UNSW

Biological Sciences Project – Stage 1 SSD Section 96 Application

Hydraulic and Fire Services Report

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1 Hydraulic and Fire Services

1.1 Executive Summary

This report is written in response to the State Significant Development – Section 96 Application requirements in relation to the Biological Sciences Project Stage 1, located on the UNSW Campus.

The Section 96 Amendments to Building D26 proposals include the following:

- Ground Floor layout,
- Facades,
- Awning and Terrace,
- Rooftop plant enclosure including Level 7, 8 and Roof,

The report addresses the following aspects

- The extent of the statutory infrastructure in the vicinity of D26,
- The impact the building's footprint will have on the routes of this infrastructure,
- The implications of the relocation, realignment or augmentation of the affected services, and
- The impact on the existing building services.

1.2 Existing University Services

The existing UNSW private services including but not limited to the existing 250mm water main, stormwater network various sizes, bore water ring main, DN100 and 150mm sewer line are located in close proximity to the existing D26 footprint.

The existing sewer main along Botany Road is a UNSW asset, but located within the Sydney Water easement and the associated water main is in close proximity. This sewer and water main are not affected by the proposed development.

The existing Upper Campus gas connection including existing Co-gen supply will be adjusted prior to the commencement of main works including maintaining existing gas regulators for Co-gen and Lowy Buildings.

1.3 Conclusion

Based on the initial infrastructure review, the proposed Section 96 Amendments do not impact any physical Utility service.

2 Hydraulic Services

2.1 Sewer and Sanitary Plumbing System

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

It is anticipated that the D26 sewer drainage system connection will be a minimum 150mm diameter service. Existing connection points will be used for the proposed redevelopment.

The sewer connections from the building have been connected to UNSW site sewer infrastructure at multiple connection points.

2.2 Domestic and Fire Water

The domestic cold water (DCW) service is supplied from the private UNSW infrastructure via a new water connection and RPZD. An existing 100mm cold water connection will be utilised from the existing UNSW water main DN 250.

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

2.3 Bore Water

The bore water (BW) service will be supplied from the UNSW infrastructure via a new water connection with backflow prevention device. 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.

2.4 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.

2.5 Stormwater Drainage System

Stormwater drainage to the building will be comprised of the main new Biological Sciences roof water and awning roof.

The stormwater design is based on rainfall intensities of:

- 231mm/hr for eaves gutters (1 in 20 year ARI, with 10% added for design safety);
- 297mm/hr for downpipes (1 in 100 year ARI, with 10% added for design safety).

The roof drainage design will incorporate roof gutters drained by a gravity downpipe system. The main stormwater downpipes are to be located within the core plant areas of the building. Roof water will be directed to new and existing stormwater pits provided as part of the Stage 1 works and Stage 2 Early Works.

The Level 1 awning overhanging northern ground level façade will be drained via a box gutter at edge of the façade. Downpipes are to gravity feed either exposed adjacent façade or built-in to facade and will be directed to existing stormwater pits provided as part of the Stage 2 Early Works.

All external stormwater works including overland flow, new stormwater pits and connection to existing infrastructure will be integrated within Civil Works.

The proposed amendments to the awning and terrace will not increase the stormwater discharge from the existing site. New awning downpipes will be connected to the existing stormwater network.

2.6 Grease Waste

A grease waste system will be required to cafe located at ground floor level. Grease waste will be collected in a separate drainage system complying with the requirements of the statutory codes and connected to the existing Grease Arrestor, 5,000L located at lower ground floor installed as part of Stage 1 works.

2.7 Conclusion

The proposed modifications do not impact on the service ability to comply with the existing conditions and Building Regulations.

3 Fire Services

3.1 Fire Services Supply

All water supplies to the campus are metered, including fire hose reel, hydrant and sprinkler water supplies. UNSW maintains double check valves at the boundary connection to the Sydney Water Infrastructure in accordance with Sydney Water requirements. The Water connection for fire services for Stage 1 and 2 will be fed from Stage 1 fire pump room. The UNSW campus is supplied off two independent water supplies from the Sydney Water 750mm main in High Street and in Botany Street. A Sydney Water sectioning valve located between the two supply points enables this connection to satisfy the Grade 2 requirements of the Fire Sprinkler Code –AS2118-1995.

Grade 1 water connection required for Stage 1 and 2 under “one building approach” will be provided as a combination of direct connection to UNSW infrastructure and fire storage tanks (25kl hydrant and 25 kl sprinkler) provided as secondary supply.

3.2 Fire Hydrant

A fire hydrant system will be provided to protect the building on site in accordance with the requirements of the BCA 2014, AS2419.1-2005, Sydney Water Corporation and the Fire and Rescue NSW.

A common Fire Brigade Booster is proposed to be installed serving Stage 1 and 2. Fire Brigade Booster will be located on LGF Stage 1 in compliance with AS2419.1-2005, and the FR NSW requirements.

A 25,000 litre fire services storage tank located on Stage 1 roof top will provide an alternate water supply source for combined buildings, Stage 1 and 2.

Hydrant valves will be located within the fire stairs and one additional on typical floors to provide required coverage

3.3 Automatic Fire Sprinklers

A fire sprinkler system is required to protect the building. The systems will be designed to comply with the requirements of the BCA 2015 Clause E1.5 & Spec. E1.5, AS 2118.1-1999 all relevant Australian Standards and will incorporate requirements of the fire engineering report.

The sprinkler system will be supplied from Stage 1 and boosted by the Stage 1 sprinkler booster assembly located on LGF.

The Fire Sprinkler strategy has been discussed and supported in principle by Fire Brigade.

3.4 Automatic Fire Detection and Alarm

A fire detection system will be provided within the building as per the requirements of AS1670, the BCA, the fire engineered solution and the FR NSW.

The automatic smoke and heat detection and alarm system will protect the whole of the building and associated facilities for smoke hazard management control.

Detectors will be spaced and located in accordance with AS1670. Heat detectors will be provided in areas not suitable for smoke detectors.

3.5 Portable Fire Extinguishers

Portable fire extinguishers will be provided to satisfy clause E 1.6 of the Building Code of Australia, AS2444 and local government requirements.

Generally fire extinguishers will be distributed throughout the building in areas of specific hazard and within fire hose reel cupboards.

3.6 Sound system & intercom system for emergency purposes (SSISEP)

A Sound System and Intercom System for Emergency Purposes (SSISEP) will be provided throughout the building with emergency audio message broadcasting through the PA system using the options of pre-recorded messages and live announcements.

The SSISEP will be developed with UNSW FM to ensure interconnections with neighbouring Campus buildings.

3.7 Fire Hose Reels

A fire hose reel service will be provided to comply with the deemed to satisfy provisions of Clause E1.4 of the Building Code of Australia, AS2441-2005.

Fire hose reels are to be located within 4m of required exits.

Water to fire hose reels will be supplied from the domestic cold water system.

3.8 Conclusion

The proposed modifications do not impact on the service ability to comply with the existing conditions and Building Regulations.