

Traffic

URaP – T T W



**Consulting Engineers**

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## **Traffic and Parking Report for Materials Science and Engineering Building, University of New South Wales, Kensington Campus**

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Prepared for  
The University of New South Wales

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Job No: 121523 UT

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**Appendix B:** UNSW Travel Mode Data

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## Response to Director's General Requirements

No	DGR Key Issues - Transport	Comments
1	<i>General</i>	<i>The study has been carried out with consideration to relevant guidelines and planning documents including: RMS's Guide to Traffic Generating Developments, AUSTROADS and state, regional and Randwick Council's planning documents including State Plan 2021, Metropolitan Plan for Sydney 2036 (Transport), State Environmental Planning Policy (Infrastructure) and UNSW/Council Development Control Plan and Council's relevant documents.</i>
2	<b>Construction:</b> <b>8. Transport and Accessibility (Construction)</b> Detail access arrangements at all stages of construction and measures to mitigate any associated pedestrian, cycleway or traffic impact	<i>A comprehensive Construction Management Plan will be prepared prior to the commencement of works. Construction access routes will be in line with Council and RMS's in order to meet their requirements. All vehicular movements to and from the site will be in forward direction. Section 3.5 provides detailed overview of construction activities and designated approach routes.</i>
3	<b>7. Transport and Accessibility (Operation)</b> <b>7.1</b> Detail access arrangements at all stages of operation and measures to mitigate any associated traffic impacts. <b>7.2</b> Demonstrate how users of the development will be able to make travel choices that support the achievement of State Plan targets. <b>7.3</b> Detail existing pedestrian and cycle movements within the vicinity of the site and determine the adequacy of the proposal to meet the likely future demand for increased public transport and pedestrian and cycle access.	All access arrangements are per existing road network and detailed in Section 3.4.  The UNSW has progressively sought to reduce car use among its patrons. These measures are detailed in Sections 2.5, 3.2 and 3.3.  <i>Bike plan and pedestrian network for the site and accessibility to the site are discussed in Sections 2.3 and 3.2.</i>
7.4	Describe the measures to be implemented to promote sustainable means of transport including public transport usage and pedestrian and bicycle linkages in addition to addressing the potential for implementing a location specific sustainable travel plan.	Please see comments above (No 7.2).
7.5	Demonstrate the provision of sufficient onsite car parking having regard to the availability of public transport. (Note: reduced car parking provision may be supported in areas well serviced by public transport.)	Section 3.3 discusses parking requirements with an objective to meet sustainable travel plan.
7.6	Estimate the total daily and peak hour trips generated by the proposed development, including accurate details of the current and future daily vehicle movements and assess the impacts of the traffic generated on the local road network, including intersection capacity and any potential need for upgrading or road works, having regard to local planning controls.	Section 3.4 of report provides detailed assessment of traffic generation and impact analysis.
7.7	Relevant Policies and Guidelines:	<i>Please note response to item 1 that all relevant Guides have been considered as part of the report.</i>

# **1 INTRODUCTION**

## **1.1 Background**

This report has been prepared for the University of New South Wales (UNSW) in support of a new building to accommodate growth in the School of Materials Science and Engineering (the School) at its Kensington campus. The key objectives of the new facility will be to:

- provide a point of focus for UNSW's defined research strength of next generation materials and technologies;
- provide a world class showcase to enable the School to grow and respond to opportunities;
- attract funding, academics and students;
- foster collaboration across faculties and schools;
- support and encourage learning; and
- support and showcase UNSW's commitment to leadership in sustainability.

The purpose of this report is to provide an assessment of traffic and parking requirements for the design documentation with consideration to UNSW Kensington Campus Development Control Plan (DCP), Australian Standards, Roads and Maritime Services Guidelines and relevant documents such as State Plan and Department of Planning Director General's Requirements – SSD 5373.

## **1.2 The Development Site**

The University of New South Wales Kensington Campus (the Campus) is located approximately six kilometres southeast of the Sydney CBD. The Campus is bounded by High Street to the north, Botany and Willis Streets to the east, Barker Street and Oval Lane to the south and Anzac Parade to the west. There is a western campus located on the opposite side of Anzac Parade which accommodates NIDA, a car park and the New College Post Graduate Village.

The site of the new facility, located at campus grid reference E10, lies north-east of the Law building (F8) and north of the Chemical Sciences building (F10) and east of the existing Materials Science and Engineering Building.

The new building will be located in a densely populated campus environment. Roadways to accommodate deliveries by truck will be located within 10 metres of the building on two sides.

The site is located within the Randwick Local Government Area.

The location of the new MSEB is shown in Figure 1.1 and the construction work zone is shown on page 6 (Figure 1.2).



**FIGURE 1.1 NEW MSEB LOCATION**

### 1.3 Scope of the Report

The report is divided into four sections:

- Section 1; includes the introduction;
- Section 2; covers the existing condition and planning controls;
- Section 3; covers the development proposal and transport implications; and
- Section 4 contains the conclusion.



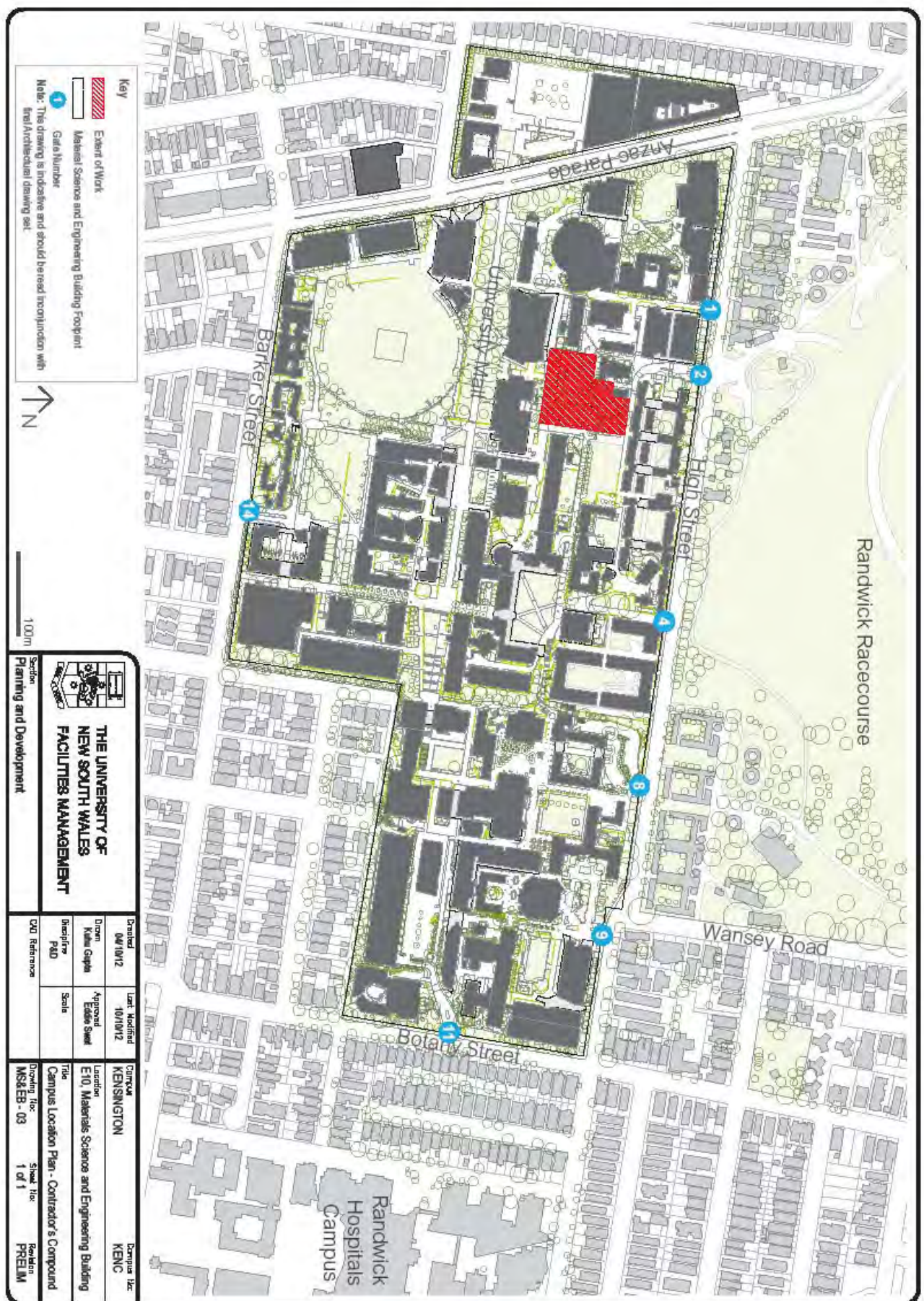


Figure 1.2 Proposed Construction Work Zone - Locality Map

## **2 EXISTING CONDITIONS**

### **2.1 Street System**

The major approach routes to the development site are via Anzac Parade and High Street. Vehicular access to the site is from Gate 2 in High Street via an internal access road which is over 6.0 metre wide in accordance with the Council's code and the Australian Standards. Gate 2 links to the development site via internal roads Gate 2 Avenue and 3<sup>rd</sup> Avenue.

Anzac Parade is a major north-south road and carries over 40,000 vehicles per day (vpd) at Barker Street. High Street runs in an east-west direction and has a four lane carriageway, with on street parking on each side. High Street has a peak hour traffic volume of 1,000 vehicles per hour (vph).

The intersection of Anzac Parade with High Street is controlled by traffic signals with pedestrian crossing facilities. The intersection of High Street with Gate 2 is also controlled with traffic signals and pedestrian crossing facilities.

### **2.2 Parking Review**

The UNSW Kensington Campus provides various parking opportunities for bikes, motorcycles and cars. Throughout the campus there are designated locations for parking provisions of the above vehicles. Car parking facilities are provided on a casual or leased basis.

There are a number of multi-storey and at grade car parks within the Campus that are available for use. These are shown in Appendix A.

The subject development area (Figure 1.1) associated with the proposed Materials Science and Engineering Building currently accommodates some 84 spaces which will be subject to modification as discussed in section 3.3.

### **2.3 Active Transport**

The Campus is well connected by pedestrian walkways as well as its surroundings. This is well documented as part of the UNSW Campus 2020 DCP. Pedestrian routes and facilities form a major part of pedestrian amenity for the users of the area (e.g. pedestrian crossing facilities are available along major roads surrounding the Kensington Campus).

The existing bicycle routes provide connection to the Kensington Campus along routes such as Alison and Wansey Roads. The planned bicycle routes will also provide further access to the Campus. The existing and planned bicycle routes are illustrated in Appendix A.

Bicycle parking facilities are readily available with the Campus. The locations of bicycle racks within the Campus are shown in Appendix A.



## 2.4 Public Transport

Access by public transport to the Campus is well established. They are supported by a full range of options and strategies for travel to and from the Campus and its environs.

Bus routes that provide services to the Campus and its environs are shown in Figure 2.1. The main bus routes that service the area include 302, 303, 391, 392, 393, 394, 395, 396, 397 and 399 and particularly routes 370, 348, 410, 400 and M50 that pass by the Campus. The 890, 891, 892 and 895 routes are express services between Central Station and the Campus.

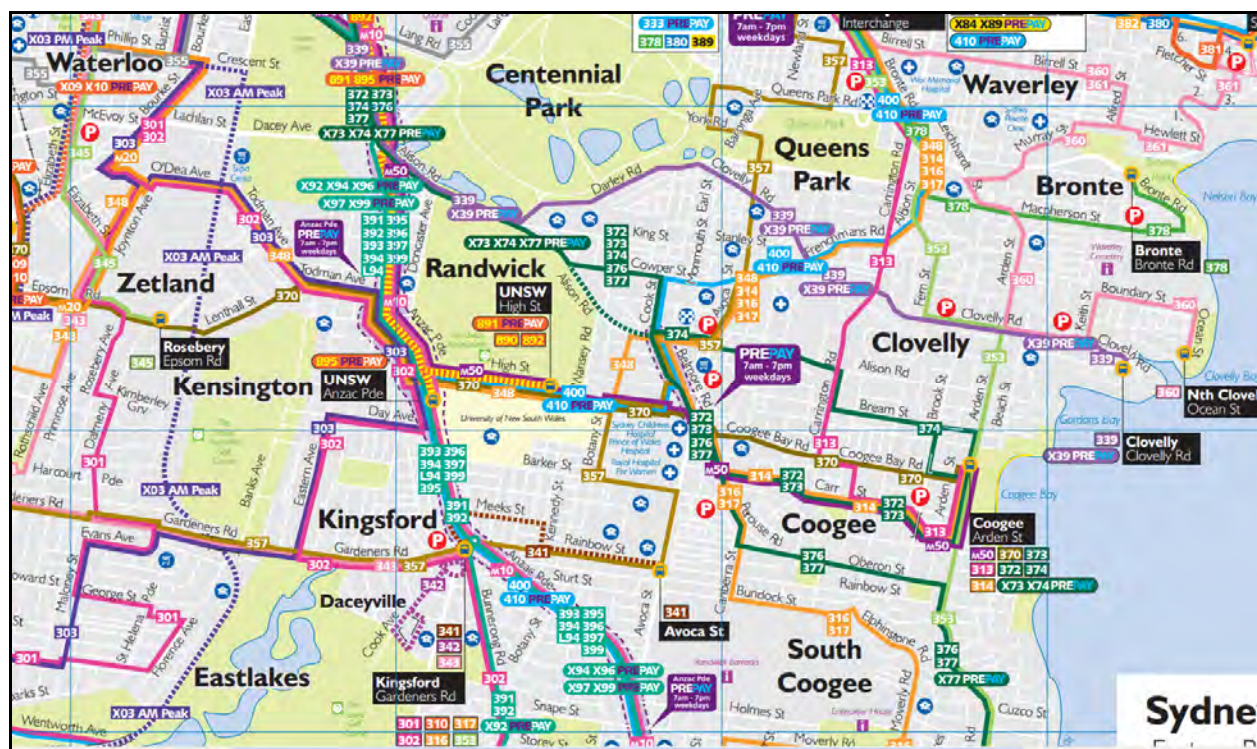


Figure 2.1 Bus Routes

Table 2.1, on the following pages, provides an overview of major bus services indicating their high level of frequencies during designated hours.

The development site will therefore have excellent access to the existing bus route system that connects the campus to the eastern suburbs as well as the City and Central Station.

The University also provides a number of travel options to and within the Campus and these are made known to users via media release booklets and websites. These options include: shuttle buses between the Kensington Campus and the Paddington Campus, train/bus timetables, disabled access within the campus and a staff travel pass.



**Table 2.1 Major Bus Route Frequencies**

Route	Operates between (Services to...)		Stop	Number of Busses AM Peak (7-9)		Number of Busses Daytime (9-4)		Number of Busses PM Peak (4-6)	
	Inbound	Outbound		IB	OB	IB	OB	IB	OB
<b>M10</b>	Leichhardt (via City)	Maroubra	AP	1 Every 10 min		1 Every 15 min		1 Every 10 min	
<b>M50</b>	Drummoyne (via City)	Coogee	HS	1 Every 10 min		1 Every 15 min		1 Every 10 min	
<b>302</b>	City	Eastgardens	AP/DA	0	0	7	7	1	0
<b>303</b>	City	Sans Souci	AP/DA	11	3	14	14	2	9
<b>348</b>	Wolli Creek	Bondi Junction	HS	4	3	14	15	4	4
<b>357</b>	Sydenham	Bondi Junction	BS	4	4	8	8	4	4
<b>370</b>	Leichardt	Coogee	HS	10	12	26	25	10	11
<b>391 &amp; 392</b>	City	La Perouse/ Little bay via Bunnerong Rd	AP	19	5	29	30	8	13
<b>393</b>	City (railway)	La Perouse /Malabar	AP	25	11	33	43	19	11
<b>394 &amp; L94, 399</b>	City	La Perouse /Malabar	AP	23	11	44	44	13	10
<b>395</b>	City (railway)	Maroubra	AP	7	3	14	14	5	8
<b>396, 397</b>	City	Maroubra	AP	11	5	30	27	8	11
<b>400</b>	Bondi Junction	Burwood	AP	18	15	64	65	16	25
<b>410</b>	Bondi Junction	Rockdale	AP	4	2	2	7	6	3
<b>890</b>	To UNSW High street from Circular Quay (via Taylor Square), Express (one direction only)		HS	NA	2	NA	1	NA	0
<b>891</b>	UNSW High Street - Express	Central - Express	HS	41	0	89	16	0	26
<b>892</b>	To City (young St set down) via Central from UNSW High St, Express (one direction only)		HS	0	NA	0	NA	2	NA
<b>895</b>	UNSW (Anzac Parade) to Central (one direction only)		AP	0	NA	35	NA	37	NA

**Key:** AP: Anzac Parade; HS: High Street; DA: Day Ave; BS: Botany Street

**Table 2.1 Continued Major Bus Route Frequencies**

Route	Operates between (Services to...)		Stop	Bus Headways (min) AM Peak (7-9)		Bus Headways (min) Daytime (9-4)		Bus Headways (min) PM Peak (4-6)	
	Inbound	Outbound		IB	OB	IB	OB	IB	OB
<b>M10</b>	Leichhardt (via City)	Maroubra	AP	10		10		10	
<b>M50</b>	Drummoyne (via City)	Coogee	HS	10		10		10	
<b>302</b>	City	Eastgardens	AP/ DA	No Bus	No Bus	60	60	120	No Bus
<b>303</b>	City	Sans Souci	AP/ DA	11	40	30	30	60	13
<b>348</b>	Wolli Creek	Bondi Junction	HS	30	40	30	28	30	30
<b>357</b>	Sydenham	Bondi Junction	BS	30	30	53	52.5	30	30
<b>370</b>	Leichardt	Coogee	HS	12	10	16	16.8	12	11
<b>391 &amp; 392</b>	City	La Perouse/ Little bay via Bunnerong Rd	AP	6	24	14	14	15	9
<b>393</b>	City (railway)	La Perouse /Malabar	AP	4.8	11	13	10	6.315 789	11
<b>394 &amp; L94, 399</b>	City	La Perouse /Malabar	AP	5	11	10	10	9	12
<b>395</b>	City (railway)	Maroubra	AP	17	40	30	30	24	15
<b>396, 397</b>	City	Maroubra	AP	11	24	14	16	15	11
<b>400</b>	Bondi Junction	Burwood	AP	7	8	7	6	7.5	5
<b>410</b>	Bondi Junction	Rockdale	AP	30	60	210	60	20	40
<b>890</b>	To UNSW High street from Circular Quay (via Taylor Square), Express (one direction only)		HS	NA	60	NA	420	NA	No Bus
<b>891</b>	UNSW High Street - Express	Central - Express	HS	2.9268 2927	No Bus	4.719 101	26.2 5	No Bus	4.6 153 85
<b>892</b>	To City (young St set down) via Central from UNSW High St, Express (one direction only)		HS	No Bus	NA	No Bus	NA!	60	NA
<b>895</b>	UNSW (Anzac Parade) to Central (one direction only)		AP	No Bus	NA	12	NA	3	

**Key:** AP: Anzac Parade; HS: High Street; DA: Day Ave; BS: Botany Street

**Table 2.1 Continued Major Bus Route Frequencies**

Route	Operates between (Services to...)		Stop	Busses Per Hour AM Peak (7-9)		Busses Per Hour Daytime (9-4)		Busses Per Hour PM Peak (4-6)	
	Inbound	Outbound		IB	OB	IB	OB	IB	OB
<b>M10</b>	Leichhardt (via City)	Maroubra	AP	6		4		6	
<b>M50</b>	Drummoyne (via City)	Coogee	HS	6		4		6	
<b>302</b>	City	Eastgardens	AP/DA	0	0	1	1	0.5	0
<b>303</b>	City	Sans Souci	AP/DA	5.5	1.5	2	2	1	4.5
<b>348</b>	Wolli Creek	Bondi Junction	HS	2	1.5	2	2.1	2	2
<b>357</b>	Sydenham	Bondi Junction	BS	2	2	1.1	1.1	2	2
<b>370</b>	Leichardt	Coogee	HS	5	6	3.7	3.6	5	5.5
<b>391 &amp; 392</b>	City	La Perouse/ Little bay via Bunnerong Rd	AP	9.5	2.5	4.1	4.3	4	6.5
<b>393</b>	City (railway)	La Perouse /Malabar	AP	12.5	5.5	4.7	6.1	9.5	5.5
<b>394 &amp; L94, 399</b>	City	La Perouse /Malabar	AP	11.5	5.5	6.3	6.3	6.5	5
<b>395</b>	City (railway)	Maroubra	AP	3.5	1.5	2	2	2.5	4
<b>396, 397</b>	City	Maroubra	AP	5.5	2.5	4.3	3.9	4	5.5
<b>400</b>	Bondi Junction	Burwood	AP	9	7.5	9.1	9.3	8	12.5
<b>410</b>	Bondi Junction	Rockdale	AP	2	1	0.3	1	3	1.5
<b>890</b>	To UNSW High street from Circular Quay (via Taylor Square), Express (one direction only)		HS	NA	1	NA	0.14 285 7	NA	0
<b>891</b>	UNSW High Street - Express	Central - Express	HS	20.5	0	12.7	2.3	0	13
<b>892</b>	To City (young St set down) via Central from UNSW High St, Express (one direction only)		HS	0	NA	0	NA	1	NA
<b>895</b>	UNSW (Anzac Parade) to Central (one direction only)		AP	0	NA	5	NA	18.5	NA

**Key:** AP: Anzac Parade; HS: High Street; DA: Day Ave; BS: Botany Street

## 2.5 Development Control Plan (DCP)

The Campus 2020 UNSW Kensington Campus Development Control Plan (DCP) guides future planning and development on the campus. The DCP includes a number of provisions in relation to transport and parking, including the following:

- reducing travel by private car and reducing on-site parking;
- annual surveys of travel behaviour;
- working with bus and rail operators to improve public transport services;
- introducing resident and short term parking on streets around the campus;
- measures to determine and manage future on-site parking provision; and
- measures to encourage walking, cycling and public transport at the campus.

Making transport more sustainable is one of the key platforms of the Campus 2020 DCP. This is to be achieved by improving access to the campus by public transport in preference to private vehicle use. Parking is to be reduced over time, but made more available across the day and night for students, staff and visitors. Other modes of transport such as cycling and walking are also to be made more attractive and safer.

A number of measures have been implemented in the recent years to help achieve these objectives. These have included:

- Additional bus services being operated by Sydney Buses to serve the campus, including pre-paid services to and from Central Station.
- Ticket facilities and a loading marshall at the Anzac Parade bus stop for 895 afternoon and evening express bus services to Central Station;
- A loading marshall at the Gate 9 departure bus stop for 891 and 892 afternoon and evening express bus services to Central Station;
- A carpooling scheme introduced in May 2009 for staff and students;
- New student accommodation on-campus of some 1,330 beds that have reduced the demand for travel to and from the campus; and
- An annual travel survey of staff and students to measure changes in travel behavior and to guide the planning of new transport services.

**Figure 2.2** on the following page shows the Transport Strategy from the DCP



## transport

The Campus Transport Strategy promotes public transport usage.

intensification of public transport services would focus on Ayrac Parade and High Street and associated primary entry points into the campus

There is a need for limited additional car parking on the lower campus, east and west of Artze Parade.

To enhance on-campus pedestrian safety, access to campus car parks is indicated from perimeter streets, with low speed service and emergency vehicles contraining to use some corrective campus spaces.

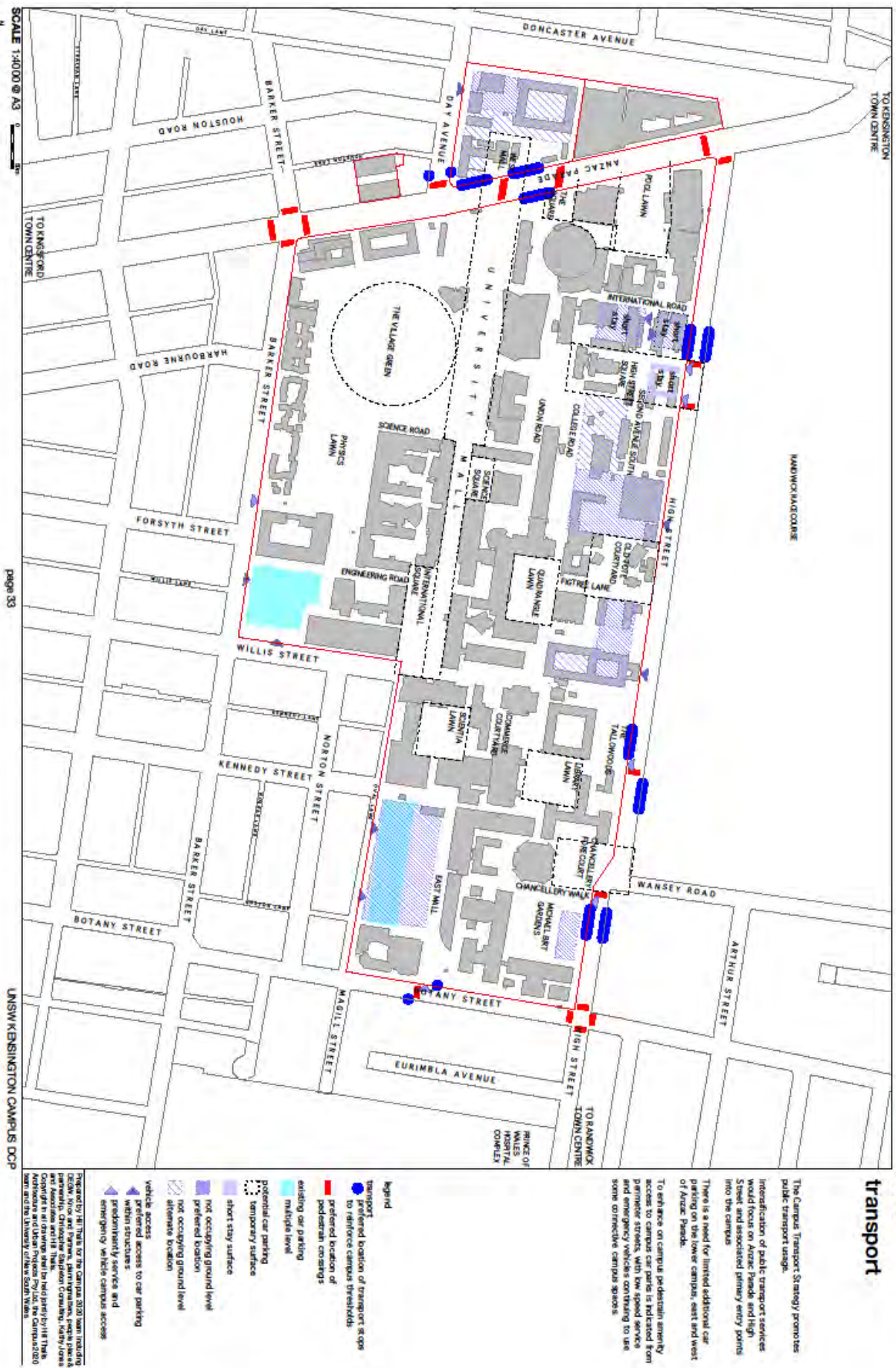


Figure 2.2 Transport Strategy (source: UNSW Kensington Campus DCP)