

# CHAU CHAK WING MUSEUM

SSDA 7894

## Environmental Impact Statement



**Submitted to:**

**Department of Planning and Environment**

**May 2017**



## Table of Contents

<b>STATEMENT OF VALIDITY</b>	<b>vii</b>
<b>ABBREVIATIONS</b>	<b>viii</b>
<b>EXECUTIVE SUMMARY</b>	<b>ix</b>
<b>1. INTRODUCTION</b>	<b>1</b>
1.1 Introduction	1
1.2 Project Overview and Background	1
1.3 Campus Improvement Program	2
1.4 Project Objectives	3
1.5 Secretary's Environmental Assessment Requirements	4
<b>2. THE SITE</b>	<b>10</b>
2.1 Campus Overview	10
2.2 The Site	10
2.3 Legal description and ownership	16
2.4 Site opportunities and constraints	16
<b>3. THE PROPOSAL</b>	<b>18</b>
3.1 Project Overview	18
3.2 Design Philosophy	19
3.3 Civil Works	21
3.4 Built form	21
3.5 Trees and Landscaping	26
3.6 Signage	28
3.7 Traffic, Access and Parking	28
3.8 Stormwater Management and Drainage	29
3.9 Lighting	29
3.10 Utilities and Infrastructure	30
3.11 Cafe	30
3.12 Operation	30
3.13 Hours of Operation	31
3.14 Staffing	31
<b>4. JUSTIFICATION AND ASSESSMENT OF ALTERNATIVES</b>	<b>32</b>
4.1 Alternatives Considered	32
4.2 Justification for Preferred Option	34
<b>5. CONSULTATION</b>	<b>36</b>

<b>6. LEGISLATION AND PLANNING POLICIES</b>	<b>37</b>
6.1 Legislation	37
6.2 Environmental Planning Instruments	39
6.3 Strategic Plans	44
<b>7. ENVIRONMENTAL ASSESSMENT</b>	<b>49</b>
7.1 Built Form and Urban Design	49
7.2 Visual Impact	50
7.3 Environmental Amenity	53
7.4 Transport and Accessibility	54
7.5 Ecologically Sustainable Development	55
7.6 Noise and Vibration	57
7.7 Heritage	61
7.8 Historic Archaeology	62
7.9 Aboriginal Heritage	64
7.10 Accessibility	65
7.11 Biodiversity	66
7.12 Trees and landscaping	66
7.13 Flooding and Drainage	67
7.14 Earthworks	67
7.15 Contamination	67
7.16 Waste	68
7.17 Construction impacts	69
7.18 Crime Prevention Through Urban Design	69
7.19 Economic impacts	71
7.20 BCA Compliance	72
<b>8. CONTRIBUTIONS</b>	<b>73</b>
8.1 City of Sydney Development Contributions Plan 2015	73
8.2 Material Public Benefits Provided by University	74
8.3 Justification for exemption	76
<b>9. PROPOSED MITIGATION MEASURES</b>	<b>78</b>

## Appendices

Appendix 1	Capital Investment Value
Appendix 2	SEARs
Appendix 3	Architectural Plans
Appendix 4	Perspectives and Photomontages
Appendix 5	Survey and Services Plan
Appendix 6	Heritage Impact Statement
Appendix 7	Architectural Design Statement
Appendix 8	Multiplier Analysis
Appendix 9	Civil Engineering Plans
Appendix 10	Aboriginal Impact Assessment
Appendix 11	Multidisciplinary Engineering Report
Appendix 12	Utilities Infrastructure Report
Appendix 13	Preliminary Operational Management Plan
Appendix 14	Consultation Report
Appendix 15	Biodiversity Assessment
Appendix 16	ESD Report
Appendix 17	Detailed Site Investigation
Appendix 18	Certification of Photomontages Report
Appendix 19	Design Excellence Report
Appendix 20	Acoustic Report
Appendix 21	Solar Light Reflectivity Analysis
Appendix 22	Pedestrian Wind Impact Assessment
Appendix 23	Transport and Accessibility Impact Assessment
Appendix 24	Historical Archaeological Assessment
Appendix 25	Accessibility Review
Appendix 26	Preliminary Construction Management Plan
Appendix 27	Waste Management Plan
Appendix 28	CPTED Report
Appendix 29	BCA Report

## Figures

Figure 1	Sydney University CIP Precincts	3
Figure 2	Existing University museum locations	4
Figure 3	Camperdown-Darlington Campus	10
Figure 4	Aerial view of site and surrounds	11
Figure 5	Oblique aerial view of site	11
Figure 6	Heritage listings	13
Figure 7	Section view of proposed building and existing ground level	21
Figure 8	Lower Level 2 Plan	22
Figure 9	Lower Level 1 Plan	23
Figure 10	Lower Ground Level	24
Figure 11	Ground Level Plan	25
Figure 12	Upper Level Plan	25
Figure 13	Plant Level Plan	26
Figure 14	Vehicle manoeuvre in loading bay	28
Figure 15	Site options	32

Figure 16	Site identification in former development / master plans	35
Figure 17	Campus parking locations	43
Figure 18	View locations	51
Figure 16	View of Museum from the Quadrangle Clocktower entrance	52

## Tables

Table 1	Secretary's Environmental Assessment Requirements Checklist	5
Table 2	Cut and Fill	21
Table 3	Key Statistics	22
Table 4	Site Options – Opportunities and Challenges	33
Table 5	Assessment against objects of EP&A Act	37
Table 6	Assessment against SLEP 2012	41
Table 7	Compliance with Policies	44
Table 8	ESD Measures	56
Table 9	Proposed construction stages and equipment	58
Table 10	Construction noise assessment	58
Table 11	Assumptions regarding functions and events at CCWM	60
Table 12	Assessment of site against relevant heritage criteria	63
Table 13	CPTED Assessment	70
Table 14	Employment impacts	72
Table 15	Mitigation Measures	77

## STATEMENT OF VALIDITY

### Environmental Impact Statement prepared by

Name	Helena Miller
Qualifications	Bachelor of Urban and Regional Planning Graduate Diploma Natural Resources Law MPIA, CPP
Address	MG Planning Pty Ltd Suite 1.4, 135 Victoria Road DRUMMOYNE NSW 2047
In respect of	Chau Chak Wing Museum, University of Sydney

### Applicant & Land Details

Applicant name	Campus Infrastructure and Services, University of Sydney
Applicant address	G12 Services Building, 22 Codrington Street, Darlington NSW 2006

Lot No, DP	Part Lot 1 in DP 1171804
------------	--------------------------

<b>Environmental Impact Statement</b>	An Environmental Impact Statement (EIS) is attached
---------------------------------------	---

Statement of Validity	I certify that I have prepared the contents of the Environmental Impact Statement and to the best of my knowledge:
-----------------------	--

- It is in accordance with Part 4 of the *Environmental Planning and Assessment Act 1979* and Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*
- The information contained in the Environmental Impact Statement is neither false nor misleading.

Signature	
-----------	---

Name	Helena Miller
------	---------------

Date	23 May 2017
------	-------------

## ABBREVIATIONS

CERC	Collections Education Research and Conservation Facility
CCWM	Chau Chak Wing Museum
CIP	Campus Improvement Program
CIS	Campus and Infrastructure Services, University of Sydney
CMP	Construction Management Plan
Concept SSDA	Stage 1 State Significant Development Application (SSD 13_6123)
CPTED	Crime Prevention Through Environmental Design
DPE	Department of Planning and Environment
DSI	Detailed Site Investigation
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
GSW	general solid waste
HIS	Heritage Impact Statement
Infrastructure SEPP	<i>State Environmental Planning Policy (Infrastructure) 2007</i>
LEP 2012	<i>Sydney Local Environmental Plan 2012</i>
OEH	Office of Environment and Heritage
PSI	Preliminary Site Investigation
RMS	Roads and Maritime Services
RSW	restricted solid waste
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 33	<i>State Environmental Planning Policy No.33 – Hazardous and Offensive Development</i>
SEPP 55	<i>State Environmental Planning Policy No.55 – Remediation of Land</i>
SSD	State Significant Development
SSDA	State Significant Development Application
State and Regional Development SEPP	<i>State Environmental Planning Policy (State and Regional Development) 2011</i>
VENM	virgin excavated natural material

## EXECUTIVE SUMMARY

This Environmental Impact Statement (EIS) has been prepared in support of State Significant Development Application (SSDA) SSD 7894 pursuant to Division 4. 1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The proposal is State Significant development as it is development for the purposes of a cultural facility and educational establishment and will have a capital investment value in excess of \$30 million pursuant to clause 13 and 15 respectively of Schedule 1 of State Environmental Planning Policy (State and Regional Development) 2011.

The University is deemed to be the Crown pursuant to section 88 of the EP&A Act), and clause 226 of the Environmental Planning & Assessment Regulation 2000 (the Regulation).

This SSDA seeks approval for the construction of a new museum at the University of Sydney on the site of the existing Fisher Tennis Courts, northeast junction of University Place and University Avenue, Camperdown Campus. The new museum is to be known as the "Chau Chak Wing Museum" and is intended to consolidate the University's existing Macleay Museum, Nicholson Museum, University Art Gallery Collection and the Research and Conservation facility into the one building. Works comprise the construction of a new five level building (maximum of three storeys above ground) with central void consisting of: entry foyer and museum shop; gallery space; collections education research & conservation (CERC) 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; and plant rooms. The proposal will comprise 7,740m<sup>2</sup> of Gross Floor Area (GFA) and has a maximum building height of RL48.350 (18.3m). The proposal also includes excavation to accommodate the three lower levels; civil and landscaping works (including hard and soft landscaping); retention, removal and planting of trees surrounding the new building; building identification signage and utilities and services infrastructure upgrades and augmentation.

The new Chau Chak Wing Museum's exhibitions, programs and onsite collection access will enable the University to transform the relevance and significance of its unique collections of great cultural, artistic, scientific and historical importance. A suite of world-class gallery spaces will deliver more than three times the University's current display space and allow the University to significantly expand exhibition programs. For the first time the university will be able to host major traveling exhibitions from first class international and national collections. Themed study rooms will support interdisciplinary teaching and learning and enable greatly expanded schools programming. These spaces will become the backbone of object-based learning and critical analysis across multiple disciplines. Embracing a unique gateway location on the northern side of the Camperdown Campus, the new Museum will be a cultural destination of local, national and international significance.

The site is located to the northeast of the University's Camperdown campus adjacent to the University Avenue entrance (accessed from Parramatta Road). It is currently used for the Fisher Tennis Courts and currently accommodates three tennis courts north of which a small weatherboard tennis pavilion building is located. An area of lawn is located to the east of the site.

The site is zoned SP2 Infrastructure – Education Establishment under Sydney Local Environmental Plan 2012 (SLEP 2012). The proposed development is permissible with development consent in the zone.

This EIS has been prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for SSD 7894 that were issued on 6 September 2016.

The proposed design is a result of extensive site planning and design review, and successfully responds to the existing site constraints including surrounding heritage items, landscape elements including topography and trees, key views and vistas, the height of neighbouring developments and the existing urban design context. The design will also

be compatible with the future built form and urban context envisaged for the Camperdown Campus in accordance with the University's approved and adopted Campus Improvement Program (SSD 6123).

This EIS concludes that the proposal demonstrates that all on-site and off-site impacts have been carefully considered and addressed, in particular:

*Built Form and Urban Design:*

In accordance with Clause 6.21 of the Sydney Local Environmental Plan 2012, a design competition process is not required for the proposed building as the building will not exceed 25 metres in height above natural ground level or have a CIV of more than \$100,000,000.

Notwithstanding, the University has conducted and completed a Concept Design Competition for the proposed development in accordance with the University's Design Excellence principles (which are aligned with those of the Sydney Local Environmental Plan 2012 – Clause 6.21), in order to deliver the highest standard of architectural, urban and landscape design. The successful architect, JPW, was engaged by The University of Sydney to design the proposed new building. The design competition process and heritage peer review have resulted in a final design that represents design excellence and which accords with the design excellence criteria established by both the University and the Sydney LEP 2012.

The proposed new building responds to the site and place and will embrace its unique gateway location on the northern side of the University's Camperdown Campus. It will be a cultural destination of local, national and international significance with the design and form reflecting this significance whilst at the same time being respectful of its context. The building represents a contemporary aesthetic and will form a significant addition to the University landscape. The height and form of the building is well considered given site characteristics and will maximise accessibility as well as integrating with existing views and vistas. The public domain treatment is generous allowing the building to open out the landscape as it falls towards Victoria Park and providing wide generous meeting spaces as well as more intimate spaces.

The proposed development has been designed and laid out to reinforce the principles of Crime Prevention through Environmental Design (CPTED)

*Amenity impacts:*

The proposal has successfully resolved potential amenity impacts such as solar access and overshadowing, acoustic impacts, reflectivity impacts, and wind impacts by incorporating the recommendations of the various detailed technical studies into the design proposal. The proposed has been sited to minimise potential overshadowing impacts and is sufficiently removed from sensitive receivers to ensure no significant adverse noise or other impact will result. Where appropriate mitigation measures have been incorporated into the proposal to reduce any identified potential impacts.

*Heritage:*

The proposed new building has been sited to minimise impacts on nearby heritage items, key historic views and vistas and taking into account the views of the NSW Heritage Council. Having regard to a detailed heritage assessment it is considered that the proposed Chau Chak Wing Museum will have a minimal impact on the overall heritage significance of the University of Sydney Camperdown campus and the adjacent Victoria Park. Recommendations have been made in relation to archival recording and the preparation of an interpretation plan / strategy for the Fisher Tennis Courts which currently occupy the site. Further it is intended to implement an Unexpected Finds Protocol should archaeological items be discovered during the proposed works.

*Views and visual impact:*

Photomontages of the proposed new building demonstrate that the building has been sensitively designed and sited and will not result in any significant impacts on key view corridors of heritage significance. The new building will be screened by existing vegetation from a number of key view locations or alternatively has been sited so as to be

outside of key areas of view sensitivity. The building will be visible and alter the existing view from the centre top step of the entrance to the Great Hall (view D) however the existing view of the City from this location is not significant or historic and that alternate views are available. When viewed from this location the new building will form a new sensitively designed and sited element within the existing landscape.

The view and visual impact of the proposal has also been considered from a heritage viewpoint. In this regard it is concluded that taking into account the off-centre northern location of the museum, its understated bulk, form and materials, and the dense canopy of the surrounding significant Fig trees, the impact of the museum on the principal view corridor (from the Quadrangle clock tower entrance, down University Avenue and across Victoria Park to the southern CBD skyline) will be relatively minor.

*Trees and Landscaping:*

The proposal will result in some negative impact in the loss of 19 trees on site loss however this impact will be offset by the proposed landscape planting which will include a compatible range of trees, shrubs and groundcovers. The proposed landscape design is high quality and will ensure that the landscape values of the site are not diminished, provide good microclimate control and enhance the setting of the new building and public domain.

*Accessibility:*

The proposed development has been informed by an access review and its recommendations and is capable of achieving a high level of access for people with disabilities and meeting all the relevant and applicable standards.

*Traffic and Transport:*

The proposal will not result in any increase in staff numbers or students and will consequently not result in any additional parking requirements. The co-location and consolidation of the Macleay Museum, Nicholson Museum and University Art Gallery as well as collections from a number of dispersed locations across the campus into a new single museum building will not result in any significant additional traffic demands or traffic generation. In addition, the site is well serviced by public transport options along Parramatta Road and is easily accessible by alternative forms of transport including by walking and cycling. Infrastructure is provided to support these forms of transportation to the site.

*Construction Impacts:*

Potential environmental impacts are able to be managed through various construction management measures as outlined in this EIS.

No additional staffing numbers will be accommodated within CCWM other than those already accommodated elsewhere on campus. However, it is estimated that an additional 660FTE jobs will be generated in all industries as a result of the project, comprising 263 FTE jobs through direct employment for construction, and 397 FTE jobs through indirect (consumption induced) employment during the construction phase.

The proposed CCWM will provide a forward-thinking, innovative and much-needed cultural and intellectual space for exploration, engagement and research at the University. It will be the centre of a new precinct for cultural and scientific engagement at the symbolic heart of the campus. It will also offer an exciting new museum space for the general public to experience the University and its significant collection of antiquities and other exhibits. At the same time, the project will also continue to foster the educational establishment uses and strengths of the campus, ensuring it serves as a primary economic and employment destination and provider through its role in education and research.

The proposal accords with the State, Regional and Local strategic initiatives to contribute to the growth of the NSW economy via enhanced education offerings. Having regard to the assessment provided in this EIS, and subject to the imposition of mitigation measures as recommended, it is concluded that the project will not result in any significant environmental impacts and that it is suitable for approval.

## 1. INTRODUCTION

### 1.1 Introduction

This Environmental Impact Statement (EIS) is submitted to the NSW Department of Planning and Environment (DPE) in support of a State Significant Development (SSD), Application No. SSD\_7894, for the construction of a new museum at the University of Sydney on the site of the existing Fisher Tennis Courts, northeast of the junction of University Place and University Avenue, Camperdown Campus. The new museum is to be known as the “Chau Chak Wing Museum” and is intended to consolidate the existing Macleay Museum, Nicholson Museum, University Art Gallery Collection and the Research and Conservation facility into the one building. The application is made pursuant to Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The proposal is SSD as it is development with a capital investment value of over \$30 million and is for the purposes of:

- an educational establishment pursuant to clause 15 of Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP), and
- a cultural facility pursuant to clause 13, Schedule 1 of the State and Regional Development SEPP.

The project will have a capital investment value of \$53,326,524 (exc. GST), as detailed in the QS Report at **Appendix 1**.

The University is deemed to be Crown pursuant to section 88 of the EP&A Act), and pursuant to clause 226 of the *Environmental Planning & Assessment Regulation 2000* (the Regulation).

This EIS has been prepared in accordance with the DPE Secretary’s environmental assessment requirements (SEARs) that were issued on 6 September 2016 (refer to **Appendix 2**) and includes the following information:

- A Statement of Validity of the EIS;
- An executive summary;
- A description of the proposed development for which approval is being sought;
- The existing planning provisions applying to the site, including the permissibility of the proposal and how it will achieve planning objectives;
- Assessment of the environmental impacts and key issues;
- Summary of proposed mitigation and management measures; and
- Justification for undertaking the project, including consideration of the suitability of the site and whether the proposal is in the public interest.

The proponent for the project is Campus and Infrastructure Services (CIS), University of Sydney.

This EIS has been prepared by MG Planning. It is based on architectural and landscape plans detailing the proposed work, and other technical information in specialist consultant reports.

### 1.2 Project Overview and Background

The proposal involves the co-location and consolidation of the Macleay Museum, Nicholson Museum and University Art Gallery as well as collections from a number of dispersed locations across the campus into a new single museum building. Currently, the University’s museums, galleries and collections are significantly fragmented and located in numerous buildings.

This SSD application seeks approval for the construction of the new Chau Chak Wing Museum (CCWM) at the site of the existing Fisher Tennis Courts, northeast of the junction of University Place and University Avenue, University of Sydney Camperdown Campus. The proposal will involve the construction of the new CCWM and will include:

- Construction of a new five level building (maximum of three storeys above ground) with central void consisting of:
  - 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; and
  - Plant rooms.
- 7,740m<sup>2</sup> Gross Floor Area (GFA) and maximum building height of RL48.350 (18.3m);
- Excavation to accommodate the three lower levels;
- Civil and landscaping works, including hard and soft landscaping;
- Retention, removal and planting of trees surrounding the new development;
- Building identification signage;
- Utilities and services infrastructure upgrades and augmentation where required.

Architectural plans prepared by JPW illustrating the proposal are provided at **Appendix 3**.

The proposed development has been informed through an extensive site planning and urban design process, consultation with Government agencies and other key stakeholders, and a competitive design process held by the University of Sydney to guide development on the site and the proposed works.

The subject site is not part of the Campus Improvement Plan (further described in Section 1.3 below) however significant background analysis has been carried out by the University to inform the appropriate development of the site.

### **1.3 Campus Improvement Program**

The University is recognised as Sydney's oldest and principal University specialising in tertiary educational and research pedagogy. In 2014 the University attracted some 50,000 enrolments, employed over 7,500 permanent staff, and generated over 5,000 jobs in the areas of construction, facilities, maintenance and services. The University is a significant employment node and destination, as well as a future employment provider through its qualified students.

The University's Camperdown-Darlington campus is located within the Global Sydney 'city shaper' and the Sydney Education & Health precinct of the DPE's Vision for Sydney in 2031. The campus is also located within the 'Camperdown-Ultimo Education and Health Super Precinct' under the *draft Central District Plan* (Greater Sydney

Commission, November 2016). The University makes a significant contribution to this precinct through high volumes of domestic and international student enrolments, academic/ other staff employment and construction activity.

The University has adopted the Campus Improvement Program (CIP) for the Concept implementation strategy of development and infrastructure to the Camperdown-Darlington campus. The CIP is a State Significant Development that was approved by the Minister for Planning (SSD 13\_6123) on 16 February 2015.

The CIP Concept approval provides for a total of six campus precincts with appropriate building envelopes, generic University land uses, transport and access arrangements, landscape concepts, as well as heritage and design principles for the University's campus. Budgetary forecasts for the CIP project an additional estimated \$1.4 billion in construction spend over a ten-year period. The CIP precincts are shown in Figure 1.

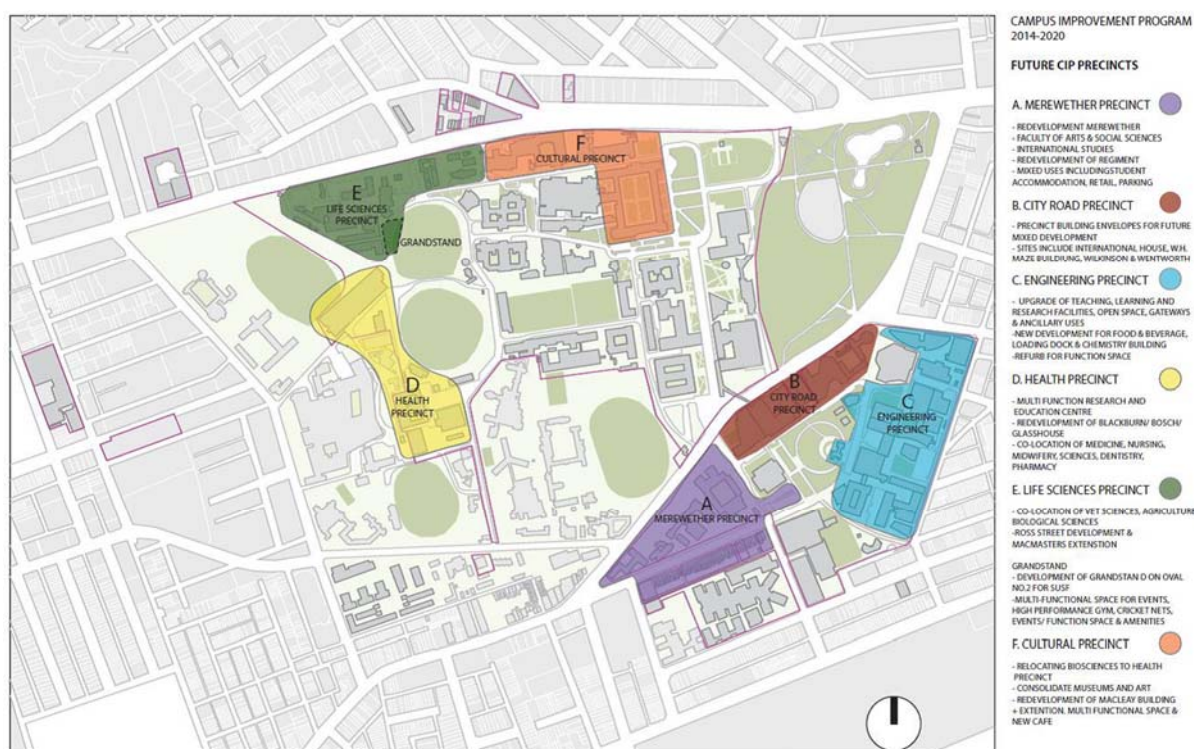


Figure 1: Sydney University CIP Precincts

The proposed CCWM building does not form part of the CIP Stage 1 SSD proposal, as it comprises an individual development site not requiring a "Precinct" building envelope approach. The decision to treat and lodge this proposed site development as an individual SSD proposal was endorsed in discussion with DPE staff. The Minister's approval of the CIP SSD13\_6123 includes the following condition:

*"A4. This approval does not preclude additional development sites outside the identified Campus Improvement Program precincts, subject to future approval (where required) and the demonstration of satisfactory environmental impacts."*

This EIS considers in detail the proposed building form and environmental impacts of the CCWM. The relevant built form aspects of the CIP have also been considered in the design development of the project to ensure an integrated and complementary design and planning approach. The works will not compromise the delivery of the CIP and are not inconsistent with the terms of the CIP Concept Approval.

## 1.4 Project Objectives

The proposal seeks to co-locate and consolidate the Macleay Museum, Nicholson Museum and University Art Gallery as well as collections from a number of dispersed locations into a new single museum building to be known as the

Chau Chak Wing Museum. Currently, the University's museums, galleries and collections are significantly fragmented and located in numerous buildings, as shown in Figure 2.

The specific objectives of the proposal are to:

- Upgrade the quality of the University's Museum and Gallery facilities to promote object based learning and research into one consolidated museum building;
- Provide a museum building that is easily accessible by the campus population, local community and visitors alike, with direct access provided from Parramatta Road and University Avenue;
- Create teaching and research space that can be shared across all faculties;
- Consolidate collections to promote education, research and conservation;
- Recognise and celebrate Aboriginal significance;
- Develop a healthy and sustainable Campus environment;
- Ensure equitable access to and through Campus;
- Respect the heritage "Sandstone University" significance.

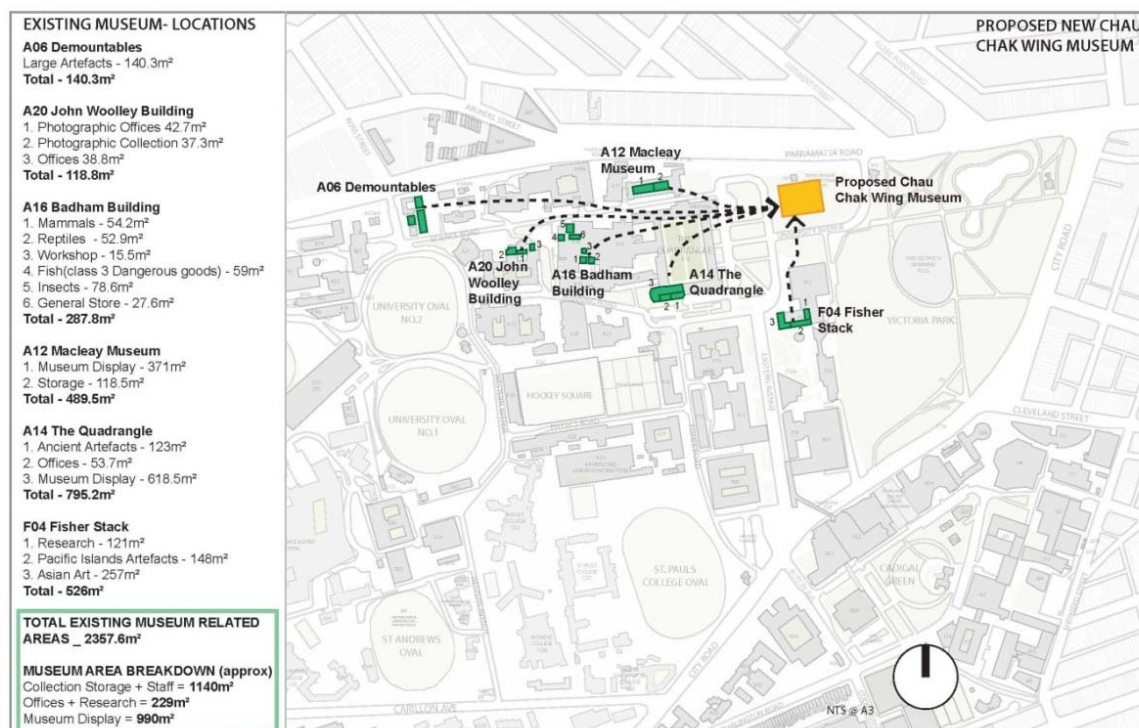


Figure 2: Existing University museum locations

### 1.5 Secretary's Environmental Assessment Requirements

The SEARs were issued on 6 September 2016. A copy of the SEARs is included at **Appendix 2**. Table 1 below summarises the requirements and identifies where responses to each of the SEARs are addressed in this report.

**Table 1:** Secretary's Environmental Assessment Requirements Checklist

EIS REQUIREMENT	REFERENCE
<b>General Requirements</b>	
<p>The EIS must meet the minimum requirements in Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i>, specifically form specifications in clause 6 and content specifications in clause 7.</p>	<p>Throughout EIS and appendices.</p>
<p><b>Environmental Risk Assessment</b></p> <p>The EIS as well as addressing the key issues specified in the SEARs must also identify the potential environmental impacts associated with the development. Where relevant the assessment of the key issues, and any other significant issues identified in the risk assessment, must include:</p> <ul style="list-style-type: none"> <li>▪ Adequate baseline data;</li> <li>▪ Consideration of potential cumulative impacts due to the other development in the vicinity; and</li> <li>▪ Measures to avoid, minimise and, if necessary, offset the predicted impacts, including detailed contingency plans for managing any significant risks to the environment.</li> </ul>	<p>Throughout EIS and appendices.</p>
<p><b>Capital Investment Value</b></p> <p>The EIS must be accompanied by a report from a qualified quantity surveyor providing:</p> <ul style="list-style-type: none"> <li>▪ a detailed calculation of the capital investment value (CIV)</li> <li>▪ an estimate of jobs that will be created during the construction and operational phases of the proposed development</li> <li>▪ certification that the information provided is accurate at the date of preparation</li> </ul>	<p>Appendix 1 (CIV) and Appendix 8 (Multiplier Analysis)</p>
<b>Key Issues</b>	
<p><b>1. Statutory and Strategic Context</b></p> <p><i>Environmental Planning Instruments</i></p> <ul style="list-style-type: none"> <li>▪ State Environmental Planning Policy (State and Regional Development) 2011</li> <li>▪ State Environmental Planning Policy (Infrastructure) 2007</li> <li>▪ State Environmental Planning Policy No 33 – Hazardous and Offensive Industry</li> <li>▪ State Environmental Planning Policy No 55 – Remediation of Land</li> <li>▪ Sydney Local Environmental Plan 2012</li> </ul> <p><i>Permissibility</i></p> <p>Detail the nature and extent of any prohibitions that apply to the development.</p> <p><i>Campus Improvement Program 2014-2020</i></p> <p>In accordance with section 83D(3) of the EP&amp;A Act, demonstrate that the proposal is not inconsistent with the development consent granted for The University of Sydney Campus Improvement Program concept proposal (SSD 6123).</p>	<p>Section 6.2</p>
<p><b>2. Policies</b></p> <ul style="list-style-type: none"> <li>▪ NSW State Priorities</li> <li>▪ A Plan for Growing Sydney</li> <li>▪ NSW Long Term Transport Master Plan</li> <li>▪ Sustainable Sydney 2030</li> <li>▪ Sydney's Bus Future 2013</li> <li>▪ Sydney's Cycling Future 2013</li> <li>▪ Sydney's Walking Future 2013</li> <li>▪ Health Urban Development Checklist, NSW Health</li> </ul>	<p>Section 6.3</p>

EIS REQUIREMENT	REFERENCE
<p><b>3. Built Form and Urban Design</b></p> <ul style="list-style-type: none"> <li>▪ Address the height, density, bulk and scale, and setbacks of the proposal in relation to the locality and the surrounding development (including SSD 6123 Campus Improvement Program building envelopes), topography and streetscape.</li> <li>▪ Address design quality, with specific consideration of the overall site layout, streetscape, open spaces, façade, rooftop, massing, setbacks, building articulation, materials, colours, landscaping and Crime Prevention Through Environmental Design Principles.</li> <li>▪ Demonstrate design excellence in accordance with the design excellence provisions of <i>Sydney Local Environmental Plan 2012</i></li> <li>▪ Detail how services, including but not limited to waste management, loading zones, and mechanical plant are integrated into the design of the development.</li> </ul>	<p>Section 7.1 and Appendices 4 and 18</p>
<p><b>4. Environmental Amenity</b></p> <ul style="list-style-type: none"> <li>▪ Detail amenity impacts including solar access, acoustic impacts, visual privacy, view loss, overshadowing, lighting impacts and wind impacts. A high level of environmental amenity for the surrounding locality must be demonstrated.</li> </ul>	<p>Section 7.3 and Appendices 5, 18, 19 and 20</p>
<p><b>5. Transport and Accessibility</b></p> <p>Include a transport and accessibility assessment that provides, but is not limited to, the following:</p> <ul style="list-style-type: none"> <li>▪ Details of the current daily and peak hour traffic, public transport, pedestrian and cycle movements and existing traffic and transport facilities provided within the vicinity of the site;</li> <li>▪ Provision of current staff and visitor parking on site;</li> <li>▪ an assessment of future transport needs associated with the development, including a clear understanding of the travel task for all modes at different times of the day (peak and off peak) and weekends;</li> <li>▪ an estimate of the total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and cycle trips;</li> <li>▪ the adequacy of public transport, pedestrian and bicycle infrastructure to meet the likely future demand of the proposed development;</li> <li>▪ measures to promote travel choices for students, staff and visitors – this includes describing the measures to be implemented to promote sustainable means of transport usage, car sharing scheme, pedestrian and bicycle linkages, end of trip facilities and bicycle parking provisions;</li> <li>▪ the daily and peak vehicle movements impact on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for upgrading or road improvement works (if required);</li> <li>▪ the proposed access arrangements and measures to mitigate any associated traffic impacts and impacts on public transport, walking and cycling;</li> <li>▪ proposed car and bicycle parking provision, including consideration of the availability of public transport and the requirements of the relevant parking codes and Australian Standards;</li> <li>▪ proposed location of pedestrian and bicycle facilities in secure, convenient, accessible areas close to main entrances that incorporate lighting and passive surveillance;</li> <li>▪ service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times); and</li> <li>▪ an assessment of traffic and transport impacts during construction and how these impacts will be mitigated for any associated traffic, pedestrian, cyclist, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact.</li> </ul>	<p>Section 7.4 and Appendix 23</p>

EIS REQUIREMENT	REFERENCE
<p><i>Relevant Policies and Guidelines:</i></p> <ul style="list-style-type: none"> <li>- <i>Guide to Traffic Generating Developments (Roads and Maritime Services)</i></li> <li>- <i>EIS Guidelines – Road and Related Facilities (DoPI)</i></li> <li>- <i>NSW Planning Guidelines for Walking and Cycling</i></li> <li>- <i>Austrroads Guide to Traffic Management Part 12: Traffic Impacts of Development</i></li> </ul>	
<p><b>6. Ecologically Sustainable Development (ESD)</b></p> <ul style="list-style-type: none"> <li>▪ Detail how ESD principles (as defined in clause 7(4) of Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i>) will be incorporated in the design and ongoing operation phases of the development.</li> <li>▪ Demonstrate that the development has been assessed against a suitably accredited rating scheme to meet industry best practice.</li> <li>▪ Include a description of the measures that would be implemented to minimise consumption of resources, water (including water sensitive urban design) and energy.</li> </ul>	Section 7.5 and Appendix 16
<p><b>7. Noise and Vibration</b></p> <ul style="list-style-type: none"> <li>▪ Identify and provide a quantitative assessment of the main noise and vibration generating sources during construction and operation. Outline measures to minimise and mitigate the potential noise impacts on surrounding sensitive receivers.</li> </ul> <p><i>Relevant Policies and Guidelines:</i></p> <ul style="list-style-type: none"> <li>- <i>NSW Industrial Noise Policy (EPA)</i></li> <li>- <i>Interim Construction Noise Guideline (DECC)</i></li> <li>- <i>Assessing Vibration: A Technical Guideline 2006</i></li> </ul>	Section 7.6 and Appendix 20
<p><b>8. Heritage</b></p> <ul style="list-style-type: none"> <li>▪ Include a Heritage Impact Assessment prepared in accordance with the guidelines in the NSW Heritage Manual that addresses the significance of, and provides an assessment of the impact on the heritage significance of heritage items on the development site and in the vicinity, including Victoria Park as a connected landscape.</li> <li>▪ Provide a view assessment identifying significant views and potential impacts.</li> <li>▪ Provide a landscape heritage assessment, including consideration of the cultural landscape of The University of Sydney and Victoria Park as connected landscapes and address the policies in <i>The University of Sydney Grounds Conservation Management Plan (2016)</i>.</li> <li>▪ The assessment is to address any archaeological potential and significance on the development site and the impacts the development may have on this archaeology.</li> </ul>	Section 7.7 & 7.8 and Appendix 6
<p><b>9. Aboriginal Heritage</b></p> <ul style="list-style-type: none"> <li>▪ Address Aboriginal Cultural Heritage (ACH) in accordance with the <i>Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011)</i> and <i>Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW)</i>.</li> <li>▪ The EIS must demonstrate attempts to avoid any impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.</li> </ul>	Section 7.9 and Appendix 6
<p><b>10. Biodiversity</b></p> <ul style="list-style-type: none"> <li>▪ Biodiversity impacts related to the proposed development are to be assessed and documented in accordance with the Framework for Biodiversity Assessment, unless where otherwise agreed by the OEH, by a person accredited in accordance with s142B(1)(c) of the <i>Threatened Species Conservation Act 1995</i>.</li> </ul>	Section 7.11 and Appendix 15
<p><b>11. Contamination</b></p> <ul style="list-style-type: none"> <li>▪ Demonstrate that the site is suitable for the proposed use in accordance with SEPP 55.</li> </ul> <p><i>Relevant Policies and Guidelines:</i></p>	Section 7.15 and Appendix 17

EIS REQUIREMENT	REFERENCE
<ul style="list-style-type: none"> <li>- <i>Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land (DUAP)</i></li> </ul>	
<p><b>12. Utilities</b></p> <ul style="list-style-type: none"> <li>▪ Preparation of an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation requirements of the development for the provision of utilities including staging of infrastructure.</li> <li>▪ Preparation of an Integrated Water Management Plan detailing any proposed alternative water supplies, proposed end uses of potable and non-potable water, and water sensitive urban design.</li> </ul>	<p>Section 3.10 and Appendix 12</p>
<p><b>13. Contributions</b></p> <ul style="list-style-type: none"> <li>▪ Address Council's Section 94 Contribution Plan and/or details of any Voluntary Planning Agreement.</li> </ul>	<p>Section 8</p>
<p><b>14. Drainage</b></p> <ul style="list-style-type: none"> <li>▪ Detail drainage associated with the proposal, including stormwater and drainage infrastructure.</li> </ul>	<p>Section 3.8, Section 7.13 and Appendix 11</p>
<p><b>15. Waste</b></p> <ul style="list-style-type: none"> <li>▪ Identify, quantify and classify the likely waste streams to be generated during construction and operation and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.</li> </ul>	<p>Section 7.16 and Appendix 27</p>
<p><b>Plans and Documents</b></p>	
<p>The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Environmental Planning and Assessment Regulation 2000. Provide these as part of the EIS rather than as separate documents.</p> <p>In addition, the EIS must include the following:</p> <ul style="list-style-type: none"> <li>▪ Architectural drawings (dimensioned and including RLs);</li> <li>▪ A physical 3D model and 3D CAD model;</li> <li>▪ Site Survey Plan, showing existing levels, location and height of existing and adjacent structures / buildings and boundaries;</li> <li>▪ Site Analysis Plan;</li> <li>▪ Stormwater Concept Plan;</li> <li>▪ Sediment and Erosion Control Plan;</li> <li>▪ Shadow Diagrams;</li> <li>▪ View Analysis / Photomontages;</li> <li>▪ Landscape Plan (identifying any trees to be removed and trees to be retained or transplanted);</li> <li>▪ Preliminary Construction Management Plan, inclusive of a Preliminary Construction Traffic Management Plan;</li> <li>▪ Geotechnical and Structural Report;</li> <li>▪ Arborist Report;</li> <li>▪ Acid Sulphate Soils Management Plan (if required); and</li> <li>▪ Schedule of materials and finishes</li> </ul>	<p>Refer Appendices (as below)</p> <p>Appendix 3</p> <p>Separate submission</p> <p>Appendix 5</p> <p>Appendix 3</p> <p>Appendix 9</p> <p>Appendix 9</p> <p>Appendix 7</p> <p>Appendix 18</p> <p>Appendix 3</p> <p>Appendix 26 and 23</p> <p>Appendix 11</p> <p>Appendix 10</p> <p>N/A - refer Appendix 17</p> <p>Appendix 3</p>
<p><b>Consultation</b></p>	
<p>During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners.</p>	<p>Section 5 and Appendix 14</p>

EIS REQUIREMENT	REFERENCE
<p>In particular you must consult with:</p> <ul style="list-style-type: none"><li>▪ City of Sydney Council;</li><li>▪ Heritage Council of NSW;</li><li>▪ Transport for NSW; and</li><li>▪ Roads and Maritime Services.</li></ul> <p>The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.</p>	

## 2. THE SITE

### 2.1 Campus Overview

The Camperdown Campus of The University of Sydney is bounded by Parramatta Road, City Road and Missenden Road as shown in Figure 3. The University's Camperdown-Darlington Campus is located in the heart of Sydney, is well connected to principal railway stations and bus services close to the CBD, and enjoys the following metrics:

- **Campus Size:** 49 hectares (Camperdown 33; Darlington 16);
- **Student enrolments:** 54,314 enrolments; 70% domestic; 30% international
- **Construction Jobs:** 5,100 construction; contractors facilities maintenance
- **Built environment:** 237 buildings (186 habitable);
- **Employment:** 7,616 full-time staff: 2,266 administrative; 5, 350 faculty



Figure 3: Camperdown-Darlington Campus

### 2.2 The Site

The development site ("the site") is located to the northeast of the University's Camperdown campus adjacent to the University Avenue entrance (accessed from Parramatta Road). The site is currently used for the Fisher Tennis Courts. 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.

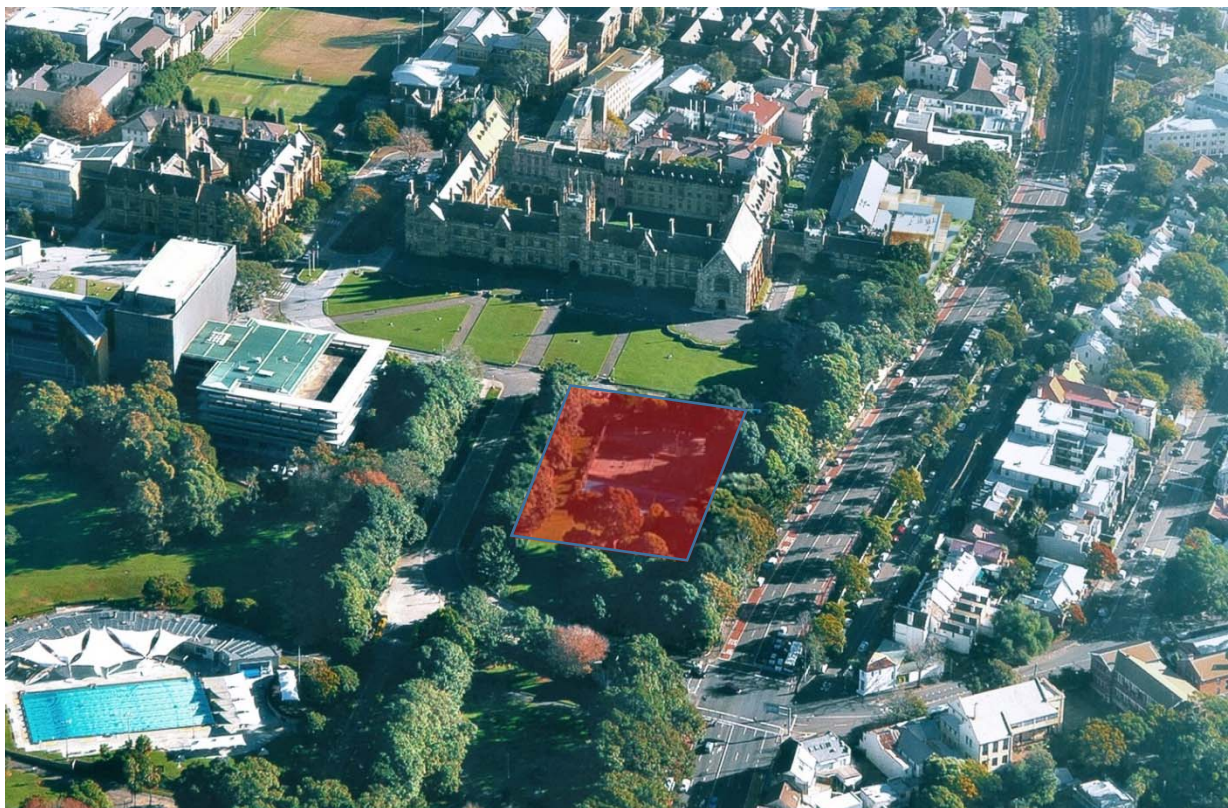
Parramatta Road runs in an approximate east to west alignment and borders the site to the north. University Place that runs in a north south direction is located to the west, beyond which is the University's main Quadrangle Building. University Avenue borders the site to the south, with Victoria Park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

The northern boundary between the Camperdown campus and Parramatta Road features a retaining wall above which a linear garden bed is located containing significant trees. The ground conditions in the area consist of a sloped garden bed. The development site is bound on all sides by trees of varying significance.

Photographs of the site are provided below. A site survey and services plan is provided at **Appendix 5**.



**Figure 4:** Aerial view of site and surrounds (Source: www.nearmap.com)



**Figure 5:** Oblique aerial view of site

The site is located within the vicinity of a number of local heritage items listed under Sydney Local Environmental Plan 2012 (LEP 2012) including the 'Botany Building' (Item 80), 'Main Building and Quadrangle group' (Item 84), 'Baxter's Lodge' (Item 86), 'Site landscaping, University of Sydney perimeter fencing and gates' (Item 72), 'Macleay Museum Building' (Item 79) and 'Victoria Park' (Item 39). The site, and Camperdown campus more broadly, is also located within The University of Sydney Conservation Area under Sydney LEP 2012 (refer Figure 6).

The University is not yet listed on the State Heritage Register however the Heritage Council has resolved to recommend to the Minister for Heritage to list the University of Sydney, the University Colleges and Victoria Park, in the near future, as a collective heritage item on the State Heritage Register.

Further detail regarding statutory and non-statutory heritage listings in the vicinity of the site is provided in the Heritage Impact Statement at **Appendix 6**.



**Photo 1:** Intersection of Parramatta Road and University Avenue (site to right of photo)

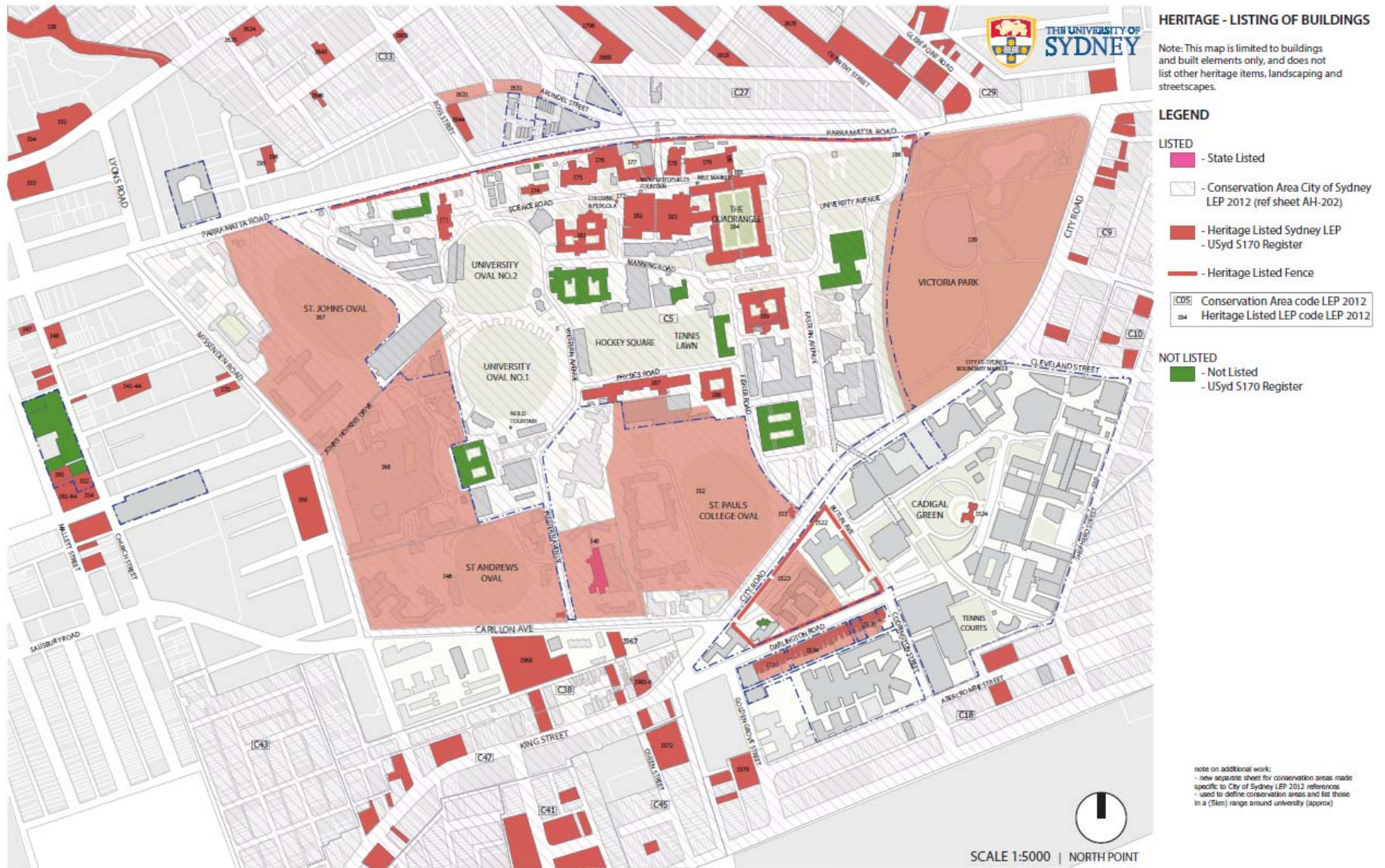


Figure 6: Heritage listings



**Photo 2:** View of site from University Avenue (east)



**Photo 3:** Existing tennis courts



**Photo 4:** Existing tennis clubhouse



**Photo 5:** View from Great Hall (site to left of photo) and Fisher Library (to right of photo)



**Photo 6:** View to Great Hall looking west from University Avenue (CCWM site to right of picture)

### 2.3 Legal description and ownership

The site is legally described as Part Lot 1 in DP 1171804. The University of Sydney is NSW Crown Land. A Plan of Consolidation is separately proposed which will consolidate seven separate lots currently comprising the Camperdown Campus. The CCW Museum Site will be part of Lot 101 in this Plan once it is registered.

A site survey is provided at **Appendix 5**.

### 2.4 Site opportunities and constraints

The proposed design was formulated following a detailed analysis of the site opportunities and constraints as outlined in detail in the Architectural Design Statement prepared by JPW and provided at **Appendix 7**. Key factors include:

- **Site characteristics** – the building has been designed and sited having regard to existing levels, the existing site landscape, the need to complement nearby heritage buildings, as well as key views and vistas (including from Parramatta Road, Victoria Park, the Great Hall and Quadrangle and Eastern Avenue)
- **Landscape site character** – a detailed landscape character assessment was undertaken which included recommendations in relation to building siting, height and scale and future plantings. The proposal is in accordance with these recommendations.
- **Site suitability** – The site has been selected having regard to findings of previous master plans / reports which identified the site as suitable for a future building
- **Relationship to Victoria Park** – detailed consideration has been given to the project's relationship with Victoria Park including the existing landscape character, key sightlines, and priority pedestrian routes and connections between the two.

- **Setbacks** - The building has been carefully positioned within the existing landscape to relate to, and reinforce, the unique character of this part of the Campus and to complement the building alignment and setbacks established by the adjoining Fisher Library.
- **Building height** – the height of the building has regard to the site slope which comprises a fall of approximately 11.5m from University Place to University Avenue. The entry forecourt is set at RL35.50 to enable an accessible approach from Eastern Avenue and University Place. Much of the building is located below ground to maximise open landscape space around the building.
- **Access, address and servicing** –The main entrance has been located off University Place, to reinforce the importance of this major formal outdoor open space within the Campus. The entry doors relate to the Great Hall axis across University Place. Consideration has also been given to vehicular access both for the dropping off of visitors and BOH servicing arrangements. These have been separated to minimise impacts and potential conflicts. Accessible access has also been considered however it is noted that the approach from the Fisher Library is the only accessible path way from the centre of the Campus due to the existing levels exceeding accessible gradients.
- **Relationship to the existing site landscape** - The building envelope above and below ground has been established from extensive site investigations of tree roots (including air spading and hand trenching) and tree canopies by a qualified arborist. Tree protection zones have also been established by a qualified arborist.

A site analysis plan is also included in the Architectural Plans at **Appendix 3** (refer plan JPW-DA0300).

### 3. THE PROPOSAL

#### 3.1 Project Overview

This SSD application seeks approval for the construction of the new CCWM Museum at the University of Sydney on the site of the existing Fisher Tennis Courts, northeast of the junction of University Place and University Avenue, Camperdown Campus. The proposal is intended to co-locate and consolidate the Macleay Museum, Nicholson Museum and University Art Gallery as well as collections from a number of currently fragmented locations into a new single museum building.

The proposal will involve the construction of the new CCWM and will include:

- Construction of a new five level building plus plant with central void consisting of:
  - 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; and
  - Plant rooms.

The following works are also proposed as part of the SSD application:

- Retention, removal and planting of trees surrounding the new development;
- Hard and soft landscaping works;
- Civil works including excavation to accommodate the three lower levels;
- Building identification signage;
- Utilities and services infrastructure upgrades and augmentation where required.

Architectural plans of the proposed development have been prepared by JPW and are provided at **Appendix 3**. Perspectives of the proposal are also provided at **Appendix 4**.

The CCWM project will result in:

- the equivalent of approximately 238 full-time equivalent jobs during the construction period; and
- a total of 24 permanent jobs during its operation (these are existing positions in the University with staff relocating to the new facility).

Additional indirect employment generated from the proposal comprises 366 full-time equivalent jobs during the construction period and 31 full-time equivalent jobs during operation.

The total employment impact is therefore an additional 660 FTE jobs generated in all industries across both construction and operation (refer Multiplier Analysis at **Appendix 8**).

### **3.2 Design Philosophy**

As outlined in the Architectural Design report (refer **Appendix 7**) the vision for the project is as follows:

*The Chau Chak Wing Museum's exhibitions, programs and onsite collection access will enable the University of Sydney to transform the relevance and significance of its unique collections of great cultural, artistic, scientific and historical importance.*

*A suite of world-class gallery spaces will deliver more than three times the University's current display space and allow the University to significantly expand exhibition programs. For the first time the university can host major traveling exhibitions from first class international and national collections.*

*Themed study rooms will support interdisciplinary teaching and learning and enable greatly expanded schools programming. These spaces will become the backbone of object-based learning and critical analysis across multiple disciplines.*

*Embracing a unique gateway location on the northern side of the Camperdown Campus, the Chau Chak Wing Museum will be a cultural destination of local, national and international significance.*

Key considerations which informed the proposal include:

#### **Relationship to Neighbours**

##### *Fisher Library*

*The parapet line of the Museum was set at RL. 48.350, to relate to the parapet of Fisher Library. This level incorporates detailed advice from equipment suppliers that minimises the clearance heights needed for key mechanical equipment in the roof level plant room. Original drawings of the Fisher Library indicate that the upper surface of the expressed horizontal blade forming the top of Fisher Library is RL. 48.310.*

##### *Great Hall*

*The entrance to the Museum has been positioned to relate to the axis of the Great Hall.*

#### **Floor to Floor Heights**

*The existing site levels and relationship to the parapet of Fisher Library have directly informed the existing floor heights.*

##### *Ground Level*

*The Ground Level has been set to provide an accessible pathway from Fisher Library and Eastern Avenue. The floor - ceiling height is 3m, which is considered the minimum for such a facility.*

##### *Upper Level*

*Several key spaces are located within the upper level. Staff offices have a floor – ceiling height of 2.5m, which is 200mm lower than conventional office space. The major gallery space at the upper level has a floor – ceiling height of 7.5m. This is critical for the display of large contemporary artworks and for the Museum to attract and present major national and international touring exhibitions. Plant rooms are located above all spaces at this level except the major gallery space.*

### **Integration of Plant & Equipment**

*The design has been developed to ensure that plant and equipment is not visible on the roof from The Quadrangle - there are no projections beyond the parapet line.*

#### *Potential Relocation of Plant from Upper Level*

*There are limited opportunities to relocate plant and equipment from the Upper Level to other parts of the building without a range of consequences, including reduced usable area for core museum functions, impacts on character and amenity of landscape, increased cost and operational risks.*

### **Landscape**

#### *Significant Trees*

*The building has been carefully positioned to avoid significant trees around the existing tennis courts.*

#### *Existing Levels & Topography*

*The floor levels of the building have been developed to respond to the surrounding topography.*

#### *Landscape Character*

*The building mass above ground level has been minimised by carefully positioning the building within the existing trees and so that the extent of open lawn around the building is maintained.*

### **Loading Dock Access**

*Museum operations require access for specialist delivery vehicles, including articulated and specialist art transport hi-bay trucks.*

*The minimum clearance for these vehicles is 4.5m.*

*The loading dock is located directly adjacent to a range of specialist facilities related to the movement of artefacts in and out of the building.*

*The ramp access into the basement has a gradient maximum of 1:8, with 1:12 and 1:20 transitions. This is the maximum possible gradient for the vehicle access ramp.*

### **Summary**

*The proposed design for the Chau Chak Wing Museum balances a range of considerations to ensure that the building is integrated with the surroundings, makes a positive contribution to the character and significance of this part of the Campus, and is a building that is efficient and safe to operate.*

*It is not feasible to reduce the floor levels proposed.*

*It is not feasible to relocate plant elsewhere in the building or landscape as this poses considerable operational constraints.*

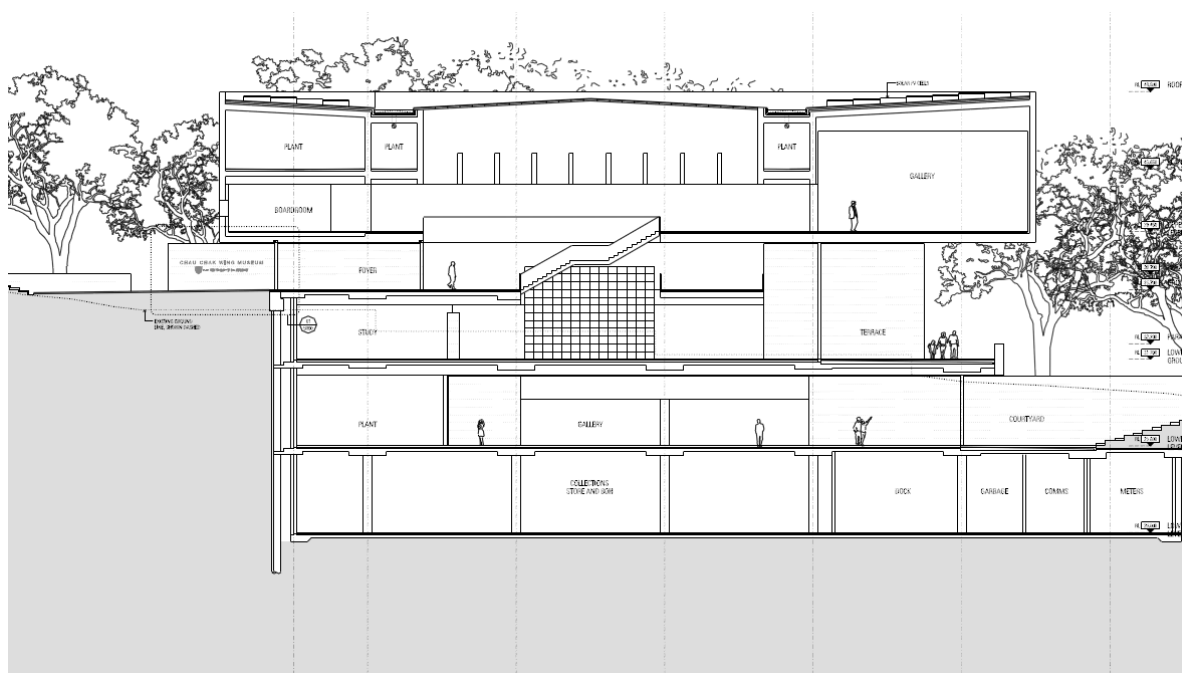
In addition the key design principles adopted for the building are:

- provision of a welcoming entrance
- simple, legible circulation
- embracing the landscape
- flexible display spaces, and
- response to place.

These are discussed in further detail at section 7.1 below and in **Appendix 7**.

### 3.3 Civil Works

The site slopes steeply from west to east at an approximate grade of 1 in 11 culminating at a short 0.5m high retaining wall before transitioning to the footpath alongside University Avenue. The proposed building has two basement floors, a lower ground floor which is partially below the existing ground level and a driveway from University Avenue which ramps down into the basement. This is illustrated on Figure 7.



**Figure 7:** Section view of proposed building and existing ground level

The proposal will involve the excavation of approximately 27,560m<sup>3</sup> of material to accommodate the new building and OSD basin. The extent of excavation is shown in the Civil Engineering Plans at **Appendix 9** and cut/fill volume calculations are provided in Table 2 below.

**Table 2:** Cut and Fill

	Cut (m <sup>3</sup> )	Fill (m <sup>3</sup> )	Net (m <sup>3</sup> )
Building Earthworks	27,640	190	27,450
Basin	170	65	105
Total	27,810	250	27,560

The works will result in a net excess of 27,560m<sup>3</sup> of excavated material which will need to be disposed of off-site. This is discussed further in sections 7.14 – 7.16 below.

### 3.4 Built form

#### 3.4.1 Building Siting

The building has been sited in accordance with the detailed opportunities and constraints analysis outlined in the Architectural Design Report at **Appendix 7** and in accordance with the principles summarised in section 3.2 above. As noted a number of alternative siting options were considered however the proposed option was the only alternative that resulted in all positive impacts when assessed against key parameters.

### 3.4.2 Built Form

The building has a maximum height of RL43.350 / 18.3 metres above natural ground level. It totals 5 storeys however only a maximum of 3 storeys are visible above ground level with two to three storeys being subterranean basement / subbasement levels having regard to the slope of the land.

The building is built around a central void that extends throughout the building with skylights above delivering natural light to all levels within the building.

**Table 3: Key Statistics**

STATISTIC	PROPOSAL
GFA	7740m <sup>2</sup>
Height	RL48.350
Storeys	5 storeys
Metres	18.3m
Car parking	Nil

#### Lower Level 2 (RL19.850)

Lower Level 2 will accommodate a large area dedicated to CERC space, loading dock, plant and other service facilities, garbage room, life and “dirty workshop”. Access to the loading dock is via a ramp entered off the eastern end of University Avenue. The loading dock has been designed to accommodate a medium rigid vehicle.

The proposed layout of Lower Level 2 is indicated below at Figure 8.



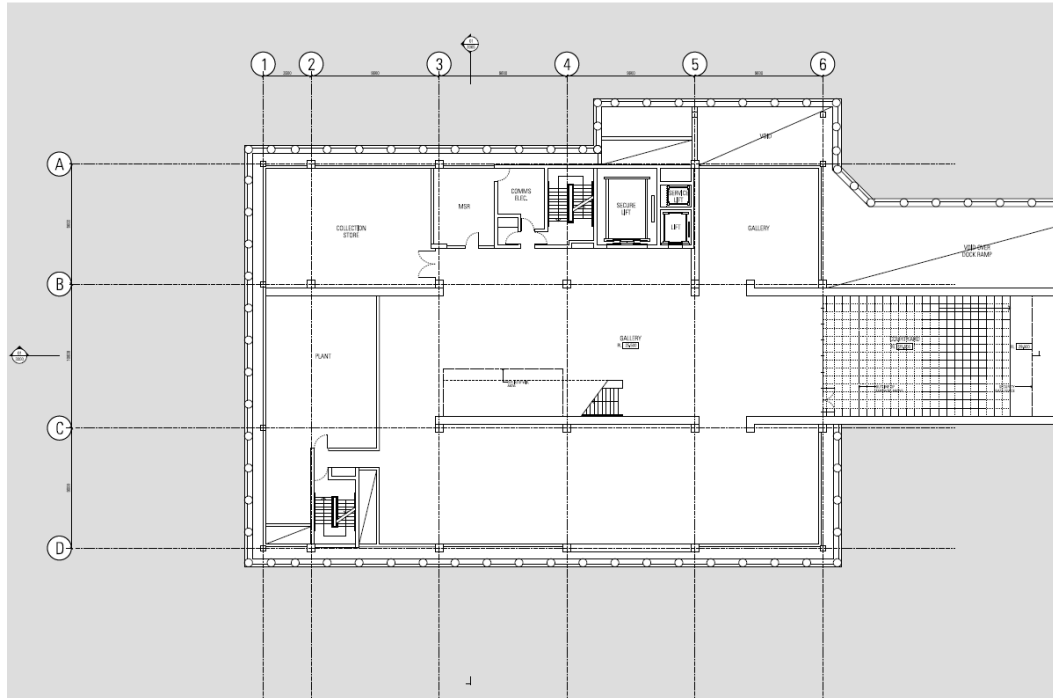
**Figure 8: Lower Level 2 Plan**

#### Lower Level 1 (RL25.500)

Lower Level 1 will comprise an extensive gallery area, along with collection storage space, plant room services rooms and lifts. The gallery area extends over four levels from the Lower Level 1 up to the Upper Level, providing approximately 2,085m<sup>2</sup> of exhibition space to display the museum’s collection as well as other material. A large skylight over the central void will provide light into the gallery areas and the museum more generally.

At the eastern end of Lower Level 1 a courtyard entry to the lower gallery area will be provided. Stairs and terraced step seating will lead down to the courtyard.

The proposed layout of Lower Level 1 is indicated below at Figure 9.

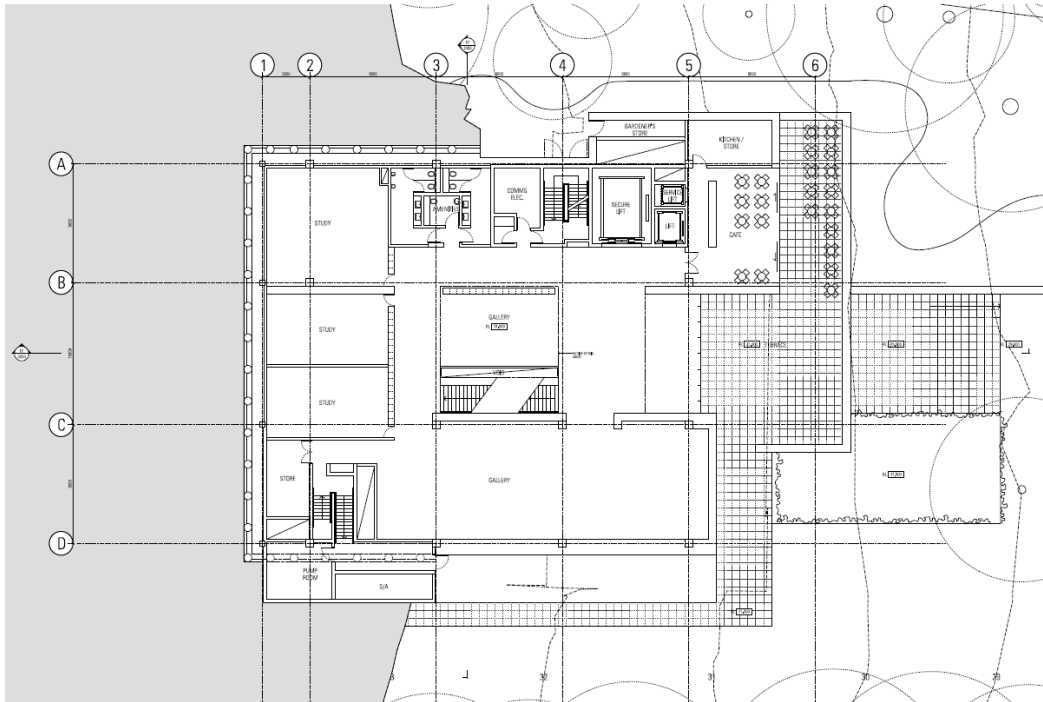


**Figure 9:** Lower Level 1 Plan

### **Lower Ground Level (RL31.000)**

Along with the gallery area, three educational study rooms are also provided on this level together with a café, amenities, back of house and lifts. A large terrace will extend the full length of the eastern end of the building. The café will open out onto the terrace with outdoor café seating located at the north-eastern end.

The proposed layout of Lower Ground Level is indicated below at Figure 10.

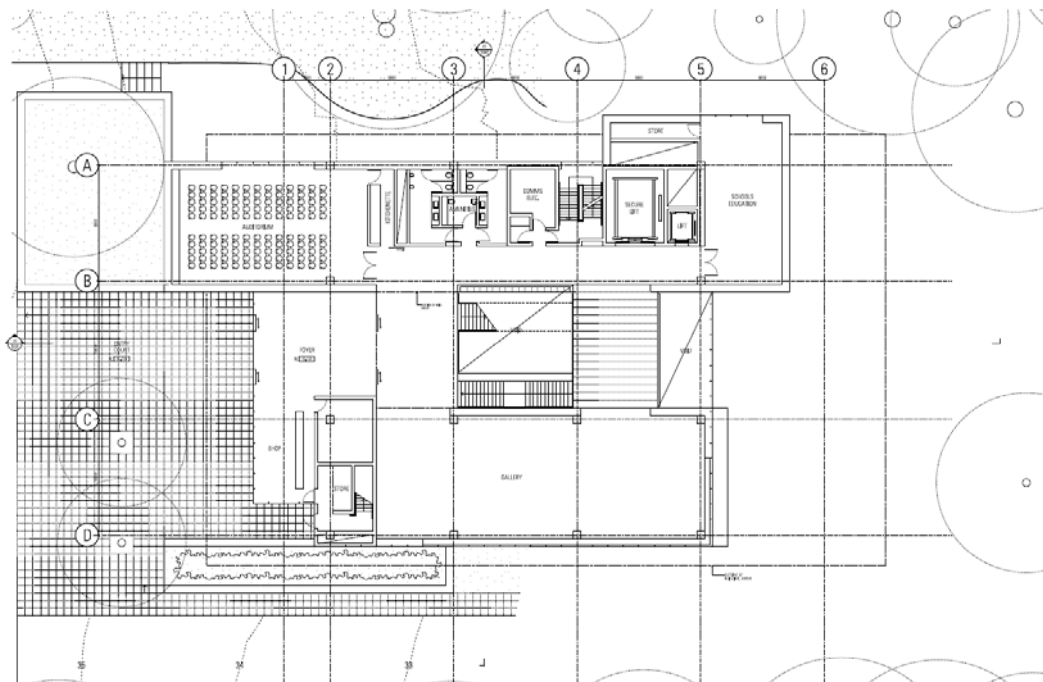


**Figure 10:** Lower Ground Level

**Ground Level (Main entry level) (RL35.500)**

The main entry to the building is located on this level. An entry forecourt will be provided at the western end of the site which will lead into the building's arrival foyer. The Ground Level also includes further gallery space, a 130 seat auditorium with kitchenette, museum shop, schools' education area, amenities and back of house.

The proposed layout of Ground Level is indicated below at Figure 11.



**Figure 11:** Ground Level Plan

### Upper Level (RL39.200)

The Upper Level will contain gallery space at the eastern end, conservation and reference resource rooms, staff offices and boardroom as well as staff amenities and back of house areas. Slotted highlight windows are provided on all elevations of this level to allow for natural light.

The proposed layout of Upper Level is indicated below at Figure 12.

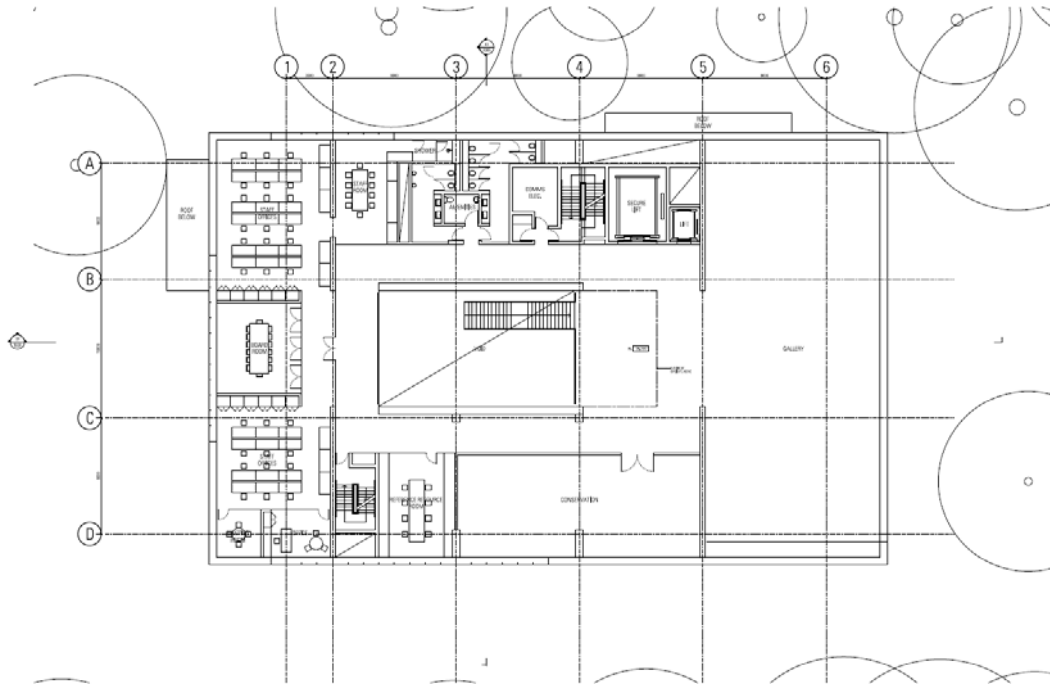


Figure 12: Upper Level Plan

### Plant Level (RL43.35)

The top level contains building plant. A large area of plant is required to service the museum which has particular climate management requirements. The plant is incorporated within the building to avoid any structures sitting above the roof line. The eastern end of this level comprises a void over the Upper Level gallery. The proposed layout of the Plant Level is indicated below at Figure 13.

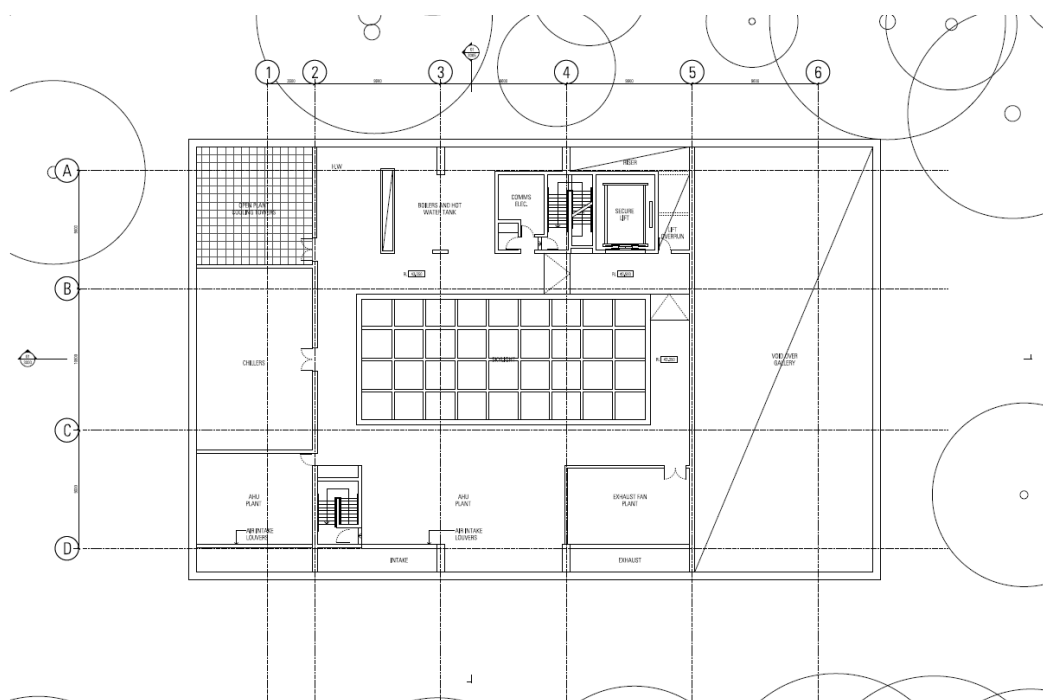


Figure 13: Plant Level Plan

### 3.4.3 Materials and Finishes

The proposed materials and finishes comprise in situ concrete, reconstituted stone, and clear and fritted glass with dark framed glazing. The building will present as a solid stone base with light coloured concrete box floating above this base on a glass plinth. The roof and ground level paving will comprise gravel ballast in a light colour.

A detailed description of the design concept, materials and colours is included in the Architectural Design Report at **Appendix 7** and Materials Schedule is provided within the Architectural Plans at **Appendix 3** (JPW-DA-A-9000).

## 3.5 Trees and Landscaping

### 3.5.1 Tree Removal and Protection

One of the key considerations in the design and siting of the building has been the need to retain as many of the existing trees on the site as is feasible. The most significant trees on the site being the nine *Ficus macrophylla* (Moreton Bay Fig) and six *Ficus rubiginosa* (Port Jackson Fig) trees to the north adjacent to Parramatta Road, and the 18 *Ficus rubiginosa* trees to the south along University Avenue. These trees will all be retained and protected during construction. However, the development requires the removal of a number of trees which lie within the footprint of the new building. An Arboricultural Impact Assessment has been prepared for the project and is provided at **Appendix 10**.

18 trees will need to be removed to facilitate the development as follows:

- Two (2) *Eucalyptus haemastoma* (Trees 85, 86)
- Seven (7) *Tristaniopsis laurina* (Trees 37, 38, 39, 40, 41, 42, 1006)
- One (1) *Lophostemon confertus* (Tree 43)
- Three (3) *Pinus halepensis* (Trees 77, 78, 79)
- Two (2) *Brachychiton acerifolius* (Tree 73, 75)
- One (1) *Callistemon viminalis* (Tree 84)

- One (1) *Jacaranda mimosifolia* (Tree 74)
- One (1) *Olea Africana* (Tree 87)

One *Ficus rubiginosa* (Tree 1005) has also been identified for removal due to its poor condition.

The Arboricultural Impact Assessment indicates that thirteen trees have high retention values. The majority of these will be retained with only two (Trees 85 and 86) requiring removal to facilitate the development. Thirty-two trees have moderate retention values, six of which (Trees 38, 40, 42, 43, 778 and 79) will require removal. In addition, seven of the twenty-six trees with low retention values will require removal. Tree 1233 is a small commemorative planting which is recommended for transplanting.

The SSD proposal includes replacement trees surrounding the new CCWM building. New plantings are addressed under section 3.6.2 below.

An assessment of the impact of the tree removal is also provided in Section 7.12 of this report.

### 3.5.2 Landscaping

The proposed landscaping will feature a mix of lawns, mass planting, tree planting as well as hard paving of the western courtyard (entry forecourt) and eastern courtyard. A landscape plan is provided in the drawings at **Appendix 3** (Drawing No. JPW-DA-L-0500).

The key components of the public domain and landscape design for the CCWM are:

#### Entry Forecourt

Sandstone coloured precast concrete paving and stairs with an acid wash finish create a welcoming arrival space. Planter walls match the sandstone precast walls and paving elements. Trees are integrated into the pavement, with custom cast iron tree grates. In ground lighting is integrated into the pavement.

#### North

Existing trees generally retained with the building stepped back from the large fig growing against the existing clubhouse. The existing pathway within the trees is retained, with a new connection to the University Avenue pavement to the east.

#### South

Precast planters create a stepped landscape of terraces that follow the natural fall of the site towards the east.

#### East

An accessible terrace for the café is located at Lower Ground Level and overlooks the landscape to the east.

The Garden Courtyard at Lower Level 1 opens out with a series of precast paved steps and seating platforms. A custom steel fence and gate secure the Garden Courtyard with access only from within the Museum. Low height, large format sandstone coloured precast elements create bedding areas for ground covers, shrubs and hedges. These elements also provide OSD adjacent to the dock entry, as well as forming the dock entry enclosure. The dock entry is paved with special precast pavers.

#### Plantings and paving

Proposed planting will include trees, shrubs and groundcovers as outlined at **Appendix 3** (Drawing No. JPW-DA-L-0501 Plant Schedule 01). Proposed trees will include *Cupaniopsos anacardioides* (Tuckeroos), *Tristaniopsis laurina* (Watergums) and *Waterhousia floribunda* (Weeing Lily Pillys). Proposed shrubs will include Kangaroo Paw, White Bottlebrush, Gynea Lilys, Lilly Pillys etc. and groundcovers will include English Ivy, Creeping Boobiolla, Grevillea and Star Jasmine,

Hardscape materials will comprise reconstituted stone paving and decomposed granite paths.

The proposed landscaping works have been designed having regard to a number of key documents including:

- The University of Sydney Landscape Master Plan (1993);
- Sydney University Concept Landscape Plan (2014);

- Campus Grounds Conservation Plan (2013);
- University of Sydney Campus Improvement Plan (SSD 13\_6123);
- University of Sydney Wingara Mura Strategy (2012);
- University of Sydney Lighting Master Plan; and
- CIS Landscape Standards (2013).

### 3.6 Signage

A 'Chau Chak Wing Museum' building identification sign is proposed on the reconstituted stone wall at the forecourt entry on Ground Level. The sign has been designed to integrate into the building form and will serve to identify the building to pedestrians and motorists.

The sign will comprise:

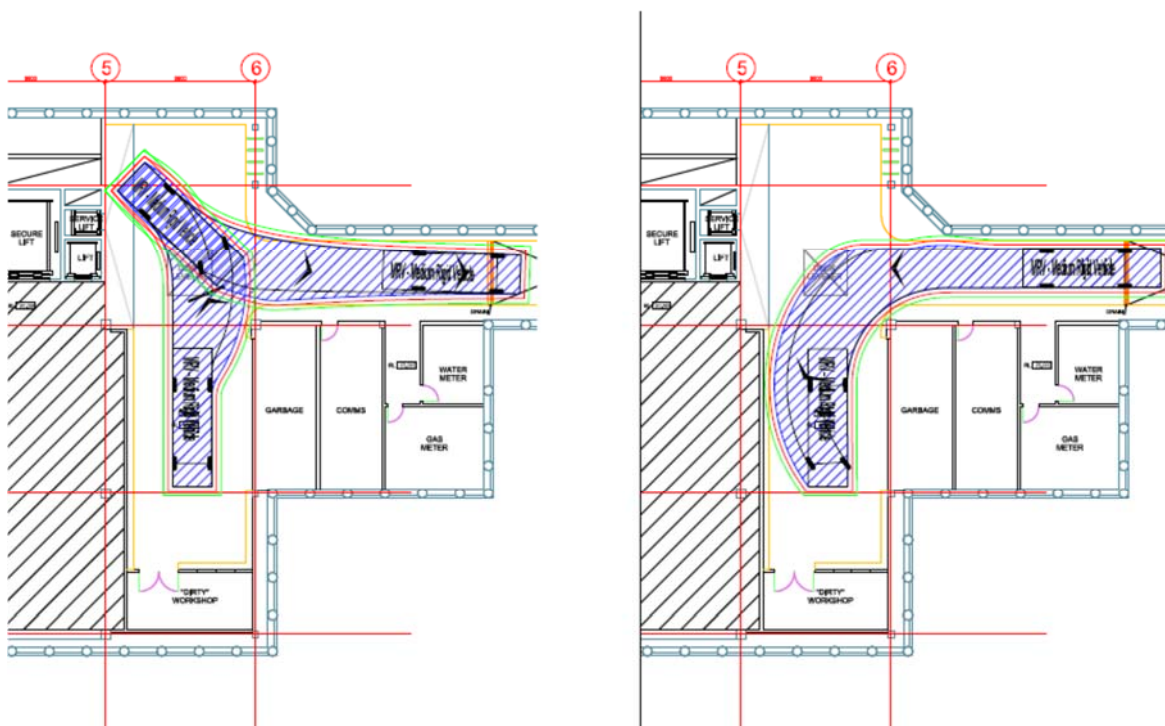
- A museum name sign in black metal lettering 225mm in height with a total length of 5381mm, and
- The University Crest and lettering cast into the concrete 120mm high with a total length of 3383mm.

The proposed sign is illustrated on the Signage Plan (JPW-DA-A-5000) which forms part of the Architectural Plans at **Appendix 3**.

### 3.7 Traffic, Access and Parking

All required loading and waste collection will occur in the loading dock to be provided at the eastern end of Lower Level 2 of the building. The loading dock is accessed off University Avenue approximately 20 metres from its intersection with Parramatta Road.

The loading bay has been designed for larger vehicles for large museum exhibitions. These deliveries are expected to occur infrequently. Figure 14 shows a typical delivery vehicle (medium rigid vehicle) manoeuvring into the proposed loading bay.



**Figure 14:** Vehicle manoeuvre in loading bay

Apart from the access for the new loading dock, the proposal will generally not alter existing vehicle access arrangements to the University. Similarly, the Museum will not provide for car parking on site, instead relying on the adjacent on-campus parking.

The Campus Improvement Program has identified the need to consider bicycle parking across the campus to provide appropriate forms of bicycle parking for staff and students. These facilities are to be staged as new buildings are developed, provided as parking in bike rooms and as bike rails in the public realm. Bicycle parking facilities will be provided at a rate of 1 per 10 staff and 1 per 10 students on campus at the peak occupancy level (in accordance with City of Sydney DCP 2012).

In relation to the current project bike storage racks are provided in the basement to accommodate parking of eight (8) bicycles (4 bicycle rails) for use by staff as well as shower and locker facilities on the ground floor of the building. Four (4) bicycle rails are also to be installed at the entry plaza level for visitor use as illustrated on the Landscape Plan at **Appendix 3** (JPW-DA-L-0500).

Pedestrian access into the museum will primarily be from the west off University Place. Secondary access is from the eastern lower courtyard.

### 3.8 Stormwater Management and Drainage

The design intent for the new museum drainage system is to replicate the existing drainage regime and to not increase the peak rate of discharge from the site. Stormwater will be collected from the museum development via roof guttering and external landscape drainage. This water will be drained to the University's existing 300mm diameter stormwater pipe and drain into Lake Northam as illustrated in the Civil Engineering Plans at **Appendix 9**.

As outlined in the Multidisciplinary Engineering Report at **Appendix 11** the external stormwater drainage design includes:

- Identification, protection/relocation and/or adjustment of existing drainage services that conflict with the proposed works;
- Design of pipes, pits, channels and grates for stormwater control through the site in response to the architectural proposals;
- Collection and discharge of building roof water;
- Subsoil drainage required for landscaping and pavements (but excluding basement drainage); and
- Water Sensitive Urban Design (WSUD) including on-site detention (OSD) and water quality treatment (as appropriate).

Water Sensitive Urban Design (WSUD) will address the quantity and quality of stormwater runoff from the project site. The stormwater design will satisfy the following:

- Water Quantity - Requirements for discharge through the existing 300mm pipe
- Water Quality - City of Sydney and Sydney Water requirements and Lake Northam specific water quality requirements.

### 3.9 Lighting

Public domain lighting will be designed to comply with the relevant Australian Standards and the University of Sydney Lighting Master Plan. Overall lighting will be provided to external areas for public safety along with select feature lighting to elements such as feature trees.

### 3.10 Utilities and Infrastructure

A review of existing and required services has been undertaken by Arup and is detailed in the Utilities Infrastructure Report at **Appendix 12**. The analysis suggests 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 new building need to be confirmed, as the University is investigating its 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.

### 3.11 Cafe

The café located on the lower ground floor will be managed by a food and beverage café operator under a lease agreement and will accommodate a maximum of 100 patrons at any one time. It is proposed that the Café will have a liquor licence. The Café area will open up onto eastern side terrace that has City views over Victoria Park.

The anticipated staff will comprise:

- 1 x Kitchen Hand
- 1 x Wait Staff
- 1 Chef/cook
- Casuals as required

The proposed hours of operation for the café are:

- 8am to 9pm Saturday to Tuesday (inclusive) and
- 8am to 11pm Wednesday to Friday.

### 3.12 Operation

A breakdown of the floor area within the museum for different uses is provided below:

- Exhibition spaces – 2,085m<sup>2</sup>
- Research/study/teaching spaces –395m<sup>2</sup>
- CERC facility – 1,235m<sup>2</sup>
- Front of house facilities (shop, café, foyer) - 440m<sup>2</sup>
- Back of house facilities – 1,200m<sup>2</sup>

The gallery is located over four levels, providing for a variety of exhibition spaces and experiences.

The main teaching and learning spaces are located on Lower Ground and Ground Levels and comprise an auditorium, study rooms and schools education space. Staff facilities, including offices and museum boardroom are located on the western end of the Upper Level configured around a central void. This space has been designed to provide more private and quiet zones for staff.

A café and outdoor terrace are provided at the eastern Lower Ground Level to enhance the visitor experience to the museum. The café will look out over the landscaped lawn area, providing an attractive vista for patrons.

The facility will be operated generally in accordance with the Preliminary Operational Management Plan provided at **Appendix 13**. The Preliminary OMP outlines:

- The proposed use of various areas of the building
- Staffing arrangements, hours of operation and occupancy numbers
- Proposed measures to protect the amenity of the neighbourhood including dispute resolution protocols
- Responsible service of alcohol (RSA) policy, and
- Management, maintenance and security arrangements.

### **3.13 Hours of Operation**

Hours of operation are proposed as follows:

- Museum opening hours to general public: 10am to 9pm Saturday to Tuesday and 10am to 11pm Wednesday to Friday
- Teaching use: 8am to 9pm 7 days per week
- Office hours (for staff): 7am to 7pm Monday to Friday
- Café: 8am to 9pm Saturday to Tuesday and 8am to 11pm Wednesday to Friday

### **3.14 Staffing**

The CCWM will accommodate approximately 27 staff members plus cafe staff as outlined above. It is noted that no additional staffing numbers will be accommodated within the museum other than those already accommodated by the Macleay Museum, Nicholson Museum, University Art Gallery and CERC facility.

## 4. JUSTIFICATION AND ASSESSMENT OF ALTERNATIVES

### 4.1 Alternatives Considered

The University of Sydney has identified four options in respect to the identified need for the development. These options are:

- Option 1 - 'Do Nothing' option,
- Option 2 - Single storey addition to Macleay Building
- Option 3 - Two storey addition to Macleay Building
- Option 4 - New building

Two site options were also considered:

- Site A: Around Macleay and Edgeworth David Buildings off Science Road
- Site B: Existing tennis courts to the north of Fisher Library.

The location of the site options are shown in Figure 15.



**Figure 15:** Site options

The opportunities and challenges presented by each site are shown in Table 4.

**Table 4:** Site Options – Opportunities and Challenges

SITE	OPPORTUNITIES	CHALLENGES
Site A	<ul style="list-style-type: none"> <li>▪ Returns Macleay Building to original use</li> <li>▪ Strong presence on Parramatta Road</li> <li>▪ Views</li> <li>▪ Creation of new Square on Science Road</li> <li>▪ Counterpoint of heritage and contemporary spaces</li> </ul>	<ul style="list-style-type: none"> <li>▪ Existing trees</li> <li>▪ Heritage setting and buildings</li> <li>▪ Existing structure limits flexibility</li> <li>▪ Some heritage spaces not aligned with brief</li> <li>▪ Decanting of users and equipment</li> </ul>
Site B	<ul style="list-style-type: none"> <li>▪ Proximity to Great Hall</li> <li>▪ Structure and services purpose built</li> <li>▪ Views</li> <li>▪ Highly flexible display and teaching spaces</li> <li>▪ Co-location of CERC</li> <li>▪ No need for decanting</li> </ul>	<ul style="list-style-type: none"> <li>▪ Existing trees</li> <li>▪ Building presence limited</li> </ul>

#### 4.1.1 Option 1 – Do Nothing

Option 1 involves retaining museum collections and artefacts in six separate locations spread across the University campus. There are a number of significant disadvantages to this option, including:

- The current display and storage facilities are inadequate and severely compromise opportunities for expansion or improvement;
- The current spaces do not provide fit-for-purpose facilities for teaching/research/study associated with the museum and gallery collections;
- The existing museum locations are better suited to other purposes in line with the CIP;
- The existing spaces do not allow for operational efficiencies associated with staffing, storage and the like, to be achieved.

#### 4.1.2 Option 2 – Single storey addition to Macleay Building (Site A)

This option adds a single storey pavilion onto the north side of the Macleay Building (Site A) to create additional exhibition display area space. This option would provide for a simple new build. However, there are a number of disadvantages to this option as follows:

- Existing trees constrain any new building envelope;
- Very limited diversity of display spaces;
- Delivers less usable area than other options;
- Relocation of existing users and facilities resulting in a later completion date;
- CERC (2000sqm) remains separate.

#### 4.1.3 Option 3 – Two storey addition to Macleay Building (Site A)

This option provides for a larger two level structure to the north side of the Macleay Building (Site A), to create a range of display spaces, including a major temporary exhibition space. In Options 2 and 3, the use of the Edgeworth David Building is similar with staff, storage and schools education functions, and the refurbishment of the existing lecture theatre.

This option has the following advantages:

- Strong presence along Parramatta Road;
- Provision of a roof terrace for functions;
- Built form responds to constraints from existing trees;
- Provides for a diversity of display spaces;
- Maximises usable area.

However, the following disadvantages have been identified:

- The need to relocate existing users and facilities,
- CERC (2000sqm) remains separate;
- Existing building requires substantial internal sealing;
- Late completion date.

#### **4.1.4 Option 4 – New Building (Site B)**

Option 4 is the construction of a new museum on the existing tennis court site (Site B). This new building would have a strong presence on the campus and would also enjoy panoramic views out to the city skyline from multiple levels. It would provide for a greater diversity of display spaces and maximises usable area. Other advantages include:

- CERC co-located;
- No relocation of existing users and facilities;
- Timely completion date;
- Terrace for functions.

Challenges include the site topography, the need to complement nearby heritage buildings, as well as protecting existing trees.

## **4.2 Justification for Preferred Option**

When compared against other potential options, the new building on Site B represents the most feasible option for the CCWM.

A number of minor variations (alternatives) to Option 4 including changes to the building siting and footprint were also considered (refer discussion in the Architectural Design Report at **Appendix 7**). The alternatives included locating the Museum building further east and down the slope towards Eastern Avenue. Ultimately the alternatives were discarded due to the potential building footprint's impact on surrounding trees, significant excavation required, pedestrian accessibility difficulties from University Place, as well as University design position that the building should not be "buried" within the site.

The preferred Option 4 siting overcomes these constraints by maximising the retention of trees, allowing a direct and accessible passage from University Place, as well as conforming with the City of Sydney's pre-DA recommendation that the CCWM footprint should align with that of the adjoining Fisher Library (south of the site and across University Avenue).

The proposed CCWM will provide a forward-thinking, innovative and much-needed cultural and intellectual space for exploration, engagement and research at the University. It will be the centre of a new precinct for cultural and scientific engagement at the symbolic heart of the campus. It will also offer an exciting new museum space for the general public to experience the University and its significant collection of antiquities and other exhibits. At the same time, the project will also continue to foster the educational establishment uses and strengths of the campus, ensuring it serves

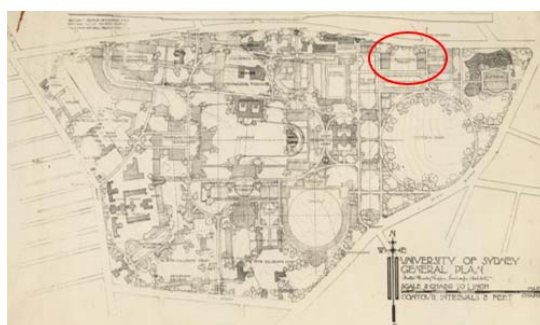
as a primary economic and employment destination and provider through its role in education and research. This role is consistent with the DPE's *A Plan for Growing Sydney*.

The principal purpose of the development is to consolidate the Macleay Museum, Nicholson Museum and University Art Gallery as well as collections from a number of dispersed locations into a new single museum building. Currently, the University's museums, galleries and collections are significantly fragmented and located in numerous buildings. Consolidating the Macleay and Nicholson Museums with the University Art Gallery will capitalise on their unique collections to create a new world class cultural destination. The project will also provide for an enhanced visitor experience, not only through the creation of engaging and fit-for-purpose exhibition spaces, but also through the provision of improved facilities such as the café and museum shop. The consolidation will also allow for improved teaching and research facilities to be provided.

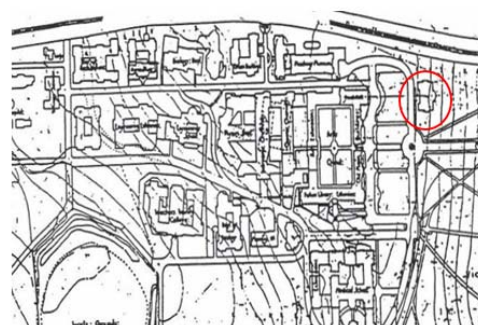
The CCW museum will also be in close proximity to the neighbouring Cultural Precinct (Precinct F) approved as part of the CIP, which is envisaged to become a principal visitor destination precinct accommodating cultural, museum and heritage components.

It is also notes that over the past 100 years, a number of other Master Plans for the University have earmarked the subject site for future development (refer Figure 16 below), including:

- W B Griffin Campus Plan, 1915
- Government Architect Master Plan, 1917
- W H Maze Development Plan, 1961
- Cox Richardson Master Plan, 2008



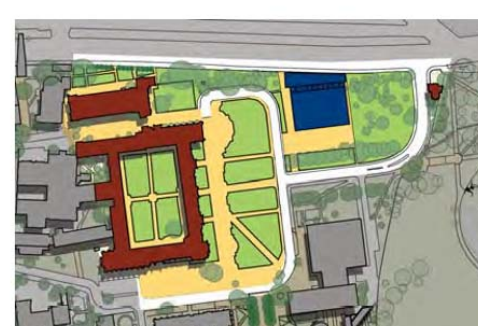
W B Griffin: Campus Plan (1915)



G McCrae (Govt Archt): Masterplan (1917)



W H Maze (USyd Architect): Development Plan (1961)



Cox: Masterplan for 2030 (2008) – Site for 6 storey Gallery

**Figure 16:** Site identification in former development / master plans

## 5. CONSULTATION

In accordance with the SEARS, consultation has been undertaken with relevant public authorities, the community and the University of Sydney, Heritage Advisory Group (HAG) as part of the development of the project. A summary of the consultation undertaken to date and future consultation program is provided in the consultation report at **Appendix 14**.

Consultation has been undertaken with the following government agencies:

- City of Sydney Council;
- Transport for NSW;
- Roads and Maritime Services; and
- Heritage Council of NSW.

Key issues raised by these agencies include:

- Building height and alignment particularly relative to the Fisher Library;
- Treatment and location of loading dock as well as vehicular access more generally;
- Views particular to/from heritage items and to the City;
- Impact on existing trees;
- Public domain treatment;
- Construction traffic management; and
- Relationship of proposal to CIP.

A community briefing session was also held in April 2017 to which community groups and local residents were invited (by letterbox drop). The meeting revealed general interest in the project and a desire to be kept informed of progress.

Matters raised during the consultations have been considered in the formulation of the project. A response to individual issues, copies of agency comments and the minutes of the community briefing session are provided at **Appendix 14**.

The University proposes to continue to provide information to the community in respect of the project in addition to the formal consultation undertaken as part of the development assessment process. Proposed activities will include the provision of information in response to email, telephone and written enquiries. This will provide an ongoing mechanism for the community to raise any issues or opportunities with the University in respect of the project. Further consultation opportunities as discussed in the CCWM Community Consultation Strategy document will be held during the Public Exhibition period as well as throughout the construction and delivery of the project.

## 6. LEGISLATION AND PLANNING POLICIES

This section addresses compliance of the proposed works with relevant legislative requirements and key strategic policies.

### 6.1 Legislation

#### 6.1.1 EP&A Act

##### Objects

An assessment of the project in relation to the objects of the EP&A Act is provided in Table 5.

**Table 5:** Assessment against objects of EP&A Act

OBJECT	ASSESSMENT
5(a)(i) to encourage the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment	The proposal will contribute to the proper management, development and conservation of the City, promote the social and economic welfare of the community and create a better environment. It will do this through creating a sustainable and exemplar cultural and education facility that provides a unique visitor experience. The works will enable the consolidation of the existing Macleay Museum, Nicholson Museum, University Art Gallery and CERC facility into a purpose built building which represents design excellence.
5(a)(ii) to encourage the promotion and co-ordination of the orderly and economic use and development of land	The proposal will provide for the orderly and economic use of the subject land for a purpose consistent with the education and cultural role of the University precinct. The new building will make economic use of part of the University's Camperdown Campus which is currently underutilised. It will also enable the consolidation of the University's existing museum collections into a purpose built facility, thereby providing for greater use and access to those collections for educational and research purposes.
5(a)(iii) to encourage the protection, provision and co-ordination of communication and utility services	The proposed works will not adversely impact on the provision or coordination of communication and / or utility services. Relevant utility providers have been consulted during the development of the proposal and the proposal is able to be adequately serviced.
5(a)(iv) to encourage the provision of land for public purposes	The proposal will continue to provide for the use of the subject land for public purposes through the provision of a new education and cultural facility that will be open to the public.
5(a)(v) to encourage the provision and co-ordination of community services and facilities	The proposed works will provide improved community services and facilities on site through the provision of a new museum facility that will be open to the university community, school groups and the wider public.
5(a)(v) to encourage the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats	The project is expected to have minimal impact on native flora and fauna in the locality, as detailed in the Biodiversity Assessment at <b>Appendix 15</b> . The building has been designed and sited to maximise tree retention with the most significant trees being retained and protected. The proposal will result in the relocation of some existing vegetation on site and the removal of 16 trees. However, wherever feasible, these trees and vegetation will be transplanted elsewhere in the University.
5(a)(vii) to encourage ecologically sustainable development	The proposed new building has been designed in accordance with the principles of Ecologically Sustainable Development, as set out in Schedule 2 of the EP&A Regulation 2000, as discussed in Section 7.5 of this EIS and the ESD report at <b>Appendix 16</b> .

OBJECT	ASSESSMENT
5(a)(viii) to encourage the provision and maintenance of affordable housing	N/A
5(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State	Consultation regarding the proposed new CCWM has been undertaken with both state government agencies and the City of Sydney (refer discussion in Chapter 5). The University has ensured that issues raised have been addressed in the design of the proposal.
5(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment	A program of consultation with the community and key stakeholders has been undertaken (refer discussion in Chapter 5) in developing the current proposal. Further opportunity for public involvement and participation will occur during public exhibition of the SSDA and EIS.

### Section 83D Staged Development

As outlined in Section 1.3 of this EIS, the University has also adopted a whole of campus approach to planning for future growth and upgrades of the Camperdown-Darlington campus, known as the Campus Improvement Program (CIP). The CIP is a State Significant Development that was approved by the Minister for Planning (SSD 13\_6123) on 16 February 2015.

The CIP Concept approval provides for a total of six campus precincts with appropriate building envelopes, generic University land uses, transport and access arrangements, landscape concepts, as well as heritage and design principles for the University's campus. The CCWM site is not included in these precincts.

The SEARs require that the EIS demonstrate that the proposal is not inconsistent with the development consent for the CIP having regard to section 83D(2) of the EP&A Act.

Section 83D (2) of the EP&A Act 1979 states as follows:

***83D Status of staged development applications and consents***

*(2) While any consent granted on the determination of a staged development application for a site remains in force, the determination of any further development application in respect of that site cannot be inconsistent with that consent.*

As shown in Figure 1 in section 1.3 of this EIS, the proposed CCWM does not form part of the CIP Stage 1 SSDA, as it comprises an individual development site not requiring a "Precinct" building envelope approach. The decision to treat and lodge this proposed site development as an individual SSD proposal was endorsed in discussion with DPE staff.

Furthermore the Minister's approval of the CIP SSD13\_6123 includes the following condition:

*A4. This approval does not preclude additional development sites outside the identified Campus Improvement Program precincts, subject to future approval (where required) and the demonstration of satisfactory environmental impacts."*

The proposed SSD application does not contravene section 83D (2) or the conditions in the Minister's Project Approval for the CIP and may be considered for approval.

#### 6.1.2 Threatened Species Conservation Act

The *Threatened Species Conservation Act 1995* (TSC Act) lists threatened species, populations or ecological communities to be considered in deciding whether there is likely to be a significant impact on threatened biota, or their habitats. If a significant impact is likely, an assessment of significance that addresses the requirements of Section 5A of the EP&A Act must be completed.

A Biodiversity Assessment of the site in relation to the proposed development has been undertaken by AMBS Ecology and Heritage (refer **Appendix 15**). The study found that the site does not contain any native vegetation

communities and that fauna habitat is extremely limited. The study found that there will be little or no impact of the Project on most native flora and fauna in the locality.

However, one threatened species, the Grey-headed Flying-fox, forages in trees on the site. Potential habitat for a second threatened species, the Eastern Freetail-bat, also occurs. The report also noted that impacts on the Grey-headed Flying-fox and potential impacts on the Eastern Freetail-bat are not likely to be significant.

Further discussion on biodiversity impacts is provided in section 7.11.

### 6.1.3 Heritage Act

The *Heritage Act 1977* regulates development/activities in relation to non-indigenous heritage, including the Section 170 register which is a mandatory list of heritage items contained on Government-owned land.

The University's Camperdown Campus is listed on the Section 170 Register although it is not listed on the State Heritage Register.

The site of the museum is surrounded by a number of significant heritage buildings. The Quadrangle (East Range, Clocktower and Great Hall) (Exceptional significance) is located to the west of the site, distanced by University Place; the Fisher Library and Bookstack (High significance) is located on the southern side of University Avenue; the Parramatta Road palisade boundary fence (High significance) is to the north; and Baxter's Lodge (High significance) is located on the eastern side of University Avenue, adjacent to the Parramatta Road entrance. To the east and south-east of Baxter's Lodge, outside of the University grounds, is Victoria Park (High significance). The site is also located within the University of Sydney Camperdown Conservation Area (C4 listed under the Sydney LEP 2012).

The Heritage Impact Statement at **Appendix 6** and Section 7.7 of this report provides discussion and consideration of the development and potential for impact on these items.

## 6.2 Environmental Planning Instruments

The SEARs require consideration of the following statutory planning instruments:

- State Environmental Planning Policy (State and Regional Development) 2011;
- State Environmental Planning Policy (Infrastructure) 2007;
- State Environmental Planning Policy No.33 – Hazardous and Offensive Development;
- State Environmental Planning Policy No 55 – Remediation of Land;
- Draft State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
- Sydney Local Environmental Plan 2012.

### 6.2.1 State Environmental Planning Policy (State and Regional Development) 2011

Part 4, Division 4.1 of the EP&A Act, identifies development that is State Significant Development (SSD) and for which the Minister is the consent authority. *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP) defines which projects are deemed to be of State Significance.

Under Schedule 1, Clause 15 Education Establishments with a capital investment value of greater than \$30 million are deemed to be SSD. Further under Schedule 1, Clause 13 Cultural, Recreation and Tourist Facilities with a capital investment value of greater than \$30 million are also deemed to be SSD. The proposed development is both an educational establishment and a cultural facility and has a capital investment value of \$53,326,524. It is therefore SSD as defined by the SEPP and the Minister is the consent authority.

### **6.2.2 State Environmental Planning Policy (Infrastructure) 2007**

The *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) provides the statutory planning framework for the delivery of government infrastructure and services across NSW.

Clause 102 of the Infrastructure SEPP applies to certain developments, including educational establishments that are located on land in or adjacent to major roads with an annual average daily traffic volume of more than 40,000 vehicles. The development site is located immediately adjacent to Parramatta Road, which is a classified road with an annual average daily traffic volume of more than 40,000 vehicles (RMS, Traffic Volume Data 2002). In this regard, the development is required to consider the following matters:

- Provision of vehicular access off a non-classified road if practicable;
- Potential road related noise or vibration requires consideration in respect to future sensitive land uses (including educational establishments) proposed along busy roads.

The development does not propose any new vehicle access off Parramatta Road. Service access will be via University Avenue. No other vehicle access is proposed.

Consideration has been given to the NSW Government “Development Near Rail Corridors and Busy Roads – Interim Guideline” during the detailed design and reviewed by an acoustic and vibration consultant to ensure suitable internal noise amenity (refer discussion in section 7.6).

Clause 103 and Schedule 3 of the Infrastructure SEPP set out those traffic generating developments that must be referred to the Roads and Maritime Services (RMS). As the CCWM will not provide on-site parking it is considered that formal referral to the RMS under this provision is not warranted. Notwithstanding, consultation has already been held with RMS regarding the proposed development (refer discussion in section 5).

There are no other provisions in the Infrastructure SEPP that are relevant to the proposal.

### **6.2.3 State Environmental Planning Policy No 33 – Hazardous and Offensive Development**

Development proposals for potentially hazardous and offensive industry or storage require assessment under *State Environmental Planning Policy No.33 – Hazardous and Offensive Development* (SEPP 33) and include the preparation of a preliminary hazard analysis (PHA) for the potentially hazardous development.

The CCWM Building is to be used as a museum and will not incorporate the storage or use of chemicals that are considered hazardous therefore the development is not defined as a ‘potentially hazardous development’. Accordingly, a ‘preliminary hazard analysis (PHA)’ is not considered necessary for this development.

### **6.2.4 State Environmental Planning Policy No. 55 – Remediation of Land**

*State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55) provides a State wide planning approach to the remediation of contaminated land by considering whether the land is contaminated and, if it is contaminated, whether it can be made suitable for the proposed purpose.

A Detailed Site Investigation Report for the site has been prepared by Douglas Partners and is provided at **Appendix 17**. The report indicates that the site is considered to be suitable from an environmental perspective for the proposed museum development.

A detailed discussion regarding the outcomes of this investigation is provided in section 7.15 below.

### **6.2.5 Draft State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017**

The *Draft State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017* (Draft SEPP) proposes changes that will make it easier for universities, TAFEs, schools and child care providers to build new facilities and improve existing ones by streamlining the planning process. The proposed SEPP will:

- simplify and standardise the approval process for child care facilities, schools, TAFEs and universities, including broadening the range of development that can be undertaken as exempt development and complying development,

- set out clear planning rules for these developments, including where they can be built, what development standards apply, and consultation requirements, and
- establish state-wide assessment requirements and design considerations to improve the quality of these facilities and to minimise impacts on surrounding areas.

The Draft SEPP proposes to insert a new clause 15 into Schedule 1 of the State and Regional Development SEPP which will expand the range of educational establishments that will be considered to be State Significant Development as follows:

**15 Educational establishments**

- (1) *Development for the purpose of a new school (regardless of the capital investment value).*
- (2) *Development that has a capital investment value of more than \$20 million for the purpose of alterations or additions to an existing school.*
- (3) *Any other development for the purpose of educational establishments (including associated research facilities) that has a capital investment value of more than \$30 million.*

The CCWM therefore continues to be considered State Significant Development under the Draft SEPP as it is an educational establishment that has a capital investment value of more than \$30 million.

There are no other provisions under the Draft SEPP relevant to the CCWM project.

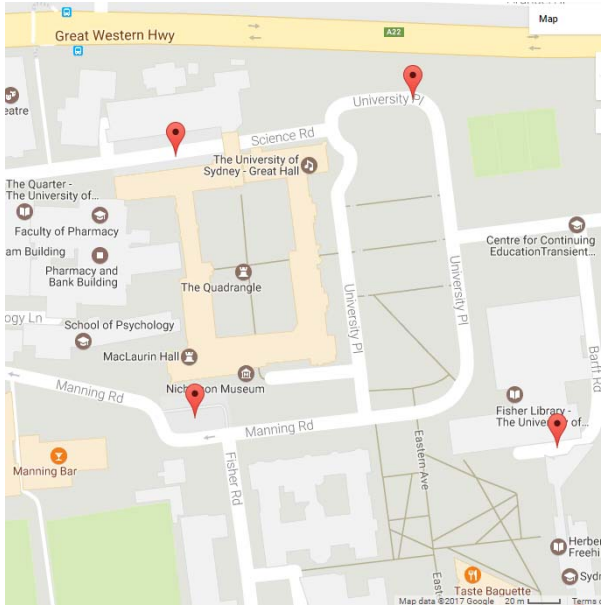
**6.2.6 Sydney Local Environmental Plan 2012**

An assessment of the proposal in relation to the relevant provisions under Sydney Local Environmental Plan 2012 (SLEP 2012) is provided in Table 6 below.

**Table 6:** Assessment against SLEP 2012

PROVISION	ASSESSMENT
Zoning and land use (clause 2.3)	<p>The subject land is zoned SP2 Infrastructure - Educational Establishment. An educational establishment is defined under SLEP 2012 as:</p> <p><i>educational establishment means a building or place used for education (including teaching), being:</i></p> <ul style="list-style-type: none"> <li>(a) <i>a school, or</i></li> <li>(b) <i>a tertiary institution, including a university or a TAFE establishment, that provides formal education and is constituted by or under an Act.</i></li> </ul> <p>Educational establishments are permissible in the SP2 zone with development consent. The proposed museum forms part of an educational establishment and is integral to the University. It provides education to University students, staff and visitors and members of the wider public. It is therefore permissible with consent.</p>
Building height (clause 4.3)	There is no specified maximum building height applying to the site.
Floor space ratio (clause 4.4)	There is no specified maximum floor space ratio applying to the site.
Preservation of trees or vegetation (clause 5.9)	Clause 5.9 aims to preserve the amenity of the area, including biodiversity values, through the preservation of trees and other vegetation.

PROVISION	ASSESSMENT
	<p>This development application seeks consent for the removal of 16 trees as illustrated on the demolition plan at Appendix 3. An Arboricultural Impact Assessment has been prepared and as provided at <b>Appendix 10</b>.</p> <p>Refer to Section 7.12 for a summary of the conclusions and recommendations of this report.</p>
<p>Heritage conservation (clause 5.10)</p>	<p>Clause 5.10 aims to conserve environment heritage, heritage items, conservation areas, archaeological sites and places of significance.</p> <p>The subject land is within the University of Sydney, Camperdown Heritage Conservation Area and is listed on the Section 170 Register. It is also located within the vicinity of a number of heritage items within the University grounds including Baxter Lodge and gates (I86), the Botany building (I80), the Science Road Bridge (I85) and the Main Building and Quadrangle group (I84). Site landscaping including perimeter fencing and gates (I72) along the Parramatta Road boundary of the University is also listed as a heritage item. Victoria Park to the east of the site is also listed as a heritage item (I39).</p> <p>The heritage impact of the proposed development is addressed in the Heritage Impact Statement at <b>Appendix 6</b> and in section 7.7 of this EIS.</p>
<p>Design excellence (clause 6.21)</p>	<p>Clause. 6.21 states that development consent is not to be granted unless the consent authority considers the development exhibits design excellence.</p> <p>In accordance with clause 6.21, a design competition process is not required for the proposed building as the building will not:</p> <ul style="list-style-type: none"> <li>▪ Exceed 25 metres in height above natural ground level</li> <li>▪ Have a CIV of more than \$100,000,000</li> <li>▪ Require a DCP to be prepared under Clause 7.20</li> </ul> <p>However, the SEARs requires the SDD to demonstrate design excellence in accordance with the design excellence provisions of SLEP 2012.</p> <p>The University of Sydney has its own design excellence process which is summarised in the Design Excellence Report at <b>Appendix 19</b>. The University's competition was applied to firstly seek a reference scheme, and then ultimately to arrive at the scheme that forms part of this SSD application. Having gone through this competitive process, the final design is considered to exhibit design excellence. Further an assessment of the proposal against the City's design excellence criteria is provided in the Architectural Design Report at <b>Appendix 7</b>. This assessment confirms that the proposal represents design excellence.</p>
<p>Other land uses (car parking) (clause 7.9)</p>	<p><i>Division 1 Car Parking ancillary to other development</i> (clauses 7.1 – 7.9) sets out the maximum car parking requirements for development. In relation to information and education facilities it specifies that the maximum number of car parking spaces allowed is 1 space for every 200 square metres of GFA. The proposed development does not provide for any car parking. As the parking</p>

PROVISION	ASSESSMENT
	<p>requirement is a maximum limit on the number of spaces (with no minimum limit prescribed) it is considered that the proposed development complies and this provision is not relevant under the circumstances. Notwithstanding, the project site is surrounded by a number of available parking locations on campus including the basement of the New Law building, Science Road, and the rear of MacLaurin Hall off Manning Road. The closest parking areas are illustrated at Figure 17 below.</p>  <p><b>Figure 17: Campus parking locations</b></p>
<p>Acid sulfate soils (clause 7.14)</p>	<p>Clause 7.14 Acid Sulfate Soils provides that consent is required for certain works including works on Class 5 land within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the water table is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land. The subject land is identified under the LEP as Class 5 land however the Detailed Site Investigation report (<b>Appendix 17</b>) notes that as identified in the Acid Sulphate Soil Risk Map published by the Department of Land and Water Conservation the site is in an area of no known occurrence of acid sulphate soil conditions.</p>
<p>Flood planning (clause 7.15)</p>	<p>Clause 7.15 aims to minimise the flood risk to life and property, allow development compatible with a flood hazard and avoid significant impacts on flood behaviour and the environment.</p> <p>The proposed site is located within the Blackwattle Bay drainage catchment. The Blackwattle Bay Catchment Floodplain Risk Management Plan was prepared in September 2015 by WMA Water on behalf of the City of Sydney. A review of the “University of Sydney Flood Mitigation Master Plan – Final Report” October 2015, prepared by WMA Water indicates that the proposed site is not flood affected in the 100 average recurrence interval storm design event. However University Avenue to the east of the site experiences peak flood depths up to 0.5m in the 100 year storm</p>

PROVISION	ASSESSMENT
	<p>event. The proposed drainage design has had regard to this constraint.</p> <p>Sydney Water requires that post development stormwater discharge from the site is to be less than pre development. Accordingly, the stormwater system for the proposed development incorporates on site detention comprising an OSD pond and swale. This system is discussed in the report at <b>Appendix 11</b>. The conclusions and recommendations of this report are discussed in section 7.13 of this EIS.</p>

There are no other relevant provisions contained in SLEP 2012.

### 6.3 Strategic Plans

The proposal's consistency and compliance with the relevant strategic planning policies is outlined in Table 7 below.

**Table 7:** Compliance with Policies

POLICY	ASSESSMENT
NSW State Priorities	<p>The NSW Government is working to achieve 12 Premier's priorities and 18 state priorities to grow the economy, deliver infrastructure, protect the vulnerable, and improve health, education and public services across NSW. One of those priorities is to increase cultural participation in NSW, with the aim of increasing attendance at cultural venues and events by 15% by 2019. Increasing cultural participation is seen as promoting personal and collective wellbeing, as well as contributing strongly to an innovative and robust local economy. Further, increasing attendance at cultural venues and events is considered to have flow-on benefits for job creation, the visitor economy and education.</p> <p>The co-location of the Macleay and Nicholson Museums and the University Art Gallery within the new CCWM building will capitalise on their unique collections to create a new world class cultural destination. In line with international best practice, the transformation will incorporate a suite of temporary exhibition galleries alongside permanent galleries designed to integrate the University's research priorities. As a crucible for the new creative economies of the 21st century the CCWM will allow for the Arts to engage with Science, Technology, Architecture, Chemistry, Economics, Engineering and Health. It will inspire creativity, visual literacy and lateral thinking in relation to materials, spaces and objects. Moreover it will allow future generations to understand Australia's place in the Asia-Pacific region, including its history, changing cultural and political formations, and technological developments. As such, the new CCWM will make a significant contribution to increasing cultural participation in NSW.</p> <p>There are no other priorities that are relevant to the project.</p>
A Plan for Growing Sydney	<p>The CCWM project is consistent with <i>A Plan for Growing Sydney</i>, in particular:</p> <ul style="list-style-type: none"> <li>▪ <b>Direction 3.4 Promote Sydney's heritage, arts and culture</b></li> </ul> <p>The Plan notes that world-class cities are distinguished by their cultural life, with many of Sydney's arts venues contributing to the city's global reputation. The Plan also notes that the Central subregion, which incorporates the University of Sydney, will continue to play a dominant role in the economic, social and cultural life of Sydney. Cultural institutions, public open spaces and iconic places of national importance add to the subregion's character and identity.</p>

POLICY	ASSESSMENT
	<p>The proposed CCWM will provide a new and significant cultural and educational venue in the heart of Global Sydney. It will enhance Sydney's reputation as an international arts and cultural destination.</p> <ul style="list-style-type: none"> <li>▪ <b>Direction 1.6: Expand the Global Economic Corridor</b></li> </ul> <p>The construction of a significant new museum and research facility as part of the ongoing upgrade of the University's facilities ensures the University of Sydney retains and reinforces its position as one of Australia's pre-eminent tertiary institutions. The University is a significant generator of employment both directly and indirectly and has ties with other specialised and priority industries, which together make a significant contribution to the economy.</p> <ul style="list-style-type: none"> <li>▪ <b>Direction 1.7: Grow Strategic Centres – providing more jobs closer to home</b></li> </ul> <p>The University is strategically located in close proximity to major transport routes and support services. The CCWM will not only provide for construction jobs but will enhance the University's ability to deliver growth in education and research with flow on foreign and domestic investment.</p> <ul style="list-style-type: none"> <li>▪ <b>Direction 1.9: Support priority economic sectors</b></li> </ul> <p>The CCWM is located in the <i>Broadway and Camperdown Health and Education Precinct</i>. The Plan notes that education-related land uses and infrastructure in this precinct will be supported.</p>
<p>NSW Long Term Transport Master Plan</p>	<p>The NSW Long Term Transport Master Plan was released in December 2012 and provides a framework to guide the NSW Government's transport funding priorities over the next 20 years. Key points relating to the University transport are as follows:</p> <ul style="list-style-type: none"> <li>▪ Better planning of public transport services around "demand generators" such as universities</li> <li>▪ Upgrade and improvements of surrounding precincts of Redfern Railway Station</li> <li>▪ Sydney Airport to CBD road link</li> <li>▪ Development of jobs in urban renewal areas such as Redfern</li> </ul> <p>Key public transport links identified in the master plan are located adjacent to the University. The completion of the Redfern Railway Station upgrades and recognition of strategic bus corridors will provide better access for students and staff to the University.</p> <p>In addition to the above points relating to universities, the master plan discusses methods in which to provide a Bus Rapid Transit or Light Rail along Parramatta Road. This investigation will also look at the urban renewal aspects along Parramatta Road due to the WestConnex motorway project. These projects should improve the public transport network for Sydney's inner west areas by providing reliable and frequent services.</p>
<p>Sustainable Sydney 2030</p>	<p>Sustainable Sydney 2030 is a set of goals aimed at making the city as green, global and connected as possible by 2030. The CCWM project is consistent with Sustainable Sydney 2030 as it supports a number of the strategic directions including the creation of a creative and cultural city. Sustainable Sydney 2030 notes that arts and cultural activities are fundamental to liveability, tolerance and quality of life and increasingly to</p>

POLICY	ASSESSMENT
	<p>economic development. The CCWM project will greatly enhance the cultural life of the city.</p> <p>Sustainable Sydney 2030 includes 10 specific targets to achieve a sustainable Sydney, five big moves, as well as 10 strategic directions to guide the future of the City. The CCWM supports a number of relevant targets, big moves, and strategic directions, including:</p> <p><b>Big Move 5</b> - transformative development and sustainable renewal - The CCWM will be a transformative project, providing a forward-thinking innovative and much needed cultural and intellectual space for exploration, engagement and research. It will unlock latent opportunities within the University's collections to support both education and research. The CCWM will visibly reinforce and strategically strengthen the University's commitment to excellence. In line with international best practice, this new purpose built facility will consist of a suite of temporary exhibition galleries alongside permanent galleries designed to integrate the University's research priorities.</p> <p><b>Direction 1</b> - A Globally Competitive and Innovative City. The construction of a significant new museum and research facility will contribute to Sydney's role as a Globally Competitive and Innovate City. The CCWM will provide for a high quality urban design outcome that will provide new learning, research and cultural opportunities.</p> <p><b>Direction 2</b> - provides a road map for the City to become A Leading Environmental Performer. The new CCWM building will incorporate sensible and appropriate ESD initiatives aligned to the function and use of the building. These initiatives aim to attain a Bronze level in accordance with the UoS Sustainability Framework.</p> <p><b>Direction 3</b> - Integrated Transport for a Connected City The CCWM supports the University's goal of looking to reduce reliance of vehicle drivers by shifting the mode share to public transport or active modes.</p> <p><b>Direction 5</b> - A Lively and Engaging City Centre. The creation of a new public museum in close proximity to the Sydney CBD will enhance the cultural offering in Sydney and contribute to creating a lively and engaging precinct in this part of the city.</p> <p><b>Direction 9</b> - Sustainable Development, Renewal and Design The CCWM building includes a range of sustainable building features.</p>
Sydney's Bus Future	<p>Sydney's Bus Future (Transport for NSW, 2013) provides the framework for improving and delivering more frequent and reliable bus services throughout Sydney. The core aim of the strategy is to provide an integrated bus network with seamless connections to other transport services. The strategy also aims to tailor bus services to customer needs. In this vein, bus services will be focused into three key types, with associated priority and infrastructure investment:</p> <ul style="list-style-type: none"> <li>▪ Rapid routes, which will use priority infrastructure, connect regionally throughout the city and have stops every 800m-1km</li> <li>▪ Suburban routes, which will have stops every 400m and have mix of frequent 'turn up and go' and timetabled services</li> <li>▪ Local routes, which will complete the network using local streets.</li> </ul> <p>Visitors and staff at the CCWM will take advantage of these improved connections.</p>
Sydney's Cycling Future	<p>Sydney's Cycling Future (Transport for NSW, 2013) provides a framework for the way cycling is planned and prioritised in Sydney. It aims to grow the number of people cycling for transport by investing in safe, connected networks, making better use of existing infrastructure and fostering the formation of partnerships to develop cycling</p>

POLICY	ASSESSMENT
	<p>infrastructure. Key points to emerge from the strategy that are relevant to the Study Area include:</p> <ul style="list-style-type: none"> <li>▪ A safe and connected bicycle network benefits the wider transport network by improving access to towns and centres, reducing congestion and increasing capacity on the public transport system.</li> <li>▪ The promotion of safe separation of cyclists from motor vehicles and pedestrians where possible.</li> <li>▪ Investment in bicycle infrastructure should be prioritised within 5km of public transport interchanges to provide improved connections.</li> <li>▪ Promoting 'bike-and-ride' at major public transport interchanges including secure parking facilities integrated with public transport access.</li> </ul> <p>The City of Sydney is moving towards a well connected cycle network to improve accessibility for workers and visitors to facilities such as the CCWM.</p>
<p>Sydney's Walking Future</p>	<p>Sydney's Walking Future (Transport for NSW, 2013) sets out a strategy to encourage people in Sydney to walk more through actions that make it a more convenient, better connected and safer mode of transport.</p> <p>Key points to emerge from the strategy that are relevant to the Study Area include:</p> <ul style="list-style-type: none"> <li>▪ NSW Government commitment to invest in new walking links that connect people to public transport.</li> <li>▪ Prioritisation of investment in walking infrastructure to be prioritised within 2km of centres and public transport interchanges.</li> <li>▪ Commitment to invest in walking facilities as part of the Transport Access Program, including improved circulation spaces around station precincts and safer walking links.</li> </ul>
<p>Healthy Urban Development Checklist, NSW Health</p>	<p>The Healthy Urban Development Checklist is a guide for health services when commenting on development policies, plans and Proposals. The focus of the checklist is on opportunities for participation in the planning and development system that Area Health Service workers are most likely to experience.</p> <p>It states further that the types of plans and proposals that this checklist is intended for include "Master Plans (may also be called concept plans), Town Centre Plans, [and] Development applications for projects like large housing developments, shopping centres, and community and health care facilities."</p> <p>While the CCWM does not fit into these categories, the Project is considered to be consistent with the intent of the Healthy Urban Development Checklist by providing a new development well connected to existing and future public transport, contributing to social infrastructure in the locality and region, and encouraging non-car transport modes by not providing any additional car parking on-site.</p>
<p>Draft Central District Plan (Greater Sydney Commission) 2017</p>	<p>The Draft Central District Plan was released for comment by the Greater Sydney Commission in November 2016. The Draft Plan sets out priorities and actions for the Greater Sydney's Central District, which includes the local government areas of Bayside, Burwood, Canada Bay, Inner West, Randwick, Strathfield, the City of Sydney, Waverley and Woollahra. Accordingly the Draft Plan is relevant to the current proposal.</p> <p>The Draft Plan includes priorities and actions for a productive Central District focussing on planning and investment in Sydney City as well as knowledge intensive innovation areas, especially in the Health and Education Super Precincts at Randwick</p>

POLICY	ASSESSMENT
	<p>and Ultimo-Camperdown. It recognises that the Precincts generate knowledge, innovation and economic activity through the collaboration that occurs between universities, research institutes and specialised health professionals.</p> <p>Relevant actions / priorities include:</p> <ul style="list-style-type: none"> <li>▪ Develop and implement an economic development strategy for the Eastern City. As part of this the Plan identified the integrated land use planning and transport framework for the Parramatta Road Corridor Urban Transformation Strategy, that establishes the vision for a high quality multi-use Corridor with improved transport choices, better amenity and balanced growth of housing and jobs. The Camperdown Precinct is identified as one of eight precincts proposed along the corridor.</li> <li>▪ By supporting the growth of the health and education super precincts the Plan seeks to ensure that health and education infrastructure keeps pace with population growth. More specifically it recognises the need to: <ul style="list-style-type: none"> <li>- plan for the expansion of these precincts</li> <li>- protect surrounding employment areas for health and education and related land uses</li> <li>- consider flexibility of zones to accommodate ancillary and complementary uses such as health and medical research activities; private hospitals; allied health; ancillary retail; visitor, carer and aged accommodation in the right locations</li> </ul> </li> <li>▪ It identifies the priority of supporting the growth of innovation and creative industries and the need for Council's and State agencies to consider opportunities to grow innovation and creative industries by enhancing synergies and connectivity between health and education facilities</li> <li>▪ It also recognises that there are opportunities to grow the commercial business activity that flows from the existing health and education activities</li> <li>▪ Finally the plan identifies the need to plan for the growth of Camperdown-Ultimo as a health and education super precinct and in recognition of the precinct's scale and complexity designates Camperdown- Ultimo as a Collaboration Area. Subject to the availability of resources, the Plan notes that the GSC will help to facilitate the efforts of the many agencies, organisations and stakeholders, interest groups that are planning for the super precinct to ensure its full potential is being realised. Under the Plan a Collaboration Area is a designated place where a significant productivity, liveability or sustainability outcome can be better achieved through the collaboration of different levels of government and in some cases the private sector or landowners.</li> </ul> <p>Having regard to the above it is considered that the proposal is entirely consistent with the Draft Central District Plan.</p>

## 7. ENVIRONMENTAL ASSESSMENT

### 7.1 Built Form and Urban Design

The following discussion regarding built form and urban design is drawn from the Architectural Design Report prepared by JPW and provided at **Appendix 7**. The built form and urban design strategy for the CCWM is based on the following overarching design parameters:

#### **Welcoming Entrance**

*The Chau Chak Wing Museum will be an active part of the Campus welcoming both students and visitors.*

*The arrival sequence is an important part of any experience, and creates a transition between the large, open civic scaled spaces of University Place and Eastern Avenue, and the more intimate, human scaled spaces within and around the building.*

*The forecourt provides suitable spaces for groups to gather, with views to The Quadrangle and the Great Hall.*

*From the forecourt views through to the landscape beyond are possible.*

*The concrete box forming the uppermost levels provides a sheltered space adjacent to the entrance.*

*Forecourt pavement finishes run into the entrance space and are framed by large sandstone coloured precast concrete panels which define the character of the ground plane as it steps down the site towards Victoria Park.*

#### **Simple, Legible Circulation**

*Other than the lowest level, which contains the loading dock, collection storage and other BOH spaces, all floors of the building are publicly accessible.*

*The circulation system is simple and easy for visitors to understand and use. Open stairs within a sky lit central atrium link all levels, and are visible upon entry.*

*These elements provide a reference point at each level, with display and other spaces set out around them.*

*Large glazed openings to the east are protected by the “floating” concrete element above, and enjoy views to the cafe terrace and landscape beyond.*

*A large dedicated lift for the movement of collections is paired with a passenger lift, and a separate goods lift serving the cafe provides easy movement of goods in and out as well as waste removal direct to the loading dock.*

#### **Embracing the Landscape**

*The building opens out the landscape as it falls towards Victoria Park.*

*Terraces and courtyards provide sheltered external spaces for a variety of uses, allowing the Museum to operate a wide range of public programs and functions, safely and securely.*

*The large scale sandstone coloured precast wall elements are used internally and externally to reinforce connections between inside and outside.*

*The exposed concrete soffit of the upper level is a dramatic counterpoint to the linear, horizontal expression of the ground plane.*

#### **Flexible Display Spaces**

*The design has been informed by a desire to create a unique series of spatial experiences for visitors and maximize flexibility for display.*

*The building has been designed from the inside out, to provide a range of spaces for display and research that are suited to the University’s collections and objectives to generate more interaction and engagement between collections, visitors and research.*

*A large custom display vitrine links the Ground Level and Lower Ground level with a mass display of collection items.*

*Specialist study rooms are integrated with the suite of display spaces.*

### **Response to Place**

*Sydney University's history and aspirations for excellence can be read through its buildings - aspirations for the institution first realized in sandstone, then brick and most recently steel, glass and concrete. In almost all cases, the material expression of buildings across the Campus has projected a confident, contemporary aesthetic of the time.*

*In this aspect, the Chau Chak Wing Museum Building is aligned with its neighbours. Concrete is used as the primary material as it enables structure and cladding to be combined in a single material, making the engineering efficient and the construction process straightforward.*

*Concrete, unlike some other contemporary materials which are highly machined or manufactured on an industrial scale, almost always shows the investment made in its making. This honesty of expression, whether highly controlled or comfortable with its own imperfections or makers' marks, gives concrete buildings a gravitas that other materials cannot match.*

*Concrete enables the building form to be both heroic and intimate in scale, and thereby appropriately address the siting and the internal program and functions.*

*The upper levels of the Museum are contained within a "floating" Class 2 white concrete box, while the lower levels are formed from large scale sandstone precast concrete panels with expressed horizontal joints.*

In summary the proposal will provide a new building of design excellence that responds to the site and place and that will embrace its unique gateway location on the northern side of the University's Camperdown Campus. The new CCWM will be a cultural destination of local, national and international significant and its design and form reflects this significance whilst at the same time as being respectful of its context. The building represents a contemporary aesthetic and will form a significant addition to the University landscape.

The height and form of the building is well considered given site characteristics and will maximise accessibility as well as capitalising on available views. The building is set within the existing landscape and has been sited to reference the heights of nearby building (notably the Fisher Library), reinforce key vistas and preserve significant plantings. The public domain treatment is generous allowing the building to open out the landscape as it falls towards Victoria Park and providing wide generous meeting spaces as well as more intimate spaces. It is therefore considered that the built form and urban design treatment is appropriate to the site.

## **7.2 Visual Impact**

Photomontages of the proposal have been prepared by JPW and are provided at **Appendix 4**. The photomontages have been prepared for key view locations identified as:

- A: View location on axis of the northern end of Eastern Avenue
- B: View from south east corner of the Quad
- C: Axial view on alignment of Bell Tower entry to the Quad, down path across University Place, aligned with University Avenue and path to Victoria Park
- D: View from the centre top step of the entrance to the Great Hall
- E: View from the Parramatta Road entrance to University Avenue adjacent to Baxter's Lodge
- G: View from the north side of Parramatta Road at the intersection with Arundel and Derwent Streets, opposite Baxter's Lodge

H: View from the pathway into Victoria Park on the alignment of University Avenue and the Bell Tower entrance to the Quad

as shown in Figure 18 below.



**Figure 18:** View locations

The photomontages include view locations requested by the NSW Heritage Council comprising the front of the Great Hall, view toward the loading dock from adjacent to Baxter's Lodge and a panoramic view from the central axis. .

The accuracy of the photomontages has also been verified by Richard Lamb and Associates (refer report at **Appendix 18**) which has certified that the images have been prepared in accordance with the Land and Environment Court of New South Wales practice direction for photomontages. The photomontages are accurately scaled and located 3D representations of the likely appearance of the proposed building and can therefore be relied upon.

A heritage assessment of the view impacts of the proposed is provided in the HIS at **Appendix 6** having regard to the photomontages. The HIS notes that the view from the Quadrangle looking down University Avenue towards the city (View C) is one of several significant view corridors within the University grounds that should be retained and, if possible, enhanced as identified in the University of Sydney Grounds Conservation Management Plan (UoS, 2015). This principal view corridor is centred on the Quadrangle clock tower, looking down University Avenue, and across Victoria Park to the former University gates on City Road. This view corridor reflects the alignment of the original Main Drive. Beyond Victoria Park one sees the tall southern CBD skyline.

The HIS notes that the museum is situated to the north-east of this principal view corridor, on an axis with the Great Hall doorway. When looking east from the Quadrangle clock tower entrance, down University Avenue, towards the

southern CBD skyline, the museum is to the left of one's view cone. Set amongst the trees on the steeply sloping ground, the three storey elevation fronting University Place is no higher than the surrounding tree canopy. This is consistent with Heritage Council advice. The museum will not disrupt the principal view corridor down University Avenue, across Victoria Park, to the southern city skyline, but it will block some views of the CBD's north-western skyline (refer Figure 19).



**Figure 19:** View of the Museum from the Quadrangle Clocktower entrance

The report notes that in a recent design review the NSW Heritage Council questioned whether the height of the proposed museum could be lowered to minimize the blocking of the city skyline when viewed from the main entrance to the Quadrangle. The Heritage Council considered that the preferred height was lower than the previously agreed height equivalent to that of the neighbouring Fisher Library. In addressing this issue a number of design responses have been considered including: shifting the building further down the slope [east], relocating some of the functional spaces from the front of the building to the back, reducing the height of the plant room and/or reducing ceiling heights. Each option creates its own set of unacceptable compromises: to the function of the museum; the quality of its interior spaces; to equitable public access from University Place; to the vehicular access to the basement loading dock; and / or an adverse impact on the quality of the landscape, while at the same time achieving only a marginal increase in views of the southern CBD skyline.

Looking west from Victoria Park, up the former Main Drive (University Avenue) view corridor to the Quadrangle (View H) the proposed museum building, off to the right, will be screened by the dense canopy of the significant Fig trees that line University Avenue.

The HIS therefore concludes that taking into account the off-centre northern location of the museum, its understated bulk, form and materials, and the dense canopy of the surrounding significant Fig trees, the impact of the museum on the principal view corridor (View C - from the Quadrangle clock tower entrance, down University Avenue and across Victoria Park to the southern CBD skyline) will be relatively minor and, therefore, is acceptable.

From a landscape and visual impact perspective, the photomontages illustrate that the proposed new building will result in some changes to existing views however these changes will be minor and will ensure the continued availability of key views and vistas particular those identified as being significant from a heritage viewpoint. The photomontages illustrate that key views to the City will be retained from view B and C with the proposed new building. The visual impact of the new building from view E and G will also be minimal with the building shielded by

existing vegetation. Further the new building will be screened from view at location H due to its siting off to the right of the main view corridor and by existing vegetation. The key view to the Bell Tower will therefore not be impacted. Existing view D (view from the centre top step of the entrance to the Great Hall) will be significantly impacted by the proposed new building however it is considered that this existing view of the City is not significant or historic and that alternate views are available. When viewed from this location the new building will form a new sensitively designed and sited element within the existing landscape.

It is therefore concluded that view and visual impact of the proposal is acceptable and that any minor adverse impacts will be offset by the positive impacts of the proposed new development.

## **7.3 Environmental Amenity**

### **7.3.1 Solar access and overshadowing**

The solar access and overshadowing impact of the proposal have been considered in the Architectural Design Report at **Appendix 7** which includes shadow plans prepared for summer, winter and at the equinoxes. In summary the shadow plans confirm that the building does not create any significant new shadowing to Campus spaces, and that most shadowing falls within zones already shaded by existing trees which are to be retained. Further importantly in mid-winter, the building does not shadow the pedestrian pavement on the southern side of University Avenue.

In terms of solar access the building has been designed to optimise light penetration into the building and adjacent spaces having regard to the functional requirements of the Museum in terms of display space etc. The use of controlled natural light from the skylight over the central circulation space reduces the need to artificial lighting and will ensure environmental sustainability.

### **7.3.2 Acoustic impacts**

Acoustic impacts resulting from the proposed development have been assessed in the Acoustic Report at **Appendix 20**. A summary of the conclusions and recommendations of this report are discussed at Section 7.6 further below under 'Noise and Vibration'.

### **7.3.3 Lighting impacts**

All external / outdoor lighting components will be designed in a manner that is bound by the relevant Australian Standards, specifically:

- AS 1158.3.1 Part 3.1 Pedestrian Area (Category P) Lighting – Performance and Design Requirements
- AS 4282 – Control of the Obtrusive Effects of Outdoor Lighting.

All luminaires used within the external/outdoor lighting portion of the site will be designed such that any light spill is highly controlled, particularly in an upward direction. This will be achieved through features designed into the luminaires, or through additional measures as required. Accordingly the proposal will not result in an adverse light spill impact.

### **7.3.4 Reflectivity impacts**

A Solar Light Reflectivity Analysis has been undertaken for the proposed development and is provided at **Appendix 21**.

The analysis identifies any possible adverse reflected solar glare conditions affecting motorists, pedestrians and occupants of neighbouring buildings as a result of the proposal.

The report concludes that the reflected solar glare from concrete, brickwork, timber, etc. is negligible and will not cause any adverse solar glare effects. Similarly, any painted or powder coated metallic surfaces on the exterior façade of the development will have a maximum normal specular reflectance of visible light in the range of 1% to 5% which is well within the acceptable limit.

The Solar Light Reflectivity Analysis recommends a maximum specular reflectivity of visible light of 20% for the glazed aspects of the development in order to avoid any potential adverse glare impacts. This recommendation will be complied with and is included as a mitigation measures at section 9 below.

### 7.3.5 Wind impacts

A Pedestrian Wind Impact Assessment has been prepared and is provided at **Appendix 22**. The assessment focuses on the critical outdoor trafficable areas associated with the proposed development, i.e. pedestrian entrances and walkways around the frontages of the building, which include:

- The courtyard situated to the east on the lower level 1;
- The terrace running along the eastern and the southern perimeter of the lower ground level;
- The entry court situated around the south-western corner of the ground level.

The expected wind conditions have been examined for the various critical trafficable outdoor areas for each of the three predominant wind directions for the Sydney region. The interaction between the wind and the building morphology in the area is considered and important features taken into account including the distances between the surrounding buildings and the proposed building form, their overall heights and bulk, as well as the surrounding landform.

The uphill slope of the proposed development site in the east to west direction could cause the north-easterly winds to accelerate along the site in this direction. However, the existing planting around the building site, along with the high density of low rise residential and commercial buildings around the region, are expected to shield the development from this effect, and both direct westerly and north-easterly winds. The Fisher library building (situated to the south of the site) is expected to shield the site from the southerly winds. As such, the outdoor trafficable areas associated with the proposed development (i.e. the courtyard situated to the east on lower level 1, the terrace running along the eastern and southern perimeter on lower ground level) and the entry court around the south-western corner on ground level) are not expected to experience any adverse wind conditions.

The report recommends retention of the existing planting surrounding the proposed development site which will ensure the wind conditions for all trafficable outdoor areas within and around the development are acceptable for their intended uses.

## 7.4 Transport and Accessibility

A Transport and Accessibility Impact Assessment has been prepared by Arup for the proposal and is provided at **Appendix 23**. The assessment comprises a detailed traffic and transport study of the existing and future conditions including an overview of the transport and traffic planning context, analysis of existing travel patterns and transport infrastructure servicing the site, identification of future parking strategies and an assessment of traffic impacts on the wider road network and public transport. It also includes a travel demand strategy and outline construction traffic management plan both of which are proposed to be implemented as part of the project. In summary the report concludes as follows:

- Census data for the travel zone immediately surrounding the university indicates that 60% of staff travel to the site via non-car modes.
- Staff currently working at the existing university museums would migrate to the CCWM. With the number of museum staff within the university being unchanged, parking and traffic generated from CCWM staff are expected to be unaffected.
- Existing university museum data has been analysed. The busiest week in August 2015 was found to be during August 24 to 30 with a total of 5,800 visitors.

- An assessment of the existing transport features to the site has been carried out. Existing public transport and parking is found to be efficient and sufficient.
- The CCWM will provide no public car parking, instead relying on the adjacent on-campus parking. The Sydney LEP 2012 rate is a maximum rate, and it is appropriate that the CCWM continues to utilise available nearby parking.
- Traffic generation of CCWM is minimal given the typical arrival profile and travel characteristics of visitors. Based on the profile, the weekday peak hour period at 11am would generate some 16 vehicles or 70 vehicles per day.
- The CCWM is classed as 'any other purposes' in the document and the report notes that should the development generate 200 or more vehicles it would need to be referred to the RMS. Given that the development will generate less than 200 vehicles, no consultation with RMS would be needed.
- Proposed traffic management principles would be adopted during the construction period:

In relation to vehicle access arrangements the report notes that all vehicles would enter via University Avenue from Parramatta Road where traffic signal control facilitates entry and exit. Buses and cars dropping off or picking up passengers will traverse University Avenue to arrive at the entry plaza on University Place. Trucks and vans will turn right into a ramp to access the loading dock.

It states that the loading dock entry has been positioned to take advantage of the grades allowing a potentially slightly graded access roadway to a basement level. It is located 25 m from the Parramatta Road entry which provides room for three vehicles to queue on exit before blocking the ramp access. The report recommends that 'keep clear' marking be located on University Avenue to enable vehicles to enter the loading dock ramp and that signage be installed to notify drivers not to store across the driveway.

Arup notes that a very low usage level of the loading dock is expected with garbage collection a couple of times a week and food and beverage twice a day for the on-site café. Further artwork deliveries would be once every 2 to 3 months. At this level of vehicle activity it concludes that the proposed access ramp arrangement is suitable in this location.

Having regard to the above it is considered that the proposal is acceptable in terms of traffic and access considerations. In relation to consultation with the RMS it is noted that, although not required, RMS has been consulted on the project and has indicated that a construction traffic management plan should be prepared. An outline CTMP has been prepared and forms part of the Traffic and Accessibility Impact Assessment at **Appendix 23**.

## 7.5 Ecologically Sustainable Development

The project acknowledges the requirements set out in the SEAR's document and reference to the *Environmental Planning Regulation 2000*. The ESD initiatives proposed for the CCWM project aim to reduce the environmental impacts typically associated with buildings during the construction and ongoing operation. The CCWM project utilises a resource hierarchy approach, with emphasis on avoiding then reducing energy, water, materials etc. The outcome of the resource hierarchy approach is to ensure the CCWM building aligns with the ecological sustainable development principles of Clause 7(4) of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.

An ESD Report has been prepared by Steensen Varming (refer **Appendix 16**) which outlines the applied approach and ESD initiatives /opportunities that have been considered for the project.

The University is committed to delivering functional, flexible, resource efficient and sustainable buildings. The University has developed its own Sustainability Framework which draws from the best national and international environmental building rating systems and best design practices. The Sustainability Framework provides the University with an equivalent rating system to demonstrate industry best practice for sustainable design. The Sustainability Framework considers the following themes:

1. Leadership and Communication
2. Resource Efficiency
3. Healthy Environment
4. Materials
5. Climate Change, Landscape & Infrastructure
6. Sustainable Transport

The Sustainability Framework benchmarks sustainability across the different building types by using common sustainability ambition levels. The CCWM building is targeting a Bronze rating under the Sustainability Framework.

To ensure a sustainable outcome, the following key strategies are being addressed within the proposed design:

- Incorporate a high-performance building envelope, to ensure energy efficiency, occupant comfort (including thermal, visual and acoustic comfort) and assist with the preservation of museum artefacts;
- Incorporate appropriate passive and active design strategies to ensure a low-energy as well as low-maintenance design outcome. Passive strategies have been incorporated where appropriate for space types;
- Adopt water sensitive urban design principles through the incorporation of rainwater harvesting and integration with the University's campus wide stormwater strategy; and
- Adopt practices to minimise demolition, construction and operational waste including recycling of demolition and construction waste.

The sustainability measures to be incorporated into the project are summarised in Table 8. Further detail in relation to these measures is provided in the ESD Report at **Appendix 16**.

**Table 8:** ESD Measures

SUSTAINABILITY ISSUE	INDUSTRY BEST PRACTICE GOALS	CCWM MANDATORY MEASURES TO ACHIEVE A BRONZE AMBITION LEVEL (Implemented using the UoS Sustainability Framework)
Indoor Environment Quality/Occupant Comfort	Improve occupant comfort and indoor environments	The CCWM project incorporates building strategies to improve: <ul style="list-style-type: none"> <li>• Daylighting, glare and views</li> <li>• Indoor air quality</li> <li>• Thermal comfort</li> <li>• Acoustics</li> <li>• Pollutant minimisation</li> </ul>
Energy	10% improvement over the benchmark requirement	The CCWM project will achieve a minimum 20% energy improvement over the benchmark requirement. This will be achieved through the building envelope design, efficient building services systems, controls and renewable energy.

SUSTAINABILITY ISSUE	INDUSTRY BEST PRACTICE GOALS	CCWM MANDATORY MEASURES TO ACHIEVE A BRONZE AMBITION LEVEL (Implemented using the UoS Sustainability Framework)
Water	Reduce potable water consumption	The CCWM project will reduce potable water consumption through: <ul style="list-style-type: none"> <li>• Water efficient fixtures and fittings</li> <li>• Rainwater harvesting and reuse</li> <li>• Capture of fire system test water</li> </ul>
Materials	Minimise material consumption or utilise best environmentally preferable materials and products	The CCWM project will target the following measures to reduce environmental impact of materials: <ul style="list-style-type: none"> <li>• 50% of all furniture items to be of environmentally preferable products with certification</li> <li>• 50% of all timber products used in construction and internal linings to be sustainably sourced</li> <li>• 60% of all steel has a post-consumer recycled content greater than 50% or is reused.</li> </ul>
Waste	Minimise waste generation during demolition, construction and operation	Recycle at least 85% of building demolition and construction waste by weight. Internal and external centralised waste and recycling bin systems will be incorporated into the design.
Emissions	Minimise best emission impacts form the ongoing operation	The CCWM project has been designed to reduce the following building emissions: <ul style="list-style-type: none"> <li>• Integration with the UoS campus wide storm water strategy</li> <li>• Surface heat reduction</li> </ul>
Transport	Promote use of alternative modes of transport and to encourage a healthy lifestyle	The CCWM will include cyclist parking and end of trip facilities to encourage and support the use of bicycles.

## 7.6 Noise and Vibration

An assessment of the noise and vibration impacts of the development has been prepared by Arup and is provided at **Appendix 20**. In accordance with the SEARs, noise and vibration generated by the development is addressed in this report according to the following guidelines:

- Industrial Noise Policy.
- Interim Construction Noise Guideline.
- Assessing Vibration: A Technical Guideline 2006.

In addition to the above, road traffic noise has been considered in accordance with the Infrastructure SEPP.

A combination of unattended and short-term attended monitoring has been utilised to quantify the existing acoustic environment on site and at the nearest potentially affected receiver locations. The main sensitive receivers relevant to the development are the residential premises along Arundel Street across Parramatta Road (measurements taken

at 13 Arundel Street being the closest sensitive receiver). The results of the monitoring have been used to establish project specific noise criteria in accordance with EPA Noise Policy.

### 7.6.1 Construction Noise and Vibration Impacts

The proposed construction staging and equipment are shown in Table 9.

**Table 9:** Proposed construction stages and equipment

Construction stage	Proposed equipment	Indicative No.	Sound Power level, dB L <sub>Aeq,15min</sub>
Earthworks/inground works	Bored piling rig	1	110
	Excavators	2	103
	Trucks	2	111
	<b>TOTAL</b>	5	114
Structure/façade	Tower crane	1	110
	Trucks	2	111
	Concrete static pump	1	109
	<b>TOTAL</b>	4	115

The construction noise levels are predicted to exceed the *Noise affected* criteria by only 3-4 dB(A) and comply with the *Highly noise affected* criteria. This is shown in Table 10.

**Table 10:** Construction noise assessment

Assessment location	Construction stage	Predicted noise level dB L <sub>Aeq,15min</sub>	Noise management levels, dB L <sub>Aeq,15min</sub>	
			Noise affected	Highly noise affected
13 Arundel St	Earthworks/inground works	68	65	75
	Structure/façade	69	65	75

In relation to vibration, the Arup report indicates that there are no sensitive receivers located within the recommended minimum working distances for vibration intensive plant. The minimum working distances are derived from Transport for NSW guidelines which are based on international standards and guidance.

### 7.6.2 Construction Noise Mitigation Measures

The report recommends mitigation measures for each major construction activity as follows:

#### General

In general, practices to reduce construction noise impacts will be required, and may include:

- Adherence to the standard approved working hours for construction projects where possible. These hours are:
  - Monday to Friday: 7:00am to 6:00pm
  - Saturday: 7:30am to 5:00pm

- No work on Sundays and public holidays
- Manage noise from construction work that might be undertaken outside the recommended standard hours following Section 2.3 of the Interim Construction Noise Guidelines (DECC, 2009)
- The location of stationary plant (air-compressors, generators, etc.) as far away as possible from sensitive receivers
- Using natural screening by topography wherever possible to reduce noise impacts
- Using site sheds and other temporary structures or screens to limit noise exposure where possible
- Installing operational noise barriers as early as possible to provide ongoing screening from construction activities, where possible
- The appropriate choice of low-noise construction equipment and/or methods
- Modifications to construction equipment or the construction methodology or programme. This may entail programming activities to occur concurrently where a noisy activity will mask a less noisy activity, or, at different times where more than one noisy activity will significantly increase the noise. The programming should also consider the location of the activities due to occur concurrently.

The above represents the best practical means of control. While the contractor will be able to achieve moderate reductions in noise and vibration, some impact is expected. A Construction Noise and Vibration Management Plan could be adopted for construction stages incorporating a programme of noise monitoring at sensitive receivers, a community information programme and a complaints hotline.

#### Universal work practices

The following noise mitigation work practices are recommended to be adopted at all times on site:

- Regularly train workers and contractors (such as at toolbox talks) to use equipment in ways to minimise noise.
- Site managers to periodically check the site and nearby residences for noise problems so that solutions can be quickly applied.
- Avoid the use of radios or stereos outdoors.
- Avoid the overuse of public address systems.
- Avoid shouting, and minimise talking loudly and slamming vehicle doors.
- Turn off all plant and equipment when not in use.

#### Piling

To reduce the effect on residents of piling noise, nearby residents should be consulted regarding the intended activities associated with the piling process.

Mitigation measures to reduce the impact of percussive piling activities include:

- Using a resilient pad (dolly) between pile and hammer head
- Enclosing the hammer head in a temporary acoustic shroud.

Alternatively, rotary bored or vibro-piling may be used where consistent with the type of pile used and restrictions on soil disturbance.

Piling, in particular, should not be undertaken outside of the standard working hours.

### 7.6.3 Operational Noise Impacts

The primary operational noise sources associated with the development are:

- Patron noise from terrace café;
- Patron and background music during functions;
- Building services equipment.

In relation to the café, the Arup report expects that patron noise will not be excessive. The noise level from café operation is predicted to readily satisfy the project requirements for the proposed operating hours up to generally 10:00pm, being 8dB lower than project specific criteria. The use is also expected to comply with the night time criteria.

In relation to functions and events held at CCWM, it is proposed that these will be limited in scale, nature and timing as set out in Table 11.

**Table 11:** Assumptions regarding functions and events at CCWM

ITEM	ASSUMPTIONS
Type of use/functions	Typically Art or Artefact exhibition openings, book launches, corporate functions, Senate Xmas party or Senate NYE party.  Noisy events, such as rock concerts or discos, are not proposed
Hours of operation	Events will typically end at 10:00-11:00pm  Outdoor space will be closed at 10:00pm
Patron capacity	Typically 100-150 across the building, including maximum 75 people in the outdoor area
Music	Typically light music such as background music, a string quartet or choir/soloist performance

The noise level from functions in the outdoor space is predicted to comply with the project goals during the day and evening periods. There is a 2dB minor shortfall in meeting the shoulder period (10:00pm to midnight) modified amenity goal, however this is considered a conservative application of the criteria. Further use of the outdoor area will cease at 10:00pm.

### 7.6.4 Operational Noise Mitigation Measures

The café is expected to meet the project goals during its operation in day and evening periods. As such, no mitigation measures are recommended.

The following recommendations are made with regard to functions:

- All outdoor areas should close at 10:00 pm;
- Any in-house sound system should incorporate a noise limiter.

### 7.6.5 Building Services

At this stage of the project, details of the building services plant selections are not known and therefore only a qualitative assessment can be carried out. During the detailed design process, appropriate noise and vibration control treatments will be specified to ensure that the noise limits are maintained. The following treatments will be considered:

- Specification of maximum sound power levels for all items of plant as part of the project documentation;
- Rectangular and circular attenuators to control fan noise;

- Acoustic louvres to control noise from plantroom ventilation openings;
- Cooling air and flue gas attenuators on the generator set;
- Vibration isolators to reduce vibration input to the building structure;
- Acoustic screens around any external plant;
- Incorporation of sound absorptive treatments in plantroom spaces where needed.

#### 7.6.6 Impacts from Road Noise

Clause 102 of the Infrastructure SEPP requires that the consent authority take into consideration any guidelines that have been issued by the DPE when determining a DA for an educational establishment (amongst other uses) that is adjacent to a major road corridor (an annual average daily traffic volume of more than 40,000 vehicles).

As the CCWM is adjacent to Parramatta Road which is a major road corridor, it will be designed according to Australian Standard 2107-2016b and noise criteria specified in Table 3.1 of *Development Near Rail Corridors and Busy Roads – Interim Guideline by Department of Planning, NSW Government*. Appropriate acoustic treatments to façade system/elements will be provided to comply with the noise criteria and will be further developed during the detailed design phase.

### 7.7 Heritage

The University is a highly significant site and the heritage context and the relatively constrained site require a finely nuanced approach to siting, materiality and form. To an acceptable heritage outcome the architect has worked closely with the heritage specialist, Ian Kelly Heritage Consultant, in siting the proposal.

Further to assess the heritage impact of the proposed new building the heritage specialist (Ian Kelly Heritage Consultant) has prepared a Heritage Impact Statement (HIS) which is provided at **Appendix 6**. The HIS considers:

- significant heritage items on site;
- adjacent significant heritage items;
- significant landscapes and views;
- potential archaeological relics; and
- Aboriginal cultural heritage values and potential archaeology;

as required by the SEAR's. In respect of each of these matters it concludes as follows:

#### Impact on significant heritage items on site:

*Having occupied this site for more than a century the Fisher Tennis Courts and associated clubhouse have an historic association with the site, but they are not of sufficient heritage significance to warrant retention. In accordance with University procedures an archival record of the site will be prepared prior to demolition.*

#### Impact on adjacent Significant Heritage Items:

*The impact of the proposed Museum on the cultural significance of the adjacent heritage items, including the Quadrangle (East Wing, Clock tower and Great Hall), Fisher Library, Baxter's Lodge and Gates, Parramatta Road palisade boundary fence and Victoria Park is acceptable.*

#### Significant Landscapes and Views:

*The siting of the museum in an area currently occupied by the three concrete tennis courts and clubhouse will result in the loss of some landscaped 'open space' of Moderate heritage significance, but the sensitive siting of the new building will ensure the retention of the significant trees that define this landscape.*

*Located to the north-east of the Quadrangle, opposite the Great Hall, the museum will be noticeable when viewed from the Clock tower entrance to the Quadrangle, but its visual impact on the primary view corridor from the Clock tower entrance, down University Avenue and across Victoria Park to the southern CBD skyline will be peripheral. Conversely, the impact of the museum building, when viewed from within Victoria Park looking up to the Quadrangle and Great Hall, will be minimal due to the dense canopy of the Port Jackson Fig trees that line University Avenue.*

#### Potential Archaeological Relics

*The museum site was terraced and levelled to create the original tennis courts (c.1911). Additional ground disturbance occurred when the grass courts were replaced by the present concrete courts, further diminishing the potential for finding any archaeological evidence. Various archaeological reports which encompass the museum site conclude that “there is unlikely to be any archaeological relics or remains of heritage significance present within the development area.” (Casey & Lowe report, 2017)*

#### Aboriginal Cultural Heritage Values and Potential Archaeology:

*None of the places identified in the AHIA as retaining Aboriginal cultural values on the University of Sydney campus are located near the museum site. The construction of the museum on the proposed site is unlikely to have any adverse impact on the Aboriginal cultural heritage values of this part of the University campus. The University’s Museum staff have in place a process of consultation with those Aboriginal communities who have a direct association with the Aboriginal artefacts to ensure their cultural values are respected.*

*The potential for the preservation of in-situ Aboriginal archaeological deposits within the museum site is low, however it would be appropriate to prepare an ‘unexpected finds’ procedure.*

A more detailed assessment of the proposal against relevant items can be found within the HIS at **Appendix 6**.

The HIS concludes that “the proposed Chau Chak Wing Museum will have a minimal impact on the overall heritage significance of the University of Sydney Camperdown campus and the adjacent Victoria Park and, therefore, could be approved subject to the preparation of:

- *an Archival Recording of the Fisher Tennis Courts and the associated Clubhouse, in accordance with the NSW Heritage Office guideline;*
- *an Interpretation Plan and Interpretation Strategy for the Fisher Tennis Courts and Clubhouse; and*
- *an Unexpected Archaeological Finds Procedure.”*

These measures are included as mitigation measures at section 9.

Having regard to the findings of the HIS it is considered that the proposal is acceptable from a heritage perspective and will not result in any significant adverse impacts.

## **7.8 Historic Archaeology**

As noted in the HIS referred to above, a Historic Archaeological Assessment has been prepared by Casey and Lowe and is provided at **Appendix 24**. This assessment evaluates the historic landuse of the CCWM site to determine if significant archaeological remains are likely to be present.

The assessment indicates that the nature of the historic land use on the site is as follows:

- Bushland prior to British settlement
- Land clearing and use as part of Grose Farm (growing of crops such as wheat, maize and oats)
- Resumed for university lands

- Roadway to Parramatta Road bordered by plantings runs through southern side of where the tennis courts were later situated
- Levelling and filling of site for tennis courts
- Building of clubhouse
- Use for 100 years as tennis centre.

Each of the phases identified above could have the following remains:

- Bushland – Possible evidence of Aboriginal occupation (discussed in Section 7.9)
- Use as Grose Farm – Possible evidence of ploughing and fencing
- University Lands – Fencing and plantings
- Roadway to Parramatta Road – Remains of roadway, edging, metalling
- Tennis Courts – Evidence of earlier courts
- Clubhouse – Artefacts relating to its use, dating to the Women’s Sports Association, and its later occupation. Artefacts might include memorabilia associated with the players

The assessment considers the potential archaeological significance of the site using the NSW Heritage Council criteria and the 2009 Heritage Branch guidelines, *Assessing significance for historical archaeological sites*. This is summarised in Table 12 below.

**Table 12:** Assessment of site against relevant heritage criteria

HERITAGE CRITERIA	CONSIDERATION
<p><b>Criterion (a): Historic Significance - (evolution)</b></p> <p><i>an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);</i></p>	<p>The potential archaeological remains on the site are considered to belong mainly to the tennis courts and their surfaces, any artefacts under or around the clubhouse building, and to the earlier roadway to Parramatta Road. These have little historic significance. There is little potential for any remains that could be connected to the Grose Farm period.</p>
<p><b>Criterion (b): Associative Significance – (association)</b></p> <p><i>an item has strong or special association with the life or works of a person, or group of persons, or importance in NSW's cultural or natural history (or the cultural or natural history of the local area);</i></p>	<p>The tennis courts and clubhouse are not connected with any individual but were associated with the Sydney University Women's Sports Association from their construction c1911 to 1932. They have a role in providing sporting facilities to university students and ex-students for over 100 years.</p>
<p><b>Criterion (c): Aesthetic Significance - (scenic qualities / creative accomplishments)</b></p> <p><i>An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the cultural or natural history of the local area);</i></p>	<p>Any archaeological remains of previous court surfaces or the roadway to the south of the courts are unlikely to have aesthetic appeal. Any memorabilia that may be located under or around the clubhouse building could have appeal for the people and groups that have used the courts in the past, although such items are unlikely and would not be considered to be relics.</p>
<p><b>Criterion (d): Social Significance - (contemporary community esteem)</b></p> <p><i>an item has a strong or special association with a particular community or cultural group in NSW for</i></p>	<p>The courts and the clubhouse are well-known to the University community and have been used by thousands of students and local residents.</p>

HERITAGE CRITERIA	CONSIDERATION
<i>social, cultural or spiritual reasons (or the cultural or natural history of the local area);</i>	
<p><b>Criterion (e): Technical/Research Significance - (archaeological, educational, research potential and scientific values)</b></p> <p><i>an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);</i></p>	<p>Remains of previous court surfaces are likely to have little or no research value, as would the roadway on the southern side of the courts. As the clubhouse is the original building in this location, there would be no remains of earlier structures. Any memorabilia found under or around the clubhouse is unlikely to have research value. Any evidence of cultivation, such as plough marks belonging to the Grose Farm period, would be ephemeral and have little research value.</p>
<p><b>Criterion (f): Rarity</b></p> <p><i>an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);</i></p>	<p>The potential archaeological remains of previous tennis court surfaces or of the roadway on the southern side of the site on the site are not considered to be rare. Any remains that could be associated with Grose Farm would be rare but such remains are likely to be ephemeral and would be hard to recognise.</p>
<p><b>Criterion (g): Representativeness</b></p> <p><i>an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places of cultural or natural environments (or the cultural or natural history of the local area).</i></p>	<p>The potential archaeological remains on the site are considered to be representative of an early twentieth-century sporting establishment. They would be representative of similar venues existing at other locations in the state.</p>

The Historic Archaeological Assessment concludes that the tennis court site has little potential to retain archaeological remains of heritage significance. Remains of earlier court surfaces are regarded as having no research potential. The likelihood of tennis memorabilia being present under the clubhouse floor or around the building is regarded as being low. Evidence of the use of the area as part of Grose Farm would be difficult to recognise and be of little research value.

Due to the site's "no to low" archaeological potential and lack of heritage significance of any remains, no specific recommendations are regarded as being necessary.

## 7.9 Aboriginal Heritage

Further an Aboriginal Heritage Impact Assessment (AHIA) has been prepared by AHMS (February 2016) in consultation with the local Aboriginal community which has identified places across the University's Camperdown and Darlington campuses which have Aboriginal cultural heritage values (refer Appendix C and D of Heritage Impact Statement at **Appendix 6**) These places include the Macleay Museum, Shellshear Museum in the Anderson Stewart Building, Mackie Building, the Quad, the Koori Centre, the Sports Ovals and the University entrances." (AHIA, p.64.)

A number of Aboriginal heritage assessments of the university campus in general and for specific work sites, prepared over the past decade, have concluded that no archaeological sites or artefacts relating to Aboriginal occupation have been found within the University grounds.

The Campus Improvement Program Aboriginal Heritage Due Diligence Report (AHDDR), prepared by GML Heritage (October 2013), concludes:

*“The current state of knowledge about the nature of past Aboriginal landscape use in the study area suggests that only few traces of these past inhabitants may be visible in the archaeological record. This result is a low potential for the preservation of in-situ Aboriginal archaeological deposits within the study area; however, if found these deposits would be of high archaeological significance due to their rarity.”* (AHDDR, p.34)

The GML conclusion was reinforced by the AHIA (February 2016), which concludes:

*“Existing information suggests that much of the subject area (University campus) is heavily disturbed by historical activities. This disturbance has reduced or removed the potential for cultural materials to be present. In the unlikely event that in-situ deposits are identified, they are likely to be of local or State significance.”* (AHIA, p.63)

None of the places identified in the AHIA as retaining Aboriginal cultural values on the University of Sydney campus will be affected by the construction of the museum. The consolidation of the University’s various collections in the new museum, however, may have some impact on how the Aboriginal artefacts are presented to the public. To manage this issue the University has in place a process of consultation with those Aboriginal communities who have a direct association with the Aboriginal artefacts.

It is therefore concluded that the construction of the museum on the proposed site is unlikely to have any adverse impact on the Aboriginal cultural heritage values of this part of the University campus. The potential for the preservation of in-situ Aboriginal archaeological deposits within the study area is low however should any deposits be discovered during the proposed works all work would cease immediately, the object safeguarded and a suitably qualified archaeologist contacted to record the find prior to work continuing. Further the Office of Environment and Heritage (OEH) and the Metropolitan Local Aboriginal Land Council would be contacted and informed of any finds as soon as possible and prior to work in that location continuing.

## **7.10 Accessibility**

An Accessibility Review report has been prepared for the proposed CCWM building by Phillip Chun Access and is provided at **Appendix 25**.

The Access Report assesses the proposed development to ensure ingress, egress, paths of travel, circulation spaces, and toilets comply with relevant statutory guidelines including:

- National Construction Code (NCC)/Building Code of Australia (BCA)
- *Disability Discrimination Act 1992*
- Access to Premises Standards 2010
- University of Sydney Access Guidelines

The report notes that the proposed development is capable of achieving a high level of access for people with disabilities and meeting all the relevant standards, noting that *the design of the Chau Chak Wing Museum is at a point where the inherent philosophies of accessibility legislation have been checked and development consent can be sought*. The report notes that the finer details with respect to code compliance can be finalised prior to the issue of a Construction Certificate and recommends that the following be addressed during subsequent design stages to achieve compliance:

- Ensure door circulation areas are in accordance with AS1428.1 (2009);

- Ensure ambulant toilet cubicles are 900-920mm wide;
- Provide an accessible shower complying with AS1428.1 (2009);
- Other items as outlined in report that require further development during detailed design stages.

### 7.11 Biodiversity

A Biodiversity Assessment Report has been prepared by AMBS and is provided at **Appendix 15**. This report assesses matters relating to the impacts of biodiversity and ecological values of the site in accordance with the Framework for Biodiversity Assessment (FBA) (OEH 2014).

The study gathered a range of information regarding the flora and fauna of the site and locality using a combination of 'desktop' analysis and a site inspection. The study found that the site does not contain any native vegetation communities and that fauna habitat is extremely limited. The vegetation that is present consists of planted trees and shrubs, many of which are not native to the area, two low hedges, a lawn and garden beds of mostly *Agapanthus* and *Liriope*. The surrounding area is highly urbanised and there is very little vegetation that has not been mapped by OEH as "Urban Exotic/Native".

The development site is likely to be of limited value for most native fauna. However, the site does contain some trees that provide a foraging resource for the Grey-headed Flying-fox and there are three hollow-bearing trees located within the project footprint. Two of the hollow-bearing trees will be retained; the third, which contained a few small potential hollows and a basal hollow that was occupied by a Black Rat, is proposed for salvage and translocation. Most of the Grey-headed Flying-fox resources including all of the figs will be retained. There was no evidence of microbat use of the tennis centre building.

The proposed development is likely to have little or no impact on most native flora and fauna in the locality, but will have a minor impact on the Grey-headed Flying-fox and there is a small potential for impacts on the Eastern Freetail-bat. It is not likely that the impacts on either species would be significant.

The BioBanking Credit Calculator generated a landscape value of zero for the development site. Due to the size and nature of the site it is not recommended that the FBA/Credit Calculator be applied any further.

### 7.12 Trees and landscaping

One of the key considerations in the design and siting of the building has been the need to retain as many of the existing trees on the site as is feasible. The most significant trees on the site being nine *Ficus macrophylla* (Moreton Bay Fig) and six *Ficus rubiginosa* (Port Jackson Fig) trees to the north adjacent to Parramatta Road, and the 18 *Ficus rubiginosa* trees to the south along University Avenue are proposed to be retained and will be protected during construction.

The proposal will however result in the removal of 19 existing trees from the site which will result in some adverse amenity impact in the short term. Two of the trees proposed for removal have been assessed as having high retention value and one tree has been recommended for removal due to poor health. The remaining trees to be removed have been assessed as having only low to moderate retention value. One commemorative tree is also proposed to be transplanted.

The negative impact of the proposed tree removal will be offset by the proposed landscape planting which will include a compatible range of trees, shrubs and groundcovers. The proposed landscape design is high quality and

will ensure that the landscape values of the site are not diminished, provide good microclimate control and enhance the setting of the new building and public domain.

### 7.13 Flooding and Drainage

As outlined in the Multidisciplinary Engineering Report at **Appendix 11**, the site is located within the Blackwattle Bay drainage catchment. The Blackwattle Bay Catchment Floodplain Risk Management Plan was prepared in September 2015 by WMA Water on behalf of the City of Sydney. A review of the "University of Sydney Flood Mitigation Master Plan – Final Report" October 2015, prepared by WMA Water indicates that the proposed site is not flood affected in the 100 average recurrence interval storm design event. However University Avenue to the east of the site experiences peak flood depths up to 0.5m in the 100 year storm event. The proposed drainage concept design illustrated at **Appendix 9** has had regard to this constraint.

Sydney Water requires that post development stormwater discharge from the site is to be less than pre development. Accordingly, the stormwater system for the proposed development incorporates on site detention comprising an OSD pond and swale as detailed at Appendix 11. Further water quality control measures will be incorporated into the design to ensure the effective treatment of stormwater flows and that the base concentration of contaminants is low.

It is therefore considered that the proposal will not result in any adverse impact in terms of flooding and / or stormwater drainage.

### 7.14 Earthworks

An Erosion and Sedimentation Control Plan has been prepared by Arup and is provided within the Civil Engineering drawings at **Appendix 9**. The Plan has been prepared in accordance with Landcom's Soil and Construction Manual (commonly known as the Blue Book), Volume 1, March 2004.

The proposed earthworks will result in the generation of a net excess of 27,560m<sup>3</sup> of excavated material which will need to be disposed of off-site. This will be undertaken in accordance with the Preliminary Construction Management Plan provided at **Appendix 26** (refer section 7.16 and 7.17 below for further detail).

### 7.15 Contamination

A preliminary site investigation (PSI) was undertaken by Douglas Partners in 2013 for the entire University Campus, including the subject site. A Geotechnical Investigation<sup>1</sup> and Preliminary (in situ) Waste Classification<sup>2</sup> were also undertaken by Douglas Partners between August and October 2016. The results of these three reports informed the preparation of a Detailed Site Investigation (DSI) by Douglas Partners for the CCWM project, a copy of which is provided at **Appendix 17**.

The scope of works for the DSI was as follows:

- review of previous reports;
- review of topography, geology and soils maps;
- review of site history based on the PSI;
- inspection of the site to assess the potential for contamination (undertaken as part of the Preliminary Waste Classification undertaken by Douglas Partners in 2016).

---

<sup>1</sup> Report on Geotechnical Investigation, Chau Chak Wing Museum, Parramatta Road, Camperdown, Douglas Partners, October 2016

<sup>2</sup> Preliminary Waste Classification, Chau Chak Wing Museum, Parramatta Road, Camperdown, Douglas Partners, October 2016

The DSI relies on sampling and laboratory analysis undertaken for the Geotechnical Investigation and Preliminary Waste Classification. A total of 12 sampling locations (boreholes) were drilled across the site to provide an indication of subsurface conditions for waste classification and geotechnical purposes. There were no obvious indications of gross contamination (e.g. staining or odours) or anthropogenic materials within the boreholes.

The laboratory results indicate that all contaminant concentrations in the soil samples analysed were within the adopted health investigation and screening levels. In addition, all contaminant concentrations in the soil samples analysed were within the adopted ecological investigation and screening levels (ESL) with the exception of B(a)P. However, the exceedances of the B(a)P (benzo(a)pyrene) ESL in two filling samples are not considered significant given that leachability results were below laboratory reporting limit and that the material is likely to be removed as part of the excavation of the proposed basement.

Overall, the analytical results suggest a low risk to human health.

Asbestos was not identified in any of the samples tested.

Douglas Partners concludes that the site is considered to be suitable, from an environmental perspective, for the proposed museum development.

The DSI recommends:

- that an unexpected finds protocol (UFP) must form part of any excavation contractor's standard work method statements / construction management plans such that there is a plan of action to deal with finds of potential contamination not encountered by the current investigations. The UFP must include inter alia methods for identifying, investigating and managing asbestos on site if found.
- the various waste classifications should be subject to appropriate segregation and validation of overlying fill. Segregation and validation of restricted solid waste (RSW) should be undertaken prior to bulk excavation of general solid waste (GSW). This process should also apply following removal and validation of GSW prior to excavation of VENM (virgin excavated natural material).

## 7.16 Waste

### 7.16.1 Construction Waste Management

A construction waste management plan has been prepared by the University and is provided within the Preliminary Construction Management Plan at **Appendix 26**.

This construction waste management plan identifies the different streams of waste likely to be generated during the construction phase of the project and provides a breakdown of methodology, responsibility, monitoring and reporting requirements, and performance measures for the management of these waste streams.

The plan also identifies the appropriate storage requirements as well as what waste streams can be reused, recycled or disposed of. Work will be undertaken in accordance with the Plan.

### 7.16.2 Operational Waste Management

A Waste Management Plan for operational waste has been prepared by Waste Audit and is provided at **Appendix 27**. The key waste streams associated with the ongoing operation of the CCWM development will include:

- general waste;
- commingled recycling.

A waste storage room is provided on Lower Level 2 of the CCWM building with dedicated bins for each waste stream. The waste storage room will be accessed by cleaners and University staff via the service lift, which is approximately 12 metres away. Waste/recyclables will be disposed of into designated bins provided.

Waste/recyclables will be collected on a daily basis by the building cleaners and/or staff and transported to the waste storage room. An appointed contractor will then provide waste and recycling collection services.

Contractors will enter the low basement area via the ramp, where they can locate and utilise the loading dock. From the loading dock the contractor can gain access to the waste storage room, where both general waste and commingled bins will be located.

Waste will be managed on site in an environmentally responsible manner and in accordance with legislative requirements and minimising environmental impact.

### **7.17 Construction impacts**

A Preliminary Construction Management Plan (CMP) has been prepared by the University of Sydney and is provided at **Appendix 26**.

Demolition, excavation and construction works will be undertaken in a manner to minimise adverse amenity impacts, including noise, vibration, dust, and erosion and sedimentation. Management measures have been provided to mitigate these impacts, and to ensure pedestrian and vehicular networks in the vicinity are not impacted.

The various components of the Construction Management Plan, including construction traffic management, construction waste management, and construction noise and vibration management have been addressed elsewhere in this EIS.

An Erosion and Sediment Control Plan is included also in the Civil Engineering Plans at **Appendix 9**. This has been prepared in accordance with Landcom's Soil and Construction Manual (The Blue Book). The Contractor will be responsible for confirming the design and phasing of the measures to suit the construction staging. A stormwater sump and pump will be required during the basement excavation and construction to capture and discharge trapped stormwater. The Head Contractor will complete a detailed soil and sediment control plan prior to commencement.

### **7.18 Crime Prevention Through Urban Design**

Arup has undertaken an assessment of the project against Crime Prevention Through Environmental Design (CPTED) principles (refer **Appendix 28**). A summary of the assessment of the project against CPTED principles is provided in Table 13.

In general, the assessment notes that natural surveillance for the campus is generally good, with numerous vantage points for staff and visitors. The location of the café provides significant natural surveillance of the road and courtyard area, as well as an overview of some of the pathway near Parramatta Road.

The assessment notes the following:

- the site and surrounds provides strong natural access control barriers to facilitate movement through the space in defined pathways. Nominated paths of travel include the University Avenue vehicular entry and road leading from Parramatta Road, and the pedestrian pathways following the same route;
- vegetation throughout the campus clearly delineates space and provides natural barriers, imposing a series of psychological deterrents while maintaining a welcoming and permeable space;

- the roadway into the site and around further increases natural surveillance from passing vehicles, ensuring the nominated pedestrian pathways can be observed irregularly when traffic is passing by;
- the pathway near Parramatta Road provides some level of natural surveillance to the less observable side of the Museum itself, however cannot be observed itself along the entire length of the path;
- campus territoriality is good, with the high amount of vegetation and the presence of the Great Hall providing a feeling of care and respect for the environment.

**Table 13:** CPTED Assessment

PROJECT ELEMENT	ASSESSMENT
Lower Level 2	<p>Lower Level 2 is primarily a store and operations area with associated loading dock and back of house equipment. The area does not have a dock master's office or associated control area, which due to the size of the building and expected traffic may be suitable.</p> <p>Natural surveillance of the loading dock is good from the various loading and unloading areas, however the location of plant and equipment near the entrance ramp may be difficult to observe. While these areas will be used on a rare occasion, staff may feel unsafe in these areas.</p>
Lower Level 1	<p>Lower Level 1 provides several gallery spaces and access to the public. This level, due to the increased circulation of guests and staff, will be well surveilled. The segregation of plant and gallery spaces allows for natural access control to occur, with clearly defined pathways for guests to follow to reach the courtyard and gallery spaces.</p>
Lower Ground	<p>The Lower Ground floor provides gallery spaces, study areas, and a café for public access. The mixed use of this floor will provide strong circulation from guests and staff, increasing the natural surveillance and territoriality of the space. The voids above will allow staff and visitors from gallery and circulation spaces on the upper floors to observe individuals using the space below.</p> <p>Of particular concern are the outdoor areas to the north of the building, including the gardens and maintenance stores. These areas will not be well observed from those internal to the building, and external natural surveillance from nearby pathways is also limited. These areas should be treated appropriately with electronic surveillance and lighting measures.</p>
Ground	<p>The Ground floor is the main entrance to the gallery, including reception desk, and some gallery spaces and other public facilities such as an auditorium and shop. The reception desk is well located to observe the entry to the Museum, and provides good control over the bag check area and store. Notably, the reception desk area has a significant blind spot of gallery and circulation spaces behind it, however this may be compensated for with electronic surveillance, or other staff members roaming the publically accessible space.</p>
Upper Level	<p>The Upper Level includes public circulation space and staff areas, including offices. Natural surveillance on this level is good, with clear lines of sight from the gallery space across the atrium area. The mixed public and staff use of this space will encourage circulation and natural surveillance throughout.</p> <p>The store area to the North of the building, adjacent to the gallery space may provide opportunity for concealment or entrapment. This area cannot be easily surveilled naturally.</p>

The assessment concludes that the campus and current building proposal provides very good CPTED characteristics. The following are recommended to be implemented into the campus design in order to further enhance the CPTED and security aspects of the site:

#### Natural Surveillance

- Use glazing where possible to facilitate natural surveillance;
- Minimise built structure where possible;
- Trees and vegetation should be well kept and maintained to maximise natural surveillance throughout the campus;
- Trees and vegetation should be of low and high height, with clear view between these two canopy levels to facilitate natural surveillance;
- Lighting, particularly on the north side of the building and the northern walkway, may need to be improved;
- The reception desk could be relocated to provide more surveillance across the gallery entrance floor;
- The back of house areas (communications room, gas meter room) on the bottom floor could be reconfigured.

#### Natural Access Control

- Use of lighting, visual cues, clearly delineated footpaths, way-finding signage, and vegetation to reinforce desired walkways and movement routes;
- Make key locations and entry/exit points clearly identifiable;
- Use of physical barriers such as roller doors in the loading dock is recommended.

#### Territorial Reinforcement

- Vegetation immediately around the campus to be regularly maintained to assist natural and electronic surveillance, ensure proposed canopy and ground vegetation heights remain reasonably static, and to reduce areas of concealment/or concealment of suspicious packages.
- Regular maintenance of infrastructure, and prompt removal of graffiti and vandalism in order to maintain and enhance the territorial aspects of the campus;
- Area activation should be used where possible to draw a diverse and mixed use of people, functions, and activities to the area, creating a sense of ownership of the space;
- Removal of waste from the perimeter and surrounding environment;
- Environmental markers (e.g. signage, walkways, change in pavement style and type, lighting, bollards, fencing) which define intended use and ownership.

These recommendations will be taken into account during the detailed design phase.

### **7.19 Economic impacts**

To determine the economic impact of the proposed development a multiplier analysis has been prepared by AECOM and is provided at **Appendix 8**. The report describes the economic effects of the construction of the proposed new CCWM on the state of New South Wales. This analysis estimates the anticipated employment effects during the construction cycle.

The results of this analysis are summarised below.

**Table 14:** Employment impacts

Industry	Economic Employment Contribution		
	Direct (Type 1A)	Indirect	Total (Type 2A)
Non-Residential Building Construction	238 FTE	366 FTE	604 FTE
Professional, Scientific and Technical Services	25 FTE	31 FTE	56 FTE
Total	263 FTE	397 FTE	660 FTE

Direct employment from the proposed CCWM is estimated to be 263 FTE jobs in all industries. The indirect (consumption induced) employment is an additional 397 FTE jobs generated in all industries. The total employment impact is an additional 660 FTE jobs generated in all industries. The proposal will therefore result in significant economic and employment benefits.

## 7.20 BCA Compliance

The proposed building is able to comply with the Building Code of Australia as outlined in the BCA Report prepared by Group DLA at **Appendix 29**.

## 8. CONTRIBUTIONS

Section 94 of the EP&A Act enables councils and other consent authorities to seek contributions from developers where a development is likely to increase the demand for public facilities. The power to levy a section 94 contribution relies on there being a clear link between the development being levied the contribution and the need for the public amenity or service for which the levy is required.

The University considers that the levying of Section 94 contributions in relation to the CCWM project is not appropriate for the following reasons:

- the CCWM will not increase the demand for public facilities in the area as it only involves the consolidation of existing University facilities into the one building and will therefore not result in an increase in the number of workers employed on the site;
- the levying of s94 contributions for university developments is unreasonable, particularly given the past, current and planning future works and services the University contributes that have a material public benefit.

### 8.1 City of Sydney Development Contributions Plan 2015

The Council's Development Contributions Plan was published in July 2015. This replaced the previous 2006 Contributions Plan.

The 2015 Plan no longer appears to acknowledge the specific role that Universities play in contributing towards broad community outcomes in providing education, research, recreation, cultural and associated services. In this regard, the 2015 plan now excludes the ability for the University to present and justify reasons for which new development on Main Campus may be considered exempt from local infrastructure contributions under section 94 of the EP&A Act 1979.

The previous 2006 Contributions Plan recognised that Crown developments, which provides a distinct community benefit for not-for profit organisations, could be provided with an exemption from payment of contributions. To date, the community benefit offered on University of Sydney developments has been widely recognised with the granting of exemptions under this Plan. Recent projects by the University for which section 94 development contributions were not sought by the Council or the Minister for Planning include:

- Faculty of Arts & Social Sciences building (SSD 7081 – approved 16 December 2016): Construction of a new Faculty of Arts and Social Sciences (FASS) building and associated internal works to the adjoining RD Watt Building (7,200m<sup>2</sup>);
- LEES1 Building (SSD 7054 - approved 22 December 2016): Construction of the LEES 1 Building, being the extension of the Carslaw Building. The LEES 1 Building consolidates the School of Molecular Biology and School of Biological Sciences within the Faculty of Science (9,800m<sup>2</sup>);
- F23 Administration Building (SSD 7055 - approved 22 December 2016): Construction of a new administrative building to consolidate various University executive administration services (8,650m<sup>2</sup>);
- Charles Perkins Centre (MP 09\_0051 – approved 29 June 2010): Construction of a new eight level Centre for Obesity, Diabetes and Cardiovascular Disease building (45,000m<sup>2</sup>);
- Australian Institute of Nanoscience (SSD 5087- approved 28 February 2013): Construction of a new four level nanoscience building (10,540m<sup>2</sup>);
- Abercrombie Precinct Redevelopment (MP 07-0158 – approved 16 November 2011): Construction of a five-level business school building (28,180m<sup>2</sup>) and student accommodation building for 200 beds; and

- Queen Mary Building (DA/2011/1107 – approved 14 March 2012): the adaptive re-use of the former nurses' quarters at the Royal Prince Alfred Hospital into a modern 800 bed student accommodation facility.

Section 94B(2)(b) of the EP&A Act 1979 outlines that the Minister may impose a condition under Section 94 which is not determined in accordance with a contributions plan. This has been exercised in the past for University developments.

Exemption from contributions is also supported by Planning Circular D6 relating to Crown development applications. The Circular is referenced in the Department of Planning and Environment's (DP&E) draft Development Contributions Guidelines as providing 'current limitations on the imposition of development contributions on public sector developments'.

Circular D6 has also been adopted as a guiding document in relation to Crown applications and development contributions, stating:

*"Crown activities providing a public service or facility lead to significant benefits for the public in terms of essential community services and employment opportunities. Therefore, it is important that these essential community services are not delayed by unnecessary disputes over conditions of consent. These activities are not likely to require the provision of public services and amenities in the same way as developments undertaken with a commercial objective."*

Clause 226(1) of the EP&A Regulation provides that a development carried out by an Australian University (under the meaning of the Higher Education Act 2001) is Crown development. The University of Sydney is listed as an Australian University under Schedule 1 of the Higher Education Act 2001. Consequently, the University is prescribed to be the Crown for the purpose of making Crown development applications under Division 4 of Part 4 of the EP&A Act. This affords the University with special provisions to ensure that developments are not unreasonably refused or conditionally approved. This extends to conditions levying local infrastructure contributions which the Council may not impose without the University's or the Minister's consent.

## **8.2 Material Public Benefits Provided by University**

The University acknowledges that the City of Sydney Council needs to meet the demand for local infrastructure and provide public amenities and public services within its local government area and that, to enable it do so, the Council makes and applies contributions plans under section 94 of the EP&A Act. The University has a shared interest with the Council in its objectives to improve the amenities and provide adequate and appropriate infrastructure for use by the local community.

The University has a public charter and is open to the public as an accessible and permeable precinct which provides a number of material public benefits over and above its core focus on education and research. These include public access to and use of the University's libraries, spaces for cultural events, community facilities such as child care centres, sporting facilities (including an aquatic centre), playing fields and stadiums, entertainment spaces, retail facilities and professional services, and large areas of open space. These are analogous to the public amenities and services which the Council provides for its local government area.

The past, current and planned future works and services the University contributes that have a material public benefit can be summarised, using the same four categories of local infrastructure used in the 2015 Plan,<sup>3</sup> as follows:

### **(a) Open space**

In total, there is approximately 4.6 hectares of lawn area and 4.6 hectares of garden beds within Main Campus. The grounds are accessible and regularly used by the general public, in addition to the students and staff of the University. The annual budget for open space, planting, repairs and maintenance is \$3,200,000.

---

<sup>3</sup> See page 15 and Appendices B to F of the 2015 Plan.



(b) **Community facilities**

The 2015 Plan describes community facilities that allow “*entertainment, creative and recreational pursuits, education and training and rest and respite*” and include child care centres, multipurpose facilities, libraries and indoor recreation facilities.<sup>4</sup> The University provides many such facilities and services which are open to the public and include:

- Three childcare centres providing 148 spaces;
- Nine libraries across Main Campus totalling approximately 30,000m<sup>2</sup>;
- Sports and fitness facilities accessible by the public including 10 outdoor venues, 5 indoor venues (including an aquatic centre with an Olympic-size swimming pool) and 44 sports clubs. These attract over 650,000 visitors per year (excluding staff and students);
- Three museums and an art gallery totalling approximately 5,000m<sup>2</sup> (to be consolidated into the CCWM);
- Numerous events attracting over 25 million visitors per year (e.g. theatre, libraries, museums, Vivid, fairs, markets, educational forums such as Sydney Ideas);
- The benefit of conservation works to heritage buildings which, since 2014, has totalled \$12,850,000; and
- Public access to retail and professional services totalling approximately 4,000m<sup>2</sup>.<sup>5</sup>

(c) **Traffic and transport facilities**

The University’s spend on transport, traffic, public domain works and strategies between 2014-2017 totals \$4,413,605 and includes:

- Abercrombie, Codrington and Lawson Streets works = \$2,048,816;
- Darlington Lane Share Road upgrade = \$995,000;
- Darlington public domain works = \$420,289;
- Gateway between Victoria Park and Camperdown Campus = \$566,000;
- Camperdown-Darlington connection to surrounding precincts = public domain strategy and urban design guidelines = \$345,000; and
- Camperdown Concept Landscape Plan = \$38,500.

(d) **Stormwater drainage**

The University has undertaken, and is planning to undertake, significant upgrades to its stormwater drainage infrastructure to support the planned developments and mitigate any impacts on infrastructure and the environment under CIP. The University’s spend in this regard totals \$6,545,000 and includes

- Completed works Camperdown Campus = \$2,750,000
- Committed works Camperdown Campus = \$3,000,000; and
- Committed works Darlington Campus = \$5,795,000.

## **8.3 Justification for exemption**

### **8.3.1 No increase in demand for services and facilities**

Section 94 of the EP&A Act states that if a consent authority is satisfied that development for which consent is sought will or is likely to require the provision of or increase the demand for public amenities and public services within the area, the consent authority may impose a condition on the development requiring the dedication of land free of cost or the payment of a monetary contribution or both.

---

<sup>4</sup> See page 35 of the 2015 Plan.

<sup>5</sup> It should be noted that, although these retail facilities are owned by the University, the vast majority of the rents received from these retail shops goes to the University of Sydney Union, an entity that is separate to the University, which provides a broad and varied range of co-curricular with over 200 clubs and societies across 9 categories including: Arts and performance; Degree-related; Faith and religion; Food and Beverage; Ethno-Cultural; Humanitarian; Political; Sport, and Just for Fun.

It is considered that in this instance that the proposed development will not require the provision of or increase the demand for public amenities and services. This is because the CCWM is being specifically built to enable the consolidation of existing museum facilities and to accommodate existing staff from various existing locations across the Camperdown campus. As noted elsewhere in this EIS, the University's existing museum facilities are currently fragmented across a number of different buildings on the Camperdown campus and the proposal is to enable all of these to be brought together into a multi-functional and flexible building. Importantly, no additional staffing numbers will be accommodated within the new Museum building.

As the development seeks to consolidate existing activities spread out across the Camperdown Campus, there will be no "nett increase" in the worker population to warrant the levying of section 94 contributions to offset increased demand for local services or infrastructure. In other words, there is no nexus between the proposed development and the levying of contributions as the museum will not create a need or increase the demand for public facilities.

### **8.3.2 Public Benefit of CCWM**

The proposed CCWM will add to the very substantial material public benefits already provided by the University. It will provide a new public facility with a distinct and significant community benefit. It will be free to visit and will be a major educational and cultural resource for the City of Sydney. In particular, the Museum will:

- significantly enhance the quality of museum and gallery facilities, providing for improved educational and research outcomes
- provide the opportunity to inform visitors and students about the University's extensive museum collection through resource materials, display, exhibitions and education programs and links into the NSW school curriculum
- enhance Sydney's reputation as a cultural destination
- assist in meeting Sydney's and NSW's cultural needs for the 21st Century by modernising and consolidating the University's existing disparate museum collections and artefacts; and
- stimulate increased public visitation of a highly significant cultural and educational attraction.

The building will be designed to provide flexible exhibition spaces, enabling the University for the first time to display extensive parts of its collection. It will also provide much needed cultural and intellectual space for exploration, engagement and research.

In summary, the University considers that no contributions should be paid having regard to the following reasons:

- As the development seeks to consolidate existing activities spread out across the University, there will be no "nett increase" in the worker population and therefore the proposed development will not require the provision of or increase the demand for public amenities and services;
- The proposed museum will deliver a significant material public benefit to the wider public, providing a major educational and cultural resource for the City of Sydney;
- In general, the University considers that it provides a wide variety of public amenities and services amounting to a substantial material public benefit and this benefit should be offset to remove or significantly reduce section 94 contributions that may otherwise be required.

Given the proposed development by the University constitutes development by a non-profit organisation, provides a distinct community benefit through a world class museum accessible by the public, does not invoke additional worker or staff population, and provides a significant quantum of budgeted/financed infrastructure works already dedicated by the University on campus, the proposed development should not be subject to section 94 contributions.

## 9. PROPOSED MITIGATION MEASURES

Table 15 below summarises the potential environmental impacts identified in Section 7 and the mitigation measures proposed to ameliorate these impacts.

**Table 15:** Mitigation Measures

ISSUE	POTENTIAL IMPACTS	MITIGATION MEASURES
<b>Built form Urban design</b>	Building form and scale may adversely impact the heritage significance of the surrounding heritage items	Construct in accordance with submitted plans at <b>Appendix 3</b> and the recommendations of the Heritage Impact Statement at <b>Appendix 6</b> .
<b>Heritage</b>	Potential impact on heritage items, views and vistas and landscape character	Construct in accordance with submitted plans at <b>Appendix 3</b> and the recommendations of the Heritage Impact Statement at <b>Appendix 6</b> including the preparation of: <ul style="list-style-type: none"> <li>▪ an Archival Recording of the Fisher Tennis Courts and the associated Clubhouse, in accordance with the NSW Heritage Office guideline;</li> <li>▪ an Interpretation Plan and Interpretation Strategy for the Fisher Tennis Courts and Clubhouse; and an Unexpected Archaeological Finds Procedure</li> </ul>
<b>Aboriginal Heritage</b>	Low potential for discovery and impact on elements of Aboriginal Heritage Significance	Should any deposits be discovered during the proposed works all work would cease immediately, the object safeguarded and a suitably qualified archaeologist contacted to record the find prior to work continuing. Further the Office of Environment and Heritage (OEH) and the Metropolitan Local Aboriginal Land Council would be contacted and informed of any finds as soon as possible and prior to work in that location continuing.
<b>Environmental amenity</b>	Overshadowing and solar access impacts	The submitted plans at <b>Appendix 3</b> identify that there is no issue with solar access or overshadowing
	Adverse reflectivity impacts on public domain and neighbouring uses	Implement the recommendations from the Reflectivity Report at <b>Appendix 21</b> , including a maximum specular reflectivity of visible light of 20% for glazed surfaces.
	Adverse wind impacts in key pedestrian areas around the building	Retain the existing planting surrounding the proposed development site
	Lighting impacts	Ensure that all external lighting meet the requirements of: <ul style="list-style-type: none"> <li>▪ AS 1158.3.1 Part 3.1 Pedestrian Area (Category P) Lighting – Performance and Design Requirements; and</li> <li>▪ AS 4282 – Control of the Obtrusive Effects of Outdoor Lighting.</li> </ul>
<b>Transport and accessibility</b>	Congestion and adverse impact on key intersections because of increased traffic generation on the site and altered traffic arrangements.	The proposal is anticipated to have a negligible impact on traffic generation, and would not compromise the safety or function of the surrounding road network. Further details contained within the Transport Assessment at <b>Appendix 23</b> .

ISSUE	POTENTIAL IMPACTS	MITIGATION MEASURES
	Adverse impact on pedestrian access across the site.	The proposal will have a positive impact on pedestrian accessibility of the site. Details contained within the Transport Assessment at <b>Appendix 23</b> .
<b>Ecologically Sustainable Development</b>	The development does not align with the principles of ESD.	Construct the proposal in accordance with the objectives set out within the ESD report at <b>Appendix 16</b> .
<b>Noise and Vibration</b>	Adverse noise and vibration impacts on neighbouring sensitive receivers	Implement the recommendations from the Acoustic Report at <b>Appendix 20</b> including: <ul style="list-style-type: none"> <li>▪ Adherence to the standard approved working hours for construction projects where possible. Piling, in particular, should not be undertaken outside of the standard working hours.</li> <li>▪ Locating stationary plant (air-compressors, generators, etc.) as far away as possible from sensitive receivers</li> <li>▪ Ensuring that music in outdoor areas ceases at 10:00pm</li> <li>▪ Ensuring that external areas are not used after midnight</li> <li>▪ Incorporating a noise limiter in any in-house sound system</li> <li>▪ Providing for appropriate noise and vibration control treatments for building services plant</li> <li>▪ Appropriate acoustic treatments to façade system/elements will be provided to comply with the noise criteria and will be further developed during the detailed design phase.</li> </ul>
	Adverse noise intrusion impacts into the building from traffic noise	Appropriate acoustic treatments to façade system/elements will be provided to comply with the noise criteria specified in Table 3.1 of <i>Development Near Rail Corridors and Busy Roads – Interim Guideline</i> and will be further developed during the detailed design phase.
<b>Biodiversity</b>	Adverse impact on biodiversity	Implement tree protection measures as prescribed by the Arboricultural Impact Assessment Report at <b>Appendix 10</b> .
<b>Arboriculture</b>	Impact on trees of high retention value.	Implement tree protection measures as prescribed by the Arboricultural Impact Assessment Report at <b>Appendix 10</b> .
<b>Accessibility</b>	Inequitable access to and through the site and buildings	During the detailed design implement the recommendations in the Accessibility Review at <b>Appendix 25</b> , including: <ul style="list-style-type: none"> <li>▪ Ensuring door circulation areas are in accordance with AS1428.1 (2009).</li> <li>▪ Ensuring ambulant toilet cubicles are 900-920mm wide.</li> <li>▪ Providing an accessible shower complying with AS1428.1 (2009).</li> </ul>
<b>Contamination</b>	Health and ecological impacts risks from presence of contaminants	<ul style="list-style-type: none"> <li>▪ An unexpected finds protocol (UFP) must form part of any excavation contractor's standard work method statements / construction management plans such that there is a plan of action to deal with finds of potential contamination not encountered by the current investigations.</li> </ul>

ISSUE	POTENTIAL IMPACTS	MITIGATION MEASURES
		<ul style="list-style-type: none"> <li>▪ The UFP must include inter alia methods for identifying, investigating and managing asbestos on site if found.</li> <li>▪ The various waste classifications will be subject to appropriate segregation and validation of overlying fill.</li> <li>▪ Segregation and validation of RSW will be undertaken prior to bulk excavation of GSW. This process will also apply following removal and validation of GSW prior to excavation of VENM.</li> </ul>
<b>Waste</b>	Excess building and construction waste are diverted to landfill	Implement the Construction Waste Management Plan within the Preliminary Construction Management Plan at <b>Appendix 26</b> .
	Operational waste is stored or disposed of improperly	Implement waste storage and disposal measures in line with the Waste Management Plan at <b>Appendix 27</b> .
<b>Construction management</b>	Impacts associated with noise, waste management and traffic management during site enabling and construction works.	Implement the methodology and recommendations of the Preliminary Construction and Traffic Management Plan at <b>Appendix 26</b> .
<b>CPTED</b>	Increase in risk to public safety and security	Implement the recommendations of the CPTED report at <b>Appendix 28</b> .
<b>Sediment, Erosion and Dust controls (Construction and Excavation)</b>	Adverse construction impacts resulting in sedimentation, erosion and dust impacts	Implement the Erosion Sediment Control Plan at <b>Appendix 9</b> .
<b>Drainage and flooding</b>	Site inundation during flood events and stormwater system capacity	Construct stormwater and drainage works in accordance with the Civil Engineering Plans at Appendix 9 and the recommendations of the Multidisciplinary Engineering Report at Appendix 11.