Report

Infrastructure Management Plan

CENTRE OF EXCELLENCE IN AGRICULTURAL EDUCATION (COE)
School Infrastructure NSW

CONFIDENTIAL

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A TETRA TECH COMPANY

Table of Contents

1 EXECUTIVE SUMMARY

NDY have been engaged by School Infrastructure NSW to complete the Utilities Report associated with the new Centre of Excellence in Agricultural Education (CoE) Development in Hawkesbury, 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 '13. Utilities' within the SEARs application SSD-15001460.

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.

2 SEARS ITEMS ADDRESSED

This report addresses how the proposed project addresses Item 13 of the SEARs and outlines strategies relating to Utilities. These requirements are outlined below alongside where the response to each can be found within this report;

Item	Action to Address the Requirement	Report Location
A site plan showing all infrastructure and facilities (including any infrastructure that would be required for the development, but the subject of a separate approvals process).	This IMP report details the hydraulic and electrical services infrastructure available to service the proposed development. This report also includes details regarding augmentation / amplifications required to service the proposed development	Relevant engineering discipline section.
13. Utilities 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. • 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.		

3 SITE DESCRIPTION

The site is identified in Figure 1 and is located within an area of the Western Sydney University Hawkesbury Campus, at 2 College Street, Richmond, NSW. The Western Sydney University Hawkesbury Campus land is described as Lot 2 DP1051798 and is within the Local Government Area (LGA) of Hawkesbury.

The site subject of this EIS, being a part of Lot 2 DP1051798, has been historically vacant and utilised for grazing purposes. To the north-east of the site are the Western Sydney University Hawkesbury Campus buildings which comprise of many buildings of varying sizes and age.

The site is approximately 12.2ha in area. To the north of the site are a number of university student residential townhouses, known as the WSU Hawkesbury Village. The Chesalon Nursing Home adjoins the site's north-western boundary. Adjoining the site's north-eastern boundary is the WSU's Microbiology Department. Rural land uses adjoin the majority of the remaining site boundaries. The site has a frontage onto an internal university road, Vines Drive.

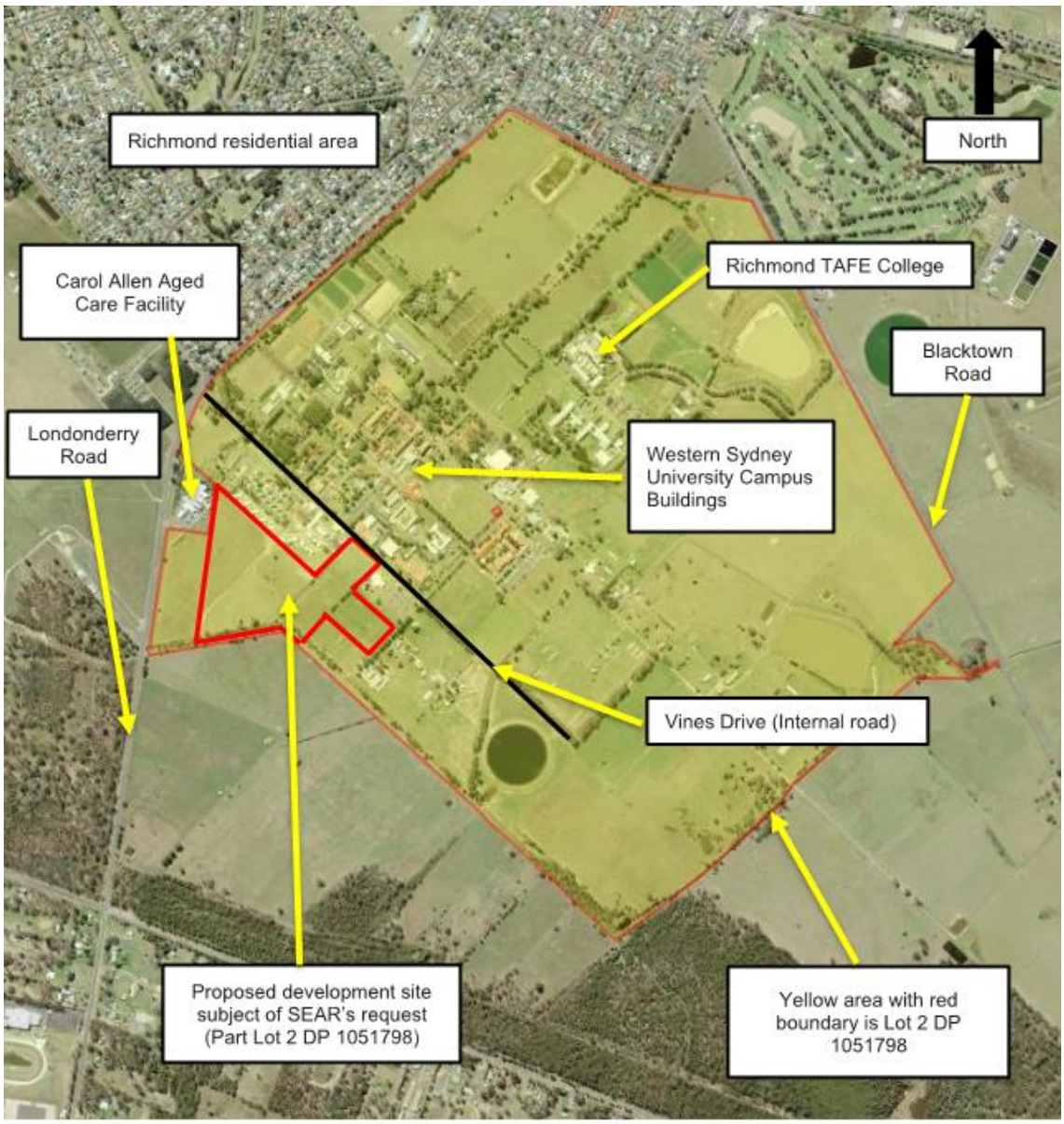

Figure 1 Location plan

(Source Six Maps)

Project Description:

The Centre of Excellence in Agricultural Excellence will support high-quality educational outcomes to meet the needs of its students and deliver:

- Agriculture labs and science labs
- Aboriginal farming enterprise (in partnership with community and industry)
- Pods for partnership work with industry (e.g. vertical farming)
- Flexible learning and collaborative spaces
- Food technology space
- Short term accommodation facilities for visiting students and teachers
- Administrative facilities
- Agricultural enterprises

The Centre of Excellence in Agricultural Education will provide:

- A purpose built education facility that will deliver contemporary agricultural and STEM education programs to students
- Professional learning programs for teachers
- Innovative location within Western Sydney University
- Short-term residential facilities on site to enable education and training opportunities for students and teachers from rural and regional areas of NSW, as well as overseas students
- Educational programs partnering with WSU and TAFE

4 INFRASTRUCTURE DEMANDS

The maximum demand for the site is as follows:

Sl No.	Service	Unit	Maximum Demand	Remarks
1.	Electricity	KVA	462	Based on AS3000
2.	Potable Water	l/s	4.6	peak
3.	Sewer Drainage	490FU ADWF = 0.26 l/s PDWF = 1.88 l/s		Sydney Water Average Water Usage Data
4.	Fire Hydrant	l/s	20	AS2419.1-2005
5.	Fire Sprinklers	No sprinklers required		
6.	Fire Drenchers	No drenchers required		
7.	Natural Gas	MJ/h	1,720	F&B, Domestic Hot Water Plant

5 INFRASTRUCTURE OVERVIEW

5.1 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

Sydney Water own and operate the potable water infrastructure on Londonderry Road that is available for connection.

5.1.1 Existing Potable Water Services

The WSU site (of which the school is leasing the land) has frontage to the following Sydney Water water mains:

- DN200 CICL main within Londonderry Road;

Refer to figure H1 for details.

Figure H1 Sydney Water Infrastructure

5.1.2 Proposed Potable Water Supply

A new potable water connection shall be made to the existing Sydney Water potable water main located within Londonderry Road. Final confirmation of the connection location can only be made after consent is granted.

Though initial investigations have been undertaken with a WSC, we recommend lodging a Sydney Water feasibility application, via a Sydney Water Water Servicing Coordinator (WSC) to confirm the adequacy of the above main for the proposed development once the consent is granted.

The incoming Potable cold water supply shall be provided with a backflow prevention devices and water meter assembly in accordance with the requirements of Sydney Water. Potable cold water supply shall then reticulated to all fixtures and tapware. Metered potable water supply will be provided to each building. Water sub-meters will be provided directly downstream of the local water supply authority meter.

Refer to Figure H2 and Appendix A for site arrangement.

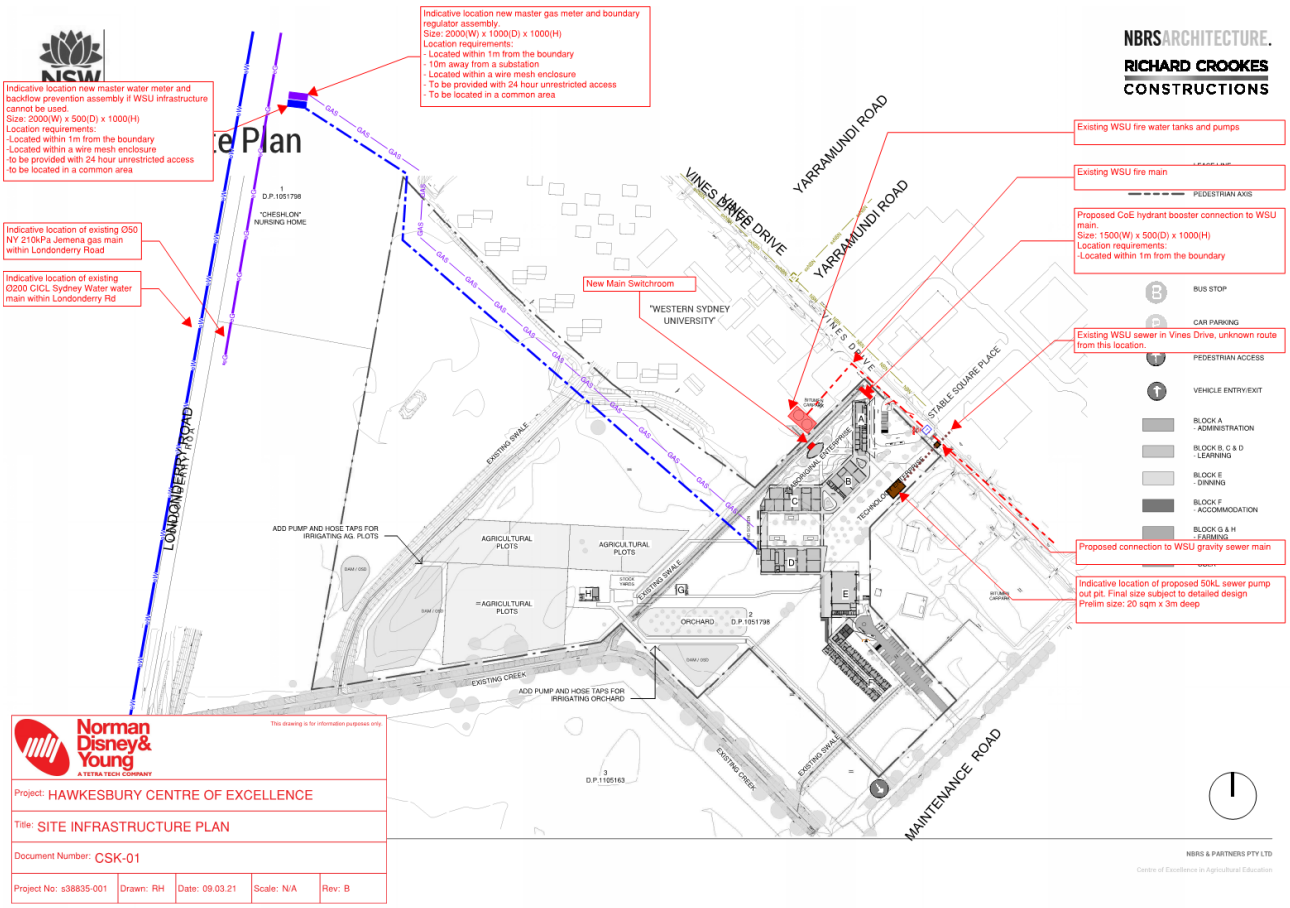

Figure H2 Hydraulics Infrastructure

5.2 Sewer Drainage Services

Gravity flow sewer drainage systems will collect waste and effluent from all fixtures, fittings and appliances from the proposed buildings and discharge into a central sewer pump out pit.

The school site will connect to the existing Western Sydney University (WSU) sewer infrastructure in Vines Drive. A site inspection was undertaken with WSU on the 16th April to confirm connection locations.

A central sewer pump out pit will be sized with an emergency storage volume of 4 hours.

The sewer connection shall be complete with boundary trap, overflow relief gully and IPMF. Venting to waste pipes will be provided to maintain fixture trap seals and adequate flow throughout the systems.

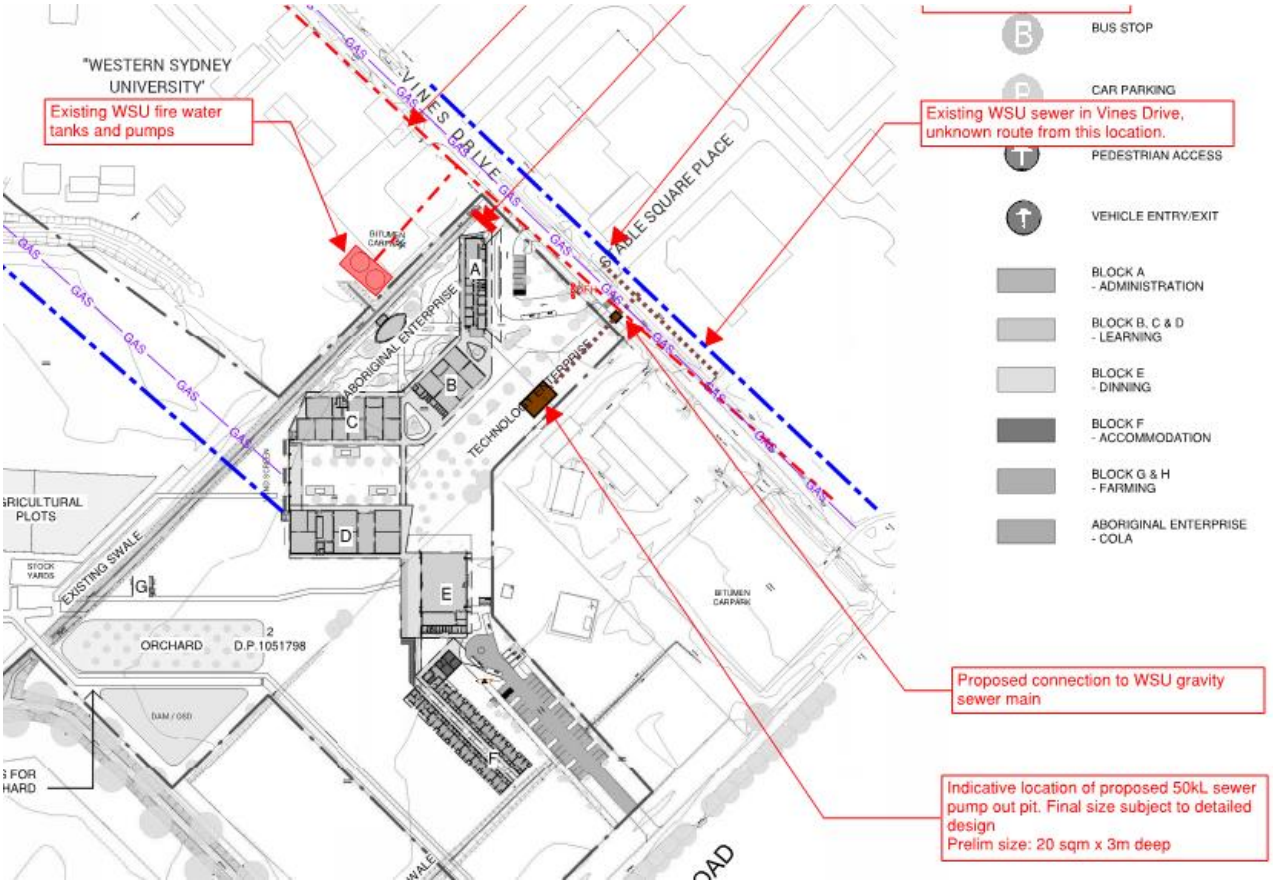

Figure H3 Sewer Connection

5.3 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

5.3.1 Existing Natural Gas Supply

The site has access to the following Jemena natural gas mains:

- 50mm Nylon 210kPa natural gas main within Londonderry Road;
- 75mm Nylon 210kPa natural gas main within Londonderry Road

5.3.2 Proposed Natural Gas Supply

The existing Jemena natural gas mains within Londonderry Road appears to have adequate capacity to service the proposed development works subject to preliminary service advice from Jemena. Final location of connection will be determined during detailed design.

An application shall be lodged with Jemena for connection once building consent is approved.

A master gas meter and boundary regulator assembly and manual shut-off valve shall be installed prior to reticulation within the site. The gas meter and regulator will be located on Londonderry Road.

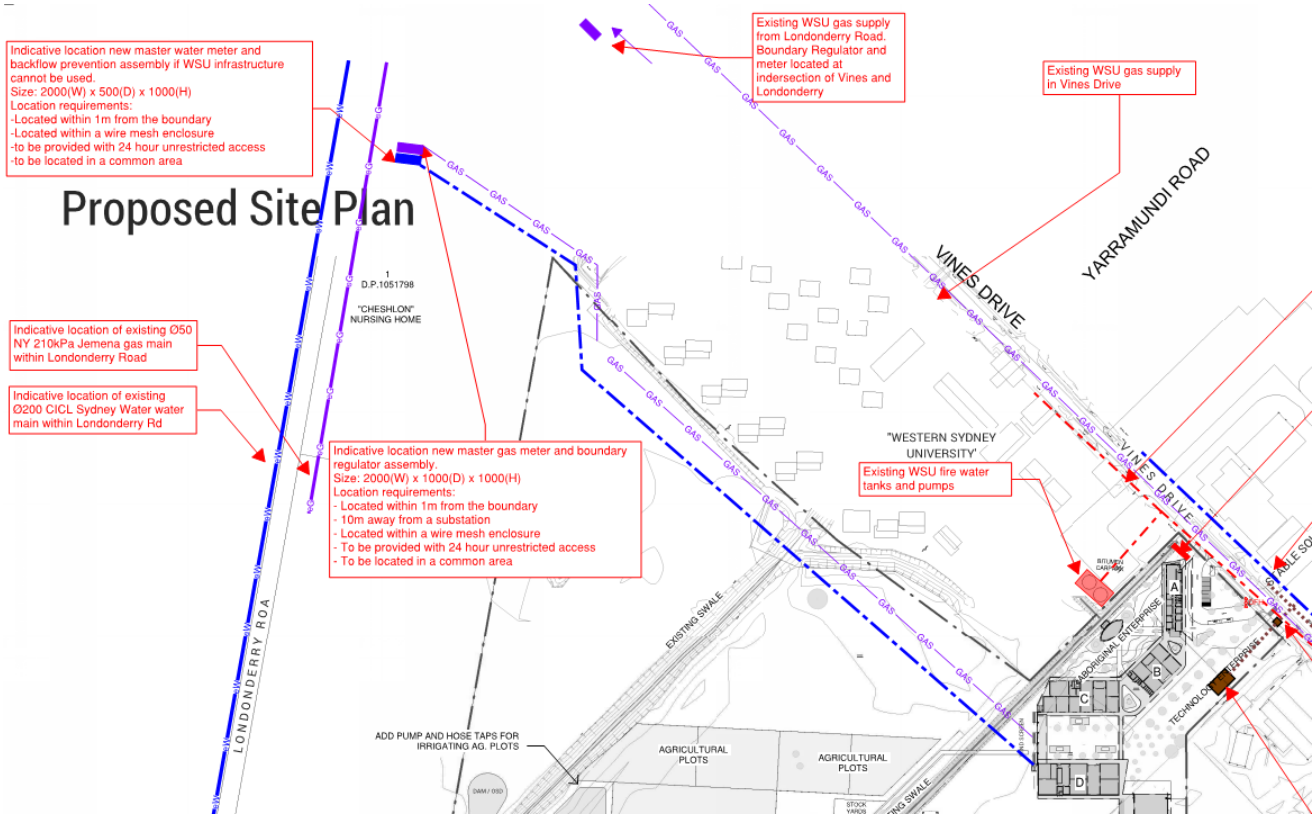

Figure H4 Natural Gas Connection

5.4 Electrical High Voltage Services

5.4.1 Existing High Voltage Supply

The existing WSU campus is supplied with an HV meter near the intersection of Londonderry Road and Vines Drive. A high voltage network reticulates through the WSU campus to several private substations, which provide LV to the various buildings on site. However, WSU has previously stated that the campus's supply is at capacity and there is insufficient spare power available to supply the new development.

5.4.2 Proposed High Voltage Supply

A new electrical supply to the campus is proposed from an Endeavour Energy padmount substation.

The substation is proposed to be located adjacent to the site with a new access road constructed (refer to Figure E1).

The maximum demand for the site is 462kVa and a 500 kVA Endeavour Energy padmount substation will be required to be installed for the development.

The consumer mains cabling reticulation will be via underground electrical conduits and pits to the school's main switchboard (MSB), which will be located inside the main switchboard room (MSR). It is proposed that the MSR will be located in an adjacent building closer to the substation's location.

A high voltage easement will be required from Londonderry Road to the new transformer location.

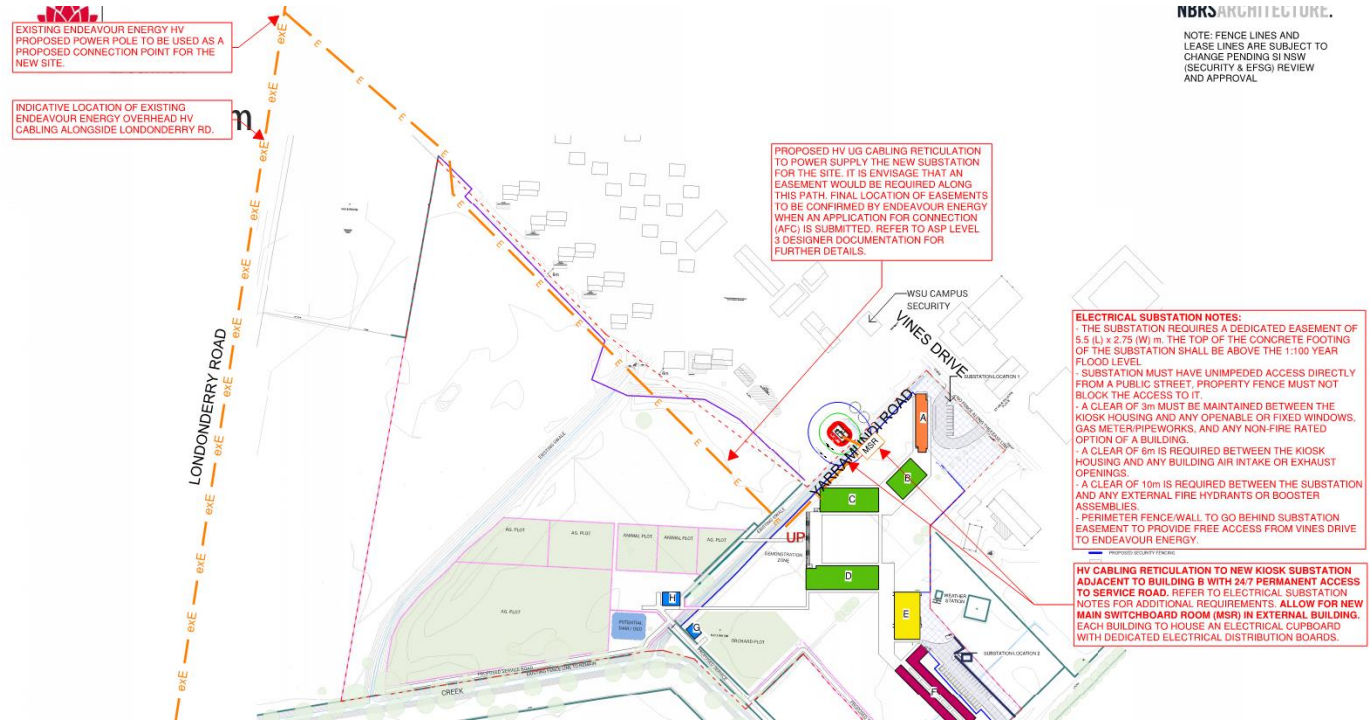

Figure E1: Electrical Infrastructure Site Plan

5.1 Authorities

An application for connection has been lodged and associated ASP Level 3 design works will be required.

5.2 Communication Services

5.3 Incoming Communication Services

Based on DBYD documentation, there is an existing Telstra/NBN pit on the corner of Yarramundi Road and Vines Drive. It is proposed to use this existing pit as the connection point to the NBN network.

The school will be provided with a Telstra Fibre connection (separate to the NBN) which shall service:

- GWIP Service (Government Wideband Internet Protocol)
- Provides connectivity from the school to the departments systems located in the NSW Government Data Centres
- TID Service (Telstra Internet Direct)
  - Provides connectivity from the school to the internet
  - Provides telephone services using SIP and VOIP phones

New NBN/Telstra pits and lead-in conduits will be terminated in a new main communications room to be located in Building A, which is a preferred location as this building is a secure, staff-only area on the campus. New pits and associated underground conduits are proposed to be installed as per Figure 2 below for Lead-in optic fibre reticulation.

Figure 2: Communications Infrastructure Site Plan

6 INFRASTRUCTURE DELIVERY AND STAGING

As there are no existing buildings on the site, there are no particular staging requirements for the infrastructure works.

The below table outlines the approval pathways, time lines and funding responsibilities of the different authority approvals required for the Project.

Service	Authority	Process	Funding Responsibility
Power	Endeavour Energy	– Engage Level 3 Designer – Submit application for connection – Receive Design Brief – ASP Design and 40 day notice – Submit Design – Authority review – Resubmit design – Authority approval – Construction	Project / Builder
Communications	NBN	– Submit application – 15 days for offer – Client accepts offer – NBN Design, appointed builder engages accredited installer.	Project / Builder
Communications	Telstra	– Submit application – 15 days for offer – Client accepts offer – Telstra Design and Construct	NSW Department of Education
Water & Sewer	Sydney Water	– Engage Sydney Water accredited Water Services Coordinator (WSC) and lodge section 73 application – Water connection application via tap in – Authority review and approval – Sydney Water meter procurement by contractor and inline pumping application via tap in – Builder to manage construction	Project / Builder
Natural Gas	Jemena	– Submit application – Receive offer – Builder to manage install and completion with Jemena	Project / Builder although no development contribution expected

7 CONCLUSION

The project can be adequately serviced by power, telecommunications, water, sewer and gas services.

No external authority infrastructure upgrades have been identified as required to service this development.

APPENDIX A INFRASTRUCTURE PLAN

te Plan

NBRS ARCHITECTURE.
RICHARD CROOKES CONSTRUCTIONS

Existing Endeavour Energy HV power pole to be used as a Proposed Connection Point for the new site

Indicative location new master gas meter and boundary regulator assembly.
Size: 2000(W) x 1000(D) x 1000(H)
Location requirements:
- Located within 1m from the boundary
- 10m away from a substation
- Located within a wire mesh enclosure
- To be provided with 24 hour unrestricted access
- To be located in a common area

Indicative location new master water meter and backflow prevention assembly if WSU infrastructure cannot be used.
Size: 2000(W) x 500(D) x 1000(H)
Location requirements:
-Located within 1m from the boundary
-Located within a wire mesh enclosure
-to be provided with 24 hour unrestricted access
-to be located in a common area

Indicative location of existing Ø50 NY 210kPa Jemena gas main within Londonderry Road

Indicative location of existing Ø200 CICL Sydney Water water main within Londonderry Rd

Indicative location of existing Endeavour Energy overhead HV cabling alongside Londonderry Rd.

Proposed HV UG cabling reticulation to power supply the new substation for the site. It is envisage that an easement would be required along this path. Final location of easements to be confirmed by Endeavour Energy when an Application For Connection (AFC) is submitted.

Proposed location for new 1000kVA Kiosk substation with unimpeded access to Vines Drive via carpark and new access road. Refer to Electrical Substation Notes on the right for further requirements

New Main Switchroom

Existing WSU fire water tanks and pumps

Existing WSU fire main

Proposed CoE hydrant booster connection to WSU main.
Size: 1500(W) x 500(D) x 1000(H)
Location requirements:
-Located within 1m from the boundary

Existing WSU sewer in Vines Drive, unknown route from this location.

Proposed new Telstra/NBN lead-in UG conduits and pits extension to the front of the site along Vines Dr by Telstra/NBN. This approach is required to be endorsed by NBN through the submission of an NBN application

Proposed location of new NBN lead-in UG conduits to new Main Communications Room (MCR) in the Admin building (Block A).Refer to the electrical schematic of building A for further details.

Proposed connection to WSU gravity sewer main

Indicative location of proposed 50kL sewer pump out pit. Final size subject to detailed design
Prelim size: 20 sqm x 3m deep

LONDONDERRY ROAD
YARRAMUNDI ROAD
VINES DRIVE
MAINTENANCE ROAD
STABLE SQUARE PLACE
TECHNOLOGY ENTERPRISE
ABORIGINAL ENTERPRISE
"WESTERN SYDNEY UNIVERSITY"
"CHESHLON" NURSING HOME
1 D.P.1051798
2 D.P.1051798
ORCHARD
AGRICULTURAL PLOTS
=AGRICULTURAL PLOTS
STOCK YARDS
DAM / OSD
EXISTING SWALE
EXISTING CREEK
BITUMEN CARPARK
ADD PUMP AND HOSE TAPS FOR IRRIGATING AG. PLOTS
ADD PUMP AND HOSE TAPS FOR IRRIGATING ORCHARD
LEASE LINE
PEDESTRIAN AXIS
BUS STOP
CAR PARKING
PEDESTRIAN ACCESS
BLOCK B, C & D - LEARNING
BLOCK E - ACCOMMODATION
BLOCK G & H - FARMING

Electrical Substation Notes:
- The substation requires a dedicated easement of 5.5 (L) x 2.75 (W) m. The top of the concrete footing of the substation shall be above the 1:100 year flood level
- Substation must have unimpeded access directly from a public street, property fence must not block the access to it.
- A clear of 3m must be maintained between the kiosk housing and any openable or fixed windows, gas meter/pipeworks, and any non-fire rated option of a building.
- A clear of 6m is required between the kiosk housing and any building air intake or exhaust openings.
- A clear of 10m is required between the substation and any external fire hydrants or booster assemblies.
- Perimeter fence/wall to go behind substation easement to provide free access from Vines Drive to Endeavour Energy.
- Final location and easement requirements of new substation to be confirmed by Endeavour Energy with the submission of an Application For Connection (AFC). Refer to ASP Level 3 Designer documentation for further details.

This drawing is for information purposes only.

Norman Disney & Young
A TETRA TECH COMPANY

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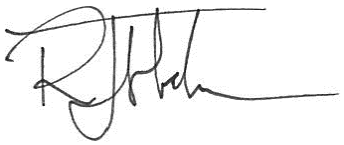

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