

Australian Catholic University
Strathfield Campus Concept Plan
Response to Traffic and Parking
Impact Assessment Review
undertaken by McLaren Traffic
Engineering, August 2012

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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.

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1 Introduction

This report responds to the issues raised in the Traffic and Parking Impact Assessment Review undertaken by McLaren Traffic Engineering dated August 2012. The McLaren report reviews the Preferred Project Report (PPR) prepared by Arup dated 9 July 2012. This report has been formatted with the same sections as the McLaren report.

McLaren Traffic Engineering also prepared a review for Mr Eddy Moussa relating to the proposed access on Barker Road to the underground car park. Arup responds to this review in Appendix A.

2 Existing Consent Conditions

The combined consent conditions imposed on the main ACU Campus limit the number of students in attendance on site at any one time to 510 between 8.00am and 5.00pm, Monday to Friday and 247 between 5.00pm and 9.00pm Monday to Friday on the MSM site and 240 between 8am and 9pm on the Clancy site.

The attendance audits undertaken by ACU since 2009 had been provided to Strathfield Council to confirm compliance with the conditions of the consents. These were provided in the Arup PPR report showing that the maximum number of students counted in the audit was 686 on a Tuesday between 12 midday and 1.00pm in 2010. After 5.00pm the audits show a maximum of 411 students on a Monday between 5.00pm and 6.00pm in 2010. These were the students in attendance in lecture rooms, tutorial rooms, laboratories, workshops and computer rooms.

The nature of the current timetabling has student attendance at classes spread throughout the week such that students come and go from the campus creating a churn throughout the day. The campus has limited facilities to attract students who are not attending classes or tutorials and this adds to the churn of students on and off the campus.

In 2012, ACU commenced use of classrooms at the Sydney Adventist College at 158 Albert Road to assist while building and refurbishment is completed.

3 Arup Transport and Accessibility Review

3.1 Report Revisions

The Arup PPR report dated 9 July 2012 supersedes the previous Arup documents by referring to the latest development proposal and updated assessment of conditions and impacts. For example, since the initial report in 2011, the number of shuttle buses has increased to meet demand.

3.2 Student and Staff Levels

McLaren reports that they undertook two surveys of student attendance at the ACU, Edward Clancy and Adventist College. The methodology used to undertake these surveys has not been provided, however, it is evident that each of the three sites was counted separately. In order to collect data on all people arriving and departing the sites, all people walking, travelling in cars and on the shuttle bus or using a bicycle or motorbike would need to be counted. There are a number of potential issues that could have resulted in over counting of the peak attendance on the campus as a whole.

Students move between the three sites to attend lectures and tutorials and use other facilities. The graphs of people arrivals and departures provided in the McLaren report are provided separately for each site with a resultant accumulation of people for each site. These are then added to give the total attendance on the campus. There is likely to be double/triple counting of people who are moving between the sites which exaggerates the total accumulation. It is highly unlikely that 400 people could be in attendance at the Edward Clancy site for a period from 10.30am to 12.30pm on both survey days when the building only accommodates a total of 300 students if all teaching rooms are fully occupied. It is most unlikely that such high occupancy of all rooms would occur concurrently.

People arriving on the shuttle bus arrive at the main entrance and then proceed to the site where their lecture is to be held. They are therefore counted in and out of the main site before they enter one of the other two sites.

There are many vehicle movements on and off the main site by students looking for a car parking space. The car occupants are counted on and off the site if the car park is full and then counted back on as a walk in trip from on-street car parking. These occurrences have the potential to double count total attendance.

Total daily people (including students, staff, visitors, contractors) attending the campus are also provided by McLaren although the methodology for counting this has not been provided. For the same reasons provided above, the total daily attendance will be over estimated due to the movements of the same person being double counted on and off the various sites.

In response to the points raised regarding deficiencies in the PPR in relation to patron levels we respond as follows:

- The ACU audits are undertaken by campus operations staff.
- The student audits focus on students in attendance in lecture rooms, tutorial rooms laboratories, workshops and computer rooms.
- The PPR provides the most up to date description of student levels.

- After 5.00pm the audits show a maximum of 411 students on a Monday between 5.00pm and 6.00pm in 2010. Later in the evening the number of students reduces significantly. These results were reported in Table 2 of the Arup PPR.
- The timetable rubric described in Section 2.2.3 of the Arup PPR identifies the groupings of students that would attend on each day. The campus has limited facilities to attract students who are not attending classes or tutorials. Students have indicated a preference to attend the campus on a limited number of days. Most students have 8 to 10 face to face teaching hours per week which can easily be timetabled within the two and a half days allocated per group.
- The proposal is to increase teaching staff from 190 to 260.
- Students currently come and go from the campus over the day due to the spread of timetabled classes. There will therefore be significant double counting of the same students on campus in any one day.

3.3 On-site and On-street Parking

Arup counted total on-street car parking and did not discount resident and other users. Many cars and trucks parked on-street at the commencement of the survey would leave throughout the survey period and be replaced by student cars.

It is proposed to increase teaching staff from 190 to 260. Not all of these staff are in attendance at any one time or on every day of the week.

The car parking calculations undertaken by McLaren are based on increased student attendance without regard for the many more students on campus than just in classrooms. The staff increase is also grossly over exaggerated.

3.4 Public Transport

In 2012 there are 5 shuttle buses available for use during the day. In peak times 4 buses are utilised with a reduction at off-peak times to match demand. The patronage data collected on the bus by the driver in March 2012 occurred in Week 3 of Semester 1 and represents the busiest attendance period. As the year progresses, student attendance at campus reduces. The pattern of attendance can also vary with large lectures being placed online so that students do not need to attend. There are also smaller tutorials being run.

Arup has undertaken a full day shuttle bus survey at Strathfield Station to provide a profile of activity during a mid year teaching period. The survey was undertaken from 7.00am – 8.30pm on Tuesday 7 August 2012. The capacity of the 5 buses being used is 22 or 24 passengers. It is usual practice to run any 4 of these buses at one time with 1 available as a spare.

The number of students enrolled in semester 2 is similar to Semester 1. There are students in Year 4 BT/BA(160 students) placed in schools for a 10 week block at this time. All other program features are the same as semester 1.

The number of students getting on and off each bus at the station was recorded as well as the bus number and time of departure. From this data we have developed an hourly profile of occupancy for the buses taking students to the uni and the available capacity as shown in Table 1. Over the day the shuttle bus carried 840 passengers to the campus and 757 passengers on return journeys to Strathfield

Station. This represents an average occupancy of 36% over the day with peak passenger numbers occurring between 7am to 11am for arrivals and 3pm to 6pm for departures.

Table 1 Shuttle bus survey at Strathfield Station Tuesday 7 August 2012

Time	Trips/ bus	No of Buses	Frequency	To University		From University		Capacity
				No.	Occupancy	No.	Occupancy	
7:00	3	4	10	119	53%	0	0%	224
8:00	3	4	10	103	46%	5	2%	226
9:00	3	4	12	134	50%	11	4%	270
10:00	3	2	9	94	50%	31	16%	188
11:00	3	2	6	91	63%	76	53%	144
12:00	3	2	6	54		69	48%	144
13:00	3	2	7	92	55%	93	55%	168
14:00	3	2	7	68	43%	65	41%	160
15:00	2	3	7	47	30%	111	71%	156
16:00	3	3	8	19	11%	105	59%	178
17:00	3	3	9	16	8%	127	64%	198
18:00	2	3	6	1	1%	41	32%	128
19:00	3	1	3	1	1%	17	24%	72
20:00	2	1	2	1	1%	6	9%	68
				840	36%	757	33%	2324

The methodology used by McLaren to calculate the public transport usage of around 16-17% is considered to be flawed because the total daily attendance is considered to include counting of students on many occasions as previously outlined in this response.

3.5 Traffic Generation

The traffic counts undertaken at the gates to the campus will be representative of the car park turnover due to the fact that on-site car parking was fully utilized in the survey periods. Even if the surveys are recorded in the last week of the semester, the car parking on-site is still fully utilized and hence traffic generation is valid. Due to the high occupancy of the car parks, traffic generation at the start of the day as vehicles arrive will be greater than later in the day when the car parks are slowly turning over.

The analysis of the operations of the road system has focused on the peak road periods because this is when the background traffic is highest resulting in the busiest traffic flows. During the middle of the day background traffic reduces significantly. The RMS has not raised any issues about the traffic analysis periods used in their response to the application.

The turnover of car spaces on the campus will be greater than on-street as students attempt to utilize these spaces first. Searching for spaces on the site also increases the traffic generation at the driveways as cars enter and leave when the car parks

are full. This artificially increases the traffic generation of 4.3 trips per space quoted by McLaren.

The analysis included in the car park report was based on the expected turnover of the on-site car parks and hence has not underestimated the number of trips generated.

The on-street traffic counts were conducted in teaching and non-teaching periods to represent the difference in impact on background traffic volumes. The survey data was used to describe the proportion of ACU traffic being about 20% of total traffic on Barker Road.

4 Summary

A number of issues raised by McLaren in the summary section of the report require further response to clarify ACU's position.

- A Green Travel Plan has been developed for ACU to provide a framework for achieving the sustainable transport initiatives.
- The Transport and Accessibility Study, Rev B, December 2011, included an analysis of the intersections of Barker Road/ Redmyre Road/ Elwin Street and Arthur Road/ Pemberton Street intersections. These were considered to represent the key main road intersections for access to the precinct. The intersections were analysed using the SIDRA intersection modelling program (version 5). The access intersections have been modelled for expected car park turnover as described in the Car Park Development Traffic Report April 2012.
- On site car parks will be free to students and staff with no boom gate control proposed. Further details of the car parking layouts and access arrangements will be included in future development applications.
- The shuttle bus patronage is discussed in Appendix B. ACU will work with Transport for NSW and Strathfield Council to develop appropriate kerbside facilities for pick-up and set-down at Strathfield Railway Station.
- The nature of the current timetabling has student attendance at classes spread throughout the week such that students come and go from the campus creating a churn throughout the day. The campus has limited facilities to attract students who are not attending classes or tutorials and this adds to the churn of students on and off the campus. The proposed timetable rubric identifies the groupings of students that would attend on each day. This will significantly reduce the turnover of cars on-street and hence improve the local street amenity.
- ACU would be pleased to support a parking scheme on-street if it was determined that this would improve resident amenity.

Appendix A

Barker Road Access to Underground Car Park

A1 Barker Road Access to Underground Car Park

The McLaren letter to Eddy Moussa dated 24 August 2012 refers to issues with the entry to the underground car park and the proposed treatments there. In this letter, concerns were raised regarding potential issues with the offset T-junction and the loss of kerbside parking.

The McLaren report gives the ACU driveway offset from Wilson Street as 26m and references the distance between a “turning vehicle from Wilson Street is fully in Barker Road” as 14m. Therefore with an assumed Stopping Sight Distance (SSD) of “approximately 23m to 27m based on 25km/h turning speed” the intersection was deemed unsafe. Several of the assumptions in this statement are incorrect.

Firstly the path distance from a turning vehicle fully in Barker road to the University access is 24m based on turning path analysis of the vehicles path as it turns. Secondly the SSD is given by a formula in Austroads Guide to Road Design Part 3 section 5.3. Utilising this formula the SSD of a vehicle travelling at 25km/h is 18m. The inter-visibility between turning vehicles on Wilson Street and the University Access allows for safe movements without the need to assess SSD. With these correct assumptions, the staggered T-intersection meets relevant safety requirements.

With regards to the pedestrians crossing Barker Road, a dedicated pedestrian facility such as a Zebra crossing is not warranted given the low pedestrian volumes at any one crossing point in the area. Therefore a refuge island is appropriate. The refuge allows for inter-visibility between cars and pedestrians so that vehicles turning right out of the underground car park are able to give way to pedestrians crossing the road.

The Arup PPR clearly identifies that eight car parking spaces will be lost on the southern side of Barker Road and five lost on the north associated with the proposed right turn bay. When the at-grade car park and driveway adjacent to the new entrance is closed, four on-street car spaces can be reinstated to the east of the relocated bus zone.

Appendix B

Future Travel Characteristics

B1 Future Travel Characteristics

Most students have 8 to 10 face to face teaching hours per week which can easily be timetabled within the 30 hours that are available over the two and a half days allocated per group. This also means that arrivals and departures will be staggered over a number of hours depending on the timing of first and last lectures. It is expected that a peak hour would represent approximately a third of students scheduled to attend on a given day. This means that 670 students will need to travel in a peak hour.

It is proposed to increase teaching staff from 190 to 260. Not all of these staff are in attendance at any one time or on every day of the week. Assuming that 75% attend on a typical day, this is 195 teaching staff. A car mode of 80% is being targeted which will result in 156 arrive in private cars and the remaining 39 arrive by shuttle bus and other modes.

The mode share target for the 670 students arriving at the campus is as shown in Table 2.

Table 2: Mode share targets

Mode	Mode Target	Number of students in one hour	Number of students in three hours	Number of students in one day
Public Transport	55%	369	1,100	1,540
Private car driver	30%	200	600	840
Private car passenger / drop-off	8%	54	160	224
Motor bike / scooter	1%	7	20	28
Bicycle	2%	13	40	56
Walk	4%	27	80	112
Total	100%	670	2,000	2,800

The shuttle buses seat 22-24 passengers and operate 3 return trips per hour. At the peak attendance periods at the start of the semester, up to 6 shuttle buses will be required in the peak to move students and teaching staff. It could be expected as attendance on campus reduces during the semester, shuttle bus activity can be reduced to meet demand.

Peak parking demand will occur when the change over of the student groups occurs at 2.00pm. Due to the staggered arrivals and departures occurring over a three hour period, additional 80 cars would be parked. Peak parking demand is therefore 600 student vehicles from the morning session, 80 student vehicles from the afternoon session and 156 teaching staff which accumulates to 836 vehicles. This represents a reduction in the use of on-street car parking with 717 spaces available on the campus.