

UNSW

Biological Sciences Project

**Hydraulic and Fire Services
Utility Report**

238676-00

Final | 4 December 2014

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 238676

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1 Hydraulic and Fire Services

1.1 Executive Summary

This report has been prepared to describe the implications of the proposed building development on the existing services infrastructure in support of the State Significant Development Application requirements for the construction of the new UNSW Biological Sciences Project.

It addresses the following aspects:

- the extent of the statutory infrastructure in the vicinity of the new UNSW Biological Sciences building,
- the impact the new building's footprint will have on the routes of this infrastructure,
- the implications of the relocation, realignment or augmentation of the affected services, and
- potential effect on the storm water systems in the area and overland flow management.

1.2 Introduction

This report is written in response to the State Significant Development Application requirements checklist in relation to the Biological Sciences Project, located on the UNSW Campus.

The following hydraulic and fire services Utility Report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) including item 9 - Utilities.

- Services Diversion,
- Cold Water Connection,
- Natural Gas Connection,
- Sewer Connection,
- Stormwater Connection,

Design development will be required to verify the assessments made in this report.

1.3 Existing University Services

Existing UNSW private services including but not limited to: water main various sizes DN200, DN300; stormwater various sizes DN350, DN450, bore water ring main DN100, Fire Services DN150 and sewer DN225 are located in close proximity to the proposed Biological Sciences Project footprint.

Any works adjacent to these existing University services will be completed under a separate application.

1.4 Utility Services

The existing sewer main along Botany Road is a UNSW asset, but located within the Sydney Water easement associated with the water main in close proximity.

Any work adjacent to sewer will require UNSW approval and negotiation of appropriate protection and survey processes (as it is a UNSW asset). However, as this sewer main is within the Sydney Water easement, a section 73 application will need to be lodged to Sydney Water for coordination in the vicinity. This application will be completed under a separate approval.

The existing Upper Campus gas connection including existing Co-gen supply will be adjusted prior to the main works starting including maintaining the two existing gas regulators; Upper Campus and Co-gen plant. The new gas meters / regulators enclosure will need to be accepted by Jemena under a separate approval.

1.5 Sewer and Sanitary Plumbing System

The sewer connection from the building will be connected to the UNSW site sewer infrastructure.

It is anticipated that the proposed Biological Sciences Project sewer drainage system connection will be a minimum 150mm diameter service

1.6 Domestic and Fire Water

The domestic cold water (DCW) service will be supplied from the private UNSW infrastructure via a new water connection and RPZD. A new 100mm cold water connection is proposed to the existing UNSW water main DN 200.

The system will be designed to incorporate potable and non- potable water tanks. The pipework material will be provided in accordance with the UNSW Design and Construction requirements.

UNSW has confirmed that the cold water main has adequate capacity to serve the new Biological Sciences Project.

1.7 Bore Water

The bore water (BW) service will be supplied from the UNSW infrastructure via a new water connection and backflow prevention. The 100mm new water connection is proposed to be connected to the existing UNSW bore water ring main DN 100.

Treated bore water will be used as source non-potable laboratory water including RO systems.

The bore water system is a non-potable water supply and will be deemed to be a protected water supply. Air gaps and RPZD will be used for significant risk of contamination.

UNSW has confirmed that the bore water main has adequate capacity to serve the new Biological Sciences Project.

1.8 Natural Gas Services

A natural gas supply will be delivered to the building for mechanical plant, hot water heating and laboratory use and will be connected to the UNSW infrastructure gas main.

The system will incorporate a footpath shut off isolation valve with a spare valve key located in the gas meter room located on Lower Ground floor. Property isolating valves will be utilised before and after the meter along with filters and regulators. The meter will be fixed in the gas meter room.

1.9 Stormwater Drainage System

Stormwater drainage to the building will comprise main roof water and laneway roof. Main roof water will be directed to the stormwater OSD tank currently being constructed under a separate approval.

The stormwater drainage will be connected to the UNSW stormwater network.

1.10 Conclusion

The new hydraulic and fire systems will be supplied from the private UNSW infrastructure and do not connect directly to the authority's infrastructure. All new connections will be made to UNSW network including potable water, bore water, fire water, natural gas, sewer and stormwater.

Following preliminary analysis on the building's hydraulic and fire services requirements, it is considered that there is sufficient capacity in the UNSW existing infrastructure for the new building development.

- Adequate potable cold water and fire services supplies have been identified for the new Biological Sciences Project within the UNSW infrastructure.
- Adequate capacity in the UNSW sewer line has been identified for the Biological Sciences Project. Multiple connection points will be provided to UNSW sewer infrastructure.
- Adequate capacity in the UNSW stormwater system has been identified for the Biological Sciences Project. Multiple connection points will be provided to UNSW stormwater infrastructure.
- The design incorporates water sensitive urban design principles such as bore water to minimise consumption of potable water and prevent stormwater runoff together with onsite detention associated with new Biological Sciences Project.

- Adequate natural gas capacity in the UNSW infrastructure has been identified for the proposed loads including mechanical and hot water demand for the new Biological Sciences Project.