

UON Central Coast Campus



Infrastructure Report

Prepared for: Lyons Architecture

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Date: 2 December 2022
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Project: UON Central Coast Campus
Location: 305 Mann St
 Gosford NSW 2250
Prepared by: ADP Consulting Pty Ltd
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Project No: SYD2223
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1. Executive Summary

This report provides a review of the existing in-ground infrastructure surrounding and serving the site at 305 Mann Street, Gosford, NSW 2250. This is a 4,670m² site are to be developed into a multi-level facility for teaching and learning for the University of Newcastle, Central Coast Campus.

The project involves demolishing a number of existing small retail buildings.

Our desktop review has found the following:

- > The existing site is supplied by overhead service mains on Beane St. based on the visual inspection of the service mains size, ADP believe the current service rating shall not be over 100 amps.
- > There are existing Ausgrid overhead & underground HV, LV and Aux OH mains running along Beane St and Hills St. Based on the early discussion with UoN and Lyons Architecture, these OH mains are to be relocated to underground. The associated public lighting network is to be upgraded with new UG SL network with steel column along the road.
- > There are NBNco and Ucomm (Optus) communication services located within Mann Street
- > The existing sewer main running through the property from Beane Street to Mann Street will have to be relocated or protected.
- > The existing water and gas mains running adjacent to the site along Mann Street appear to be adequate to serve the proposed development

Figure 1 Proposed 110 Gow Street Site location (Source: Google Earth)



2. Introduction

2.1 Project Description

The subject site is located at 305 Mann Street, Gosford, NSW 2250. The site currently consists of a number of small retail shops.

The proposed development shall consist of the following:

- > 4 storey student learning facility with teaching and learning rooms and seminar rooms
- > Retail and cafe tenancy
- > 19 spot on grade car park
- > 4 spot EV charging
- > Life access to roof top

This report reviews the existing infrastructure within the area, and the capacity to that this infrastructure has to support this project.

The following information sources have been utilised to prepare this report:

- > Dial before you dig (DBYD) information packages
- > Lyons Architecture
- > Site visit by ADP Consulting on 8th August 2022

ADP have undertaken a desktop review of the information provided from the site Dial Before You Dig (DBYD) search. The report provides an overview of the following information relating to each service:

- > Existing infrastructure surrounding and serving the site from the following in-ground services:
 - Water & Sewer (Central Coast Council)
 - Power (Ausgrid)
 - Telecommunications (Telstra, NBN and Optus)
 - Gas (Jemena)
- > Estimated new infrastructure works associated with the development.
- > A summary of additional infrastructure items to be resolved as part of the project design.

3. Electrical Infrastructure

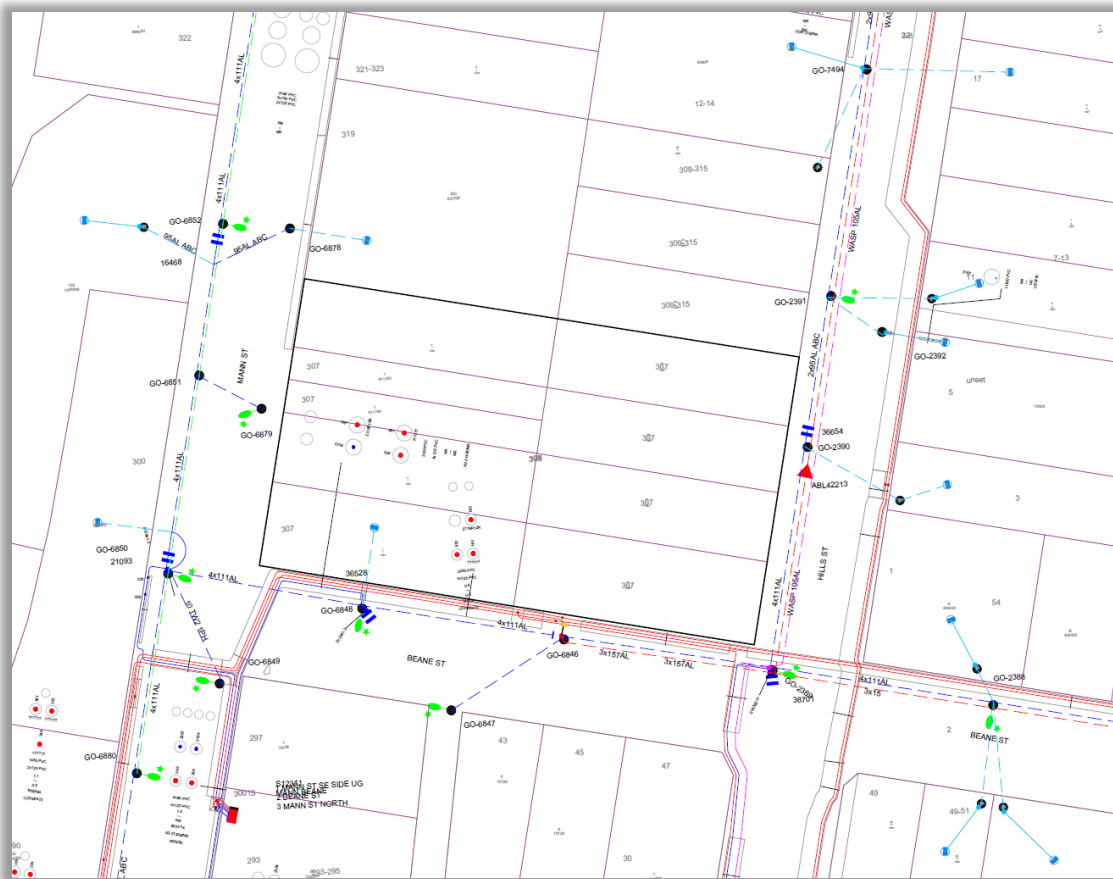
3.1 Existing Infrastructure

The Ausgrid electrical network has a mix of overhead (OH) and underground (UG) distribution network surrounding the development site.

Based upon the DBYD and Ausgrid GIS information, there are existing Ausgrid overhead HV (high voltage - 11kV), LV (Low voltage 415V) and Auxiliary networks running on northern side of Beane St and western side of Hills St, along the development boundary. There are existing Ausgrid underground HV network running on northern side of Beane St.

Existing Ausgrid network GIS has been shown as below in Figure 2.

Figure 2 Existing Ausgrid Network



There are three HV feeders running west-east direction on Beane St:

WEST GOSFORD: ZN12650PA17L

WEST GOSFORD: ZN12650PA12R

WEST GOSFORD: ZN12650PA9R

Feeder WEST GOSFORD: ZN12650PA17L transfers from underground to overhead network at corner of Beane and Hills St, and extends further towards north along Hills St. The existing OH HV network towards east of Beane St is a spur HV supply to a pole substation PT-13104 at the end of Beane St (HV network ends).

Figure 3 Existing Ausgrid HV Network



3.2 New Works Associated with Electrical Infrastructure

Based on Ausgrid network status and the proposed development architect plans, it is anticipated that below new electrical infrastructure works will be required:

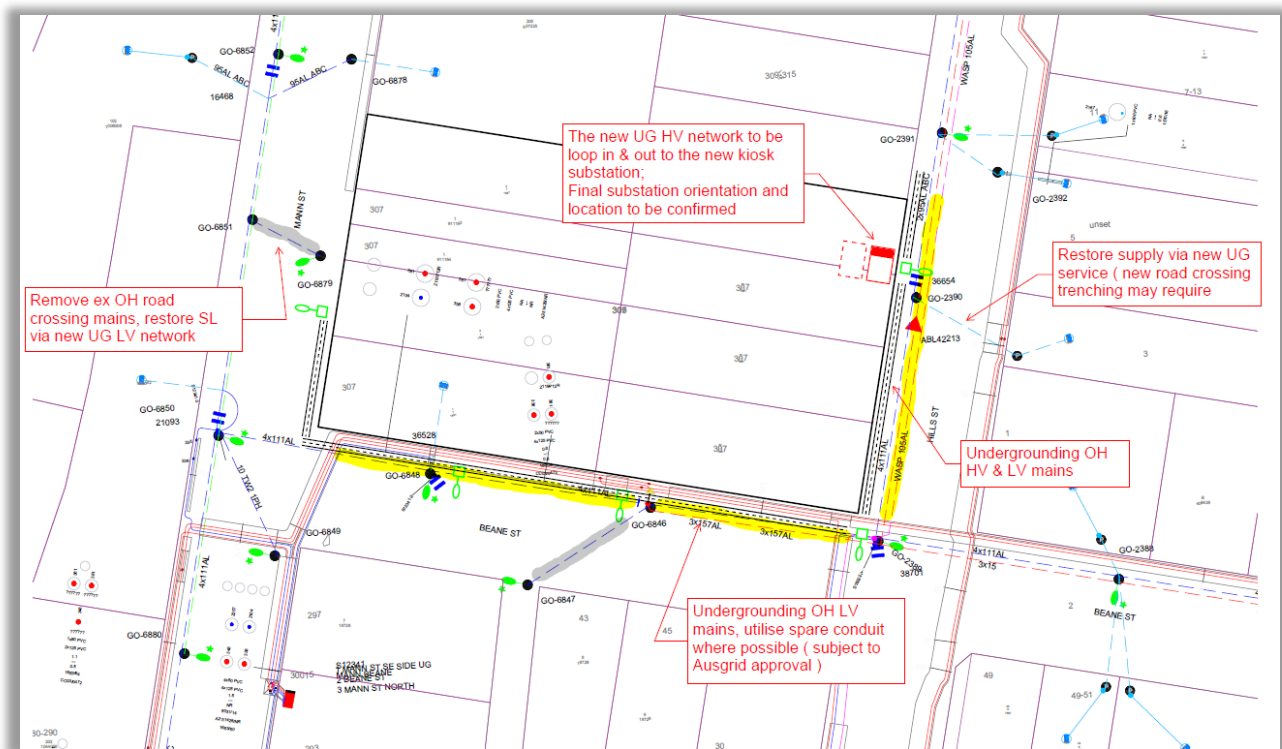
1. Undergrounding all OH mains on Beane St & Hills St
2. Restore public lighting illuminating on Mann St, Beane St & Hills St
3. Install one new Kiosk type substation on Hills St within development premises
4. Reserve vacant land adjacent new kiosk substation for the future second substation (create easement)

Subject to the development construction programming, the OH undergrounding and kiosk substation works are ideally to be undertaken in one single contestable project, but it is possible to undertake the works in stages.

The estimated design timeframe for this work is approximately 6-12 weeks, with the Ausgrid approval process currently taking around 6-8 weeks following design submission.

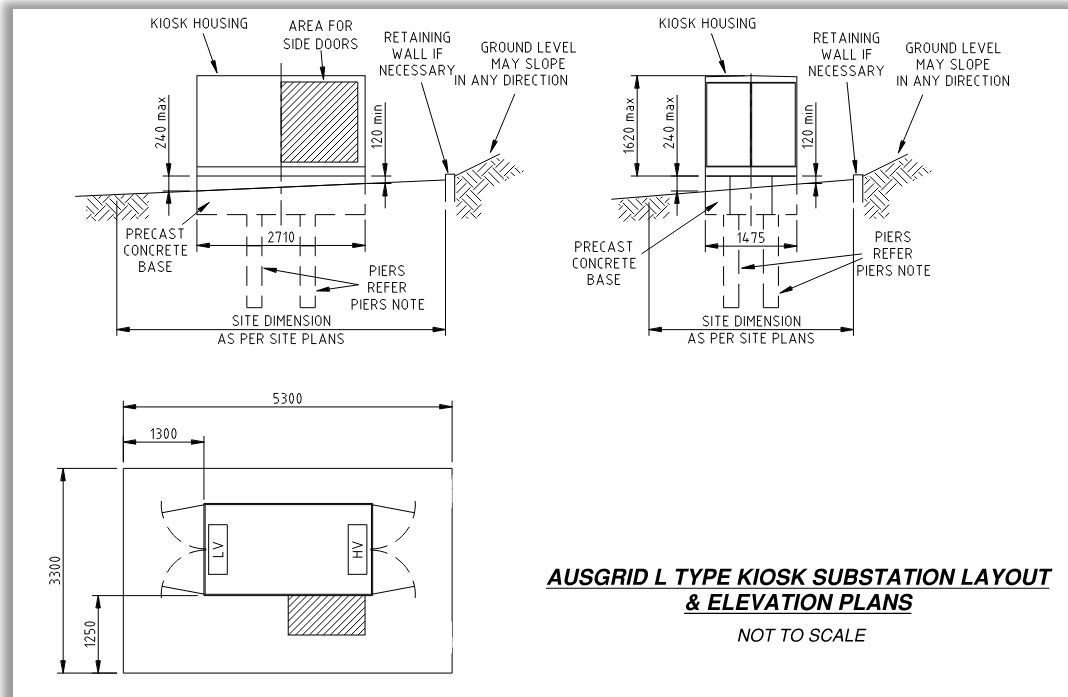
The existing OH elec service may not be suitable to be used as Temporary Builder Supply. A new TBS application needs to be submitted to Ausgrid by the builder, it is likely Ausgrid may approve 400 amps supply for short period of time for site TBS use.

Figure 6 Proposed ASP 3 & substation HV connection diagram



The new kiosk substation type will be standard L type (1000 kVA). The L type kiosk substation easement layout and spatial requirements had been shown as below:

Figure 7 Typical Single Ausgrid L Type Kiosk substation layout



3.3 Estimated ASP3 Construction Cost

| Items | Unit Price | Quantity | Total Price |
|--|------------|----------|------------------|
| New Kiosk Substation | \$150,000 | 1 | \$150,000 |
| Ausgrid Network Alternation (includes trenching and cabling works) | \$1,500/m | 160 | \$240,000 |
| Power restoration to SL & other customers | \$50,000 | 3 | \$150,000 |
| Street Lighting restoration | \$3000 | 5 | \$15,000 |
| Miscellaneous (Traffic Control, Rock excavation, hazardous materials handling etc.) | \$ 100,000 | 1 | \$100,000 |
| Total: | | | \$655,000 |

> The above ASP3 high-level construction cost estimation is associated with electrical works only, any substation relevant architectural and structural costs are not included

4. Telecommunications

4.1 Existing Infrastructure

The current DBYD information indicates that there are in-ground communication services which run along the Mann St and Beane St boundary of the development. The telecommunications services listed below are available to the development site.

- > NBN co
- > Uecomm (Optus)
- > Telstra
- > TPG (Vodafone)

The dial before you dig has shown that there are several carriers within the area, including NBN, that could be extended to serve this site. The new development will require a new incoming telecommunications feed from Mann St, consisting of lead-in conduits from the nearby NBN pits.

4.1.1 NBN Inground Asset

Existing telecommunications assets run along the Mann Street and Beane Street boundary of the development area as indicated by the green and blue lines in the figure below. An existing NBN pit is located adjacent to the site frontage of Mann Street as well as a conduit running into the site.

With regards to NBN assets that are within the development site, NBN Co will need to be notified of any excavation/removal/relocation of their assets before commencement of any works. Should the builder proceed with NBN infrastructure removal a submission for relocation will need to be submitted to NBN Co., who will send the offer with scope of works along with the invoice will be sent to the client to be accepted.

Figure 8 NBN Co – Mann St

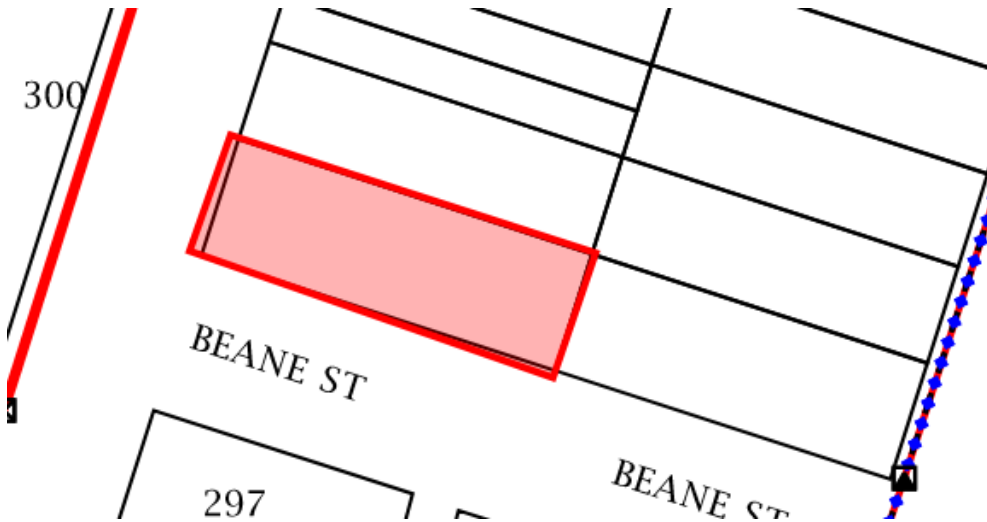


4.2 Uecomm (Optus) in Ground assets

The Uecomm (Optus) telecommunications assets are not available within the vicinity of the development along Mann Street as indicated by the red line.

Further negotiation with the telecom providers is required should the builder decide to extend Optus services to the building.

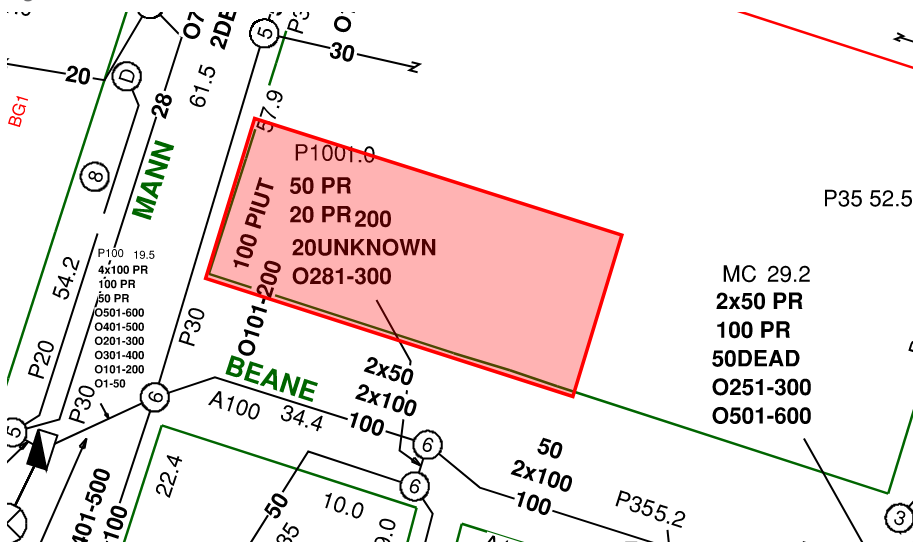
Figure 9 Uecomm (Optus) Mann St



4.3 Telstra in Ground assets

The Telstra telecommunications assets are available within the vicinity of the development along Mann Street as indicated by the black line.

Figure 10 Telstra Mann St



4.4 TPG (Vodafone) in Ground assets

As per the TPG DBYD fibre reticulation drawing, there are no in-ground services available within the vicinity of the development. However, a fibre line exists cross the Mann Street as indicated by the blue line.

Further negotiation with the telecom providers is required should the builder decide to extend TPG services to the building.

Figure 11 TPG Mann St



4.5 Carrier Cell Towers

There are the following carrier cell towers (highlighted in yellow) within the vicinity of development (within 300m) suggesting there will be proper signal coverage for 3G, 4G and potential 5G signal within the outdoors areas. Further RF survey needs to be conducted to measure the signal strength on-site.

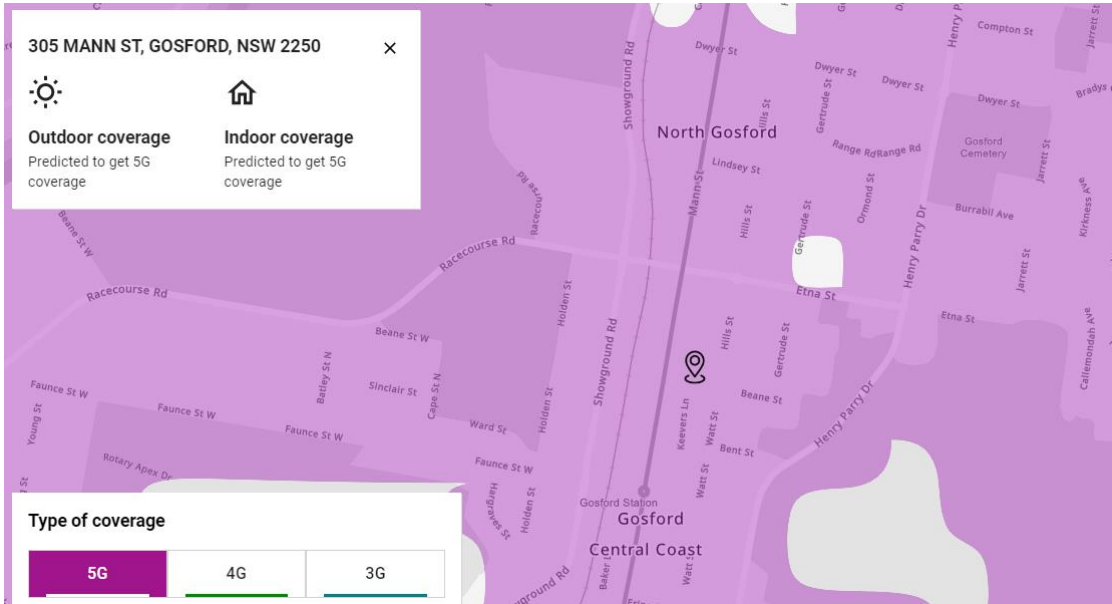
Figure 12 Mobile Telephone cell towers



4.6 Telstra - 5G Coverage

Currently, it is expected that there is Telstra 5G coverage available in the area. The purple indicates the good 5G signal coverage within the outdoor areas.

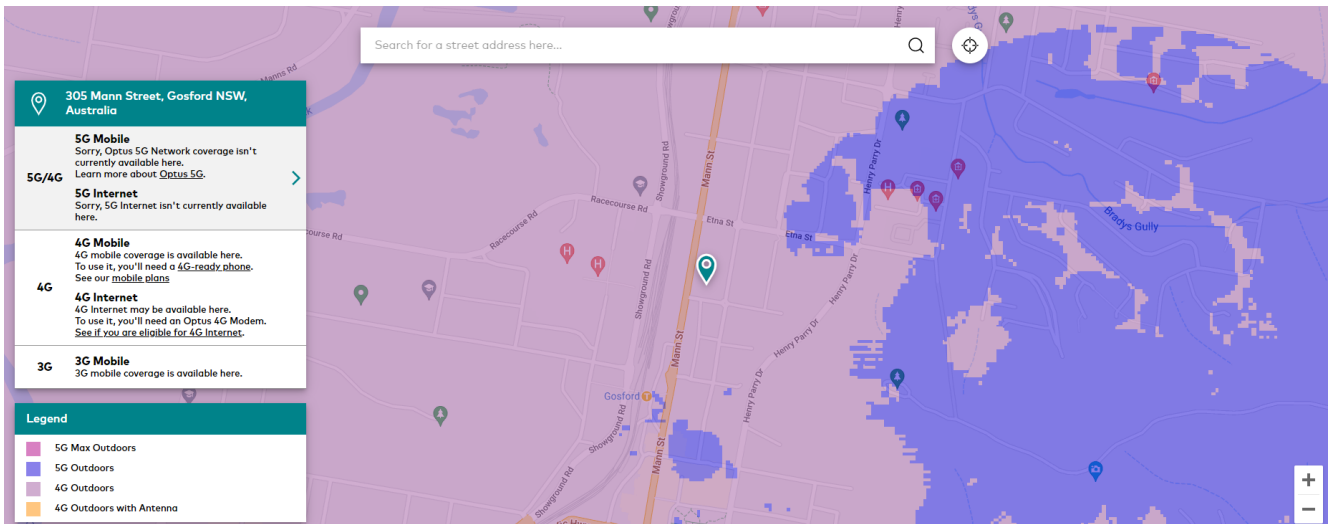
Figure 13 Telstra – 5G



4.7 Optus - 5G Coverage

Currently, it is expected that there is not Optus 5G coverage available in the area. The purple indicates the good 5G signal coverage within the outdoor areas. It is predicted that there will be 5G in the future.

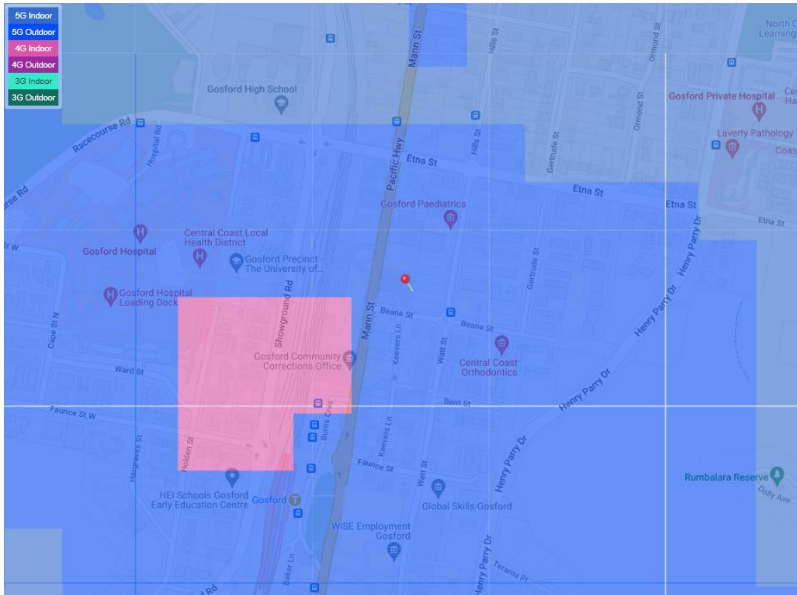
Figure 14 Optus – 5G



4.8 TPG (Vodafone) - 5G Coverage

Additionally, it is expected that there is TPG 5G coverage available in the area. The purple indicates the good 5G signal coverage within the outdoor areas.

Figure 15 TPG – 5G



4.9 New Works Associated with Telecommunications Infrastructure

The new development will require a new incoming telecommunications feed from the frontage of the development site.

The final connection point is up to the discretion of the telecommunications network operator.

Applications to telecommunications providers should always be made at the first convenience once the exact final requirements are further identified and confirmed to avoid potential delays

5. Water & Sewer Infrastructure

5.1 Existing Infrastructure

5.1.1 Sewer

The DBYD information provided by Sydney Water indicates:

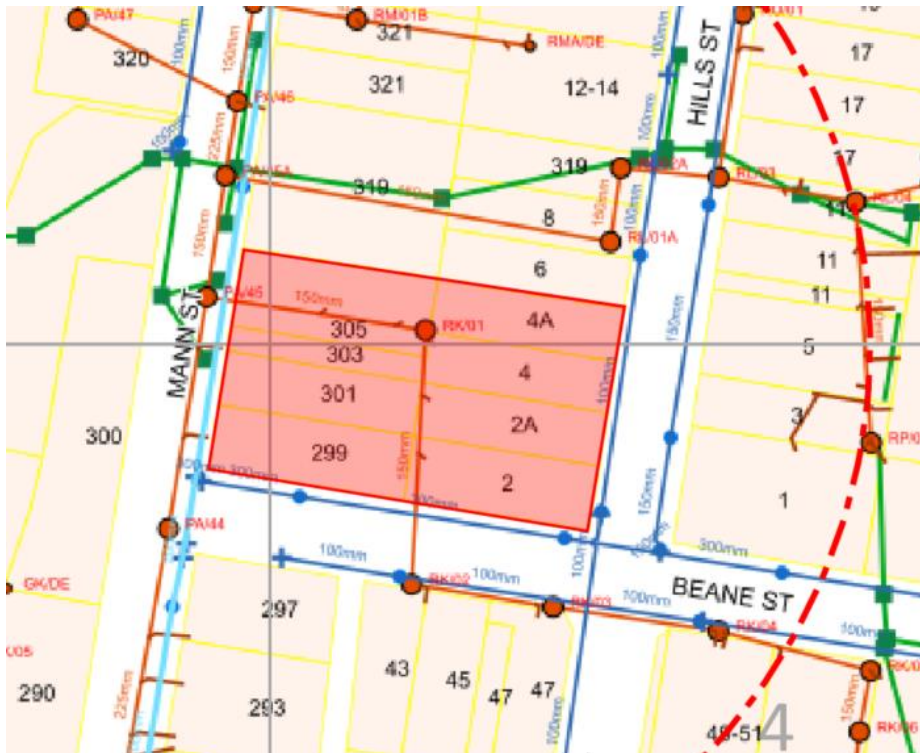
- > An existing Ø150mm Central Coast Council sewer main runs along the eastern side of Mann Street
- > An existing Ø150mm Central Coast Council sewer main runs along the southern side of Beane Street
- > An existing Ø150mm Central Coast Council sewer main runs through the site connecting from Beane Street to Mann Street via a manhole central to the site.

5.1.2 Water

The DBYD information provided by Sydney Water indicates water mains local to the site along Mann Street and Beane Street.

- > An existing Ø225mm asbestos water main is located on the eastern side of Mann Street
- > An existing Ø300mm water main is located on the northern side of Beane Street
- > An existing Ø100mm water main is located on the southern side of Beane Street
- > An existing Ø100mm water main is located on the western side of Hill Street

Figure 16 Existing Sewer and Water Infrastructure surrounding site



5.2 New Works Associated with Sewer & Water Infrastructure

5.2.1 Sewer

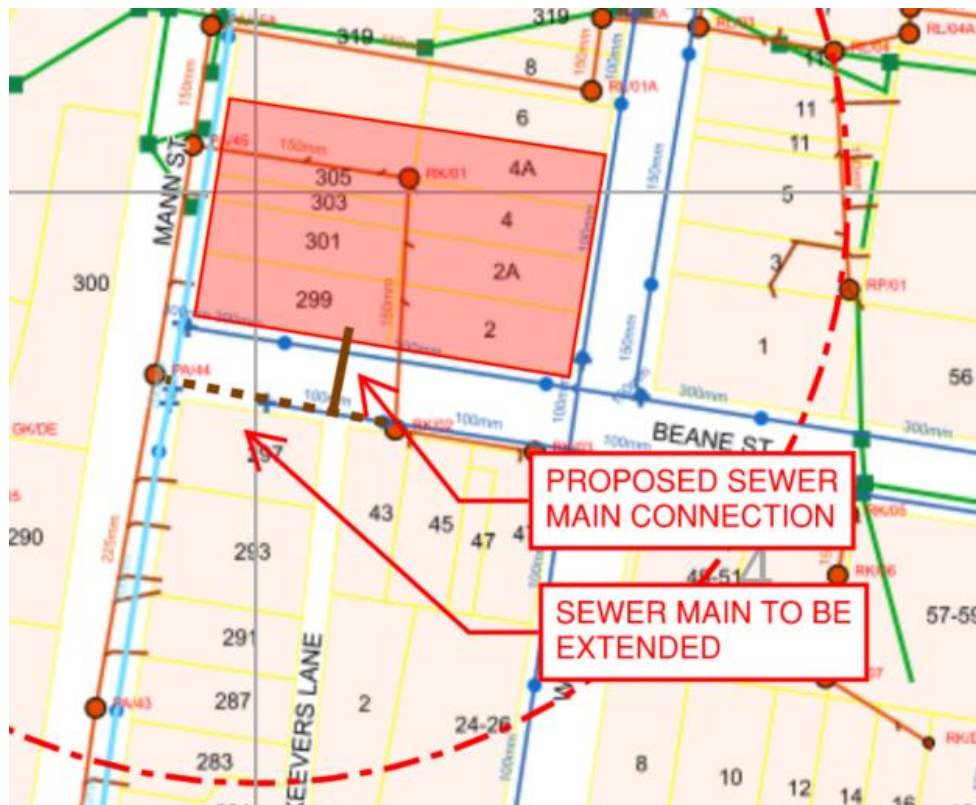
Based on the water and sewer information received by the Central Coast Council the Ø150 sewer main running through the property will have to be disconnected and relocated, or protected. This will be according to the advice received from Central Coast Council upon application of the Section 305. However, it is proposed that the sewer main along the south side of Beane Street be extended to directly connect into Ø150 sewer main on Mann Street. This will serve as the new connection for the site.

The capacity of the redirected sewer main should be adequate for the proposed development. The capability of the main is subject to Central Coast Council requirements.

Alternatively, a sewer connection to the Ø150 sewer main along Mann Street is feasible and is adequate for the proposed development.

The exact location of sewer connection is subjected to Section 306 Notice of Requirements advice.

Figure 17 Proposed sewer main connection point



5.2.2 Water

The water main meter is advised to be located on the south-western end of the site and is to be connected to the Ø300mm water main. The boundary water meter is to have a backflow prevention assembly at the frontage of the property.

The exact location of potable water supply connection is subjected to Section 306 Notice of Requirements advice.

5.3 Risks

The following items will need to be confirmed during the design development process to determine the development sewer drainage and water demand:

- > Fixture and Loading Units for the proposed building (respective sewer drainage and water services demand for the development).
- > A pressure and flow inquiry will be required to confirm any requirements for water or fire services booster pumps.
- > Central Coast Council Approved Engineer is required to be engaged for liaison with Central Coast on the application, to coordinate design of sewer protection service in accordance with advice received by Section 306 notice of requirements.

5.4 Section 305/6/7 Application

A Section 305 application will be required by Central Coast Council to achieve council compliance. It is assumed that the sewer main running through the property will be flagged as a critical asset in the zone of influence and be subject to the advice received by Central Coast Council and the Section 305 application.

The application will include the Development Application (DA) details and DA stamped plans, and be processed by Central Coast Council. A notice of requirements will be received prior to issuing of the Section 306, detailing the required water and sewer works.

The Section 306 will require payment of the council contributions prior to approvals.

Plans rectifying the issues flagged by council will be required to be issued and assessed. Upon acceptance and final installation the Section 307 will be awarded, and compliance achieved.

5.5 Estimated Construction Costs

Connection costs to the site will be approx. \$5,000 for water services and \$120,000 for sewer services and deviations/protection.

6. Gas Infrastructure

6.1 Existing Infrastructure

The DBYD information provided by Jemena indicates:

- > A 50mm nylon, 210kPa medium pressure gas main along the northern side of Beane Street
- > A 160mm polyethylene 210kPa medium pressure gas main along the western side of Hills Street

Figure 17 Existing Jemena Gas Infrastructure



6.2 New Works Associated with Gas Infrastructure

The existing 50NY 210kPa gas main along Beane Street should be sufficient to serve the proposed development if required. The location of the property boundary regulator assembly shall be at the frontage of the property boundary at Ground Level.

6.3 Risks

The following items will need to be confirmed during the design development process in order to determine the development gas demand:

- > Gas load (MJ/hr) for the proposed building (residential and retail gas loads demand, special plant or equipment requiring gas, etc).
- > Jemena yet to be notified of the new works via application.

6.4 Estimated Construction Costs

Connection costs for gas are expected to be approximately \$6,000 for the site based on the immediate proximity of services.

6.5 Electrification Option

Consideration of a gas mains connecting should be made as developers are now thinking to the future and removing gas from sites, especially new developments.

Reasons for removal of gas from site:

- > The price of gas is increasing
- > The ability to use clean energy to power the site
- > Futureproofing
- > Greenstar ratings (fossil fuels not possible on a Greenstar site)
- > Ability to offset dependency on the grid due to onsite energy generation (i.e. PV panels)
- > Safety considerations
- > Net Zero capabilities
- > Automation

ADP recommend a zero fossil fuel site.

End

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