Report

Utilities Report

WSU BANKSTOWN CITY CAMPUS PROJECT
Western Sydney University

CONFIDENTIAL

Revision: 3.0 - Issued for DA Submission
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A TETRA TECH COMPANY

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1 EXECUTIVE SUMMARY

NDY have been engaged by Western Sydney University to complete the Utilities Report associated with the new Western Sydney University (WSU) Bankstown City Campus Development in Bankstown, Sydney. This report has been prepared for submission as part of the Environmental Impact Statement (EIS). NDY have been engaged to prepare an Infrastructure Management Plan for the proposed development in response to item '12. Utilities' within the SEARs application SSD 9831.

This report outlines the outcomes of initial Authority consultation, to determine the capacities of existing services and utilities available for the proposed development. This document is intended to provide sufficient information to demonstrate servicing can be provided to support the proposed development. In general, it should be noted that formal applications to relevant authorities for site servicing/supply can only be made after Development Consent has been granted.

The key items within the report include:

- Preparation of an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation and easement requirements of the development for the provision of utilities including staging of infrastructure.
- Preparation of Integrated Water Management Plan detailing any proposed alternative water supplies, proposed end uses of potable and non-potable water, and water sensitive urban design.

Sections 3.3 and 4.2 of the report relating to Stormwater Drainage and Water Sensitive Urban Design have been provided by Bonacci, as the Civil Engineers for the project.

2 SITE DESCRIPTION

The Bankstown City Campus Development (BCCD) is a key component of Western Sydney University's Western Growth Program. The project, entailing a stand-alone vertical campus and University/Education Space use building on an undeveloped site in Bankstown Central Business District, will facilitate the relocation of most programs from the existing campus at Milperra into new facilities that support new modes of working, learning and research, with scope to accommodate future growth.

The project site, located at 74 Rickard Road, is owned by Canterbury Bankstown Council, and subject to a Lease agreement between the Council and the University. The site is within the Civic Precinct, located next to Council office and chambers, Bankstown Knowledge Hub and the Bryan Brown Theatre, and Paul Keating Park. On the east side of the site The Appian Way, a partially pedestrianised roadway, links from Rickard Road south to Bankstown Railway Station.

Project Description:

The building characteristics are as noted below:

- **Basement**: The Bankstown City Campus development has two levels of basement, accommodating carparking, loading & delivery, building management office, end of trip facilities and building services plant.
- **Ground Level**: The Ground Level concept is to create a porous building, connected to its external context, drawing both landscape and visitors into the Ground Level, and continuing through to the levels above. Key entry points provided at the centre of the Rickard Road and Paul Keating Park frontages, connected by an internal 'University Street', punctuated by an atria and escalator route that provided a visual and physical connection that extends to high student use spaces above. The ground level also contains 3 retail tenancies which are proposed to food and beverage tenancies.
- **Levels 1 & 2**: Level 1 & 2 are the largest floor plates of the Bankstown City Campus Development with Net Lettable Area each of approximately 2,300m2. A greater floor to floor height has been provided to both these levels of 4.32m, offering a flexible expansive floor for range learning programmes, particularly to the north where the column spacing extends to 12m.
- **Level 3**: Situated between high occupancy levels above and below, including the Library, Level 3 has been identified as a real destination space within the building for students and visitors. It's proposed that level will accommodate the Student Hub and provide valuable breakout and study space between classes for students.
- **Levels 4-6**: Levels 4 to 6 are proposed to house a variety of University Workspace, Research and Learning accommodation, including the Library at Level 4, situated directly above the Student Hub below. The levels are served by escalators, was well as lifts. The large rectangular flexible floor plate allows for a range of learning accommodation, including larger rooms to the north, where the column spans are at their greatest.
- **Level 7**: Levels 7 is the final level served by the escalators. The Collaborative Space is envisaged as another destination hub, facilitating spaces designed to foster a strong cross disciplinary collaboration and learning culture between University Staff, students and industry partnerships.
- **Levels 8-12**: Levels 8 to 12 form the mid-tower, with access via the passenger lifts. The levels are expected to accommodate a variety of University Workspace and Learning Spaces. A series of balconies are provided at each floor the south-west façade allowing for external study and breakout areas from the main floorplate.

- **Level 13**: Level 13 had been designed to accommodate a conference facility for the University, catering for up to 300 persons. A generous floor to floor height in excess of 5m has been provided, allowing for large conference rooms with increased ceiling heights along the northern boundary.
- **Levels 14-18**: Upper tower levels form the cantilevered form of the building. These levels allow future growth opportunities for the University as the campus develops. The floors will be fitted out for future to accommodate University growth needs. Terraces are provided to Level 16 and Level 18 overlooking Bankstown CBD to the south, as well as Level 17 to the north. The north east corner of the Level 18 floor plate accommodates the majority of the 'roof' services plant, including building back-up generator, hydraulics plant, and external cooling towers. Additional smaller plant rooms are located at Level 14, 15 and 17, accommodating AHU and stair pressurisation plant.

Early site preparation works will be subject to a separate development application and assessed by Canterbury Bankstown Council.

Early works will include:

- Erection of site hoardings;
- Demolition, including tree removal;
- Bulk excavation;
- Shoring, including temporary anchors;
- Disconnection and/or diversion of services; and
- A new lay-back along Rickard Road leading into Appian Way.

Details of the infrastructure presently within the site and surrounds is detailed within this report. Diversion or disconnection and capping of services traversing the subject site will occur as part of the Early Works DA package

3 INFRASTRUCTURE MANAGEMENT PLAN

3.1 Potable Water Services

The following information has been provided and sourced to inform this report and our assessment of the Potable Water Service.

- Dial Before You Dig
- Discussions with the Water Servicing Coordinator

3.1.1 Existing Potable Water Services

The site has access to the following Sydney Water water mains:

- DN150 uPVC water main within Rickard Road.

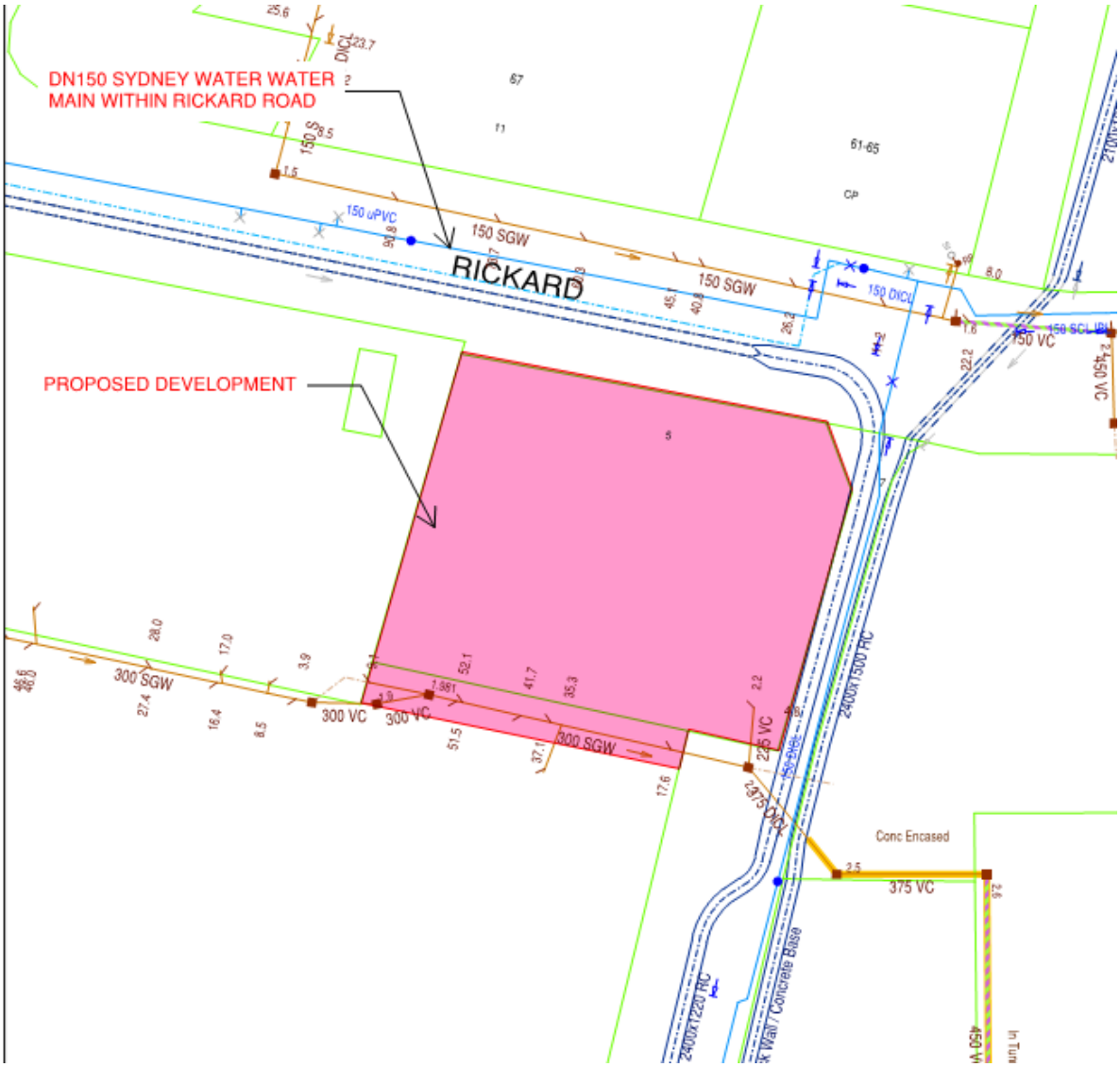

Figure 3.1.1 Sydney Water Infrastructure

3.1.2 Proposed Potable Water Services

The proposed development shall make connection into the DN150 Sydney Water water main within Rickard Road subject to the Notice of Requirements (NOR) received from Sydney Water as part of the Section 73 application to be made by the Water Servicing Coordinator. NDY have received the pressure and flow information from Sydney Water and understand that the water main has adequate capacity to service the potable water and fire fighting demands. The water main size is deemed adequate as per the Water Supply code of Australia WSA-03 table 3.1.

TABLE 3.1

MINIMUM PIPE SIZES FOR PARTICULAR DEVELOPMENTS

ZONING/DEVELOPMENT	MINIMUM PIPE SIZE (DN)	
	Cast iron outside diameter series	ISO series[3]
Low and medium density residential	100 [1]	125 [1]
High density residential (≥ 4 storeys)	150	180
Multiple developments of high density residential (≥ 8 storeys)	200 or 225 [2]	250 or 280 [2]
Industrial and commercial	150	180

NOTES:

1 *The Water Agency may authorise smaller pipe sizes to address issues such as water quality, provided that requirements for fire fighting supply are otherwise met.*

2 *The Water Agency to nominate the preferred size.*

3 *For steel (SCL) and polyethylene (PE) pipes only.*

Figure 3.1.2 Extract from WSA-03

A water servicing coordinator has been engaged by the client to liaise with Sydney Water and lodge a section 73 application once the development approval has been received.

There are no existing or proposed Sydney Water easements within our site as part of this project.

3.2 Sewer Drainage Services

The following information has been provided and sourced to inform this report and our assessment of the Sewer Drainage Service.

- Dial Before You Dig
- Discussions with the Water Servicing Coordinator

3.2.1 Existing Sewer Drainage Services

The site has frontage to the following Sydney Water sewer mains:

- DN150 Sydney Water sewer main within Rickard Road;
- DN300 Sydney Water sewer main traversing the site along the southern boundary of the site.

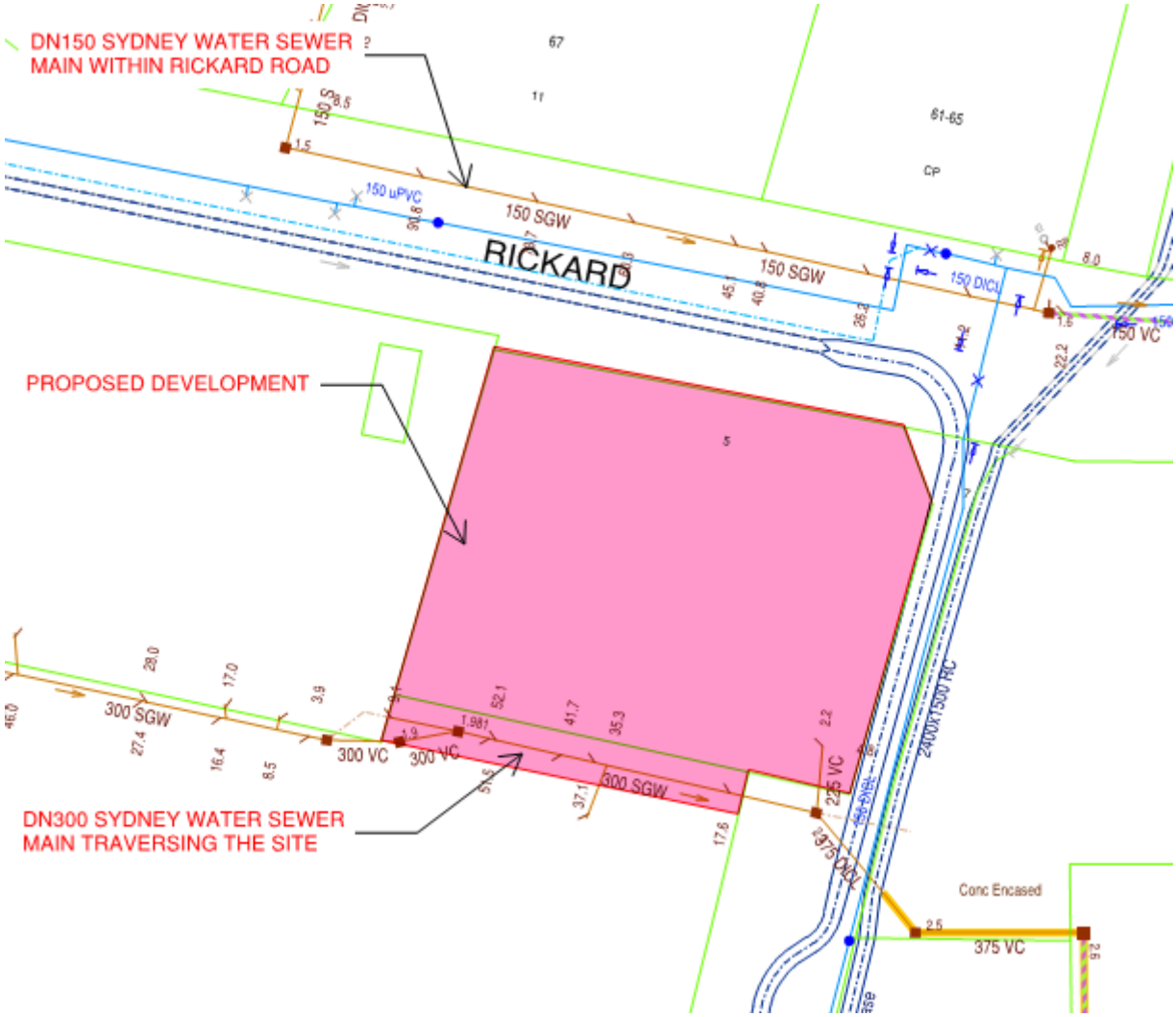

Figure 3.2.1 Sydney Water Infrastructure

3.2.2 Proposed Sewer Drainage Services

The site has an existing DN225 sewer drainage connection connecting into the DN300 Sydney Water sewer main traversing the site. The DN225 sewer connection has adequate capacity to service the proposed development. This will be confirmed by Sydney Water once the Section 73 application is lodged upon receipt of development approval.

The existing DN300 Sydney Water sewer main traversing the site is reticulating within the proposed building footprint. The water servicing coordinator has prepared draft sewer diversion design to re-route the existing sewer main outside the building footprint.

The sewer diversion will form part of a separate early works development application and the design will be lodged with Sydney Water once development consent is received for the Early Works by Canterbury Bankstown Council.

There are no existing or proposed Sydney Water easements within our site as part of this project.

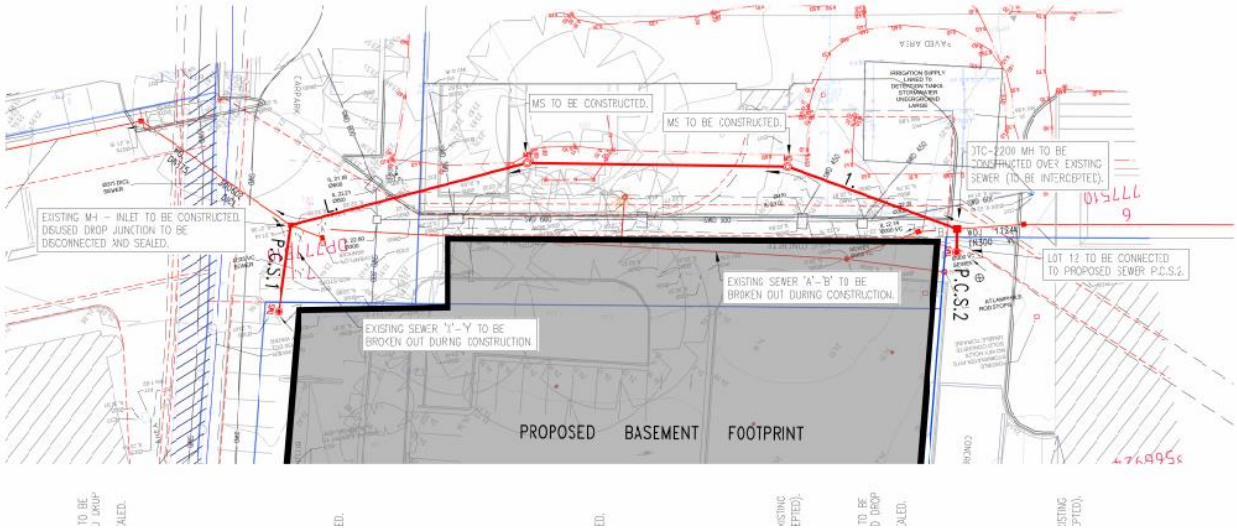

Figure 3.2.2 Draft Sewer Diversion Design prepared by the Water Servicing Coordinator

3.3 Stormwater Drainage Services

Existing stormwater infrastructure exists for the proposed development site. Stormwater runoff for the existing carpark sheet flows from the north to the south from Rickard Road towards Paul Keating Park. Part of this runoff is captured by kerb inlet pits located near the southern site boundary. Runoff on Appian Way is captured by a sag pit at the south eastern corner of the site. It is assumed these pits drain towards the 2.4mx1.5m box culvert running parallel to Appian Way. As the site is flood affected (refer to Civil Design report for further details), the 2.4mx1.5m culvert forms a major channel conveying much of the flood waters past the site.

The development consists of a new grated drain along Appian Way where it connects to the existing Council pits via a new junction pit.

There are no existing or proposed Sydney Water easements within our site as part of this project.

3.4 Natural Gas Services

The following information has been provided and sourced to inform this report and our assessment of the Natural Gas Service.

- Dial Before You Dig
- Discussion with Jemena

3.4.1 Existing Natural Gas Services

The site has frontage to the following Jemena Natural Gas mains:

- DN75 NY 7kPa Jemena Gas main within Rickard Road;

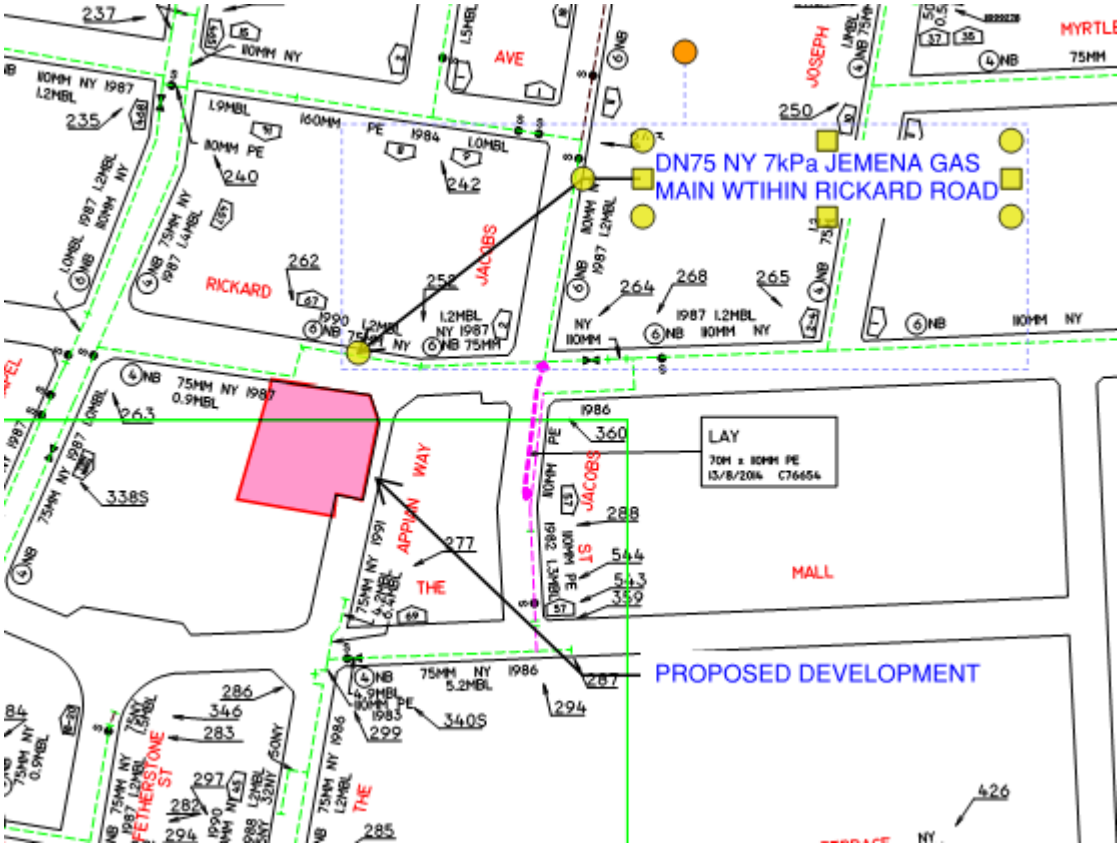

Figure 3.4.1 Jemena Infrastructure

3.4.2 Proposed Natural Gas Service

Natural gas is proposed to be used within the development for the following:

1. Retail Tenancies (assumed food and beverage);
2. Domestic Hot Water System;
3. Mechanical Heating System;
4. Level 13 Kitchen.

NDY have liaised with Jemena regarding the capacity of the existing natural gas main and Jemena have confirmed that the existing 7kPa natural gas main within Rickard Road does not have sufficient capacity to service the proposed development.

Jemena have confirmed that the development can be serviced by extending a new natural gas main off the 210kPa natural gas main located at the corner of Kitchener Parade and Rickard Road. The length of extension is approximately 250m. The natural gas main extension will be completed by Jemena once the connection application is lodged post receipt of the development approval.

There are no existing or proposed Jemena easements within our site as part of this project.

From: Alex Raeside <alex.raeside@jemena.com.au>
Sent: Friday, 8 March 2019 3:16 PM
To: Muralidharan, Ashwin <a.muralidharan@ndy.com>
Subject: RE: WSU Bankstown Campus

Hi Ashwin,

Thanks for your email and apologies for delay in getting back to you.

The 7kPa out the front does not have the capacity to support this load, the supply may need to come from the 210kPa gas network located in Kitchener Parade and be a mains extension down Rickard Rd.

Do you have any further details on the actual meter room location, i.e a site plan of the site so I can review?

Kind Regards

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Figure 3.4.1 Jemena Confirmation Regarding Capacity

3.5 Electrical High Voltage Services

3.5.1 Background Information

The following information has been provided and sourced to inform this report and our assessment of the Electrical High Voltage Infrastructure Service.

- Dial Before You Dig
- Desktop study from Ausgrid WebGIS
- WebGIS CAD drawing

3.5.2 Existing Electrical 11kV High Voltage Services

There are substations in the vicinity of the project site as shown on figure 3.1.

There are 11kV underground cable along the footpath of Rickard Road, opposite to the site as show figure 3.2.

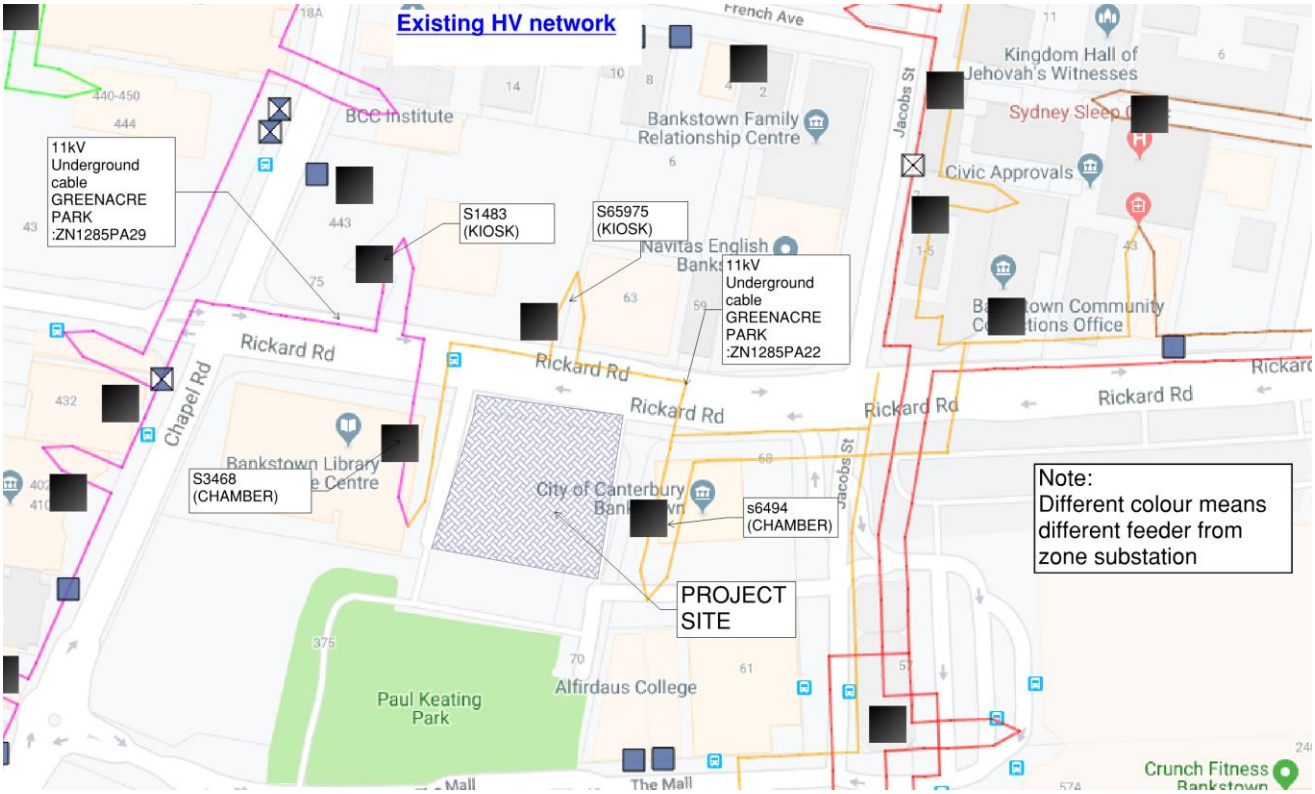

Figure 3.5.1 Proposed 11kV network (Source Ausgrid WebGIS)

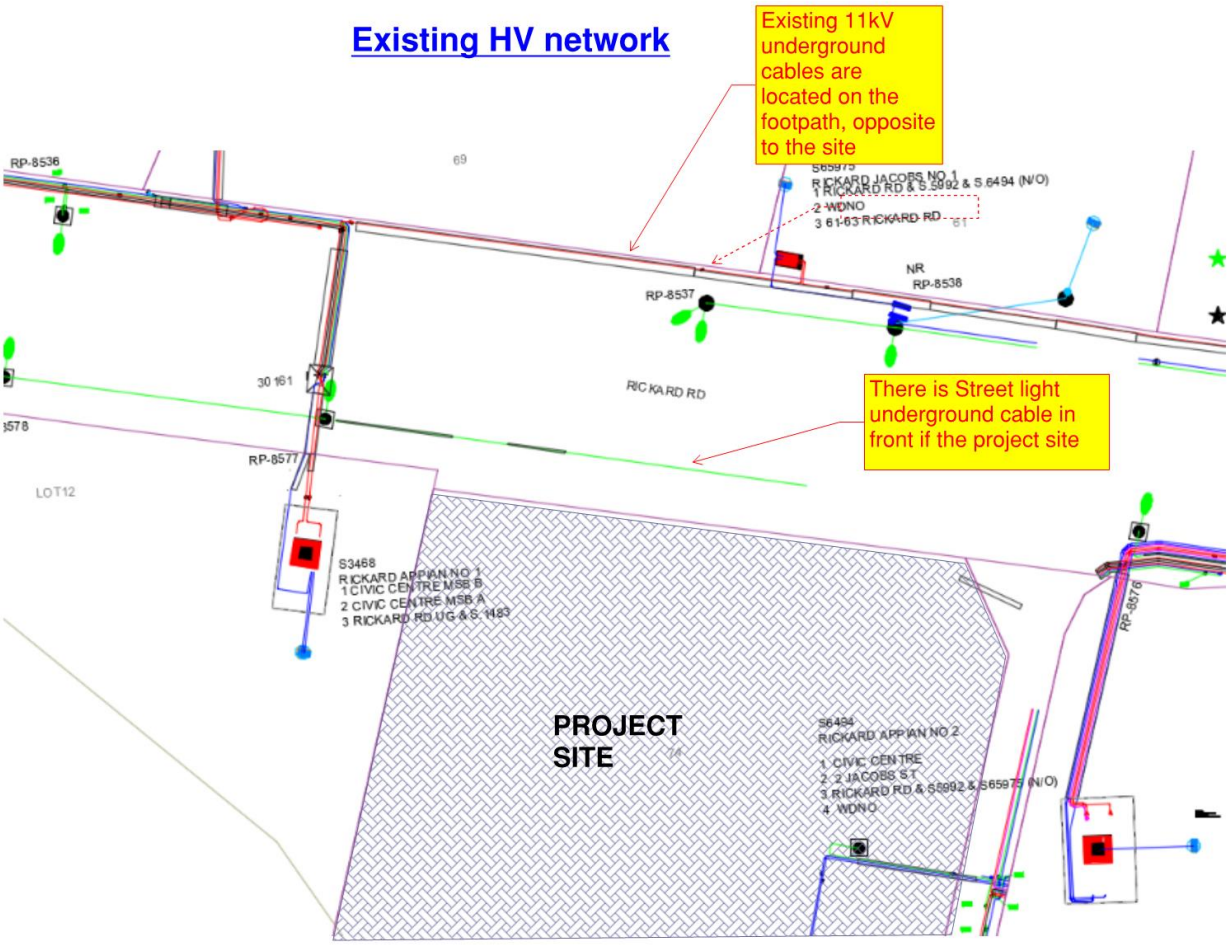

Figure 3.5.2 Proposed 11kV network (Source Ausgrid GIS CAD)

3.5.3 Proposed Electrical High Voltage Services

The maximum demand for the new WSU building is approx. 3500kVA. Therefore one (1) chamber substation with 3 x 1500kVA transformer arrangement is required.

There are existing Ausgrid distribution substations near the new WSU building. Existing substation S3468 is approx. 20m from the proposed substation on site. The location of the proposed substation is shown on figure 3.3 and figure 3.4.

Note: The following is proposal only. The final 11kV network arrangement will be determined in the Design package information from Ausgrid.

The following easements will apply to the development:

- Substation Easement;
- Cable Easement from the property boundary to the substation;
- Right of Way to access to the substation.

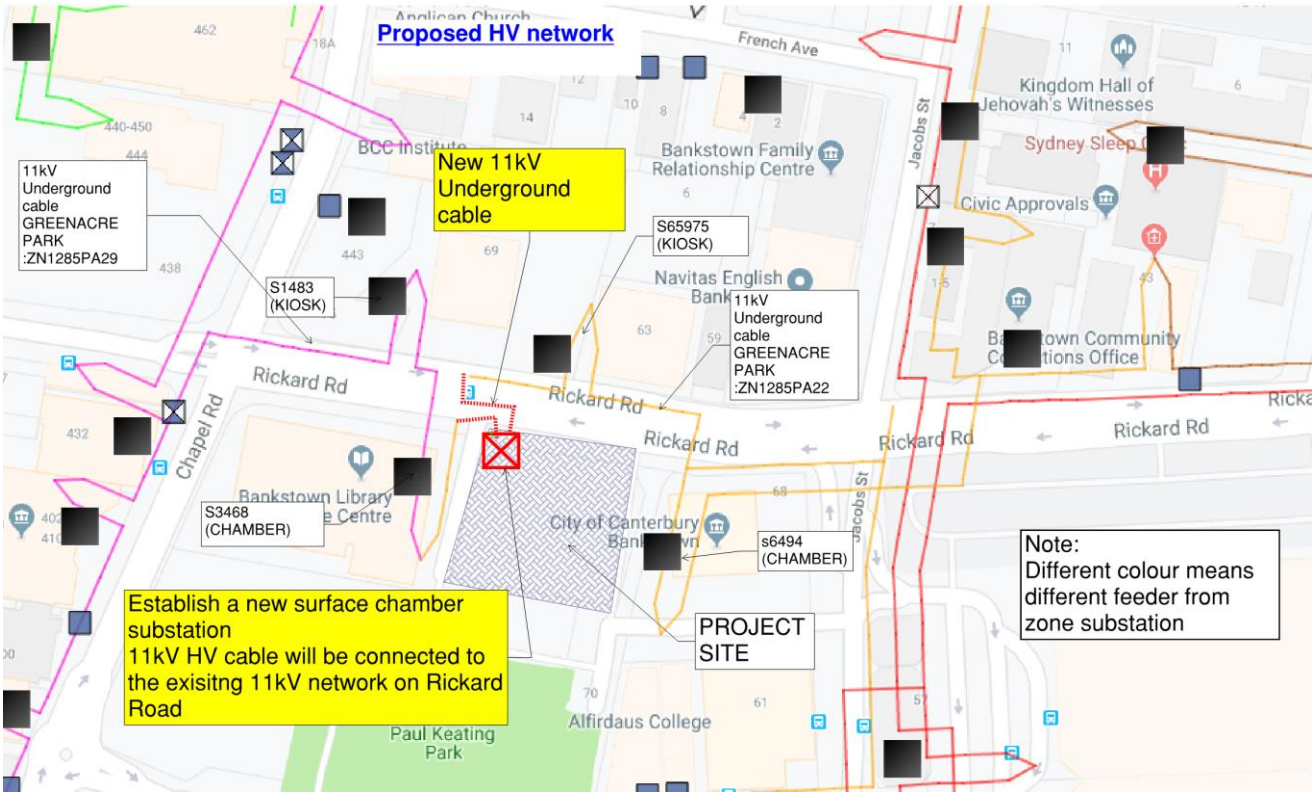

Figure 3.5.3 Proposed 11kV network (Source Ausgrid WebGIS)

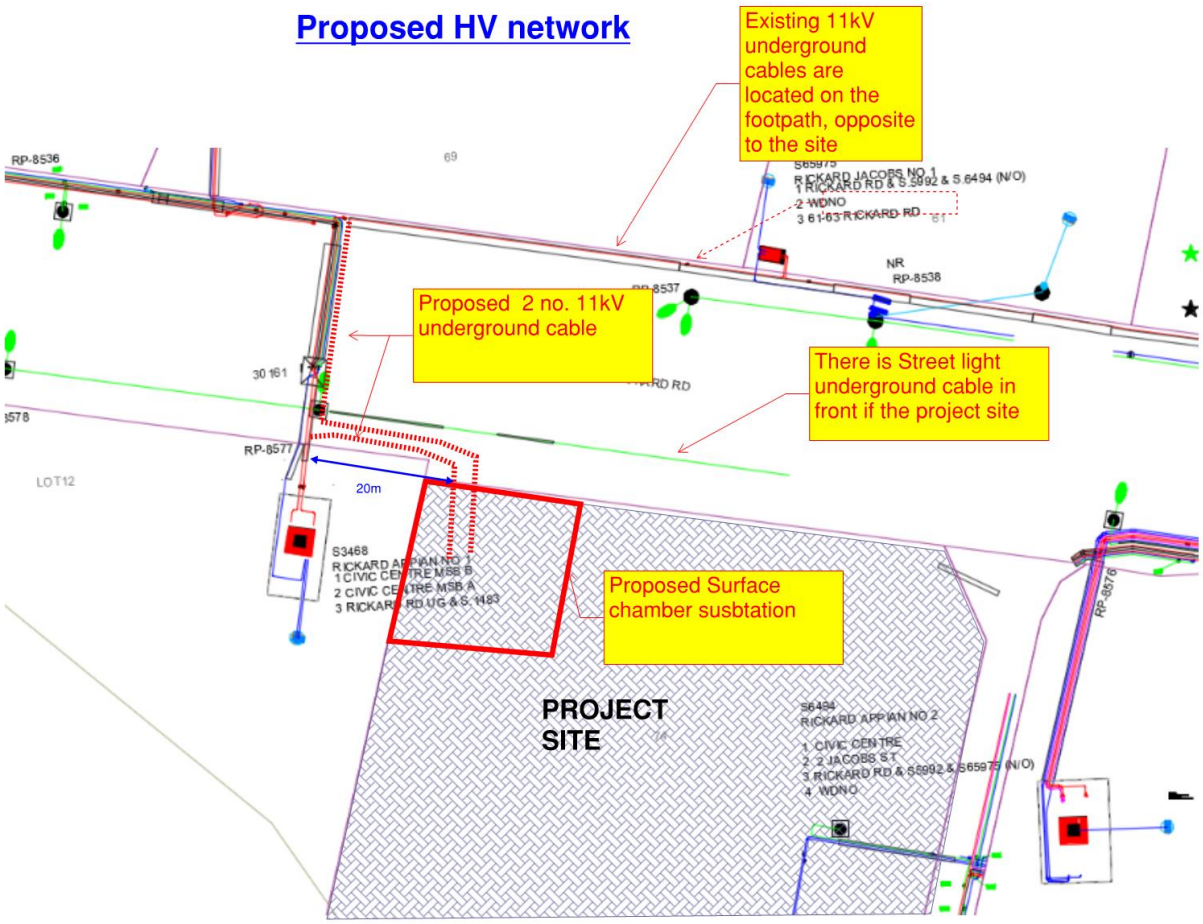

Figure 3.5.4 Proposed 11kV network (Source Ausgrid GIS CAD)

3.5.4 Status.

The maximum demand of 3500kVA requires an additional 184A at 11kV from the existing network, to supply the site.

This is subject to the HV planner information, provided by Ausgrid.

Next Steps

NDY to prepare and issue the **Application for Connection** to Ausgrid for the proposed new substation on site to confirm that the required load can be accommodated within the network.

3.6 Communication Services

3.6.1 Background Information

The following information has been provided and sourced to inform this report and our assessment of the Communications Infrastructure Service.

- Dial Before You Dig (DBYD)
- Bankstown City Council - Data/Voice Cabling Layout

3.6.2 Existing Communications Services

The site is currently used as council parking lot.

The site has 50pr of copper lead-in cables from the Appian way, however these copper cables are confirmed dead by Telstra DBYD and will not be used as there are NBN services are available in the area. The removal of this obsolete infrastructure will form part of the Early Works DA and subject to a separate consent.

Currently, there is no lead-in fibre cables to the site.

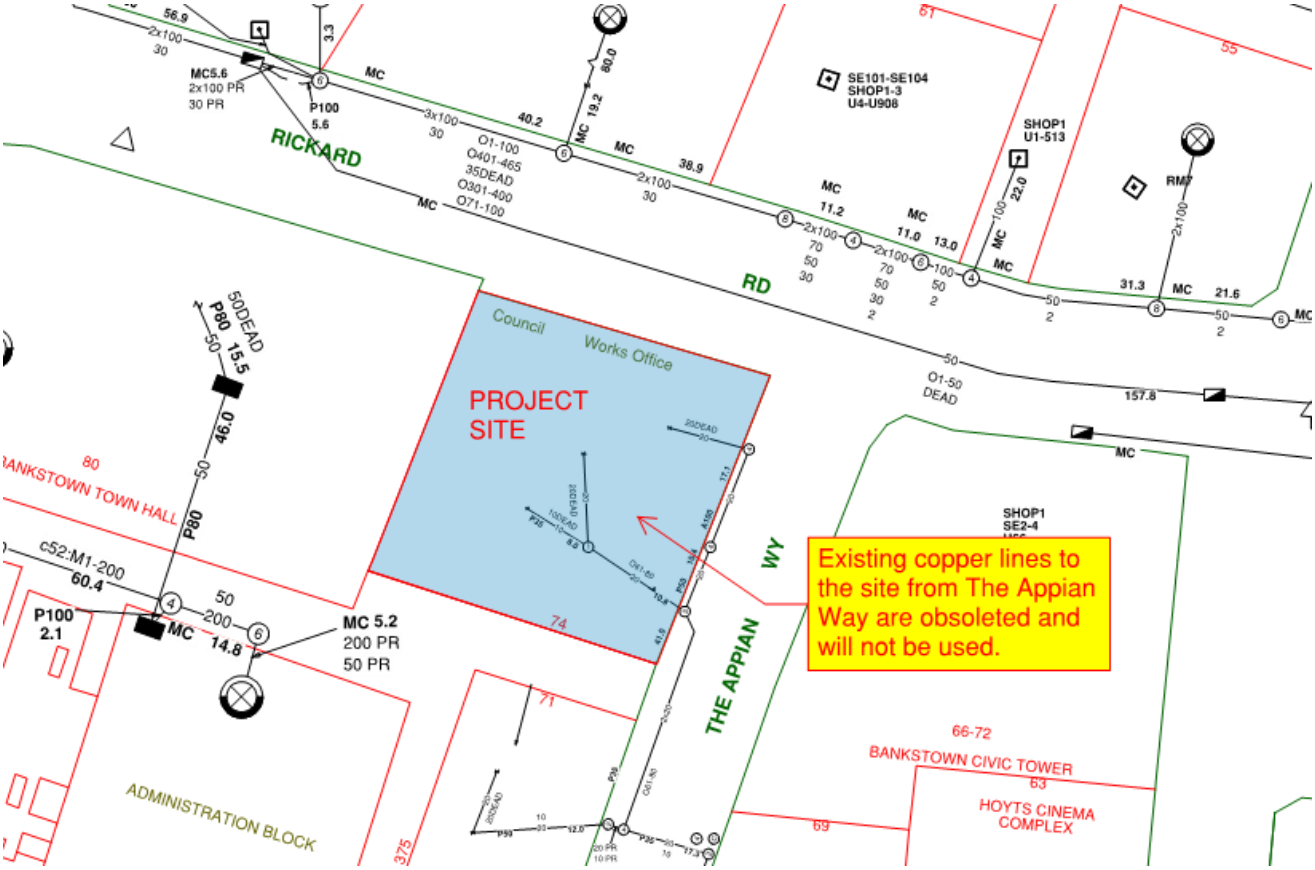

Figure 3.6.1 Existing copper lead-in cabling (Source Telstra copper network)

3.6.3 Proposed Communication Services

It is proposed that Carrier fibre to be run underground from the closest existing pit on Rickard road as shown in Fig.3.5.2.

There are no existing or proposed easements within our site as part of this project.

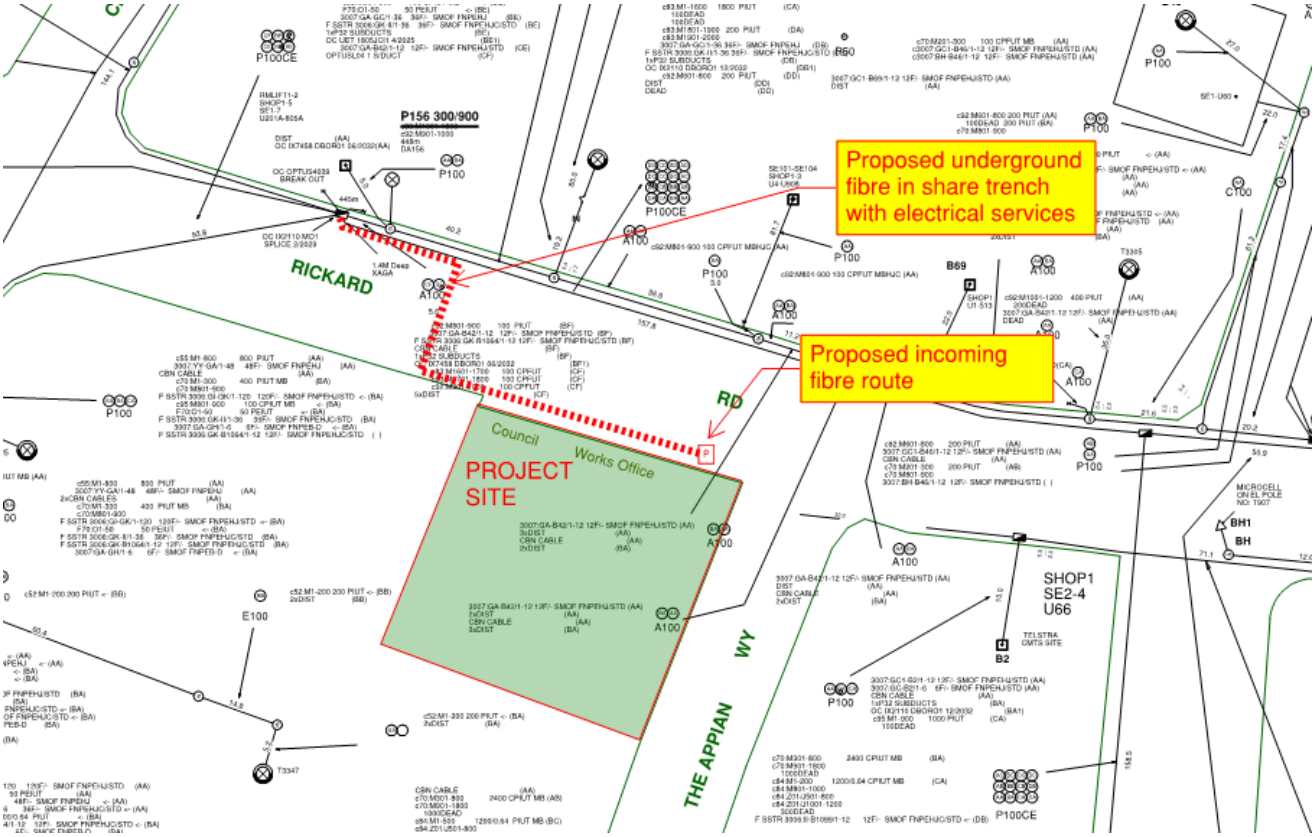

Figure 3.6.2 Proposed route for incoming fibre cabling (Source Telstra Fibre Network)

4 INTEGRATED WATER MANAGEMENT PLAN

4.1 Non-Potable Water Services

The proposed development includes a 45kL rainwater tank that captures the entire roof drainage. Rainwater is being re-used for toilet flushing and irrigation. The rainwater re-use system consists of:

- Dual non-potable water pumpsets duty / standby arrangement;
- 50 Micron Bag Filters;
- Dual Backwash Filters;
- Dual UV Filters.

The recycled rainwater reticulates within the hydraulic riser located at the core of the building. The non-potable water services are metered at each level to monitor the consumption. The meter is wired back to the Building Management System (BMS).

The rainwater tank is provided with domestic water top up from the authority towns main system.

4.2 Water Sensitive Urban Design

The proposed development demonstrates Water Sensitive Urban Design through rainwater reuse and enviropod filtration. The development constitutes an improvement in water quality as the existing carpark is to be replaced by a new roofed area. The rainwater tank captures roof areas for rainwater re-use. Overflow will flow towards the OSD where it discharges to an enviropod on Appian Way for further water quality treatment. Appian Way draining to the grated drain also gets treated by the enviropod. The proposed development meets Greenstar water quality requirements.

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