded this message on 26/08/2021 6:21 PM.

Afternoon Alex,

Based on the information provided below the teaching kitchen would require pre-treatment in the form of an approved 1000L grease arrestor.

The coffee kiosk will not need pre-treatment as there is no hot food being cooked.

Let me know if you need anything else,

Troy

Troy Carruthers
Business Customer Representative
Customer Services
Sydney Water, Cascade Building, 51 Hermitage Road, West Ryde, 2114

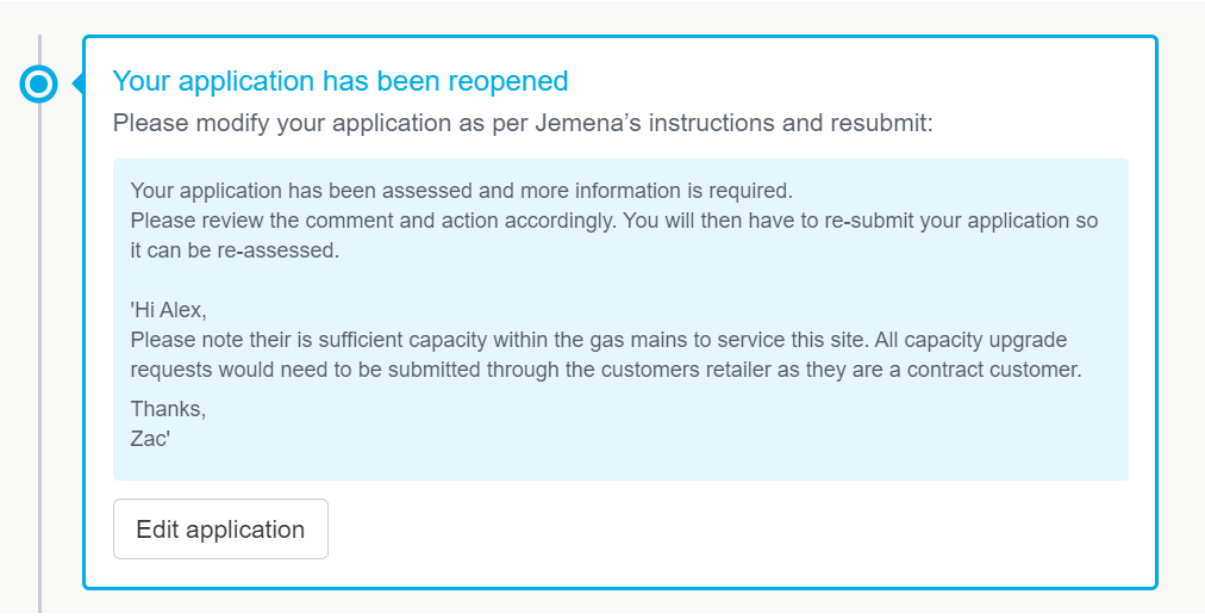
Sydney WATER

Ph 9800 6122
Mob 0409 987 292
troy.carruthers@sydneywater.com.au

JEMENA – New Gas connection Application

A 'New Gas connection' application (application no.00350378) was lodged to Jemena as a feasibility assessment to check if the authority's gas mains have sufficient capacity to serve the development based on the current gas loads.

Jemena had provided confirmation that their gas mains will have sufficient capacity to serve the site in below correspondence.



2.3.2 Existing Infrastructure Review

WATER

Based on DBYD maps, the proposed site has frontage to a DN.150 UPVC Sydney Water potable water main within Parkside Crescent.

The Underground Utilities Survey drawings received for the site does not indicate any potable cold-water services traversing through the site and no diversion works are envisaged.

GAS

Based on DBYD maps, the proposed site has frontage to a DN.150 UPVC Sydney Water potable water main within Parkside Crescent.

The Underground Utilities Survey drawings received for the site does not indicate any potable cold water services traversing through the site and no diversion works are envisaged.

SEWER

Based on DBYD maps, the proposed Lot does not have frontage to a Sydney Water sewer main at present.

The Underground Utilities Survey drawings received for the site indicates a DN.225 sewer main that traverses through the site. It is envisaged the DN.225 sewer pipe is a privately owned asset, that serves several of the existing buildings within the Campbelltown hospital precinct.

As part of an 'Early Works' package, the existing DN.225 sewer pipe will need to be diverted around the proposed footprint of the new Medical Research building. Works shall be staged to ensure the upstream hospital buildings being served by the sewer pipe remain operable during all phases of the diversion works.

The exact location and invert levels of the existing pipe will be investigated and confirmed during the detailed design stage.

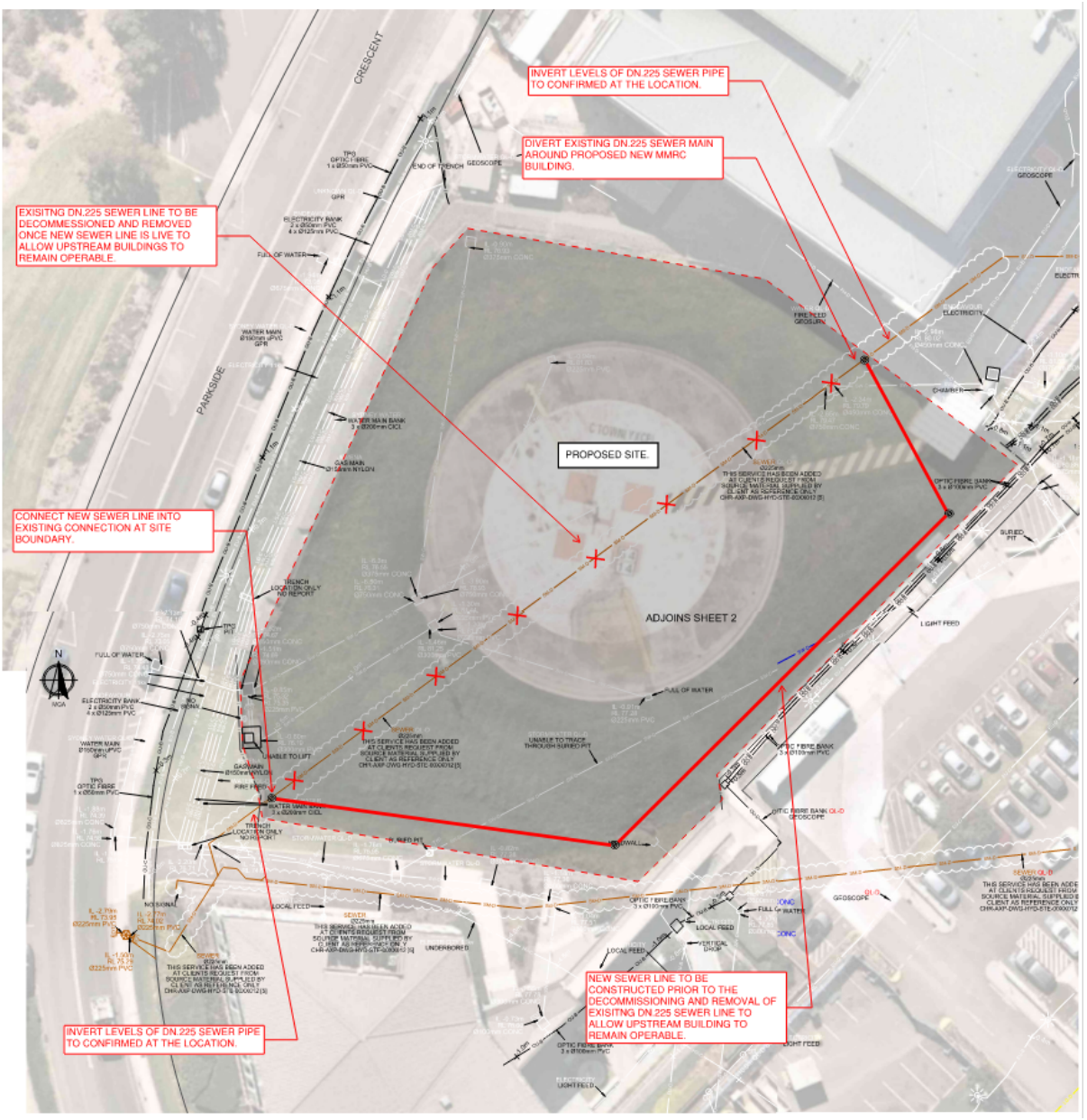


Figure 9 – Sewer Diversion sketch

2.3.3 New Services

SEWER

In accordance with the feasibility letter (Case No. 193052) received back from Sydney Water, the development will be able to make connection to the existing sewer connection serving the Campbelltown hospital precinct.

However, if the development is subdivided from the Campbelltown hospital precinct, the lot will require its own dedicated sewer connection.

In accordance with the Gravity Sewerage Code of Australia (WSA-Part 2), if the proposed development requires an independent sewer connection, a minimum DN.225mm sewer main will need to be extended to provide frontage to the development. It is envisaged the new DN.225 sewer main pipe will be constructed from the existing sewer manhole and extended to run within portion of footpath to provide connection into the site's boundary via a new sewer manhole and junction.

At this stage of the design the building's approximate wastewater loads are as per table below:

Building's Approximate Wastewater Discharge		
Daily wastewater discharge	7909	**L/day**
Peak wastewater flow rate	7.7	**L/s**

A formal Section 73 application will be submitted to Sydney Water during the detailed design phase to finalise the infrastructure servicing strategy for the development.

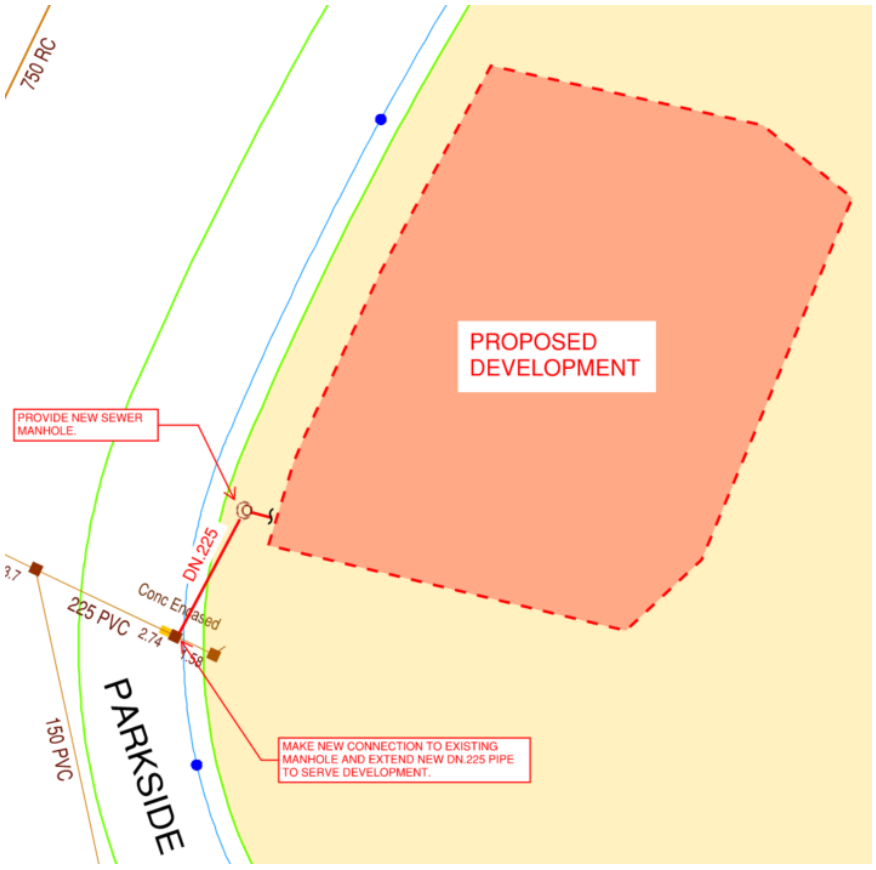


Figure 10 – Subdivided sewer connection sketch

WATER

In accordance with the feasibility letter (Case No. 193052) received back from Sydney Water, the DN.150 UPVC watermain within Parkside Crescent has sufficient capacity to serve the development.

A pressure and flow investigation was undertaken on the water main. Based on the results received back from Sydney Water, the water main is deemed to have sufficient pressure and flow to cater for the development's potable water and fire services demands.

At this stage of the design the building's approximate potable water demand is as per the table below.

Building's Approximate Potable water demand		
Daily potable water discharge	14854	**L/day**
Peak wastewater flow rate	4	**L/s**

Two new connections will be made, a new potable water service and fire service will extend from the water main to serve the development. The final water tapping location and size will be subject to both coordination of the building layout and a formal approval from Sydney Water.

A formal Section 73 application will be submitted to Sydney Water during the detailed design phase to finalise the infrastructure servicing strategy for the development.

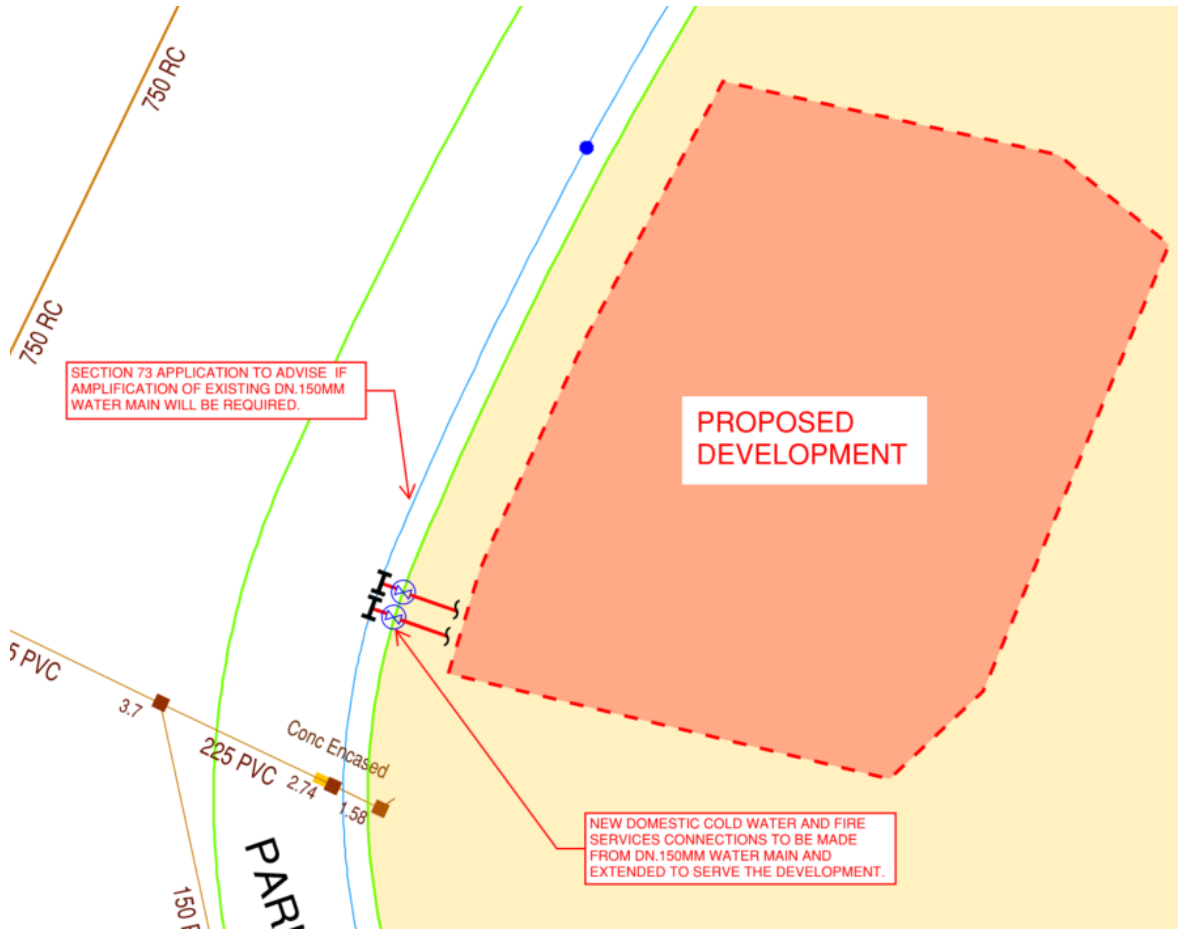


Figure 11 – Water connection sketch

Statement of Available Pressure and Flow

Sydney WATER

Alex Tamras
73 Walker Street
North Sydney, 2060

Attention: Alex Tamras Date: 30/06/2021

Pressure & Flow Application Number: 1160181
Your Pressure Inquiry Dated: 2021-06-30
Property Address: Appin Road, Campbelltown 2560

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: Parkside Crescent	Side of Street: East
Distance & Direction from Nearest Cross Street	80 metres North from Central Road
Approximate Ground Level (AHD):	77 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	88 metre head
Minimum Pressure	74 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	74
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15 20 30 40 50 60	75 75 74 74 72 70 67 64
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 30 40 50 60	74 73 73 72 70 68 65 62
Maximum Permissible Flow	67	59

(Please refer to reverse side for Notes)

For any further inquiries regarding this application please email :

swtapin@sydneywater.com.au

Figure 12 – Water main pressure and flow results

NATURAL GAS

The development's natural gas services will be connected from Campbeltown's Hospitals site wide natural gas ring main service currently being upgraded.

At this stage, natural gas will only be utilised within the building to serve the mechanical boilers (1,500mj/hr) and has not been considered for domestic water heating or cooking.

Once the building's gas loads are finalised during the detailed design stage, a formal gas connection application will be submitted via a chosen energy retailer.

Jemena Discussions

The design team have liaised with Zachary Kennett (Network Development Specialist – I&C) from Jemena for confirmation on how the development would be serviced and had been advised the following:

"Jemena currently services the whole precinct via a single meter connection Approx. location circled in red below. This meter then connects to an internal ring main that services various sites.

We are currently in the process of upgrading this meter to provide additional capacity to the current building being constructed on the site.

For more information about the internal reticulation, I would recommend reaching out to Daniel Dickerson from Axis as he has been managing the gas upgrades for the new development and maybe able to shed some light on the internal infrastructure.

Depending on the required increased supply Jemena can potentially just upgrade the meter again to service the proposed medical research centre."

Figure 13 - Jemena Precinct Gas Meter (D)

2.4 Conclusion

- Electrical

  The Macarthur Medical Research Centre (MMRC) will be supplied from the existing Macarthur Clinical School (MCS) low voltage network which is supplied by the existing 1MVA Endeavour Energy Substation located in the carpark area of Macarthur Clinical School (MCS) building.

- Communication

  Communications conduits for telco carrier services will be installed from the Parkside Crescent property boundary to the Macarthur Medical Research Centre (MMRC) building.

- Hydraulic

  Based on high level advise from Sydney Water, the DN.150 UPVC watermain within Parkside Crescent has sufficient capacity to accommodate the development's potable water and fire services.

  As part of an 'Early Works' package, the existing DN.225 sewer pipe will need to be diverted around the proposed footprint of the development.

  Based on high level advise from Sydney Water, the existing sewer connection currently serving the Campbelltown hospital precinct has capacity to serve the development on the basis the lot won't be subdivided. If subdivided, the development will require a dedicated sewer connection which will encompass sewer main extension works.

  Jemena have advised the development will need to make connection to the Campbelltown hospital's natural gas ring main. Based on the intention to only utilise natural gas for the building's mechanical heating, the site wide natural gas ring main will have capacity to accommodate the new development.