WOOD & GRIEVE ENGINEERS

25WW Arts Precinct

Electrical & Hydraulic Engineering Services
Infrastructure Management Plan
SSD Report

Prepared for:

Client name
Macquarie University

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Prepared by:

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Revision

REVISION	DATE	COMMENT	APPROVED BY
A	10/07/17	DRAFT SSD	**SMB**
A	08/008/17	FINAL SSD	**SMB**

Contents

1. INTRODUCTION

The following information covers the electrical infrastructure, Communication, Hydraulic Services, including sewer and water supply for the proposed 25WW Arts Precinct project.

The proposed 25WW footprint is depicted in image below.

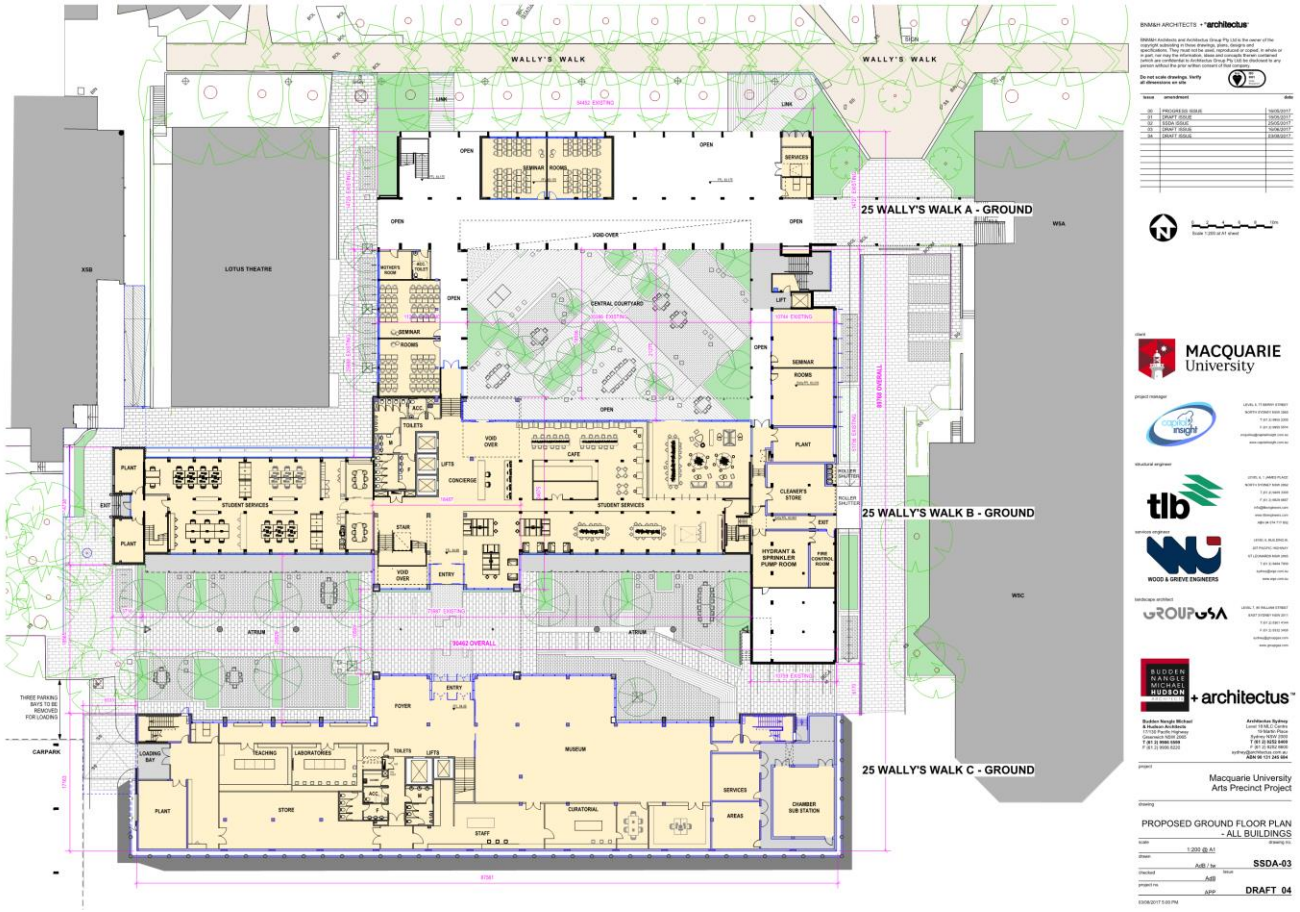

Fig 1 Proposed 25WW Arts Precinct Site Plan

2. Electrical Infrastructure

2.1 Existing Electrical Infrastructure Services

Ausgrid is the local supply authority providing power to Macquarie University Campus. The site is supplied from an Ausgrid underground feeder on Epping Road boundary and a second feeder supplying from Herring Road. Each 11kV supply feeder reticulation through the campus either using the tunnel system or buried underground in conduits.

Macquarie University is not a High Voltage (HV) customer and Ausgrid own all Assets downstream of the service protection devices.

The new development requires to be supplied from the existing incoming HV which has capacity to support the additional load.

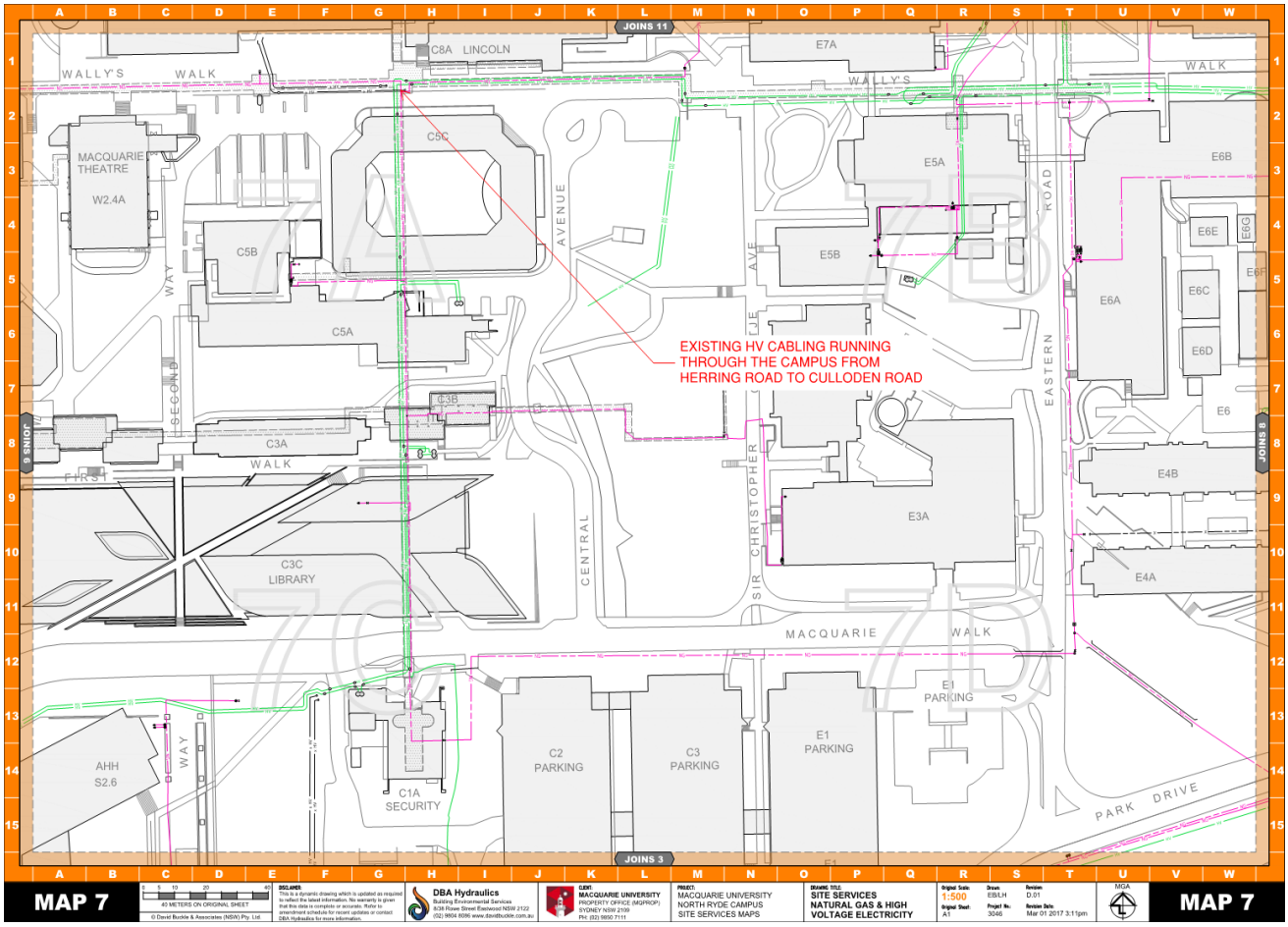

Fig 2 MU Site Wide HV Route

2.2 Proposed Electrical Supply to 25WW

The electrical maximum demand calculated for the propose development equates to 2571.3amps; the development is also to allow for the transfer of existing buildings onto this new supply with an introduction of a new regional switchboard and the supply for these additional loads are 3731.7amps. An application to Ausgrid was for a 3MVA supply and allowance for up to 4.5MVA with a third transformer being installed in the chamber substation.

A new HV supply will be connected to the existing HV supply running through the tunnel system along to the proposed new chamber substation located in 25WW C.

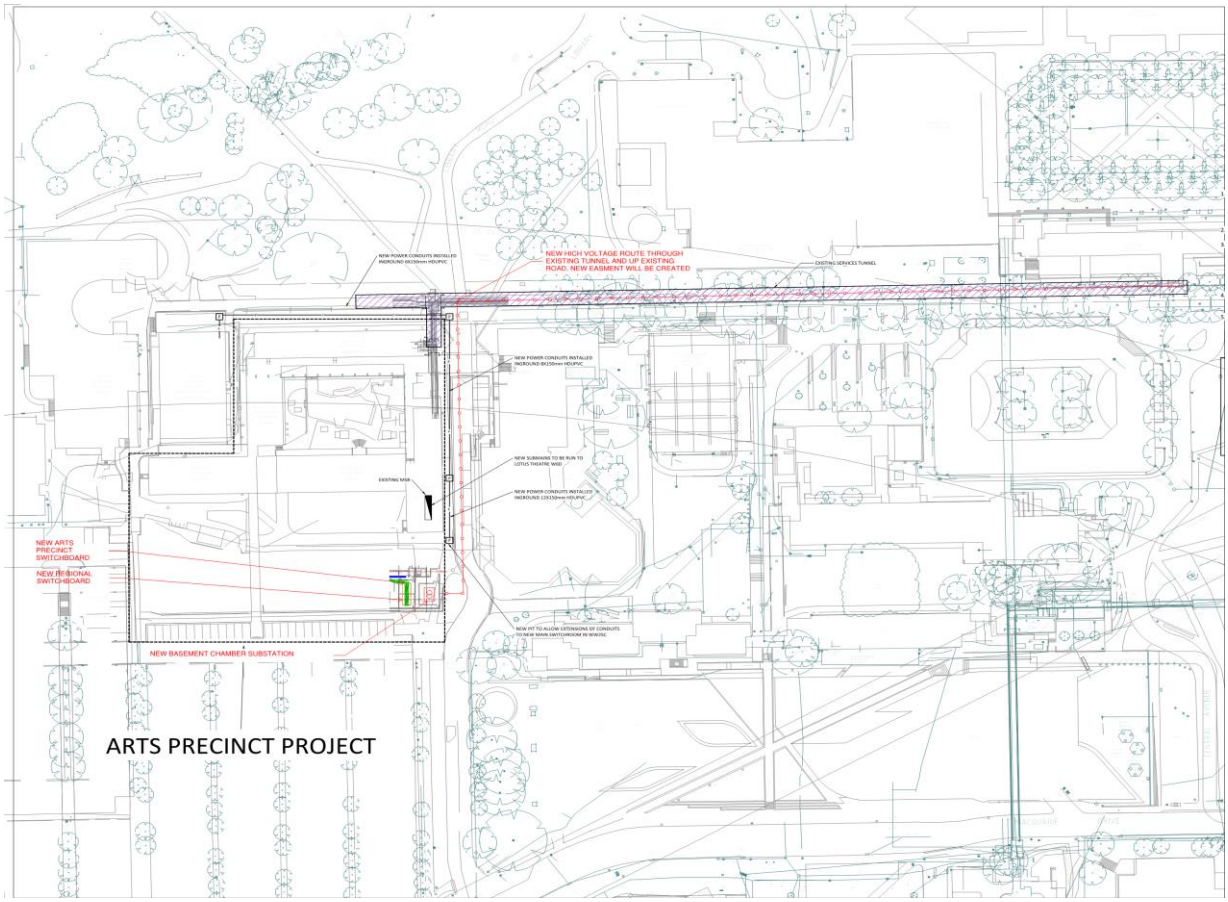

Fig 3 25WW Proposed Site Reticulation

2.3 Standby Generator

A new Standby generator will be provided to support the Fire Exhaust system; the generator will also service the Lifts and other Safety services. The location of the generator will be located on the level 8 plantroom.

2.4 Telecommunication

25WW Art Precinct project will utilise the existing Macquarie University campus telecommunication system with new fibre running from Star Building E6A communication room and redundant link from Star Building C3C

2.5 External Lighting

The external lighting has been design to 1158.3.1:2005 Pedestrian Area (Category P) Lighting and AS4282-1997 Control of the Obtrusive effects of outdoor lighting.

2.6 Security systems

25WW Arts Precinct will be provided with a number of CCTV cameras covering the new development within the central internal area of the building and external areas as agreed with the university; the project will have IP PTZ type cameras installed.

3. Hydraulic Infrastructure

3.1 Existing Hydraulic Infrastructure Services

The following existing hydraulic services are located within the Macquarie University site, providing hydraulic infrastructure services to the refurbished and expanded building envelope. The impact on the existing services is considered minimal and therefore there is no proposed adverse impact on the existing Macquarie University connection to authority services such as Sydney Water and Jemena.

3.2 Sewer Drainage

An existing 150dia gravity connection to the Macquarie University's main sewer infrastructure located Wally's Walk is proposed to be retained for the development. All existing internal drainage will be removed to allow new piping routes to the existing connection as identified below;

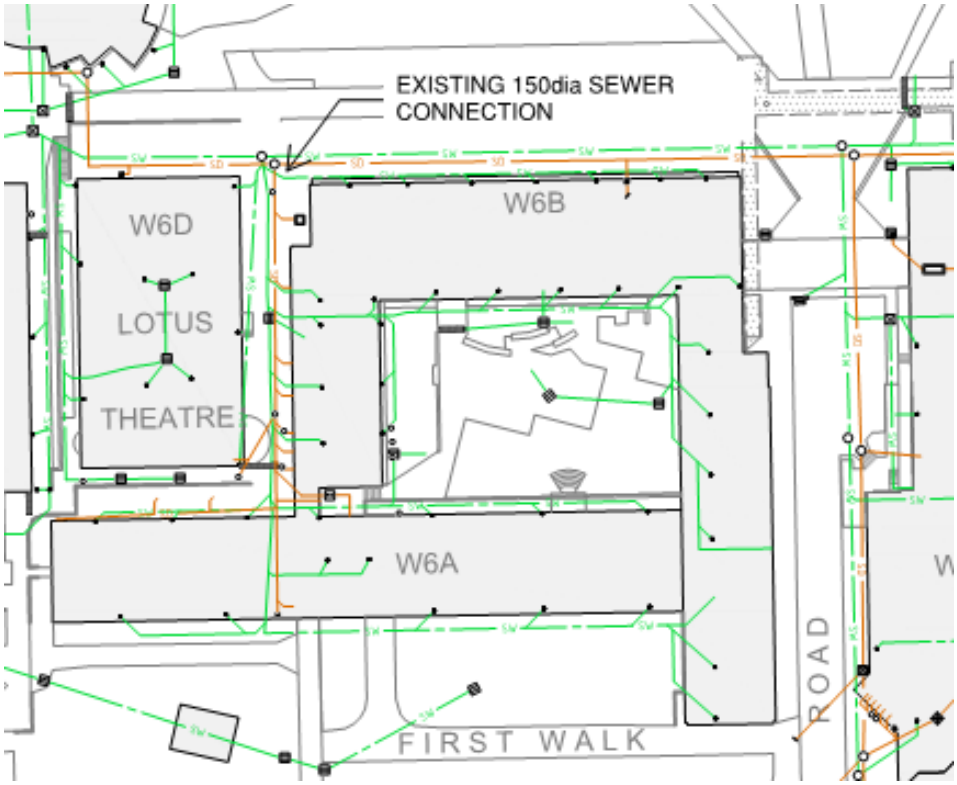

Fig 4 25WW Sewer Diagram

3.3 Water Supply and Fire Water

An existing 65dia connection to the Macquarie University main water infrastructure located Wally's Walk utility tunnel complete with main isolation valve and master water meter. The proposed development load will not exceed the existing provisions. An upgrade to the meter and backflow prevention will be provided. Additionally, diversion the water main infrastructure around the proposed development will occur to maintain the integrity of the potable water ring main system.

The fire water main will be connected to the existing water supply system within the Wally's Walk utility tunnel. A 200dia main will extend to the new booster connection and pump room. Refer below to the existing connection location;

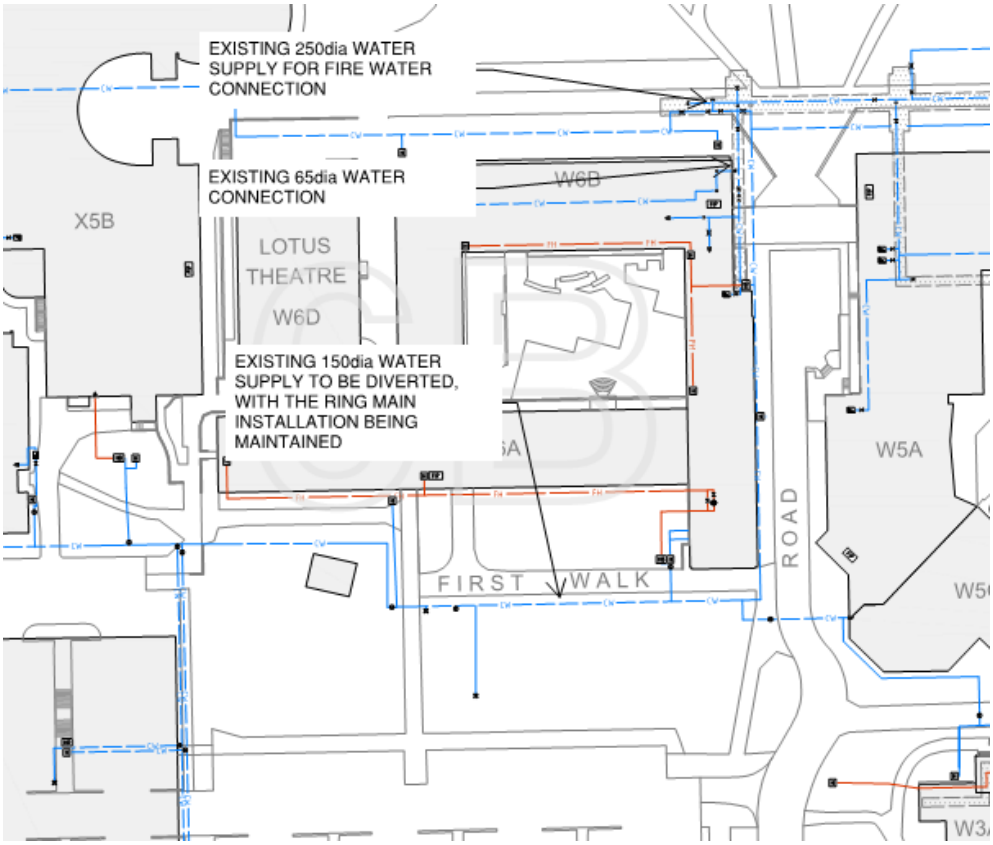

Fig 4 25WW Water Supply Diagram

3.4 Natural Gas

An existing 40dia connection to the 100kPa Macquarie University gas main infrastructure located Wally's Walk utility tunnel complete with main isolation valve and regulator is considered adequate for the load of the proposed development.

A new isolation valve, regulator and meter set will be provided as part of the proposed development as indicated below.

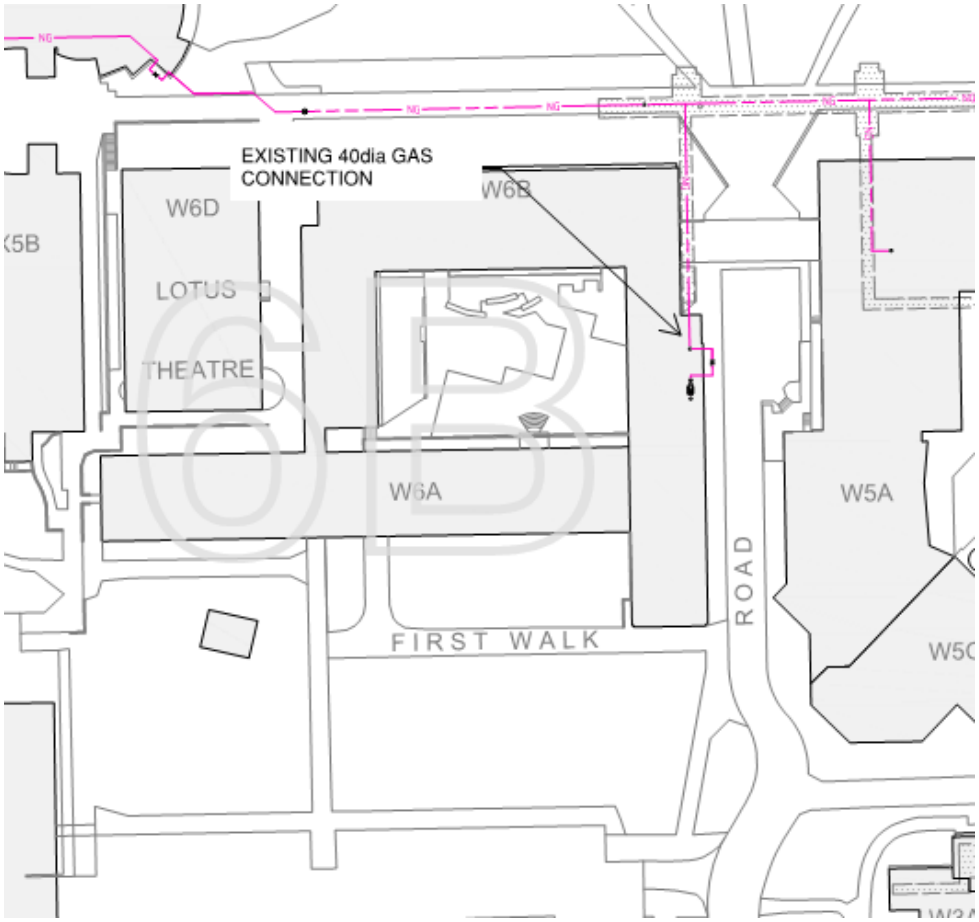

Fig 5 25WW Gas Diagram

4. Mechanical Infrastructure

4.1 Existing Mechanical Services

The existing chilled water mechanical services for 25WW provide cooling to the existing building and the Lotus theatre. The existing system comprises of plate heat exchangers supplied by the district cooling plant via the service tunnel below Wally's Walk. This will be disconnected and proposed mechanical design as follows in section 4.2.

The existing heating water mechanical services for 25WW provide cooling to the existing building and the Lotus theatre. The existing system comprises of central dedicated hot water boilers located within a ground floor plantroom. These boilers will be made redundant as a result of the proposed development.

4.2 Proposed Mechanical Services

The proposed mechanical services for 25WW have been developed to provide Primary/Secondary Chilled Water Pumping System. Four secondary networks to serve WW25A, WW25 B & C, W6D, and W5 A/C. Secondary chilled water distribution by direct return system with no differential pressure control valves.

The new infrastructure connects the CHW/HHW supply to W6D and W5 A/C, in order to facilitate the disconnection from the district cooling system.