URaP – TTW

Consulting Engineers

Traffic

Traffic and Parking Report for Tyree Building, University of New South Wales - Kensington Campus

Prepared for
The University of New South Wales

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1 INTRODUCTION

1.1 Background

This report has been prepared for the University of New South Wales Ltd in support of a new Energy Technologies Building to be known as the Tyree Building.

The building will provide high quality space to accommodate leading edge research facilities in key energy areas, including carbon capture and storage, oil and gas reservoir characterisation, carbon trading, nano materials and policy and market analysis.

The purpose of this report is to provide assessment of traffic and parking requirements for the design documentation with consideration to UNSW Kensington Campus Development Control Plan (DCP), Australian Standards and Roads and Traffic Authority's Guidelines.

1.2 The Development Site

The University of New South Wales (UNSW) Kensington Campus is located approximately six kilometres southeast of the Sydney CBD. The main campus is bound 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 the Parade Theatre, NIDA and a small number of other facilities. The main campus is divided into upper, middle and lower campus zones.

The site of the proposed building is at UNSW on the lower campus at the junction of University Mall, Anzac Parade and Day Avenue. The site is located to the north of New College, west of Sam Cracknell Pavilion and Village Green and south of University Mall. It is identified in the Campus 2020 Master Plan, adopted by Randwick Council in 2005, as both an icon site, because of its landmark location, and a potential development site.

The site is located within the Randwick Local Government Area.

1.3 Scope of the Report

The report is divided into four sections, following the introduction.

- Section 2; covering the existing situation and planning controls;
- Section 3; covering the development proposal and transport implications; and
- Section 4 containing the summary & conclusions.

2 EXISTING CONDITIONS

2.1 Street System

The major approach routes to the site are via Anzac Parade and Barker Street. Vehicular access to the site is from Gate 14 off Barker Street from a driveway which is over 6.0 metre wide in accordance with the Council's code and the Australian Standards. Gate 14 links to the development site via the internal road *Southern Drive*.

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

The intersection of Anzac Parade with Barker Street is controlled by traffic signals with pedestrian crossing facilities.

2.2 Public Transport

Access and transport for the University Campus is well established. It is supported by a full range of options and strategies for travel to the University and it surrounding areas.

Bus routes that provide services to the University and its environs are shown in Figure 1. The main bus routes that service the area and its surroundings include 302, 303, 391, 392, 393, 394, 395, 396, 397 and 399. The proposed site has an excellent access to bus route system connecting the site to the eastern suburbs as well as City and Central Station.

The University also provides a number of travel options associated with the Campus and these are readily available to users via media release booklets and websites. These options as listed by the University include: Shuttle buses, train/bus connections, disabled access and staff travel pass.

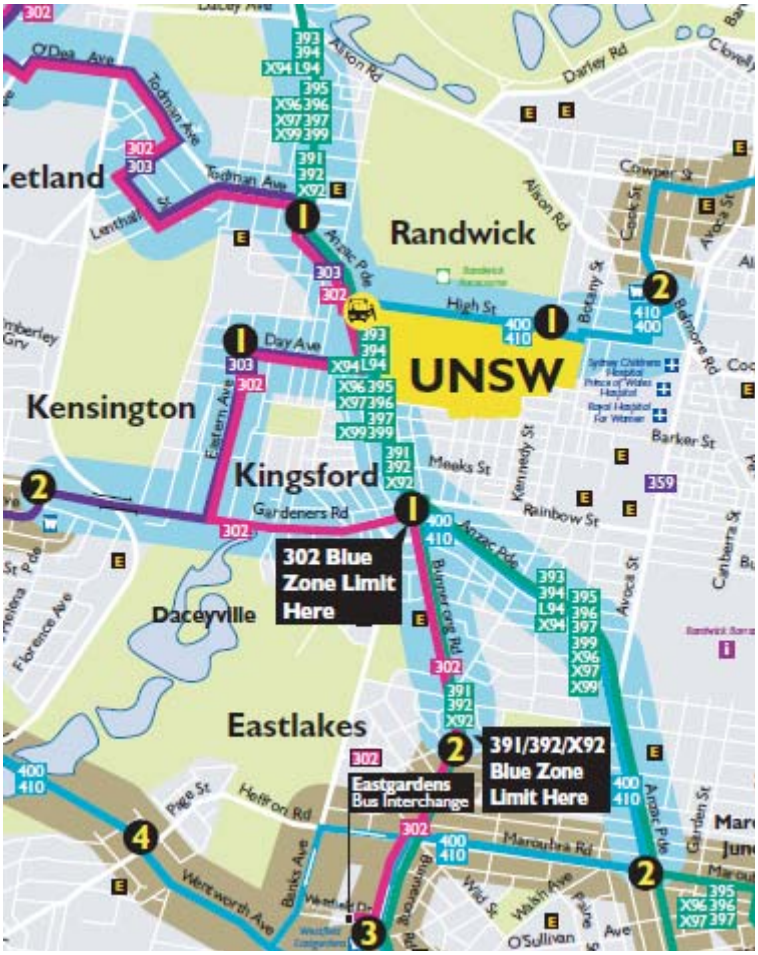

Figure 1 Bus Routes

2.3 Development Control Plan (DCP)

A DCP (adopted by Council) has been prepared to guide future development at the university (Campus 2020 UNSW Kensington Campus Development Control Plan). 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 Master Plan. 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 last two 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 and a new 348service between Bondi Junction, UNSW, Alexandria and Wolli Creek Station introduced in April 2009;

- ticket facilities and a loading marshall at the Anzac Parade bus stop;

- an additional service by Telfords between Redfern Station and the campus;

- a carpooling scheme introduced in May 2009 for staff and students;

- new post graduate student accommodation of some 300 beds on Anzac Parade in 2009; and

- new student accommodation of some 1,030 beds on High Street in January 2010.

3 PROJECT PROPOSAL

3.1 The Proposal

The proposed development consists of a new four and a half (4.5) storey Energy Technologies Building of approximately 15,200m2 of floor space area and associated servicing, landscape and public domain works on the site of the existing tennis courts, Grounds Depot and cricket nets on the south-eastern corner of Anzac Parade and University Mall at UNSW's Kensington Campus. Specifically the proposed development comprises:

- a standalone building with 4 and a half floors and a lower ground/semi-basement level
- learning and teaching spaces including tutorial rooms, computer laboratories, and lecture theatres, laboratories and workshops, administration, meetings rooms and offices
- lobby, exhibition spaces, circulation, amenities and cyclist facilities
- a café with associated kitchen and storeroom
- a central atrium space with access stairs and pedestrian bridges connecting the floor levels through the full height of the building
- standard building services including air conditioning, ventilation, lighting, power, communications, security, hydraulic and fire detection systems, storage and plant spaces
- specialised dangerous goods storage and handling, and
- external works around the building including roadworks, pavements, retaining walls and landscaping.

The overall population of the building will be in order of **1200** persons of whom some **1100** will be transferred from other buildings on the campus.

3.2 Transport and Accessibility

The site is located at south-east corner of Anzac Parade and University Mall. A mid-block signalised pedestrian crossing facility along Anzac Parade is located within very close proximity (less than 50m) to the north of the site.

The intersection of Anzac Parade and Barker Street which is located about 200m to the south of the site is controlled with traffic signals, and also provides pedestrian crossing facilities.

University Mall and other internal routes within the University Campus provide a high level of pedestrian and bicycle connectivity to the site.

The site is serviced by many bus services and has excellent transport accessibility.

As stated earlier, bus services provide connections (from the site) to Bondi Junction, Circular Quay, City, Town Hall and Central Train Stations.

The University endeavours to achieve a high level of active (i.e. walk and cycling) and public transport among its users and has been consistently effective in maintaining such goals. Such targets respond to the appropriate planning controls including the DCP for the University Campus that states:

"Council and the UNSW to enter into an agreement on the Management of Parking and Traffic for a five year period and review progress thereafter. The short term management agreement to include:

a) BUS TRAVEL
(i) Council and the UNSW to work together on preparing a submission to Sydney Buses, through their Regional Board, for additional services to the University. The submission to be based on the transport analysis completed for the Campus 2020 Master Plan.
(ii) Council and the UNSW to work together on a management scheme to improve bus operations in High Street. This work to commence with an origin and destination survey to determine the proportion of traffic turning right into Botany Street from High Street (west). Options include banning the right turn into Botany Street thereby clearing delays from High Street and a bus lane from Wansey Road to Botany Street thereby giving priority to buses.

b) RAIL TRAVEL
Council and the UNSW to work together on preparing a submission for a rail connection to the University.

c) LOCAL STREET PARKING PLAN
The University and Council to reach agreement on a parking control plan for the streets surrounding the University. It is anticipated that this plan may have the following objectives.
(i) Provide 50% of kerb space for residents and short term parking (time may vary according to local need) with 50% of kerb space to remain unrestricted. The plan is intended to comfortably accommodate all residential users and their visitors leaving a large proportion of short term spaces unoccupied. Unrestricted spaces will also be used by residential visitors wishing to stay a long time in the area.
(ii) Introduce the plan over three years.
(iii) Review the plan after three years.

d) SHORT TERM PARKING
Consideration to be given to introducing short term parking in streets immediately surrounding the University until such time that 10% of spaces remain unoccupied at 11:00 am on weekdays, which is the peak accumulation of staff and students on campus.
Achievement of unoccupied spaces demonstrates that demand has been met by allowing turnover of spaces."

These initiatives have been actively pursued by UNSW, such that the most recent travel survey has demonstrated a reduction in the use of private vehicles from 32% to 25% over the last three years (please refer to section 2.3 for a number of measures that have been implemented).

3.3 Parking

The DCP for UNSW states the following in relation to parking provision:

"The total number of parking spaces on campus is to be maintained until such time as it is demonstrated through the annual parking survey that the total number may be reduced without adversely impacting parking on the surrounding streets. In the event of development that would increase the total population of staff or students then the prevailing mode of travel and distribution of parking (as measured in the latest survey) to be used to assess the future travel patterns and parking demand. The additional campus population arising from the development to be considered as the same proportion of the existing peak population (at 11:00 am weekdays) of students and staff to the total number of students and staff respectively."

"Parking fees on campus to be increased annually subject to ongoing monitoring. This is not anticipated to have any appreciable impact on on-street parking but will leave the way open to a continued disincentive to driving in the 10 to 15 year period. It will also pave the way to introduce some student parking (including permit parking) onto the campus at a higher fee than staff sometime after the initial five year period."

"As parking becomes available on campus, as a result of increased use by staff of public transport and increased fees, these spaces to be reassigned for short term and student parking. UNSW to continue to optimise the use of spaces on campus."

"The short term parking requirements of external users for special events to be accommodated on campus as part of event coordination and parking management. (This will not stop the use of short term parking on the surrounding streets)."

In line with DCP for the UNSW and the University's policy, the proposed development does not provide any parking for its additional users. This reflects the fact that most users of the proposed development will continue to use their current parking arrangements per their existing situation. **Table 3.1** indicates the reduction of motor vehicle use associated with the University Campus from **32.13%** to **24.07%** during a three year period between **2007** and **2009**.

Table 3.1 Mode of Travel to and from the University

Mode	2007 Count	2007 %	2008 Count	2008 %	2009 Count	2009 %
Car Driver	2039	*29.13*	2252	*21.54*	1454	*22.22*
Car Passenger	144	*2.06*	174	*1.81*	114	*1.74*
Motorbike	66	*0.94*	98	*1.02*	66	*1.01*
Sub-Total	2249	*32.13*	2524	*26.27*	1634	*24.97*
Bus	1173	16.76	1866	19.42	1319	20.15
Train and Bus	2253	32.19	3386	35.24	2433	37.17
Sub-Total	3426	48.94	5252	54.66	3752	57.33
Bike	191	2.73	268	2.79	236	3.61
Walk	1003	14.33	1398	14.55	840	12.83
Live on Campus	131	1.87	166	1.73	83	1.27
Sub-Total	1325	18.93	1832	19.07	1159	17.71
Total	**7000**	**100**	**9608**	**100**	**6545**	**100**

Note: Counts includes number of students and staff – see Appendix for full data
Source: UNSW

It is anticipated that the proposed building will accommodate some **1200** persons. Of these a total of some **1100** are part of the existing campus population and will continue to have their parking arrangements similar to the existing situation. The additional parking demand for additional 100 staff of the site could only result in a maximum 24 spaces. This is on the basis that the 2009 travel survey (UNSW) showed that 44% of staff travelled to the campus by car and the remaining 56% were either car passengers, travelled by motorbike, public transport, walked or cycled i.e. 56% created no demand for parking. In 2 years time (see clause 6 of the DCP Transport Strategy) when the Tyree Building opens it could reasonably be argued that the 44% would decrease further – say to a conservative 40%.

It could therefore be reasonably assumed that 40 of the additional 100 additional staff to be accommodated in the Tyree Building would then be drivers. Calculation of their parking requirement would be based on the 60% of staff attending at the 11am peak period using the DCP transport strategy. Therefore 60% of 40 additional staff equates to **24** additional parking spaces.

Further, considering that not all the users will be on site at one time, it is well justified to assume that any additional parking demand from the proposed development will be small.

As it is illustrated in Table 3.1, the demand for car use has consistently been decreased by the University users from some 26.27% motor vehicle use in 2008 to 24.97% in 2009 (considering that public transport use has increased from 54% to 57% during the same period).

Therefore such steady decrease in car parking demand could easily accommodate the additional 24 parking spaces (if it would be required) within the University Campus. However, these measures will discourage such demand.

Accordingly, no major parking provision is proposed as the result of the proposal which is consistent with the DCP and its objectives. Such measures will encourage more use of public and active transport associated with the campus which is among main purposes of the DCP for UNSW, Kensington Campus.

The site will however accommodate 2 spaces for loading vehicles while an area on the south side of the Tyree Energy Technologies Building as part of its research and technology program (laboratory area) will be used for charging electric cars and FM maintenance vehicles/equipments. All vehicular movements associated with the site will take place in forward direction.

3.4 Road Network and Access

The proposed development site will accommodate some 100 additional staff on the site. As discussed earlier the travel mode to and from the University will account for 40% drive a car. Therefore, the maximum number of vehicular trips per day would be in order of 80 trips (40 in and 40 out). In addition to this a total of some 40 vehicular trips associated with deliveries could occur during a day as the result of the proposed building.

Considering, that not all trips would occur during a one hour period and also their low number (120 trips per day for in and out – deliveries and users), there would be a minimal impact on operation of the road network. This effectively means a maximum number of some 30 vehicles per peak period (i.e. 1 car per 2 minutes).

Therefore, additional traffic generation from the site would have an insignificant impact on the street system and intersection performances in the vicinity of the site.

Vehicular access to the site will be maintained as per the existing situation where vehicles will gain access to the site from Gate 14, off Barker Street via Southern Drive.

The loading area for the site is located on the south-east corner of the proposed building. It is envisaged that vehicular access to and from the site will be in a forward direction (turning paths for medium rigid trucks are shown in Appendix A).

Access to the site during the construction period will generally be from Anzac Parade,. utilising an existing loading area on south-eastern part of the site.

3.5 Summary

No adverse impact in terms of vehicular traffic generation or parking demand will be experienced as a result of the proposed development.

The proposal for the site is in line with current transport strategies and guidelines such as “Action for Transport 2010” and Council’s DCP objectives on reducing car use.

The proposed development provides an integrated land use and transport development not only to satisfy the current initiatives (by governmental instruments) but taking appropriate actions to implement such measures. In summary, the project contains the following characteristics:

- The project site is located in the Randwick Local Government Area.
- DCP for UNSW (Randwick Council) where the reduction of car parking is encouraged to reduce the need for car use.
- The site has a high accessibility to pubic transport. Buses provide services in the vicinity of the site (within walking distance) with connection to train stations.
- The project site is located along Anzac Parade within UNSW Campus.
- Ample transport choices are available for the site’s patrons and include: various buses, bicycle, walking, private car and taxi. Bicycle storage areas will be provided at appropriate locations within the project site.
- A safe and efficient access for all modes of transport is available in the vicinity of the site.
- A loading area for service and delivery vehicles is accommodated as part of the proposal and all vehicular movements (in and out) will be in forward direction.
- The site will accommodate 2 spaces for loading vehicles and 5 spaces for electric cars (as part of its research and technology program).

4 CONCLUSION

The approach routes to the site are Anzac Parade and Barker Street. These roads will continue to have a similar level of service to the existing situation once the proposed facility is in operation.

Vehicular access to and from the site will remain as the existing situation. The access layout is in accordance with the Roads and Traffic Authority's Guidelines, Australian Standard and Council's Code.

No adverse impact in terms of vehicular traffic generation or parking demand will be experienced as the result of the proposed development.

Bus routes provide numerous services to the development site which are situated within walking distance to the project site.

Pedestrian facilities and footpaths are available along streets in vicinity to the site. Pedestrian amenities such as ramps and access ways also are included as part of the proposal.

Bicycle parking facilities will be provided as part of the project proposal.

The loading area and access arrangements are acceptable and should comply with Australian Standards. As well, the development will have no unacceptable traffic implications.

Service and delivery vehicles will gain access to the site from Gate 14, off Barker Street via Southern Drive. The loading area for the site is located on the south-east corner of the proposed building. It is envisaged that vehicular access to and from the site will be in a forward direction.

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APPENDIX

Q1: What is your usual method of travel to and from the Kensington Campus?	2007						2008						2009					
	Staff		Student		Total		Staff		Student		Total		Staff		Student		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Motor Vehicle																		
Car driver	231	53.47%	1,808	27.53%	2,039	29.13%	352	44.61%	1,900	21.54%	2,252	23.44%	328	43.79%	1,126	19.43%	1,454	22.22%
Car passenger	18	4.17%	126	1.92%	144	2.06%	22	2.79%	152	1.72%	174	1.81%	21	2.80%	93	1.60%	114	1.74%
Motorbike	4	0.93%	62	0.94%	66	0.94%	13	1.65%	85	0.96%	98	1.02%	9	1.20%	57	0.98%	66	1.01%
	253	58.56%	1,996	30.39%	2,249	32.13%	387	49.05%	2,137	24.23%	2,524	26.27%	358	47.80%	1,276	22.02%	1,634	24.97%
Public Transport																		
One or more buses	52	12.04%	1,121	17.07%	1,173	16.76%	130	16.48%	1,736	19.68%	1,866	19.42%	123	16.42%	1,196	20.63%	1,319	20.15%
Train and one or more buses	69	15.97%	2,184	33.25%	2,253	32.19%	160	20.28%	3,226	36.58%	3,386	35.24%	176	23.50%	2,257	38.94%	2,433	37.17%
	121	28.01%	3,305	50.32%	3,426	48.94%	290	36.76%	4,962	56.26%	5,252	54.66%	299	39.92%	3,453	59.58%	3,752	57.33%
Other																		
Bike	25	5.79%	166	2.53%	191	2.73%	39	4.94%	229	2.60%	268	2.79%	30	4.01%	206	3.55%	236	3.61%
Walk Only	32	7.41%	971	14.78%	1,003	14.33%	72	9.13%	1,326	15.04%	1,398	14.55%	60	8.01%	780	13.46%	840	12.83%
Live on campus	1	0.23%	130	1.98%	131	1.87%	1	0.13%	165	1.87%	166	1.73%	2	0.27%	81	1.40%	83	1.27%
	58	13.43%	1,267	19.29%	1,325	18.93%	112	14.20%	1,720	19.50%	1,832	19.07%	92	12.28%	1,067	18.41%	1,159	17.71%
Total	432	100.00%	6,568	100.00%	7,000	100.00%	789	100.00%	8,819	100.00%	9,608	100.00%	749	100.00%	5,796	100.00%	6,545	100.00%