

The University of Sydney
Chau Chak Wing Museum
Transport and Accessibility Impact
Assessment

Issue | 16 May 2017

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 248177

Arup
Arup Pty Ltd ABN 18 000 966 165



Arup
Level 10 201 Kent Street
PO Box 76 Millers Point
Sydney 2000
Australia
www.arup.com

ARUP

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1 Summary

Objectives

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

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

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

2 Objectives of Assessment

This report is written primarily for assisting and providing information about the traffic and transport implications of the project. The scope of the study addresses the required SEARs requirements and includes:

- An overview of the transport and traffic planning context
- Existing travel patterns
- Existing transport infrastructure serving the site
- Future parking strategies
- An assessment of the traffic impacts the project would have on the wider road network and public transport
- An outline of a construction traffic management plan

3 Site and Project Descriptions

3.1 The Site and Surrounds

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

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

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

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

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



Figure 1: Areal View of Site

3.2 The Project

The Project Proposal involves the co-location and consolidation of the Macleay Museum, Nicholson Museum and University Art Gallery as well as collections from a number of currently fragmented locations into a new single museum building to be known as the Chau Chak Wing Museum. Currently, the University's museums, galleries and collections are significantly fragmented and located in numerous buildings.

At the heart of the project is the University vision to:

- Upgrade the quality of Museum and Gallery facilities to promote object based learning and research.
- Create teaching and research space that can be shared across all faculties.
- Consolidate collections to promote education, research and conservation.
- Recognise and celebrate Aboriginal significance.
- Develop a healthy and sustainable Campus environment.
- Ensure equitable access to and through Campus.
- Respect the heritage "Sandstone University" significance.

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

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

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

4 Site Analysis

4.1 Current Travel Patterns

4.1.1 Staff

Journey to Work census data has been used to estimate the current travel behaviour of staff. Census data for the travel zone immediately surrounding the university indicates that 58% of staff travel to the site via non-car modes. However, the use of private vehicles is the predominant mode of travel, accounting for 42% of all journey to work trips.

Trains and buses make up the most common form of public transport access mode. The current travel patterns of staff working in the university are illustrated in Figure 2

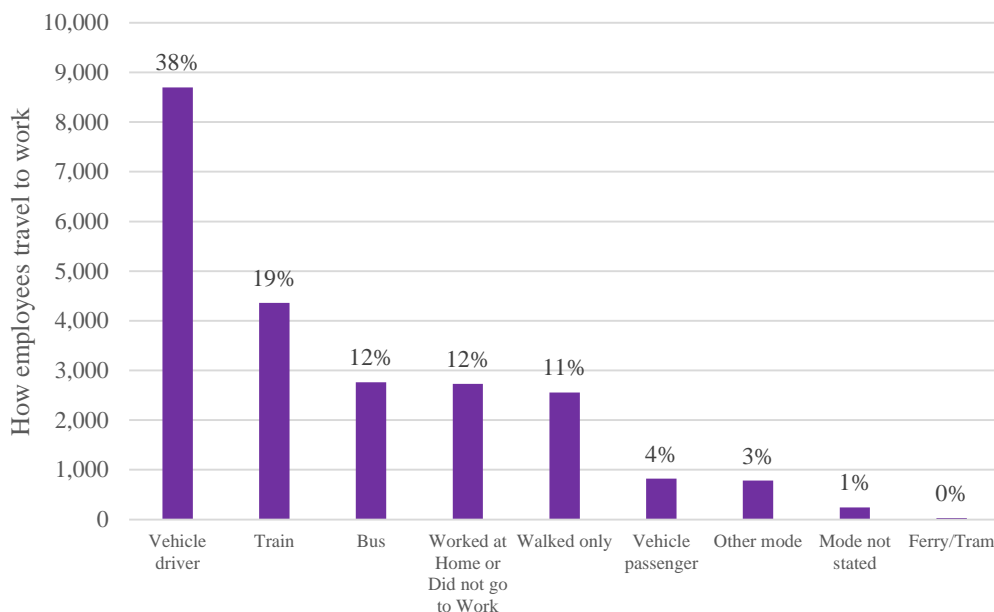


Figure 2 Current transport mode share of Gallery staff

Source: Bureau Transport Statistics JTW explorer 2011¹

¹ <http://visual.bts.nsw.gov.au/jtwbasic/#236,239,243,242,238,231,232,207,233,158,240,246>

4.1.2 Visitors

Arup has collected travel data in 2015 of an existing gallery with good public transport access to gain an understanding of how visitors travelled to the museum. The survey results are presented in Figure 3 and indicate:

- Over half of all visitors to the site currently take public transport, with train being the primary mode of travel.
- 24% of visitors either drove or were dropped off to the Gallery, reflecting the good level of public transport accessibility and constrained parking environment around the site.

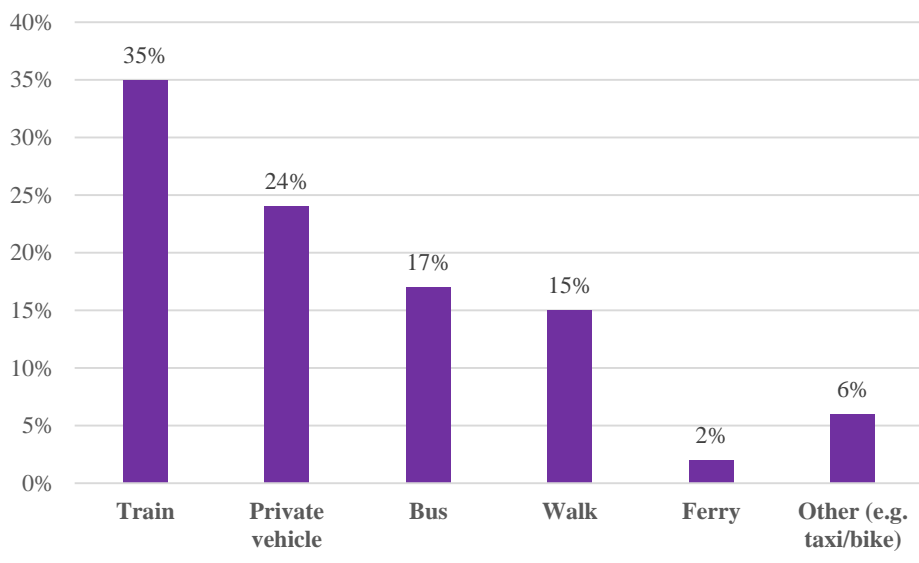


Figure 3 Typical transport mode share of gallery visitors

(Note: the mode of transport is the primary mode if there were multiple modes taken)

4.2 Current Staff Levels

The Project Proposal involves the co-location and consolidation of the Macleay Museum, Nicholson Museum and University Art Gallery into a new single museum building to be known as the Chau Chak Wing Museum (CCWM).

Staff currently working at the existing university museums would therefore migrate to the CCWM. With the number of museum staff within the university being unchanged, parking and traffic generated from CCWM staff are expected to be unaffected.

4.3 Current Visitation

4.3.1 Visitor Characteristics

The number of tickets sold, with relation to each visitor profile is shown in Figure 4. A majority of the tickets sold related to school students which generally generate less traffic given that students would arrive by school buses or public transport.

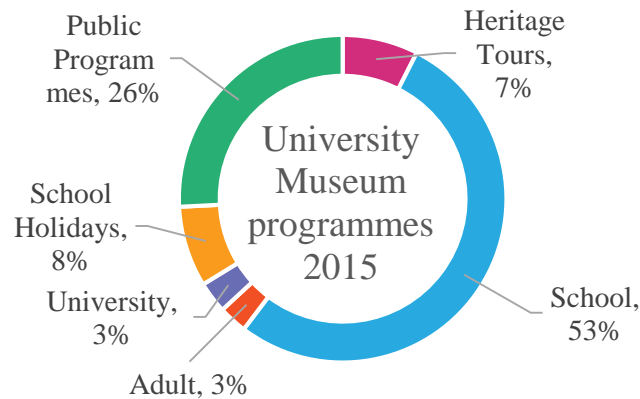


Figure 4: Number of tickets sold relating to each university museum programme 2015

4.3.2 Monthly Attendance Profile

Visitor data for each month has been collected for the three museums in the university, The Macleay Museum, Nicholson Museum and University Art Gallery. A total of 123,789 people visited the university museums during 2015.

The total monthly visitors to the museums over the year 2015 is shown in Figure 5, with August being the busiest period.

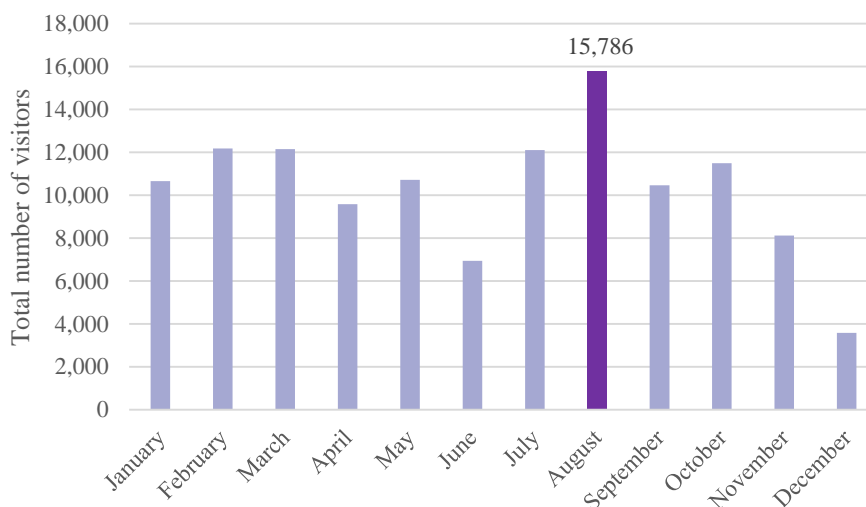


Figure 5: Totally monthly visitors to museums in the university in 2015

4.3.3 Daily Attendance Profile

Museums in the university have opening hours between 10am to 4:30pm and do not open on weekends, with exception to the first Saturday of every month. The busiest week in August was found to be during August 24 to 30 2015 with a total of 5,800 visitors over the week. The average daily visitors to the three museums are:

- Weekdays 24 August 2015: 1,178 visitors
- Saturday 1 August 2015: 701 visitors

A typical arrival profile of museums previously surveyed is shown in Figure 6. The data indicates a spread over the day with peak hourly arrivals at 11am and 12am.

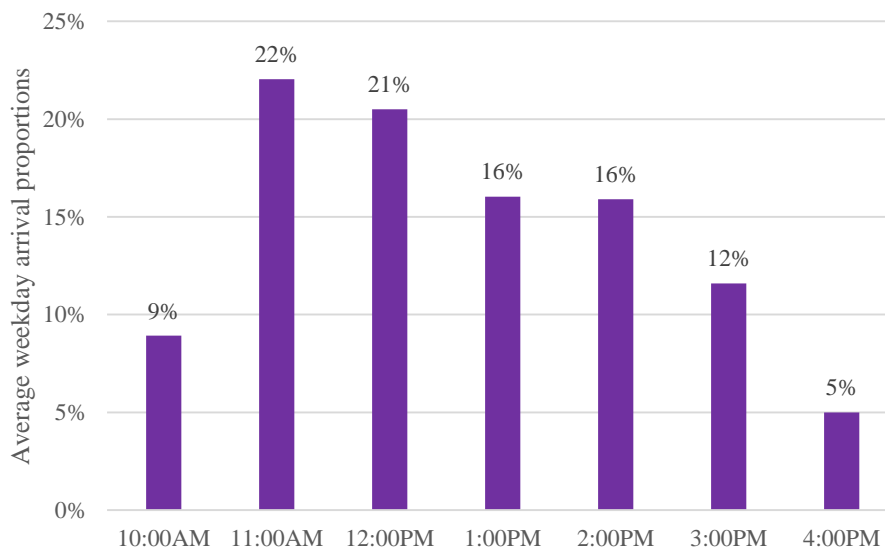


Figure 6 Daily attendance profile by the hour

4.4 Access and Circulation

4.4.1 Surrounding Road Network

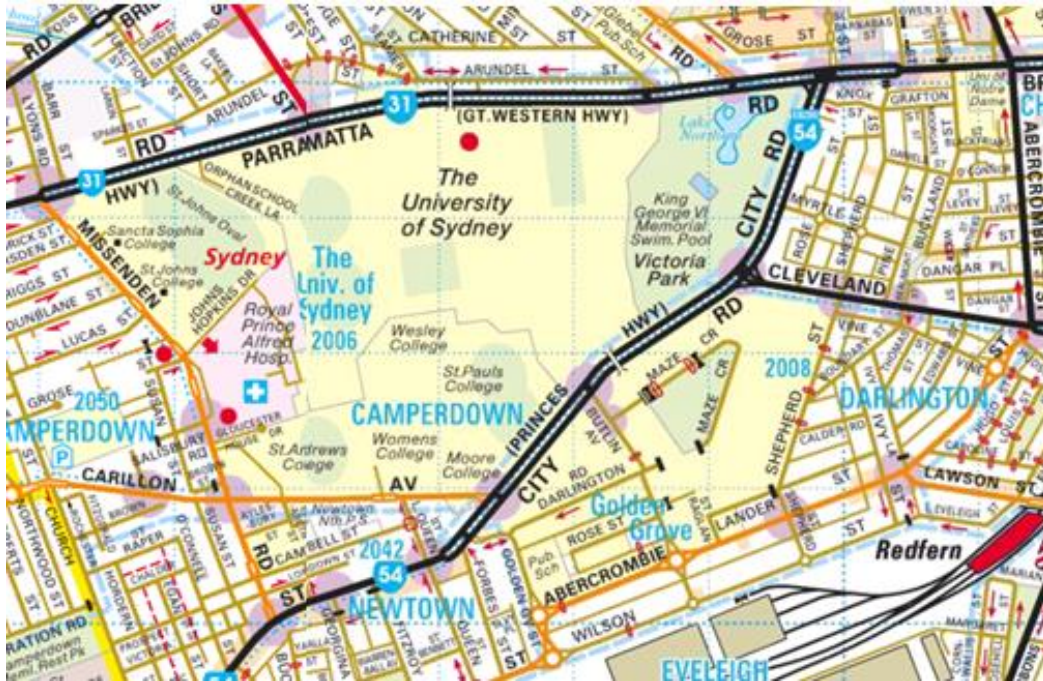


Figure 7: Road network surrounding the University²

The state road network (shown in black in Figure 7) is governed by RMS and includes Parramatta Road / Broadway, City Road / King Street, Cleveland Street and Abercrombie Road (north of Cleveland Street). These roads are major bus corridors and carry in the order of approximately 40,000-50,000 vehicles per day. Parramatta Road borders the north of Camperdown, and City Road divides the University between the Camperdown-Darlington campus. Cleveland Street also borders a small section of Darlington (at the Seymour Centre / Shepherd Street car park).

The regional roads within close proximity of the University consist of Glebe Point Road, Carillon Avenue, Mallett Street and Missenden Road (south of Carillon Avenue). The regional road network provides connections and increased capacity between state roads, and is shared responsibility between RMS and Council.

The local road network surrounding the site is governed by the City of Sydney Council and provides for local access. Roads are generally characterised by posted speed limits of 50km/h with parking either side. The main local roads surrounding the University include the following:

² Sydways

- Abercrombie Street is a local two-way road between Cleveland Street and Golden Grove Street and currently carries around 6,300vpd near Codrington Street. Access to Cleveland Street is limited to left-in/left-out. West of Lawson Street, it carries large numbers of pedestrians.
- Shepherd Street is a local two-way road between Wilson Street and Cleveland Street. Shepherd Street provides unrestricted access to Cleveland Street and carries a large number of pedestrians between Lander Street and Abercrombie Street.
- Golden Grove Street is a local two-way road connecting King Street with Wilson Street, and carries traffic flows at the sub-arterial level along that section between Abercrombie Street and Wilson Street.
- Codrington Street is a local two way road between Butlin Avenue (University Avenue) and Wilson Street. Codrington Street serves as a major connector to City Road for local traffic and provides a pedestrian/cyclist route for access to through Darlington.
- Darlington Road is a wide one-way local road with parking perpendicular to the traffic on the northern side. West of Golden Grove Street, the road is two-way and provides unrestricted movement to King Street.

4.4.2 Internal Road Network and Circulation

The current internal road network of the Camperdown-Darlington campus consists of a number of general traffic roads, owned by the University. While owned by the University, these roads are public roads which are governed by the NSW Roads Act 1999, which means speed limits, parking restrictions and road signs must be followed by law. The speed limit on all University roads is currently 25km/h.

The University is serviced by a number of vehicular entrances via the following external roads:

- Parramatta Road (four gates)
- Shepherd Street (three gates)
- City Road (three gates and Butlin Avenue)
- Codrington Street (two gates and Butlin Avenue)
- Carillion Avenue
- Abercrombie Street

Currently, the internal road network allows through traffic to drive from one side of the campus to the other (e.g. a driver is able to drive from Parramatta Road to City Road via Western Avenue or Fisher Road). However, there are a number of existing barriers in place which stop through traffic, including:

- Forced one-way eastbound direction on Physics Road
- Bollards between University Avenue Loop and Science Road
- Complete pedestrianisation of Eastern Avenue between the main gate and University Avenue
- Pedestrianisation between Darlington Road and Maze Crescent
- Forced one-way eastbound exit from Maze Crescent onto Shepherd Street
- Forced entry of Barff Road into the Law Building car park, which has boom gate control

The main routes and barriers throughout the University are shown in Figure 8.

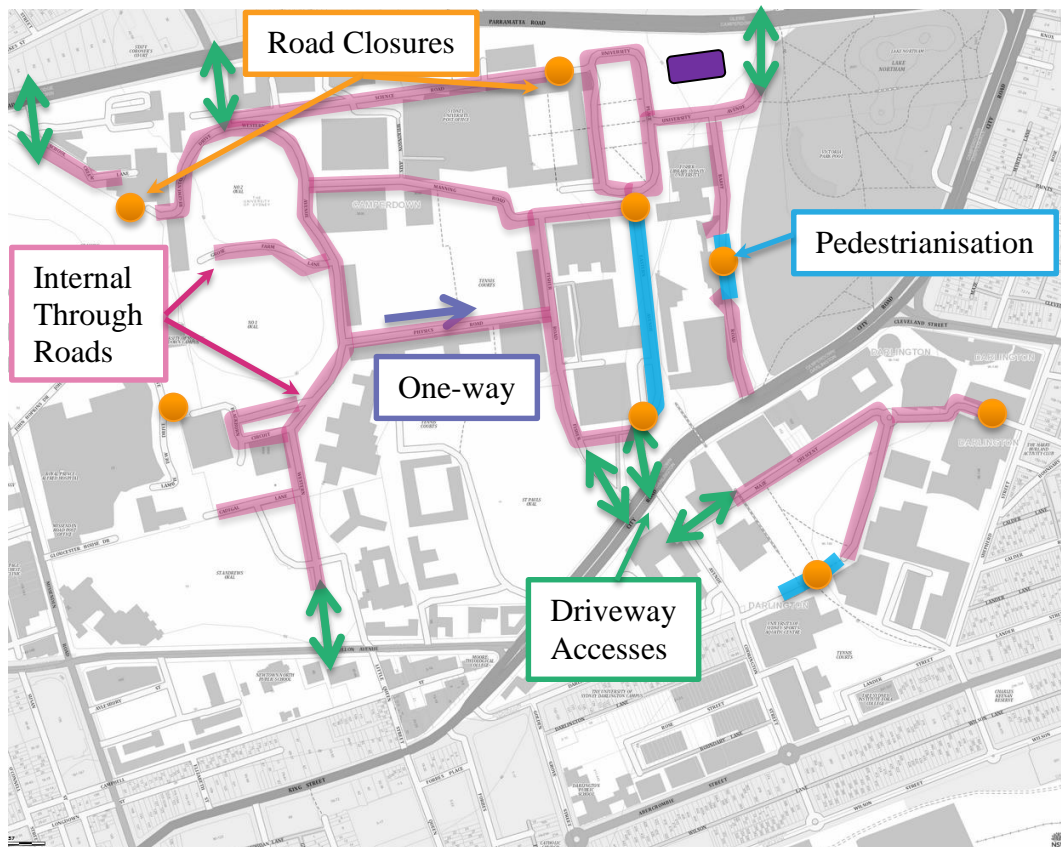


Figure 8: Vehicular Access

4.4.3 Servicing Arrangements

Most buildings currently have their own loading zones, requiring service vehicles to drive on the internal road network to service each building. In 2010, the Camperdown-Darlington campus had a combined total of 84 service vehicle spaces throughout the University. The main loading docks are located on Shepherd Street (next to the boardwalk), Regiment Drive (north of CPC), and Physics Building (north of AIN).

Waste is currently collected throughout the University by a private contractor who is able to access a number of compactors located around the University. Currently waste is separated by recycling and general waste, except hazardous waste from science areas.

4.4.4 Existing Public Transport

Public transport to the University consists of primarily bus and train services with very little current light rail use, with an overall mode share of 60% for public transport (discussed in section 4.1.1).

The main public transport routes to the University are shown in Figure 9.

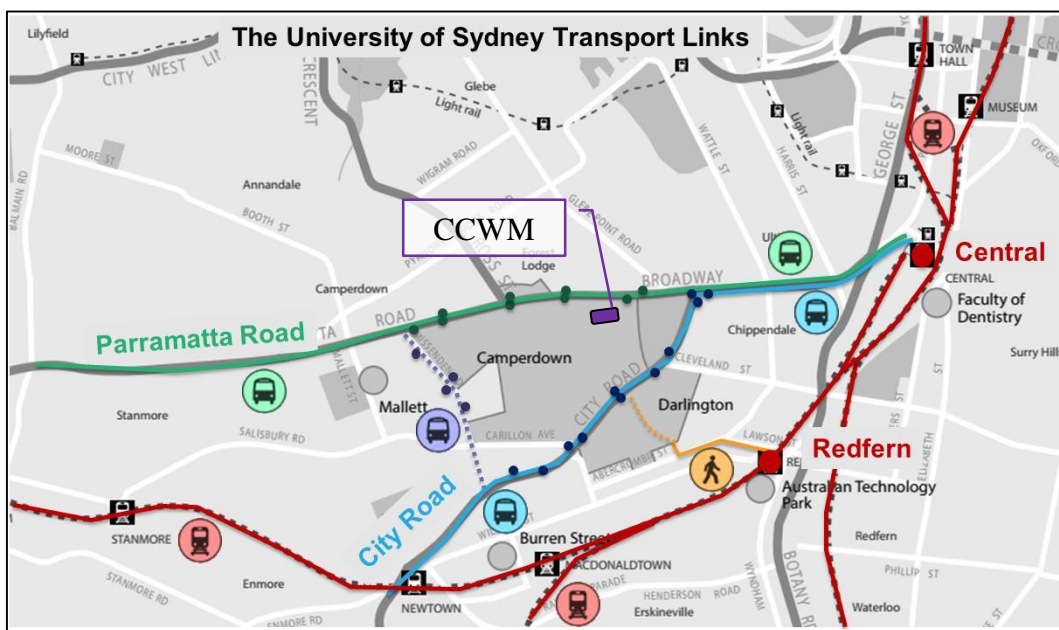


Figure 9 Transport Links

4.4.5 Drop-Off Bays

Several drop-off bays are proposed to be provided along University Avenue, west of the site. These spaces would have no parking restrictions.

4.4.6 Buses

From all campuses of the University, 17% of students and staff take buses to access the University. This number is likely to be greater for Camperdown-Darlington campus due to the greater use of public transport for the city campus.

The Camperdown-Darlington campus is serviced by buses on the Parramatta Road and City Road corridors with 11 bus routes servicing Parramatta Road, and 10 buses servicing City Road. A service map is given in Figure 10 showing all bus routes passing the University campus. The Physical Activity and Travel Mode Survey, states the most regularly used bus routes are:

- 440- Rozelle to City via Leichhardt- 10%
- 422- Kogarah to City via Tempe and St Peters – 8.7%
- M30- Spit Junction to Sydenham via City and the University- 8%
- 423- Kingsgrove to City via Earlwood- 6.4%

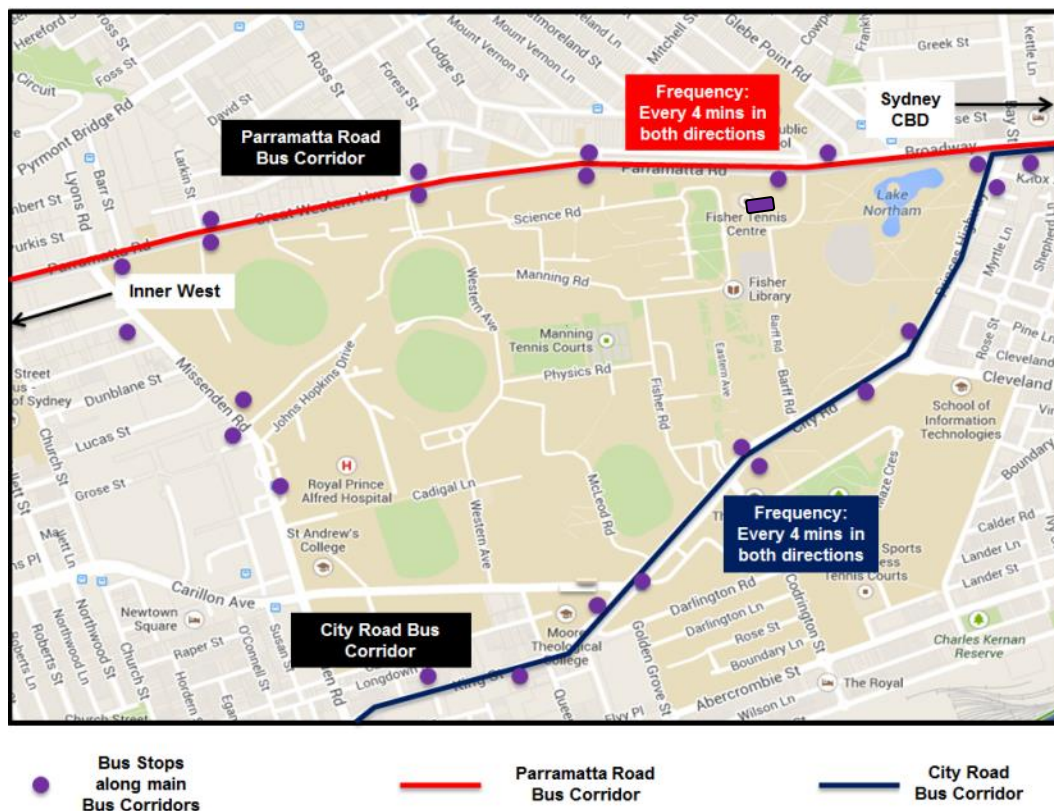


Figure 10: The University Bus Service Map

Buses running along Parramatta and City Road towards the Sydney CBD arrive at a frequency of every 4 minutes while buses in the opposite direction are of similar frequency.

There are currently bus lanes installed on both sides of Parramatta Road, and on the westbound lane of City Road which generally assist in on time running of buses along these corridors.

The bus stops servicing the University are located approximately every 400 metres around the perimeter of Camperdown, along the Parramatta Road and City

Road. Buses are generally full in the peak direction (i.e. a bus approaching the city would be full in morning peak and the reverse is true for evening peak).

4.4.7 Trains

Train usage is the dominant public transport mode for the University, with approximately 30% of students and staff using it to get to all University campuses. The Camperdown-Darlington campus is located near three railway stations (shown in Figure 11) which are:

- Redfern Station
- Macdonaldtown Station
- Central Station

Central Station is serviced by all train lines (including intercity and interstate services) except the Carlingford Line and Cumberland Line of Sydney Trains. Redfern Station is similarly serviced by all train lines except certain NSW Trainlink services and Airport/ East Hills Line. Macdonaldtown is serviced only by the Inner West Line.

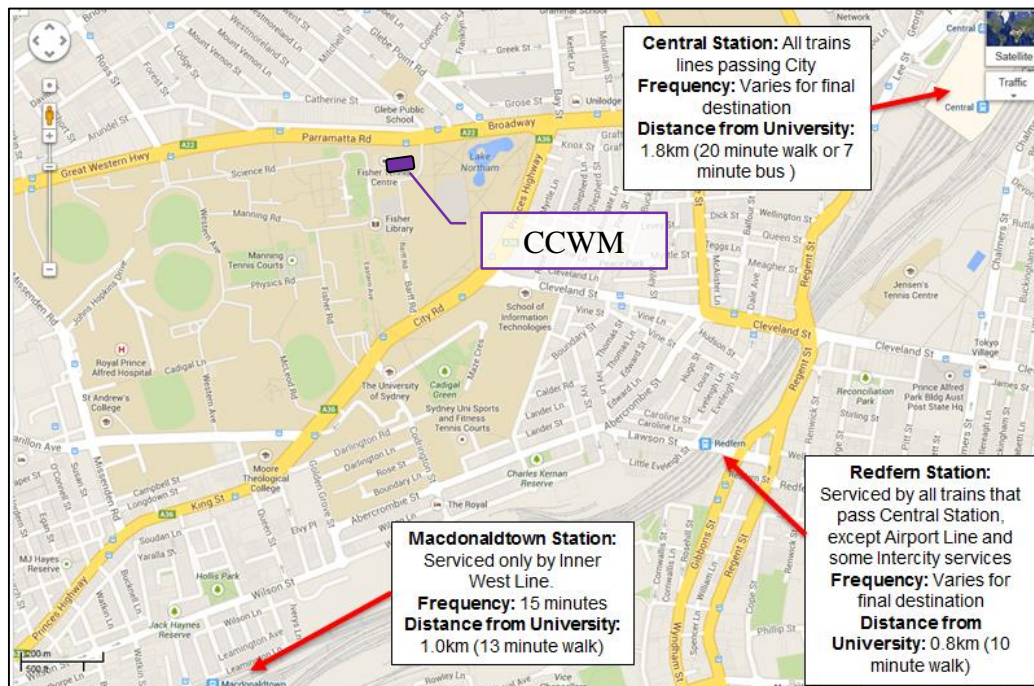


Figure 11: Train Station locations close to the University

Redfern Station is the closest railway station to the Camperdown-Darlington campus and has the highest patronage for the University. Redfern Station patronage is five times higher than Central Station, with very little patronage recorded at MacDonalldtown Station³.

Access to the University from Central station is likely accessed via Parramatta Road or City Road bus services, which take approximately 7 minutes (depending

³ Travel mode survey

on the location on-campus). This mode choice is more likely to occur during adverse weather events or dark hours, when the walk between Redfern Station and the University is undesirable.

The walk from Redfern Station to the University is approximately 10 minutes (boardwalk entry at Shepherd Street), with an additional 5 minutes walking time to Camperdown (Eastern Avenue entry). During the later hours, safety (and perceived safety) is an identified issue for the walk between Redfern Station and the University. This issue is especially prevalent on Lawson Street, which becomes quite a dark and narrow footpath.

Redfern Station currently does not have lift access to the station platforms, limiting access for parents with prams, and the mobility impaired persons. However in August 2013, Transport for NSW announced the construction of lift access to at least one platform to help alleviate this issue⁴.

The City of Sydney, with the University contribution is implementing an upgrade to the Abercrombie Street footpath with Lawson Street and Codrington Street.

4.4.8 Taxis

Taxis currently use University Avenue to drop-off passengers to the north east part of the campus. This will continue to be available for the CCWM. Taxis also travel along Parramatta Road and drop-off and pick-up passengers in the vicinity of the University Avenue gates.

4.4.9 Shuttle Bus Services

The University owns three minibuses which are operated as free shuttle services. The University operates these minibuses from the University to Redfern Station and satellite campuses. One of the minibuses is an eight seat bus with full hydraulic wheel lift for mobility impaired access, operated on demand.

A security shuttle operates on a loop between the University and Redfern Station. Security services run from the Fisher Library to Redfern Train Station at 15-20 minute frequencies at the following times between 4:30pm-10:15pm during semester, and 4:30pm-8:15pm outside of semester.

Additionally, the shuttle services are operated between the Camperdown-Darlington campus (corner of Manning Road / Fisher Road), the Mallett Street campus and the Sydney College of Arts (Rozelle) campus. Services are operated during the day from 8.30am-8.30pm at half hour frequencies. The estimated travel time between campuses is approximately 20 minutes.

All of these bus services do not run on weekends, public holiday or Christmas shut down period⁵

The security bus route is shown in red in Figure 12 below.

⁴ <http://www.transport.nsw.gov.au/media-releases/accessibility-upgrade-redfern-station>

⁵ http://sydney.edu.au/current_students/transport_safety/campus-bus.shtml

Figure 12: The University Security Bus Route⁶

4.4.10 Cycling Network and Connections

Cycling conditions on-campus have improved in recent years, with more shared plaza areas such as Eastern Avenue, and an increased supply of bike parking. The University promotes cycling as a way of keeping fit and healthy and has a bicycle map that shows bike parking areas on-campus. There is also reference to the Council map of cycleways surrounding the University. The Council map shows bike-friendly streets within a five-kilometre radius of the University and encourages the use of sustainable transport.

Excerpts from the Council bicycle map, showing cycle paths in and around the immediate vicinity and cycle parking stations within the University are shown in Figure 13.

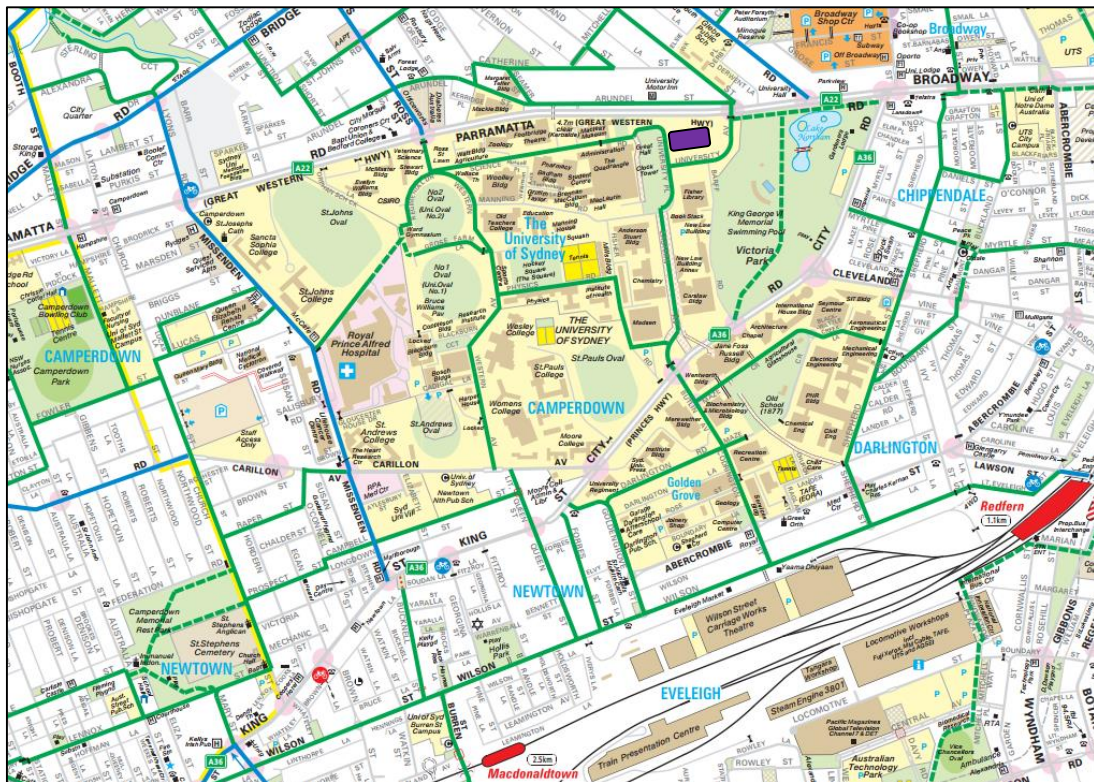


Figure 13: Bicycle Map

4.4.11 Pedestrian Paths and Routes

There remain some concerns about personal security of students and staff on-campus and in surrounding areas, particularly after hours. The University has published information and maps of security services including security bus services.

There are currently various issues concerning pedestrians and cyclists movements into and around the University. A summary of the key issues is as follows:

- Footpath capacities
- Conflicts with circulating and parking/ unparking vehicles produce unsafe and inconvenient delays for pedestrians and vehicles
- Access and security of walking to Redfern
- Abercrombie Street crossing delays/safety
- The principal pedestrian challenges are the safe access of students to and from Redfern railway station, via Abercrombie Street and Shepherd Streets, as well as travel between the Camperdown, Darlington and North Eveleigh sites. In many cases, principal pedestrian and bicycle routes coexist.

Pedestrian conflicts have been identified as being significant at the following locations:

- at the Shepherd Street / Lander Street intersection;
- at the pedestrian crossings of the traffic signals at Butlin Avenue / City Road;
- QMB access along Grose Street and crossing Missenden Road; and
- along the Abercrombie Street / Lawson Street footpaths.

For cyclists keys issues are as follows:

- The NSW Helmet Law requires helmets to be worn by all riders on roads and road-related areas which may be a barrier for students or staff having to carry additional items.
- Insufficient bicycle parking is provided on-campus leading to bicycles chained to other infrastructure and trees where insufficient bicycle spaces are provided.

4.4.12 Pedestrian Access to Transit Stops

The access to transit stops varies depending on-campus and building the student and staff member is located at the beginning or end of the day.

From the Travel Mode Survey 2012 conducted by the University, it was found the four most popular initial destinations of students and staff as being:

- Eastern Avenue (Red) - 22%
- Maze, Shepherd, Lander Area (Blue) - 17%
- Veterinary Science, Science Road Area (Green) – 12%
- Manning, Hockey Square Area (Yellow) - 11%

These points were plotted on a map and the locations are shown below in Figure 14:



Figure 14: Most popular initial destination at the University

Using Google Maps, the distances and approximate walking time to these locations was calculated from the closest bus and train station. The results are shown in Table 1.

Table 1: Time to Transit Stop

Area	City Road Bus Stops	Parramatta Road Bus Stops	Central Station	Redfern Station	Macdonaldtown Station
Eastern Avenue	300m/ 4 mins	290m/ 4 mins	1.5km/ 11 mins	1.3km/ 16 mins	1.4km/ 18 mins
Maze, Shepherd, Lander Area	350 m / 4 mins	1.1km/ 14 mins	1.9km/ 14 mins	750 m/ 9 mins	1.2km/ 15 mins
Veterinary Science, Science Road Area	1.0km/ 12 mins	160m/ 2 mins	1.9km/ 11 mins	1.9km/ 24 mins	2.0km/ 25 mins
Manning, Hockey Square Area	500m/ 6 mins	500m/ 6 mins	2.2km/ 14 mins	1.4km/ 18 mins	1.3km/ 16 mins

Assumptions for Table 1 include:

- Students and staff from Central Station boarded a bus to reach the University
- For the City and Parramatta Road bus stops, students and staff alighted at the bus stop nearest to their final destination
- For all other transit stops, it was assumed that walking was the main mode used.

The current barrier to accessing transit stops includes Parramatta Road (bus stops) and Arundel Road (overpass) from Science Road. The safety of staff and students accessing Redfern Station at night time, especially along Lawson Street

4.5 Existing University Parking

The CCWM will provide no public car parking, instead relying on the adjacent on-campus parking. The Sydney LEP 2012 rate is a maximum rate, and it is appropriate that the CCWM continues to utilise available nearby parking.

4.5.1 Car Parking

Currently, parking availability on the Camperdown-Darlington campus is wide spread, with relatively short walking distances required to the drivers' final destination. Figure 15 shows where parking is available at Darlington and Camperdown as follows:

- University car parking stations (red) and
- Wilsons car parking stations (blue)

Several on-street parking spaces, likely to be designated as handicapped spaces, would be located along University Place, adjacent to the CCWM. Drop-off bays would also be located within a similar vicinity.

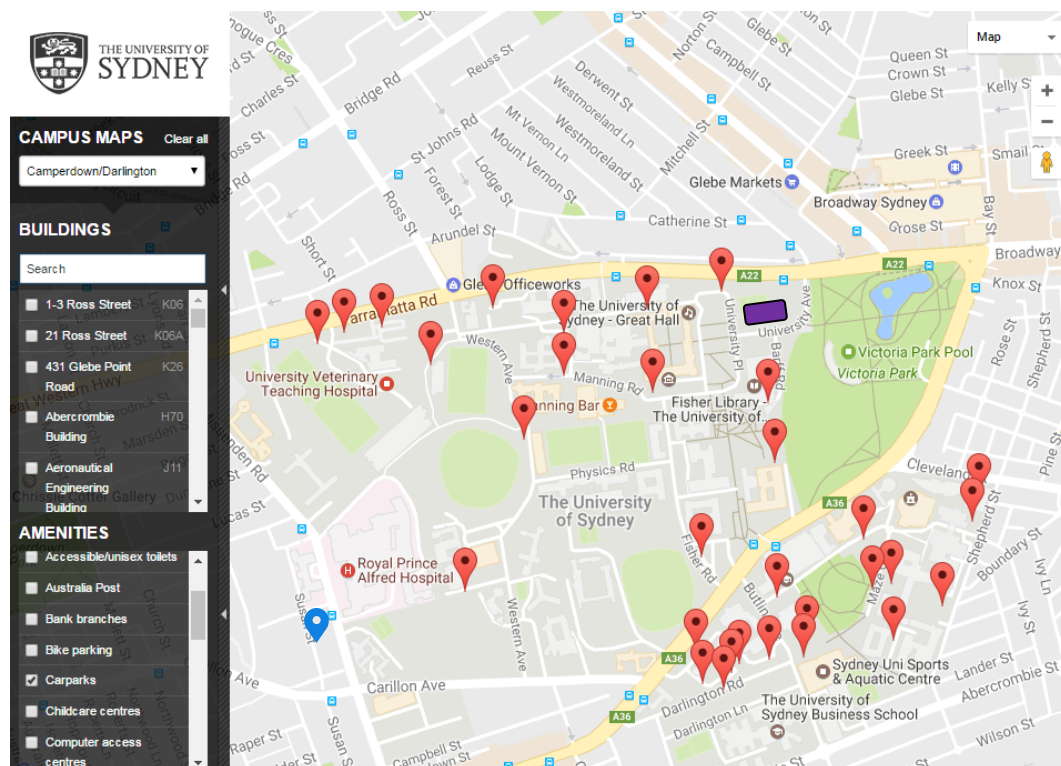


Figure 15: Camperdown Parking Locations

Source: <http://sydney.edu.au/maps/campuses/?area=CAMDAR>

An audit of parking spaces on-campus in 2010 showed that the total number of parking spaces on the Camperdown-Darlington campus was 2,357 in 2010 (prior to Transformational developments). This number has decreased in the most recent audit undertaken in 2013, with a total of 2,227 parking spaces due construction over previous surface parking sites. There are approximately an additional 200 parking spaces being constructed in these Transformational developments.

The total spaces listed currently contain a mixture of parking including:

- Permit and ticket holder spaces,
- Accessible parking spaces,
- Service type spaces,
- Union type vehicle spaces
- University operated type vehicle spaces
- Clinic visitor type vehicle spaces

The demand for parking is dictated on-campus by a pricing mechanism and permit system. Currently, visitors are only able to park for a flat rate of \$24 (between 6am-3pm weekdays) at the University, except Shepherd Street car park which allows a \$4 hourly rate up to the maximum \$24. Outside of 6am-3pm weekdays, \$2 per hour available other times up to a maximum of \$6. Vehicles parked without correct ticketing or permits are fined at the current infringement rate of \$99.

Parking permits are available to staff, with special regular visitor and VIP permits available. The permits cost as little as \$285.05 per annum and are offered with salary sacrificing. In 2012, the University issued 2293 parking permits to staff (63%), students (21%), commercial representatives (1%), departments (3%), and service contractors (13%). In 2012, of approximately 7000 staff, 65% had parking permits.

4.5.2 Motorcycle Parking

Motorcycle parking is currently provided informally at four peripheral locations at the University as shown on Figure 16.

- West side of Ross Street (Gate from Parramatta Road) with space for approximately 20 motorcycles
- City Road car park at Eastern Avenue (Gate from City Road) with space for approximately 40 motorcycles
- West side of Western Avenue south of Cadigal Lane with space for approximately 20 motorcycles
- West side of Codrington Street, between Darlington Road and Darlington Lane with space for approximately 15 motorcycles

While the University caters for approximately 100 motorcycles; any car parking space on-campus provides for motorcycles also (for the cost rates of cars).

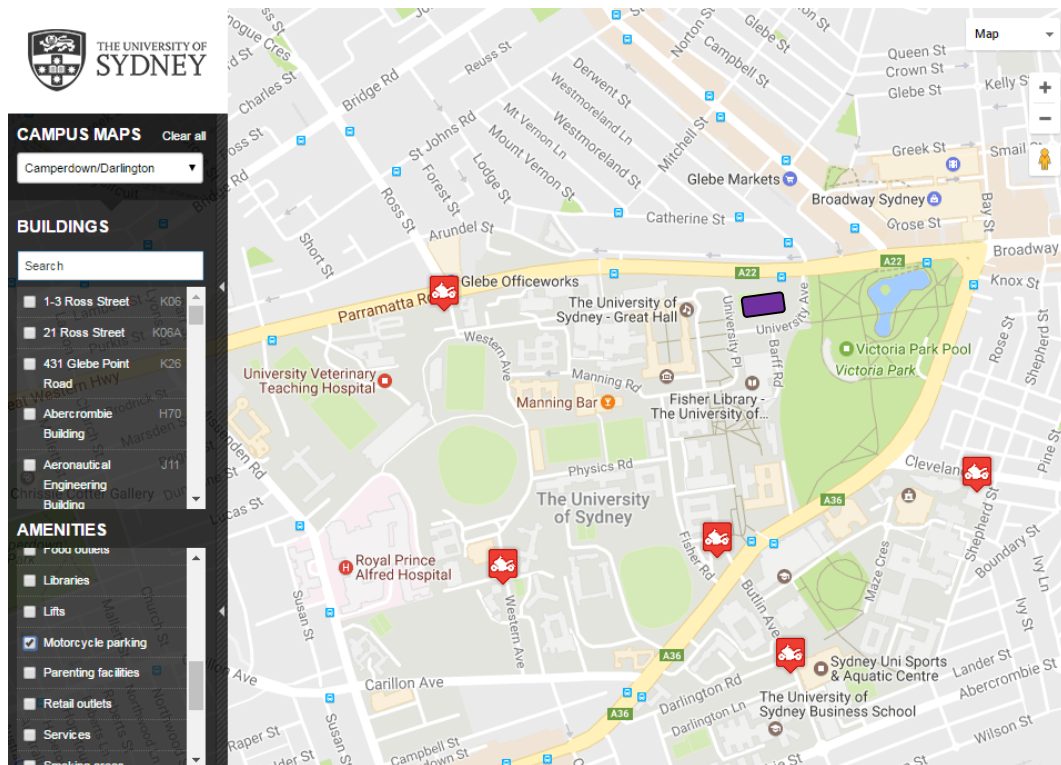


Figure 16: Motorcycle parking around the university

Source: <http://sydney.edu.au/maps/campuses/?area=CAMDAR>

4.5.3 Bicycle Facilities

The University currently provides approximately 1,300 bicycle spaces on the Camperdown-Darlington campus. Most of the bicycle infrastructure provided includes bicycle racks, with only three secure bicycle cages currently on-campus, located at biochemistry, Margaret Telfer and the New Law building. The location of bicycle parking at Camperdown and Darlington is shown in Figure 17.

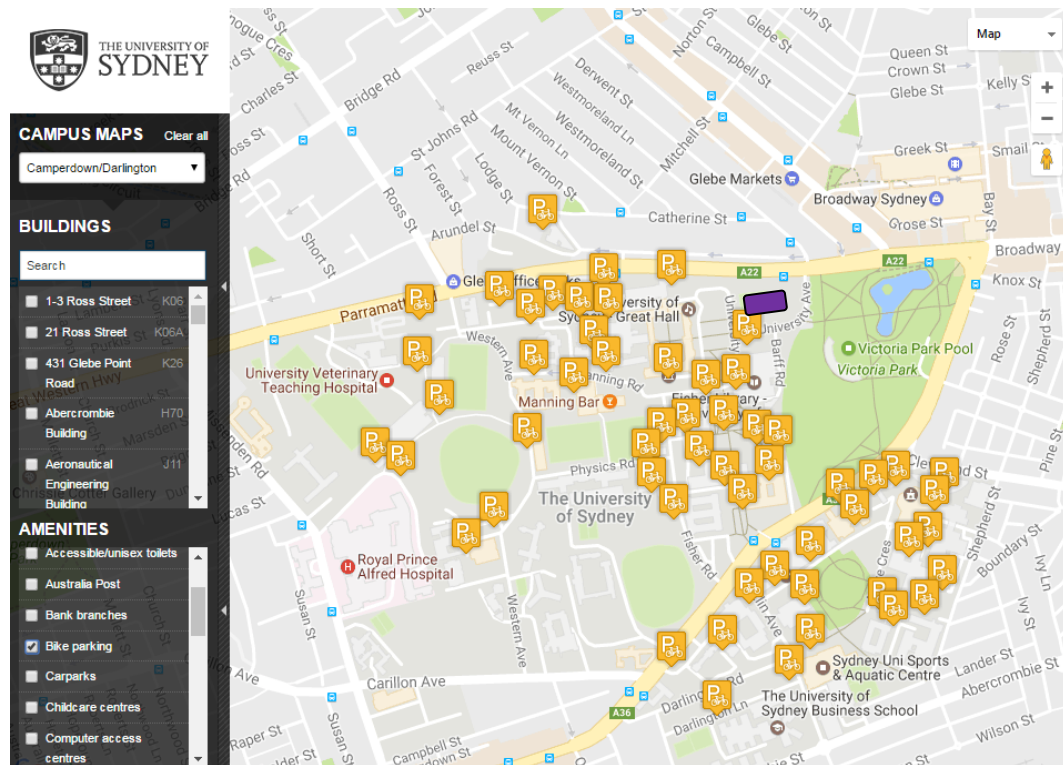


Figure 17: Bicycle parking facilities around the university

Source: <http://sydney.edu.au/maps/campuses/?area=CAMDAR>

5 Regulatory Context

5.1 SEARs – Transport and Accessibility

This report has been prepared on behalf of The University of Sydney in response to Secretary Environmental Assessment Requirements (SEARs) issued for State Significant Development application (SSDA) No. 7894 for the Chau Chak Wing Gallery.

This report addresses issues required for a SSD and specifically responds to the SSD Issue number 1, 2 and 5.

SSD Issue	Report Section
1. Statutory and Strategic Context Development Standards: Identify compliance with the development standards applying to the site. Environmental planning instruments: Address the statutory provisions contained in all relevant environmental planning instruments: <ul style="list-style-type: none"> State Environmental Planning Policy (Infrastructure) 2007 Sydney Local Environmental Plan 2012 Campus Improvement Program 2014 - 2020 In accordance with section 83D(3) of the Environmental Planning and Assessment Act 1979, demonstrate that the proposal is not inconsistent with the development consent granted for The University of Sydney Campus Improvement Program concept proposal (SSD 6123).	2.0
2. Policies Address the relevant planning provisions, goals and strategic planning objectives in the following: <ul style="list-style-type: none"> NSW State Priorities; A Plan for Growing Sydney; NSW Long Term Transport Master Plan 2012; Sustainable Sydney 2030; Sydney's Bus Future; Sydney's Walking Future; and Sydney's Cycling Future; and Healthy Urban Development Checklist, NSW Health. 	
5. Transport and Accessibility	
Details of the current daily and peak hour traffic, public transport, pedestrian and cycle movements and existing traffic and transport facilities provided within the vicinity of the site.	4.0
Provision of current staff and visitor parking on site.	5.0
An assessment of future transport needs associated with the development, including a clear understanding of the travel task for all modes at different times of the day (peak and off peak) and weekends.	6.0
An estimate of the total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and cycle trips.	7.0

SSD Issue	Report Section
The adequacy of public transport, pedestrian and bicycle infrastructure to meet the likely future demand of the proposed development.	4.0
Measures to promote travel choices for students, staff and visitors – this includes describing the measures to be implemented to promote sustainable means of transport usage, car sharing scheme, pedestrian and bicycle linkages, end of trip facilities and bicycle parking provisions.	6.0
The daily and peak vehicle movements impact on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for upgrading or road improvement works (if required).	7.0
The proposed access arrangements and measures to mitigate any associated traffic impacts and impacts on public transport, walking and cycling.	6.0
Proposed car and bicycle parking provision, including consideration of the availability of public transport and the requirements of the relevant parking codes and Australian Standards.	4.0 and 5.0
Proposed location of pedestrian and bicycle facilities in secure, convenient, accessible areas close to main entrances that incorporate lighting and passive surveillance.	4.0 and 5.0
Service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times).	4.1.3
An assessment of traffic and transport impacts during construction and how these impacts will be mitigated for any associated traffic, pedestrian, cyclist, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact.	8.0
Relevant Policies and Guidelines <ul style="list-style-type: none"> ● Guide to Traffic Generating Developments (RMS) ● EIS Guidelines – Road and Related Facilities (DoPI) ● NSW Planning Guidelines for Walking and Cycling ● Guide to Traffic Management – Part 12: Traffic Impacts of Developments (AUSTROADS) 	2.0

5.2 Sydney Local Environmental Plan 2012

The Sydney Local Environment Plan (LEP) 2012 applies to most of the City's local area and is made up of a written instrument and maps. It identifies the maximum number of on-site car parking spaces that can be provided for new developments based on their location and level of transport accessibility. The objective of the car parking rates is to minimise the amount of vehicular traffic generated because of the proposed development.

Clause 7.9(3) of Sydney LEP 2012 provides that the maximum number of car parking spaces for a building used for the purposes of information and education facilities which includes art galleries, is 1 space for every 200 square metres of the gross floor area of the building used for those purposes.

The CCWM will provide no public car parking, instead relying on the adjacent on-campus parking. The Sydney LEP 2012 rate is a maximum rate, and it is appropriate that the CCWM continues to utilise available nearby parking.

5.3 State Environmental Planning Policy (Infrastructure) 2007

The aim of this policy document is to facilitate the effective delivery of infrastructure across NSW. Clauses relevant to the SMP include:

Clause 103: Excavation in or immediately adjacent to corridors

This clause applies to development that involves the penetration of ground to a depth of at least 3m below ground level (existing) on land that is the road corridor, which is Parramatta Road. Should the SMP require penetration of ground beyond this depth, the consent authority would give written notice of the application to the RMS within 7 days after the application is made.

Clause 104: Traffic-generating development

This clause applies to new or enlarged development sites including any alterations or additions of the size and capacity of the proposed CCWM. The CCWM proposes to amalgamate existing facilities across the campus into a new purpose built building to provide for greater visitor numbers throughout the year, and therefore is subject to this clause. The clause considers the threshold level of traffic generation for certain land uses, beyond which the development is to be referred to the RMS.

The CCWM is classed as 'any other purposes' in the document and notes that should the development generate 200 or more vehicles the development would be referred to the RMS. Given that the development will generate less than 200 vehicles, no consultation with RMS would be needed.

5.4 Campus Improvement Program (2014-2020)

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

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

However, the proposed Chau Chak Wing Museum Building did not form part of the CIP Stage 1 SSD proposal, as it comprises an individual development site not requiring a "Precinct" building envelope approach.

The Access Strategy prioritises active travel modes and demonstrates an integrated approach supporting the transport and access objectives of the CIP. The Access Strategy provides guidance on general vehicle and service vehicle access, accessibility, parking rationalisation and management, sustainable transport objectives and initiatives, and pedestrian and bicycle opportunities both to and through the Camperdown-Darlington campus.

The proposed CCW Museum provides on-site loading but no car parking. Drop-off and pick-up facilities will align with the principles of the CIP.

5.5 NSW State Priorities

The NSW Premier announced in September 2015 12 Premier's priorities to support the growth of the economy while protecting the most vulnerable in our society.

The Premier's priorities are supported by 30 State priorities or 'reforms' that aim to grow the economy, deliver infrastructure, deliver infrastructure, and improve health, education and other services across NSW.

Key policies and actions relevant to study area:

- Accelerating major project assessment.
- Building infrastructure.
- Consistently meet public transport reliability targets.
- Improve the efficiency of the road network during peak times on Sydney's road corridors.

5.6 A Plan for Growing Sydney

A Plan for Growing Sydney (Department of Planning & Environment, 2014) presents a new framework for Sydney that will guide planning decisions over the next 20 years to accommodate growth. The planned growth will see an additional 700,000 jobs and 1.6 million residents added to Sydney by 2036.

The plan is driven by the vision of Sydney to be: 'A strong global city, a great place to live'. To achieve this vision, the Government has set goals that Sydney will be:

- A competitive economy with world-class services and transport.
- A city of housing choice with homes that meet our needs and lifestyles.

- A great place to live with communities that are strong, healthy and well connected.
- A sustainable and resilient city that protects the natural environment and has a balanced approach to the use of land and resources.

The plan outlines a set of strategic directions to deliver the housing and workplaces required to meet growth whilst providing high levels of amenity and good accessibility to jobs and services, creating resilient communities and a highly liveable city.

The provision of a new expanded Gallery aligns with the Plan's vision of creating a strong global city and a great place to live. The growing population of Sydney will be provided with an enhanced cultural destination.

5.7 NSW Long Term Transport Master Plan 2012

The Long Term Transport Master Plan was released in December 2012. It is the key framework for improving and delivering better transport throughout NSW. Sydney is identified as the major international centre in the plan with the University identified as a key specialised centre of health and education. Key points relating to the University transport are as follows:

- Better planning of public transport services around “demand generators” such as universities
- Upgrade and improvements of surrounding precincts of Redfern Railway Station
- Sydney Airport to CBD road link
- Development of jobs in urban renewal areas such as Redfern

Key public transport links identified in the master plan are located adjacent to the University. The completion of the Redfern Railway Station upgrades and recognition of strategic bus corridors will provide better access for students and staff to the University.

In addition to the above points relating to universities, the master plan discusses methods in which to provide a Bus Rapid Transit or Light Rail along Parramatta Road. This investigation will also look at the urban renewal aspects along Parramatta Road due to the WestConnex motorway project. These projects should improve the public transport network for Sydney's inner west areas by providing reliable and frequent services.

5.8 Sustainable Sydney 2030

The Vision for The City of Sydney is to be a green, global and connected city, leading the world in all three of these fields. To achieve these goals, the city is required to encourage active modes of transport and improve its public transport system. The University also has key issues to achieve this vision:

- “Activity hubs as a focus for the city's village communities and transport” along King Street
- Metro-rail along the Parramatta Road corridor

- 70% reduction of greenhouse gases by 2030 from 1990 levels
- Reduce existing parking
- Encourage carpooling
- Establish pricing schemes for car parking to fund public transport

The Vision has objectives similar to that of the University's, including achievement of the 5 star green rating for new buildings. The University is also looking to further reduce the reliance of vehicle drivers by shifting the mode share to public transport or active modes.

5.9 Sydney's Bus Future

Sydney's Bus Future (Transport for NSW, 2013) provides the framework for improving and delivering more frequent and reliable bus services throughout Sydney. The core aim of the strategy is to provide an integrated bus network with seamless connections to other transport services.

The strategy also aims to tailor bus services to customer needs. In this vein, bus services will be focused into three key types, with associated priority and infrastructure investment:

- Rapid routes, which will use priority infrastructure, connect regionally throughout the city and have stops every 800m-1km
- Suburban routes, which will have stops every 400m and have mix of frequent 'turn up and go' and timetabled services
- Local routes, which will complete the network using local streets.

Visitors and staff at the Gallery will take advantage of these improved connections.

5.10 Sydney's Walking Future

Sydney's Walking Future (Transport for NSW, 2013) sets out a strategy to encourage people in Sydney to walk more through actions that make it a more convenient, better connected and safer mode of transport.

Key points to emerge from the strategy that are relevant to the Study Area include:

- NSW Government commitment to invest in new walking links that connect people to public transport.
- Prioritisation of investment in walking infrastructure to be prioritised within 2km of centres and public transport interchanges.
- Commitment to invest in walking facilities as part of the Transport Access Program, including improved circulation spaces around station precincts and safer walking links.

5.11 Sydney's Cycling Future

Sydney's Cycling Future (Transport for NSW, 2013) provides a framework for the way cycling is planned and prioritised in Sydney. It aims to grow the number

of people cycling for transport by investing in safe, connected networks, making better use of existing infrastructure and fostering the formation of partnerships to develop cycling infrastructure. Key points to emerge from the strategy that are relevant to the Study Area include:

- A safe and connected bicycle network benefits the wider transport network by improving access to towns and centres, reducing congestion and increasing capacity on the public transport system.
- The promotion of safe separation of cyclists from motor vehicles and pedestrians where possible.
- Investment in bicycle infrastructure should be prioritised within 5km of public transport interchanges to provide improved connections.
- Promoting ‘bike-and-ride’ at major public transport interchanges including secure parking facilities integrated with public transport access.

The City of Sydney is moving towards a well connected cycle network to improve accessibility for workers and visitors to facilities such as the Gallery.

5.12 Relevant Policies and Guidelines

The following documents have been considered in the development of this transport strategy for the Sydney Modern project:

- RMS Guide to Traffic Generating Developments used to inform the traffic assessment undertaken for the project.
- EIS Guidelines – Road and Related Facilities used to inform the preparation of the transport strategy, in particular the assessment of transport impacts.
- NSW Planning Guidelines for Walking and Cycling. This document has been used to inform the development of the walking and cycling measures proposed in this strategy.
- Guide to Traffic Management – Part 12: Traffic Impacts of Developments (AUSTROADS). This guide has been referenced for the appropriate methodology to be used for traffic impact assessment of the development.

6 Consultation

A summary of consultation to date:

Transport for NSW – email communication on 6 March 2017

Mark Ozinga

Principal Manager Land Use Planning & Development

Freight, Strategy & Planning Division

Transport for NSW

T 02 8202 2198 M 0439 489 298

Level 3, 18 Lee St Chippendale NSW 2008

It is suggested that we include the following points in the SSDA Transport Report:

- An outline construction traffic management plan. It was noted that there is already significant works going on at the moment on the campus which should be considered.
- Description of how the proposal sits with the overall CIP that has previously been approved.

CBD Coordination Office – email communication 6 March 2017

Lisa McGill

Senior CBD Precinct Planning Manager

CBD Coordination Office

Transport for NSW

P 02 8265 7380

Level 44, 680 George Street, Sydney NSW 2000

Agreed with TfNSW requests and comments. No meeting needed at this stage for this project.

RMS – telephone call on 14 March 2017 and email response 6 April 2017.

Angela Frew

T 02 8849 2041

Inner city development officer. (handing over to a colleague, Rachel Nicholson)

RMS will mostly be interested in vehicle access routes for construction and operation. No meeting needed at this stage for this project. Draft copy of assessment was provided to RMS for any initial comments prior to SSDA application.

Jana Jegathesan

Land Use Planner, CBD & East Precinct, Network Safety

T 02 8849 2313

Roads and Maritime has reviewed the report and has nothing further to add to the draft. A Construction Traffic Management Plan (CTMP) would need to be submitted however, Roads and Maritime will provide comments during the formal referral process.

7 Travel Demand Strategy

7.1 The University Demand Management

Demand management is any measure that reduces or eliminates the need for travel or encourages increased use of modes of travel that are an alternative to private single occupant car use, thus reducing traffic impact.

Measures to reduce demand for travel are often the most difficult to achieve but can be the most effective often achieving over 10% change or more.⁷ This is particularly the case in study areas where there is little that can be done to improve the physical infrastructure due to constraints from surrounding housing, heritage areas, topography etc.

The University lends itself well to this type of measure for the following reasons:

- There are several large trip generators in the study area that have a direct influence over those accessing their sites;
- Often the most enthusiastic take up of alternative modes of travel come from student populations; and
- There is high quality and high frequency public transport within a 10 minute walking distance of the study area.

There are a number of measures and associated actions that are appropriate for the University. These are not necessarily direct actions to reduce car use but rather set a framework within which the University can develop a long term strategy to work with the various faculties. It is expected that individual faculties within the University should have or be encouraged to develop their own travel plans with their own targets and actions. The Premiers Council for Active Living cites excellent examples of global and Australian guidance that can be used to develop quality travel plans⁸.

7.2 Existing Travel Demand

The CIP has already included a number of transport demand measures through land use planning that will increase affordable student accommodation on site. In addition, there are proposals to improve the connectivity to existing public transport along appropriate pedestrian and cyclist routes, enhancing gateways. Parking is proposed to be rationalised to the perimeter of the Camperdown-Darlington campus to enhance the public realm within the centre of the campus areas. Prioritisation of the development staging program has also been prepared to ensure that the transition from existing to future can be made without undue impact on the operation of the University.

Arup has conducted a review of previous studies and considered the following to be some of the key transport issues:

⁷ Report by Cairns S, Sloman L, Newson C, Anable J, Kirkbride A & Goodwin P (2004) '*Smarter Choices – Changing the Way We Travel*' **Workplace. travel plans**

⁸ http://www.pcal.nsw.gov.au/workplace_travel_plan

- Availability of parking:
 - overparking / informal parking in some areas;
 - vehicles circulating while searching for a space;
 - impact of removal of cars from the centre of the campus; and
 - ‘fairness’ of the permit system.
- Access and security of walking around campus:
 - footpath capacities;
 - conflicts with circulating and parking vehicles produce unsafe and inconvenient delays for pedestrians and vehicles;
 - access and security of walking to Redfern;
 - routes for the mobility impaired are not always intuitive or easy; and
 - Abercrombie Street crossing delays / safety.
- Difficulty of external vehicular access routes:
 - Butlin Avenue / City Road intersection congestion; and
 - lack of eastbound right turns from Parramatta Road.
- Internal access and circulation:
 - service vehicles, visitors, deliveries, couriers etc. conflict with pedestrians who are delayed crossing City Road;
 - physical separation of Camperdown and Darlington by major arterial road (City Road); and
 - through traffic between City Road and Abercrombie Street via Butlin Avenue and Codrington Street.

The ability to travel by car is largely influenced by the availability of car parking at an affordable price. The provision of car parking is a balance between ample car parking with resultant congestion, safety, noise and sustainability concerns and scarce car parking with resultant deterrence of some users and visitors, and overspill into streets outside the Camperdown-Darlington campus to the detriment of the University’s relationship with the surrounding community.

A parking provision rate of one bay per 200m² Gross Floor Area (GFA) is recognised as a sustainable trade-off between these extremes by recent City of Sydney and NSW Government policy, and is in accordance with world best practice for inner city sites. This rate accords with a total University parking supply of 2,800 bays, a number and rate that might be reduced over future years as opportunities to reduce car use arise and the green travel plan measures are successfully implemented.

Parking and transport policy are also influenced by the areas external to the University. The University should engage with its neighbours, City of Sydney, Urban Growth Development Corporation, Transport for NSW, RMS and others to develop complementary walk route, bike route, and resident parking policies.

Significant actions arising from this strategy would not be limited to, but might include:

- All routes to be safely walkable, with adequate lighting and active paths
- Development of a truly accessible campus environment;
- Enforce shared zones campus-wide, with maximum vehicle speed limits of 10km/h;

- Minimise through traffic within the University by implementing peripheral car parking and considering a quality servicing strategy to address service vehicle movement;
- Iconic bold bike parking station(s) as a highly visible demonstration of best practice;
- Car Pooling, Car Share and Bike Hire operators be established; and,
- Review and implementation of a workplace Green Travel Plan that is genuinely achievable, measurable and successful.

8 Assessment of Travel Impacts

CCWM would result in the co-location and consolidation of the Macleay Museum, Nicholson Museum and University Art Gallery as well as collections from a number of currently fragmented locations into a new single museum.

Future visitors would likely adopt similar characteristics as the current University Museum visitors. A similar future visitor profile proportion can be expected, shown in Figure 18. A majority of the existing university museum tickets sold relate to school students which generally generate less traffic given that students would arrive by school buses or public transport.

A proportion of the remaining 47% of the visitors would likely drive, with a majority taking public transport.

This section discusses the likely impacts and travel characteristics of these visitors.

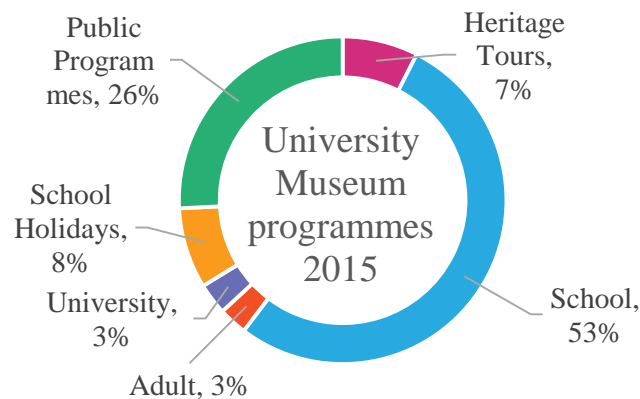


Figure 18: Number of tickets sold relating to each university museum programme 2015

8.1 Patronage Increase

As a conservative estimate and the purpose of this report only, the number of visitors to the CCWM is assumed to increase by 30% of the total number of visitors. Peak monthly data from the year 2015 is used in the assessment.

8.2 Travel Analysis

Assuming that school related visitors arrive by public transport on train or bus modes, the CCWM would likely generate an additional 40 vehicles per day. This is based on a typical museum profile discussed in section 4.1.2, with a summary of the calculations shown in Table 2.

Table 2: Patronage and vehicle increase as a result of the completion of the CCWM

Daily patronage data	Existing university museums visitors	CCWM with a 30% increase in visitors	Number of visitors generated by the CCWM
Weekday visitors	1,178	1,531	353
Non-school related visitors (47%)	554	720	166
Daily car users (24% JTW)	132	173	40

In summary, on a typical day it is predicted that the additional museum visitors will use the following modes of travel:

- 187 students using bus, train,
- 126 visitors using bus, train, walk and cycle.
- 40 visitors by car

This traffic generation is minimal given the typical arrival profile of visitors, discussed in section 4.3.3. Based on the profile, the weekday peak hour period at 11am would generate some 9 vehicles. Arrivals would occur outside of AM and PM road network peak hours.

Given the small increase in traffic generated by the CCWM, the surrounding road network and intersections are unlikely to be affected adversely.

For school bus access, this equates to an additional 3 buses per day, or less if train is used.

Only non-school visitors are anticipated to use active travel modes walking and cycling.

9 Proposed Development Vehicle Access

9.1 Vehicle access arrangements

The vehicle movements for drop-off /pick-up by bus and car and for access to the loading dock are shown in Figure 19. All vehicles enter via University Avenue from Parramatta Road where traffic signal control facilitates entry and exit. Buses and cars dropping off or picking up passengers will traverse University Avenue to arrive at the entry plaza on University Place. Trucks and vans will turn right into a ramp to access the loading dock.

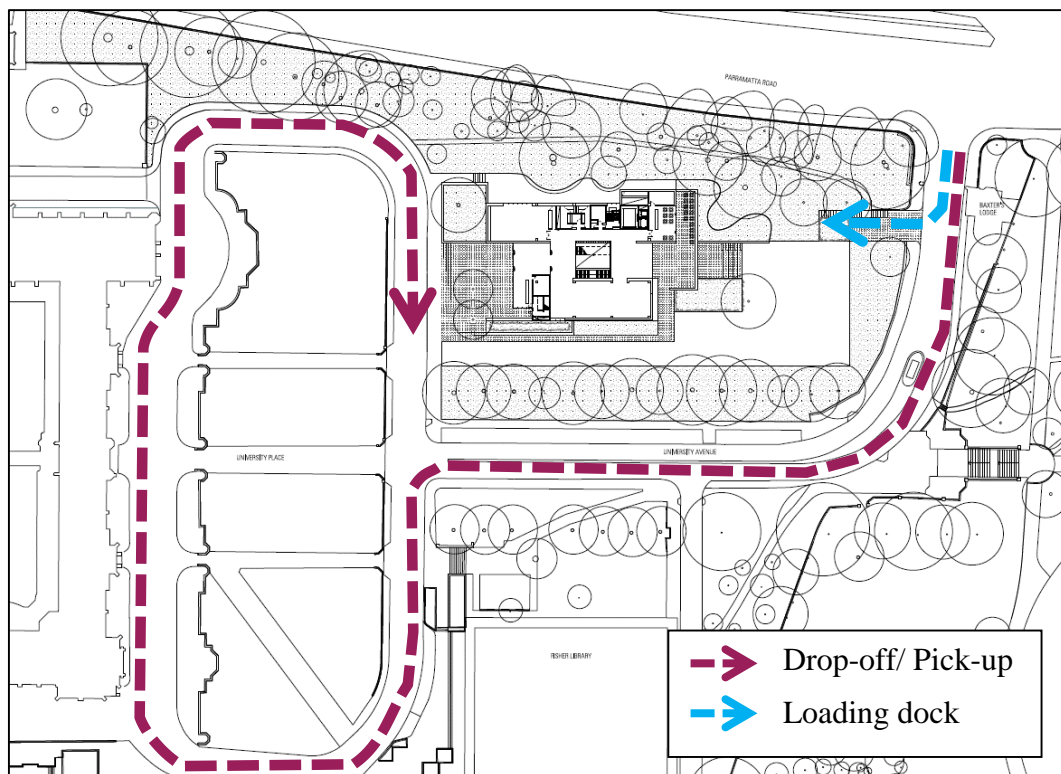


Figure 19: Vehicle access arrangements

The loading dock entry has been positioned to take advantage of the grades allowing a potentially slightly graded access roadway to a basement level. It is located 25 m from the Parramatta Road entry which provides room for three vehicles to queue on exit before blocking the ramp access. It is recommended that a keep clear marking be located on University Avenue to enable vehicles to enter the loading dock ramp as shown in Figure 20. Signage will also be installed to notify drivers not to store across the driveway.

A very low usage level of this loading dock is expected with garbage collection a couple of times a week and food and beverage twice a day for the on-site café. Artwork deliveries will be once every 2 to 3 months. At this level of vehicle activity we consider the proposed access ramp arrangement to be suitable in this location.

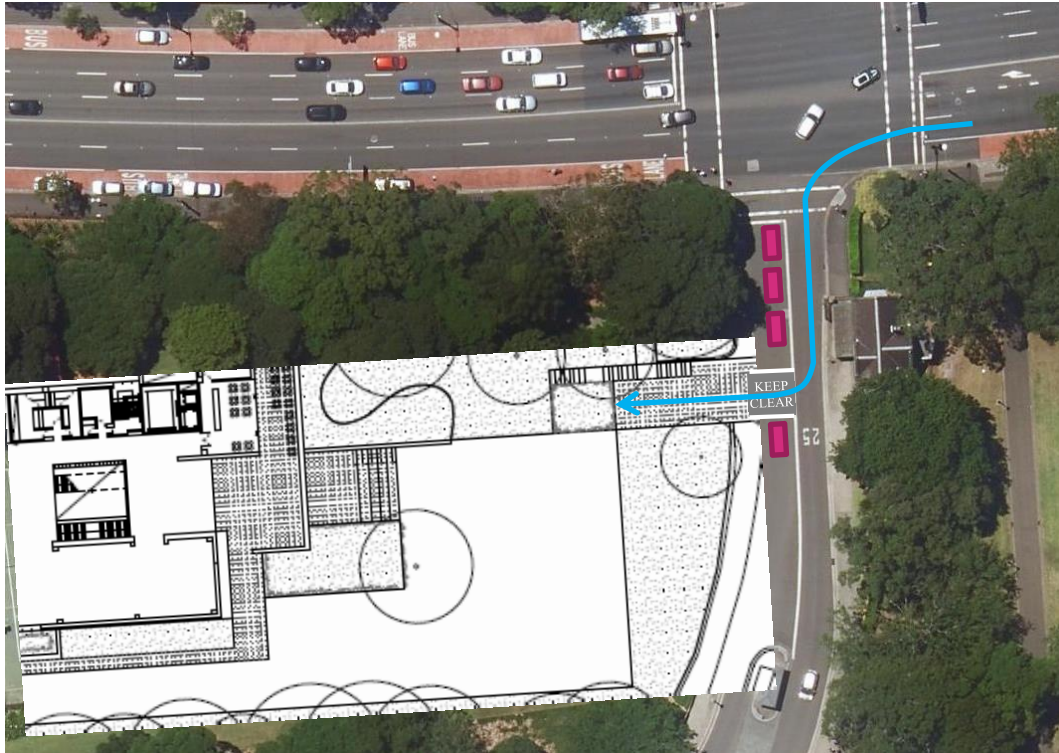


Figure 20: Vehicle access to loading dock ramp

9.2 Loading Dock

The CCWM would have loading access in the basement. A typical delivery vehicle (medium rigid vehicle) is shown manoeuvring into the proposed loading bay in Figure 21. The loading bay has also been designed for larger vehicles for large museum exhibitions. These deliveries are expected to occur infrequently.

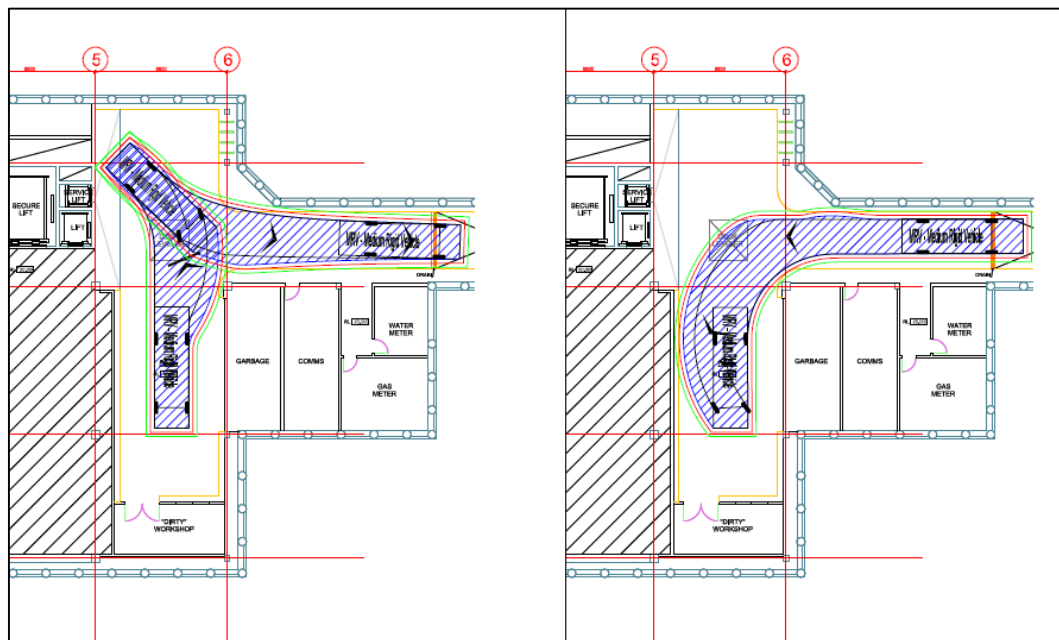


Figure 21: Loading bay in the basement showing garbage/delivery vehicle entry and exit

9.3 Bicycle Parking

The Campus Improvement Program has identified the need to consider bicycle parking across the campus to provide appropriate forms of bicycle parking for staff and students. These facilities will be staged as new buildings are developed, provided as parking in bike rooms and as bike rails in the public realm.

Bicycle parking facilities will be provided at a rate of 1 per 10 staff and 1 per 10 students on campus at the peak occupancy level. (In accordance with City of Sydney DCP 2012).

At the CCW Museum, it is recommended that a series of bicycle rails be installed at the entry plaza level for visitor use.

10 Outline Construction Traffic Management Plan (CTMP)

The following proposed traffic management principles would be adopted during the construction period:

- Disruption to all road users during the construction period would be kept to a minimum.
- Traffic control would need to be provided to manage and regulate traffic movements during construction.
- Construction and delivery vehicles entering or leaving the site compound and/or stockpile sites would use arterial roads. These movements would be restricted to non-peak traffic periods.
- In most cases access throughout the university would be maintained throughout the construction period with suitable alternative access arrangements provided otherwise.
- Public transport would not be affected
- Clear signage and alternate pedestrian routes should be organised if footpaths are affected.
- It is recommended that a detailed CTMP is developed as part of the detailed design stage.

10.1.1 Proposed Working Hours

Depending on the construction stage, the workforce which includes both construction and design personnel, will vary. Construction would be undertaken during standard working hours which are assumed to be as follows:

- Monday to Friday: 7:00am to 6:00pm;
- Saturday: 7:30am to 5:00pm; and
- No work on Sundays or NSW Public Holidays.

In some cases, it may be necessary to undertake night works to minimise disruption to traffic. Further assessments of these requirements would be undertaken once the detailed design stage is undertaken and the requirements are known. All night works would be undertaken in accordance with the Roads and Maritime Services Environmental Noise Management Manual (RTA 2001): Practice Note vii – Road works outside normal working hours, as well as the Office of Environment and Heritage Interim Construction Noise Guideline (DECC 2009).

Prior notice would be given to the community if any works are planned to be undertaken outside normal construction hours.

10.1.2 Access Routes

The expected construction material will be from the greater Sydney metropolitan area, with the bulk of deliveries in the form of concrete trucks considered to be from Blackwattle Bay or St Peters.

Right turns are not permitted into University Avenue from Parramatta Road. Construction vehicles would take the following routes shown in Figure 22 . Larger vehicles travelling from the western side of Parramatta Road would have to make a detour to the Princes Highway, rather than use Catherine Street.

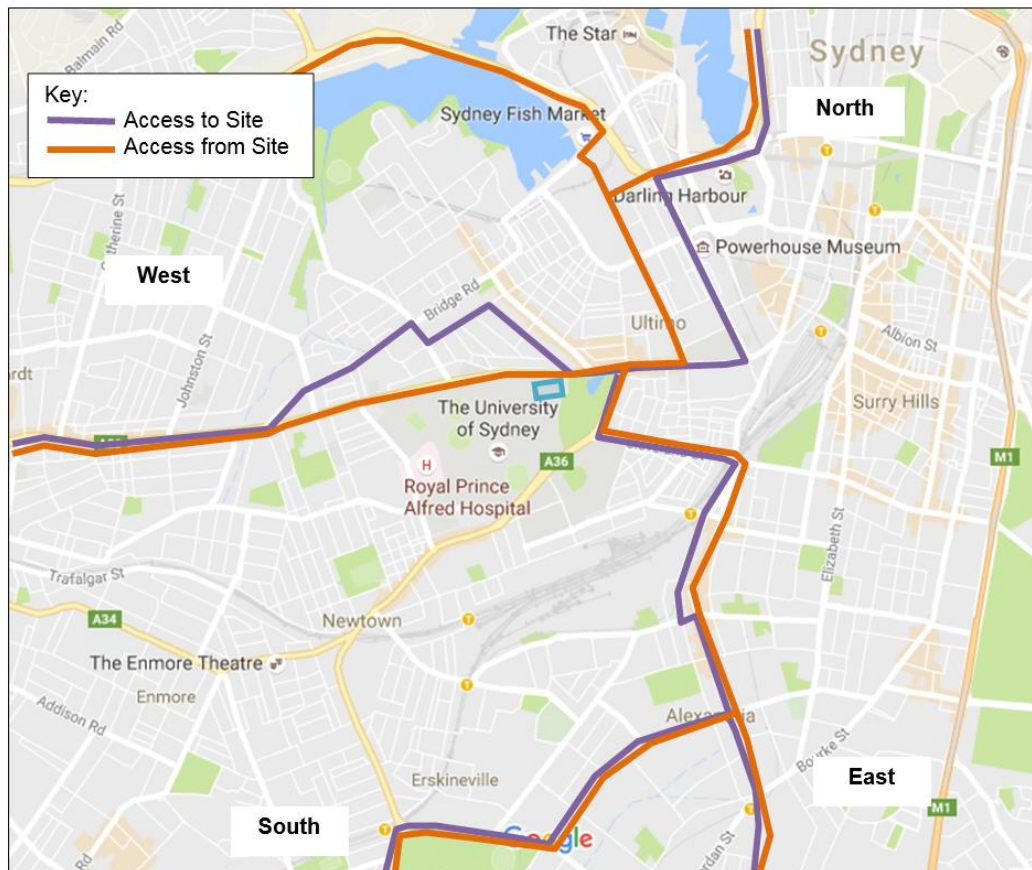


Figure 22: Suggested routes for construction vehicles

10.1.3 Access management and control

The challenge of this project will be to maintain segregation of construction vehicle operations and pedestrian foot traffic within the Campus. Pedestrians approach via buses, and foot from Parramatta Road, utilising the footbridge over both Parramatta Road and the signalised pedestrian crossings at the Derwent Street intersection. It will be imperative that traffic controllers control vehicle movements and pedestrians to ensure safe entry of vehicles into the site.

Vehicle management will be controlled by the traffic controllers ensuring construction will have no effect on Parramatta Road. Communication to traffic controllers for vehicles on approach will be via mobile phone, whereby the designated traffic controller located at the University Avenue entry will be contactable by delivery drivers to ensure access is provided. At no times are deliveries permitted to park on Parramatta Road.

Pedestrian access around the site should be maintained during construction. Traffic controllers should be deployed at key areas when needed. An overview is shown in Figure 23.



Figure 23: Maintaining pedestrian access

10.1.4 Description of Proposed Development Works

The proposed development of the Chau Chak Wing Museum will consist of the following building elements:

- Lower Level 01 (RL 20.00), CERC, plant rooms, outdoor courtyard;
- Lower Level 02 (RL 25.50), Gallery, Collection Stores and Loading Dock;
- Lower Ground 03 (RL31.00) Café, Amenities, Gallery, Study;
- Ground Level 04 (RL35.50), Arrival, Shop and Cloak Room, Gallery, Auditorium and Project Rooms;
- Upper Level 05 (Upper Floor, RL39.20), Gallery, Amenities and Boardroom;
- Plant Level 06 (R43.350), Plant Rooms.
- Roof Level 07 (RL48.50)

The building on completion will consist of approximately 6,800m² of Gross Floor Area.

10.1.5 3.3 Programme

The following key milestones are identified for the construction of the Chau Chak Wing Museum:

- Commencement of Construction Works – 16 October 2017;
- Base Building Completion - 04 April 2019; and
- Fitout of Exhibition Space Completed, and Museum Opening - 6 June 2019.

10.1.6 Construction traffic volumes

It is expected that the peak movements during the structure phase of construction will be bogies removing spoil from the excavation and supply of concrete trucks. The peak movements are calculated as follows;

- Approximately 15 truck and dog loads of spoil removal per day for 60 days during excavation – 27,560m³ net.
- Approximately 40 concrete loads per major concrete pour
- On average we anticipate approx. 10 to 15 truck and 5 to 6 courier/van deliveries per day.

10.1.7 Cumulative construction impacts

A range of construction activities are planned and proposed around the university with an overview of the proposed construction entry and exits for each building shown in Figure 24. Each building will commence construction at different phases, with a summary shown in Table 3. The plan indicates that buildings ID 1, 2, 8 and 11 (CCWM) are planned for construction phase in the near future. The remainder of the buildings would occur at a later stage.

Table 3: Summary of construction phase of each building and approximate amount of construction traffic generated

ID	Building name	Planning stage*	Construction Traffic generated per day	
			Trucks	Light veh
1	F23 (P.D. Glen Nicholson)	Construction	10 to 15	5 to 6
2	LEES (P.D. Glen Nicholson)	Construction	10 to 15	5 to 6
3	Health (P.D. Tim Pike)	Planning	-	
4	Wesley College (Precinct 6)	Planning	-	
5	St Paul's College (Precinct 6)	Planning	-	
6	Women's College (Precinct 6)	Planning	-	
7	St Andrew's College (Precinct 6)	Planning	-	
8	FASS (P.D. Scott Biggs)	Construction	10 to 15	5 to 6
9	Regiment (P.D. Geoff Cunningham)	Planning	-	
10	FEIT (P.D. Seamus O'Connell)	Planning	-	
11	Chau Chak Wing Museum	Construction	10 to 15	5 to 6
Total traffic generated per day by building planned for construction in the near future			40 to 60	20 to 24

Notes on Planning Stage*:

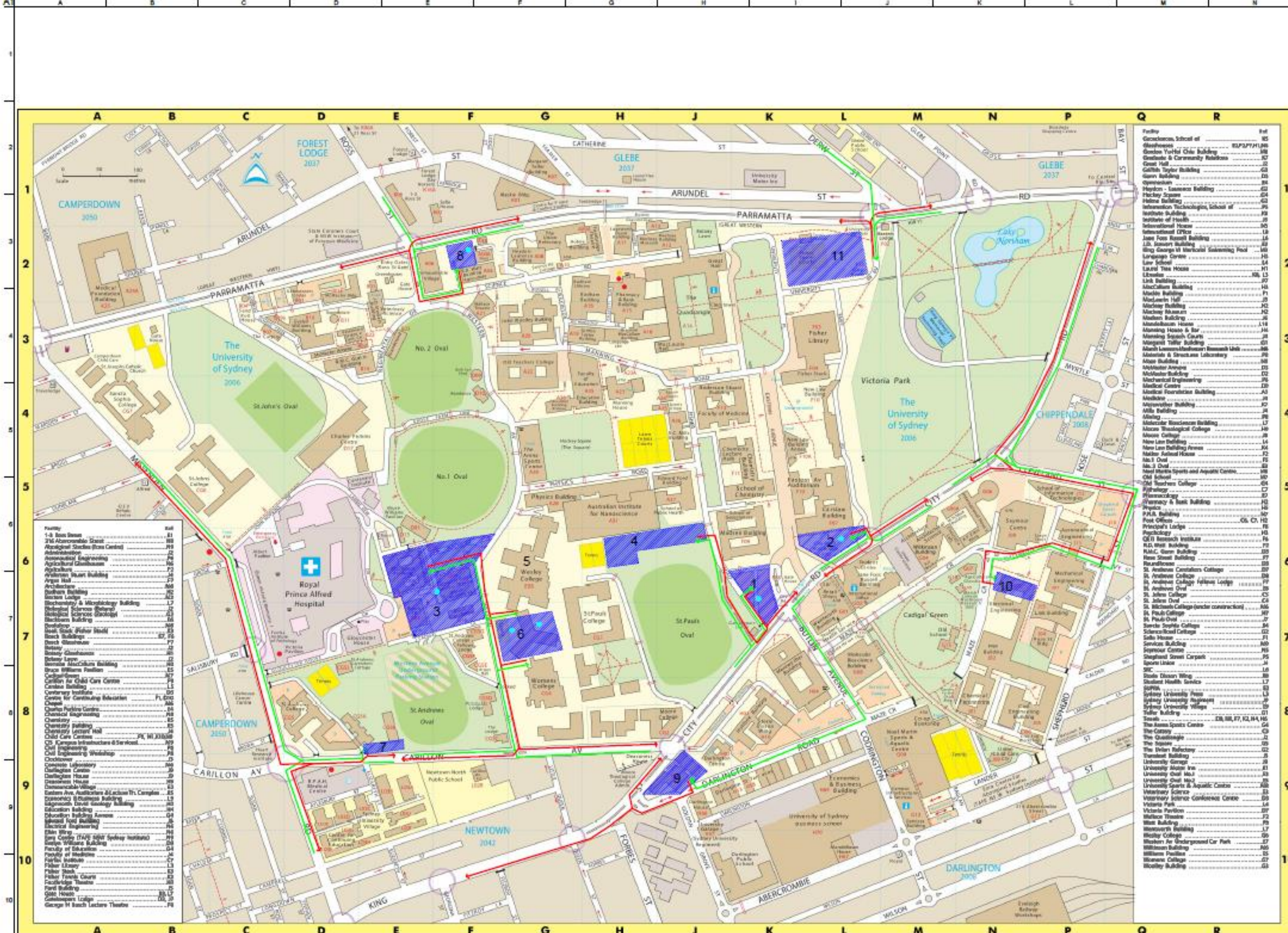
Construction: Planned for construction in the near future

Planning: Upgrades are still undergoing a planning stage

An indicative estimation of the peak number of construction traffic generated, based on various CTMP reports approximates that during the construction phase of these buildings, a maximum of:

- 40 to 60 heavy vehicles will be generated per day
- 20 to 24 light vehicles will be generated per day

Given that these construction vehicles would be spread across the day and accessing the site outside of peak hours, the impacts to the overall road network are likely to be minimal.



- CRANE
- PROPOSED ROUTE
- ENTRY ROUTE
- EXIT ROUTE
- CONSTRUCTION SITE
1. F23
 2. LEES
 3. HEALTH PRECINCT
 4. ST. PAUL'S COLLEGE
 5. WOMEN'S COLLEGE
 6. ST. ANDREWS
 7. FASS
 8. REGIMENT
 9. ENGINEERING
 10. CHAU CHAK WING
 11. WESLEY COLLEGE
- NOTED: OTHERS
5. WESLEY COLLEGE

REV	DATE	BY	CHKD	APPD
REV1	24/02/07	JF	JM	JM
REV2	24/02/07	JF	JM	JM
REV3	24/02/07	JF	JM	JM
REV4	24/02/07	JF	JM	JM
REV5	24/02/07	JF	JM	JM

ARUP

ARUP Ltd, 201 Kent St
Sydney, NSW 2000
Tel: +61 (0)2 9539 9200 Fax: +61 (0)2 9539 9201
www.arup.com.au

University of Sydney
Construction Traffic Management
Plan

Construction Entry and Exit Routes

Scale: 1:1000
Not to Scale
Drawing: Transport
Drawing Date: Draft
Job No: 247168-00
Drawing No: TSK001-01
Page: 02

11 Conclusions and Recommendations

The Project Proposal involves the co-location and consolidation of the Macleay Museum, Nicholson Museum and University Art Gallery as well as collections from a number of currently fragmented locations into a new single museum building to be known as the Chau Chak Wing Museum (CCWM). Arup has conducted a traffic and transport study of the existing and future conditions, with the key findings below:

- Census data for the travel zone immediately surrounding the university indicates that 60% of staff travel to the site via non-car modes.
- Staff currently working at the existing university museums would migrate to the CCWM. With the number of museum staff within the university being unchanged, parking and traffic generated from CCWM staff are expected to be unaffected.
- Existing university museum data has been analysed. The busiest week in August 2015 was found to be during August 24 to 30 with a total of 5,800 visitors.
- An assessment of the existing transport features to the site has been carried out. Existing public transport and parking is found to be efficient and sufficient.
- The CCWM will provide no public car parking, instead relying on the adjacent on-campus parking. The Sydney LEP 2012 rate is a maximum rate, and it is appropriate that the CCWM continues to utilise available nearby parking.
- A travel demand strategy has been detailed in the report
- Traffic generation of CCWM is minimal given the typical arrival profile and travel characteristics of visitors. Based on the profile, the weekday peak hour period at 11am would generate some 16 vehicles or 70 vehicles per day.
- The CCWM is classed as ‘any other purposes’ in the document and notes that should the development generate 200 or more vehicles the development would be referred to the RMS. Given that the development will generate less than 200 vehicles, no consultation with RMS would be needed.
- Proposed traffic management principles would be adopted during the construction period: