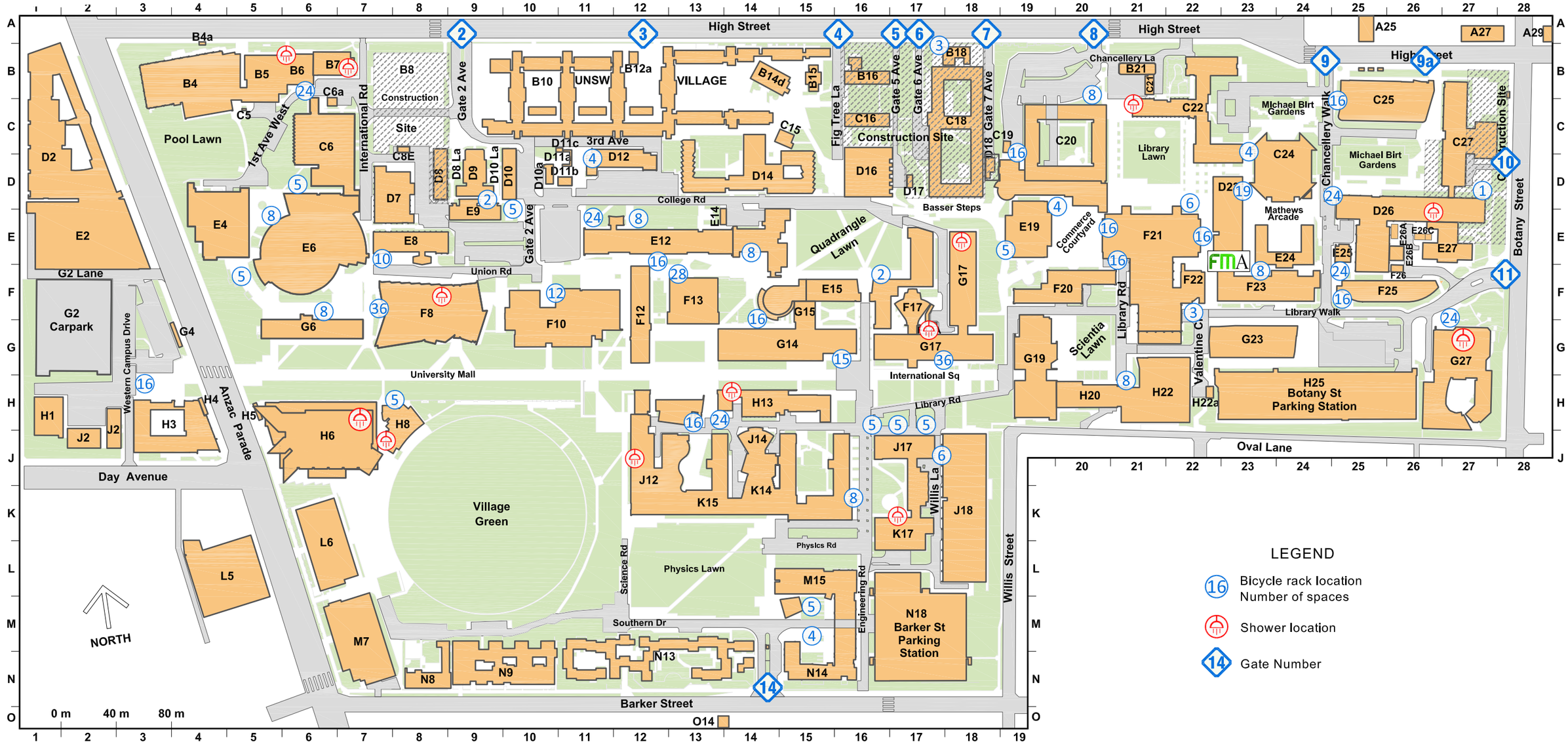
Kensington Campus Bicycle Map



LEGEND

- Bicycle rack location, Number of spaces
- Shower location
- Gate Number

LOCATION OF SHOWERS

B5 7 SHOWERS
B7 SHOWER
C22 SHOWER IN EACH MALE & FEMALE TOILETS IN BASEMENT
D26 SHOWERS LOCATED ADJACENT TO WEST LIFTS. 1 SHOWER PER TOILET. FEMALE ON LEVEL G,2,3,5, MALE ON LEVEL 1,4
F8 SHOWER IN BASEMENT IS SWIPE CARD RESTRICTED ,SHOWER ON LEVEL 2 IS NOT
F17 1 SHOWER IN MALE TOILET ON GROUND FLOOR
G27 SHOWER IN DISABLE TOILET IN BASEMENT
H6 SHOWER ON GROUND FLOOR
H8 1 SHOWER EACH IN MALE AND FEMALE TOILET ON GROUND FLOOR
H13 1 SHOWER EACH IN MALE AND FEMALE TOILET IN BASEMENT
H20 1 SHOWER IN MALE TOILET ON LEVEL 4
J12 1 SHOWER EACH IN MALE AND FEMALE TOILET ON GROUND FLOOR
K17 1 SHOWER IN DISABLED TOILET IN BASEMENT

15/02/2012

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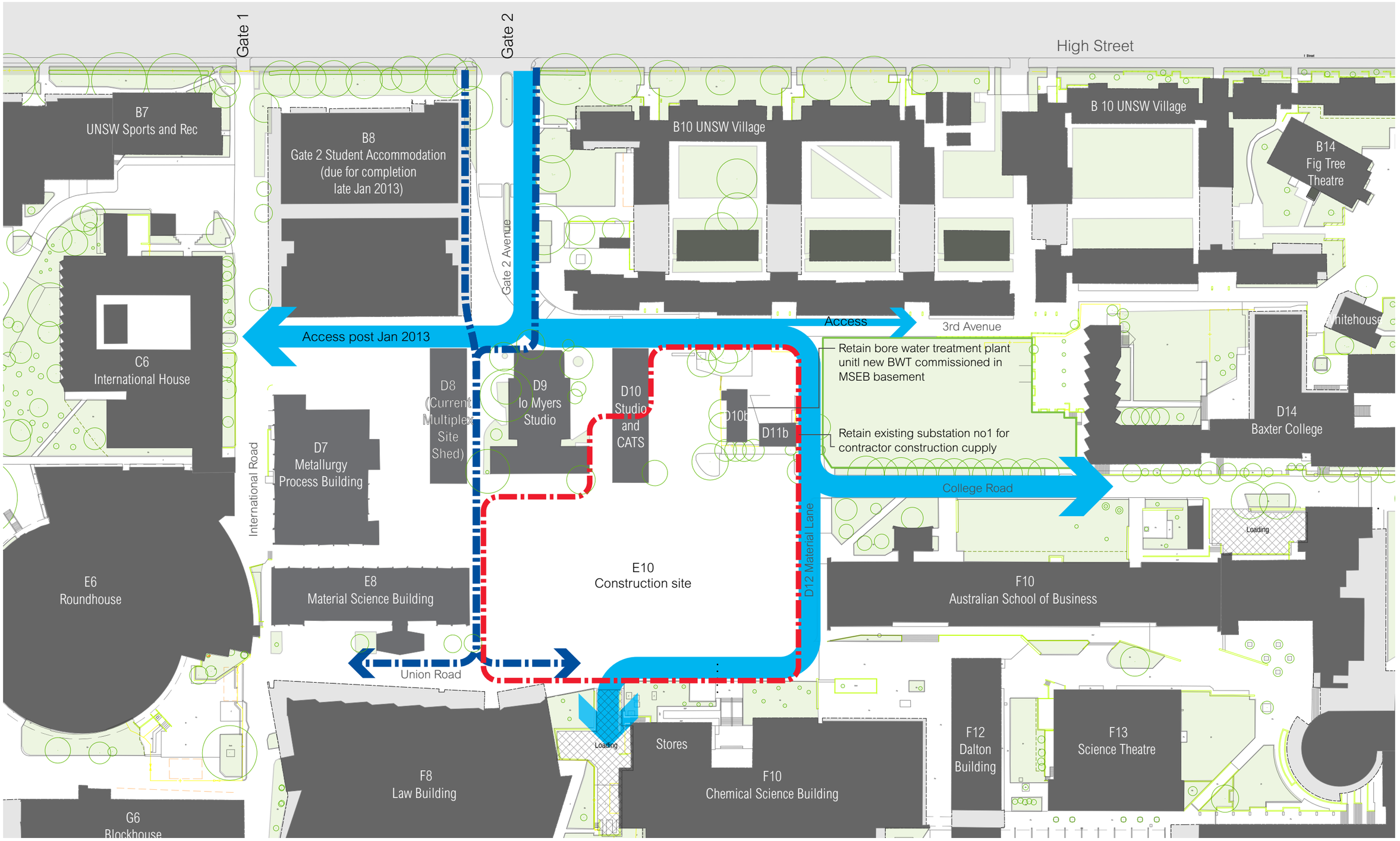
This map was produced by Randwick City Council. Cartography and research by Sustainable Transport Consultants Pty Ltd. © 2008 Randwick City Council



Key

- Extent of Work
- Vehicular Access (Including Truck Deliveries)
- Pedestrian Access

Note: This drawing is indicative and should be read inconjunction with final Architectural drawing set.

N

0 10 20 30m

THE UNIVERSITY OF NEW SOUTH WALES
FACILITIES MANAGEMENT

Section: Planning and Development

Created: 0423/10/12	Last Modified:	Campus: KENSINGTON	Campus No: KENC
Drawn: Kuhu Gupta	Approved: Eddie Swat	Location: E10 Materials Science and Engineering Building	
Discipline: P&D	Scale:	Title: Site Plan	
CAD Reference:		Drawing No: MS&EB - 01	Sheet No: 1 of 1 — Revision: PRELIM

APPENDIX B

Travel Survey 2012

Analysis Summary

Never Stand Still

INTRODUCTION

The annual Travel Survey completed its sixth year in 2012 and has become an extremely valuable database for the University's operational activities and forward planning. The Survey was conducted over a three-week period in March and April. The response this year was the highest ever (double that of last year) with more than 2,200 staff and 8,000 students participating. This response represents 22% of the daily (Monday to Friday) campus population.

The Survey is conducted on-line by Facilities Management on a voluntary basis for those staff and students that attend the Kensington campus – the main campus of UNSW. The Survey seeks to determine the method of travel to and from the campus, arrival and departure points, where car drivers park, times of arrival and departure, the time taken to travel and the point of travel origin.

The Survey is a key element of the University's Transport Strategy outlined in the Kensington Campus Development Control Plan. Survey results and trends are also key inputs to further planning of the campus.

The Survey results are analysed each year to assist in implementing measures to reduce car dependence and parking demand at the campus while at the same time improving public transport access and related public domain improvement works at strategic locations.

Attached to this Analysis Summary are the results from the Travel Survey 2012. For each question the results are tabulated; firstly to show the percentages of total staff and students that responded to the question; and secondly to show the counts and percentages between staff and students.

The percentages of total staff and students that responded to each question are represented by a chart to more clearly convey the results.

Please contact Ms. Kuhu Gupta, Campus Planner at UNSW Facilities Management on 93853362 or kuhu.gupta@unsw.edu.au should you have further queries with regards to the Survey.

METHOD OF TRAVEL

Figure 1 shows the changing trends in the method of travel to and from the campus since 2007.

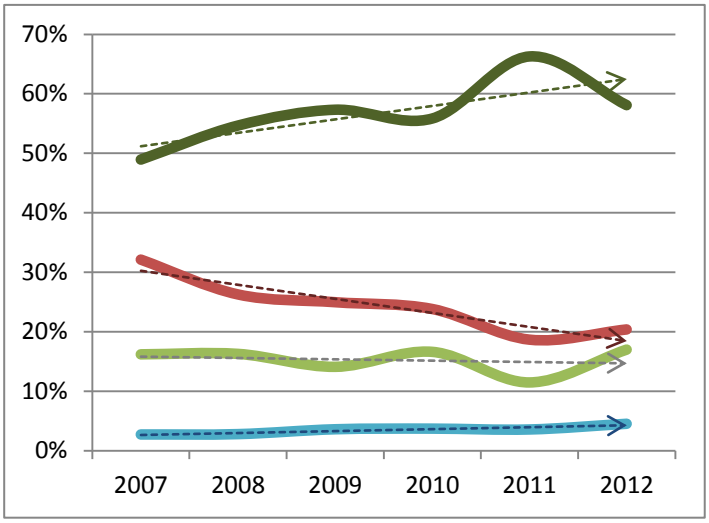
The results demonstrate a continuing trend to more sustainable methods of travel with public transport being the most obvious. Staff and students however, continue to drive to the campus. There are perhaps three main reasons for this:

- The availability of free and unrestricted parking in streets immediately surrounding the campus;
- Increased travel times to and from the campus for users of public transport; and
- The availability of staff parking at comparatively low commercial rates.

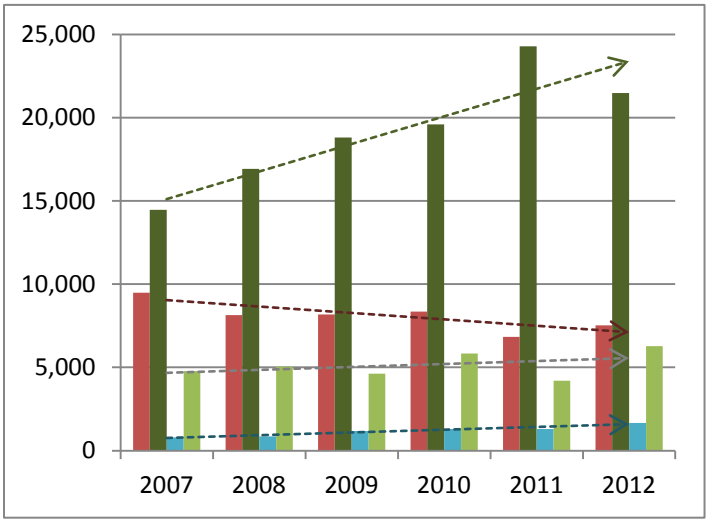
The opportunity for free parking in streets around the campus encourages the use of private cars and creates less of a need to use public transport. UNSW will be unable to achieve targets in sustainable travel modes while substantial parking remains available in local streets. Further discussions are required with Randwick City Council on this issue.

In Figure 1 the percentages for respondents are applied to the average daily campus population of staff and students (Monday to Friday) in order to derive real numbers for the whole campus. In doing this, the derived numbers are 80% of the actual campus population because on any weekday 20% of staff and students are absent from the campus.

FIGURE 1 TRAVEL TRENDS 2007-2012



Percentage of Total Campus Population



Average Daily Campus Population (Mon-Fri)

Public Transport
Bicycles
Private Vehicles
Linear Trends
Walking/Living on Campus

Private Motor Vehicles (Car Driver, Car Passenger, Motorbike)

In 2012 20% of respondents travelled in private vehicles, a significant decrease since 2007 when this method of travel was used by 32% of staff and students. When applied to the average daily campus population this approximates to a decrease from 9,500 private vehicles users each weekday in 2007 to 7,000 in 2012, equating to an average decrease of 400 car users each year. This is despite an increase in campus population by approximately 9,700 staff and students since 2007.

For the actual counts between staff and students, 44% of staff and around 14% of students travelled by private vehicle in 2012. This compares favourably to 2007 when 59% of staff and 30% of students used this method of travel.

Public Transport (Bus, Train, Ferry)

In 2012 the majority of respondents (58%) travelled by public transport a 9% increase since 2007 when this method of travel was used by 49% of staff and students. When applied to the average daily campus population this approximates to an increase from 15,000 public transport users each weekday in 2007 to 23,500 in 2012, equating to an average increase of 1,400 daily public transport users each year.

For the actual counts between staff and students, 40% of staff and 63% of students travelled by public transport in 2012. This demonstrates a positive shift towards the use of public transport users when compared with 2007 when 28% of staff and 50% of students used this method of travel.

Bicycles

The percentage of respondents cycling to and from the campus has increased from around 3% in 2007 to around 5% in 2012, demonstrating a continuing trend despite coming from a low count base. When applied to the average daily campus population this approximates to 1,650 bicycle riders in 2012.

For the actual counts between staff and students, 6% of staff and 4% of students travelled by bicycle in 2012, about the same as in 2007.

Pedestrians (Walk, Live on Campus)

The percentage of respondents walking to and from, or living on the campus has remained steady over the last six years at around 17%. When applied to the average daily campus population, this approximates to 6,000 pedestrians in 2012. However, this figure is expected to rise in the next few years with completion of new student housing projects at Gate 2 and the Kensington Colleges site together with a steady increase in the provision of private sector student housing within the nearby suburbs of Randwick, Kensington and Kingsford.

Arrival and Departure

A new question was introduced to the Survey in 2012 that asked for the points of arrival and departure to and from the campus. The results showed that entrances at the University Mall/Anzac Parade and Gates 2, 8 and 9 in High Street are the major points of arrival and departure.

Gate 2 in High Street is the main arrival point to the campus for the majority of respondents (36%) but the actual count between staff and students showed that while this is the main arrival point for students (39%), Gates 8 and 9 are the main arrival points for staff at 29% and 32% respectively.

The main departure point from the campus by far is University Mall/Anzac Parade with around 62% of all respondents and 68% of students departing from this point. Gate 9 in High Street was the second most popular departure point with 30% of all respondents and 25% of the student count. It was also the main departure point for staff with 56% of the count.

In Figure 2 below, the percentage of respondents arriving and departing from the campus has been applied to the average daily campus population in order to give an estimate of actual numbers arriving and/or departing at each point. The size of the circle is proportional to these numbers, being 80% of the actual daily campus population as explained earlier above.

Figure 2 Points of Arrival and Departure 2012

Car Occupancy and Parking

For those respondents that drove to and from the campus in 2012, an overwhelming majority (85%) were single occupant cars. This is consistent with previous Survey results and consistent in the actual counts between staff and students (87% and 86% respectively). Despite the introduction of the UNSW Car Pools Scheme in 2010, it has a very low participation rate with only 2.5% of respondents.

Of the respondents that drove, 55% parked on the campus while 45% parked in local streets. Between staff and students, the counts showed that most staff parked on the campus (84%) while most students parked in local streets (75%). These results are consistent with previous years and are consequence of on-campus parking being restricted to staff or with a parking fee, and the availability of free parking in surrounding streets.

Travel Time

In 2012 57% of respondents took less than 1 hour to travel to the campus while 41% took up to 2 hours and 2% took more than 2 hours. This is a significant increase from 2007 when only 36.5% commuted for longer than 1 hour.

Between staff and students, the counts showed that a higher proportion of students than staff took longer than 1 hour to travel to the campus (45% as opposed to 34%).

For the return journeys the travel times for respondents and between staff and students were similar to the journeys to the campus.

The increased travel times from previous years could be a result of several factors such as:

- The increased population and growth of Sydney in the west and north west regions;
- The level of service for public transport not increasing proportionally to cater for Sydney's urban growth and spread;
- The increase in average daily campus population (@ 80%) from 29,520 in 2007 to 36,960 in 2012 resulting in increased waiting times during peak hours, especially for buses.

1.3 Time Taken to Travel 2007-2012

Typical Arrival Times

In 2012 the peak period of arrival at the campus for respondents was the 2 hour period between 8 am and 10 am with around 51% arriving in this period Monday to Thursday. A smaller percentage of 46% arrive on Fridays during this period.

Staff arrivals were in a concentrated period between 7 am and 10 am whereas students continued to arrive after the peak morning period in declining numbers throughout the rest of the day. Lesser numbers of students were on campus on Fridays. Around 20% were absent Monday to Thursday, but this jumped to 34% on Fridays.

Very few staff or students attended the campus on the weekend.

These results are consistent with previous years except for Fridays where the student non-attendance of 34% in 2012 was a marked improvement from 46% in 2008. In other words, more students attend the campus on Fridays than ever before.

Typical Departure Times

In 2012 the peak period of departure from the campus for respondents was the 3 hour period between 4 pm and 7 pm with around 51% departing in this period Monday to Thursday. On Fridays, the peak departure period extended an extra hour from 3 pm to 7 pm with 50% of respondents leaving the campus during this time.

Staff departures were more concentrated than those of students with most staff leaving the campus during the peak period. However, students begin leaving the campus after noon in increasing numbers with the majority in the peak period, but with a significant percentage (8-9%) leaving after 8 pm, except for Fridays.

These results are consistent with previous years except for the Friday departure spike after 8 pm. This is perhaps attributed to the following:

- Higher student enrolments in 2012 than ever before requiring the scheduling of evening teaching classes;
- The temporary presence of College of Fine Arts students in evening classes and studios while the Paddington campus is being redeveloped; and
- The after-hours facilities available on the campus such as the library and gym.

Point of Origin

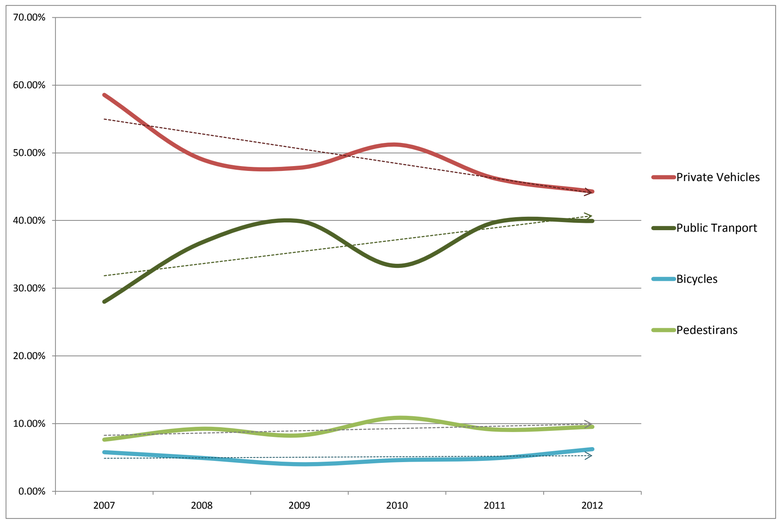
The postcodes of survey respondents identify how far staff and students live from the Kensington campus. The results show that 40% of staff and students live approximately 5km or less from the campus. However, significant numbers of staff and students commute from suburbs throughout the Sydney metropolitan area, including 1% of respondents travelling from the Blue Mountains region or further.

Travel Trends 2007-2012

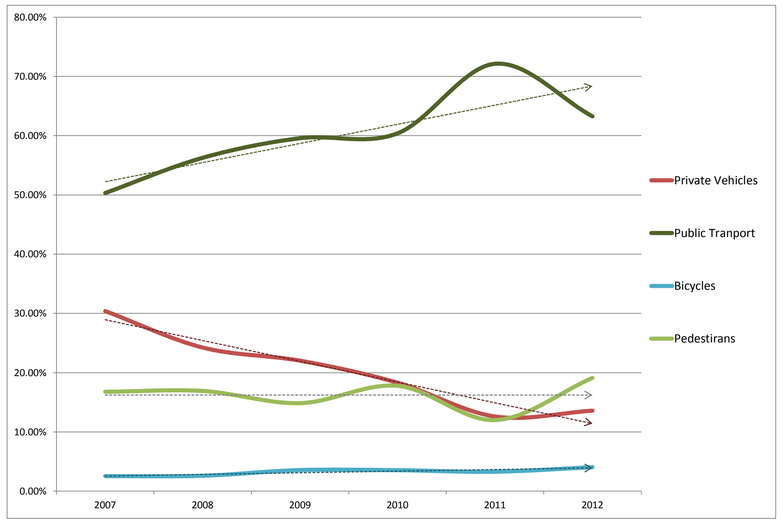
Q1.1: What is your usual method of travel to and from the Kensington Campus?	2007						2008						2009					
	Staff		Student		Total		Staff		Student		Total		Staff		Student		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Motor Vehicle																		
Car driver	231	53.5%	1,808	27.5%	2,039	29.1%	352	44.6%	1,900	21.5%	2,252	23.4%	328	43.8%	1,126	19.4%	1,454	22.2%
Car passenger	18	4.2%	126	1.9%	144	2.1%	22	2.8%	152	1.7%	174	1.8%	21	2.8%	93	1.6%	114	1.7%
Motorbike	4	0.9%	62	0.9%	66	0.9%	13	1.6%	85	1.0%	98	1.0%	9	1.2%	57	1.0%	66	1.0%
	253	**58.6%**	**1,996**	**30.4%**	**2,249**	**32.1%**	**387**	**49.0%**	**2,137**	**24.2%**	**2,524**	**26.3%**	**358**	**47.8%**	**1,276**	**22.0%**	**1,634**	**25.0%**
Public Transport																		
One or more buses	52	12.0%	1,121	17.1%	1,173	16.8%	130	16.5%	1,736	19.7%	1,866	19.4%	123	16.4%	1,196	20.6%	1,319	20.2%
Train and one or more buses	69	16.0%	2,184	33.3%	2,253	32.2%	160	20.3%	3,226	36.6%	3,386	35.2%	176	23.5%	2,257	38.9%	2,433	37.2%
Ferry and one or more buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	121	**28.0%**	**3,305**	**50.3%**	**3,426**	**48.9%**	**290**	**36.8%**	**4,962**	**56.3%**	**5,252**	**54.7%**	**299**	**39.9%**	**3,453**	**59.6%**	**3,752**	**57.3%**
Bicycle																		
Bike	**25**	**5.8%**	**166**	**2.5%**	**191**	**2.7%**	**39**	**4.9%**	**229**	**2.6%**	**268**	**2.8%**	**30**	**4.0%**	**206**	**3.6%**	**236**	**3.6%**
Pedestrians																		
Walk Only	32	7.4%	971	14.8%	1,003	14.3%	72	9.1%	1,326	15.0%	1,398	14.6%	60	8.0%	780	13.5%	840	12.8%
Live on campus	1	0.2%	130	2.0%	131	1.9%	1	0.1%	165	1.9%	166	1.7%	2	0.3%	81	1.4%	83	1.3%
	33	**7.6%**	**1,101**	**16.8%**	**1,134**	**16.2%**	**73**	**9.3%**	**1,491**	**16.9%**	**1,564**	**16.3%**	**62**	**8.3%**	**861**	**14.9%**	**923**	**14.1%**
Total	**432**	**100.0%**	**6,568**	**100.0%**	**7,000**	**100.0%**	**789**	**100.0%**	**8,819**	**100.0%**	**9,608**	**100.0%**	**749**	**100.0%**	**5,796**	**100.0%**	**6,545**	**100.0%**

Q1.1: What is your usual method of travel to and from the Kensington Campus?	2010						2011						2012					
	Staff		Student		Total		Staff		Student		Total		Staff		Student		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Motor Vehicle																		
Car driver	605	47.3%	997	15.7%	1602	21.0%	443	41.7%	522	10.8%	965	16.4%	935	41.1%	937	11.7%	1872	18.2%
Car passenger	32	2.5%	100	1.6%	132	1.7%	29	2.7%	38	0.8%	67	1.1%	40	1.8%	76	1.0%	116	1.1%
Motorbike	18	1.4%	64	1.0%	82	1.1%	19	1.8%	47	1.0%	66	1.1%	33	1.4%	73	0.9%	106	1.0%
	655	**51.2%**	**1,161**	**18.3%**	**1,816**	**23.8%**	**491**	**46.2%**	**607**	**12.6%**	**1,098**	**18.7%**	**1,008**	**44.3%**	**1,086**	**13.6%**	**2,094**	**20.4%**
Public Transport																		
One or more buses	185	14.5%	1357	21.4%	1542	20.2%	186	17.5%	1002	20.8%	1188	20.2%	406	17.8%	1630	20.4%	2036	19.8%
Train and one or more buses	229	17.9%	2430	38.3%	2659	34.9%	230	21.7%	2439	50.6%	2669	45.4%	484	21.3%	3375	42.2%	3859	37.6%
Ferry and one or more buses	12	0.9%	45	0.7%	57	0.7%	6	0.6%	35	0.7%	41	0.7%	19	0.8%	53	0.7%	72	0.7%
	426	**33.3%**	**3,832**	**60.4%**	**4,258**	**55.8%**	**422**	**39.7%**	**3,476**	**72.1%**	**3,898**	**66.3%**	**909**	**39.9%**	**5,058**	**63.3%**	**5,967**	**58.1%**
Bicycle																		
Bike	**59**	**4.6%**	**224**	**3.5%**	**283**	**3.7%**	**52**	**4.9%**	**158**	**3.3%**	**210**	**3.6%**	**142**	**6.2%**	**323**	**4.0%**	**465**	**4.5%**
Pedestrians																		
Walk Only	138	10.8%	1005	15.8%	1143	15.0%	97	9.1%	531	11.0%	628	10.7%	216	9.5%	1302	16.3%	1518	14.8%
Live on campus	1	0.1%	123	1.9%	124	1.6%	0	0.0%	47	1.0%	47	0.8%	1	0.0%	227	2.8%	228	2.2%
	139	**10.9%**	**1,128**	**17.8%**	**1,267**	**16.6%**	**97**	**9.1%**	**578**	**12.0%**	**675**	**11.5%**	**217**	**9.5%**	**1,529**	**19.1%**	**1,746**	**17.0%**
Total	**1,279**	**100.0%**	**6,345**	**100.0%**	**7,624**	**100.0%**	**1,062**	**100.0%**	**4,819**	**100.0%**	**5,881**	**100.0%**	**2,276**	**100.0%**	**7,996**	**100.0%**	**10,272**	**100.0%**

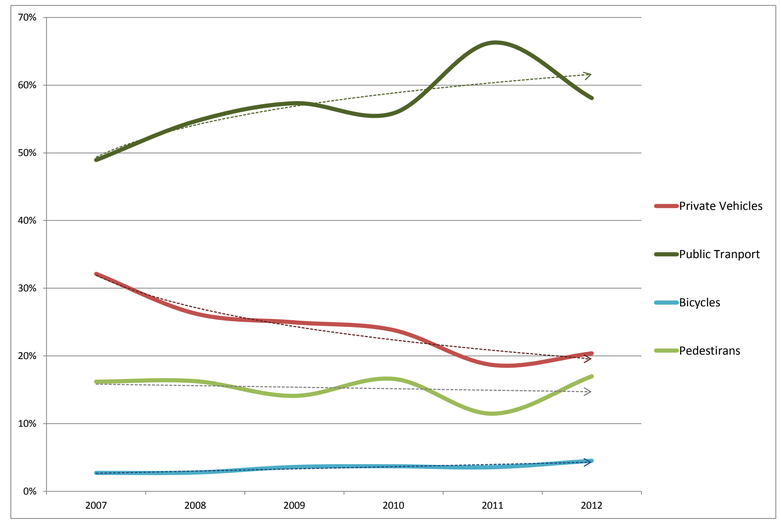
Staff



Students



Overall



APPENDIX C

Material Sciences & Engineering - Loading & Access

Access for an Articulated Vehicle to the current Liquid Nitrogen fill point outside the Chemical Sciences building has been preserved through the new access route.

Swept paths and traffic safety measures need to be confirmed via a traffic engineer.

An external service vehicle lay-over parallel to the Materials Sciences building is proposed to relieve congestion of the existing Chemical Sciences loading bay. An additional turn in bay is proposed between the existing loading bay ramp and the Law building, to facilitate maneuvering and use of the lay-over zone.

The turn in bay can be sized to allow pedestrian connection to the Mall past the law building if the turn out bay of the existing Chemical Sciences loading zone can be rationalized with assistance of a traffic engineer,

The diagram below indicates the loading and access strategy for the Material Sciences & Engineering building.

- Personnel access for gas bottle pickup/drop-off and chemical transport: via the Southern utility access.
- Forklift delievry of bulk goods: drop-off staging at utility access point - unpacking and breakdown can be performed inside the utility entrance.
- Large equipment: forklift or trolley access through the high-bay laboratory zone to the service corridor linking to the goods lift.
- Large equipment delivery to the basement larger than the goods lift capacity: access to the void to the basement touchdown space is via the high-bay laboratory. A lifting beam at the top of the basement void allows hoisting equipment to the basement space through the demountable glass partition surrounding the void.
- Diesel and bore water neutralization delivery: from the external loading bay through remote fill points to basement tanks. External fill point can be formed to capture spills.
- - Substation basement chamber: multipart gatic access from the north directly into basement chamber.