



THE UNIVERSITY OF
SYDNEY



environmental assessment

Abercrombie Precinct Redevelopment Project

March 2011





Prepared for:



The University of Sydney
Campus Infrastructure and Services
Level 2, Services Building, G12
UNIVERSITY OF SYDNEY NSW 2006

Prepared by:



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striving for balance between economic, social and environmental ideals...

PJEP Ref: Environmental Assessment_Mar11

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CERTIFICATION BY AUTHOR

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Prepared under the *Environmental Planning and Assessment Act 1979*

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Abercrombie Precinct Redevelopment Project,
Darlington Campus, University of Sydney
University of Sydney
Campus Infrastructure and Services
Level 2, Services Building, G12
UNIVERSITY OF SYDNEY NSW 2006
Part of the University of Sydney's Darlington
Campus, Darlington.
See schedule of land in Appendix Q

Proponent name
Proponent address

Land to be developed

Certificate

I certify that I have prepared the contents of this document, and to the best of my knowledge the assessment:

- has been prepared in accordance with the requirements of Part 3A and the Regulations; and
- does not contain false or misleading information.

Signature

Name Phillip Jones
Date 18 March 2011





EXECUTIVE SUMMARY

The University of Sydney is proposing to develop a new world-leading Business School on its Darlington Campus. The faculty's mission is:

"to build and sustain the leading learning community in business, economics and government in Australia and its region."

The faculty is proposed to be established via the redevelopment of the Abercrombie Precinct at the southern end of the Darlington Campus. This underdeveloped area of the campus forms the southern gateway to the University, and the opportunity exists to significantly enhance the amenity of the precinct through considered redevelopment.

The project, known as the Abercrombie Precinct Redevelopment Project, has been designed in a manner that is consistent with the University's strategic plans, and involves the staged delivery of the following:

- subdivision of the site to consolidate existing lots (including the closure of Rose Street and Boundary Lane), and create 2 development lots;
- demolition of all buildings and structures within the site, with the exception of the existing Economics and Business Building (H69);
- bulk and detailed earthworks across the site;
- construction and use of a new:
 - o Business School Building, comprising 3 to 7 levels (plus 2 basement levels and rooftop plant); and
 - o Student Accommodation Building, comprising 3 to 4 levels, providing approximately 100 beds; and
- ancillary works, including servicing and minor works to Darlington Public School.

The project is a landmark project for the University, both in terms of the faculty's mission to develop one of the world's leading business schools, and the University's broader aim to provide a high quality southern face to the Darlington and Camperdown campuses.

The project has a capital investment value of approximately \$267 million, and would accommodate a gross staff population of approximately 500 and a student population of approximately 7,000¹.

The proposal constitutes a 'major project', and consequently requires the approval of the Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979*.

The key environmental issues identified for assessment in this Environmental Assessment include:

- layout and design, including visual amenity and landscaping;
- environmental and residential amenity, including the protection of solar access, privacy and noise;
- traffic and transport;
- heritage;
- sustainability (particularly energy and water conservation);
- soil and water; and
- infrastructure and services.

Assessment of these and other environmental issues indicates that the project is able to be conducted in a manner that would not result in any significant environmental impacts, or impacts on the amenity of surrounding residents and other land users.

¹ The University acknowledges that most of this population would be re-deployed from existing areas of the campus, rather than the creation of new positions.



The project has been designed to a high standard to befit its anticipated status as a world-leading centre for business studies and training, within a functional framework that maximises collaboration between educators and students. The buildings have also been designed in a manner that respects the site's physical and historic setting, and incorporates best practice energy and water savings measures.

The University has committed to a range of measures to ensure that the project is undertaken in an orderly, environmentally responsible and sustainable manner.

Importantly, the project would directly promote the NSW Government's strategic goals and direction for this part of Sydney. In this regard, the site is located within the '*Sydney Education and Health Precinct*' as identified in the Sydney City Draft Subregional Strategy, which aims to promote the clustering of education (and health) facilities in the area.

The project would also have significant direct social and economic benefits for Sydney through a significant direct capital investment in the University, through supporting the employment and educational opportunities provided by the Business School, and through providing much needed affordable housing for students.

Accordingly, it is considered that the project represents orderly development of the land. It is respectfully requested that the Minister, having due regard for the information submitted in this Environmental Assessment, grant approval to the Abercrombie Precinct Redevelopment Project.



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- D Architectural Design Statement
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- K Phase 1 Site Contamination Assessment
- L Noise Assessment
- M Arborist Assessment
- N Non-Indigenous Archaeological Assessment
- O Statement of Heritage Impact
- P Traffic Assessment
- Q Accessibility Review
- R Schedule of Land



1 INTRODUCTION

1.1 Overview

The University of Sydney (the University) is proposing to develop a world-leading Business School by redeveloping the Abercrombie Precinct at the southern end of the University's Darlington Campus (see **Figure 1.1**).

This Environmental Assessment has been prepared by PJEP Environmental Planning Pty Ltd (PJEP) on behalf of the University to assist the Minister's and the Department of Planning's consideration of the Abercrombie Precinct Redevelopment Project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

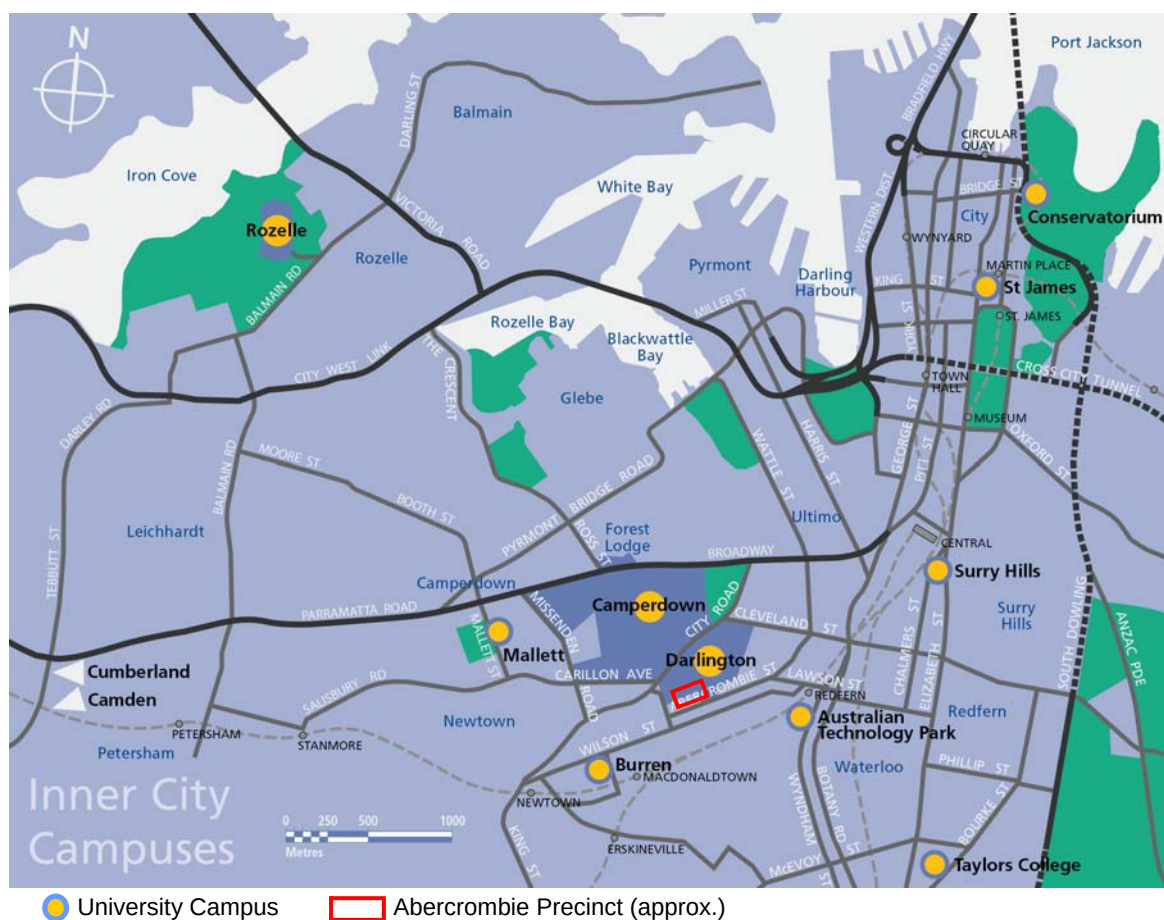


Figure 1.1: Regional Context (Source: University of Sydney)

1.2 Background

The University of Sydney Business School (formerly known as the Faculty of Economics and Business) was founded in 1920. In 2004, it earned accreditation by both the Association to Advance Collegiate Schools of Business (AACSB) International (for both business and accounting programs), and by the European Quality Improvement System (EQUIS). It is the only business school in Australia to hold all three. In December 2006, it was elected as the only Australian associate member school of the Community of European Management Schools & International Companies (CEMS). It currently comprises 11 academic business disciplines and hosts 4



institutes, centres and schools, 13 multidisciplinary research groups and one Foundation (the Accounting Foundation).

The Business School's mission is:

"to build and sustain the leading learning community in business, economics and government in Australia and its region."

At present, the Faculty's facilities are not ideal and do not support the University's aspiration or the Business School's mission. The Faculty teaches in more than 20 buildings of varying standards scattered across the campus. Travel between these locations is time-consuming and inconvenient for students and staff. The Merewether Building (located to the north of the Abercrombie Precinct) is the Faculty's main teaching building, was built in the 1960's and does not meet modern teaching requirements, particularly in relation to collaborative learning. The Faculty's growth over the last decade has placed a considerable strain on physical infrastructure.

To overcome these issues, and to create a world-leading Business School that befits the Faculty's mission, the University is proposing to consolidate the Faculty via the redevelopment of the Abercrombie Precinct at the southern end of the Darlington Campus. This underdeveloped area of the campus forms the southern gateway to the University, and the opportunity exists to significantly enhance the amenity of the precinct through considered redevelopment. The precinct already accommodates a relatively modern 5-level Economics and Business Building built in 2001 (known as H69), and the project would encompass and integrate with this existing facility.

The redevelopment project is aligned with, and directly supports, the University's strategic plans and the Business School's key objectives, which include:

- to develop a world-class Business School to replace the dilapidated accommodation currently in use;
- to provide a recognisable image for the Faculty and be a significant and durable work of architecture appropriate to the University of Sydney;
- to provide a high quality experience for staff and students and be highly functional;
- to facilitate the use and further development of collaborative learning techniques; and
- to provide a sustainable development.

The strategic context of the project is discussed further in Section 4.1.

1.3 The Project

The key components of the Abercrombie Precinct Redevelopment Project include the staged delivery of the following:

- subdivision of the site to consolidate existing lots (including the closure of Rose Street and Boundary Lane), and create 2 development lots;
- demolition of all buildings and structures within the site, with the exception of the existing Economics and Business Building (H69);
- bulk and detailed earthworks across the site;
- construction and use of a:
 - o Business School Building, comprising a 3 to 7 level building (plus 2 basement levels and rooftop plant) with a total gross floor area of approximately 35,185 m²;
 - o Student Accommodation Building, comprising a 3 to 4 level building providing approximately 100 beds, with a total gross floor area of approximately 4,430 m²; and
- ancillary works, including servicing and minor works to Darlington Public School.

The project has a capital investment value of approximately \$267 million, and would accommodate a total staff population of approximately 500 and a total student population of approximately 7,000 (Nb. This staff and student population is equivalent to the existing population associated with the Business School. In this regard, the project would not generate a significant



number of new positions, but rather consolidate the existing faculty population in a purpose-built precinct).

The project is discussed in detail in Section 3.

1.4 The Proponent

The University of Sydney is the proponent of the project.

Founded in 1850, the University of Sydney was Australia's first university, and is one of its most prestigious. Today, the University is spread over a number of campuses across Sydney (see **Figure 1.1** for inner city campuses), with the main Camperdown and Darlington campuses located only 2 kilometres south-west of the Sydney CBD.

The University currently has around 49,000 student enrolments, with some 3,070 academic staff. There are some 170,000 alumni worldwide.

The University has the following stated aim:

'We aim to create and sustain a university in which, for the benefit of both Australia and the wider world, the brightest researchers and the most promising students, whatever their social or cultural background, can thrive and realise their full potential'.

1.5 Environmental Assessment Team

This Environmental Assessment has been prepared by PJEP Environmental Planning in conjunction with a range of specialist consultants as listed in the following table.

Table 1.1: Environmental Assessment Project Team

Discipline	Organisation	Study/Deliverable
Project Management	DBL Property and Campus Infrastructure and Services (CIS), University of Sydney	Project Management
Architecture	Woods Bagot	Principal Consultant, Architecture
Functional Design	Arina Consultants	Functional Design
Environmental Planning	PJEP Environmental Planning	Environmental Assessment
Soil and Water		
– Geotech	Coffey Geotechnics	Geotechnical Assessment
– Site Contamination	SKM	Phase 1 Contamination Assessment
– Stormwater and Flooding	GHD	Stormwater Management Plan Soil and Water Management Plan
Noise	Marshall Day	Noise Assessment
Wind	Windtech	Wind Analysis
Solar Access	Woods Bagot	Solar Access Analysis
Sustainability	Atelier ten	Green Building Design Report
Flora and Fauna	The Tree School	Arborist Assessment
Aboriginal Heritage	Jo McDonald Cultural Heritage Management	Aboriginal Heritage Test Excavations (previously undertaken in 2006/07)
Historical Heritage	Casey and Lowe Graham Brooks & Associates	Archaeological Assessment Heritage Impact Statement
Traffic and Parking	Arup	Traffic Assessment
Infrastructure and Services	GHD	Infrastructure Assessment
Landscaping	360 Degrees	Landscape Plan
Wastes and Hazards	PJEP	Waste and SEPP 33 review



2 THE SITE

2.1 Location and Context

The Abercrombie Precinct site is located at the southern end of the University's Darlington Campus. For the purposes of this project, the project site (the site) is the area bounded by Darlington Lane to the north, Codrington Street to the east, Abercrombie Street to the south, and Darlington Public School to the west. It is noted that the project involves some minor ancillary works in Darlington Public School (see Section 3).

Figures 2.1 to 2.3 below show the site in relation to key landmarks on the University and surrounding area.

The site is approximately 2 kilometres south-west of the Sydney CBD, and is located in the City of Sydney local government area.

2.2 Site Analysis

The following provides a brief analysis of the site. Detailed information on environmental features of the site is provided in Section 6.

2.2.1 Site Description and Ownership

The site is rectangular in shape and has an area of approximately 1.92 hectares. It is located within the University's Darlington Campus, which has a total area of approximately 16.7 hectares.

The site currently comprises some 79 individual allotments (a consequence of the historic residential land use of the site – see Section 6.7), as well as Rose Street and Boundary Lane.

The 79 individual lots are owned by the University.

On 10 August 2009, Sydney City Council (Council) resolved to close Rose Street and Boundary Lane, and sell the land to the University to accommodate the project. At the date of this EA, Council is still the registered owner of the land, and accordingly Council has provided its owners consent to the project².

2.2.2 Land Use

The site is located in a hitherto less developed area of the University's Darlington Campus. It currently comprises a number of buildings used for a range of university purposes, including:

- the 5-level Economics and Business building (H69) (Nb. this building is the only building proposed to be retained within the site);
- Demountable Village (Geology Building) (H11) – a set of 1-level demountable buildings which accommodate the University Printing Service;
- Joiner's Shop (H05) – a 1-level brick building formerly used by University maintenance services (Nb. The building has structural issues and consequently has approval for demolition from Council – see Section 3.3);
- Clark Building (H12) – a 1-level concrete building which accommodates a University book repository;
- Boundary Lane Childcare Centre (H09) – a 1-level brick building which accommodates a child care centre;
- Shepherd Centre (H68) – a 1-level concrete building which accommodates a facility for deaf and hearing-impaired children;

² The owners consent and resolution accompany the project application form.



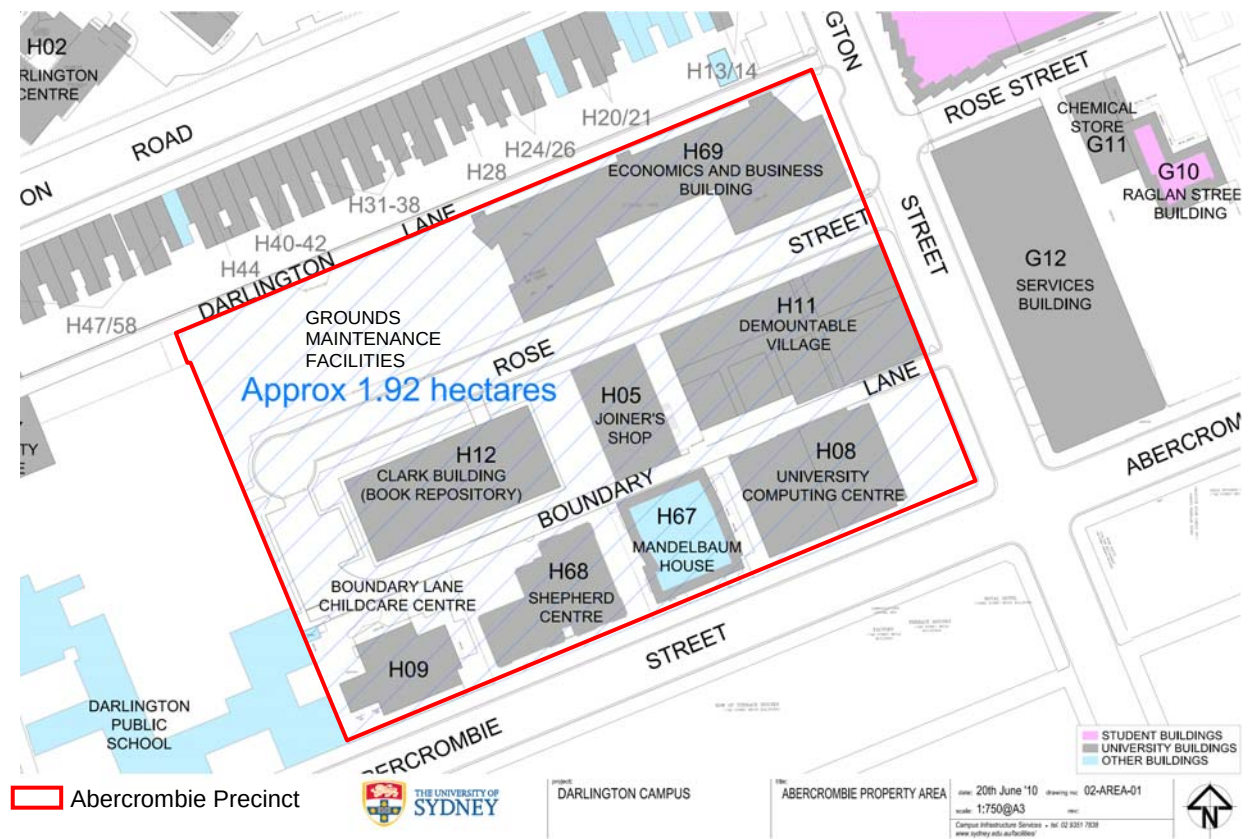


Figure 2.2: Existing Site Plan (Source: University of Sydney)



Figure 2.3: Aerial Photograph (Source: nearmap)



- Mandlebaum House (H67) – a 3 to 4 level brick and render building which accommodates student housing;
- University Computing Centre (H08) – a 2-level brick building which accommodates university computing services;
- University grounds maintenance sheds and facilities; and
- internal roads and utilities.

Most of the buildings in the precinct are of poor quality and are at the end of their useful lives.

Rose Street and Boundary Street provide access to and around these existing buildings, but neither of these streets provides any through access.

2.2.3 Surrounding Land Use

The Abercrombie Precinct is located at the southern end of the University's Darlington Campus, with the precinct marking the boundary between the University and residential and mixed use land uses to the south.

Land use immediately surrounding the site:

- *North* – Darlington Lane, with the residential Darlington Road Terraces beyond. Most of these terraces are owned by the University (see **Figure 2.2**) and are used for student accommodation. The privately-owned terraces are used for residential land use;
- *East* – Codrington Street, with University buildings beyond, including the 3-level Campus Infrastructure and Services Building (G12) on the corner of Codrington Street and Abercrombie Street, and the University Sports and Aquatic Centre;
- *South* – Abercrombie Street, mixed land use beyond, predominately 2-level residential terraces (some with 3rd level attic levels), with one 2-level commercial building ('Spinifex Group') and the 3-level Royal Hotel on the corner of Codrington Street and Abercrombie Street. Further to the south beyond Wilson Street is the North Eveleigh mixed use site; and
- *West* – Darlington Public School, with residential land use further to the west beyond Golden Grove Street.

The nearest sensitive receivers to the project site include:

- privately-owned residences and University-owned student housing directly to the north across Darlington Lane, approximately 20 metres from the site;
- residences directly to the south across Abercrombie Street, approximately 20 metres from the site;
- students and teachers at Darlington Public School, immediately to the west; and
- residences to the west of Golden Grove Street, approximately 100 metres from the site.

2.2.4 Topography

The project site slopes gently from north-west down to south-east. Existing ground levels across the site range from approximately 36.5 metres AHD in the north-western corner, to 24.5 metres AHD near the corner of Boundary Lane and Codrington Street.

2.2.5 Geology and Soils

The underlying geology of the site comprises Ashfield Shale, which typically consists of shale and laminite.

The soil profile reflects the historic disturbance and filling of the site to accommodate the urban land uses, and typically includes fill (clay, sand, gravel and bricks) to depths of between 0.4 to 1.4 metres in some areas of the site.

Site assessments undertaken for the project indicate that the site has some risk of low-level contamination.



Geological and soil aspects of the project, including contamination, are discussed further in Section 6.1.

2.2.6 Water and Flooding

There are no natural watercourses on or in proximity to the site, with the nearest watercourses being Alexandra Canal approximately 1.5 kilometres to the south, and Johnston's Creek approximately 1.7 kilometres to the west. (The heritage assessment suggests that the headwaters of the former Blackwattle Swamp Creek originally flowed through the site from west to east – see Section 6.7 for further detail).

The site drains generally from north-west to south-east in accordance with the site topography. Stormwater from the site drains via existing pipe infrastructure to services in Codrington Street, near Boundary Lane (ie. the low point of the site).

The site is located above the 1 in 100 year flood level.

Water and flooding aspects of the project are discussed further in Section 6.1.

2.2.7 Noise and Air Quality

The acoustic environment of the project site reflects its urban setting near the Sydney CBD. The noise environment is influenced by traffic noise on nearby local roads, as well as university and related uses.

Air quality also reflects the site's urban setting, and is considered to be typical of the Sydney airshed.

As identified above, the nearest sensitive receivers to the site are the residences directly to the north and south of the site, as well as the users of Darlington Public School.

Noise and air quality aspects of the project are discussed further in Sections 6.3 and 6.4, respectively.

2.2.8 Flora and Fauna

The site is predominantly cleared, however there are some mature street trees along the road frontages and property boundaries, along with a small (approximately 600m²) pocket park on the corner of Codrington Street and Abercrombie Street that contains approximately 15 trees and a number of shrubs.

The treed vegetation contains native and exotic species, which vary in condition from poor to good.

The vegetation is not considered to provide significant habitat for native fauna, given that the vegetation is essentially isolated and fragmented site landscaping, with a lack of connectivity to areas of remnant bushland.

Ecological aspects of the project are discussed in detail in Section 6.6.

2.2.9 Heritage

The site is located within the Golden Grove heritage conservation area, as identified in the *South Sydney Local Environmental Plan 1998* (see **Figure 2.4**)³. There are no listed heritage items within the site, however some of the two-storey Victorian terraces directly to the north on

³ The site is proposed to be removed from the conservation area under the *Draft Sydney Local Environmental Plan 2011*, due to its lack of contribution to the heritage values of the conservation area – see Section 6.7 for further detail.



Darlington Road are listed as heritage items under the LEP (identified as heritage items 347 to 354).

Previous Aboriginal archaeological assessment undertaken on the site indicates that the area has low archaeological potential given its previous disturbance. No Aboriginal sites/objects have been identified on the site.

Non-indigenous archaeological assessment undertaken for the project indicates that the site has some potential to contain remains of a corner shop, some terrace houses and the line of the former Blackwattle Swamp Creek, particularly around the south-eastern corner of the site, with the potential remains having local heritage significance. Additional test excavation is proposed in this area.

Heritage aspects of the project are discussed further in Section 6.7.

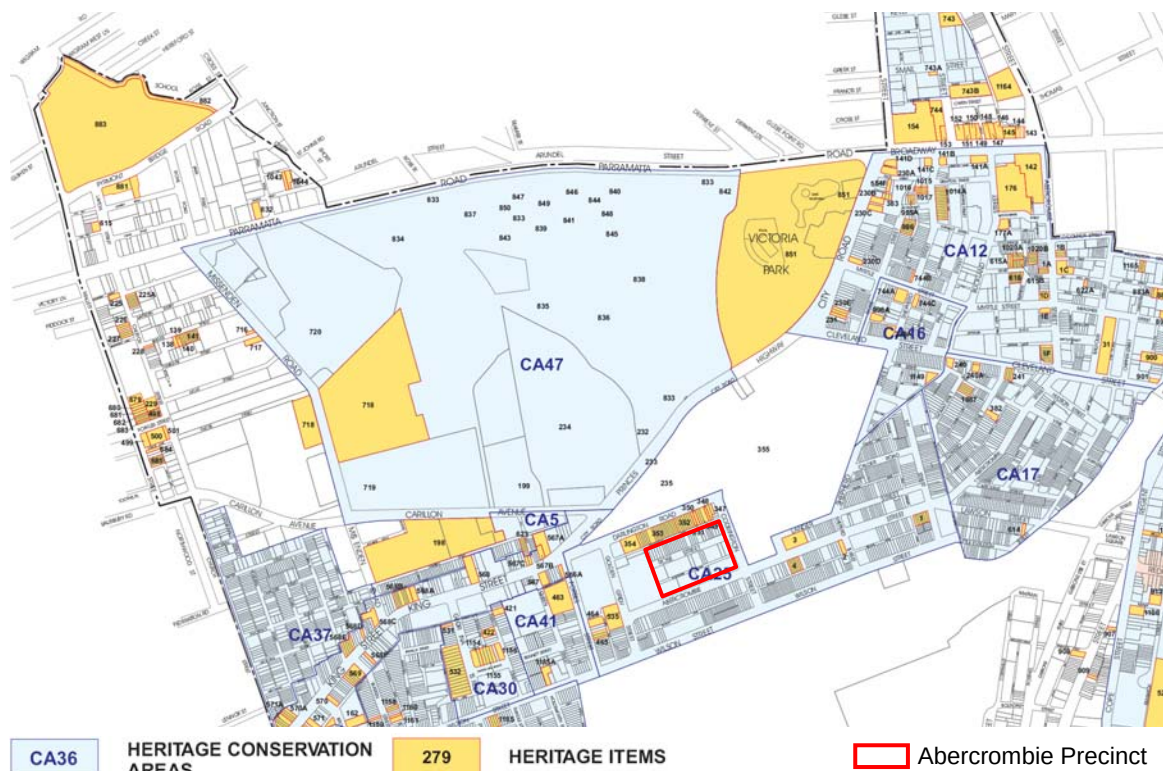


Figure 2.4: Heritage Items under South Sydney LEP 1998 (Source: South Sydney LEP 1998)

2.2.10 Visual Context

The Abercrombie Precinct site is a landmark site for the University, given that it forms one of the key southern entrances to the University, and is located adjacent the one of the University's primary north-south axes, known as the Eastern Avenue axis (see **Figure 4.6**). This axis forms a major connecting pedestrian/cycle thoroughfare for the University, and is an integral component of the University built structure.

However, at present the Abercrombie Precinct site presents as a mixed bag of architectural styles, scale and design quality, without a central or unifying theme. Buildings range from the poor quality, single level demountable village on Codrington Street, to the higher quality, 5-level H69 Economics and Business building in the north-eastern area of the site fronting Codrington Street and Darlington Lane.

Key visual receivers to the site include:

- Abercrombie Street residents and commuters to the south;



- Darlington Road residents to the north;
- commuters on Codrington Street to the east;
- Darlington Public School students and staff to the west; and
- the University itself to the north and east.

Visual amenity aspects of the project are discussed further in Section 6.1.

2.2.11 Infrastructure and Services

Access and Road Network

The Abercrombie Precinct site is located on the corner of Abercrombie Street and Codrington Street, both of which are 2-lane, 2-way local roads with on-street parking available.

Abercrombie Street provides access to City Road via Golden Grove Street to the west, and to Redfern Station and Regent Street to the east. Redfern Station is approximately 700 metres walking distance from the site.

Codrington Street provides access to City Road to the north via Butlin Avenue, and to Abercrombie Street to the south.

Darlington Lane forms the northern boundary of the site, and acts as a minor thoroughfare between Golden Grove Street and Codrington Street.

The two local roads within the site – Rose Street and Boundary Lane – are in the process of being closed and are proposed to be incorporated into the project site. These roads provide limited thoroughfare within and around the existing Abercrombie Precinct site, and do not provide through access.

Stormwater Drainage

The site drains via localised stormwater pipes in Rose Street and Boundary Lane, to a 600 millimetre diameter pipe in Codrington Street near the corner of Boundary Lane.

Potable Water

The site is serviced by existing reticulated potable water, with mains services in Rose Street, Darlington Lane, Codrington Street and Abercrombie Street.

Sewer

The site is serviced by an existing reticulated sewerage system, with 300 millimetre diameter mains in Boundary Lane and Codrington Street.

Electricity

Electrical infrastructure within the University is distributed around the campus via high voltage underground cables originating from various Energy Australia zone substations. The precinct is currently serviced via 2 padmount kiosk substations located within the site.

Gas

The site is serviced by existing reticulated gas, with mains supply in Rose Street and Abercrombie Street.

Telecommunications

The site is serviced via the University's IT network which originates from the existing H69 Economics and Business Building.



3 THE PROJECT

3.1 Project Summary

The University is proposing to redevelop the Abercrombie Precinct site to provide a world-leading campus for its Business School faculty. The project – known as the Abercrombie Precinct Redevelopment Project – is summarised in the following table, and the layout of the project is shown on **Figures 3.1 to 3.10**. A full set of the architectural and landscape plans is provided in **Appendix C**.

Table 3.1: Project Summary

Project Summary	Redevelopment of the Abercrombie Precinct site, including the staged delivery of: • lot consolidation / subdivision; • demolition; • bulk and detailed earthworks; • construction and use of a new Business School Building and Student Accommodation Building; • ancillary works, including utilities servicing and minor works to Darlington Public School.
<i>Proposed Uses</i>	University purposes, predominately education/training and research, but also student housing, along with ancillary facilities including cafés/restaurants
<i>Subdivision</i>	Lot consolidation/subdivision to form 2 development lots (1 for the Business School Building and 1 for the Student Accommodation Building)
<i>Demolition</i>	Staged demolition of all buildings and structures within the site excluding the existing Economics and Business Building (H69).
<i>Earthworks</i>	Bulk earthworks across the site to create a level building pad and to excavate basement levels. Approximately 25,000m ³ of fill to be exported.
<i>Facility Description</i>	The Business School Building would comprise a single building varying from 3 to 7 levels (plus 2 basement levels and rooftop plant) with a total gross floor area of approximately 35,185 m². The Student Accommodation Building would comprise a single 4-level building with a total gross floor area of 4,430 m². The combined development has a total gross floor area of 39,615 m².
<i>Staging</i>	Construction of the project would be staged over a period of approximately 5 years
<i>Capital Investment Value</i>	\$267 million
<i>Employees</i>	Construction – Estimated 200 full time equivalent construction jobs Operation – Total building population of approximately 500 staff (including 350 academics and 150 general staff). Total student population of approximately 7,000.
Infrastructure and Services:	
<i>Access and Roads</i>	Construction of internal access driveway to basement and car parking (185 spaces). No external roadworks are required.
<i>Stormwater Drainage</i>	The site would be connected to existing Council stormwater main in Codrington Street. On-site stormwater collection and treatment prior to discharge.
<i>Potable Water</i>	The site would be connected to existing Sydney Water mains supply in Abercrombie Street and Codrington Street. The proposal includes a number of water savings measures, including water efficient fixtures and harvesting of roof rainwater for toilet flushing and irrigation (and potentially cooling tower make-up).
<i>Sewer</i>	The site would be connected to reticulated sewer which runs through the site (along Boundary Lane). This sewer main would be relocated within the site or suitably encased to accommodate the project.

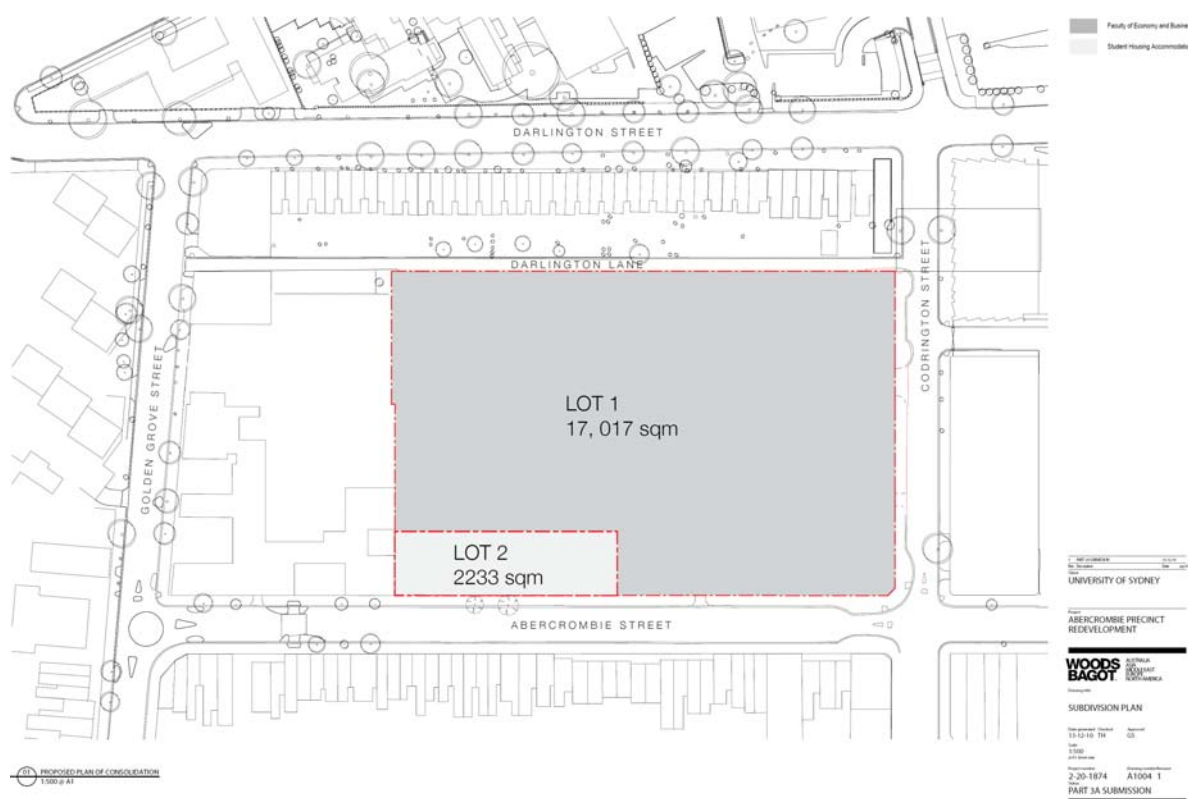


Figure 3.2: Concept Subdivision Plan (Source: Woods Bagot)

3.3 Demolition

The project involves the staged demolition of all existing buildings and structures within the site, with the exception of the existing Economics and Business Building (H69) and its immediate surrounds. Buildings/structures to be demolished are shown on **Figure 2.2**, and include the University's:

- Demountable Village (Geology Building) (H11);
- Joiner's Shop (H05);
- Clark Building (H12);
- Boundary Lane Childcare Centre (H09)⁴;
- Shepherd Centre (H68);
- Mandlebaum House (H67);
- University Computing Centre (H08);
- University grounds maintenance sheds; and
- internal roads and utilities.

It is noted that the Joiner's Workshop has a valid development consent from Council for its demolition (D/2009/1961, granted on 5 March 2010). Demolition for this building was sought due to the existing poor structural condition of the building (wall cracking and rotation).

Demolition would be undertaken in accordance with a detailed Waste Management Plan for the project, which would target a 90% diversion of demolition (and construction) waste from landfill. It would also provide for a hazardous materials survey to be undertaken of the buildings prior to demolition (see Section 6.9).

⁴ The child care centre would be relocated to another site (provisionally identified as a University site on Burren Street), subject to separate application.



All demolition would be undertaken in accordance with applicable standards and guidelines, including *Australian Standard AS 2601-2001: The Demolition of Structures*.

3.4 Earthworks and Construction

Bulk earthworks works would be undertaken across the site to create level building pads and to excavate the basement levels. The buildings would be constructed at a finished ground level of approximately 26-27 metres AHD.

The earthworks would require exportation of approximately 25,000m³ of fill from the site. Excavated material would be classified and managed in accordance with DECCW's *Waste Classification Guidelines* (2008).

Once the bulk earthworks are complete, construction works associated with the project would involve:

- detailed earthworks, including stormwater drainage works;
- infrastructure and site servicing;
- construction of the buildings; and
- site landscaping.

Construction works would be undertaken in accordance with a detailed Environmental Management Strategy, prepared to the satisfaction of the Department of Planning.

Construction of the project would be undertaken on a staged basis over a period of approximately 5 years. The broad concept staging – showing the general building sequence – is shown on **Figures 3.3 and 3.4**, although it is noted that there may be some intermediary sub-stages within these broad stages.

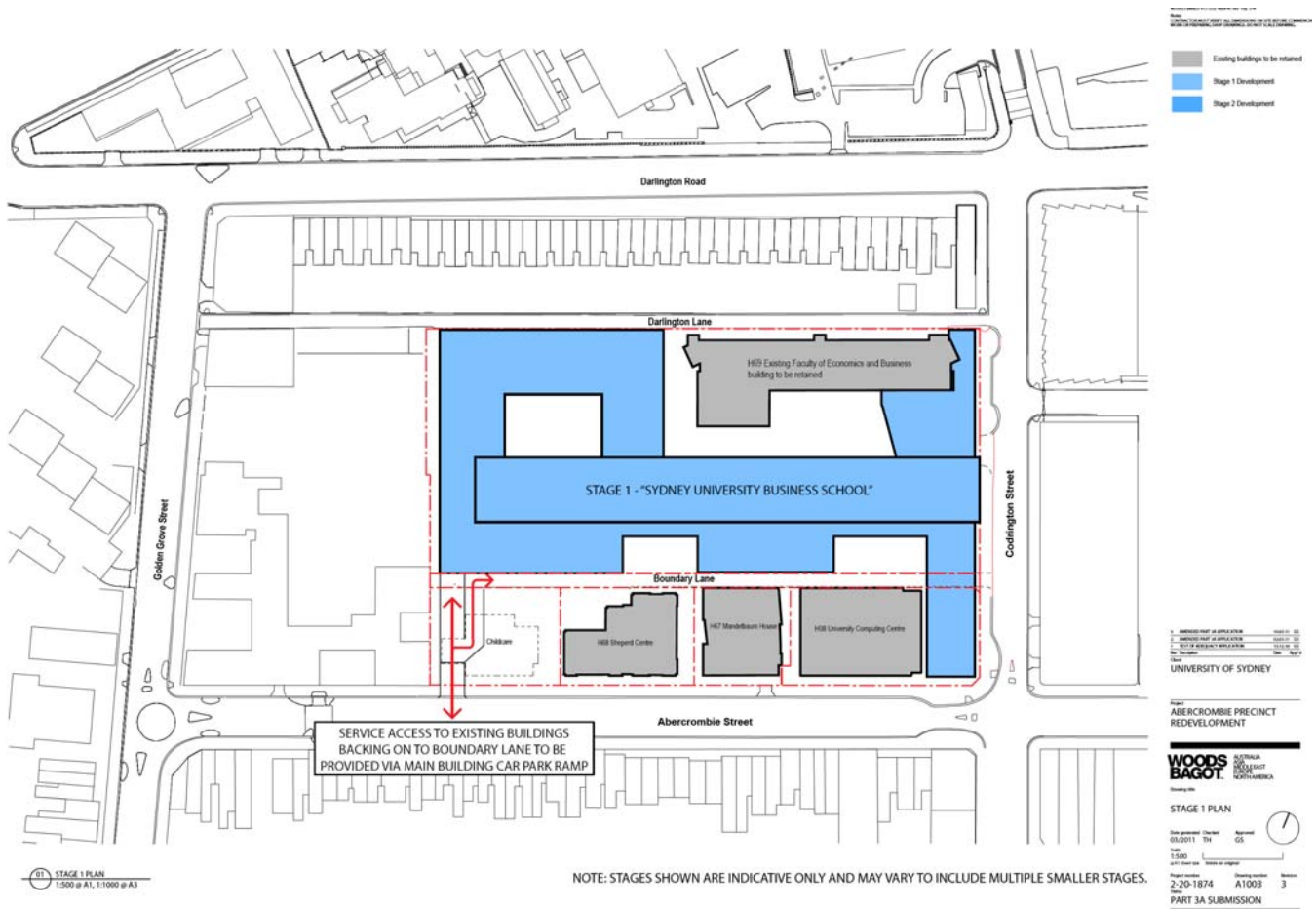


Figure 3.3: Concept Staging Plan – Stage 1 (Source: Woods Bagot)

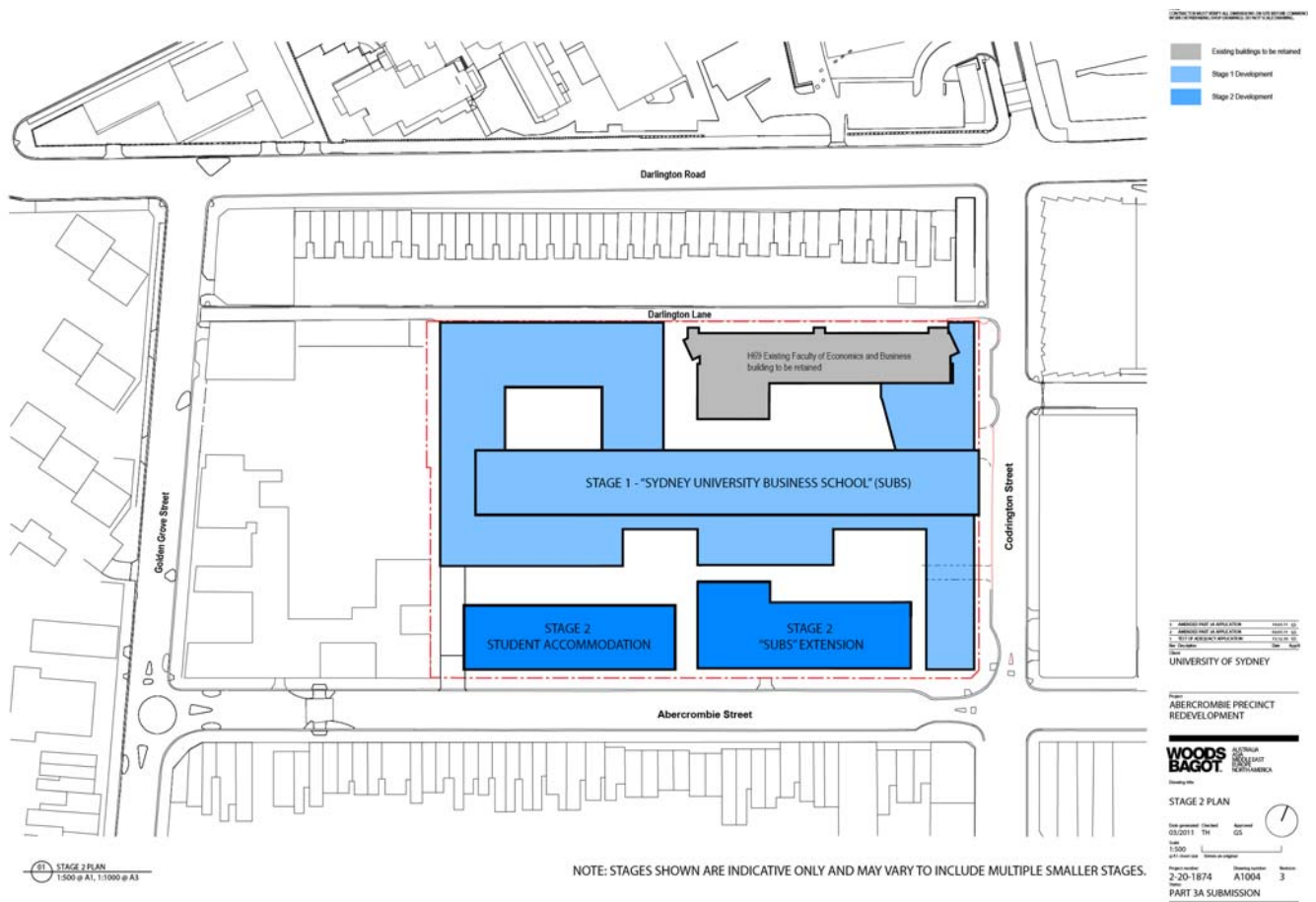


Figure 3.4: Concept Staging Plan – Stage 2 (Source: Woods Bagot)

3.5 Description of the Buildings

A summary of the project building elements, and the associated areas and heights, is presented in Table 3.2 below. The design philosophy of the project is described in detail in the architect's design statement in Section 6.1 and **Appendix D**.

Essentially the precinct development comprises 2 separate buildings, including the:

- *University of Sydney Business School Building* (Business School Building) – a 7-level teaching and learning facility for the Business School Faculty, delivering a world class Business School. The building would comprise a:
 - o 3 podium level teaching and learning complex, arranged around informal, internal courtyards. The courtyards are linked by internal 'lanes' that provide circulation, with the main entry off Codrington Street. A north-south link through the site encourages through site movement linking Abercrombie Street to Darlington Lane and then onto other areas of the Campus. These lower levels would provide both formal and informal teaching and learning spaces ranging from lecture theatres to outdoor informal gathering spaces;
 - o 4-level office component sitting atop the central part of the podium and running east-west across the site, providing office accommodation for faculty staff; and
- *Student Accommodation Building* – a 3 to 4 level building providing some 100 student and academic units facing onto Abercrombie Street.



Figure 3.5: Level 1 Floor Plan (Source: Woods Bagot)



Figure 3.6: Level 5 Floor Plan (Typical Upper Level) (Source: Woods Bagot)



Figure 3.7: Roof Plan, showing landscaping areas (Source: 360 degrees)

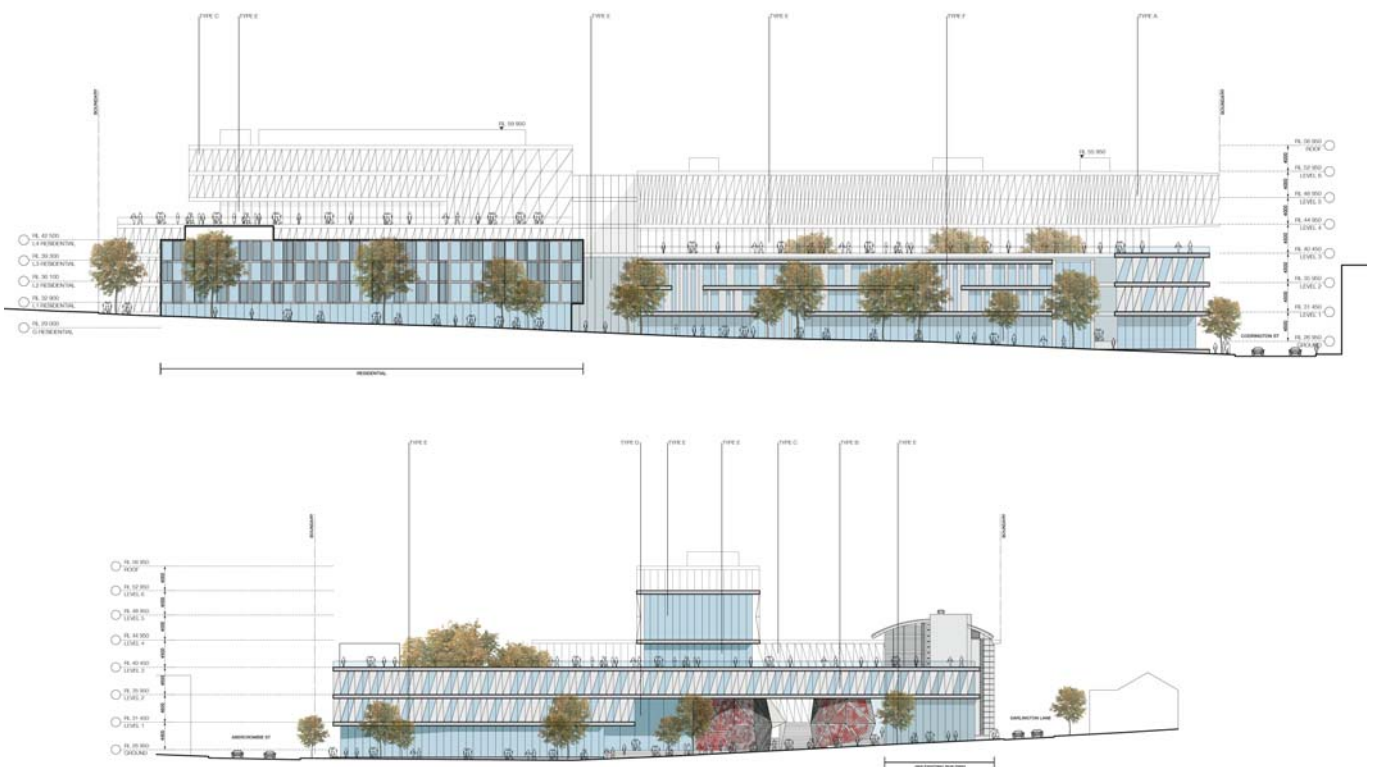


Figure 3.8: Elevations – Abercrombie Street (above) and Codrington Street (below)
(Source: Woods Bagot)

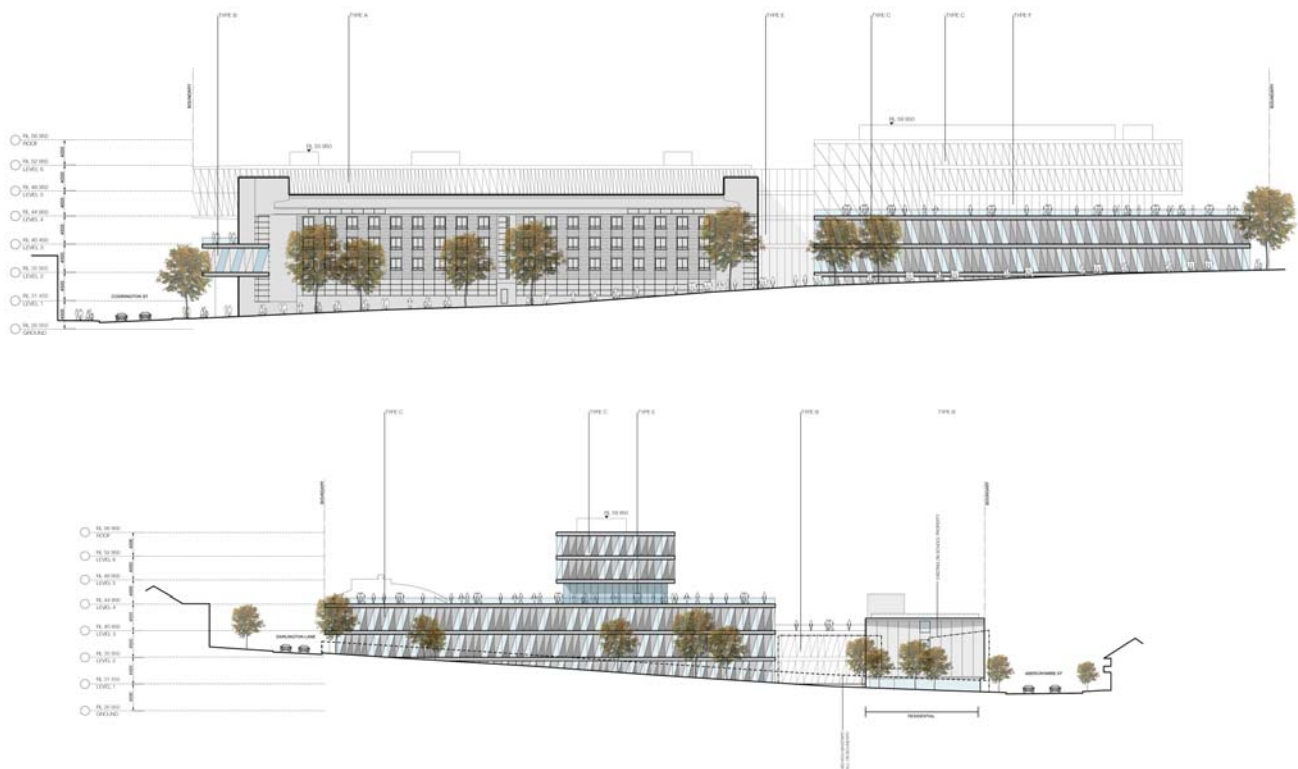


Figure 3.9: Elevations – Darlington Lane (above) and Darlington Public School (below)
(Source: Woods Bagot)

Table 3.2: Project Built Elements and Area Schedule

Building Elements and Areas

Business School Building:	35,185 m²
• Teaching and learning space	23,778 m ²
• Faculty offices, admin and support	10,014 m ²
• Ancillary Space (Café/Restaurant/Foyers)	1,393 m ²
Student Accommodation Building:	4,430 m²
• Student Rooms (Studio Units)	90 rooms
• Student Rooms (1 Bed)	6 rooms
• Visiting Academics (1 Bed Units)	4 units

Total Areas

Gross floor area (excluding parking)	39,615 m ²
Parking area	7,520 m ²
Landscape area	13,240 m ²
Building footprint area:	
• Business School Building;	10,528 m ²
• Student Accommodation Building	1,110 m ²
Site Area	1.92 ha
Floor Space Ratio (Darlington Campus existing)	1.1:1
Floor Space Ratio (Darlington Campus with project)	1.3:1

Heights

Maximum No. of levels above ground (inc. ground floor)	7
Maximum No. of levels below ground (basements)	2
Finished ground level	RL 26.0m
Maximum height	RL 56.0 (roof level) RL 60.0m (roof plant level)



Parking	
Car parking spaces	185
Loading spaces	3 small rigid vehicles 1 medium rigid vehicle
Bicycle parking	313

The setbacks of the buildings vary between frontages and levels. A schedule of setbacks is provided in the following table.

Table 3.3: Setbacks Schedule

Business School Building				
Level	Abercrombie St Setback	Codrington St Setback	Darlington Lane Setback	Darlington Public School Setback
Ground	5.25 m	6.75 m	0 m (below ground)	0 m (below ground)
Level 01	2.7 m (slab edge) 3.4 m (glass line)	4.2 m (slab edge) 4.9 m (glass line)	0 m (below ground)	0 m (below ground)
Level 02	2.7 m (slab edge) 3.4 m (glass line)	4.2 m (slab edge) 4.9 m (glass line)	0 m	2.25-3.5 m
Level 03	2.7 m (slab edge) 5.3 m (to stair well) 48.9 m (glass line)	4.2 m (slab edge) 11.9 m (glass line)	0 m	2.25-3.5 m
Level 04	44.8m	0 m	0 m (slab edge) 2.6 m (stair well) 41 m (glass line)	2.25-3.5 m
Level 05	44.8 m	0 m	41 m	2.25-3.5 m
Level 06	47 m	19 m	41 m	2.25-3.5 m
Roof Plant	58 m	100 m	43.75 m	7.7-8.95 m
Student Accommodation Building				
Level	Abercrombie St Setback		Darlington Public School Setback	
Ground	3.3 m		8.85 m	
Level 01	3.3 m		8.85 m	
Level 02	2.6 m		8.85 m	
Level 03	2.6 m		8.85 m	
Level 04	6.2 m		13.8 m	

3.5.1 The University of Sydney Business School

The University of Sydney Business School (Business School Building) forms the main built component of the site. With its principle pedestrian access from Codrington Street, the Business School promotes a collaborative teaching and learning environment arranged in large floor plates providing a range of teaching and learning spaces over 3 levels. These first 3 levels are the public and learning areas of the School, and are arranged around two internal courtyards linked with a main internal street and other secondary circulation routes which run both horizontally and vertically.

Three cores and internal stairs connect the lower learning and teaching areas to the upper level research and office space for the Faculty. The upper floors are designed around social hubs, with wide stairs for meeting places and visual connectivity between floors. This would provide opportunity for collaboration between staff members, industry and students. The main activities within the Business School are outlined below.



Teaching and Learning Space

The Business School Building is specifically designed to offer adaptive, collaborative teaching and learning spaces allowing use of both indoor and outdoor meeting spaces. The spaces are both informal and formal and include:

- 2 large lecture theatres seating 250 and 350 students respectively located on the ground level and accessed via the north-south link and the internal movement corridors;
- a variety of collaborative classrooms of varying sizes, and seminar rooms arranged around the internal courtyard spaces; and
- external and internal lounge areas associated with the internal courtyards to create informal meeting and learning spaces.

Faculty Offices

The upper levels of the building comprise faculty office, administration and research spaces. They would be accessed via 3 main cores and would provide large floor plates aimed at providing strong collaboration between the disciplines and the teaching and research function.

Standard office accommodation for academic staff is arranged with window frontage whilst administration and support areas are located in the centre of the floors. Void areas are aimed at creating a strong visual link between the floors to again promote a collaborative environment.

Ancillary Support Areas

The Business School Building includes a number of ancillary facilities to support the education and research function of the building, as well as ceremonial entry and foyer spaces befitting its status as a pre-eminent international Business School. These facilities would include:

- entrances and receptions to the Business School Building off Codrington Street, as well as a new bridge link connecting the new faculty space with the existing Economics and Business Building (H69);
- a main cafe (256 m²) located at ground level on the corner of Codrington Street and Abercrombie Street, and a restaurant located at the top of the building (Level 6 – 350m²);
- amenities, including showers and lockers in the basement to cater for staff and students that cycle or walk/jog to work to shower and change. A shower is also located in each main amenities area; and
- administration and IT support spaces.

3.5.2 Student Accommodation Building

The proposed Student Accommodation Building is targeted at replacing the existing Mandelbaum House residential facility. The new building is proposed over 3 to 4 levels with basement parking, and would provide approximately 100 rooms/units for students and visiting academics.

The building is specifically located on Abercrombie Street to maintain the residential scale and nature of this frontage, maintain student housing in this area and to replace existing student accommodation in Mandelbaum House. The building would comprise the following main elements:

- Ground Level (partial level) would provide a student lounge;
- Level 1 would provide entry into the building, office and administration areas, library, kitchens, lounge and dining areas. It would also include some larger rooms provided for visiting academics;
- Levels 2 to 3 would then provide the main student accommodation area providing 96 single rooms with ensuites, and various student breakout/lounge areas; and
- a roof-top terrace, setback from Abercrombie Street.

3.6 Hours of Operation

The new Business School Building and Student Accommodation Building would operate up to 24 hours a day, 7 days a week, 365 days a year.



Normal hours of operation for teaching-related activities in the Business School would be 7:00am to 9:00pm, Monday to Saturday.

Construction works for the project would be undertaken in accordance with the hours as stipulated in DECCW's *Interim Construction Noise Guideline*, namely:

- 7:00am to 6:00pm Monday to Friday;
- 8:00am to 1:00pm Saturdays; and
- no work on Sundays or public holidays.

Construction works that are inaudible at surrounding receivers may be undertaken outside these times.

3.7 Capital Investment

The project has a capital investment value of approximately \$267 million.

3.8 Employment and Building Population

The project would have a total staff population of up to 500 (including 350 academics and 150 general staff). The vast majority of these staff would be existing personnel based at the University, which would be relocated from existing areas of the University campuses.

The new Business School Building, together with the existing H69 Economics and Business Building, would also accommodate a student population of up to 7,000, comprising roughly 4,000 undergraduates, 2,800 postgraduates, and 200 PhD students. These student numbers are consistent with existing student numbers in the University's Business School Faculty, and as such the project would not result in any significant increase in student numbers at the University.

The Student Accommodation Building would provide residential accommodation for approximately 100 students.

The construction phase of the project is expected to generate approximately 200 full time equivalent jobs.

3.9 Infrastructure and Services

The infrastructure and servicing strategy for the project is detailed in the Infrastructure Assessment and Traffic Assessment for the project, attached as **Appendix F** and **Appendix P**, respectively. A summary of the strategy is provided below.

3.9.1 Access and Road Network

Site Access and Internal Roads

Vehicular access to the new buildings is proposed to be provided via a single driveway off Abercrombie Street, in the south-west corner of the site⁵ (see **Figure 3.1**). This driveway would provide access to the basement car park and loading docks.

The existing driveway to the Mandelbaum House car park and many other vehicular access points within the site would be removed. These accesses would be removed on a staged basis, as indicated on the staging plans (see **Figures 3.3** and **3.4**).

The two local roads within the site – Rose Street and Boundary Lane – are in the process of being closed and are proposed to be incorporated into the project site. These roads provide limited

⁵ As discussed in Section 6.8, a number of alternative driveway locations were considered.



thoroughfare within and around the existing Abercrombie Precinct site, and do not provide through access.

External Roadworks

No external roadworks are required for the project.

Parking and Loading

A car park with 185 parking spaces would be provided in the basement levels. These spaces would be restricted to allocated staff and student parking, although the University may allow wider community access on weekends.

Loading facilities would also be provided in the basement, with the area providing loading space for 1 medium rigid vehicle and 3 small rigid vehicles. The loading dock has been designed so that all vehicles can enter and enter the site in a forward direction.

All parking spaces would be appropriately sealed and linemarked.

3.9.2 Stormwater Drainage

Stormwater management for the project has been designed in a manner that is consistent with Council's standards. Stormwater infrastructure would include (from upstream to downstream):

- roof rainwater harvesting tanks (see Section 3.10 below);
- traditional pit and pipe on-site network;
- a gross pollutant trap for stormwater treatment; and
- connection to existing 600 millimetre Council stormwater main in Codrington Street, near Boundary Lane.

Stormwater management is discussed further in Section 6.2.5. As indicated in that section, preliminary analysis indicates that post-development flows would not exceed pre-development flows, and therefore on-site detention for the project is not required.

3.9.3 Potable Water

Sydney Water potable water supplies are available from mains supply in Abercrombie Street and Codrington Street, which are adequate to service the project. Existing Sydney Water potable water assets in Rose Street and Boundary Lane would be removed as necessary.

As discussed in Section 0 below, the project includes a number of water savings measures which would significantly reduce potable water use on the site.

3.9.4 Sewer

The site would be connected to the reticulated 300 millimetre sewer main which currently runs through the site (along Boundary Lane), which is adequate to service the project.

However, this sewer main would need to be relocated within the site or suitably encased to accommodate the project, which would be undertaken in accordance with Sydney Water requirements.

3.9.5 Electricity

Energy Australia has advised that there is insufficient capacity within the existing electrical infrastructure to meet the operational needs of the project and the University's other planned developments.

Energy Australia confirmed that electricity can be made available for the project and other University projects but upstream augmentation will be required to be undertaken by Energy



Australia at some point. These works will need to be coordinated with Energy Australia to suit the staging and delivery of projects across the University.

As discussed in Section 3.10.2 below, the project includes considerable passive and active energy savings measures to reduce energy use associated with the project (by some 40-49%), which would help to reduce demand on existing electricity supplies.

3.9.6 Gas

The project would be serviced with reticulated gas via a connection from the medium pressure gas main on Codrington Street and reticulated throughout the site. The gas main has adequate capacity to service the demand from the project.

The existing mains in Rose Street would be removed.

3.9.7 Telecommunications

The existing University IT infrastructure within the site would be relocated as necessary around the footprint of the site. All communications services would originate from the existing Economics and Business Building (H69), which would act as a central hub for the precinct communications. The University IT network has adequate capacity to service the project.

3.9.8 Ancillary Works to Darlington Public School

The project includes some relatively minor ancillary works to Darlington Public School, which arise predominately from the changes to emergency access to/from Rose Street and Boundary Lane to the school. The works are shown on **Figure 3.10**, and include:

- provision of a new emergency access from Golden Grove Street (including removal of 4 on-street car parking spaces on Golden Grove Street);
- demolition of an existing sports storage shed, and construction of a new masonry shed on the eastern boundary of the site;
- provision of a new bus bay off Darlington Lane;
- provision of 4 new staff parking spaces off Darlington Lane;
- construction of a new ramp from the new bus bay down to the playground; and
- installation of new palisade fencing on the boundary to Darlington Lane, and provision of an acoustic wall on the eastern boundary.

3.10 Sustainable Building Design

The project has been designed to be a landmark in sustainability, achieving high benchmarks for energy efficiency, water efficiency and indoor environmental quality.

To develop the sustainable building design initiatives, a Green Building Design report has been prepared for the project by specialist sustainability consultants Atelier ten (see **Appendix G**). A summary of the proposed sustainable building design measures is presented below.

3.10.1 Benchmarks

The University has committed to the following key benchmark for the new Business School Building:

“The new Business School Building will achieve a minimum 5-Star rating based on the Green Star benchmark rating system for Education.”

Further, the University will investigate achieving a stretch target of 6-Star rating, which would be subject to detailed design.

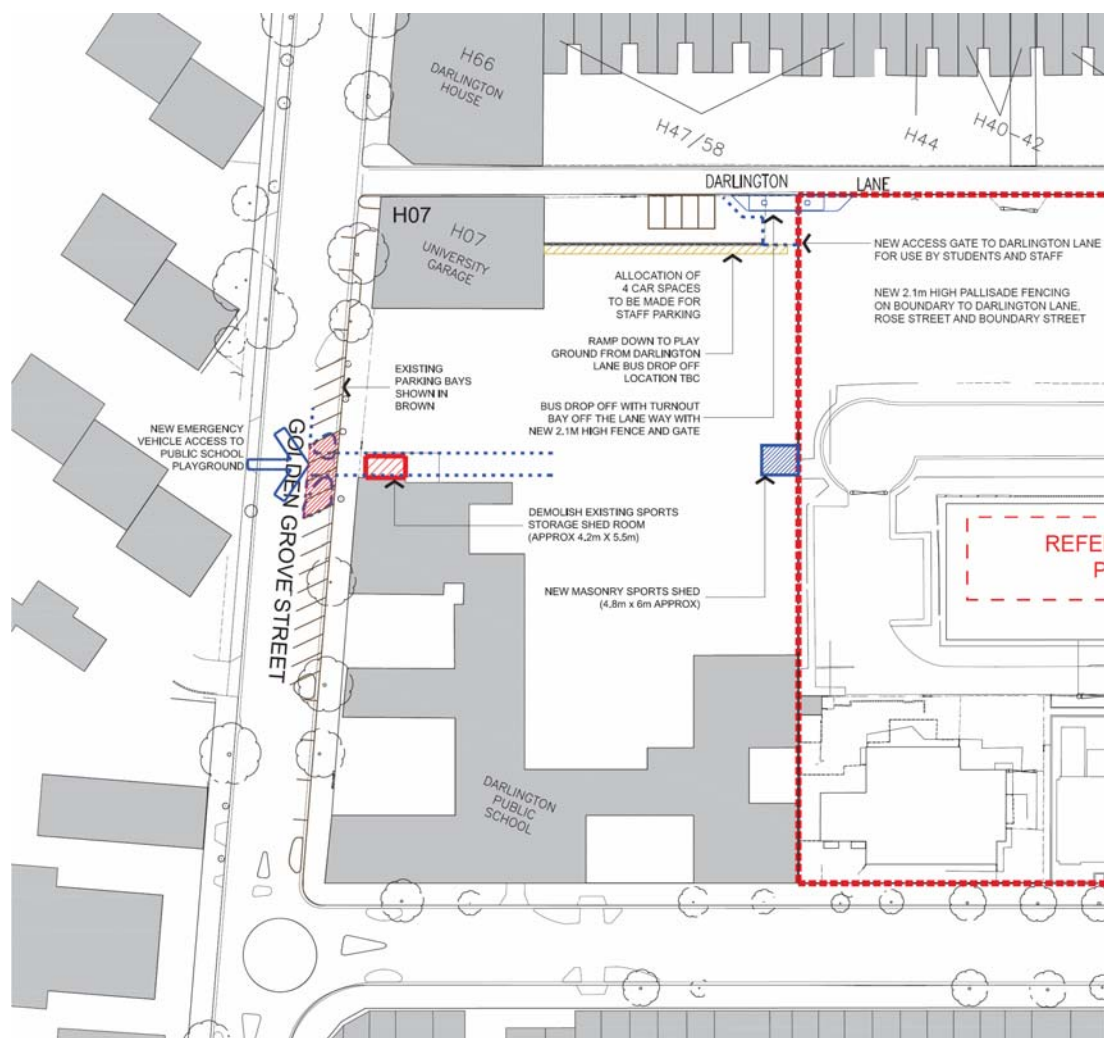


Figure 3.10: Ancillary Works to Darlington Public School (Source: Woods Bagot)

The key initiatives that have been proposed, or are being investigated, to meet the key benchmark are outlined in the following sections.

It is noted that some of the key measures – including the ground source heat pumps and co-generation/tri-generation plant – are subject to detailed feasibility analysis at this stage. Accordingly, whilst the University has committed to the key performance-based benchmark above, it notes that some of the initiatives to reach these benchmarks may be subject to change. Any such change would not affect the overall performance of the project, given that the 5-Star benchmark would be met.

3.10.2 Energy Conservation

The key energy savings measures that are proposed or are being investigated for the project to meet the above benchmarks include:

- **Ground Source Heat Pumps** – comprising a bore network installed under the precinct site. The system would use heat in the earth to provide a renewable means of offsetting building heating loads in winter (and vice versa in summer);
- **Co-generation / Tri-generation** – comprising gas-driven engines coupled with absorption chillers. Electricity produced by the generators would offset power demands and waste heat from the generators would be used to produce chilled water for cooling and heating for the air handling system. When combining the electrical, cooling and heating energy, tri-generation systems can be up to 90% efficient, which compares to utility-generated electricity which is about 30% efficient. To improve efficiency and feasibility, the University



is investigating the potential to link the system with energy demands associated with nearby facilities, including the University pool and the student accommodation;

- *Earth Ducts* – comprising buried concrete ducts to supply passively conditioned fresh air (using the thermal mass of the ground) into the building;
- *Daylight Access* – Large voids/courtyards have been incorporated into the building design to maximise daylight from the roof into the core of the building, and reduce lighting demand and energy consumption. The teaching spaces, classrooms and offices have been carefully arranged to maximise and/or control daylight access as required;
- *Shading, Insulation and Green Roofs* – The building incorporates a range of shading and insulation measures to control solar access and heat exchange, including use of:
 - o high performance glazing;
 - o well insulated and sealed building envelope;
 - o integrated shading structures, particularly to the north and west facades; and
 - o incorporation of 'green roofs' to large portions of the roof;
- *Energy Efficient Air Handling Systems* – including displacement ventilation and/or underfloor ventilation systems. These systems deliver conditioned air at low levels (ie. through the floor and/or walls), and are considerably more energy efficient than conventional air handling systems (see **Figure 3.11**). The systems would also include:
 - o control facilities via local and remote stations enabling plant usage to match occupancy patterns;
 - o separation of systems to serve building zones individually and achieve maximum turn down; and
 - o use of energy efficient motors for pumps and fans; and
- *Energy Efficient Lighting Systems* – including use of energy efficient lighting fittings and automatic control systems (except where it conflicts with functional requirements).

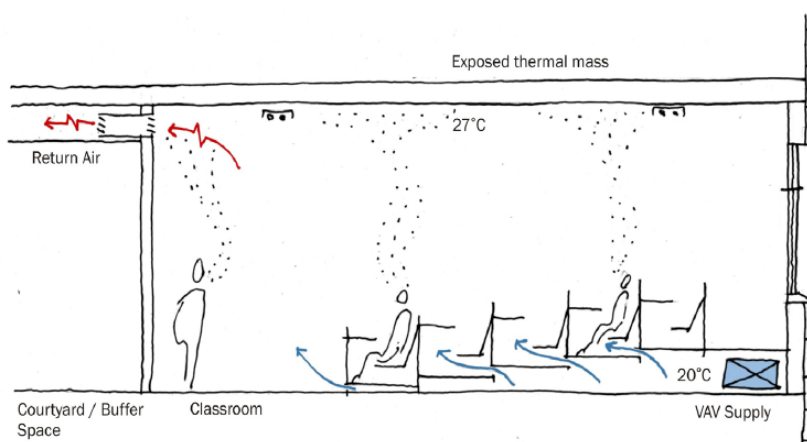


Figure 3.11: Displacement ventilation system concept (Source: Atelier ten)

3.10.3 Water Conservation

The project would include a number of water savings measures, including:

- roof rainwater collection for use in toilet flushing, irrigation and (potentially) cooling tower make-up;
- installation of water efficient fixtures to all sanitary fixtures, including minimum:
 - o 3-star water efficient showers;
 - o 4.5/3 litre dual flush toilets;
 - o waterless urinals;
 - o 6-star water efficient washbasin taps; and
 - o 4-star water efficient dishwashers;
- water efficient landscaping, including:
 - o water efficient landscaping species; and
 - o installation of water efficient drip irrigation systems; and



- installation of state-of-the-art water consumption metering to enable monitoring and analysis of water use.

The University is also investigating the potential to incorporate greywater⁶ recycling into the project for toilet flushing, to complement the proposed roof rainwater harvesting system.

These water savings measures would significantly reduce potable water use associated with the project.

3.11 Landscaping

Landscaping would be undertaken in accordance with the Landscape Plan prepared for the project, prepared by 360 Degrees.

Refer to Section 6.1 for detail on the landscaping principles.

3.12 Lighting and Security

The project would include a range of security installations, which would be managed by the University's Security Service.

Security measures would include:

- electronic access card control of all pedestrian access points to the buildings, except main reception doors and public amenity areas (eg. student common areas, cafes), which would be unsecured during normal operating hours;
- boom gates and electronic access card control at the vehicular access point;
- alarm systems and CCTV; and
- 24 hour patrol by the University's Security Service.

All external lighting would be installed in compliance with *AS 4282(INT) - Control of Obtrusive Effects of Outdoor Lighting*.

The architectural and landscape design has also been undertaken in accordance with Crime Prevention Through Environmental Design (CPTED) principles, including maximising opportunities for natural surveillance, providing prominent entrances, avoiding dark/unlit corners/nooks and avoiding landscaping that obscures key views.

3.13 Signage

Final signage details for the project have not been resolved at this stage.

To ensure that external signage is designed and installed in an orderly and high quality manner, the University has committed to the preparation of a Signage Strategy for the project, to be prepared in consultation with Council, and to the satisfaction of the Department of Planning.

⁶ Water that has been used for hand washing, showering, and clothes washing, but that has not been exposed to food products or human waste.



4 PLANNING CONTEXT

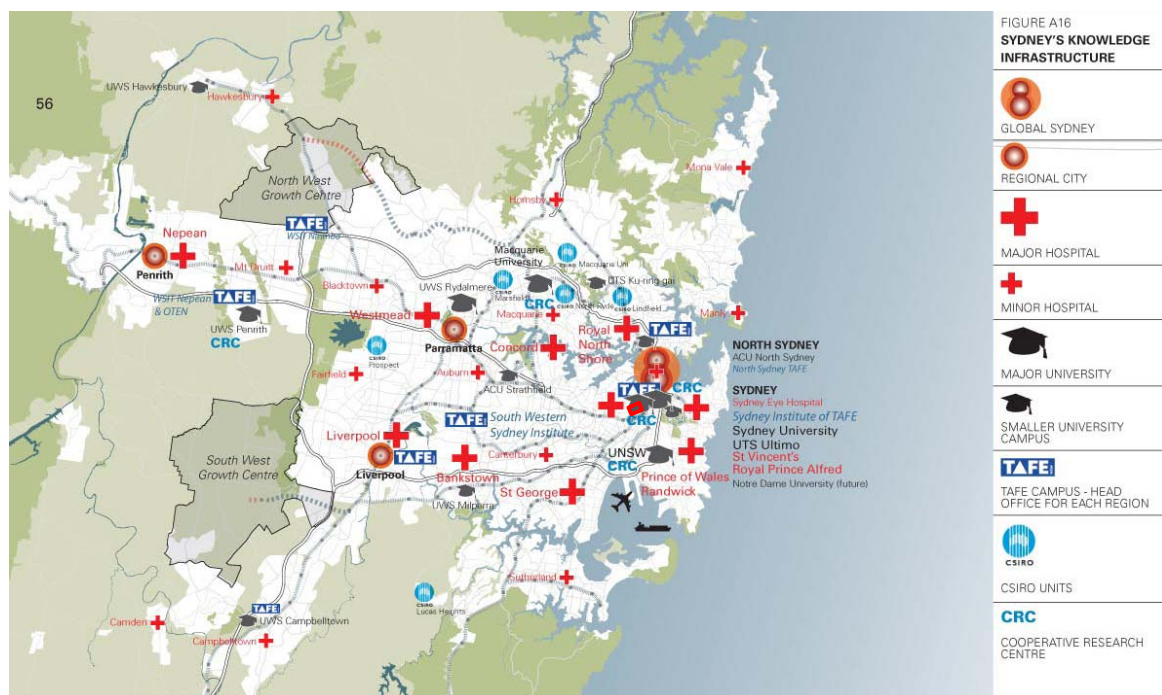
4.1 Strategic Context

4.1.1 Metro Plan

The *Sydney Metropolitan Plan for Sydney 2036* (the Metro Plan) released in December 2010, is the State Government's long term planning blueprint for the Sydney Metropolitan Area for the next 25 years. It caters for the creation of 760,000 extra jobs over the period to 2036. The Metro Plan builds on the strategic planning framework established under the previous *Sydney Metropolitan Strategy*, which is replaced by the new plan.

The Metro Plan acknowledges that the 'education sector...is a potent driver of economic activity and potential employment' and recognises that 'Sydney needs to promote skills development to establish itself as a place of innovation and growth, focusing on...skills formation,... [and] support for lifelong learning to sustain productivity growth, innovation and a workforce that can readily adapt to new challenges...'.

The University is specifically identified in the Metro Plan (and the former Metro Strategy) as a knowledge precinct that contributes to Sydney's competitive strengths globally, as well as being an important higher education 'cluster', or 'specialised centre' (see **Figures 4.1 and 4.2**).



Abercrombie Precinct (approx.)

Figure 4.1: Sydney's Knowledge Infrastructure (Source: Metro Strategy)

The Abercrombie Precinct Redevelopment Project is considered to be wholly consistent with the Metro Plan's objectives and targets, in particular:

- Objective B2 – To strengthen Major and Specialised Centres to support sustainable growth of the city Objective A2 – Increase Innovation and Skills Development:
 - o Action B2.2 – Provide sufficient capacity for the clustering of businesses and knowledge-based activities in Major and Specialised Centres; and
- Objective E2 – To Focus Sydney's economic growth and renewal, employment and education in centres:



- o Action E2.5 – Strengthen clusters of activity in Specialised Centres, particularly those for high growth and high value sectors, and support emergence of new; and
- o Action E2.6 – Promote development of education, research and development (R&D) clusters around TAFEs, universities and health infrastructure in accessible centres to promote skills development, capacity for innovation and lifelong community learning.

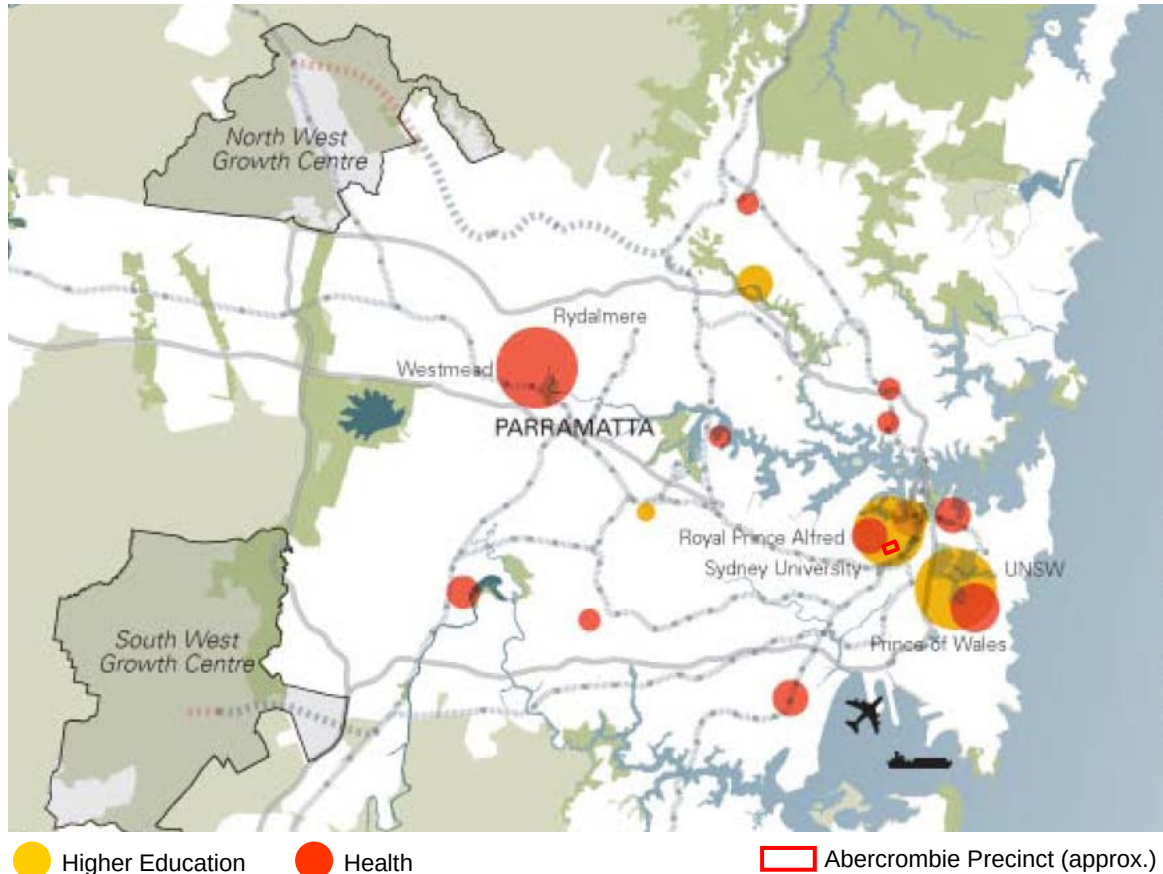


Figure 4.2: Sydney's Education (and Health) Clusters (Source: Metro Strategy)

4.1.2 Sydney City Draft Subregional Strategy

The *Sydney City Draft Subregional Strategy* builds on the strategic planning framework established under the Metro Plan (and former Metro Strategy), and acts as a broad framework for the long term development of the Sydney subregion.

One of the key directions for the City of Sydney, as outlined in the strategy, is for the NSW Government and the City of Sydney to continue to promote existing and emerging 'clusters', including the education hub around the University of Sydney. The Abercrombie Precinct Redevelopment Project directly supports this goal.

Indeed, the site is identified as part of the 'Sydney Education and Health Precinct' under the strategy (see **Figure 4.3**). The strategy states that the precinct, '*located to the south and west of the Sydney CBD, is a major area for education, medical and other research and technology-based jobs. The area contains world-class education infrastructure at the University of Sydney, University of Technology Sydney and Sydney Institute of Technology...*'.



Figure 4.3: Sydney City Subregional Structure Plan, showing Sydney Education and Health Precinct in orange (Source: Sydney City Draft Subregional Strategy)

The Abercrombie Precinct Redevelopment project is considered to be wholly consistent with the strategy's specific targets and actions, in particular:

- Action A2.1.2 – ...strengthen partnerships and investigate opportunities for government and institutions to work together within the Sydney Education and Health Precinct and the wider 'creative crescent' to promote innovation;
- Action A.2.1.3 – ...work together to identify opportunities for collaboration and to raise the profile of research in Sydney;
- Action A2.2.4 – ...continue to promote Central Sydney as a prime location in South East Asia for regional business headquarters, particularly for finance and advanced business services;
- Action A2.3.1 – ...continue to undertake programs that encourage clustering of business activities around Magnet Infrastructure; and
- Action A2.3.2 – The Redfern–Waterloo Authority to continue to investigate means to leverage off infrastructure investment in achieving the broader aims of economic development and improved social cohesion within the Redfern–Waterloo area.

4.1.3 State Plan

The *State Plan: A New Direction for NSW*, released in November 2006, sets out the priorities for NSW State Government action over the next 10 years. The Plan includes 34 priorities and 60 targets designed to deliver better services and improve accountability across the public sector.

The Abercrombie Precinct Redevelopment Project would directly contribute to a number of the plan's important priorities and targets, including the following priorities:



- P1 – Increased business investment; and
- P4 – More people participating in education and training throughout their life.

4.1.4 The University of Sydney 2011-2015 Strategic Plan

In August 2010, the University released its new strategic plan for the University for the period from 2011 to 2015. The plan has the following stated aim for the University:

'We aim to create and sustain a university in which, for the benefit of both Australia and the wider world, the brightest researchers and the most promising students, whatever their social or cultural background, can thrive and realise their full potential'.

In pursuing this purpose, the University community shares two key values – 'engaged enquiry' and 'mutual accountability'. In essence, these values seek to promote a collaborative approach to education and research.

The Abercrombie Precinct Redevelopment Project is specifically mentioned in the plan as part of the University's strategy to *'develop our capacity to identify and promulgate excellence in teaching'*.

The University's White Paper which accompanies the strategic plan expands on this strategy and the aim to facilitate enquiry-based or collaborative learning, noting that *'Modern approaches to enquiry-based education require learning spaces that inextricably entwines the student experience across formal physical spaces with their virtual learning space. Student expectations of University infrastructure must also shape the provision of informal learning space....A transformative infrastructure project during the planning period is the construction of a new Business School building, known as the Abercrombie Precinct'*.

In this regard, the Abercrombie Precinct Redevelopment Project would directly fulfil one of the key strategies of the 2011-2015 strategic plan.

4.1.5 Draft University 2020 Masterplan

The (draft) *Campus 2020 Masterplan*⁷ was the University's response to the pressing development drivers of increased student enrolments, growing and evolving teaching and accommodation needs, and an ageing building stock. The draft masterplan was developed before the 2011-2015 strategic plan, and as such is not totally aligned with the University's current strategic direction.

Whilst the University has resolved to update the masterplan to reflect the current strategic direction, the draft masterplan still provides a useful guide to the physical planning of the University.

The masterplan has the following key planning objectives:

1. Enhancing the campus environment;
2. Engaging the community;
3. Supporting academic excellence;
4. Enhancing the student experience;
5. Ensuring a green and environmentally responsible campus; and
6. Sustainability of capital development and asset management.

Considerable progress has been made towards achieving these goals with the completion in recent years of the Law Building, Jane Foss Russell Building, and the new pedestrian mall running from Abercrombie Street to the Main Quad via Eastern Avenue (see **Figure 4.4**). In

⁷ Campus 2020 Masterplan: Building the future University, Volume 1, University Masterplan, March 2008



addition, the \$350 million Centre for Obesity, Diabetes and Cardiovascular Disease (CODCD) was approved by the Minister on 29 June 2010, and will commence construction in the near future.

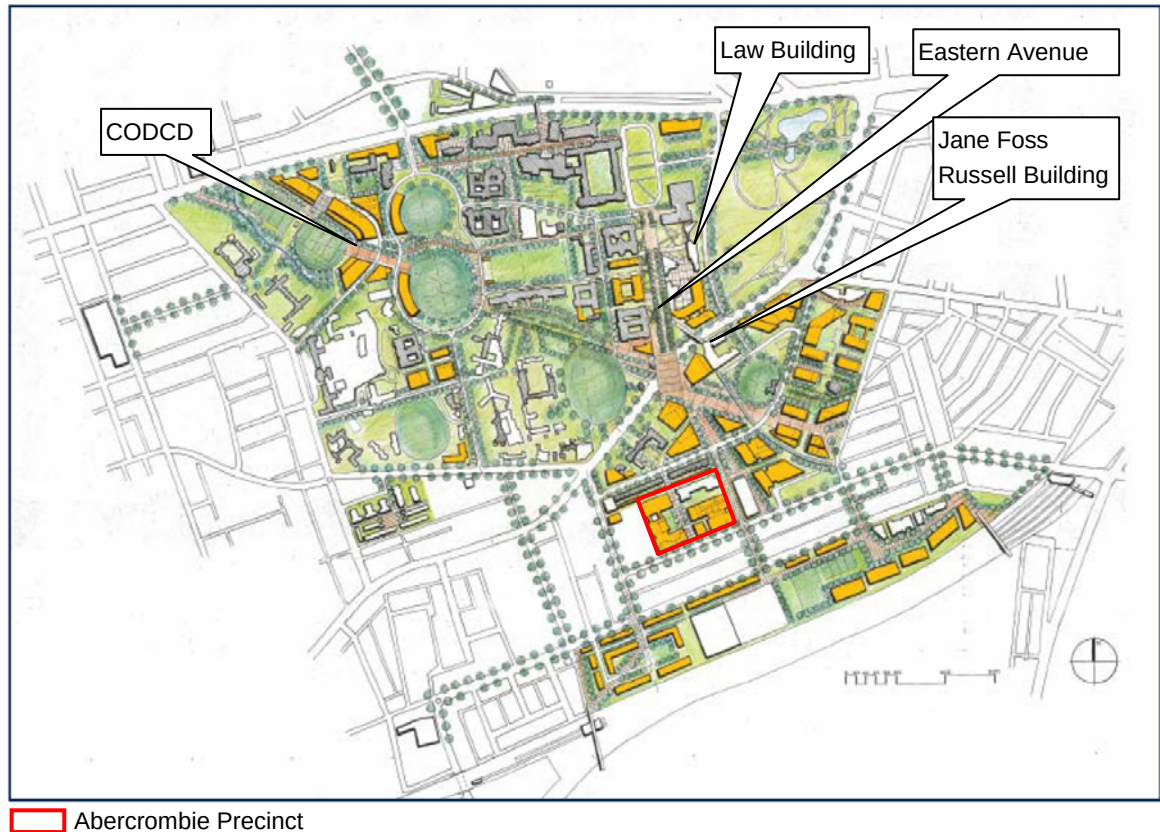


Figure 4.4: University of Sydney Indicative Layout in 2030, showing recently completed (or approved) developments (Source: Draft Campus 2020 Draft Masterplan)

Redevelopment of the Abercrombie Precinct is specifically addressed in the draft masterplan. With regard to the site, the masterplan notes:

'The sites between Darlington [Road] and Abercrombie St are the principal redevelopment opportunity. With the exception of the recently completed [H69] Economics Building, there are no significant buildings on the remainder of the site, which is occupied by sheds, old warehouses and storage yards. This part of the precinct is one of the last large undeveloped sites of the University and is an important site for new development which can provide a new face of the University to the suburb of Darlington and provide a major expansion for accommodation for teaching and research.'

The masterplan notes that the terrace houses on the southern side of Darlington Road are 'an important reminder of the old suburb before its resumption to create the University in the 1960s. Most of these terraces are owned by the University, although variable amounts of restoration work are required'.

The project is broadly consistent with the draft 2020 Masterplan, as it would provide a major redevelopment of the Abercrombie Precinct and provide a new southern face to the University. The scale of the project is generally consistent (or slightly lower) than that envisaged under the draft masterplan, which was based on an earlier scheme for the precinct. That earlier scheme envisaged 4-7 storey buildings across the precinct, and a gross floor area of some 50,000m². The proposed project has been designed with buildings 3-7 storeys, and a gross floor area of less than 40,000m².

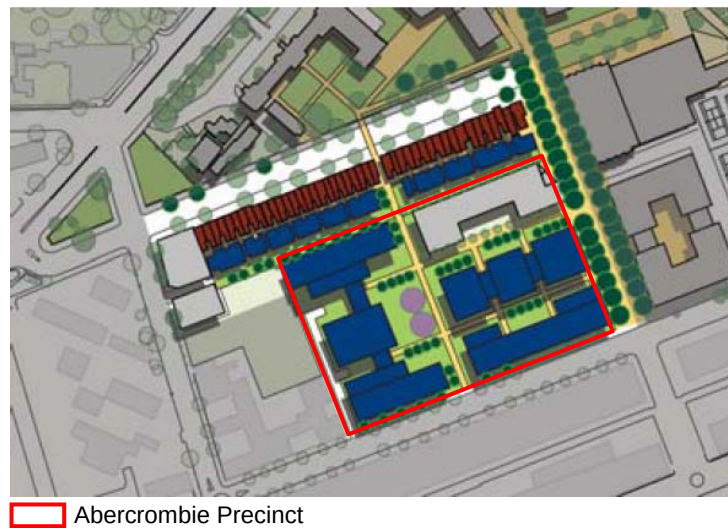


Figure 4.5: Indicative Precinct Development in Masterplan (Source: Draft Campus 2020 Masterplan)

Further, the project has been designed in a manner that is consistent with the University's Structure Plan, as set out in the draft masterplan (see **Figure 4.6**). In particular, the project would reinforce the key Eastern Avenue axis which, together with the historic Wilkinson axis, defines, orders and connects the University's Camperdown and Darlington Campuses. The project has also been designed to respect the secondary axes that traverse the site itself, with the provision of the through-site links.



Figure 4.6: University Structure Plan (Source: Draft Campus 2020 Draft Masterplan)

The proposed structure for the Abercrombie Precinct is further discussed in Section 6.1.



4.1.6 Other Relevant Plans

Redfern-Waterloo Built Environment Plan 2006

The Redfern-Waterloo Authority's (RWA's) *Redfern-Waterloo Built Environment Plan (Stage 1) 2006* (BEP) applies to the RWA's 8 strategic sites within the RWA's operational area, as shown on **Figure 4.7**.

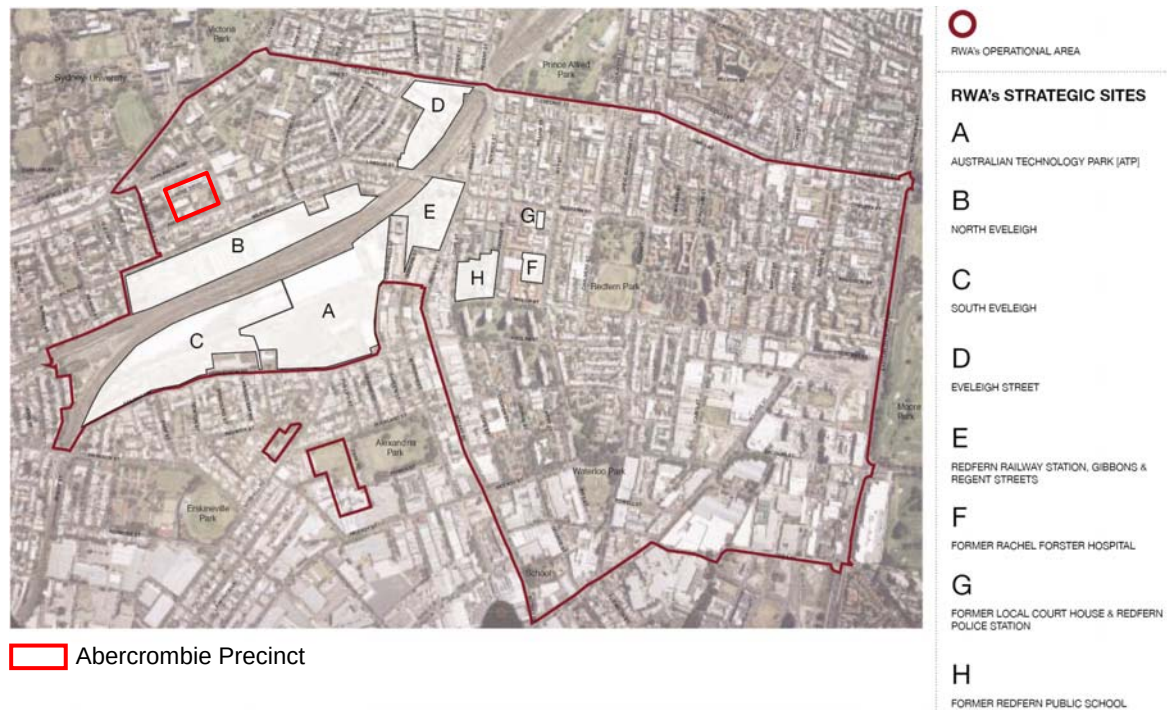


Figure 4.7: RWA's Strategic Sites (Source: Redfern-Waterloo BEP)

As indicated on the figure, the Abercrombie Precinct site is within the operational area, but not within or immediately adjacent to any of the 8 strategic sites. The nearest strategic site is North Eveleigh (Site B), which is located to the south beyond Wilson Street.

The land use strategy for the strategic sites under the BEP is shown on **Figure 4.8**. As indicated, the North Eveleigh site is proposed to contain a mix of residential, cultural and business land uses.

An important component of the North Eveleigh land use plan is a proposed pedestrian/cycle bridge connection over the railway lines between North Eveleigh to the north and South Eveleigh / Australian Technology Park to the south. The location of this bridge connection supports and aligns with the University's key Eastern Ave axis (see **Figure 4.6**), which acts as a central pedestrian/cycle spine connecting the university campuses.

The concept building height plan under the BEP is shown on **Figure 4.9**. As indicated, the BEP suggests buildings of between 4 and 10 storeys on the North Eveleigh site (with floor space ratios of up to 2:1).

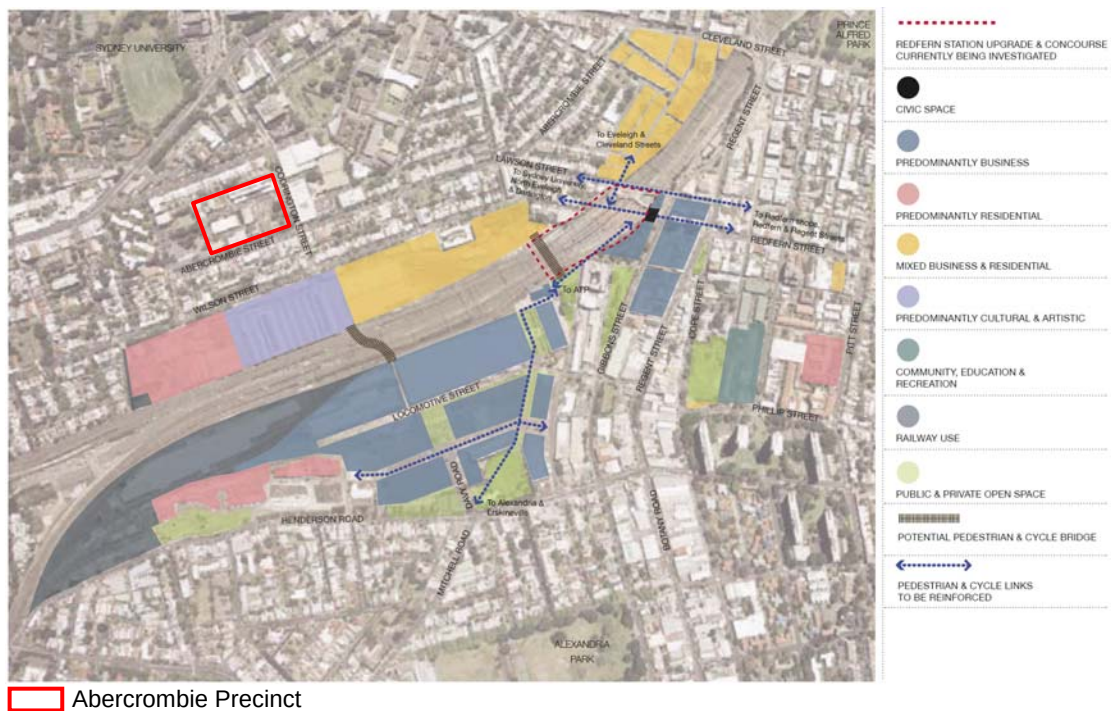


Figure 4.8: Land Use Strategy for RWA Strategic Sites (Source: Redfern-Waterloo BEP)

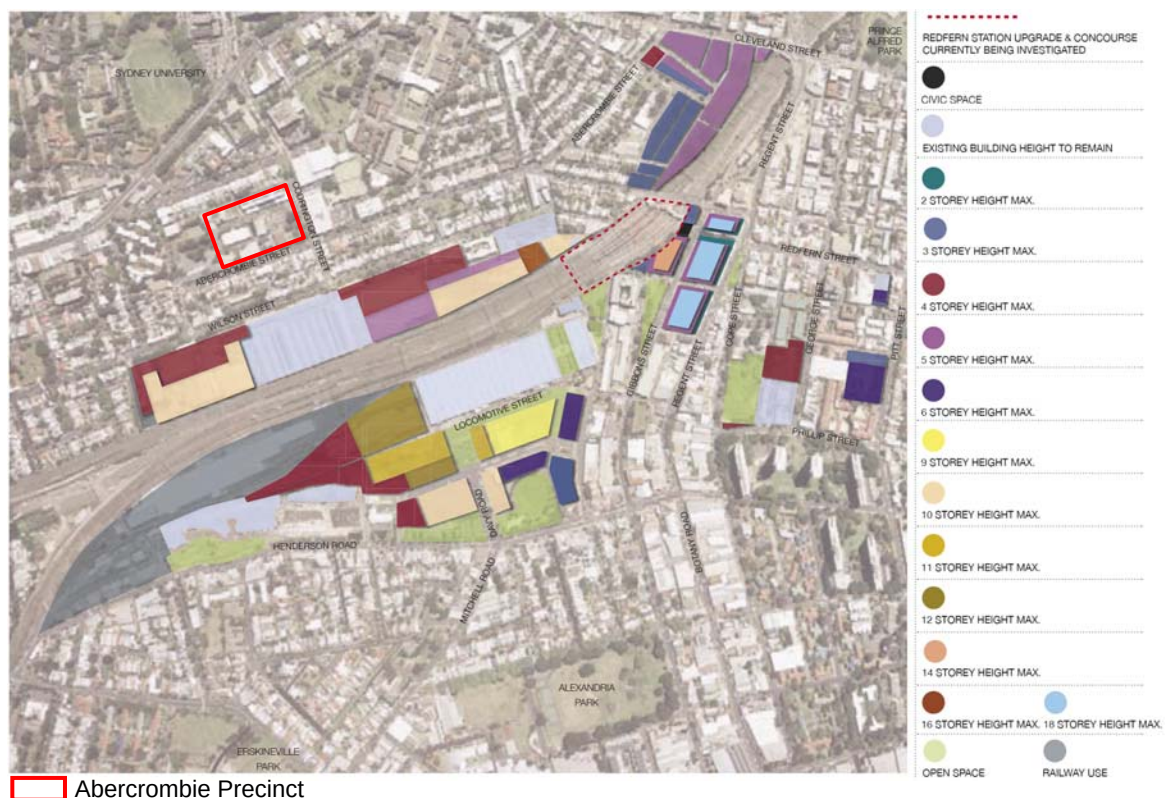


Figure 4.9: Heights for RWA Strategic Sites (Source: Redfern-Waterloo BEP)

It is considered that the Abercrombie Precinct Redevelopment Project would not compromise development of the North Eveleigh strategic site, as envisaged under the BEP. Further, it is considered that the project is generally consistent with the wider strategic planning for the RWA operational area.



In early 2011, the RWA released the Draft Built Environment Plan Stage 2 for public comment. The Stage 2 plan provides a planning framework for the provision of improved social and affordable housing for Housing NSW sites within the RWA operational area. It is considered that the project would not compromise development of these sites, and would further the broad aims of the plan through the provision of student (ie. affordable) accommodation.

RWA's North Eveleigh Concept Plan

On 16 December 2008, the Minister for Planning approved a concept plan application from RWA for redevelopment of the North Eveleigh strategic site, under Part 3A of the *Environmental Planning and Assessment Act 1979*. The concept plan is shown on **Figure 4.10**, and comprises some 177,527m² gross floor area of mixed uses, including (a maximum of):

- 55,672m² commercial space;
- 4,000m² retail space;
- 22,796m² cultural/community space; and
- 95,059m² residential space.

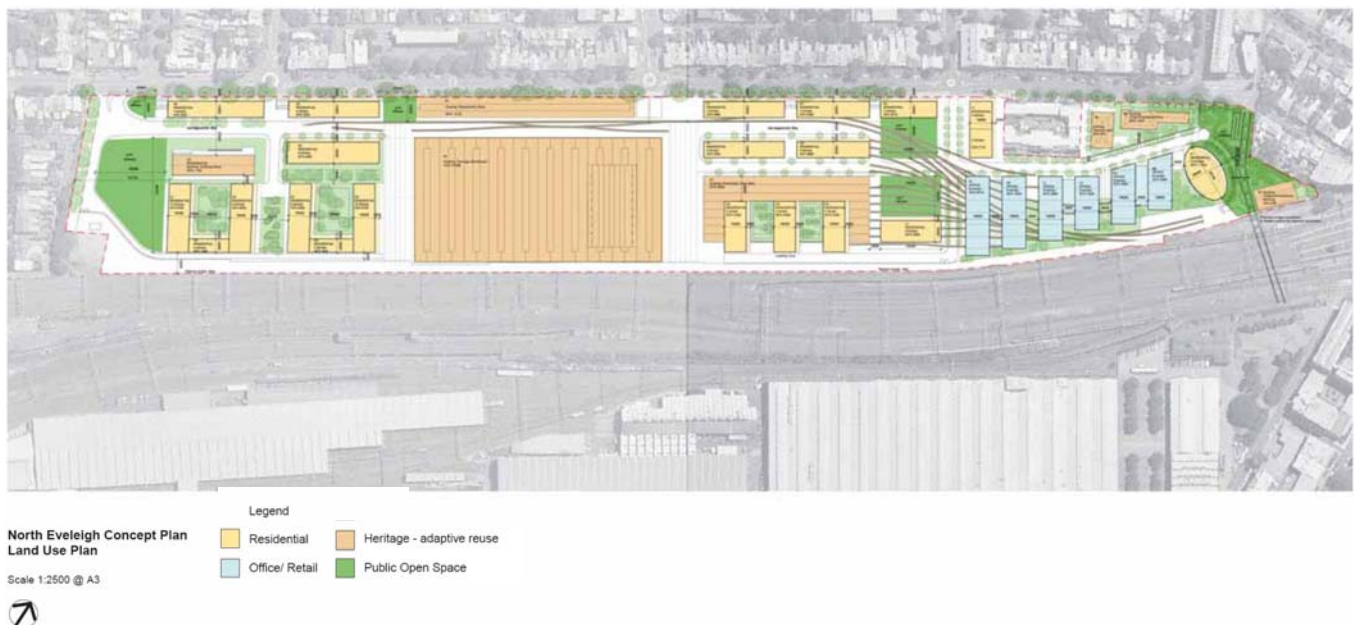


Figure 4.10: *North Eveleigh Concept Plan* (Source: *North Eveleigh Concept Plan, preferred project report*)

The concept plan provides for buildings of between 4 and 16 storeys across the site, with floor space ratios of up to approximately 2:1 (based on site 'precincts'). The closest residential buildings to the Abercrombie Precinct site, fronting Wilson Street, are proposed as 4 storey buildings.

As with the RWA BEP, it is considered that the project would not compromise the development of the North Eveleigh concept plan (as approved), and that the project is compatible with the concept plan.

It is noted that the University has expressed an interest to purchase the North Eveleigh site from the State government. If purchased by the University, North Eveleigh has potential for campus expansion and provision of additional student accommodation.



4.2 Statutory Context

4.2.1 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), as it involves development for the purpose of teaching or research with a capital investment value of more than \$30 million, and therefore triggers the criteria in Clause 20 of Schedule 1 of *State Environmental Planning Policy (Major Development) 2005*.

The Minister for Planning has formed the opinion that the proposal is development of a kind that is described in Schedule 1 of the Major Development SEPP. Consequently, the Minister for Planning is the approval authority for the project.

4.2.2 Permissibility

The site is zoned 5 – Special Uses (University) under the *South Sydney Local Environmental Plan (LEP) 1998* (see **Figure 4.11**).

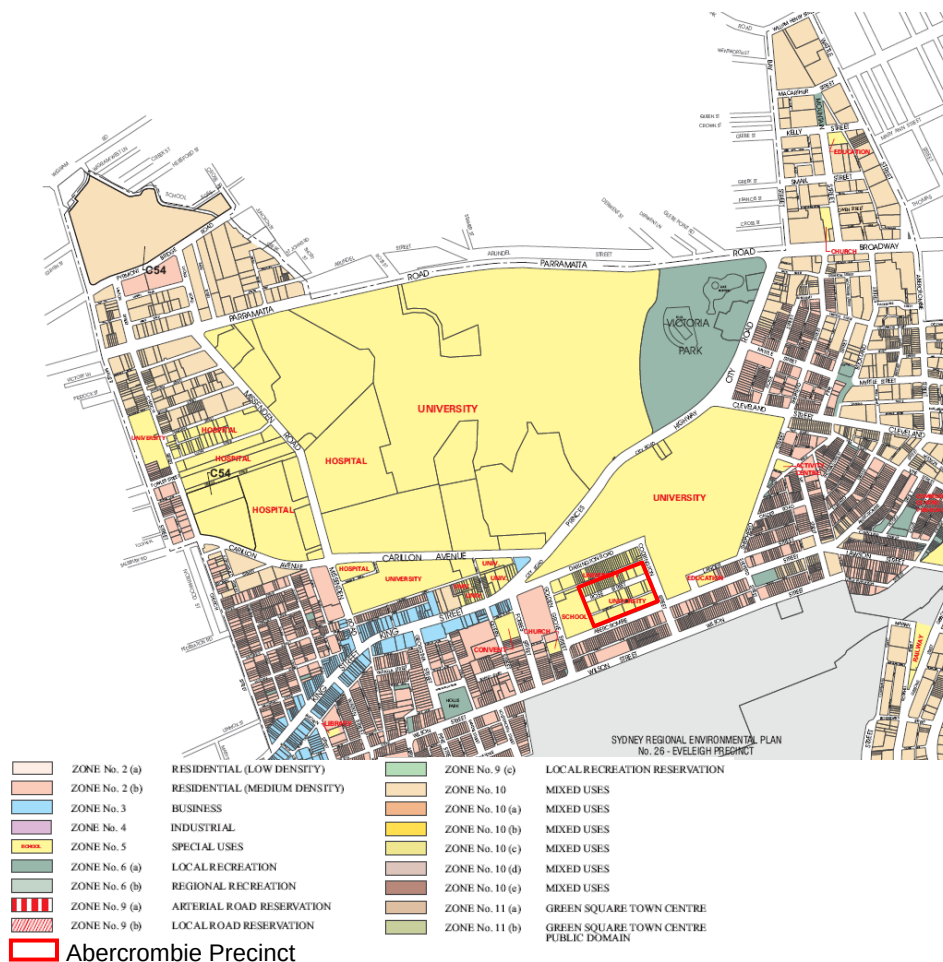


Figure 4.11: Zoning Plan (Source: South Sydney LEP 1998)

The objectives of Zone No 5 are:

- to facilitate certain development on land which is, or is proposed to be, used by public authorities, institutions, organisations or the Council to provide community facilities, services, utilities or transport facilities, and
- to allow other ancillary development which is incidental to the primary use specified on the map, and



- (c) *to provide flexibility in the development of sites identified for special uses by allowing development which is permissible on adjoining or adjacent land, and*
- (d) *for land in the zone and within Green Square, in addition to the above:*
 - (i) *to reflect and reinforce the need for proper recognition of community land and facilities as part of a robust public domain in the Green Square locality, and*
 - (ii) *to recognise that protecting and improving the quality, accessibility and impact of the public domain makes a fundamental contribution to the social, economic, environmental and urban design outcomes for the area, and*
 - (iii) *to ensure that development contributes to a sustainable, vibrant community, and reflects equal and integrated consideration of social, economic and environmental design issues.*

Development for 'University' purposes is permissible with consent in this zone. Therefore, the project is permissible with consent. Further, it is considered that the project is able to be undertaken in a manner that is consistent with the zone objectives.

4.2.3 Environmental Planning Instruments

The following environmental planning instruments have been considered during the preparation of the Environmental Assessment:

- *SEPP No.33 – Hazardous and Offensive Development;*
- *SEPP No.55 – Remediation of Land;*
- *SEPP No.65 – Design Quality of Residential Flat Development;*
- *SEPP (Major Development) 2005;*
- *SEPP (Infrastructure) 2007;*
- *SEPP (Urban Renewal) 2010;*
- *South Sydney Local Environmental Plan (LEP) 1998; and*
- *Draft Sydney Local Environmental Plan (LEP) 2010.*

Consideration of these instruments is provided below. It is considered that none of the instruments substantially govern the carrying out of the project. Further, it is considered that the project is able to be conducted in a manner that is consistent with the aims, objectives and provisions of the applicable instruments.

SEPP No.33 – Hazardous and Offensive Development

SEPP 33 provides definitions for hazardous and offensive industry to enable decisions on developments to be made on the basis of merit, rather than on industry type per se.

An analysis of the project with regard to SEPP 33, and the Department of Planning's *Applying SEPP 33* guidelines, is provided in Section 6.9.2. It is considered that the project is unlikely to result in any significant off-site risk and is able to be conducted in a manner that is consistent with the aims and objectives of SEPP 33.

SEPP No.55 – Remediation of Land

SEPP 55 aims to provide for a statewide planning approach to the remediation of contaminated land, and in particular, to promote the remediation of contaminated land for the purpose of reducing risk of harm to human health or any other aspect of the environment.

Clause 7 of the SEPP requires a consent authority to consider whether the land to which a project/development application relates is contaminated, and if the land is contaminated, to be satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation), prior to granting consent.

The potential for site contamination on the land is considered in Section 6.2, which indicates that the land is not significantly contaminated and would be fit for the intended use, following potential remediation of localised contamination. As such, the project is able to be conducted in a manner that is consistent with the aims, objectives and provisions of SEPP 55.



SEPP No.65 – Design Quality of Residential Flat Development

SEPP 65 aims to improve the design quality of residential flat development in NSW, recognising that design quality is of significance for the State due to the economic, environmental, cultural and social benefits of high quality design.

Clause 30 of the SEPP requires a consent authority to consider the design quality of residential flat development against the Residential Flat Design Code and the design quality principles of the SEPP, which include:

1. Context;
2. Scale;
3. Built form;
4. Density;
5. Resource, energy and water efficiency;
6. Landscape;
7. Amenity;
8. Safety and security;
9. Social dimensions and housing affordability; and
10. Aesthetics.

The project architect, Woods Bagot, has designed the proposed Student Accommodation Building in accordance with these principles. An analysis of how the building addresses each principle has been prepared by Woods Bagot, and is attached as **Appendix H**.

The analysis indicates that the Student Accommodation Building has been designed, and is able to be constructed, in a manner that is consistent with the aims, objectives and design principles of SEPP 65.

SEPP (Major Development) 2005

SEPP (Major Development) 2005 aims to identify projects of State or regional planning significance that are of a kind that the approval and assessment process under Part 3A of the EP&A Act should apply.

As stated in Section 4.2.1 above, the project constitutes a class of development in Schedule 1 of the SEPP. Consequently, the Minister is the approval authority for the project.

SEPP (Infrastructure) 2007

SEPP (Infrastructure) 2007 aims to facilitate the effective delivery of infrastructure across the State.

Clause 28 of the SEPP provides that development for the purpose of educational establishments on land on which there is an existing educational establishment, is permissible with consent.

Clause 104 of the SEPP applies to traffic generating development and ensures that the RTA is given the opportunity to make representations on certain traffic generating development applications before a consent authority makes a determination on the proposal.

The project meets the thresholds in schedule 3 of the SEPP (as an educational establishment with more than 50 students), and is therefore considered to be traffic generating development for the purposes of the SEPP. Consequently, the application will need to be referred to the RTA for comment. Traffic assessment indicates that the project is unlikely to result in any significant traffic impacts (see Section 6.5).



SEPP (Urban Renewal) 2010

SEPP (Urban Renewal) 2010 aims to identify and facilitate the orderly and economic development of key sites for urban renewal.

The site is within the Redfern-Waterloo 'potential urban renewal precinct', which has similar boundaries to the RWA operational area (see Section 4.1.6 above).

Clause 10 of the SEPP requires a consent authority to consider whether applicable development within a potential precinct (which includes the project) is consistent with the objective of developing the potential precinct for the purposes of urban renewal.

It is considered that the Abercrombie Precinct Redevelopment Project is consistent with, and indeed supports, the SEPP's objectives for urban renewal.

South Sydney Local Environmental Plan (LEP) 1998

As stated in Section 4.2.2 above, the site is zoned for university purposes under the South Sydney LEP and the project is permissible with consent in this zone.

A number of special provisions of the LEP are applicable to the project. Consideration of these provisions is provided in the following table.

Table 4.1: Consideration of Relevant South Sydney LEP Special Provisions

Clause	Provision	Project Complies	Consideration
Part 4, Div.1	Heritage Conservation Requires consent authorities to consider the impacts on heritage items and heritage conservation areas, including sites of Aboriginal or non-Aboriginal archaeological significance.	Yes	The site is within the Golden Grove heritage conservation area under the LEP. There are no heritage items within the site, however some of the 2 storey terraces directly to the north on Darlington Road are listed under the LEP (see Figure 2.4). Consideration of heritage impacts is provided in Section 6.7.
Cl.28	Design Principles and Masterplans Requires consent authorities to consider a number of built environment design principles and, where applicable, available masterplans. The design principles relate to: • topography and setting; • streetscape and character; • scale and design; • privacy and solar access; • energy efficiency; • public domain; • visual amenity; and • complementary land uses.	Yes	The project has been designed in a manner that is consistent with the design principles (see Section 6.1 in particular), and the University's (draft) Campus 2020 Masterplan.
Cl.33	Community Use This clause allows the community use of the land and facilities of educational establishments and to the commercial operation of those facilities	Yes	Noted
38	Flooding Requires consent authorities to consider the flood-related impacts of development	Yes	Flooding is considered in Section 6.2.
39	Site Contamination Requires consent authorities to consider the potential for site contamination	Yes	Site contamination is considered in Section 6.2.



Draft Sydney Local Environmental Plan (LEP) 2011

Although not applicable to the project, it is noted that the draft Sydney LEP 2011 is being publicly exhibited from 2 February to 4 April 2011. The site is proposed to be zoned SP 2 – Infrastructure (Educational Establishment) under the draft LEP, as shown on **Figure 4.12**, and the project would remain permissible under the LEP. The draft LEP does not contain any special provisions that substantially govern the project, and it is considered that the project would be generally consistent with the provisions of the draft LEP, if it applied to the project.

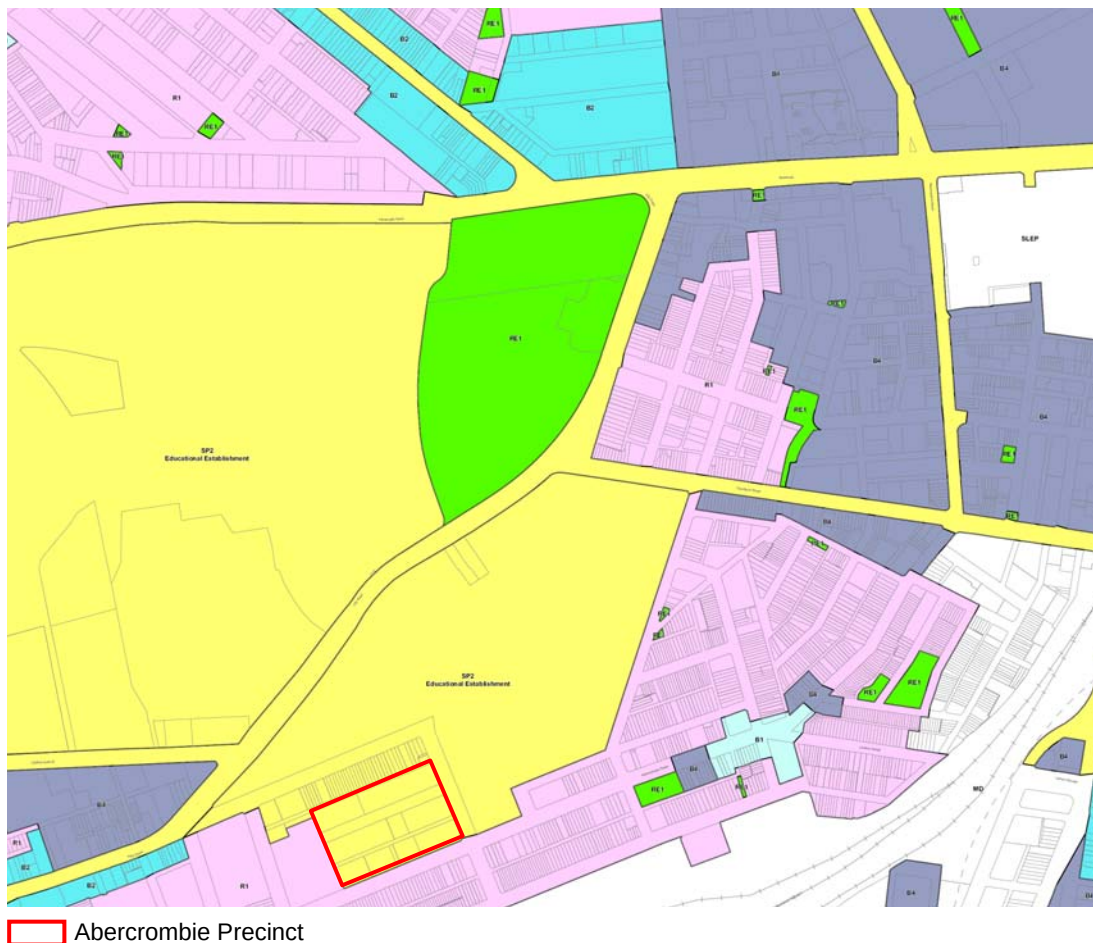


Figure 4.12: Draft Zoning Plan (Source: Draft Sydney LEP 2010)

4.2.4 Objects of the EP&A Act

Section 5 of the EP&A Act sets out the objects of the Act. It is considered that the objects of most relevance to the project are those found in Section 5(a)(i)-(vii). These objects are reproduced below:

The objects of this Act are:

(a) *to encourage:*

- (i) *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*
- (ii) *the promotion and co-ordination of the orderly and economic use and development of land,*
- (iii) *the protection, provision and co-ordination of communication and utility services,*
- (iv) *the provision of land for public purposes,*



- (v) *the provision and co-ordination of community services and facilities,*
- (vi) *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, and*
- (vii) *ecologically sustainable development.*

It is considered that the project is able to be carried out in a manner that is consistent with these objects. In particular, it is noted that the project:

- would not sterilise or adversely affect any known natural resources of significance (Object 5(a)(i));
- provides for the orderly and economic use of the land (Object 5(a)(ii)) as it allows for the development of a world class education and research facility in a recognised education precinct;
- is able to be serviced by existing and planned utility services in the locality (Object 5(a)(iii));
- provides for the orderly provision and use of land for public and community purposes (ie. education and research) (Objects 5(a)(iv) and (v));
- is able to be carried out without any significant environmental impacts (Object 5(a)(vi)); and
- is able to be undertaken in a manner that is consistent with the principles of ecologically sustainable development (Object 5(a)(vii)), including:
 - o the precautionary principle – it is considered that, following environmental assessment, there is good scientific understanding of the environmental impacts of the project. The assessment indicates that the project does not entail a threat of serious or irreversible environmental damage;
 - o inter-generational equity – the project would not adversely affect future generations. Indeed, the project seeks to benefit current and future generations through improving education and research facilities;
 - o conservation of biological diversity and ecological integrity – the project is not expected to have a significant impact on biodiversity values of the site (see Section 6.6); and
 - o improved valuation, pricing and incentive mechanisms.

4.3 Development Contributions

4.3.1 Redfern-Waterloo Authority Contributions Plan 2006

The site is within the Redfern-Waterloo Authority's (RWA's) operational area, and the *RWA Contributions Plan 2006* ostensibly applies to the project.

The plan states that the Minister for Planning may impose, as a condition of consent, a requirement that the Proponent pay a development levy of 2% of the proposed cost of carrying out the development.

Using the calculation methods in the contributions plan, including the exclusion of that part of the development to be used for student housing (ie. affordable housing), the total cost of the project is approximately \$251 million. This translates to a contribution of \$5.02 million for the project under the contributions plan.

The University considers this contribution to be unreasonable under the circumstances of the project.

In this regard, clause 6 of the contributions plan provides that contributions do not apply to certain developments by or on behalf of the Crown if exempted in writing by the Minister. Such development includes those for purposes which have a public or community benefit, including a *'fire station, community health facility, public hospital, police station/police shop front, ambulance station, public school, or other public infrastructure as determined by the Minister'*.



The Abercrombie Precinct Redevelopment project is being carried out by a public authority (ie. the University) for a purpose that is similar to these stated purposes (ie. research and education), and would provide distinct and marked community benefits (ie. higher education).

Further, as discussed in Section 3.8 the project would not result in any significant increase in staff or student numbers at the University, given that the project simply seeks to consolidate the existing Business School into a purpose-built facility. As such, the project would not significantly increase overall activity at the University, or demand on local facilities within the RWA operational area.

The University also notes that the site is not within or adjacent to a RWA site (see **Figure 4.13**), yet the levy payable under the contributions plan amounts to almost 14% of the total estimated cost of the works schedule identified in the plan (ie. \$36.7 million). It is considered that most of the works in the works schedule (see **Figure 4.13**) have little if any nexus or relationship to the project.

For the above reasons the University believes that it is reasonable that the Abercrombie Precinct Redevelopment project is exempted from paying contributions under the plan. It is respectfully requested that the Minister, having regard to the information presented in this Environmental Assessment, considers the University's request for exemption in his consideration of the project.

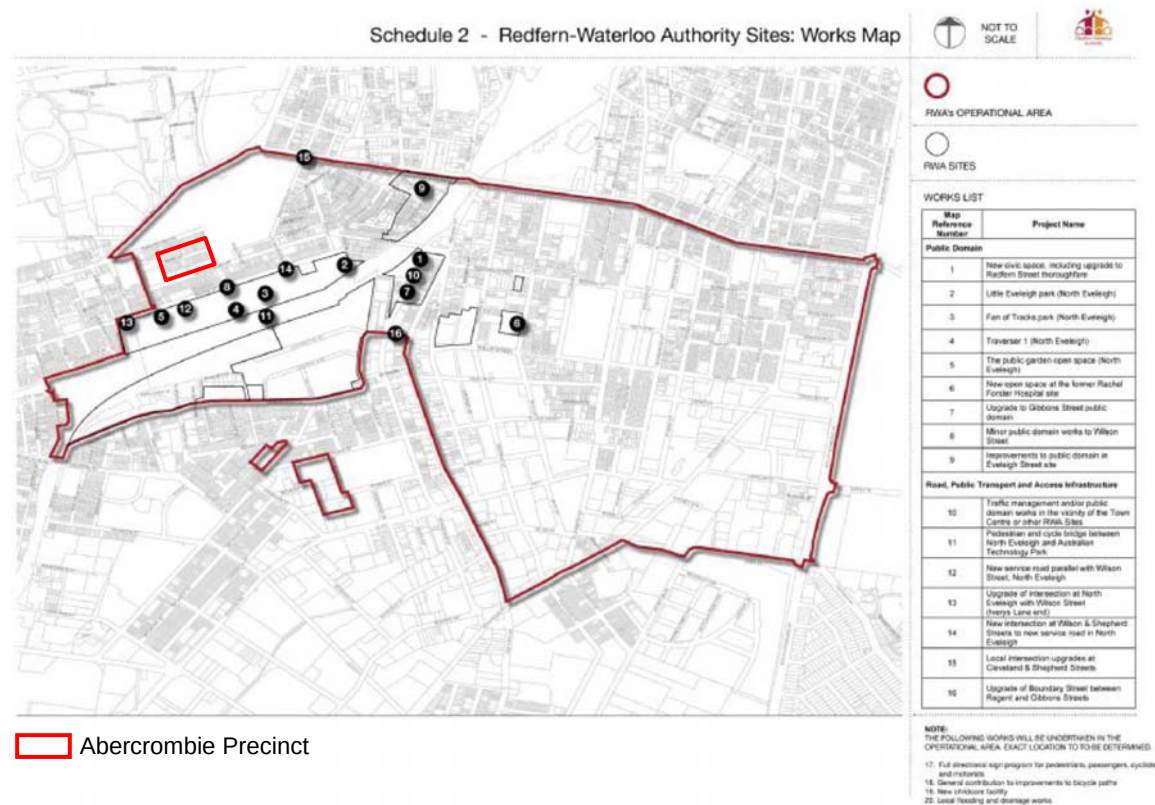


Figure 4.13: RWA Sites and Works Schedule Plan (Source: RWA Contributions Plan 2006)

4.3.2 Redfern-Waterloo Authority Affordable Housing Contributions Plan 2006

The RWA Affordable Housing Contributions Plan 2006 also ostensibly applies to the project.

The contributions plan adopts the definition of affordable housing from the EP&A Act and the SEPP 70 – Affordable Housing (Revised Schemes), namely 'housing for very low income households, low income households or moderate income households'.



These households are further defined as those whose gross incomes fall within the following ranges of percentages of the Sydney median household income:

- very low income household: less than 50% (ie. \$31,000 in 2006);
- low income household: 50% to 80% (ie. \$49,000 in 2006); and
- moderate income household: 80 to 120% (ie. \$74,000 in 2006).

Affordable housing contributions under the contributions plan apply to most Part 4 and Part 3A development, but do not apply to (amongst other things):

- development subject to a planning agreement that makes provision for affordable housing;
- development for the following kinds (amongst other things) if exempted by the Minister:
 - o development for or on behalf of the Crown for public benefit purposes (as per the RWA Contributions Plan as discussed in the preceding section); and
 - o that part of a development of which the sole purpose is the provision of affordable housing, that is, dwellings for the purpose of affordable housing provided by or on the behalf of a community housing organisation...or an organisation approved by the Minister.

The contribution rate under the contributions plan is set at \$59 per m² GFA as at 2006, indexed to inflation. The RWA has advised that the current rate is approximately \$67.58 per m² GFA. Using the calculation methods in the contributions plan (including the exclusion of that part of the development to be used for student housing), this translates to a contribution of \$2.38 million for the project under the affordable housing contributions plan. (Therefore, the total contribution under the 2 RWA contributions plans amounts to some \$7.4 million for the project).

The contributions plan states that the contribution rate is based on the equivalent estimated cost of providing affordable housing comprising 1.25% of the total GFA of development in the RWA operational area. Based on the estimated development potential of 600,000m² in the RWA operational area, approximately 7,500m² of affordable housing (or 75 deliverable units at 100 m² per unit) is proposed to be provided in the RWA operational area.

The contributions plan provides that, where proposed development makes satisfactory arrangements for the provision of affordable housing, the consent authority may take that contribution into consideration in determining a contribution required under the plan.

The project would provide for approximately 4,430 m² of student housing, or approximately 100 student beds, which constitutes around 65% of the affordable housing proposed in the entire RWA operational area. It is considered that the proposed student housing meets the definition of affordable housing, given that the student housing would generally meet the income thresholds in the affordable housing definition. At the very least, the proposed student housing would significantly offset the need for affordable housing in the area, given that student accommodation constitutes a significant portion of the rental demand (and therefore rental prices) in the area.

Given the provision of considerable affordable housing, and for the public benefit reasons discussed in the preceding section, the University believes that it is reasonable that the Abercrombie Precinct Redevelopment project is exempted from paying contributions under the affordable housing contributions plan. It is respectfully requested that the Minister, having regard to the information presented in this Environmental Assessment, considers the University's request for exemption in his consideration of the project.



5 CONSULTATION AND IDENTIFICATION OF KEY ISSUES

Planning for the project has involved consultation with relevant government authorities, service providers and project stakeholders including surrounding landowners.

Based on the consultation undertaken, it is considered that the University, the project team and the relevant stakeholders have gained a good appreciation of the key issues relevant to the project and development of the site. Stakeholders consulted, and the key issues raised by or considered to be of relevance to these stakeholders, are listed in the following table.

Table 5.1: Stakeholder Consultation and Issues Raised

Stakeholder	Main Consultation Forum/s	Key Issues
Government Authorities		
<i>Department of Planning</i>	• Pre-lodgement meeting; • Director-General's Requirements	• General planning and environmental issues; • Layout and design including visual amenity; • Environmental and residential amenity, including solar access, wind effects, visual privacy, view protection; • Traffic and transport; • Heritage; • Safety, public domain, landscaping and social impacts; • Sustainability measures; • Stormwater and flooding; • Infrastructure and services; • Staging; • Site contamination; and • Dedication of open space.
<i>Redfern-Waterloo Authority</i>	• Meeting	• Layout and design; • Traffic and transport; • Contributions.
<i>City of Sydney Council</i>	• Pre-lodgement meeting	• General planning and environmental issues; • Layout and design including visual amenity; • Heritage; • Traffic and transport, including parking and access; • Environmental and residential amenity; • Sustainability measures.
<i>Roads and Traffic Authority</i>	• Telephone (for traffic assessment)	• Traffic and transport.
Service Providers		
<i>Energy Australia</i>	• Meeting and/or telephone (for infrastructure assessment)	• Electrical servicing and capacity issues.
<i>Sydney Water</i>	• As above	• Water and sewer servicing, including the need for relocation of assets.
<i>City of Sydney Council (as stormwater provider)</i>	• As above	• Stormwater servicing.
<i>Jemena Gas Networks</i>	• As above	• Gas servicing.



Stakeholder	Main Consultation Forum/s	Key Issues
Project Stakeholders		
<i>University of Sydney user groups.</i>	• Project User Group meetings	• Functionality for world-class collaborative education and research; • Layout and design; • Administrative support and services.
<i>Darlington Public School</i>	• Meetings	• Traffic and access; • Amenity for students.
<i>City of Sydney Council (as landowner of Rose Street and Boundary Lane)</i>	• Council meeting	• Council resolution to close roads and sell the land to the University.
Surrounding Residents / Community		
<i>Residents</i>	• Letterbox drop undertaken to 1,400 surrounding residents; • Door-knock of residents on Abercrombie St adjacent the site; • Community meeting held on 16 Nov 10 (attended by 37 residents); • Project information display at CIS Building	• Noise; • Traffic and access (including need for vehicular access off Abercrombie Street, location of driveway entry and pedestrian access issues); • Parking and bicycle facilities; • Privacy (including from rooftop areas); • Layout and design, inc. use of Darlington Road terraces (particularly to increase setback to Abercrombie Street terraces); • Student engagement in community (lack of); • Provision of dogs off-lead areas on campus (not directly project-related).

The Director-General of the Department of Planning has provided his environmental assessment requirements for the project. These requirements are reproduced in **Appendix B**.

The key issues identified for assessment in the Director-General's environmental assessment requirements and/or the University's consultation and assessment of the project to date, include:

- layout and design, including landscaping and visual amenity;
- environmental and residential amenity, including the protection of solar access, privacy and noise;
- traffic and transport;
- heritage;
- sustainability (particularly energy and water conservation); and
- soil and water;
- infrastructure and services.

These issues, along with other environmental issues of relevance to the project, are addressed in Sections 3 and 6 of this Environmental Assessment.



6 ENVIRONMENTAL IMPACTS

6.1 Layout and Design

The Abercrombie Precinct Redevelopment Project has been designed by internationally-respected architects Woods Bagot, based on a functional design brief prepared by specialist education facility planners Arina Consultants, in collaboration with the University. Landscaping has been designed by specialist landscape architects, 360 Degrees.

Woods Bagot's Architectural Design Statement is attached as **Appendix D**, and the Landscape Design Statement is attached as **Appendix E**. The following provides a summary of the reports and the design-related impacts associated with the project.

6.1.1 Architectural Design

Precinct Structure

The Abercrombie Precinct Redevelopment Project provides a unique opportunity to create a modern and high quality southern entrance to the University, in a manner that respects the University structure and the adjacent land uses.

In this regard, the precinct is located at the interface between the University campus and the Darlington community. The University has been very conscious of the need to design the project in a manner that responds to, and respects, the surrounding community.

The structure of the precinct in relation to the University's Darlington and Camperdown campuses is shown on **Figure 4.6**. As indicated on the plan, the Abercrombie Precinct site is located adjacent to the Eastern Avenue axis, which together with the Wilkinson axis forms the primary north-south axis ordering and connecting the University campuses. The project has been designed in a manner that respects, and reinforces, this axis. The project has also been designed in a manner that respects the secondary north-south and east-west axes within the site, as described below.

Design Evolution, Scale and Massing

The broad project design has evolved through detailed site analysis, consideration of wider structure planning, the functional design brief and the project objectives, including the aim of maximising collaboration and integration between educators, students and the community.

With regard to site analysis, Woods Bagot – together with the project team – undertook an analysis to define the maximum potential extent of the building based on the site's key opportunities and constraints. This envelope analysis included consideration of:

- *Site context* – including:
 - o applicable development controls and precedents in the area (eg. heights, setbacks);
 - o on-site environmental features (eg. significant vegetation, heritage buildings) (Nb. No such on-site features were considered to significantly constrain the building envelope);
- *Heritage context* – including:
 - o that the scale of the Abercrombie Street frontage should relate to the scale of the 2 to 3 storey terraces on the southern side of the street and existing site development (eg. Mandlebaum House), and that any upper levels are appropriately set back to reduce scale and bulk;
 - o that the scale of the Darlington Lane frontage should relate to the terraces along Darlington Road, including maintaining consistency with the existing H69 Economics and Business Building and ensuring that the development is not visible from Darlington Road (see below);
- *Visual context* – including:
 - o that the development should not be visible by a person standing on Darlington Road;



- o that the development should not significantly impact views from the Abercrombie Street residences or other surrounding land users (Nb. No such views of significance are considered to significantly constrain the building envelope – see Section 6.1.2); and
- *Overshadowing context* – namely ensuring that the development complies with applicable overshadowing controls on the Abercrombie Street terraces to the south, Darlington Public School to the west, and the proposed student accommodation within the development itself.

A maximum building envelope (or 'wire frame') was developed based on this analysis, and is shown on **Figure 6.1**. As indicated on the figure, the envelope illustrates that the bulk of the development should be located in the middle of the site.

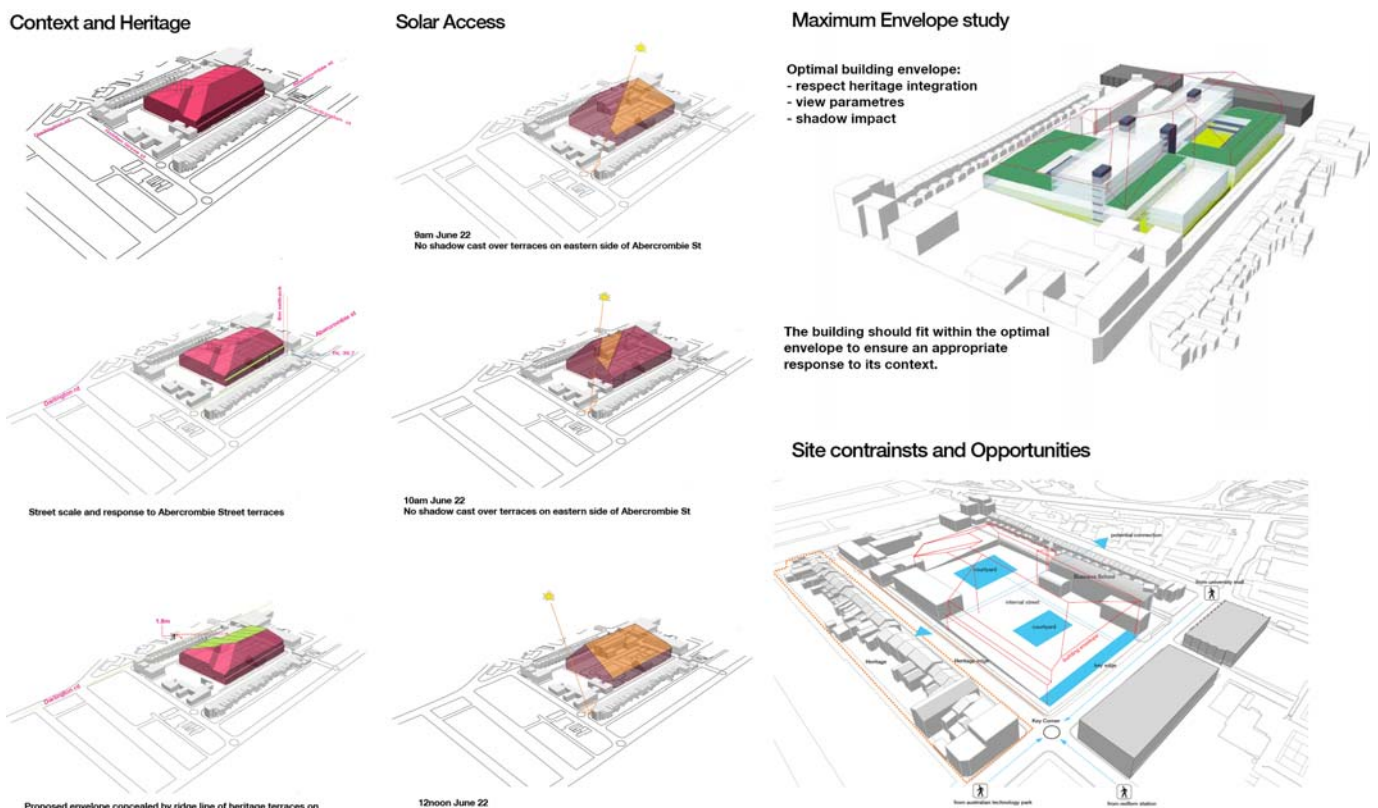


Figure 6.1: Building Envelope Study (Source: Woods Bagot)

The concept design evolution following the site analysis is shown on **Figure 6.2**, and included:

1. Define the developable portion of the site, including the Business School Building and the Student Accommodation Building. This included:
 - providing for the north-south and east-west through-site linkages as indicated on the structure plan;
 - relating the Business School Building to the existing H69 Economics and Business Building; and
 - positioning the Student Accommodation Building on Abercrombie Street, consistent with the dominant residential land use on the street;
2. Create 2 distinct 'learning environment' masses for the Business School Building on the lower levels (accommodating lecture theatres, classrooms and informal learning spaces), where access and potential interaction/collaboration is maximised;
3. Create an internal street to connect the 2 learning environments and provide good east-west access through the precinct;
4. Create courtyards to provide informal 'indoor-outdoor' learning environments and maximise natural lighting;



5. Create multiple entries and circulation paths around the courtyards – including a bold main entrance to Codrington Street – to maximise interaction and collaboration, avoid dead-ends and further maximise natural lighting; and
6. Provide academic research offices above the learning environment in the centre of the site (ie. where the site analysis indicates that the bulk should be located), and create roof gardens to maximise amenity and green space, and assist with building sustainability.

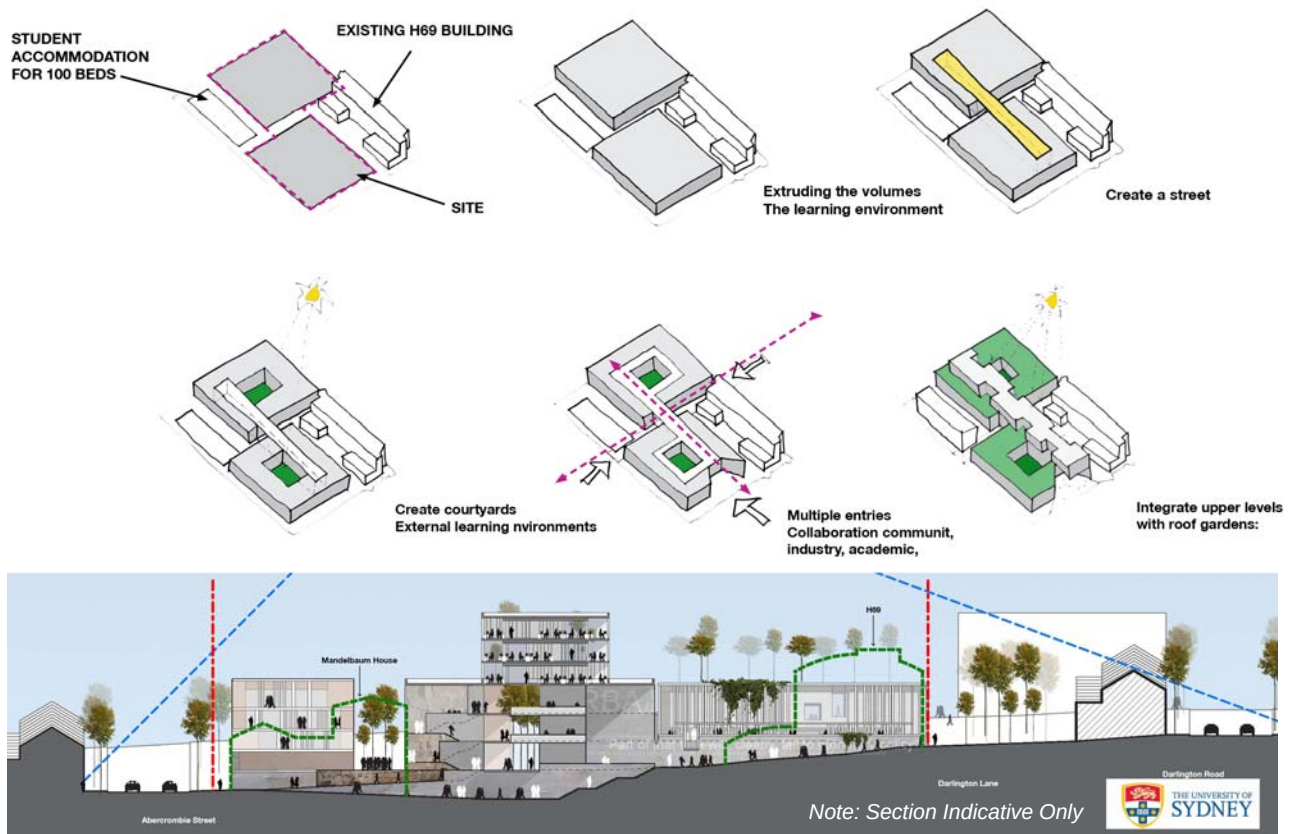


Figure 6.2: Design Evolution (Source: Woods Bagot)

Building Description

As outlined in Section 3.5, the 7-level Business School Building essentially comprises a 3 podium-level base with an additional 4 level office component sitting on top of the podium. An extract from the Architectural Design Statement, which details the broad design philosophy further, is reproduced below:

"The first three levels of the building are the public and invited spaces, the environment is a large 'terrain-like' floor plate consisting of teaching and learning functions which are in the form of flexible teaching spaces and three external courtyards. The building encourages interaction with the existing [buildings], wide streets and social spaces to meet and work.

The courtyards and teaching spaces are linked with a main internal street and other secondary circulation routes which run both horizontally and vertically.

The upper levels consist of invite and private spaces, the function of these are research and workplace environments. Three cores and internal stairs connect the upper and lower functions and are located along the primary street. The upper floors are also designed around social hubs, wide stairs for meeting places and visual connectivity between floors. This will provide opportunity for collaboration and collegiality between staff members, industry and students."



It is noted that the project would not significantly increase the existing total floor space ratio of the Darlington Campus, which would increase from about 1.1:1 to about 1.3:1).

Design Quality and Activation

The Abercrombie Precinct Redevelopment project has been designed to the highest standards in order to attract the highest quality business students and academics from around the world, and to reflect its anticipated status within the University. Measures to present an 'address' and to activate the building are described in the Architectural Design Statement, an extract from which is reproduced below:

"The main entry address is Codrington Street, the entry is into a courtyard connecting the old and new structures on the site. This strong entry statement also acts as a visual and strong physical link back to the main campus....

The building is activated at the ground and upper floors with the use of exposed stairs linking floors of teaching space, transparency from the street through to the courtyards and internal informal learning environments.

The functional floor plates are provided with a 'spectrum' of learning environments resulting in variation to the facade and reading of internal depth of rooms. The laneways are activated by "knowledge vessels", a series of colourful protrusions into the landscape to create not only a playfulness in the form but variety and spectacle in the spaces between the forms.

A variety of transparency and screening to the facade will allow visual access and integration where required and privacy in areas close to the school and community dwellings."

6.1.2 Visual Amenity

The key public and off-site visual receivers to/from the Abercrombie Precinct site are:

- Abercrombie Street residents and commuters to the south;
- Darlington Road residents to the north;
- commuters on Codrington Street to the east; and
- Darlington Public School students and staff to the west.

There are also views from within the University itself to the north and east, however these views are not considered to be significant.

None of the receiver areas have visually significant long range views across the site (ie. to high scenic areas or landmarks such as waterways or the City). Nevertheless, the project would affect views from each of the key off-site receivers to some degree. A summary of the affects is provided below, along with the key measures to mitigate the impacts and maintain the visual amenity and character of the surrounding area. These key measures essentially relate to the considered design of the proposed buildings as described above, and include ensuring that the design philosophy adopts:

- a high quality design and finishes, including articulation that is consistent with the character of the surrounding neighbourhood; and
- a scale that is compatible with the surrounding neighbourhood, including generous setbacks to upper building levels (by keeping the largest mass in the centre of the site).

Abercrombie Street

Some of the Abercrombie Street residences have limited views across the site to the top of the University's Institute Building, however the views are not considered significant and most are



interrupted by intervening vegetation and buildings, including the existing H69 Building. The terraces do not have significant views to the City skyline.

To mitigate visual impacts on the Abercrombie Street receivers, the building heights along the Abercrombie Street frontage have been restricted to 3 to 4 levels, consistent with the scale of existing buildings in the area (eg. Mandlebaum House, CIS Building and the Royal Hotel). The higher office component of the Business School Building has been set back approximately 45 metres (see Table 3.3), to provide good separation to the terraces.

Along the Abercrombie Street frontage, the Business School Building has a height of RL 40.5m, which is generally consistent with the scale of other buildings in the area including the University's CIS Building (G12) at RL 39.4m, Mandlebaum House at RL 37.8m, the Royal Hotel at RL 39.2m, and the terraces, which range from RL 35.1m to 39.8m. The Student Accommodation Building has a height of RL 42.5m (plus plant), which is compatible with the Business School Building and other buildings in the area.

The buildings have also been designed to contain a significant amount of high quality articulation along this frontage, to harmonise with the character of the Victorian terraces.



Figure 6.3: Abercrombie Street Perspective (Source: Woods Bagot)

Darlington Road/Darlington Lane

A large portion of the long range views from the Darlington Road terraces to the south are interrupted by the existing H69 Building, which has a ridge height of RL 48.4m (and a lift overrun height of RL 51.5m). Most of the terraces are owned by the University.

To mitigate visual impacts on the Darlington Road receivers, as described in Section 6.1 the building envelope was restricted such that the proposed buildings would not be visible from a person standing on Darlington Road (this was to protect heritage values as well as visual amenity). As proposed, the buildings are well within this building envelope (see **Figure 6.2**).

Along the Darlington Lane frontage, the Business School Building has been restricted to 2 above ground levels, with a height of RL 44.9m (plus plant), which is well below the height of the H69 Building. The higher office component of the Business School Building has been set back approximately 41 metres (see Table 3.3), to provide good separation to the terraces.



As with the Abercrombie Street frontage, the buildings have been designed to contain a significant amount of high quality articulation along this frontage, to harmonise with the character of the Victorian terraces.

Codrington Street

Visual receivers on Codrington Street are considered to be less sensitive than the Abercrombie Street or Darlington Road receivers, given that the receivers are generally University employees and students.

The project is not expected to result in any significant visual amenity impacts on these receivers.

Given the reduced sensitivity, and that the Codrington Street frontage is on the University key Eastern Ave axis (see Section 4.1.5), the building has been designed to present a modern and bold expression to the street. The increased height on part of this frontage – associated with the cantilevered office component of the Business School Building – befits this design intent and is not considered to result in any adverse visual impacts.



Figure 6.4: *Codrington Street Perspective* (Source: Woods Bagot)

Darlington Public School

Visual receivers on Darlington Public School are also considered to be less sensitive than the Abercrombie Street or Darlington Road receivers, given that the receivers are generally teachers and students of the School.

From Darlington Public School, the proposed buildings present mainly as a 2 to 3 level building, although the office component of the Business School Building extends higher over a relatively small portion of the frontage.

Given the urban nature and existing buildings on the site, the project is not expected to result in significant visual impacts on the school. The school's key vistas and frontages are Abercrombie Street, Golden Grove Street and Darlington Lane, which would not be affected by the project.

It is noted that the University has met with the school on a number of occasions regarding the project, and that the school has reviewed the proposed design plans.



6.1.3 Overshadowing and Wind and Reflectivity

As discussed in Section 6.1, the building envelope for the project was designed from an early stage to comply with relevant overshadowing standards (Nb. the standard adopted in the building envelope analysis was retention of a minimum 3 hours solar access at the winter solstice on the whole receiver lot). Overshadowing drawings are included in the architectural design drawings in **Appendix C**, which demonstrate that the project would comply with the overshadowing controls at the relevant receivers, including the Abercrombie Street terraces and Darlington Public School.

A Wind Analysis has been undertaken for the project by specialist consultants Windtech, and is included in **Appendix I**. The analysis indicates that the project would not have any significant adverse impacts on wind patterns in the surrounding area. To mitigate localised wind effects on the rooftop terraces, the report recommends that the terraces have impermeable balustrades around the perimeter of the terraces, and also include some scattered vegetation (shrubs/trees) within the larger areas of the terraces. The architectural and landscape design plans have been prepared in accordance with these recommendations, with the terraces having continuous glass balustrades and the landscaping incorporating suitable vegetation.

The building facades would be designed to comply with relevant Council reflectivity standards (ie. reflectivity increment of less than 20%).

6.1.4 Landscape and Public Domain Design

The landscape design philosophy is detailed in the Landscape Design Statement attached as **Appendix E**, and the project landscape plans are included in **Appendix C**.

In summary, the overarching landscape concept for the project is for an external environment that supplements and connects the learning and social spaces created by the architecture. The landscape has been designed in accordance with the following key principles:

- provide inspiration, respite, amenity, functionality and privacy, as appropriate to each landscape space;
- provide landscape continuity for the site, its adjacent buildings and the wider context;
- maximise accessibility, clarity and ease of movement;
- contribute positively to the Abercrombie Street and Codrington Street streetscapes and public domain;
- provide varied and seasonal amenity for students, staff and visitors;
- complement the architecture;
- incorporate sustainability and water sensitive urban design principles;
- be low-maintenance;
- incorporate crime prevention through environmental design principles; and
- demonstrate design excellence by the use and fine detailing of a restrained material palette.

The key landscapes areas and elements addressed by the landscape plan include:

- *Abercrombie Street and Codrington Street Public Domain* – These areas are proposed as a wide, soft landscaped area, with pockets of seating provided at regular intervals. Mass planting of predominantly native, low-water use species would be used. Proposed street tree planting is in accordance with the City of Sydney's Street Tree Masterplan 2004 (ie. *Eucalyptus sideroxylon* to Codrington Street and *Nyssa sylvatica* to Abercrombie Street);
- *Main Entry of Codrington Street and the former Boundary Lane Area* – This area includes the main entry to the precinct and is characterised by a generous open approach with clear visibility. High quality paving and seating would be used. Seating areas are associated with pocket gardens of shrubs and groundcovers, and will provide amenity for varying levels of use and activity;
- *South-East Courtyard* – Comprised of locally native canopy trees (*Corymbia maculata*), mid-storey shrubs or small trees (eg *Banksia serrata*), Livistona palms and a lush understorey (eg *Macrozamia*, *Xanthorrhoea*, *Alocasia* and native ferns) this landscape will



be experienced from all levels of the building, including the rooftop. At ground level, the garden is traversed for access to classrooms and lecture theatres via steel mesh boardwalks that float over the slightly sunken landscape. This courtyard is essentially a protected garden, providing an intimate connection with nature;

- *North-West Courtyard* – In contrast to the relative passivity and protection of the South-East Courtyard, this courtyard is an open space with a character adapted from the qualities of The Quadrangle. It will be particularly valuable as a winter garden, and is defined by three key elements:
 - o *a shroud of filagree planting* – that blurs the edge of the space and shows the silhouettes of movement and activity. The shroud is proposed to be bamboo, planted at intermittent spacings to allow movement and seating;
 - o *a grove of Illawarra Flame Trees (*Brachychiton acerifolius*)* – symbolically correlating with the flowering of the Jacaranda in The Quadrangle; and
 - o *open space* – with casual street furniture, which could also be used for temporary sculptures;
- *Student Housing Courtyard* – including various opportunities for passive recreation including open lawn space, quiet seating areas and a communal bbq facility. The planting scheme will maintain continuity of species with the precinct, including transplanted *Elaeocarpus* (Blueberry Ash) from Boundary Lane, Livistona palms, *Banksia* spp and ornamental native shrubs and groundcovers;
- *North-South Through-site Link* – including a grove of Livistona palms emerging from the paving at the southern end with associated seating, creating a plaza that complements the building scale and provides visual continuity with the Livistona plantings in the Ground South-East Courtyard. At the northern end, a new Blue Gum is proposed in lieu of the existing Blue Gum to be removed as part of the site works (see Section 6.6). Symbolically, the new Blue Gum would be a marker tree, reinforced with a passive seating zone adjacent; and
- *Rooftop Terrace Landscapes* – The rooftop landscaping would promote the project sustainability principles. In addition to rainwater absorption collection, building insulation and habitat benefits, the rooftop terraces would provide valuable additional usable space. Designed as an island in the inner-city sky, the rooftops are intended for respite and private study for individuals and small groups. The landscape will be predominantly planted with hardy native shrub and groundcover species creating a buffer to the external building edges, with timber deck paths floating over the landscape to varied pockets of space, immersed in the landscape. The spaces would be of varied character, including permanent shade and fixed bench seating, small turf pockets with daybed benches and small ornamental trees providing shade to informal seating areas.



Figure 6.5: Courtyard Perspectives (concepts) (Left: South-east; Right: North-west) (Source: Woods Bagot)



6.2 Soil and Water

6.2.1 Erosion and Sedimentation

The project involves earthworks across the site to excavate basement levels and create a level building pad for construction of the buildings and ancillary services.

As discussed in Section 2.2.5, the project site is moderately sloped (from north-west down to south-east) and there are no natural watercourses in the vicinity of the site. As such, the risk of significant erosion and sedimentation associated with the project is considered to be low.

Erosion and sedimentation risks are able to be effectively managed using standard best practice control measures, including:

- minimising disturbance areas;
- diverting 'clean' run-on water around disturbance areas;
- controlling 'dirty' run-off water from within the disturbance area via various controls such as sediment fencing and basins; and
- rehabilitating disturbed areas as quickly as possible following disturbance.

To manage these erosion and sedimentation risks during construction, a Soil and Water Management Plan (SWMP) has been prepared for the project by GHD. The plan is attached as **Appendix J**, and has been prepared in accordance with the above principles and Landcom's (2004) *Managing Urban Stormwater: Soils and Construction* manual (ie. the 'Blue Book'). All construction works would be undertaken in accordance with the SWMP.

6.2.2 Site Contamination

A Phase 1 site contamination assessment has been undertaken for the project by Sinclair Knight Merz, and is attached as **Appendix K**.

The assessment was undertaken in accordance with applicable guidelines, including DECCW's *Guidelines for Consultants Reporting on Contaminated Sites (1997)* and the *National Environment Protection Measure – Assessment of Site Contamination (1999)*, and included:

- site history review;
- geological and hydrogeological review;
- site inspection; and
- qualitative risk assessment of the potential areas of contamination.

It is noted that the Phase 1 assessment covered a wider area than the current project site, including the Darlington Road terraces and the University Garage (H07). The summary provided below only considers the current project site.

The site history review indicates that the vast majority of the site appears to have been used for residential purposes until at least 1970. Significant development, involving the demolition and replacement of buildings, appears to have occurred after this time. The site is not subject to any contamination-related notices, and has not been subject to previous remediation.

Notwithstanding, the assessment identified a number of potential areas of contamination. These areas of interest include:

- *Fill material* – located in parts of the precinct. The source of this material (e.g. on- or off-site) is not known, however it is possible that the fill may have been sourced from material that was displaced during the demolition or construction of buildings within the precinct;
- *Joiner's Shop (H05)* – This building appears to have been present on-site since at least 1930. It is likely that chemical contaminants such as solvents and glue could have previously been stored within this building;
- *Recycling Centre (University Maintenance Facilities)* – The Recycling Centre contains a shed which has been identified as a site of fertiliser storage; and



- *Transformers and Generator* – Two transformers are located on-site. It is possible that these represent a source of polychlorinated biphenyls (PCBs). A generator is also located within the site.

The assessment also identified the University Garage (H07) as an area of potential contamination, however this building is outside the current project site.

Potential contaminants within these areas vary from site to site, though may include:

- total petroleum hydrocarbons (TPH), and benzene, toluene, ethyl benzene and xylene (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAHs) and phenols;
- Heavy metals;
- Organochlorine Pesticides (OCPs) and Organophosphate Pesticides (OPPs);
- Polychlorinated biphenyls (PCBs); and
- Asbestos.

Following a qualitative risk assessment, the Phase 1 assessment concluded that the majority of these potential areas of contamination (including the Joiner's Shop, Recycling Centre and Transformers/Generator) present a low contamination risk, however the fill material (and the University Garage located outside the site) is considered to present a medium contamination risk.

The assessment concludes that although current and historical activities conducted on the site may have contaminated soil and groundwater beneath the precinct, it is unlikely that the levels of contamination, if present, would limit the project. The assessment recommends that a targeted Phase 2 site contamination assessment – involving soil and groundwater sampling – is undertaken prior to construction to further define potential contamination present.

In accordance with this recommendation, the University has committed to undertaking a Phase 2 site contamination assessment, following demolition of the applicable buildings and prior to construction of the project⁸. The Phase 2 assessment would be undertaken in accordance with applicable DECCW and NEPM guidelines, including *Contaminated Sites: Sampling Design Guidelines* (NSW EPA, 1995).

In the event that the Phase 2 assessment identifies actual contamination, the University would remediate the site in accordance with a Remedial Action Plan prepared in accordance with applicable DECCW guidelines.

Given the findings of the Phase 1 site contamination assessment, it is considered that the site is not significantly contaminated and would be fit for its intended use, subject to potential removal of localised contamination.

6.2.3 Acid Sulfate Soils

The site does not present a significant risk of containing acid sulfate soils (ASS), given its elevation (ie. 24.5-36.5m AHD) and the relatively small amount of excavation required for the project (ie. 24.5m AHD for the basement levels). ASS are generally restricted to areas below 10m AHD.

Notwithstanding, and given that the site forms part of the headwaters of the former Blackwattle Swamp Creek (see Section 6.7), the University has committed to testing for ASS as part of the Phase 2 site contamination assessment discussed above. In the event that ASS or potential ASS is identified, the University would prepare and implement an Acid Sulfate Soil Management Plan in accordance with the NSW Acid Sulphate Soil Advisory Committee's (1998) *Acid Sulfate Soil Manual*, prior to the commencement of building works.

⁸ Given that the areas of potential contamination are generally located in and around buildings, it is considered appropriate that the Phase 2 assessment is undertaken following demolition of the applicable buildings.



It is noted that acid sulfate soils are able to be effectively managed using established best practice techniques, including:

- minimising disturbance areas;
- minimising the exposure of excavated PASS and ASS material to the atmosphere (ie. to oxidising environments);
- ensuring good erosion and sediment control;
- treatment of affected soils (with lime);
- appropriate classification and disposal of excavated PASS and ASS material; and
- appropriate consideration and treatment of concrete footings and sub-ground building materials.

6.2.4 Riparian Areas and Waterbodies

There are no natural riparian areas (ie. creeks and rivers) on or in the vicinity of the site. Accordingly, the project would not have any direct impacts on riparian areas.

However, the heritage assessment (see Section 6.7 below) indicates that the headwaters of the former Blackwattle Swamp Creek once flowed through the site from west to east. It is likely that this minor stream was filled during early residential development of the precinct. It is noted that the Infrastructure Assessment for the project (see **Appendix F**) did not identify any major stormwater pipes below the site, which would seem to indicate that the stream was not a significant physical or hydraulic feature of the site and that significant diversion works were not required⁹.

Indirect impacts on riparian areas and waterbodies associated with the project (principally through erosion and sedimentation during construction and pollution during operations) are discussed in separate sections above and below.

6.2.5 Stormwater Management

The project has been designed in accordance with integrated water cycle management (IWCM) and water sensitive urban design (WSUD) principles to ensure that it meets applicable stormwater quantity and quality criteria.

The broad stormwater strategy for the project is outlined in the Infrastructure Assessment (see **Appendix F**), and includes provision of:

- roof rainwater harvesting tanks;
- traditional pit and pipe on-site network;
- a gross pollutant trap for stormwater treatment; and
- connection to existing 600 millimetre Council stormwater main in Codrington Street.

With regard to stormwater quantity, the Infrastructure Assessment includes preliminary hydrologic/hydraulic modelling using DRAINS software, to assess whether the project would significantly affect stormwater flows from the site. The analysis was carried out based on a 100-yr ARI design storm and the results are summarised in the following table.

The modelling results indicate that post-development flows would not exceed pre-development flow rates, and hence on-site detention (OSD) would not be required for the project. The Infrastructure Assessment notes that the proposed roof rainwater harvesting would further reduce post-development flows from the site, which would further assist in mitigating potential downstream stormwater impacts and the need for any OSD.

⁹ The Infrastructure Assessment does identify a stormwater main to the east of the site (below the University's Campus Infrastructure and Services Building) which could be on the alignment of the former creek downstream of the site.



Table 6.1: Stormwater Flows

Catchment	Catchment Area (ha)	Pre-development Flow (m³/s)	Post-development Flow (m³/s)	Variance
External contributing	0.92 (100% impervious)	0.654	0.654	Nil
Precinct North	0.94 (100% impervious ¹)	0.668	Diverted to Precinct South	Net reduction of 0.131m ³ /s
Precinct South	1.14ha (100% impervious ¹)	0.673	1.21 ²	

¹ Over a number of years the University has progressively made modifications to the Precinct which has resulted in the partial or complete demolition of some areas. The analysis is based on a fully developed state which would represent the Precinct in its original form.

² Catchment modified to 95% impervious due to potential landscaping and rerouting of storms from overland flow to a piped drainage system.

With regard to stormwater quality, best practice guidelines generally require the following reduction of pollutants in stormwater discharge from a development site:

- 80% reduction in total suspended solids;
- 45% reduction in total phosphorus; and
- 45% reduction in total nitrogen.

The stormwater concept plan includes provision of a proprietary gross pollutant trap (GPT) near the site's downstream connection point with Council's stormwater system on Codrington Street. The GPT (CSR Humeceptor or similar) would remove most gross pollutants, sediment (total suspended solids, or TSS) and free oil and grease in the stormwater discharge.

Given that the catchment is predominantly roof area, it is not expected that high levels of nutrients (Total Phosphorus and Total Nitrogen) would be discharged to the stormwater network.

To ensure that stormwater is appropriately designed and managed, the University has committed to preparing and implementing a detailed Stormwater Management Plan for the project. The plan would be prepared in accordance with the above principles and applicable Sydney Water and/or Council requirements, prior to the commencement of building works.

6.2.6 Flooding

The site is not identified as being flood prone, however the preliminary hydraulic modelling in the Infrastructure Assessment indicates that the 600mm diameter concrete stormwater pipe in Codrington Street is running at capacity in a 100 year ARI storm event.

The hydraulic assessment undertaken for the project indicates that the project would result in some reduction to site discharge volumes, which would marginally improve this localised ponding.

Further, the Infrastructure Assessment indicates that the project would not affect overland flows from the contributing upstream catchment (with flows running down Darlington Lane).

As detailed above, the University has committed to preparing a detailed Stormwater Management Plan for the project prior to the commencement of building works. The management plan would include consideration of overland flows and flooding.

With these measures, it is considered that the project is unlikely to be affected by, or adversely affect, flooding in the area.

6.2.7 Soil and Water Pollution

The project does not involve processes that entail a significant risk of soil or water pollution once the site is developed.



Only minor quantities of dangerous goods and hazardous materials would be stored (eg. cleaning products, diesel for generators, etc.), with volumes commensurate with typical commercial facilities of this scale. Storage and handling of all dangerous goods and hazardous materials would be undertaken in accordance with the Dangerous Goods Code and AS 1940-2004: *The storage and handling of flammable and combustible liquids*. In this regard, all hazardous substances would be stored internally within the building, in appropriately bunded areas with no external drainage to stormwater or to land or water resources.

Waste management, including disposal of liquid wastes, is discussed in Section 6.9.

6.3 Noise

A Noise Impact Assessment has been undertaken for the project by Marshall Day Acoustics, and is attached as **Appendix L**. The assessment includes consideration of construction, operational and traffic related noise, and has been undertaken in accordance with applicable noise guidelines including DECCW's:

- *Industrial Noise Policy (INP)*;
- *Interim Construction Noise Guideline*; and
- *Environmental Criteria for Road Traffic Noise (ECRTN)*.

The assessment was undertaken with reference to the nearest residential and commercial sensitive receivers in the vicinity of the site, including:

- Receiver A – Darlington Road terraces to the north;
- Receiver B – Abercrombie Street terraces to the south;
- Receiver C – Darlington Public School to the west;
- Receiver D – University's Campus Infrastructure Services commercial building to the east; and
- Receiver E – proposed Student Accommodation Building within the site.

6.3.1 Construction Noise and Vibration

Construction Noise

The construction period for the main stages of the project are expected to extend for approximately 24 months, with the full development extending over a period of around 5 years. The main noise-generating construction works would be the demolition, earthworks and foundations phase, and to a lesser extent building construction.

Predicted worst case and typical construction noise levels at the nearest sensitive receivers are provided in the following table, along with the applicable criteria.

Table 6.2: Construction Noise Predictions dB(A) $L_{A10(15 mins)}$ (exceedances in brackets)

Receiver	Demolition		Earthworks		Superstructure		Criterion
	Maximum	Typical	Maximum	Typical	Maximum	Typical	
A – Darlington Road terraces	78 (+24)	59 (+5)	82 (+28)	63 (+9)	78 (+24)	58 (+4)	54
B – Abercrombie Street terraces	72 (+17)	57 (+2)	76 (+21)	61 (+6)	71 (+16)	56 (+1)	55
C – Darlington Public School	68 (+13)	47 (+2)	72 (+27)	51 (+6)	66 (+21)	47 (+2)	45
D – CIS Building	62	48	66	52	61	48	70

The assessment indicates that the project's construction noise emissions would exceed the applicable criteria at all of the sensitive receiver locations with the exception of the University's CIS Building.



DECCW's *Interim Construction Noise Guideline* states that where the construction noise objectives are exceeded, proponents should implement all reasonable and feasible work practices to minimise noise, and notify potentially affected receivers of the works.

In this regard, the University has committed to preparing a detailed Construction Noise Management Plan, as part of a wider Environmental Management Strategy for the project. The noise management plan would include provisions for:

- restriction of construction hours (see below);
- scheduling noisy activities in close proximity to receivers to less sensitive periods (eg. avoiding early mornings and Saturdays), where practicable;
- managing and maintaining equipment to minimise noise; and
- keeping receivers up to date regarding the works and managing complaints.

With regard to construction hours, the University has committed to restricting construction activities to the recommended standard hours in DECCW's *Interim Construction Noise Guideline*, namely 7am to 6pm Monday to Friday, 7am to 1pm on Saturdays, with no construction on Sundays or public holidays. Construction works which are inaudible at surrounding residences may be carried out outside these times.

Construction Vibration

It is expected that the primary sources of vibration during the construction phase of the project would be those generated by hydraulic rock breaking and piling.

A summary of the applicable amenity and structural construction vibration criteria are reproduced in the following table.

Table 6.3: Construction Vibration Criteria

Receiver Type	¹ Amenity Criteria, m/s ^{1.75}		² Structural Damage Criteria, mm/s	
	Preferred	Maximum	4-15Hz	>15Hz
Residences				
Offices, school, educational institutions and places of worship	0.2	0.4	15-20	20-50

1 Daytime figure as per DECCWs *Assessing Vibration: A Technical Guideline* (2006) and British Standard 6472-1992

2 As per Australian Standard AS 2187: Part 2-2006 and BS 7385 Part 2-1993. It is noted that rockbreaking/hammering and sheet piling activities can potentially cause dynamic loading in some structures (eg. residences) and it may therefore be appropriate to reduce the transient values by 50%, however the British standard notes that 'some data suggests that the probability of damage tends towards zero at 12.5 mm/s'.

To ensure that project-related vibration does not adversely affect the amenity or structural integrity of surrounding land users and buildings, the University has committed to complying with these criteria throughout the project construction. Construction vibration would be managed as part of the Construction Noise Management Plan for the project, as discussed above.

6.3.2 Operational Noise

Using the procedures in the Industrial Noise Policy, the noise assessment defined the following project specific noise criteria for the operational phase of the project.



Table 6.4: Operational Noise Criteria

Receiver	Day	Evening	Night	Night (sleep disturbance)
A – Darlington Road terraces	49 L _{Aeq} (15 min)	44 L _{Aeq} (period)	38 L _{Aeq} (period)	54 L _{A1} (1 min)
B – Abercrombie Street terraces	50 L _{Aeq} (15 min)	48 L _{Aeq} (15 min)	44 L _{Aeq} (15 min)	54 L _{A1} (1 min)
C – Darlington Public School (internal, when in use)	39 L _{Aeq} (period)	-	-	-
D – CIS Building (internal, when in use)	65 L _{Aeq} (period)	-	-	-
E – Student Accommodation Building	50 L _{Aeq} (15 min)	48 L _{Aeq} (15 min)	44 L _{Aeq} (15 min)	54 L _{A1} (1 min)

Note: With regard to time periods:

- Day is the period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and public holidays;
- Evening is the period from 6pm to 10pm; and
- Night is the period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and public holidays.

The noise assessment includes consideration of the main noise generating components of the project – namely on-site carparking, loading, building services plant, outdoor activities and internal traffic (off-site traffic is considered separately below) – against these criteria, as summarised below.

Car Parking and Loading

To minimise noise on Darlington Public School associated with vehicles using the access driveway, the project includes provision of a 2.4 metre high acoustic wall on part of the western boundary.

With this measure, the noise assessment indicates that noise levels from on-site cars and truck deliveries, predicted as equal or less than 30 dBA and 38 dBA respectively, would comfortably meet the applicable L_{Aeq} operational criteria at all times of the day.

Building Services Plant

A variety of electrical and mechanical plant would be required to service the project. Most of this plant would be capable of generating noise to some degree, and some may operate 24 hours a day.

The general philosophy adopted for the project is to locate the building services plant internally within purpose built plant rooms in order to minimise noise emissions. Any opening required for ventilation would be orientated away from the nearest receivers and provided with acoustic attenuators as required.

Proven noise control techniques would be employed to ensure that emissions from plant comply with the applicable criteria at the nearest receivers at all times, with such measures including:

It is envisaged that the following may be employed:

- duct mounted attenuators on air handling plant;
- splitter attenuators or acoustic louvres to internal plant areas;
- solid barriers screening any external plant; and
- anti-vibration mounts on all reciprocating plant.

The design of mechanical services is as yet only at a schematic stage and detailed noise predictions cannot be undertaken.

However, the noise assessment indicates that if the mechanical services for the entire building were considered as one source, a reasonable total sound power level for the equipment of 83 dBA would achieve compliance with the applicable project specific noise criteria at all surrounding receivers.



Given this, the noise assessment considers that there is no technical impediment to meeting the noise criteria at all sensitive receivers.

To ensure that the mechanical plant is designed in a manner that protects the amenity of surrounding sensitive receivers, the University has committed to:

- complying with the applicable project specific noise criteria; and
- undertaking noise compliance monitoring following the commencement of operations to demonstrate that the project complies with the applicable criteria.

With these measures, it is considered that the project would not result in any significant noise impact to surrounding receivers.

Outdoor Activities

The main outdoor activity with the potential for off-site noise impact is use of the rooftop landscape areas, which would be used for private study and conversation.

The noise assessment indicates that noise levels from use of the rooftop areas, predicted as 14 dBA or less at the surrounding receivers, would comfortably meet the applicable L_{Aeq} operational criteria at all times of the day.

Combined Operational Noise

The noise assessment includes modelling of the combined operational noise associated with the project (ie. on-site traffic noise, plant noise and outdoor activities). A summary of the results are provided in the following table. As outlined, the project is predicted to comfortably comply with the applicable criteria at all times, at all surrounding receivers.

Table 6.5: Operational Noise Predictions dB(A) $L_{Aeq(15 mins)}$ (exceedances in bold)

Receiver Location	Period	Predicted Noise Level	Criteria
A – Darlington Road terraces	Day	38	49
	Evening	38	44
	Night	38	38
B – Abercrombie Street terraces	Day	41	50
	Evening	38	48
	Night	38	44
C – Darlington Public School (internal, when in use)	Day	31	39
D – CIS Building (internal, when in use)	Day	28	65
E – Student Accommodation Building	Day	40	50
	Evening	38	48
	Night	38	44

Notes:

With regard to time periods:

- Day is the period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and public holidays;
- Evening is the period from 6pm to 10pm; and
- Night is the period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and public holidays.

As outlined above, the University has committed to meeting the applicable operational criteria and to undertaking noise monitoring to demonstrate this compliance.

Sleep Disturbance

In addition to the above operational noise emissions, which are based on average noise levels over a 15 minute period, sudden or short-lived noise emissions at night have the potential to result in sleep disturbance.



The noise assessment includes consideration of such potential noise sources associated with the project, which may include loud car movements (including a loud stereo), and rowdy voices. A summary of the assessment is provided in the following table.

Table 6.6: Sleep Disturbance Predictions dB(A) L_{Amax} (exceedances in brackets)

Noise Source	Predicted Noise Level	
	Receiver A – Darlington Road terraces	Receiver B – Abercrombie Street terraces
Standard Vehicle	34	62 (+8)
Modified Vehicle (worst case)	43	70 (+16)
Loud Car Stereo	29	56 (+2)
Rowdy Voice	49	64 (+10)
Criteria	54	54

Although the assessment identifies some exceedances at the Abercrombie Street residences, the noise assessment notes that the predicted L_{Amax} noise levels are generally below the values of 60-65 dBA which are regarded as being “unlikely to result in awakening reactions”, and hence are considered acceptable.

With regard to the vehicle-related exceedances, it is noted that the character of the noise would not be dissimilar to that from the existing road traffic on Abercrombie Street. Notwithstanding, and consistent with the recommendations of the noise assessment, the University has committed to installing a speedhump inside the entry crossovers to the site in order to maintain low vehicle speeds.

Further, to minimise noise associated with ‘rowdy voices’, the University has committed to closing access to the rooftop landscape areas in the night time period.

6.3.3 Traffic Noise

Given the moderate traffic volumes associated with the project (see Section 6.8), the project is not expected to result in any traffic noise impacts. The noise assessment indicates that the project would increase traffic noise surrounding roads by less than 2 dBA, which is within the allowable increase under DECCW’s ECRTN guideline.

6.4 Air Quality

The main sources of air emissions associated with the project would be:

- dust during construction; and
- plant and vehicle emissions.

Dust emissions during construction works – the majority of which would be associated with bulk earthworks – are considered able to be managed in accordance with standard best practice techniques, including:

- minimising the area of disturbance as far as practicable during works;
- minimising drop heights for materials being worked on the site;
- keeping exposed surfaces moist at all times;
- rehabilitating/revegetating disturbed surfaces as soon as practicable; and
- ensuring that trucks are covered and do not track sediment onto public roads.

These measures would be documented in a construction dust management plan, which would be prepared as part of an Environmental Management Strategy for the project.



Air emissions from vehicles, plant and equipment would be fairly typical of a modern commercial building, the levels of which are not expected to result in any significant air quality impacts. Initiatives to encourage sustainable transport (see Section 6.8) and minimise energy use (see Section 3.10) associated with the project would help to reduce these air emissions.

6.5 Greenhouse Gases and Climate Change

By far the greatest source of greenhouse gas (GHG) emissions associated with the project would be indirect (or 'Scope 2') emissions associated with energy use at the facility. Other GHG emission sources would include emissions associated with employee and visitor commuting and delivery of goods and materials.

Energy Use Related Emissions

As detailed in Section 3.10, the project has been designed to be a landmark in sustainability, achieving high benchmarks for energy efficiency, water efficiency and indoor environmental quality.

In this regard, the University has committed to the following key benchmark for the new Business School Building:

"The new Business School Building will achieve a minimum 5-Star rating based on the Green Star benchmark rating system for Education."

Further, the University will investigate achieving a stretch target of 6-Star rating, which would be subject to detailed design.

The key initiatives that have been proposed, or are being investigated, to meet these key benchmarks are outlined in Section 3.10, and described in detail in the Green Building Design Report prepared by Atelier ten (see **Appendix G**).

The Green Building Design Report estimates that the expected total greenhouse gas emissions of an equivalent baseline building (ie. without the proposed energy efficiency measures) would be approximately 1,572,000 kilograms of CO₂ equivalent per year¹⁰. Based on the proposed energy efficiency measures, the report estimates that the project would generate annual emissions of between approximately 800,000 to 940,000 kilograms of CO₂ equivalent per year, representing a savings in greenhouse gas emissions of up to approximately 50%.

Transport Related Emissions

As detailed in Section 6.8, the project would generate only moderate traffic volumes, has good access to existing and planned public transport, and includes sustainable transport measures including bicycle and pedestrian facilities. Accordingly, project-related transport is not expected to generate significant GHG emissions.

6.6 Flora and Fauna

As discussed in Section 2.2.8, the site is predominantly cleared, however there are some mature street trees along the road frontages and property boundaries, along with a small (600 m²) pocket park on the corner of Codrington Street and Abercrombie Street.

The vegetation is not considered to provide significant habitat for native fauna, given that the vegetation is essentially isolated and fragmented site landscaping, with a lack of connectivity to areas of remnant bushland. However, at least some of the vegetation does provide habitat for birds and possums.

¹⁰ Calculated using the Green Star Education v1 Energy Calculator.



Two arborist assessments have been undertaken for the site, both of which cover a wider study area than the current project area. The second arborist assessment, undertaken by the Tree School, incorporates the findings of the earlier assessment and is attached in **Appendix M**.

Overall, the arborist assessment concludes that there are few trees within the precinct that are of high retention value. A summary of the vegetation within the site, and the impacts on the vegetation as a result of the project, is presented below.

Darlington Lane Vegetation

With regard to vegetation in the vicinity of Darlington Lane, the arborist assessment recommended:

- retaining the plantings of Poplars (*Populus sp.*) and Frangipanis (*Plumeria rubra*) along the northern side of the existing Economics and Business Building (H69). The project would not affect this landscaping, which has been incorporated into the landscape plan for the precinct;
- retaining trees in the backyards of some of the Darlington Road terraces (No.s 99-105, 116 and 117). These trees are outside the current project area and would not be affected by the project; and
- allowing adequate setbacks to significant Eucalypt trees in the grounds of Darlington Public School. These trees, located near the University Garage (H07), are well setback from the current project area and would not be affected by the project.

Rose Street Vegetation

With regard to vegetation around Rose Street, the arborist assessment recommended:

- retaining (preferably) or relocating the 5-10 year old Crow's Ash (*Flindersia australis*) on the northern side of the street;
- relocating (if practicable) the 6 recently planted Blueberry Ash (*Eleocarpus reticulatus*) on the southern side of the street; and
- retaining the significant Sydney Blue Gum (*Eucalyptus saligna*) on the southern side of the street near Codrington Street.

The Crow's Ash and Blueberry Ash are within the proposed building footprint, and would need to be removed for the project. The University has committed to salvaging the trees that are able to be transplanted, prior to construction works.

The arborist assessment considers that the Sydney Blue Gum has a very high retention value, as it is mature, healthy, vigorous, structurally sound and visually dominant. The assessment notes that retention of the tree would require maintaining a tree protection zone of 12 metres radius from the base of the tree in all directions, with no excavation occurring under or near the tree.

The University has considered in detail the potential to retain this tree in the design of the precinct redevelopment project. However, the location of the tree makes its retention impracticable, particularly as:

- the location and the required tree protection zone would effectively sterilise a considerable portion of the eastern area of the site from development, which would consequently mean that the density (including bulk and height) of the project in other areas of the site may need to increase to meet the project's floorspace requirements; and
- the tree is located in an area of the site which will be subject to intensive pedestrian traffic. Although currently healthy, the tree is aged and many limbed and does present some hazard though limb loss. As such, the tree would require intensive maintenance to mitigate ongoing risk.

It is also noted that the tree provides limited habitat value due to its isolated position with no linkage to vegetated areas.

On balance, it is considered that retention of the tree is not reasonable or practicable. As discussed in Section 6.1, a detailed Landscape Plan has been prepared for the project, which



would help to mitigate the loss of vegetation required for the project. The Landscape Plan provides a net increase in landscaping area on the site, and includes a replacement blue gum to be installed as a feature tree.

Boundary Lane Vegetation

There is one significant tree in the Boundary Lane area, namely a Lemon-scented Gum (*Corymbia citriodora*) on the southern side of the lane adjacent to the University Computing Centre building. This mature tree is in good condition and health, however the arborist assessment acknowledges that its proximity to buildings and services makes its retention impractical.

This tree is within the proposed building footprint, and would be removed for the project. As discussed above, the detailed Landscape Plan prepared for the project would help to mitigate the loss of this vegetation.

Abercrombie Street Vegetation

The only significant vegetation along Abercrombie Street is a row of 5 semi-mature Crow's Ash located between the Shepherd Centre and Mandelbaum House buildings. These trees are in good condition although the arborist assessment notes that they are probably planted too close together to reach their full potential. The assessment recommended retaining or relocating the trees.

These trees are within the proposed building footprint and would need to be removed for the project. To minimise impacts as far as practicable, the University has committed to salvaging the trees that are able to be transplanted, prior to construction works.

Codrington Street Vegetation

The small pocket park on the corner of Codrington Street and Abercrombie Street contains approximately 15 trees and a number of shrubs. The trees range in condition from poor to good, and include specimens of Broad-leaved Paperbark (*Melaleuca quinquenervia*), Black Tea-tree (*Melaleuca bracteata*), Water Gum (*Tristanopsis laurina*), Norfolk Island Hibiscus (*Lagunaria patersonii*), Bottlebrush (*Callistemon spp.*), Pencil Pine (*Cupressus sempervirens 'Stricta'*), Frangipani (*Plumeria rubra*) and a Cheese Tree (*Glochidion ferdinandi*).

The arborist assessment did not recommend retaining any of these trees, with only the Cheese Tree having some botanical value.

The assessment did however recommend retaining several Tulipwood (*Harpullia pendula*) that occur as street trees along Codrington Street.

Conclusion

In light of the findings and recommendations of the arborist assessment, it is considered that the removal of existing vegetation within the Abercrombie Precinct would not result in any significant impact to the flora and fauna values of the area. To mitigate the impacts as far as practicable, the University has committed to:

- salvaging the trees that are able to be transplanted, prior to construction works; and
- implementing the detailed Landscape Plan for the project, which would result in an increase in the net area of landscaping within the precinct (see Section 6.1).

6.7 Archaeology and Heritage

6.7.1 Aboriginal Heritage

The entirety of the site has been extensively disturbed as a result existing and historic land uses (see Section 6.7.2 below). As such, it is considered highly unlikely that any items of Aboriginal archaeological significance remain extant on the site.



In this regard, the non-indigenous archaeological assessment undertaken for the project notes that, as part of a range of archaeological projects undertaken at the University in 2006 and 2007, Jo McDonald Cultural Heritage Management undertook a series of Aboriginal test excavations in the vicinity of the project site. One series of testing was undertaken on the line of Blackwattle Creek, near Darlington Public School. The testing program did not identify any Aboriginal sites/objects.

Accordingly, the project is not expected to have any significant impact on Aboriginal heritage.

6.7.2 Historical Heritage

Two non-indigenous historical heritage assessments have been undertaken for the project, namely:

- a Non-indigenous Archaeological Assessment to investigate below-ground heritage potential, undertaken by Casey and Lowe; and
- a Statement of Heritage Impact to assess above-ground heritage impacts, undertaken by Graham Brooks and Associates.

These assessments are attached in **Appendix N** and **Appendix O**, respectively. The key findings and recommendations from the assessments are summarised below.

Non-Indigenous Archaeology

The Non-indigenous Archaeological Assessment included a detailed literature and site history review including review of previous archaeological assessments, consideration of the potential archaeological resource of the site, archaeological survey of the site, and an assessment of the significance of the identified heritage items. It is noted that the assessment considered a wider area of the Darlington Campus than the current project area. The summary below focuses on the archaeology within the project area.

The assessment benefits from a previous archaeological assessment and subsurface testing undertaken by Casey and Lowe between 1997 and 2001, during development of the existing Economics and Business Building (H69) site.

With regard to the history of the site, the assessment identifies a number of phases of land use in the study area, which can be summarised as:

1. *Pre 1788* – Natural landscape and Aboriginal occupation;
2. *1788-1819* – Vacant land in the ownership of the Orphan School. The site was earmarked for ‘school purposes’ from the Colony’s first years, and is part of the 200 acres Governor Phillip set aside to provide maintenance for a school teacher. The site was used for timber felling in the early days, followed by grazing;
3. *1819-1879* – Vacant land in the ownership of William Hutchinson and his Estate. Timber felling and grazing was likely to have continued through this time. The Institute Building (known then as the Deaf, Dumb and Blind Institute) to the north of Darlington Road, opened in 1872;
4. *1879-1893* – Initial subdivision and the sale of the Golden Grove Estate, for residential purposes, along with some industrial/workshop land use. Blackwattle Swamp Creek, which crossed the site on roughly an east-west alignment between Abercrombie Street and Boundary Lane, was likely diverted and encased during this time;
5. *1893-1968* – Occupation of the houses and industrial/workshop land use, and the development of the University of Sydney to the north;
6. *1968-1980s* – Purchase and demolition of many houses by the University; and
7. *1980s-2007* – Present use and occupation by the University.

The Phase 5 use of the land offers the most potential for archaeological remains. The study area is likely to contain the remains of single and two-storey houses and some shops built between the



1880s and 1920s that fronted Abercrombie and Rose Streets (see **Figures 6.6** and **6.8**). The archaeological remains of the demolished houses and shops will consist of house footings, outhouses/cesspits, yard surfaces, rubbish and other occupation-related deposits dating from the later nineteenth to the mid twentieth centuries.

Overall, the assessment considered that the project area has limited ability to contain the remains of up to 10 houses, a corner shop (on the corner of Abercrombie and Codrington Streets) and the line of Blackwattle Swamp Creek. The group of terraces along Darlington Road (outside the current project area) also have the potential to contain archaeological remains.

These remains have limited ability to contribute to research themes relating to late nineteenth-century urbanisation and consumerism. There are very little surviving archaeological remains within the suburb of Darlington. However, the remains are expected to have reduced research potential due to the limited nature of the occupation deposits of late nineteenth-century houses. These remains have a low to medium level of research potential and heritage significance at a Local level.

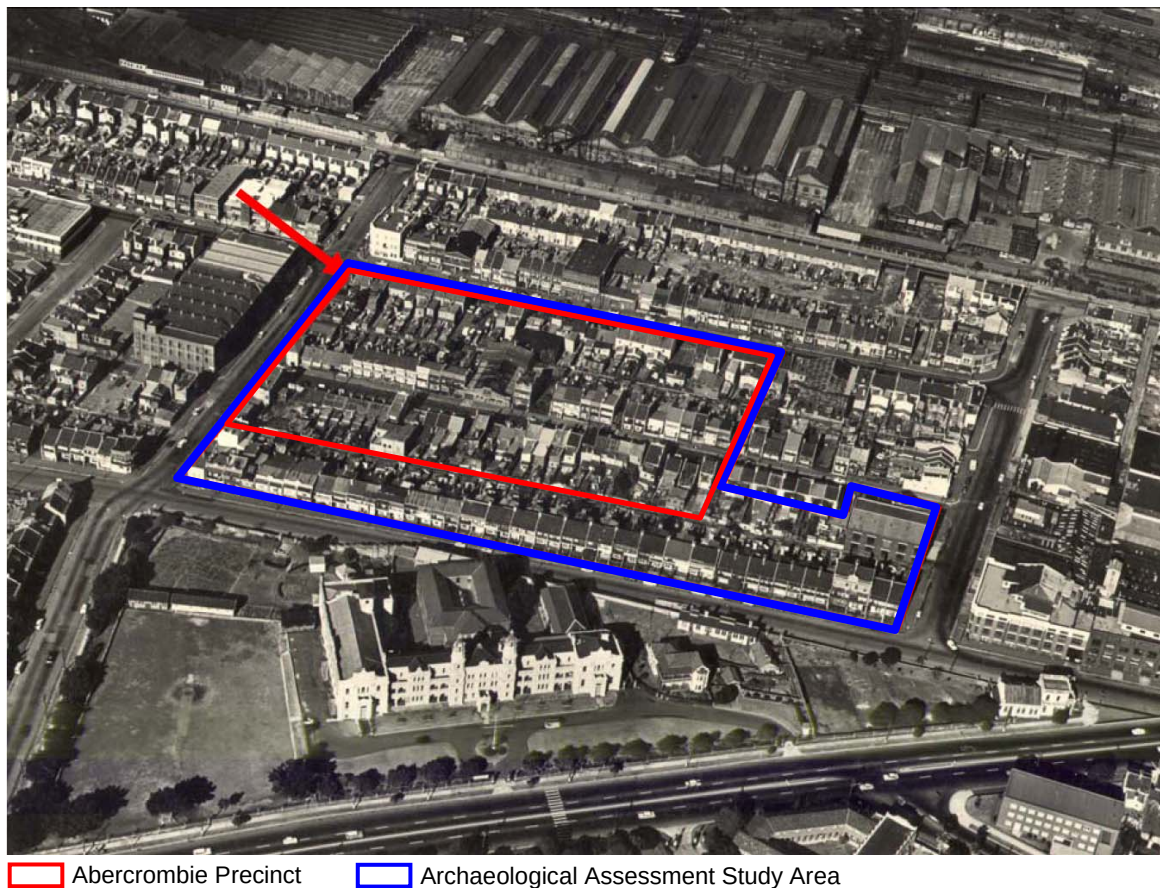


Figure 6.6: Historical aerial photograph looking south, prior to development for University purposes (Nb. The arrow is pointing to the corner of Abercrombie and Codrington Streets. The photo shows extensive residential development in the project area. The Institute Building can be seen in the foreground, and the North Eveleigh railway workshops can be seen in the distance) (Source: Casey and Lowe)

For archaeological assessment potential, the assessment divided the site into a number of smaller study areas, as indicated on **Figure 6.7**. As indicated on the figure, only Areas 1, 2, 3 and 6-8 occur within the current project area.

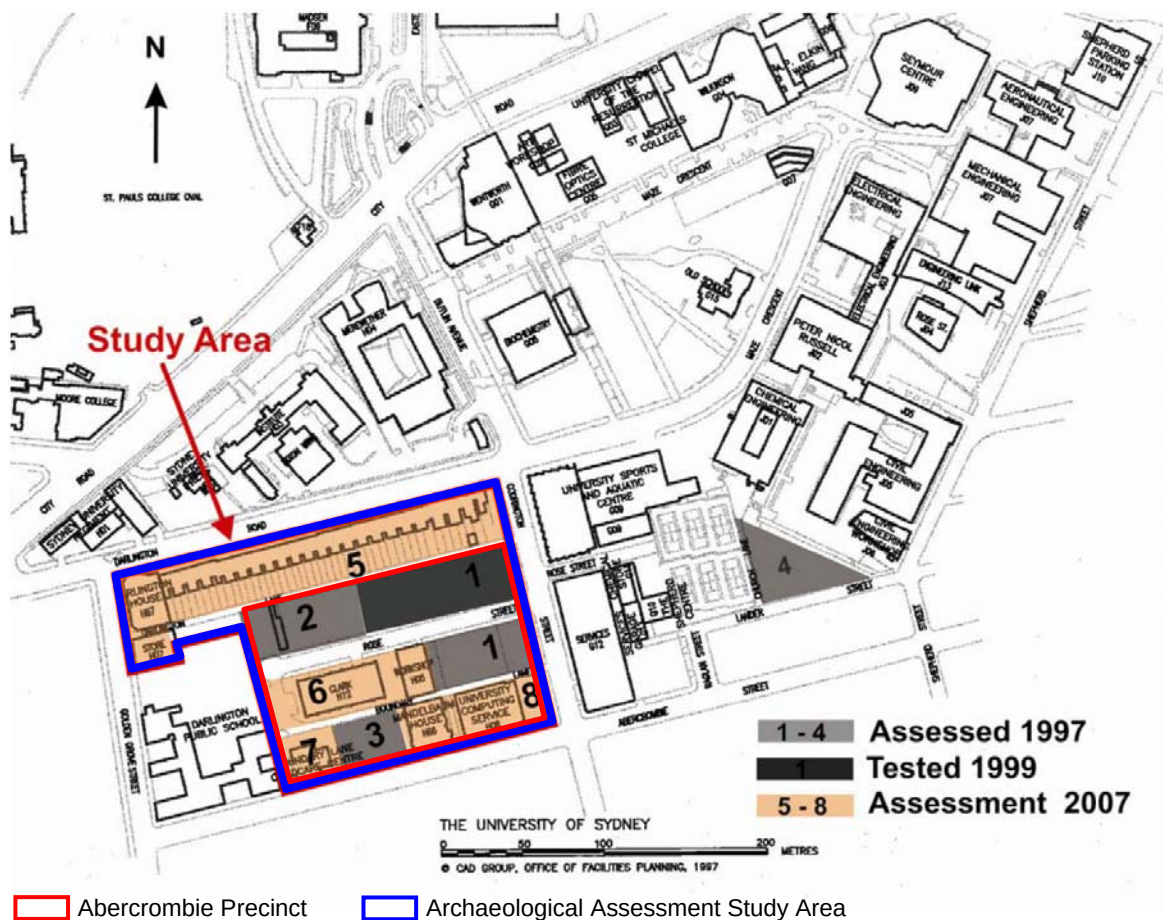


Figure 6.7: Archaeological Assessment Areas (Source: Casey and Lowe)

The findings and recommendations of the archaeological assessment with respect to each of the assessment areas is summarised below:

- **Area 1** – This area was subject to subsurface testing in 1999, which confirmed the low level of archaeological potential for the late nineteenth-century terraces in the study area. The area has since been developed with the Economics and Business Building (H69) and the Demountable Village, and the assessment does not recommend any further archaeological work in this area;
- **Area 2** – This area was also subject to subsurface testing in 1999, which confirmed the low level of archaeological potential in the area. The assessment does not recommend any further archaeological work in this area, other than applying for an administrative excavation permit exception under the *Heritage Act 1977*. It is noted that this excavation permit exception is not required for the project as it is being assessed under Part 3A of the EP&A Act¹¹;
- **Area 3** – This area was also subject to subsurface testing in 1999. The area has since been developed with the Shepherd Centre, and the assessment does not recommend any further archaeological work in this area;
- **Areas 4 and 5** – These areas are outside the current project area;
- **Areas 6 and 7** – These areas are considered to have a limited archaeological resource surviving and, based on the 1999 testing program of Areas 1-3, the assessment does not recommend any further archaeological work in these areas. The assessment does recommend an excavation permit exception be obtained for these areas, however as

¹¹ Heritage-related approvals have been integrated into the approval process under Part 3A, and as such separate approvals are not required (by virtue of Section 75U of the EP&A Act).



discussed above these permits are not required for project applications under Part 3A of the EP&A Act; and

- **Area 8** – This area comprises the small pocket park on the corner of Abercrombie Street and Codrington Street, and the assessment concluded that this area probably has a better surviving archaeological resource due to the lack of development of the area. The area should contain the remains of a corner shop (see **Figure 6.8**) and an adjacent house. The assessment therefore recommends that some limited archaeological testing be done in the area with the aim of examining the potential for remains associated with the corner shop and the adjacent house, particularly those relating to the commercial operations of the shop. If substantial remains are found at the shop site there may be a need for further detailed archaeological excavation. Another aspect of testing in this area is that it provides an opportunity to examine part of the line of the former Blackwattle Swamp Creek.



Figure 6.8: Historic photograph of Abercrombie Street

(Nb. The photograph shows the former shop on the corner of Abercrombie and Codrington Streets, as well as the former terraces along the northern side of Abercrombie Street) (Source: Casey and Lowe)

The University has committed to undertaking further archaeological testing of Area 8 in accordance with the recommendations of the archaeological assessment, prior to construction of the project.

With the implementation of this measure, it is considered that the project would not result in any significant impacts on the archaeological values of the site.

Built Heritage

As outlined in Section 2.2.9, the site is currently located within the Golden Grove heritage conservation area under the *South Sydney Local Environmental Plan (LEP) 1998* (see **Figure 2.4**). However, the site has been removed from the conservation area under the draft *Sydney LEP 2011*, as the site is not considered to contribute to the heritage values of the conservation area. The heritage map under the Draft LEP is reproduced on **Figure 6.9**.

There are no listed heritage items within the site, nor are any buildings within the site listed on the University's Section 170 Register¹².

However, some of the two-storey Victorian terraces directly to the north on Darlington Road are listed as heritage items under the 1998 LEP (identified as heritage items 347 to 354). Under the Draft 2011 LEP, these heritage items are expanded to include all of the terraces on Darlington Road adjacent the site (see **Figure 6.9**).

¹² The *Heritage Act 1977* requires that Government agencies keep a heritage and conservation register, commonly known as a Section 170 Register, listing heritage assets under its ownership, occupation or management.



Other listed heritage items in the surrounding area include the University's Institute Building and Grounds and Superintendent's Residence to the north of Darlington Road; and St Michael's Church Group to the southwest of the site. However, the heritage assessment notes that these have little relationship with the site due to their large physical and visual separation from the site.

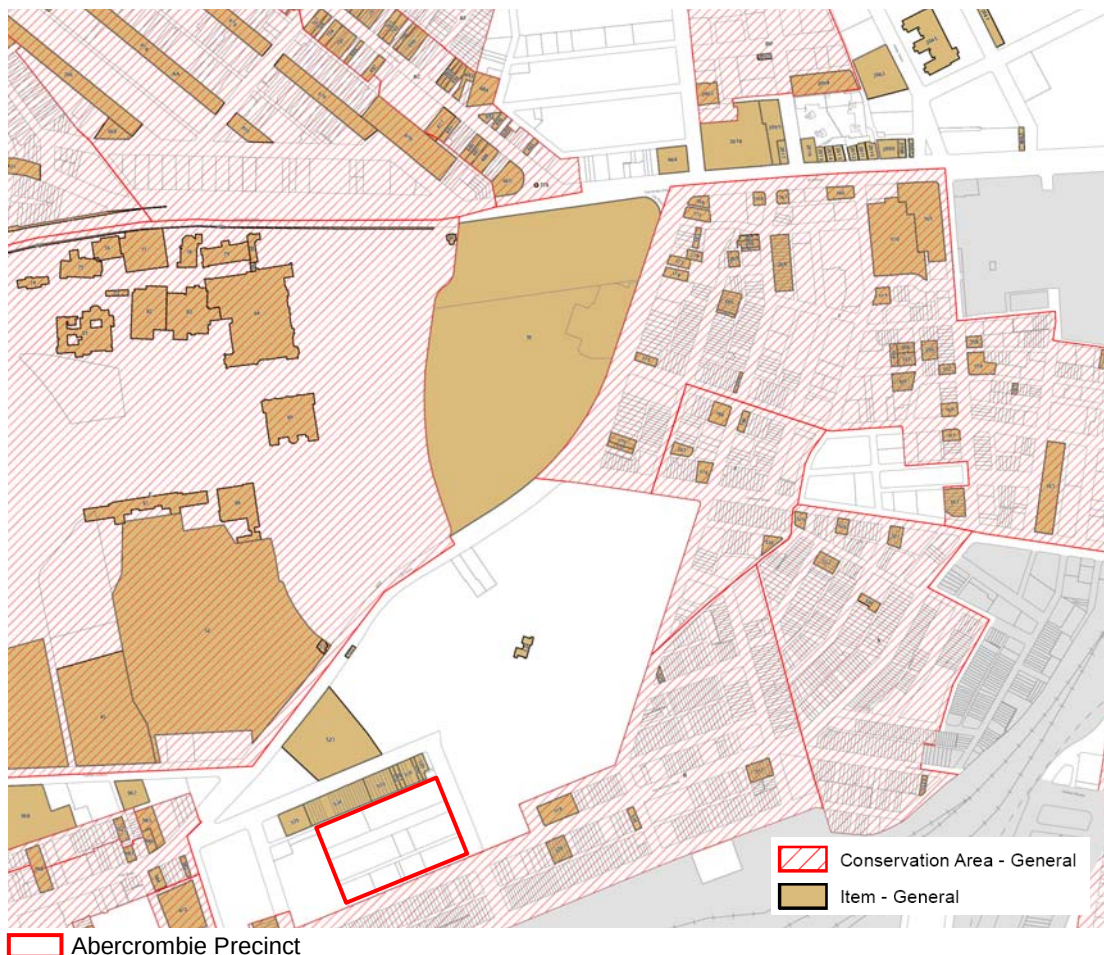


Figure 6.9: Heritage Map under Draft Sydney LEP 2011 (Source: Draft Sydney LEP 2011)

The heritage assessment also provides consideration to the following items that, although not heritage-listed, have some potential heritage value:

- the Joiner's Shop (H05), within the site (Nb. This building has structural issues including cracking and wall rotation and was approved for demolition by Council on 5 March 2010);
- the University Garage, or former IXL Jam Factory (H07), located to the north-west of the site;
- the row of terrace houses along Abercrombie Street, directly to the south of the site.

The Statement of Heritage Impact includes a comprehensive assessment of the impacts of the project on all heritage items on and in the vicinity of the site. A summary of the findings of the assessment is presented in the following table.

Table 6.7: Summary of Heritage Impacts

Heritage Item	Applicable Heritage List	Summary of Heritage Impact
Items Within the Abercrombie Precinct Site		
Golden Grove Conservation Area (CA25)	South Sydney LEP (though proposed to be removed under Draft Sydney LEP)	Overall, the statement of significance in the heritage assessment states that the site (as part of the existing conservation area) has some historical significance for being part of one of the earliest land grants in the area and the Golden Grove subdivision of 1879.



<i>Heritage Item</i>	<i>Applicable Heritage List</i>	<i>Summary of Heritage Impact</i>
	2010)	The assessment includes a grading of the significance of the various elements within the site, which can be summarised as: • <i>high significance</i> – Rose Street and Boundary Lane street alignments as well as any surviving vestiges of the Blackwattle Swamp Creek and early street and subdivision pattern such as fences, kerbs, gutters and footings; • <i>moderate significance</i> – Joiner's workshop (negated by its structural issues and demolition approval); and • <i>intrusive (or adverse) significance</i> – all other site elements. However, the assessment notes that the key aspects of the surrounding conservation area (such as the Victorian subdivision pattern and the historic building stock) have already been lost within the site. The heritage significance of the site is mainly embodied in the remnant street pattern, which is much compromised, and the Joiner's Workshop which is approved for demolition. Remnant vestiges of the Blackwattle Swamp Creek, the subdivision pattern and street alignments in the form of archaeological relics and above-ground elements make a limited contribution to the significance. The project has been designed to mitigate the impacts on the conservation area and the items of relative significance, with the key measures including: • respecting the existing street pattern. This has been achieved by retaining a portion of Rose Street as an 'internal street', and incorporating 'lane-like' spaces within the development; • respecting the subdivision pattern. This has been through building to the boundary street alignments and orthogonal planning; • responding to the character of the conservation area by subtly incorporating its architectural aspects within the new design; and • interpreting the Blackwattle Swamp Creek through the landscaped courtyard. With these measures, the heritage assessment concludes that the project would have no unacceptable adverse heritage impact on the established heritage significance of the site and Golden Grove Conservation Area.
Joiner's Workshop	None	The Joiner's Workshop is a single storey brick industrial building from the inter-war period. The heritage assessment states that is a good example of a Federation Industrial building within an early Victorian residential subdivision with some architectural features of note. However, its significance has been much compromised by the loss of the historic building stock in the area. As noted above the building is in poor structural condition and was approved for demolition by Council on 5 March 2010. The development consent (D/2009/1961) is subject to a condition requiring archival recording to be carried out prior to demolition of the building. Demolition of the Joiner's Workshop would be carried out as part of the demolition phase of the project, and has therefore been included within the scope of the current project. As noted below, the University has committed to undertaking archival recording of the site prior to demolition, which would include the workshop building.



Heritage Item	Applicable Heritage List	Summary of Heritage Impact
Other Items in the Vicinity of the Abercrombie Precinct Site		
Darlington Road Terraces	South Sydney LEP	The 2 storey (some with additional attic levels) Victorian terraces on Darlington Road and Abercrombie Street are largely intact and contribute to the heritage values of the Golden Grove conservation area. The heritage assessment notes that the rear of the Darlington Road terraces facing the proposed new development is typical of such terraces and retains much of its original character, although there are some later additions and alterations. The terraces are only exposed to half of the proposed development, the 5-level Economics and Business Building (H69) occupying the other half, thereby limiting any potential impact. The Abercrombie Street terraces, although retaining no relationship with the Darlington Road terraces, provide a strong context for the proposed development due to their close proximity and well defined character. The street width provides moderate physical and visual buffer. The project has been designed to mitigate the impacts on the 2 rows of terraces, with the key measures including: • restricting heights. The building height has been generally restricted to 3 levels along Darlington Lane and Abercrombie Street, with the higher 7-level portion away from the terraces, confined to the middle of the site; • respecting sight lines and views. The building has been designed so as not to be visible by a person standing on Darlington Road. The building would not impact any significant views from either row of terraces; • incorporating compatible architectural elements. These include: - o an uninterrupted built form along street elevations insinuating the contiguous character of the terraces, with street elevations that are setback on the ground level creating a 'balcony-like' profile, similar to the terraces; - o a varied roof profile that is not flat, instead incorporating a play of building elements alluding to the play of elements such as pitched roofs/chimneys along the roofline of the terraces; - o adopting an architectural 'rhythm', similar to the terraces, created by repetition of vertical elements; - o maintaining a visual link between the Darlington Road terraces and Abercrombie terraces providing glimpses to the terraces from within. With these measures, the heritage assessment concludes that the project would have no unacceptable adverse heritage impact on the established heritage significance of the terraces. The heritage assessment recommends that consideration be given to the preparation of a masterplan for the Darlington Road terraces (under its control). The University will explore such a plan, outside the scope of this project, and in conjunction with University-wide masterplanning.
Abercrombie Street Terraces	None (though within the Golden Grove Conservation Area)	
University Garage Building		The University Garage is a 2 storey brick industrial building built between 1911 and 1920 and acquired by the University for use as a garage in late twentieth century. The building is relatively intact and in fair condition. The heritage assessment identifies the building as contributing to the values of the Golden Grove Conservation Area. However, the



<i>Heritage Item</i>	<i>Applicable Heritage List</i>	<i>Summary of Heritage Impact</i>
		assessment notes that the building does not have any particular relationship to the site or to the future precinct, and its heritage values would not be affected by the project.
		The assessment notes that the opportunity exists for adaptive re-use of the building. The University will explore such options outside the scope of the current project.
Institute Building	South Sydney LEP; University's Section 170 Register	The heritage assessment notes that the University's Institute Building, to the north of Darlington Lane, has little relationship with the site due to the large physical and visual separation, and its heritage values would not be affected by the project.
St Michael's Church	South Sydney LEP	The St Michael's Church group buildings are located to the south-west of the site. The heritage assessment notes that the Church has little relationship with the site due to the large physical and visual separation, and its heritage values would not be affected by the project.

Based on the findings of the Statement of Heritage Impact, it is considered that the Abercrombie Precinct Redevelopment Project has been designed in a manner that is consistent with, and would not have any significant impact on, the built heritage values of the area.

To mitigate the impacts on items directly affected by the project, and consistent with the recommendations of the heritage assessment, the University has committed to:

- undertaking archival recording of the site, prior to demolition; and
- preparing an interpretation plan for the site, prior to construction.

6.8 Traffic and Parking

A Traffic and Transport Assessment has been undertaken for the project by Arup, and is attached as **Appendix P**. A summary of the assessment is provided below.

6.8.1 Access and Road Network

The Abercrombie Precinct site is located on the corner of Abercrombie Street and Codrington Street, both of which are 2-lane, 2-way local roads with on-street parking available.

Abercrombie Street provides access to City Road via Golden Grove Street to the west, and to Redfern Station and Regent Street to the east. Redfern Station is approximately 600 metres walking distance from the site.

Codrington Street provides access to City Road to the north via Butlin Avenue, and to Abercrombie Street to the south.

Darlington Lane forms the northern boundary of the site, and acts as a minor thoroughfare between Golden Grove Street and Codrington Street.

Vehicular access to the project is proposed to be provided via a single driveway off Abercrombie Street, in the south-west corner of the site (see **Figure 3.1**). This driveway would provide access to the basement car park and loading docks.

A number of alternative access locations were considered – and ultimately discounted – in the traffic assessment, including:

- driveway off Codrington Street – not preferred as Codrington Street is a major pedestrian spine, and a key structural pedestrian axis for the University (see Section 4.1.5);
- driveway off Darlington Lane – not preferred due to its very narrow width (ie. 4 metres), level issues, and potential conflicts with Darlington Public School;
- driveway off Abercrombie Street, mid frontage – not preferred due to adverse affects on site planning and usability; and



- more than 1 driveway – not deemed to be necessary.

The proposed access in the south-west corner is the most efficient location within the site and basement layout, and is located safely between the school accesses and the pedestrian entry to the site. The traffic assessment notes that the access driveway has adequate sight lines. The existing driveway to the Mandelbaum Centre car park and many other vehicular access points within the site would be removed (albeit on a staged basis, as indicated on **Figures 3.3 and 3.4**).

The two local roads within the site – Rose Street and Boundary Lane – are in the process of being closed and are proposed to be incorporated into the project site. These roads provide limited thoroughfare within and around the existing Abercrombie Precinct site, and do not provide through access.

6.8.2 Traffic Generation and Road Network Performance

Modal Split

The traffic assessment is based on the modal split shown in the following table, which has been adopted from Australian Bureau of Statistics (ABS) and University surveys.

Table 6.8: Modal Split

Mode	Split (%)	
	Staff	Students
Train	24	59
Bus	18	
Car	40	4.9
Bicycle	4	15
Walk	10	20
Other	4	-
Total	100	~100

Traffic Generation

Based on the above modal split, the predicted building population (ie. 500 staff and 7,000 students), and the expected upper limit trips per day (ie. 2.4 trips a day), the traffic assessment estimates that the project would generate up to 1,303 passenger vehicle trips a day, or 176 trips in the peak hours.

The assessment notes that the project is expected to generate negligible additional heavy vehicle trips, estimated to be approximately 1 to 2 medium rigid vehicles a day.

Background Traffic

Based on tube counts undertaken on Abercrombie Street between Golden Grove Street and Codrington Street in October 2010, the traffic assessment estimates that background traffic on Abercrombie Street is an average of 408 trips eastbound, and 135 trips westbound, in the morning peak. It is noted that these trips include traffic generated by the existing land uses on the Abercrombie Precinct site.

The assessment also includes consideration of potential traffic associated with development of the North Eveleigh concept plan, as approved (see Section 4.1.6). The assessment notes that the concept plan is predicted to generate approximately 2,135 vehicle trips over the morning peak 2 hours.

Intersection Performance

Based on the background traffic (including contribution from development of the North Eveleigh concept plan), and the predicted traffic generated by the project, the traffic assessment modelled



the impact of the project on potentially affected intersections¹³. The results are presented in the following table.

Table 6.9: Predicted Intersection Performance

Intersection	Control Type	Predicted Performance (with project)	
		Level of Service	Av. Delay (sec)
Abercrombie Street / Codrington Street	Roundabout	A	9.0
Abercrombie Street / Golden Grove Street	Roundabout	A	3.2
Butlin Avenue / City Road	Signal	B	18.6

Note: Level of Service is fully defined in the traffic assessment, however a summary of the ratings is:

A – Good operation

B – Good with acceptable delays

C – Satisfactory

D – Near capacity

E – At capacity

F – Extra capacity required

The modelling indicates that the relevant intersections would operate at a good level of service, with acceptable delays.

6.8.3 Parking

The parking strategy for the Abercrombie Precinct project has been designed in accordance with the University's draft *Campus 2020 Masterplan*, which encourages provision of basement car parking towards the periphery of the campus. The objective of this strategy is to allow for the removal of existing at grade parking scattered throughout the University and reduce the extent of vehicle intrusions into the Campus enabling the creation of more pedestrian orientated links and reducing pedestrian / vehicle conflicts.

In this regard, the project includes the provision of approximately 185 car parking spaces within a basement car park below the site. These spaces would be restricted to allocated staff and student (accommodation) parking.

It is noted that approximately 72 existing on-site parking spaces would be removed by the project. However, the proposed parking supply would result in a net increase in parking of some 113 spaces in the locality.

The traffic assessment notes that application of the car parking rates in the City of Sydney Council's *Development Control Plan (DCP) No. 11* would require some 607 car parking spaces for the project.

The provision of this amount of car parking is not considered to be consistent with the objectives of the DCP (which seeks to encourage a reduction in vehicular travel in South Sydney) or the transport objectives of the University's masterplan. Further, the traffic assessment notes that under the Draft Sydney LEP 2011, Council car parking rates have been reduced to encourage use of sustainable transport modes, particularly in locations well served by public transport (such as the subject site). Application of the car parking rates under the Draft LEP translates to a maximum of 203 spaces being provided for the project.

The provision of 185 basement car parking spaces is considered to be an appropriate balance between satisfying staff and student parking demands, encouraging alternate transport modes and maintaining consistency with the masterplan objectives, particularly given the site's good access to public transport and sustainable transport modes, as outlined below.

¹³ The modelling results are based on the modelling undertaken for the North Eveleigh concept plan, which included contribution from the envisaged Abercrombie Precinct Redevelopment Project. See traffic assessment for further detail.



Aside from the parking provided for the project, the proposed ancillary works to Darlington Public School would result in removal of 4 on-street parking spaces on Golden Grove Street, to allow emergency access to the school (see Section 3.9.8). However, the proposal includes provision of 4 compensatory spaces on University land with access off Darlington Lane. This would ensure no net loss of parking occurs as a result of the project.

6.8.4 Loading and Service Vehicle Arrangements

The project includes provision of adequate loading facilities within the basement of the new Business School Building.

The loading dock and associated manoeuvring area would be separated from the car parking spaces, however service vehicles and cars accessing the car park would utilise the same access driveway.

The sizes of delivery vehicles would vary from small vans to medium rigid vehicles. No articulated vehicle access to the loading area is envisaged. It is anticipated that only 1 to 2 medium rigid vehicles per day would access the proposed loading dock.

Swept path analysis in the traffic assessment demonstrates that a medium rigid vehicle is able to access and egress the site in a forward direction, and in a safe and acceptable manner.

6.8.5 Sustainable Transport

The Abercrombie Precinct site enjoys good access to existing and planned public transport and established cycle and pedestrian networks.

In this regard, the University is within walking distance of Redfern and MacDonalddown railway stations (approximately 700 metres each), and frequent bus services run along the University's frontages to City Road. Bus stops on City Road are located approximately 250 metres north of the site, near the intersection of City Road and Butlin Avenue.

As shown on **Figure 6.10**, the site has good access to the University's broad pedestrian and cycle structure, and the project has been designed in a manner that respects and encourages this structure, including the key provision of ground level east-west and north-south pedestrian links through the Business School Building.

At the wider level, Codrington Street and Butlin Avenue in particular form a key north-south pedestrian spine linking the University's Darlington and Camperdown campuses. Both Codrington Street and Abercrombie Street are identified as regional bicycle routes on Council's *Cycle Strategy and Action Plan 2007-2017*.

The project also includes the provision of approximately 313 bicycle parking spaces, which is generally consistent with Council's DCP 11 requirements (ie. 390 spaces), as well as change facilities in the basement near these parking spaces.

The traffic assessment indicates that the existing pedestrian and bicycle facilities in the surrounding area are adequate to facilitate the pedestrian and bicycle traffic associated with the project. It is noted that the University is currently in discussions with Council regarding improving pedestrian access between Redfern Station and the University campuses.

6.8.6 Disabled Access

An access strategy has been undertaken for the project by Access Associates Sydney, and is attached as **Appendix Q**. The strategy addresses access provisions for people with physical and sensory disabilities in accordance with relevant Australian Standards (AS1428, AS2890.6;



AS1735.12), the Building Code of Australia and the *Disability Discrimination Act 1992*'s obligations of equitable and dignified access.

The project has been designed in accordance with the recommendations of the access strategy, which provide for access for all persons via continuous accessible paths of travel:

- from points of arrival including the footpaths, bus stops, accessible car parking spaces (3 mobility impaired spaces to be provided) and links to the main campus facilities;
- to and through the principal entrance and to not less than 50% of all entrances;
- to and throughout all teaching and academic areas within the buildings;
- to and throughout student accommodation areas; and
- to all accessible toilet and shower facilities.

6.8.7 Construction Traffic

Access to the proposed construction site would be via the existing road network described above.

To appropriately manage potential construction traffic-related impacts, the University has committed to preparing a detailed Construction Traffic Management Plan for the project. The plan would detail traffic generation, site access arrangements and implications on the operation and safety of the surrounding road network.

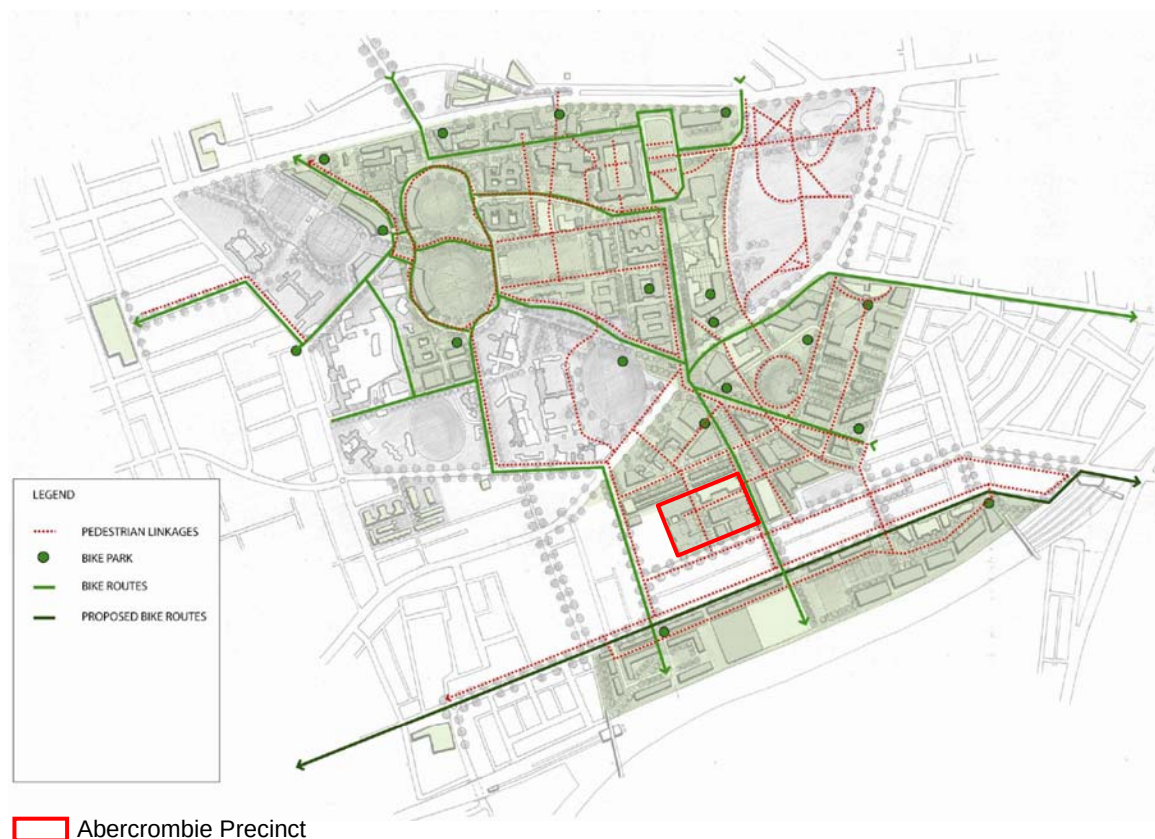


Figure 6.10: University's Pedestrian and Bicycle Network (Source: Draft Campus 2020 Masterplan)

6.9 Wastes and Hazards

6.9.1 Wastes

Construction and Demolition Waste

The project would generate a considerable amount of construction and demolition waste, associated with:



- demolition of the existing buildings;
- excavation (and export) of fill from the project's basement levels; and
- building construction.

Most of the buildings to be demolished are of brick and/or concrete/masonry construction, including the Joiner's Shop (H05), Clark Building (H12), Boundary Lane Child Care Centre (H09), Shepherd Centre (H68), Mandelbaum House (H67) and the University Computing Centre (H08). Given the age of some of these buildings, there is some potential that the buildings contain hazardous materials such as asbestos. To ensure that the risks associated with such materials is appropriately managed, the University has committed to undertaking a hazardous materials survey following de-population and prior to demolition of the structures.

Any hazardous substances identified would be managed and disposed in accordance with relevant legislative requirements and guidelines, including the *Code of Practice for the Safe Removal of Asbestos [NOHSC:2002 (2005)]* and the *Protection of the Environment Operations (Waste) Regulation 2005*.

These measures would be outlined in a Waste Management Plan for the construction and demolition phase, as outlined below.

Other buildings to be demolished – including the Demountable Village and the Facilities Maintenance Shed – are constructed of metal and are able to be salvaged and reused off-site.

The excavation phase would generate about 25,000m³ of fill that would need to be exported from the site. As detailed in Section 6.2, some of the on-site material has the potential to contain low-level contamination. As such, following demolition (and prior to construction) the University has committed to undertaking a detailed Phase 2 site contamination assessment of the site, in accordance with DECCW guidelines. If any contamination is confirmed, the University would undertake the excavation, storage and disposal of the material in accordance with a Remedial Action Plan, prepared in accordance with DECCW guidelines. This would include classification of the material in accordance with DECCW's *Waste Classification Guidelines (2008)*.

Construction of the new Business School Building would also generate a considerable amount of waste. However, with appropriate planning and management, construction waste is able to be minimised through application of best practice waste avoidance, re-use and recycling measures.

In this regard, the University has committed to preparing a Waste Management Plan for the construction and demolition phase of the project, prior to construction. The plan would be prepared as part of a wider Environmental Management Strategy for the project.

Operational Waste

Waste generated during the operational phase of the project would be fairly typical of an educational/commercial facility with student accommodation, and include:

- general waste – which would be disposed as general putrescible waste;
- paper and cardboard – which would be separated for recycling;
- glass, recyclable plastics and recyclable metal – which would be separated for recycling;
- sewerage waste – which would be disposed to sewer;
- feminine hygiene waste – which would be managed by contractor for off-site disposal; and
- other wastes (eg. printer toner cartridges) – which would be separated for re-use or recycling where possible.

The project is not expected to generate any significant quantities of hazardous waste. The project includes provision of a centralised waste storage area in the basement, which would store all collected solid waste prior to off-site disposal.



To minimise and manage operational waste, the University has committed to preparing a Waste Management Plan for the operational phase of the project, prior to operation. The plan would be prepared as part of a wider Environmental Management Strategy for the project.

6.9.2 Dangerous Goods and Hazardous Substances

As outlined in Section 4.2.3, SEPP 33 and the Department of Planning's *Applying SEPP 33* guidelines are used to ascertain whether a proposal is a 'potentially hazardous industry'.

The project is not expected to store significant quantities of hazardous materials or dangerous goods. Some diesel would likely be stored for back-up generators, however SEPP 33 does not recognise diesel as a dangerous good for the purposes of SEPP 33 analysis unless it is stored with other classes of dangerous goods.

A range of other dangerous goods (eg. cleaners, solvents, paints) may be stored within the proposed buildings, however these would be stored in domestic/commercial sized containers in small quantities.

Given the above, it is considered that the project does not constitute a potentially hazardous industry under SEPP 33.

Notwithstanding, all dangerous goods and hazardous substances storage and handling on site would be undertaken in accordance with the Dangerous Goods Code and AS 1940-2004: *The storage and handling of flammable and combustible liquids*.

7 PROJECT JUSTIFICATION AND CONCLUSION

7.1 Statement of Commitments Summary

The University has prepared a Statement of Commitments for the project, which is attached as **Appendix A**.

The Statement of Commitments outlines a range of measures that the University would implement during the detailed design, construction and operational phases of the project, to ensure that the project is undertaken in an orderly and environmentally responsible manner.

A summary of the key commitments is presented in the following table.

Table 7.1: *Statement of Commitments Summary*

Aspect	Key Commitment
Subdivision	The University will prepare a final subdivision plan to the satisfaction of the Department of Planning prior to obtaining a subdivision certificate for the site.
Soil and Water	<i>Erosion and Sediment Control</i> The University will undertake the project in accordance with the project Soil and Water Management Plan.
	<i>Stormwater Management</i> The University will prepare and implement a Stormwater Management Plan for the project prior to construction.
	<i>Site Contamination / Acid Sulfate Soils</i> The University will prepare and implement a Phase 2 Site Contamination Assessment (including assessment for acid sulfate soils) for the project prior to construction.
	If necessary, the University will prepare a Remedial Action Plan and/or Acid Sulfate Soil Management Plan to manage site contamination/acid sulfate soils, prior to building



Aspect	Key Commitment
	construction.
Noise	The University will only carry out audible construction works within the day-time period. The University will ensure that the operation of the project complies with the applicable project specific noise level criteria. The University will undertake noise compliance monitoring upon commissioning.
Air Quality and Odour	The University will implement all reasonable and feasible measures to control dust emissions, and ensure that the project does not generate offensive odour.
Energy and Greenhouse Gas	The University will carry out the project generally in accordance with the energy savings measures in the green building design report for the project, including achieving a 5 Star rating for the Business School Building based on the Green Star rating system for Education.
Flora and Fauna	The University will salvage any transplantable vegetation.
Heritage	The University will undertake additional archaeological investigation within 'Area 8', prior to construction. The University will undertake archival recording, and prepare an interpretation plan for the site.
Traffic and Parking	The University will construct internal roads and car parking in accordance with applicable standards, and provide suitable bicycle parking facilities for the project.
Visual Amenity	The University will maintain landscaping on site to a high quality, and ensure that all lighting is installed and maintained in a manner that does not cause nuisance.
Environmental Management	The University will prepare and implement an Environmental Management Strategy for the project, including (amongst other things) a: • construction noise and vibration plan; • construction traffic management plan; • waste management plan.

7.2 Consideration of Alternatives

Alternatives to carrying out the project on the site in the proposed manner include:

- developing the site to a lesser or higher scale;
- developing the site with a different layout and/or design; and
- not undertaking the project at all.

In terms of project scale, it is noted that:

- the project design has evolved following a comprehensive analysis of site opportunities and constraints (as described in Section 6.1);
- the project has been designed so that the key frontages are compatible with the scale and character of existing buildings on site and in the surrounding area, particularly in relation to the sensitive Abercrombie Street and Darlington Lane frontages;
- the higher office component of the Business School Building has been well set back from the key frontages (ie. approximately 45 metres from Abercrombie Street and 41 metres from Darlington Lane);
- heritage assessment indicates that the project would not adversely impact the heritage values of the area, including the Darlington Road and Abercrombie Street terraces;
- the project would not significantly increase the total floor space ratio on the Darlington Campus (ie. from about 1.1:1 to 1.3:1), and the total FSR of the University with the project is not considered excessive for the locality;
- the project scale is consistent with that envisaged in the University's draft Campus 2020 Masterplan; and
- environmental assessment indicates that the project is able to be undertaken in a manner that would not adversely affect the environment or surrounding landusers.



Accordingly, it is considered that the scale of the project provides a reasonable balance between maximising the development, education and employment opportunities of the site whilst ensuring that the amenity of the surrounding area is not adversely affected.

In terms of alternative layouts and/or designs, it is noted that:

- the project has been designed to a high quality by internationally-respected architects Woods Bagot in a manner that befits the Business School's anticipated status as a world class centre for business studies;
- a number of alternatives were considered during the evolution of the design, as outlined in Section 6.1;
- the project is based on a functional design framework that promotes collaboration between educators and students, both on each floor and between building levels;
- the design of the project has paid particular attention to its physical and heritage setting, ensuring that the building does adversely affect the heritage values of the area, particularly the Victorian terraces of Abercrombie Street and Darlington Road; and
- the layout and design of the project maximises the use of passive energy savings measures, including a northern building orientation, shading and the use of large courtyards/voids to maximise natural light, ventilation and heat control.

Accordingly, it is considered that the proposed building layout and design provides a good balance between the utilitarian needs of the project, the setting and constraints of the site, and the desire for a visually attractive building that would promote world class education, research and training.

Not undertaking the project at all on the site is not considered to be a reasonable alternative, as:

- the project is consistent with, and indeed directly promotes, the strategic planning aims and objectives for the area as identified under the Metropolitan Plan (and former Metro Strategy) and the South Sydney Subregional Strategy;
- the project is not predicted to have any significant impacts on the environment or surrounding land users; and
- not undertaking the project would negate the project's significant socio-economic benefits, as outlined below.

7.3 Project Need and Justification

As discussed in Section 1.2 the University of Sydney's Faculty of Economics and Business – now known as the University of Sydney Business School – was founded in 1920, and has grown to become one of the most prestigious international business schools in the region. In December 2006, it was elected as the only Australian associate member school of the Community of European Management Schools & International Companies (CEMS). It currently comprises 11 academic business disciplines and hosts 4 institutes, centres and schools, 13 multidisciplinary research groups and one Foundation (the Accounting Foundation).

The Business School's mission is:

"to build and sustain the leading learning community in business, economics and government in Australia and its region."

At present, the Faculty's facilities are not ideal and do not support the University's aspiration or the Business School's mission. The Faculty teaches in more than 20 buildings of varying standards scattered across the campus. Travel between these locations is time-consuming and inconvenient for students and staff, and the facilities do not promote modern teaching requirements, particularly collaborative learning.



The Abercrombie Precinct Redevelopment Project presents a unique opportunity to consolidate the faculty into one, high quality, purpose-built campus, that befits the Business School's international status. The project also provides the opportunity to develop the school based on the University's key values of 'engaged enquiry' and 'mutual accountability' – through development of a highly-collaborative learning environment.

The redevelopment project is aligned with, and directly supports, the University's strategic plans and the Business School's key objectives, which include:

- to develop a world-class Business School to replace the dilapidated accommodation currently in use;
- to provide a recognisable image for the Faculty and be a significant and durable work of architecture appropriate to the University of Sydney;
- to provide a high quality experience for staff and students and be highly functional;
- to facilitate the use and further development of collaborative learning techniques; and
- to provide a sustainable development.

The proposed Student Accommodation Building would replace student accommodation to be removed by the project (ie. Mandlebaum House), and address the current acute shortage of affordable housing for students in the area.

The site is considered to be ideally suited to the project. It provides the opportunity to redevelop and revitalise a hitherto relatively underdeveloped and somewhat degraded area of the Darlington Campus, and provide a new southern gateway, or face, to the University. The new Business School Building would make use of existing infrastructure and facilities, particularly through integrating with the relatively modern existing Economics and Business Building (H69) built in 2001.

Further, as detailed in Section 4.1 the site is recognised in NSW Government's strategic plans as part of the 'Sydney Education and Health Precinct', which aims to promote research and training developments to reinforce the strengths of Global Sydney.

Environmental assessment indicates that the project is able to be conducted in a manner that would not result in any significant environmental impacts, or adversely affect the amenity of the surrounding area.

The project would generate significant socio-economic benefits for Sydney and NSW, through the direct capital investment of \$267 million, and supporting the Business School's staff and student population, which equates to some 7,500 people.

On balance, it is considered that the project represents the orderly and reasonable development of the land, and is therefore in the public interest.