

The University of Sydney
Chau Chak Wing Museum
SEARs - Utilities Infrastructure
Report

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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.

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1 Summary

1.1 Objectives

This report has been produced in response to the Secretary's Environmental Assessment Requirements (SEARs) Application Number SSD 7894 on behalf of The University of Sydney in support of the State Significant Development (SSD) Application.

This report assesses environmental impacts of the proposed works, which will be inputted into the Environmental Impact Statement (EIS).

Furthermore, it addresses issues particular to a SEARs application for a SSD and specifically responds to the ***Plans and Documents*** Section to provide information on the proposed utilities infrastructure configuration of the building.

2 Objectives of Assessment

This report is written primarily for assisting and providing information about the utilities infrastructure to the planning and client teams. It is also useful for:-

- Engineers or building professionals who are building the infrastructure;
- Owners or tenants of the finished building; &
- Other members of the design team.

3 Site and Project Descriptions

3.1 The Site and Surrounds

The development site is located to the northeast of the University's grounds adjacent to the Parramatta Rd entrance, within the area currently used as the Fisher Tennis Courts site.

Parramatta Rd runs in an approximate east to west alignment and borders the site to the north. University Place that runs in a north south direction is located to the west, beyond which is the University's main Quadrangle Building. University Avenue borders the site to the south, with Victoria Park located beyond the University grounds to the east.

The main portion of the site consists of three tennis courts, to the north of which is a small weatherboard tennis pavilion building. An area of lawn is located to the east of the site.

The northern boundary between the University campus and Parramatta Rd features a retaining wall above which is a linear garden bed containing significant trees. Ground conditions of the area consist of a sloped garden bed.

The development site is bound on all sides by trees of varying significance.



Figure 1: Areal View of Site

3.2 The Project

The proposal comprises the construction of the new Chau Chak Wing Museum in the north eastern sector of the Camperdown campus. The proposed museum will comprise a new five level building (maximum of three storeys above ground) with central void and will include:

- Entry foyer and museum shop
- Gallery space
- CERC (Collections Education Research & Conservation Facility) space
- Collection storage and workshop areas
- Staff offices, facilities and boardroom
- Study rooms and schools education area
- A 130 seat Auditorium
- Café and terrace facilities
- Loading dock
- Plant rooms

The proposed works also include associated earthworks, tree removal, landscape works and augmentation to existing infrastructure and services.

4 Infrastructure Provider Consultations

The University of Sydney owns the Hydraulic utilities surrounding the Chau Chak Wing Museum. This network is servicing a larger area and at present these utilities are under investigation. In particular the Facility Management team are testing the

proposed connection points in order to confirm the requirements for the sewer, water and gas connection point for the site.

ARUP has lodged a preliminary Application-for-Connection (AFC) with Ausgrid in order to obtain advice and information with regard to viable options for a new museum building power supply connection.

In response to the AFC Ausgrid advised that the most viable option to establish connection to the new building will be by extending and augmenting the existing Ausgrid network and commissioning a new substation.

5 SEARs Issues Addressed

This report has been produced in response to the Secretary's Environmental Assessment Requirements (SEARs) Application Number SSD 7894 on behalf of The University of Sydney in support of the State Significant Development (SSD) Application.

This report assesses environmental impacts of the proposed works, which will be inputted into the Environmental Impact Statement (EIS).

6 Building Loads

In order to assess the capabilities of the surrounding utility services infrastructure Arup have undertaken a preliminary load take down assessment for the development.

The estimates of the demands imposed upon different existing utilities by the Chau Chak Wing Museum project are as follows:

6.1 CCW Museum Infrastructure Loads

Proposed CCW Loads	
Utility Service	Chau Chak Wing Museum
Potable Water Supply	3.0 L/s
Gas	3,600 MJ/hr
Sewer	3.6 L/s
General Stormwater	Roofs 1:100 year ARI to be piped (270 mm/hr)
Power	Approximately 900A three phase

Table 1: Proposed CCWM Load estimates for utility services

7 Utilities Services

The development incorporates the construction of Chau Chak Wing museum. Survey show existing services located near or below the footprint of the incoming building. The existing services will need to be assessed during the enabling works in order to commence the works for CCW and ensure the surrounding buildings remain operational. Existing private inground services may need to be capped, demolished or diverted.

7.1 Water, Sewer, Gas and Stormwater

In order to identify existing water, gas, sewer and stormwater utilities, the Arup design team have reviewed the Dial Before You Dig (DBYD) information for the precinct and existing survey information, this does not show existing services available inside the development site, however the survey has identified existing utility infrastructure around the precinct. Utilities' capacity have to be confirmed and connection points are under investigation. The network appears to be able to support the load of the CCW museum.

7.1.1 Existing Infrastructure Services

Utility services are present around the precinct. The existing services are described as follows and are detailed in the figures below.



Figure 2: Services' survey

7.1.2 Cold water

Existing water main under investigation is located near Science Road and University Pl. Sydney University manage their own pumped network and will confirm their preferred connection point is suitable for connections of domestic and firefighting water, based on the building load described in this report.

As an alternative, Dial Before You Dig shows existing water mains in Parramatta Rd. Where the private infrastructure cannot support the development new connection will be made.

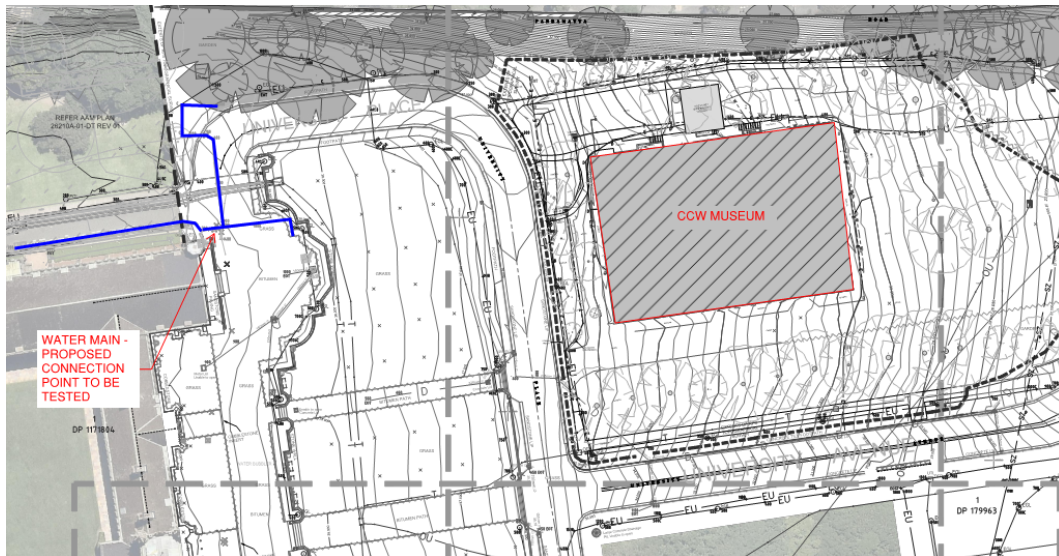


Figure 3 – Water main – Proposed connection point to be tested

7.1.3 Sewer

Existing sewer main under investigation is located between the footprint of CCW museum and University Avenue, as shown below.

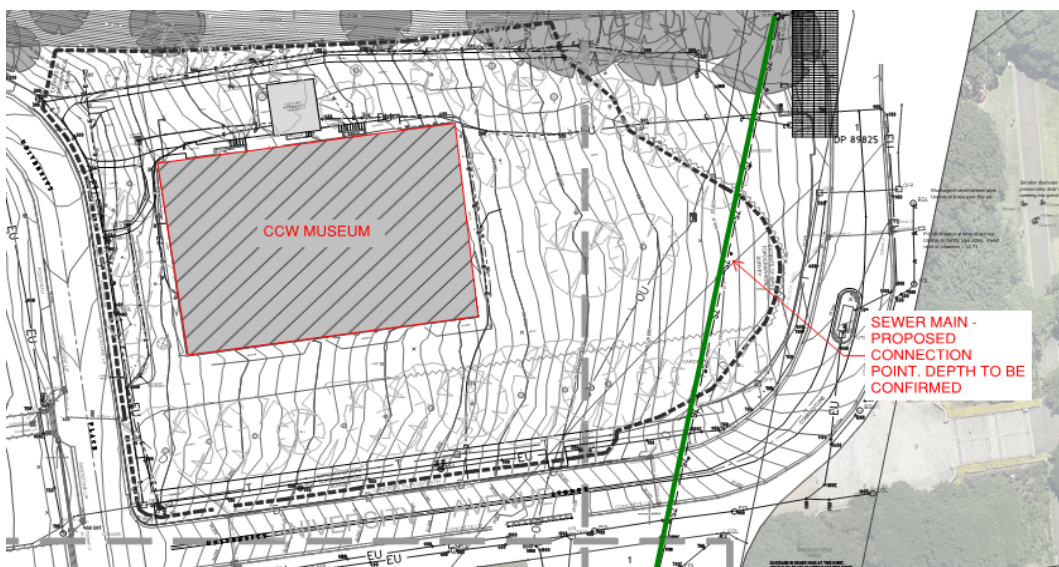


Figure 4 – Sewer main – Preferred connection point

The survey shows a sewer main located inside the Sydney University area. This sewer main slopes from south to north and then runs parallel to Parramatta Rd. As this line might be servicing other buildings owned by Sydney University, its capacity to carry the load of CCW has to be confirmed. Should this line be unavailable, a new line will need to be designed to connect into the 225mm sewer main located outside of the CCW site, near the intersection between University

7.1.4 Stormwater

A strategy to collect the rainwater has been identified in conjunction with the Arup Civil team.

Gutters and downpipes will be provided to bring the rainwater out of the building and then at its boundary the civil design will connect it to the existing infrastructure.

7.1.5 Natural gas

The site is currently served by the Sydney University gas network. Facility management has indicated two gas lines, one located on the North/East side of the site at 7kPa which seems to be the second option and another one on the South/East side running at 100kPa.

The 100kPa gas main will be connected to the CCW museum.

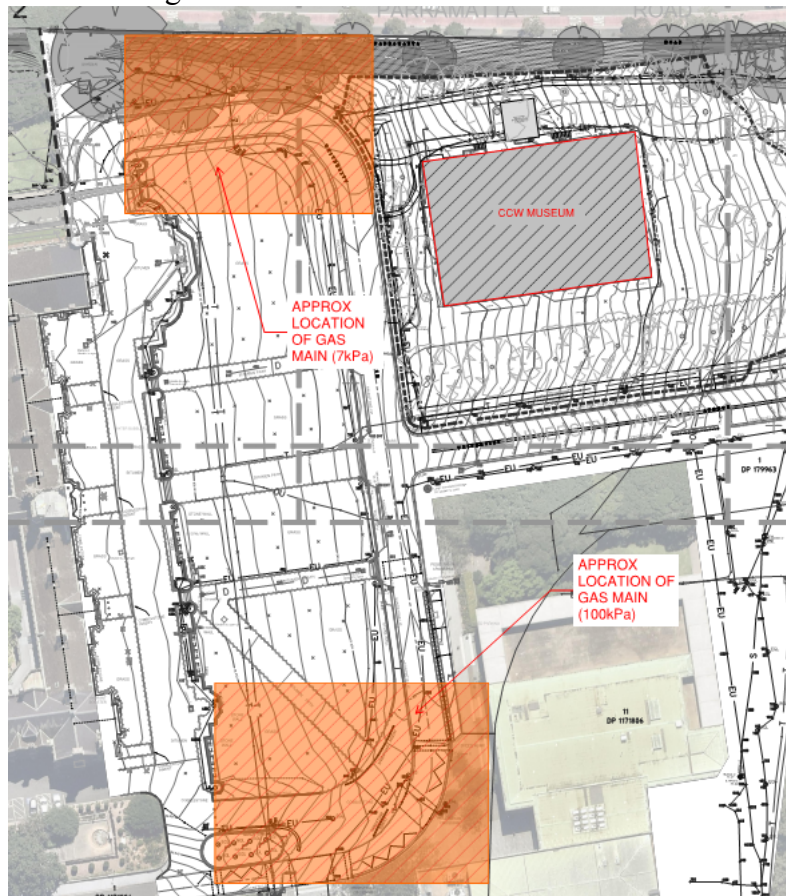


Figure 5 – Natural Gas main approx. locations

7.2 Power Supply

The University of Sydney (UoS) has a network of existing Ausgrid underground High Voltage (HV) cabling and substations within the Camperdown Campus. Each substation feeds a cluster of buildings in its surrounding.

ARUP has lodged a preliminary Application-for-Connection (AFC) with Ausgrid in order to obtain advice and information with regard to viable options for a new museum building power supply connection.

In response to the AFC Ausgrid advised that the most viable option to establish connection the new building will be by extending and augmenting the existing Ausgrid network and commissioning a new substation. This work is contestable and requires the engagement of a L3 Accredited Service Provider (ASP) to undertake the design of the required works which includes all works required by the supply authority associated with design of the substation and new HV supplies.

The Application-for-Connection process leading to the eventual commissioning of a new substation has been initiated with Ausgrid by ARUP on behalf of the University.

The sketch below (Figure 6) indicates the existing HV infrastructure and the proposed new works. These works will be designed and finalised by a L3 Accredited Service Provider which has been engaged by the University of Sydney.



Figure 6 – Power Supply Infrastructure

7.3 Communications

The University of Sydney has an existing campus-wide underground communications infrastructure system which is maintained and developed by the University's Information and Communications Technology (ICT) Department.

Generally all new or existing buildings within the campus are connected to the university communications infrastructure. ARUP will liaise with the University ICT Department to confirm cabling type, route and terminations for the proposed communications connections to the new museum building.

Communications cabling to the new museum will consist of fibre optic cabling (FOC) and copper cabling installed in underground conduits. All underground conduits will be installed as per the communications carrier standards. Two incoming communication links (primary and secondary) will be provided to the new building as per the university's ICT guidelines.

The sketch below (Figure 7) indicates the existing communications infrastructure and the proposed new works.

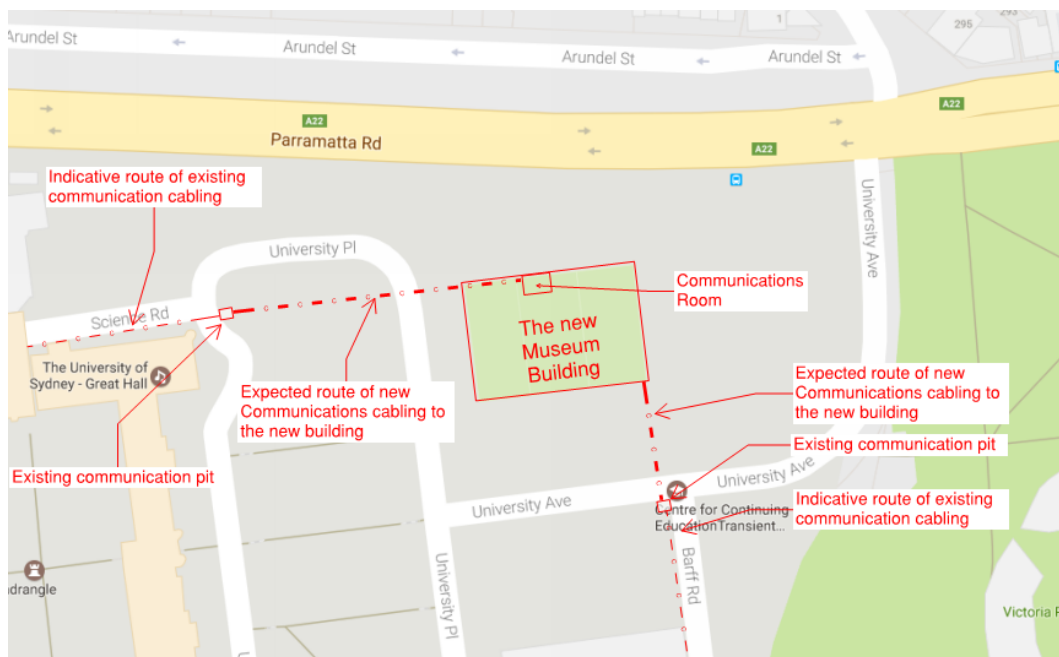


Figure 7 – Communications system Infrastructure

8 Conclusion

The loads for the development of CCW have been assessed and summarised in this report. The analysis suggest that the water supply, gas and sewer utility services are capable of supporting the development. At this stage, connection points and reticulation from the infrastructure to the CCW building need to be confirmed, as Sydney University are investigating their own network.

A new power supply connection will be established to the museum building. The connection will require extension and augmentation work on the Ausgrid network within the University Camperdown Campus. This work will also require commissioning of a new substation for the building.

Two new communication connections will be provided to the new museum building. The cabling type, route and terminations will be designed in coordination with the University ICT Department.

9 References

- JPW Drawings and documents set;
- Existing services drawings; &
- Site surveys by AAM Survey company;