

Report

Infrastructure Management Report (SSD-7081)

**UNIVERSITY OF SYDNEY - FACULTY OF ARTS AND SOCIAL
SCIENCE BUILDING (FASS)**

Lend Lease Building Pty Ltd



CONFIDENTIAL

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1 INTRODUCTION

1.1 Information Source

Information contained within this report is based on the following documentation:

- University of Sydney Design Guidelines;
- University of Sydney, Hydraulic Infrastructure Drawing; and
- Architectural General Floor Plans prepared by Architectus.

1.2 Overview

NDY have reviewed the following documents with respect to the infrastructure provisions and connections required for the Faculty of Arts & Social Sciences (FASS) Building at the University of Sydney.

The following report details the infrastructure management plan for the connections of infrastructure from existing university infrastructure supplies.

Figure 1 below shows on the existing building position.

1.3 Existing services

All existing services located adjacent to, or within the proposed location of FASS Building, that may be affected by the development are to be:

- Capped, sealed and removed, if redundant; or
- Isolated and re-routed if being retained.

All works associated with capping, diverting or connecting to Sydney University infrastructure shall be co-ordinated with Campus Infrastructure Services (CIS) prior to any works being carried out.

Figure 1 below shows the approximate location of the proposed FASS development and existing services identified. The extent of capping and diverting of services is to be further detailed through the detail design phase.

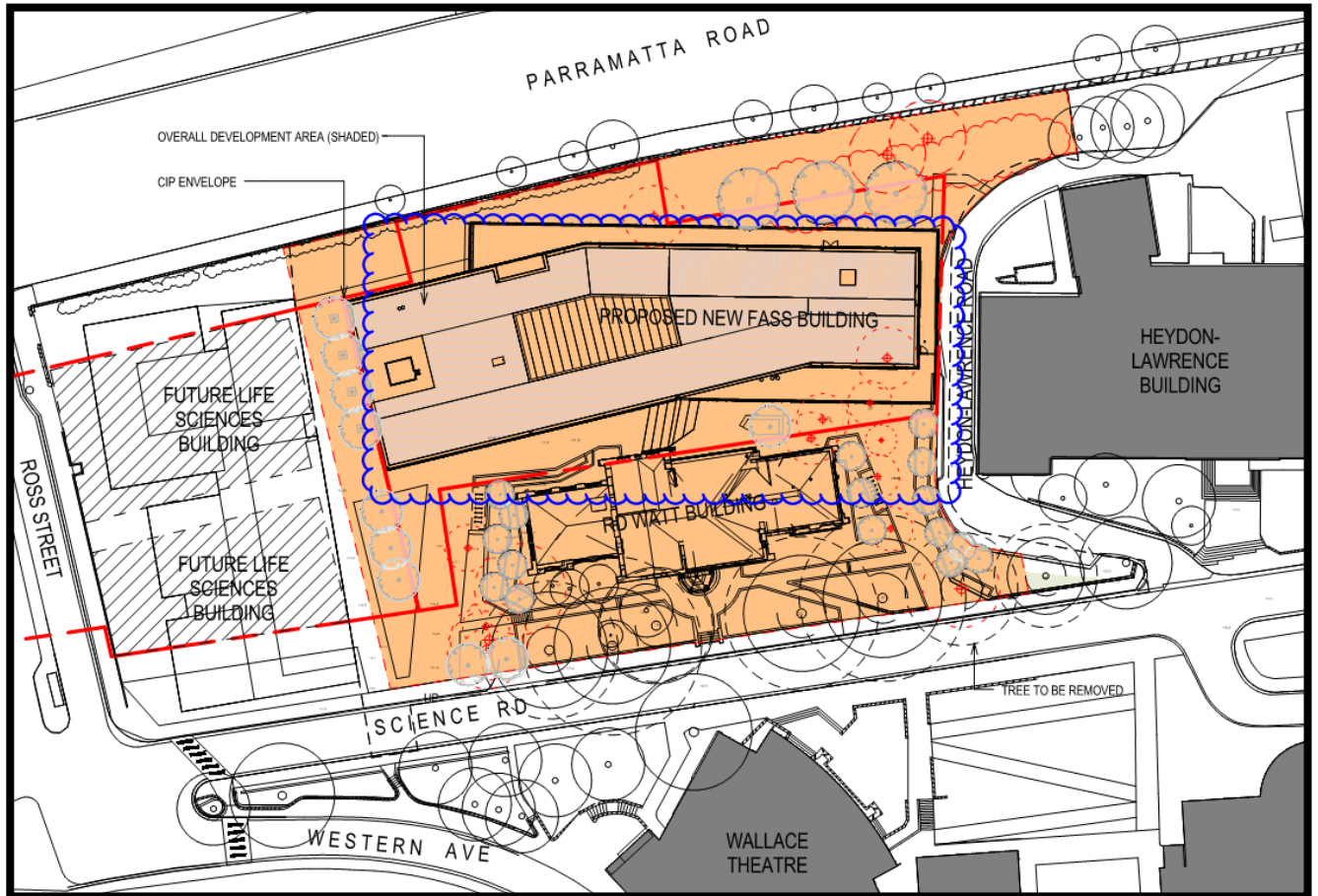


Figure 1: Proposed FASS development



2 ELECTRICAL

2.1 Electrical Infrastructure

The maximum demand for the new building is anticipated to be approximately 720kVA with an allowance of 20% spare capacity. The supply to the building will be derived from the new 1,000kVA kiosk (KL type) substation which will be located on the North East corner of FASS building subject to further Ausgrid approval.

It is understood that there is existing Ausgrid HV cables that run along the Heydon-Laurence road between the new FASS and Heydon-Laurence building. It is proposed that this Ausgrid HV cables will be extended to the new kiosk substation, however Ausgrid will advise on HV connection point upon formal load application.

New conduits will be installed along the Heydon-Laurence road between FASS and Heydon-Laurence Building to bring the LV supply from the kiosk substation to the Main Switchroom.

Please refer to the Figure 2 for the proposed electrical services connection route possible from the kiosk substation to the Main Switchroom within FASS building.

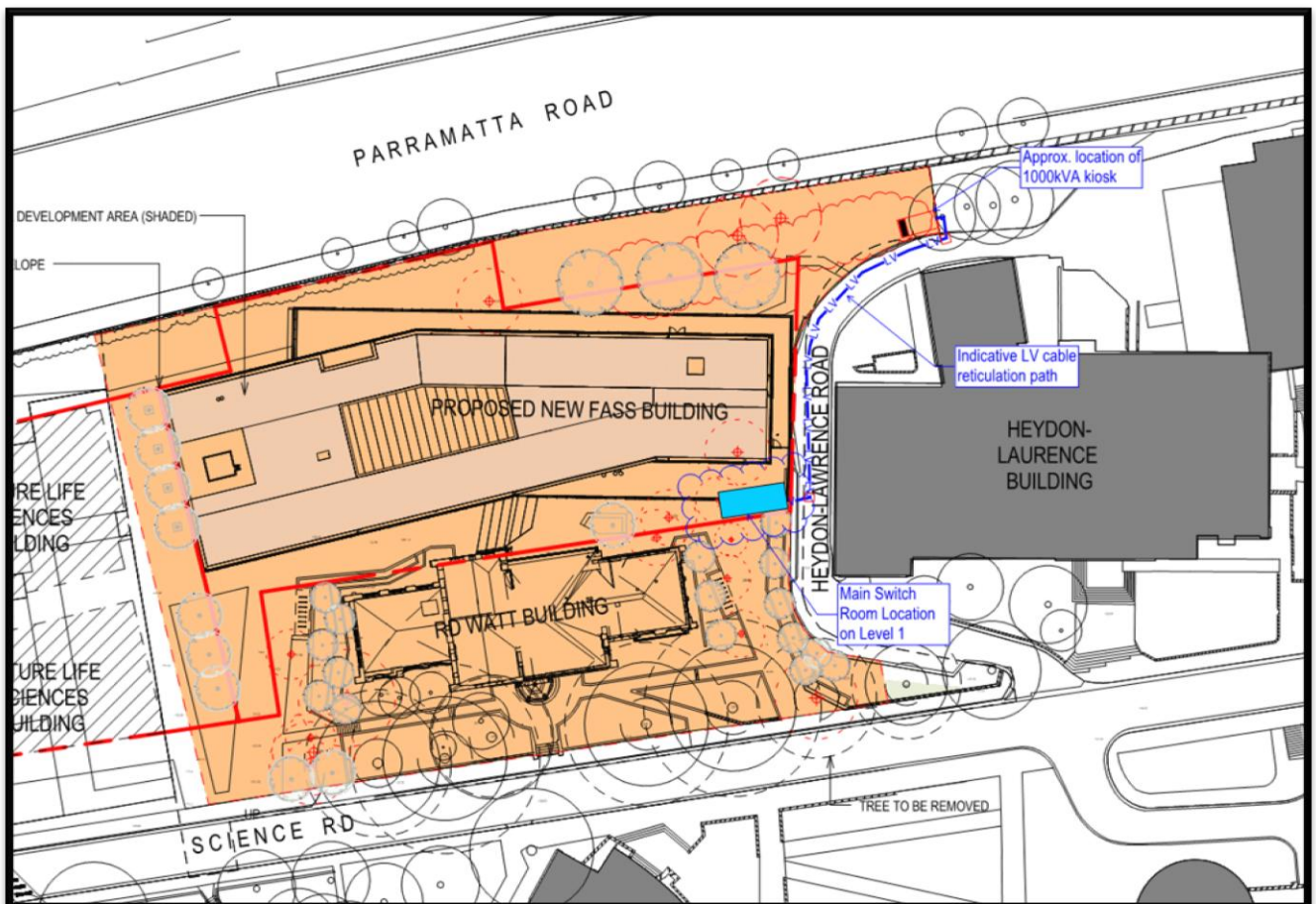


Figure 2: Electrical Services – LV Reticulation Path



Figure 3 below details the proposed location of the main switch room within the new building:

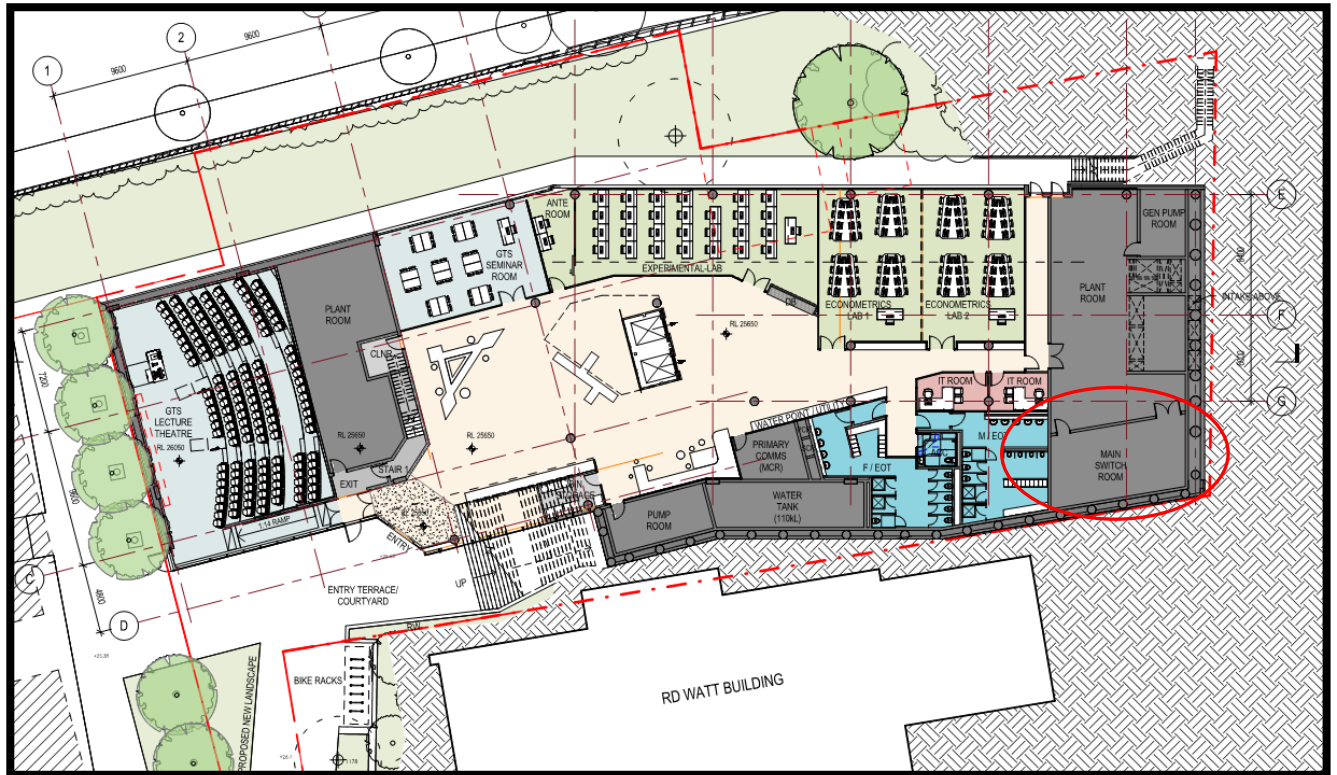


Figure 3 - Proposed Main Switchroom Location in FASS Building



3 HYDRAULICS

3.1 Hydraulic Infrastructure

Figure 4 below shows the approximate locations of the hydraulic services local to the proposed FASS development.

Sewer, Gas and Water branches have been provided within infrastructure upgrade works carried out under a separate scope of works (as advised by Sydney University) to serve the proposed FASS development.

More detail on each service, and proposed location of each connection is shown in further detail within this report.

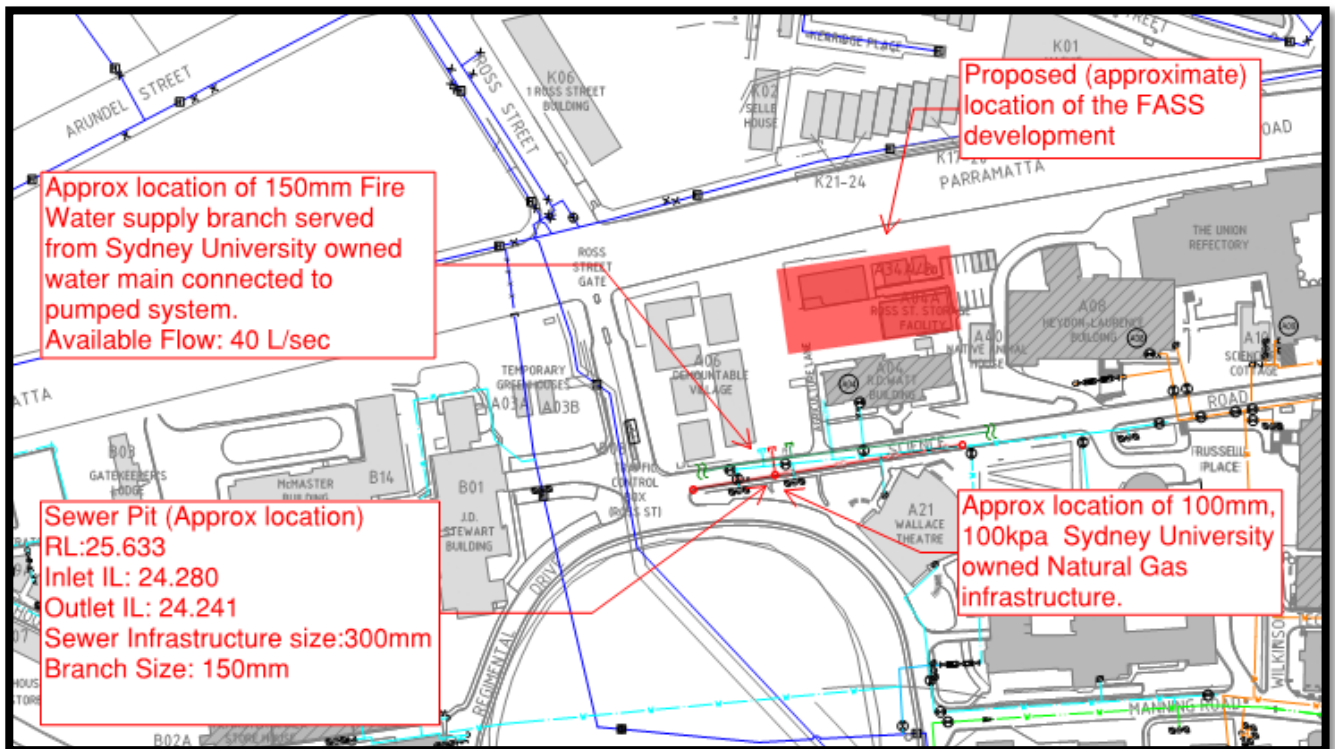


Figure 4: Hydraulic Services connection locations

Refer to Appendix A for a full size drawing.



3.1.1 Water

The calculated probably Simultaneous Flow (PSF) of the Domestic water to serve the proposed FASS development is to be determined, however based on our preliminary calculations will not exceed **3.5 L/second**.

The Domestic water shall be supplied via a separate branch from the existing Sydney University infrastructure located within Science road.

The calculated Fire Service demand for the proposed FASS development is **26 L/second**. A maximum calculated Fire Service Flow of **40 L/second** is available from the Sydney University infrastructure.

The Fire Service demand (26 L/second) will be supplied by a dedicated 150mm connection to the existing Sydney University infrastructure within Science road, with no Fire water storage tanks provided.

Figure 5 below shows the proposed location of the Domestic water and Fire Service water connections into the Sydney University infrastructure, within Science road.

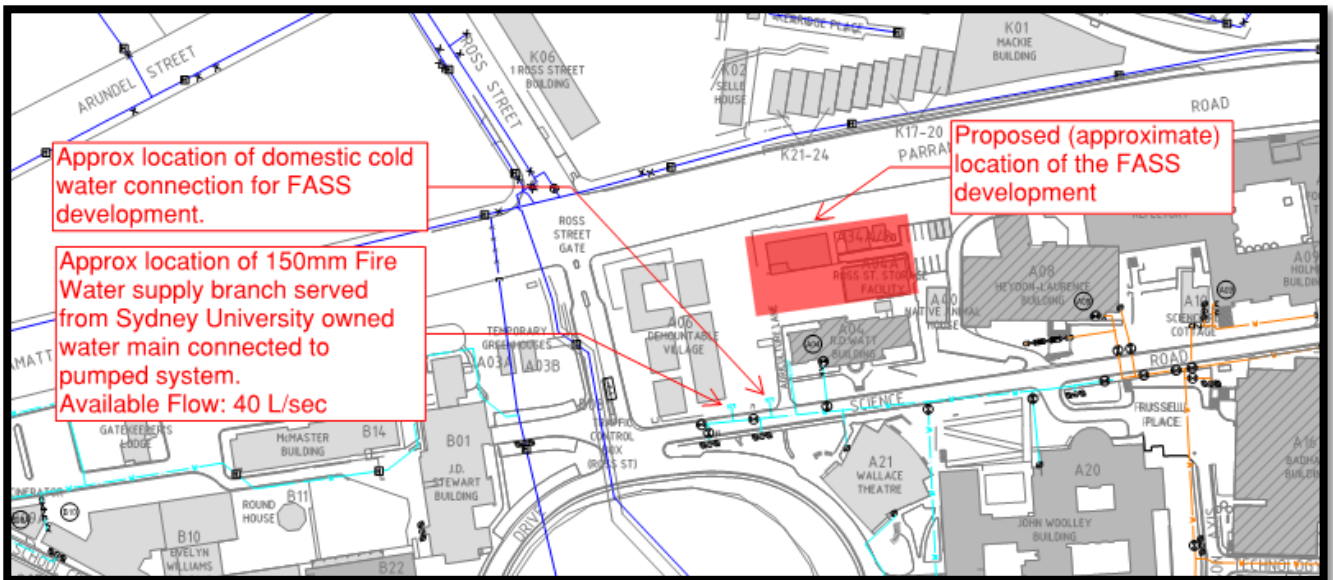


Figure 5: Proposed locations of Domestic and Fire water connections

Refer to Appendix A for a full size drawing.

A water meter and RPZD device will be provided to the Domestic water connection.

The Fire service will be provided with a Double Detector Check Valve (DDCV) assembly and terminated with a capped table E flange for extension by the Fire services contractor.



3.1.2 Sewer Drainage

The calculated Fixture Loading Units of the Sewer Drainage serving the proposed FASS development is to be determined, however based on our preliminary calculations will not exceed **400 Loading Units**.

The proposed FASS development will be served via 150mm Sewer Drainage connection to the existing Sydney University Sewer infrastructure located within Science Road.

Figure 6 below shows the proposed location of the Sewer connection.

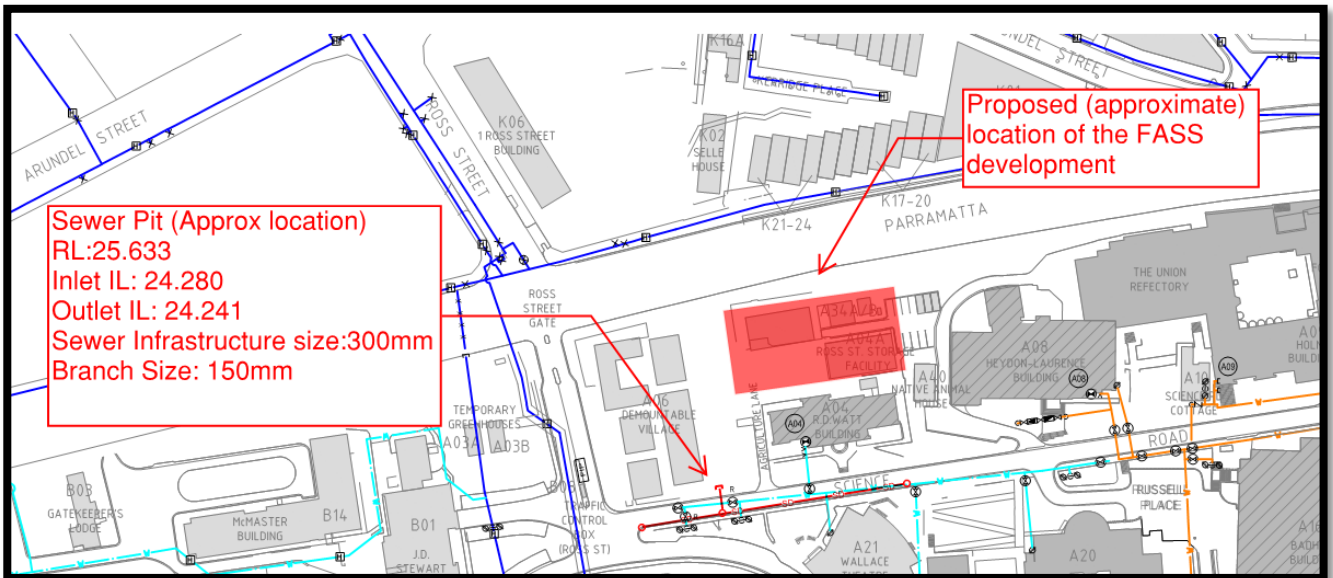


Figure 6: Proposed location of the Sewer connection

Refer to Appendix A for a full size drawing.

3.1.3 Roof water

The calculated 1:100 ARI discharge from the roof is 133 L/Second.

The Roof water system is designed to convey two separate discharges, as follows:

- Water from non trafficable areas to the Rainwater Harvesting plant; and
- Water from trafficable areas to the site stormwater infrastructure.

The water captured from non trafficable areas, will be treated and reticulated as Non Potable Cold Water for Sanitary Flushing and Landscape Irrigation.

The Overflow provision from the Rainwater Harvesting tank is being discharged to the site civil stormwater system.

3.1.4 Gas

The calculated Mega Joule (MJ) loading of the Natural Gas system serving the proposed FASS development is to be confirmed.

The proposed FASS development will be served via 100kpa, 100mm Sydney University Gas infrastructure located within Science Road.



Figure 7 below shows the proposed location of the Natural Gas connection.

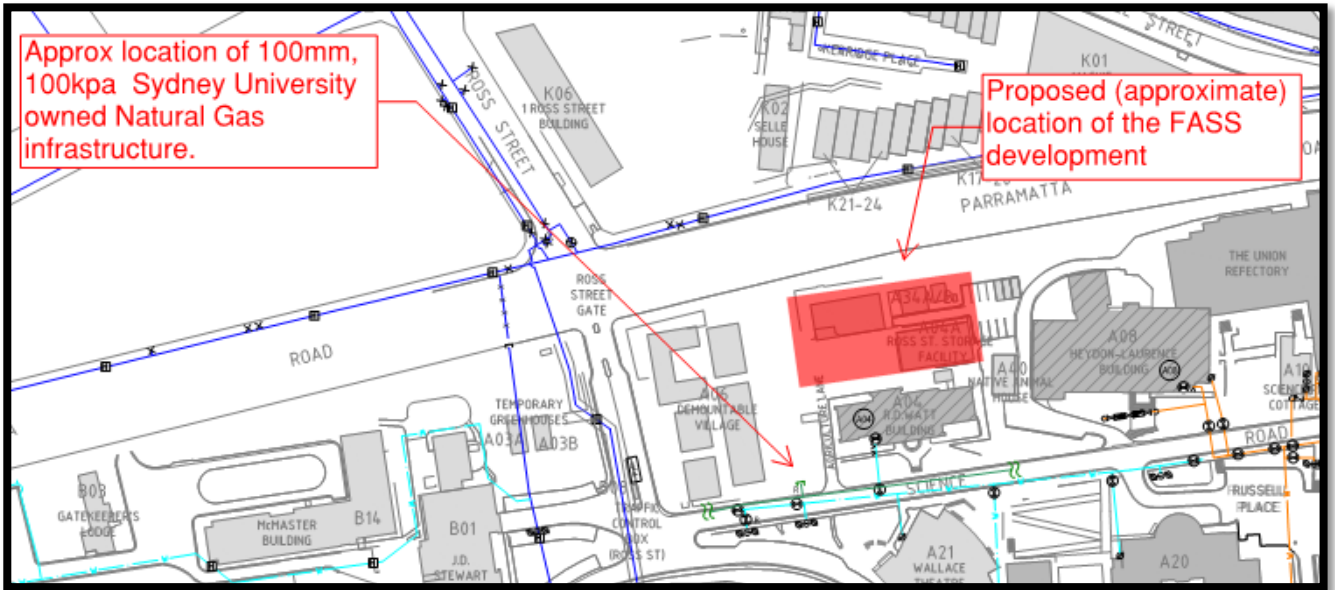


Figure 7: Proposed location of the Natural Gas connection

Refer to Appendix A for a full size drawing.



4 FIRE SERVICES

4.1 Fire Water Supply Infrastructure

See water service section of this report;

Hydraulic contractor to provide independent dedicated fire water feed from the University Owned Pumped Water Main System. Incoming supply shall be complete with testable dual check valve assembly with metered bypass.

A shared Quad fire brigade booster assembly shall be installed adjacent to the FASS and RD Watt building. The booster location is the subject of a potential alternative solution to allow a combined booster for the RD Watt and FASS buildings.

The site infrastructure described in the report referenced above, and detailed in the hydraulics section, indicates the water supply is adequate for the combined sprinkler and hydrant system without the use of break tanks or secondary pumping systems.

4.2 Smoke Detection Infrastructure

Supply and installation of a new Fire Indicator Panel (FIP). The panel shall be a Notifier 2800 or approved equivalent. FIP shall be connected to the main campus FMS FIP via the building PABX/MDF by an approved University contractor. Connections to FIP to include 2 hard wired phone lines (wet and dry fire brigade call) and 1 data port to allow for high level interface connection to FMS. Allow to modify the main campus FMS FIP, FMS fire alarm mimic panels (located at 5 gate entries) and FMS graphic computer terminals (3 off).

Smoke detection will be provided throughout to comply with the requirements of AS 1670.1 and AS 1668.1 subject to the requirements of the Fire Engineering Report.

4.3 Sound Sydney and Intercom System for Emergency Purposes Infrastructure

Supply and installation of a new Main Emergency Control Panel (MECP). The MECP shall be either an Inertia 2000 or Vigilant QE90 type. MECP shall be connected to the University Mass Notification System by an approved university contractor. Connections to MECP to include 1 data port to allow connection to MNS. Allow to modify the University Mass Notification System as required.



5 COMMUNICATION

5.1 Overview

The University of Sydney's Camperdown Campus has a very substantial underground communications ducting network, which is managed by the University's Information and Communications Technology (ICT) department.

The Camperdown Campus underground communications ducting network is to be extended and adapted to provide ducting connections to the existing RD Watt building and the new FASS building.

All underground communications cables will be installed by the ICT department.

5.2 Communication Infrastructure

The following is a summary of the proposed communications infrastructure:

- A new pit and underground pipe system shall be installed for two lead-in points to FASS, and two lead-in points to RD Watt. The new pit and underground pipe system shall be installed to connect to the existing pit and pipe system on Science Road. These are for optical fibre connections and for the copper lead-ins.
- Each diverse lead-in paths to the FASS building shall contain four (4) x P100 conduits for cabling reticulation. One lead-in pathway shall come from South-West of the FASS building; and the other lead-in pathway shall come from South-East of the FASS building.
- Each diverse lead-in paths to the RD Watt building shall contain two (2) x P100 conduits for cabling reticulation. One lead-in pathway shall come from west of the RD Watt building; and the other lead-in pathway shall come from East of the RD Watt building.
- The manholes are to be Telstra-compliant and thus are not trafficable. They must be positioned where maintenance vehicles will not be able to drive on them. Bollards to protect the manholes where necessary.
- All new manholes shall be CL 426 4 lid type. All manhole lids are to be standard cast iron type, marked "Comms" and Telstra styles. Note that all manhole features, such as ladders, side bells, etc. must be allowed for.



APPENDIX A – SYDNEY UNIVERSITY INFRASTRUCTURE – HYDRAULIC DRAWING



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