3 PROJECT PROPOSAL

3.1 The Proposal

The proposed multi-storey building will consist of 20,000 m^2 of gross floor area (GFA) that will house a variety of laboratories conducting materials science research, ranging from macro-scale traditional testing to nano-scale fabrication and analysis. The building will also contain an atrium, classrooms, offices, and research spaces housing heavy testing equipment. Some of these spaces will incorporate the use of high temperature ovens and other heat sources which may pose potential fire risk. The building must be designed to be flexible enough to contain a range of other potential uses with a focus on sciences.

The basement will have laboratories containing leading edge electron microscopy and other high sensitivity instruments. Several passenger elevators and a large goods elevator will be located in the building.

The overall design population of the building will be in order of 700 persons. The proposed building will only result in an additional population of 24 staff as most of population are part of the existing facility or will be transferred from other buildings on the campus. It is envisaged that the building would not meaningfully contribute to any student population growth on campus. This results in additional student population of 0 people. It should however be noted that there could be a potential for additional shell population of 120 persons (i.e. a total of 144 staff).

3.2 Accessibility

The site is located north of Union Road, about 150m south of High Street and 230m east of Anzac Parade. A mid-block signalised pedestrian crossing facility along High Street at its intersection with Gate 2 is located within very close proximity (less than 150m) to the north of the site.

The intersection of Anzac Parade and High Street which is located about 200m to the west of the site is controlled with traffic signals, and also provides pedestrian crossing facilities. Similarly, the traffic signals at the intersection of Gate 2 with High Street provide safe signalised pedestrian crossing.

Cars and service vehicles currently access the MS&EB site and surrounding buildings via Gate 2 Avenue and exit via Gate 2 Avenue and International Drive. The UNSW Lower and Western Campus Urban Design Framework discusses the need to reduce the number of access points along High Street and forecasts the potential closure of International Drive in the longer term.

Cars and service vehicles access car parking (D12, E9 and E10) and deliveries to buildings in this precinct via Gate 2 Avenue which currently extends through to Union Road.

Union Road provides delivery access and disabled parking to key buildings including the existing Materials Science Building (E8), The Faculty of Law (F9), Chemical Sciences Building (F10) and the Australian School of Business (E12) and Science Theatre (F13) to name a few. Union Road is also a significant pedestrian route providing access to all the buildings above and to the Quadrangle and College Road.

University Mall and other internal routes within the Campus provide a high level of pedestrian and bicycle connectivity to the site. The pedestrian access associated with the development site will also utilise the existing pedestrian paths as shown in Appendix A. The pedestrian access will be along Gate 2 Avenue on

its eastern and western side and will connect to Union Road between the existing materials science building and the proposed development 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 Kensington 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 20.4% over the last six years (please refer to section 2.5 for a number of measures that have been implemented while Appendix B illustrates the trend of travel mode among the University patrons).

The UNSW Kensington Campus DCP also provides the following guidelines in relation to car parking provision and its management:
"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)."

3.3 Parking

In line with UNSW Kensington Campus DCP initiatives and the University's objectives to reduce car dependency, the proposed development does not provide any parking for its additional users. **Table 3.1** indicates the reduction of motor vehicle use associated with the University Campus from **32.13%** to **20.4%** during a six year period between **2007** and **2012**.

Table 3.1 Mode of Travel to and from the University (Student & Staff)

Mode	2007 %	2008 %	2009 %	2010 %	2011 %	2012 %
Car Driver	***29.13***	***21.54***	***22.22***	***21.0***	***16.4***	***18.2***
Car Passenger	*2.06*	*1.81*	*1.74*	*1.70*	*1.1*	*1.1*
Motorbike	*0.94*	*1.02*	*1.01*	*1.10*	*1.1*	*1.0*
Sub-Total	*32.13*	*26.27*	*24.97*	*23.8*	*18.7*	*20.4*
Bus	16.76	19.42	20.15	20.2	20.2	19.8
Train and Bus*	32.19	35.24	37.17	35.6	46.1	44.6
Sub-Total	**48.94**	**54.66**	**57.33**	**55.8**	**66.3**	**58.1**
Bike	2.73	2.79	3.61	3.70	3.6	4.5
Walk	14.33	14.55	12.83	15.0	10.7	14.8
Live on Campus	1.87	1.73	1.27	1.60	0.8	2.2
Sub-Total	**18.93**	**19.07**	**17.71**	**16.6**	**11.5**	**17.0**
Total	**100**	**100**	**100**	**100**	**100**	**100**

Note: *Counts includes number of* ***students and staff*** *– see Appendix B for full data*
Source: UNSW **included 0.7% Ferry use*

It should be noted that the majority of persons using the building are part of the existing campus population and will continue to utilize their existing parking arrangements.

The parking demand for an additional 24 staff on the site would only result in a maximum 10 spaces (0.41x24). This is on the basis that the 2012 travel survey as shown in Appendix B (UNSW) showed that 41% of staff travelled to the campus as car drivers and the remaining 59% were either car passengers, travelled by motorbike, public transport, walked or cycled. (Note: Table 3.1 provides overall travel mode to the Campus by students and staff, while the Table "Travel Trends" in Appendix B provides information on staff and students separately).

It is anticipated that the proposed building will accommodate some **144 additional** persons at its final completion (initially 24 staff with a parking demand of 6 to 10 spaces and a further shell population of 120 staff, please see section 3.1).

The additional parking demand for additional 144 staff of the site could only result in a maximum 30 spaces. This is on the basis that the 2012 travel survey (UNSW) showed that 41% of staff travelled to the campus by car and the remaining 59% were either car passengers, travelled by motorbike, public transport, walked or cycled i.e. 59% created no demand for parking. In 5 years' time (see clause 6 of the DCP Transport Strategy) when the Building would be at its full capacity it could reasonably be argued that the 41% would decrease further – say to a conservative 35% (based on survey data "Travel Trends" that shows a reduction of 14% car driver mode among staff from 53.5% in 2007 to 41.4% in 2012, see Appendix B – in fact a more realistic figure would be 30% car driver as mode of travel among staff for a 5 year period but as conservative rate of 35% has been used instead).

It could therefore be reasonably assumed that 50 of the additional 144 staff that to be accommodated in the Building would then be drivers (i.e.35%x144). 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 50 additional staff equates to **30** additional parking spaces.

As it is illustrated in Table 3.1, the demand for car use has consistently been decreased by the University users from some 29.13% motor vehicle use in 2007 to 18.2% in 2012 (considering that public transport use has increased from 49% to 58% during the same period). Therefore this steady decrease in car parking demand could easily accommodate the additional 30 parking spaces, if it would be required, within the University Campus (i.e. as less people would be using their car, more parking spaces within the campus becomes available).

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. As discussed below a net increase of one car parking space will be experienced throughout the campus as the results of on going works.

The image below shows existing parking spaces, spaces that will be lost as a result of the proposed works. The existing spaces are based on UNSW Facilities Management, Location of Parking Spaces plan.

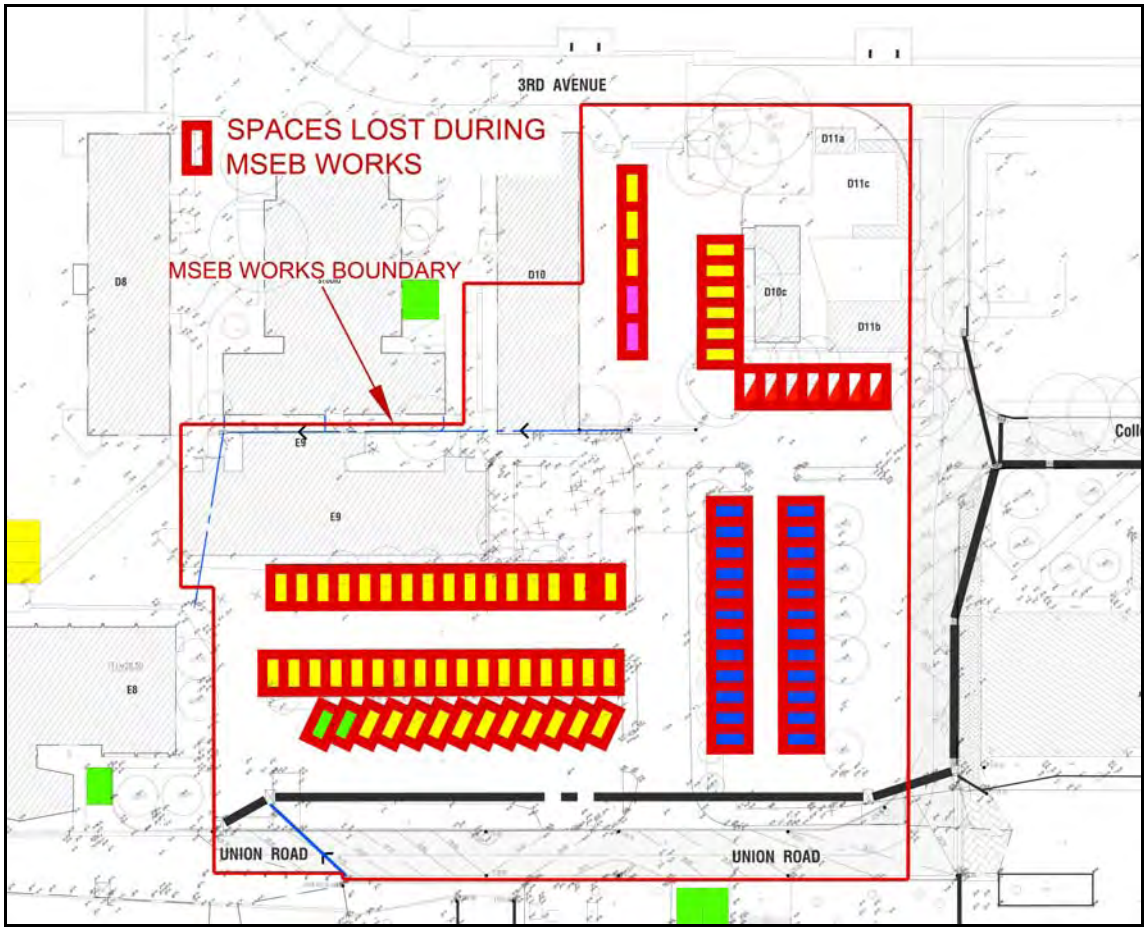


Figure 3.1 Existing parking spaces affected by proposed works

There are total of 84 spaces lost due to the proposed works, including 2 disabled spaces. However UNSW will create 2 new disabled spaces within the Campus to compensate the lost spaces due to the proposed work. The 84 spaces lost are made up of the following:

Type of space	Spaces lost
Permit	53
Reserved	24
Metered	7
Disabled	2
Loading	2
TOTAL	**88**
TOTAL **(Excluding Disabled and Loading)**	**84**

Table 3.2 Spaces lost due to proposed works

The proposed works will remove parking spaces within the development site. However, the overall Campus area will result in an increase in parking provision due to recent works carried out across the Campus.

Table 3.3 below shows adjacent works within the Campus and their effects on parking numbers (excluding motorbike and loading spaces). A net increase of 1 space would be experienced as the results of all works within the Campus.

The proposed works will not have an adverse impact on overall parking provision across the Campus. The following points also support such measure.

- The possible shortfall on parking provision and overall loss of parking is minor when is considered the impact within the Campus.
- There is a focus to encourage more use of public and active transport.
- The objectives of DCP for Kensington Campus should be adhered.
- There is a trend and desire among the community to follow environmental goals and sustainability as part of personal as well as local and global initiatives.

Recent works within the Campus	Spaces lost(-) or gained(+)
Less DA/259/2011 western campus – demolition of existing car park	-26
Plus DA/259/2011 western campus – reconstruction of car park	+163
Net Increase	**+137**
Less DA/385/2011 Gate 2 Housing early works – demolition of existing car park	-126
Plus DA/494/2011 Gate 2 Housing main works – construction of basement car park	+77
Net Increase	**+88**
Less DA/739/2011 Kensington Colleges early works – demolition of existing car park	-25
Plus DA/748/2011 Kensington Colleges main works – construction of basement car park	+107
Net Increase	**+170**
Less demolition of Petroleum Engineering car park	-50
Net Increase	**+120**
Less Lower Campus Development Enabling Works	-35
Net Increase	**+85**
Less Materials Science and Engineering Building Works	-84
NET INCREASE FROM ALL WORKS	**+1**

Table 3.3 Adjacent works and affects on parking provision

As Table 3.3 illustrates, further car parking accommodation will be available throughout the campus as part of future and on going works within the campus. Such works will provide a car parking for future additional 30 spaces if such demand would occur in future.

3.4 Traffic Impact and Access

Traffic Impact: The proposed development site will accommodate some 24 additional staff in the immediate future. As discussed earlier, the staff travel mode to and from the University will account for 44% who drive a car or are a car passenger or ride a motorbike. Therefore, the maximum number of vehicular trips per day would be in order of 22 trips (11 in and 11 out). In addition to this, a total of some 10 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 (32 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 20 vehicles per peak period, if all staff arrive or depart at the same time while service vehicles also arrive and depart in the same one hour period. This level of vehicular traffic is equivalent to 1 car per 3 minutes which in traffic engineering terms is insignificant to have any adverse impact on operation of intersection or street system.

Therefore, additional traffic generation from the site would have no adverse impact on the street system and intersection performances in the vicinity of the site.

Similarly, considering the additional future population of the site at its final capacity i.e. additional 144 staff, a peak vehicular traffic generation of 35 vehicles per peak hour would result (35% car driver based on projections as discussed in Section 3.3 and assuming that about 70% of staff arrive or depart within a one hour period). This level of vehicular traffic translates to about 1 car per two minutes which in traffic engineering terms would have a minimal impact on the road system. It should be also noted that not all drivers will approach the area from the same direction, therefore the vehicular impact on the road system and intersections operation would be much less.

Vehicular access to the site will be maintained as per the existing situation where vehicles will gain access to the site from Gate 2, in High Street. Considering the low vehicular traffic generation from the development site, the operation of Gate 2 and High Street will be similar to its existing condition.

Internal access routes within the site will consist of Gate 2 Avenue, 3rd Avenue, D12 Material Lane and College Road while International Road provides a one way northbound movement for exiting vehicles (see Appendix A)

Loading and Truck Access: Loading for the new building will occur on the south side of the building, north of Union Road. 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 C). If required reversing manoeuvres can take place within the existing Chemical Sciences (F10) loading dock.

It is envisaged that appropriate traffic management measures (such as provision of pedestrian paths) will be implemented to minimise the conflict between pedestrian movements and vehicular traffic along Union Road. These Measures will be confirmed in the Contractors Construction Management Plan.

Pedestrian and Bicycle Facilities: The study area has a well-established pedestrian network and this will remain following the proposed development. As mentioned earlier, the Campus has a number of bicycle parking racks throughout the campus in order to meet the needs of its population. Architectural drawings illustrate the pedestrian and bicycle facilities for the proposed development (see Appendix A).

3.5 Construction Traffic

Access to the site during the construction period will generally be from Anzac Parade, utilising an existing access off Gate 2 from High Street.

A preliminary estimate of construction vehicle numbers has been carried out for the project. The information is based on the estimated volume of material requiring handling associated with the project's major tasks. Table below provides a summary of the number of trucks, proposed schedule and duration of each of the major activities.

Table 3.4 Estimates of Number of Trucks for the Major Activities (Estimates only – subject to change by contractors)

Activity	No. of Trucks per day	Average trucks per hour	Peak Trucks per hour	Duration (month)
Bulk Excavation	35	6	6	3
Structure	10	2	3	10
Fit out	5	1	2	8

We note in regards to the table above that there will be an overlap between the various activities, with the overall construction program expected to be approximately 20 months. It is expected that a maximum of 2 trucks per hour will be required during the initial period while during the construction period it would vary between 4 to 6 trucks per hour.

Access Routes

The site of the proposed building is at UNSW, Kensington on the lower campus. The street systems in the vicinity of the site are supported by Anzac Parade and High Street.

The main approach routes to the site are Anzac Parade and High Street. Further away from the site, the choice of which route to take is dependent on the origin and destination of trucks.

It can be seen from the information on Table 3.5 that major materials for the project will be sourced almost entirely from the Southern and Western Suburbs of Sydney. Some material/services will be sourced from the South Eastern Suburbs while there will be no material originating from the Northern Suburbs while some services could be sought.

It is therefore evident from the investigation of the access routes that the most likely access routes for the construction traffic will be via major routes such as Anzac Parade.

Considering the low level of vehicular traffic volumes associated with construction activities and use of designated routes to the site (per existing condition) there will be no adverse impact on pedestrian or bicycle movements or road network. The detailed Construction Traffic Management Plan will include all requirements for better and safe accessibility to and from the site.

Internal access routes mainly consists of Gate 2 Avenue and 3rd Avenue while International Road provides a departure route for exiting vehicles due to its one way movement in northbound direction.

Table 3.5 Likely Origin and Destination of Trucks

Major Activities	Origin/Destination of Trucks
Excavation	Depends on whether the rock excavated will be utilised on other sites or not. Also, depends on preferred dumping points of the excavation company. Likely Southern & Western suburbs
Structure	Concrete plants in Pyrmont, Ultimo, Blackwattle Bay, St. Peters Reinforcement supply from Villawood, Lidcombe, Burwood, Strathfield
Services, wet trades	Eastern and possibly Southern and Western suburbs
Façade	Various locations
Fit out	Eastern and possibly Southern and Western suburbs
Equipment & fittings'	Various locations including overseas (air and sea)

Possible Preferred Routes

In selecting suitable access routes for the construction traffic, the following issues should be taken into consideration:

- The bulk of material will be sourced from the eastern, western and southern suburbs,
- The main construction activities, and the required access onto the site, will take place on the Western portion of the site,
- The length of the route
- The residential impact
- Traffic and physical restrictions of the road system which present few suitable opportunities in terms of access

Having considered the above factors, the following routes would most likely form the construction traffic routes to/ from the site:

- Arrival from the West– Eastern Distributor (**ED**), Dacey Ave, Anzac Pde
- Arrival from the North – Eastern Distributor, Anzac Pd,
- Arrival from South – M5, Southern Cross Dr (**SCD**), Dacey Ave, Anzac Pde

- Departure to the West – Anzac, Dacey Ave, ED
- Departure to the North –Anzac Pd, ED
- Departure to the South - Anzac Pde, Dacey Ave, SCD, M5

Actual truck routes will depend on the excavation method proposed by the Contractor plus particular requirements by Randwick Council concerning road load limits. It is expected that these matters will be discussed and resolved with Council. The construction traffic management plan will be prepared prior to the commencement of works.

3.6 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 “State Plan” and Council’s DCP objectives on reducing car use.

In summary, the project contains the following characteristics:

- The project site is located in the Randwick Local Government Area.
- The development is in line with DCP for UNSW Kensington Campus (Randwick Council) which encourages the reduction of car parking provision in order to reduce the need for car use.
- The site has a high level accessibility to public transport. Buses provide services in the vicinity of the site (within walking distance) with connection to train stations.
- The project site is located within walking distance to High Street and Anzac Parade.
- Ample transport choices are available for the site’s patrons. These include: various bus services, bicycle, walking, private car and taxi. Bicycle storage areas will be provided adjacent to new building within the development/project site. A total of 10 bicycle racks is suggested (equivalent to 5% of student population)
- 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 its vehicular movements (in and out) will be in a forward direction in accordance with the Australian Standards.

4.0 CONCLUSION

The approach routes to the site are Anzac Parade and High 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 Maritime Services 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.

Although the proposed enabling works will remove 84 spaces within the development site, there will be no adverse impact on parking provision across the Campus area due to recent works carried out. A net increase of 1 space will be achieved by all works within the Campus.

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.

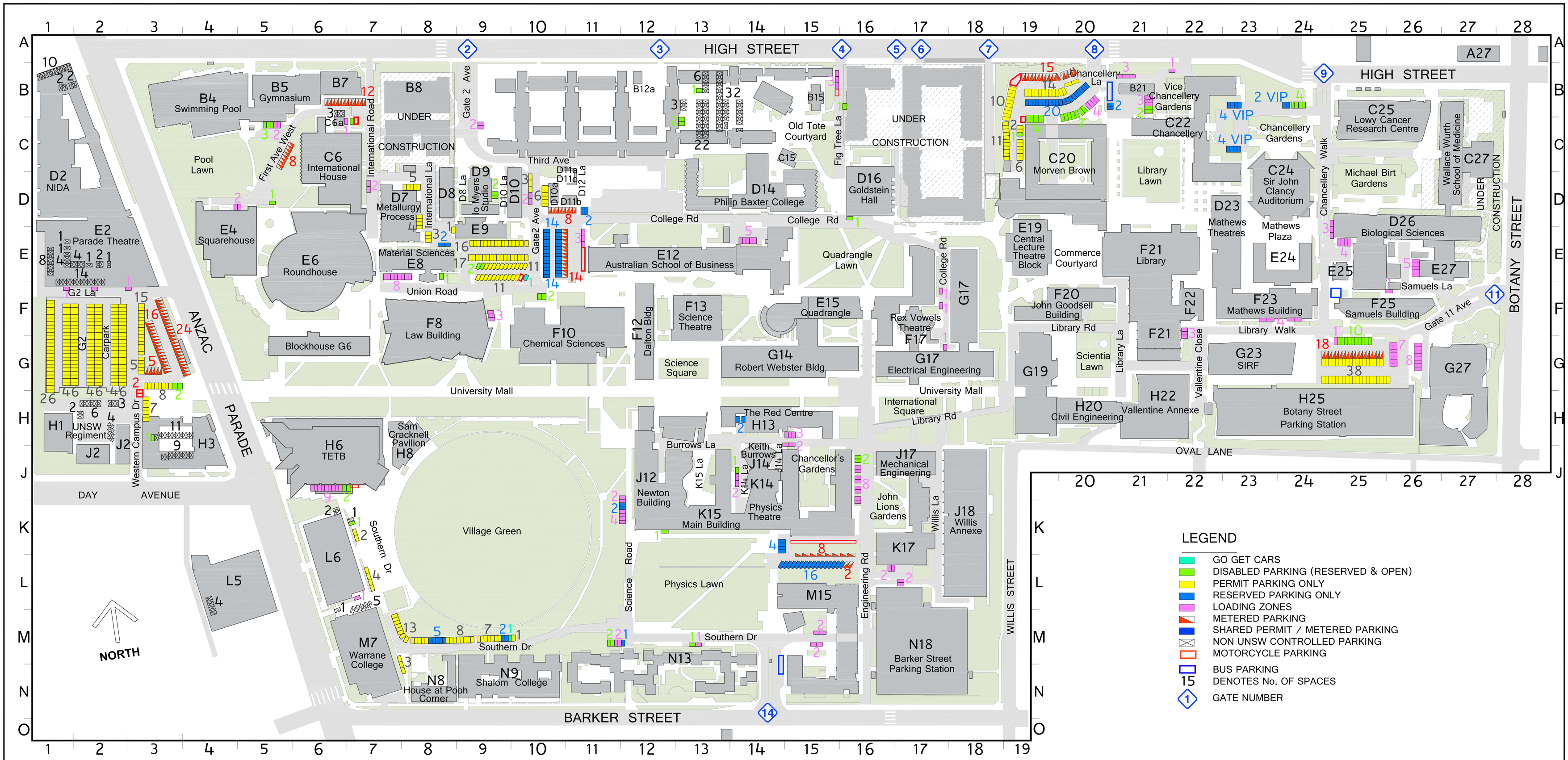
Bicycle parking facilities will be provided as part of the project proposal (a total of 10 racks near the proposed building).

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 2, in High Street. The loading area for the site is located as part of the existing Chemical Science Building on the south of the proposed building. It is envisaged that vehicular access to and from the site will be in a forward direction to meet the Australian Standards.

Prepared and Authorised by
URAP–TTW PTY LTD
Dr Kam Tara
Director

APPENDIX A



BARKER STREET PARKING STATION

TOTAL SPACES 913

- PERMIT PARKING .....42 — LEVEL 1C
- MOTORCYCLES .....6; RESERVED PARKING .....13; PERMIT PARKING .....70; TOTAL .....89 — LEVEL 1B
- MOTORCYCLES .....2; RESERVED PARKING .....40; DISABLED PARKING .....8; TOTAL .....50 — LEVEL 1A
- PERMIT PARKING .....41 — LEVEL 2C
- DISABLED PARKING .....1; PERMIT PARKING .....88; TOTAL .....89 — LEVEL 2B
- PERMIT PARKING .....55 — LEVEL 2A
- PERMIT PARKING .....41 — LEVEL 3C
- PERMIT PARKING .....88 — LEVEL 3B
- PERMIT PARKING .....55 — LEVEL 3A
- PERMIT PARKING .....41 — LEVEL 4C
- PERMIT PARKING .....85 — LEVEL 4B
- PERMIT PARKING .....55 — LEVEL 4A
- TICKET AND PERMIT PARKING .....87 — LEVEL 5B
- TICKET AND PERMIT PARKING .....53 — LEVEL 5A
- TICKET AND PERMIT PARKING .....42 — LEVEL 5C

BOTANY STREET PARKING STATION

TOTAL SPACES 1045

- RESERVED PARKING .....69; DISABLED PARKING .....8; PERMIT PARKING .....13; TOTAL .....90 — LEVEL 1A
- PERMIT PARKING .....98 — LEVEL 1B
- LEVEL 1A/1B
- PERMIT PARKING .....91; MOTOR CYCLES .....9; TOTAL .....100 — LEVEL 2A
- MOTORCYCLE .....2; PERMIT PARKING .....95; TOTAL .....97 — LEVEL 2B
- LEVEL 2A/2B
- MOTORCYCLE .....1; PERMIT PARKING .....95; TOTAL .....96 — LEVEL 3A
- MOTORCYCLE .....1; PERMIT PARKING .....95; TOTAL .....96 — LEVEL 3B
- LEVEL 3A/3B
- MOTORCYCLE .....1; PERMIT PARKING .....95; TOTAL .....96 — LEVEL 4A
- MOTORCYCLE .....1; PERMIT PARKING .....95; TOTAL .....96 — LEVEL 4B
- LEVEL 4A/4B
- PERMIT PARKING .....93 — LEVEL 5A
- TICKET AND PERMIT PARKING .....91 — LEVEL 5B
- LEVEL 5A/5B
- TICKET AND PERMIT PARKING .....92 — LEVEL 6A

NOT FOR PUBLICATION

THE UNIVERSITY OF NEW SOUTH WALES

FACILITIES MANAGEMENT

CAMPUS: **KENSINGTON**

TITLE: LOCATION OF PARKING SPACES

SCALE: 1:1000@A0

LAST UPDATE: 08/10/2012

CAD REF: i:\drawings\site services\campus maps\kensington\dwg\facilities management\kenc - fm parking map.dwg