

infrastructure & development consulting

Macarthur Gardens North  
Infrastructure Master Planning Report

December 2024

## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
1.1	Infrastructure Master Planning Report Revision .....	4
<b>2</b>	<b>Site Description &amp; Proposed Works .....</b>	<b>5</b>
<b>3</b>	<b>Data .....</b>	<b>6</b>
<b>4</b>	<b>Potable Water .....</b>	<b>7</b>
4.1	Existing Network .....	7
4.2	Sydney Water Growth Servicing Plan.....	7
4.3	Proposed Network.....	8
<b>5</b>	<b>Sewer.....</b>	<b>9</b>
5.1	Existing Network .....	9
5.2	Sydney Water Growth Servicing Plan.....	9
5.3	Proposed Network.....	10
<b>6</b>	<b>Electricity .....</b>	<b>11</b>
6.1	Existing Network .....	11
6.2	Endeavour Energy Growth Servicing Plan.....	11
6.3	Proposed Network.....	12
<b>7</b>	<b>Telecommunications .....</b>	<b>14</b>
7.1	NBN .....	14
7.2	Telstra 5G Network.....	14
<b>8</b>	<b>Gas.....</b>	<b>15</b>
<b>9</b>	<b>Conclusion .....</b>	<b>16</b>

This Document has been prepared for the Party that has commissioned it, for the specific Purposes of this Project (or part thereof). It should not be relied upon by any other Party, or for any other Purpose.

Infrastructure & Development Consulting Pty Ltd accept no responsibility for any consequences of this being relied upon by any other Party or for any other Purpose, or for any errors or omissions which are due to errors, omissions or incomplete data being supplied to us for this Project.

This Document must not be disclosed to any other Party without the prior consent of Infrastructure & Development Consulting and from the Party who has commissioned it.

Project Number	19-036	Date	5 December 2024
Project Name	Macarthur Gardens North	Status	For Planning Proposal
Client	Landcom	Revision	6
Author	R. Higginson	Reviewed	D. Reilly

# 1 Introduction

Infrastructure & Development Consulting (IDC) have been engaged by Landcom to prepare an Infrastructure Master Planning Report to support the proposed development of a site at Macarthur Gardens North for apartment and mixed-use development. This report is also to support a planning proposal to amend Campbelltown City Council's height limits in the Local Environment Plan (LEP) to enable an increase in dwelling yield at the site.

The following infrastructure report investigates the capacity of the existing utilities and evaluates the capacity needed to service the proposed development of the Macarthur Gardens North site with respect to:

- Sydney Water servicing including potable water and wastewater;
- Electrical reticulation in accordance with Endeavour Energy requirements;
- Telecommunications; and
- Gas.

The following analyses have been undertaken to provide an overall strategy for servicing the site and to guide future detailed design through the implementation of appropriate authority controls and best management practices.

## 1.1 Infrastructure Master Planning Report Revision

This revision provides an update to the previously submitted Infrastructure Masterplan DA report prepared by IDC (August 2022) to reflect changes in the proposed development, with an increase in dwellings from 1,250 to 1,625 dwellings. This report also updates the proposed servicing strategies for the site to reflect the latest Sydney Water and Endeavour Energy Growth Servicing Plans.

The Landcom subdivision of the site has been approved under the following:

- Subdivision Works Certificate - SWC/17924, Development Consent – 3944/2021/DA-SW/A.
- Approved Sydney Water Sewer Reticulation – Case No. 205388WW
- Approved Sydney Water Potable Water Reticulation - Case No. 205388PW
- Approved Endeavour Energy Electrical Reticulation – NRS3625
- Approved NBN Design – STG-W000295704

This report is to support the increase in dwellings at Macarthur Gardens North in terms of infrastructure requirements.

## 2 Site Description & Proposed Works

The Macarthur Gardens North site is located approximately 45km south-west of the Sydney CBD at Lot 1097 DP1182558 and is situated within the Campbelltown City Council local government area. The Macarthur Gardens North (MGN) site, which is located to the north of the Macarthur Train Station, covers an area of approximately 18ha and forms part of the larger Macarthur Precinct.

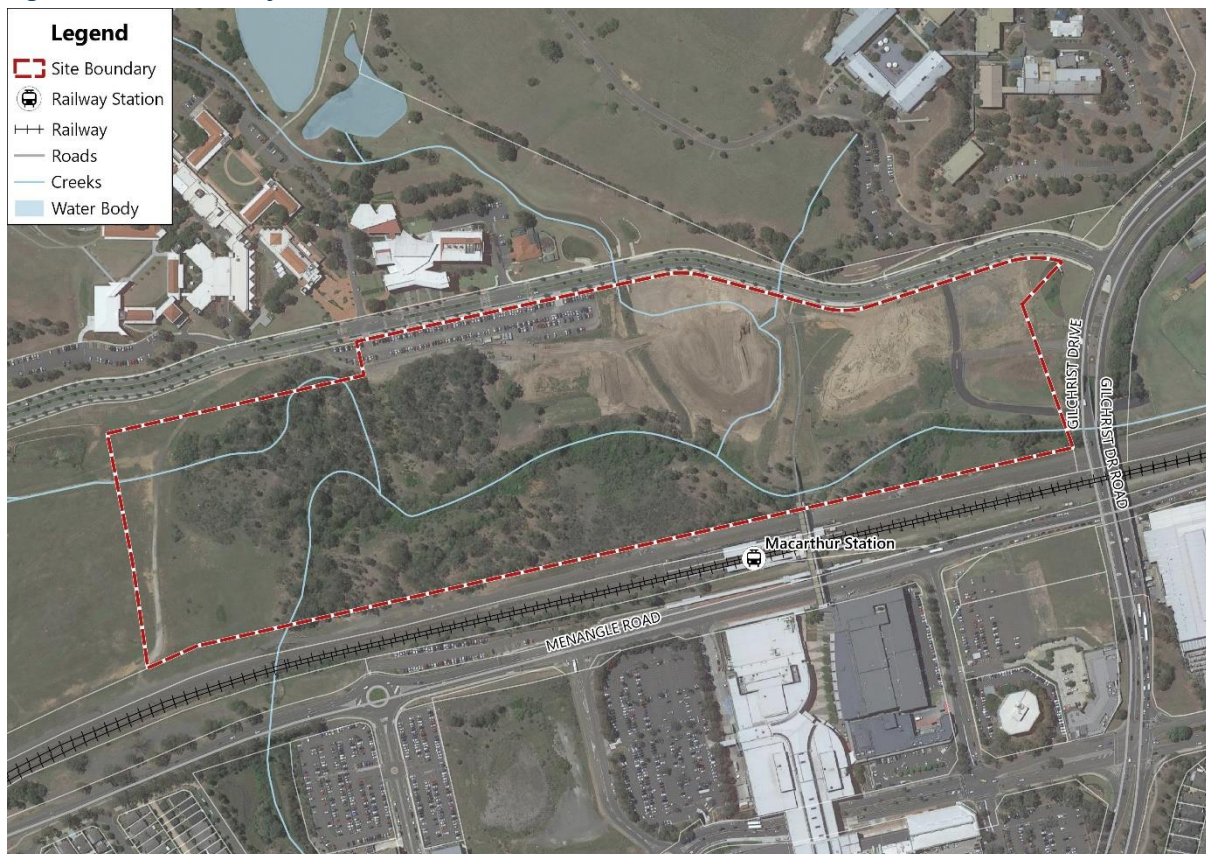
The existing MGN site, which currently consists of undeveloped land, falls generally from north to south and is bound by:

- Goldsmith Avenue to the north
- The Airport & South rail line to the south
- Gilchrist Drive / Oval to the east; and
- The existing Macarthur Heights development to the west

The proposed development includes the subdivision of the site into 10 lots (Lots 11-20) to provide up to 1,625 apartment dwellings as well as a new local access road network to link the development to the surrounding street system.

This report considers the servicing requirements associated with the development of the site.

**Figure 1 - Site Boundary**



### **3 Data**

The following data has been resourced to assist with the preparation of this report:

- Dial Before You Dig (DBYD) services search
- Site survey prepared by JMD Surveyors
- Sydney Water hydra search
- Endeavour Energy Distribution Annual Planning Report online tool
- Feedback from service providers
- Campbelltown City Council Development Control Plans



## 4 Potable Water

### 4.1 Existing Network

The existing site is serviced by a 250mm diameter trunk main located along Goldsmith Avenue, adjacent the northern site boundary. This main will be used to supply future development on the site. As this main also supplies water to adjacent sites, service disruptions should be avoided during any future construction works and connection of proposed services.

Watermains are also located to the south of the site in Menangle Road on the southern side of the rail corridor. The existing water mains within the vicinity of the site are shown in Figure 2 below.

**Figure 2 - Existing Potable Water Network**



### 4.2 Sydney Water Growth Servicing Plan

In September 2023 Sydney Water released a Growth Servicing Plan (GSP) which outlines the servicing strategy to support planned growth in Greater Sydney up to 2029. The GSP indicates that trunk infrastructure to support the Greater Macarthur Region is in the option planning phase, with no planned date provided for infrastructure delivery.

### 4.3 Proposed Network

A high-level assessment was undertaken using the Water Supply Code of Australia (WSA) to determine the infrastructure requirements to support the proposed development. This involved calculating the peak hourly demand to estimate the likely trunk main size required.

The maximum water demand rates were extracted from the WSA. These rates were used to determine the peak hour demand for each land use type. The results of the assessment are provided in Table 1.

**Table 1 - Proposed Water Demand Calculations**

Land Use	Dwellings	Max Day Demand Rate (kL/Dwelling/day)	Max Day Demand (kL/day)	Peak Hour Demand (kL/hour)	Peak Demand (L/s)
Apartment Precinct	1,625	0.8	1,300.0	108.3	30.1
<b>Total</b>	<b>1,625</b>	<b>0.8</b>	<b>1,300.0</b>	<b>108.3</b>	<b>30.1</b>

Based on the above assessment and assuming a target velocity of 1.0-1.5m/s, a minimum 150-200mm diameter watermain would be required to support the proposed development.

The potable water reticulation design at Macarthur Gardens North for the initial subdivision works (SWC/17924) has been approved by Sydney Water under Case No. 205388. This is to include the construction of a new DN250 main extension from the existing DN250 main in Goldsmith Ave that will provide frontage to each lot in the subdivision, with the main to be constructed across the full road frontage of each lot as part of the proposed works. The above water demand calculations indicates that this proposed DN250 main extension will likely be sufficient to cater for the planned increase in dwellings to 1,625.

Further stakeholder engagement will be undertaken during the detailed design phase to confirm the servicing requirements for the site.

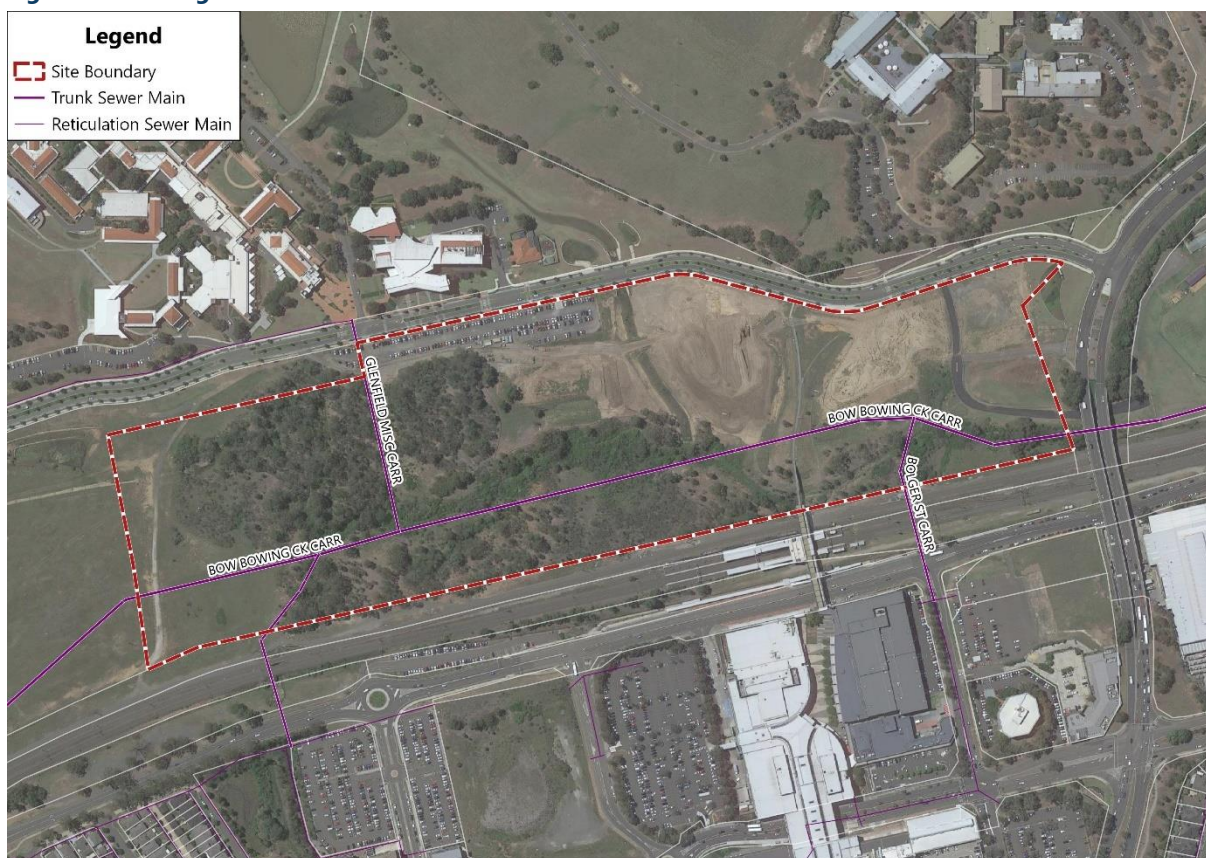


## 5 Sewer

### 5.1 Existing Network

The site is currently serviced by the Sydney Water sewer network. The Bow Bowing Creek carrier is a 750mm diameter trunk sewer main which bisects the site in an east-west direction. The Bow Bowing Creek carrier drains to the Glenfield Campbelltown Submain, located at the intersection of the rail corridor and Narellan Road. The future development of the site will utilise the Bow Bowing Creek carrier main for sewer servicing. The existing sewer mains within the vicinity of the site are shown in Figure 3.

**Figure 3 - Existing Sewer Network**



### 5.2 Sydney Water Growth Servicing Plan

Sydney Water's GSP indicates that trunk infrastructure to support the Greater Macarthur Region is in the option planning phase, with the precinct to receive wastewater servicing through the Glenfield Water Resource Recovery Facility. There is no planned date provided for any infrastructure upgrades required to support development in the Macarthur Precinct.

### 5.3 Proposed Network

As discussed in Section 5.1, the Bow Bowling Carrier is located within the site boundary, adjacent the creek corridor. Future development will drain directly to this main.

The trunk main has an associated zone of influence of approximately 16m. The proposed development layout has been located to minimise the impact on the existing main where feasible. In accordance with Sydney Water Requirements, concrete encasement / bridging slabs may be needed to protect the sewer main where the development extent encroaches into the zone of influence. The alignment of this sewer main will be retained to ensure upstream properties do not experience disruptions to servicing.

A high-level assessment of the required infrastructure was undertaken using the Sewage Supply Code of Australia (SSA) to determine if the development can be serviced by the Bow Bowling Carrier. The load on the sewer network is expressed in Equivalent Population (EP). The EP for the proposed land uses were extracted from the SSA. For residential uses, EP is expressed as a rate per dwelling. The approximate total EP for the site was calculated using the EP rates tabulated below.

**Table 2 - Calculated Equivalent Population**

Land Use	EP Rate	Dwellings	Total EP
High Density Residential	2.5/Dwelling	1,625	4,063
<b>Total</b>		<b>1,625</b>	<b>4,063</b>

Based on the above, a total equivalent population of 4,063 is expected within the site. The site would require the equivalent of a 225-300mm diameter main to service the development in its entirety. This could be provided as a series of smaller mains.

The sewer reticulation design at Macarthur Gardens North for the initial subdivision works (SWC/17924) has been approved by Sydney Water under Case No. 205388. This is to include the construction of new DN250 mains which will drain into the existing DN750 Bow Bowling Carrier.

Each lot within the development will have frontage to these mains that can be used for connection. The above equivalent population calculations shows that the current proposed DN250 mains is sufficient to cater for the proposed increase in dwellings to 1,625.

Further stakeholder engagement will be undertaken during the detailed design phase to confirm the servicing requirements for the site.



## 6 Electricity

### 6.1 Existing Network

The site is located within the Endeavour Energy electrical supply zone. The closest zone substation (ZS) to the site is the Campbelltown ZS, located on Narellan Road, approximately 450m north east of the site. A number of high voltage 11kV feeders are located within the vicinity of the site. Two feeders bisect the site in a north-south direction. Another feeder is located on the northern side of Goldsmith Avenue, adjacent the northern site boundary. The existing electrical infrastructure within the vicinity of the site is shown in Figure 4.

**Figure 4 - Existing Electricity Network**



### 6.2 Endeavour Energy Growth Servicing Plan

Endeavour Energy released a Growth Servicing Plan in 2018 (updated 2022) which outlines the servicing strategy to support planned growth across Greater Sydney. The plan outlines future infrastructure including completion dates to accommodate the dwelling increase in the Greater Macarthur Priority Growth Area, which ensures connection capacity is available for new developments.

### 6.3 Proposed Network

A high-level assessment was undertaken to determine the electrical servicing requirements for the site. The electrical demand was calculated using electrical demand rates provided by Endeavour Energy. The results are tabulated below.

**Table 3 – Calculated Diversified Load**

Land Use	Dwellings	After Diversity Maximum Demand (kVA/unit)	Diversified Load (MVA)
Apartments	1,625	3.5	5.69
<b>Total</b>			<b>5.69</b>

Based on the assumption that a single 11kV feeder can supply approximately 4-5MVA, the proposed Macarthur Gardens North site would likely require one to two 11kV feeders to support the proposed development.

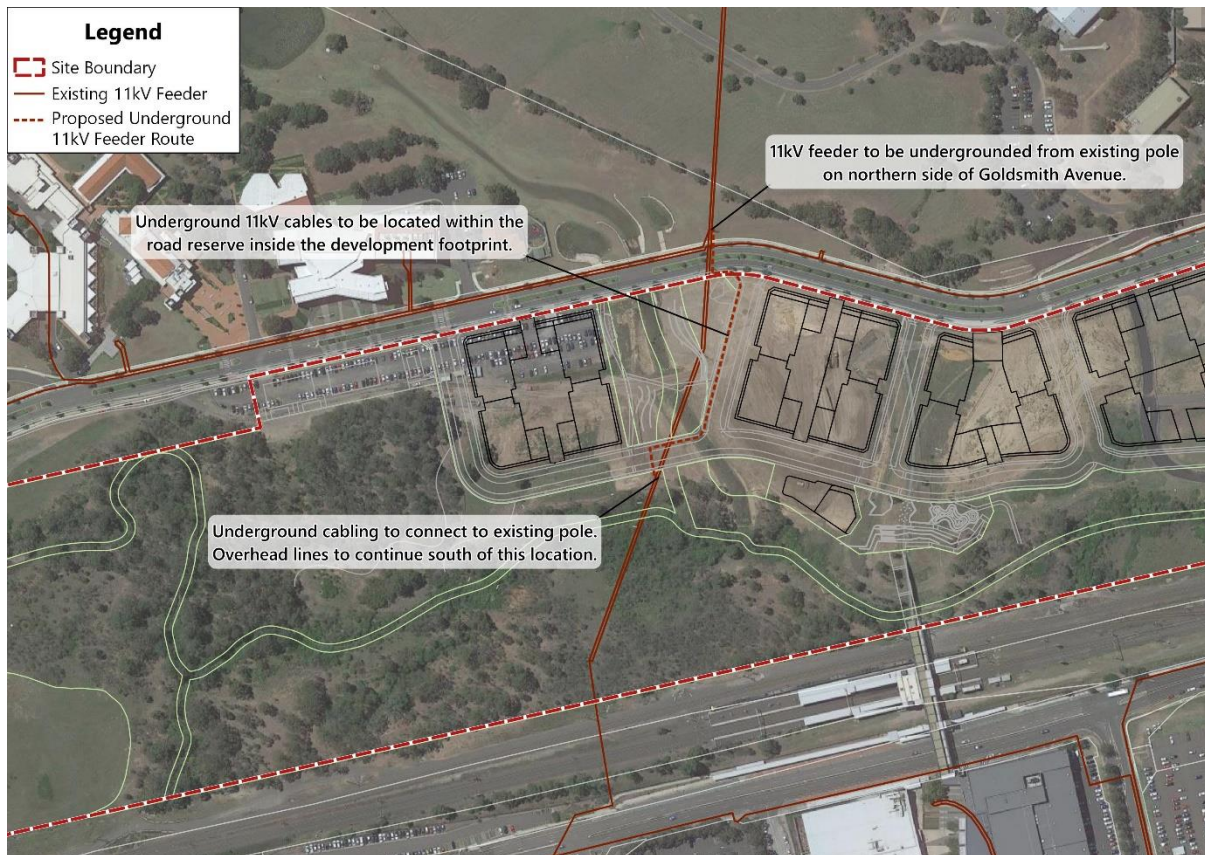
The Campbelltown ZS is forecast to have residual capacity of 18.0 MVA in 2028. Based on this assumption, there is sufficient residual capacity to support the proposed development.

It should be noted that spare capacity cannot be reserved for developments and connection applications are assessed as they are received. However, given the significant investment in infrastructure across the Greater Macarthur Growth Area, it is likely that capacity will be available to support the development.

Based on the previous assessment for the site undertaken by Arcadis in 2018, it is understood that the existing 11kV feeders within the vicinity of the site have limited capacity. A new feeder will therefore likely be required to support the development and will be constructed from the Campbelltown ZS to the site.

As part of the initial subdivision works (SWC/17924) the overhead feeders which bisect the site will be relocated underground within the development footprint to suit the proposed road layout. These services are to be maintained as they supply the adjacent site. The proposed area of relocation works is indicatively shown in Figure 5. It is anticipated that no new feeders will be required to service the proposed uplift in dwellings.

**Figure 5 – Proposed Electrical Relocation Works**



We note that the initial subdivision works approved under (SWC-17924 / NRS3625) is to include the extension of the existing HV network to provide frontage to each of the proposed lots within the development area only, with the subsequent high-rise residential developments of each of the lots to be the subject of separate future Development Application submissions by others. Similarly, any embellishments required to the electrical network as result of the development of the future high-rise residential buildings will also form part of the separate future Development Applications by others, with the construction of these embellishments (including PM substations and the like) to be the responsibility of the developer of that land.

Further stakeholder engagement will be undertaken during the detailed design phase to confirm the servicing requirements for the site.



## 7 Telecommunications

### 7.1 NBN

The site is currently serviced by NBN Co. fixed line technology. Existing NBN Co. infrastructure is located on the northern side of Goldsmith Avenue.

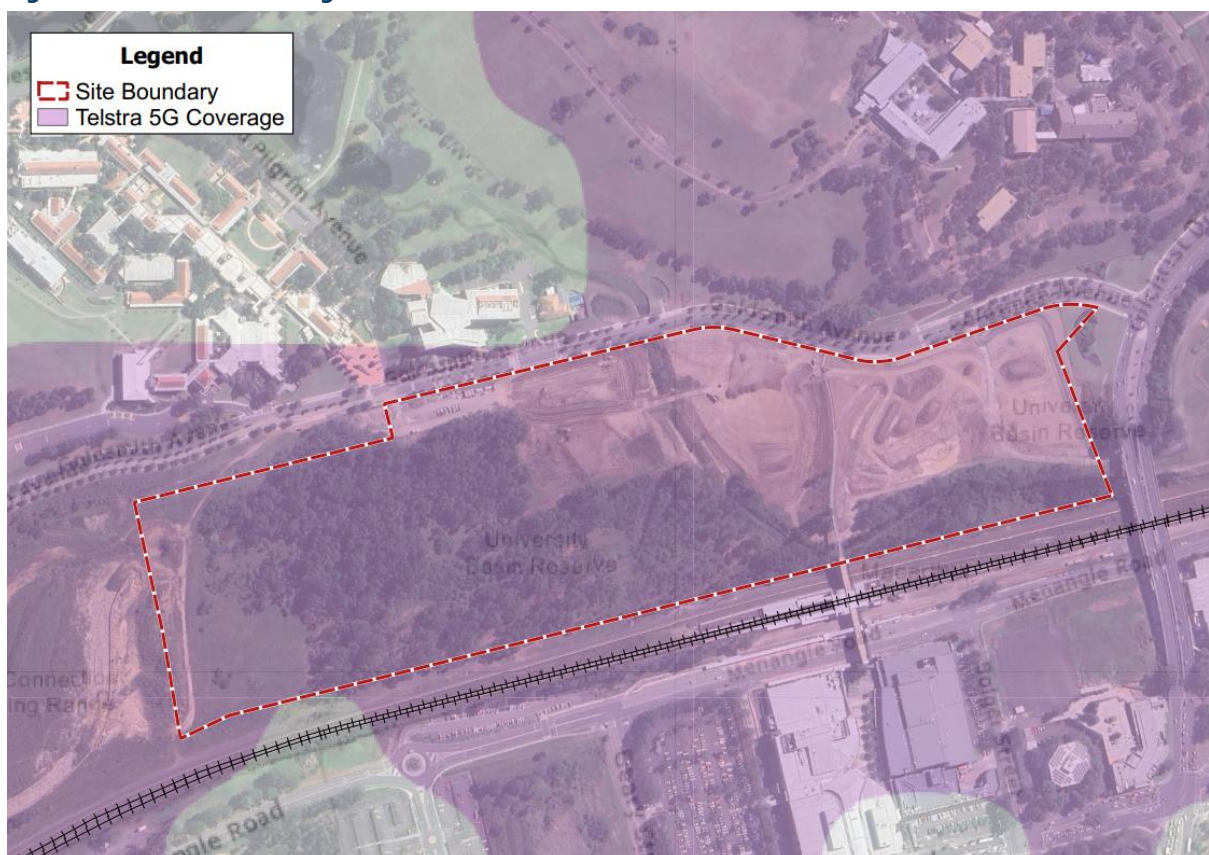
NBN Co. policy requires developers to provide pit and pipe infrastructure within the road reserve for all subdivisions. Refer to NBN design STG-W000295704 for details of the new NBN infrastructure to service Macarthur Gardens North.

### 7.2 Telstra 5G Network

Telstra have blanket handheld 5G coverage across the site. The existing 5G network coverage is shown in Figure 6.

The provision of telecommunications infrastructure is not expected to pose a constraint to development.

**Figure 6 - Telstra 5G Coverage**





## **8 Gas**

Gas is supplied to the area by Jemena. A high pressure secondary gas main (1050kPa) traverses the western side of Gilchrist Drive and terminates at a Distribution Regulator Set located inside the eastern site boundary. From the Distributor Regulator Set, a medium pressure network main (210kPa) extends along the northern side of Goldsmith Avenue.

Should the site require gas infrastructure, the existing network is likely to have sufficient capacity to supply the proposed development. Jemena will support the demand generated by the development as required. The provision of gas supply is therefore not expected to pose a constraint to development.

## 9 Conclusion

Following a review of the increase in dwellings at Macarthur Gardens North in terms of infrastructure requirements, it is evident that the approved service designs can adequately support the development.

Further stakeholder engagement will be undertaken during the subsequent detailed design phases to confirm if any additional servicing requirements will be required for the site.