

17 December 2014

P0117B NeW Space SSD RTS Response Ver02

University of Newcastle  
C/- APP Corporation  
King Street,  
Newcastle NSW 2300

**Attn: Ms Gillian Geraghty**

Dear Gillian,

**Re: Response to request for further details – NeW Space, Newcastle, NSW**

Further to our discussions we have reviewed the comments provided following discussions between APP and the authorities and provide the following information to elaborate on matters raised.

This should be read in conjunction with the prior reports issued, namely:

NeW Space Transport Access Strategy	Seca Solution July 2014
NeW Space Transport and Accessibility Assessment	Seca Solution July 2014
NeW Space Travel Demand and Parking Analysis	Seca Solution November 2014

We trust that this response assists with the approval process for NeW Space, Hunter Street, Newcastle, NSW.

Please feel free to contact me on 4925 7795, should you have any queries.

Yours sincerely



**Cathy Thomas**

**Director**

## Justification of the ATZ

The location of the ATZ was determined by considering what distance an average cyclist would expect to cover riding from or to the Newcastle CBD in twenty minutes. Given the relatively flat topography surrounding the CBD, and allowing for routes which have minimal traffic congestion and delays compared to the equivalent in Sydney, most average riders can cover 8 kilometres in this time. This is supported by census data which shows that of the 106,360 people in Victoria (69,803 in Melbourne) who walked or cycled to work on census day in 2006 women cycled an average of 6.1 km and men an average of 8.2 km (State of Victoria 2009), or walked about 2 km per trip. The average cyclist's trip to work on that day was 7.7km. Hence the following area was determined, taking into consideration the ridgeline associated with Merewether Heights, Adamstown Heights and Blackbutt Reserve to the south and west of the CBD.

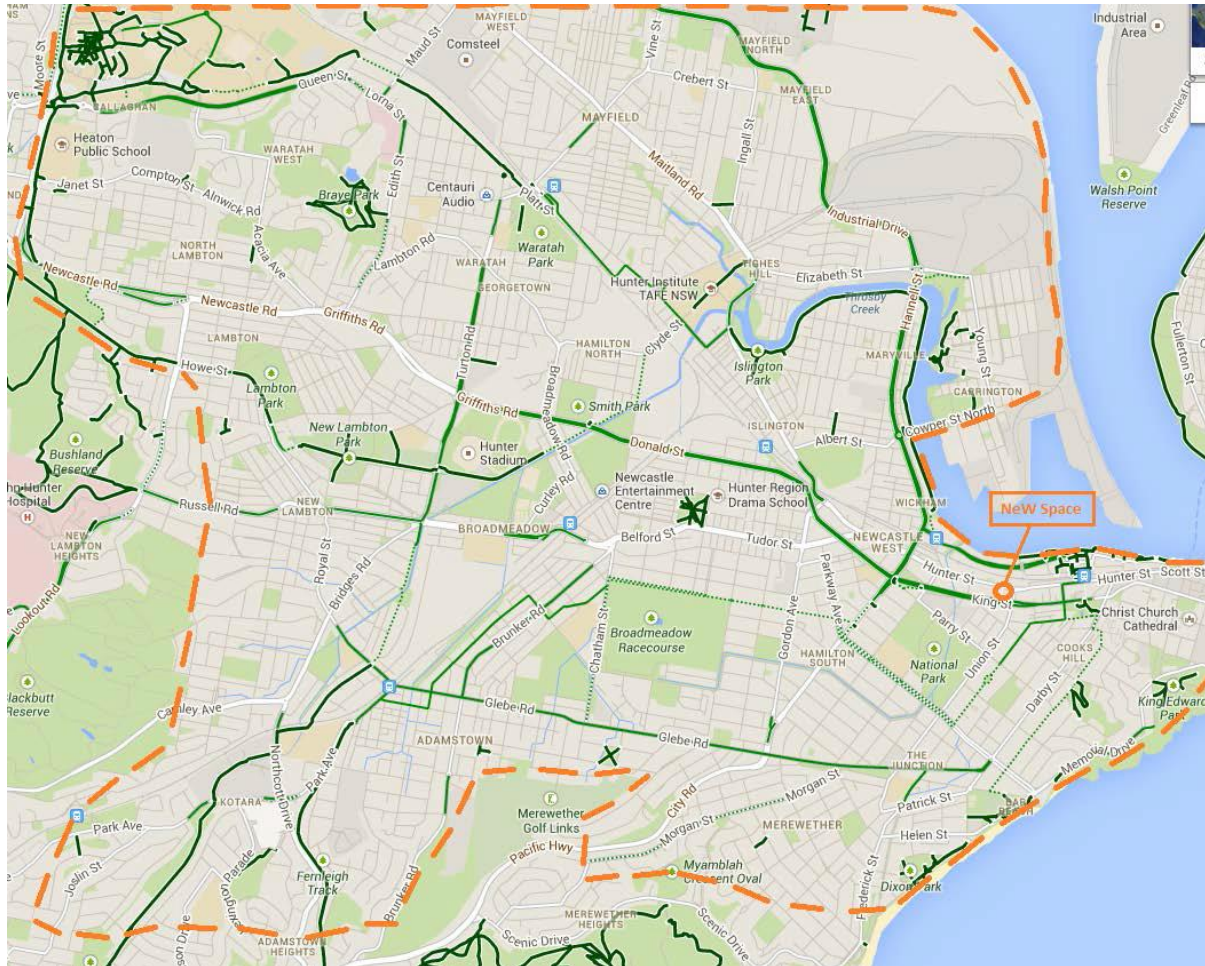


Figure 1 The cycling boundary considered appropriate for the ATZ based on a 20 minute journey time

This area is also shown below in Figure 2 allowing for a radius of 8 kilometres from the NeW Space location.

*Walking, riding and access to public transport Supporting Active Travel in Australian Communities* is a ministerial statement released in July 2014 which provides advice on appropriate travel distances by confirming that *walking works best for short distances up 20 minutes (two kilometres) and is more likely to occur in locations with convivial streetscapes; good access to public transport; and a wide range of destinations nearby such as shops, schools, workplaces, recreational activities and services like the post office or library whilst bicycle riding is ideal for regular trips up to 20 minutes (five kilometres).*

This statement was developed to promote a shift from car use for short trips to walking and cycling and so is considered conservative in its approach. It is however consistent with the ATZ in Newcastle as it recognises the relevant travel time of 20 minutes and provides an equivalent travel distance which would be based on cycling for novices in city centres such as Sydney or Melbourne with delays due to congestion, traffic lights etc. Census data

for Victoria confirms an average cycling speed of 20km/hr for cycling trips to work. As traffic delays and congestion in Newcastle are significantly lower than in Sydney or Melbourne, and the ATZ is an area that is primarily flat, the average speed of 22-24km/hr is considered appropriate for cyclists commuting on a regular basis to work or university.

Cycling speeds are also documented in Planning Guidelines for walking and cycling (NSW Government 2004) where path measure speeds in Melbourne have a median of 19.5km/hr and a range of 8-45km/hr where a Florida Study (William Hunter 2006) showed that the average speed was the same for both road and path travel.

Using Google Maps cycling tool and planning a series of routes from NeW Space provides the following to support the choice of 8 kilometres for a 20 minute ride in Newcastle and compares it with the equivalent car travel time.

Journey	By Car with traffic	By Car without traffic	Distance	By Bicycle
NeW Space to Adamstown	11min	9min	5.2km	14mins
NeW Space to Kotara	14	12	8.3km	23mins
NeW Space to Jesmond	15	12	8.5km	23mins
NeW Space to Callaghan	14	12	8.5km	23mins
NeW Space to Mayfield West	12	10	6.5km	18mins
NeW Space to Waratah West	12	10	7.2km	20mins

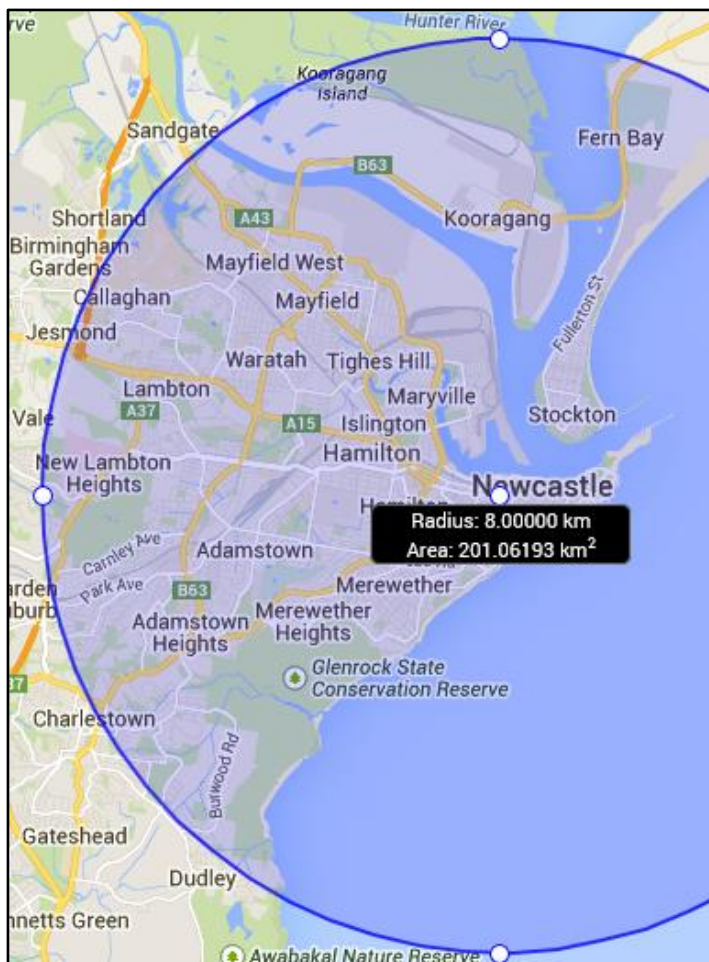


Figure 2 Active Travel Zone 8 kilometre radius from NeW Space



## Student Profiles

Further details regarding the student profile of business and law students.

For undergraduate business programs, a full-time student spends between 8-12 hours per week on campus in face-to-face teaching (2-3 hours per course for 4 courses). For Law, a full-time student spends 16-18 hours per course in face-to-face teaching (4-6 hours per course for 4 courses).

The approach for the NeW Space campus is to create a 'sticky' campus where students are encouraged to undertake not only their face to face courses but also complete other aspects of their studies using the facilities offered within the NeW Space campus. The Faculty of Business and Law has developed a draft plan based around a new pedagogy within the University to facilitate learning in the campus, particularly maximising technology to deliver course outcomes. These new study plans will particularly enable students to participate in courses by video conferences and online podcasts.

A review of the current Faculty of Business and Law enrolments shows the following study patterns. These patterns, particularly for students studying a single degree may not be replicated in the future when optional courses out of faculty may not be as convenient or as appealing as they currently are.

Academic Level	Program Faculty	Program Single/Combined	Enrolment Location	FT/PT Status	Domestic Students		International Students		All Students	
					Total		Total		Total	
					Program Enrols	EFTSL	Program Enrols	EFTSL	Program Enrols	EFTSL
UGRD	FBUSL	Single	All NeW Space	FT	262	195.500	70	48.750	332	244.25
				PT	209	73.375	23	7.250	232	80.625
			Part NeW Space	FT	575	489.250	322	263.250	897	752.5
				PT	142	70.250	25	12.000	167	82.25
		Combined	All NeW Space	FT	406	390.500	10	10.500	416	401
				PT	57	23.625	2	0.625	59	24.25
			Part NeW Space	FT	521	491.625	4	4.125	525	495.75
				PT	37	20.000	1	0.625	38	20.625
PGCW	FBUSL	Single	All NeW Space	FT	14	9.625	148	70.750	162	80.375
				PT	207	51.000	189	85.750	396	136.75
			Part NeW Space	FT	7	4.250	120	72.500	127	76.75
				PT	71	33.625	65	40.000	136	73.625
		Combined	All NeW Space	FT	17	14.875	45	33.875	62	48.75
				PT	11	3.750	17	9.375	28	13.125
			Part NeW Space	FT	2	2.000	13	12.750	15	14.75
				PT	6	2.875	7	6.250	13	9.125
RSCH	FBUSL	Single	All NeW Space	FT	25	22.455	41	35.702	66	58.157
				PT	25	10.099	8	4.751	33	14.85
			Part NeW Space	FT	0	0.000			0	0
				PT	2	0.750	2	1.390	4	2.14
NOAW	FBUSL	Single	All NeW Space	FT	0	0.000	60	27.375	60	27.375
				PT	7	1.000	2	0.500	9	1.5
			Part NeW Space	FT	0	0.000	184	91.000	184	91
				PT	0	0.000	0	0.000	0	0

How many students will only need to travel to NeW Space?

For the Business School, all undergraduate students studying the Business and Commerce and Bus/Com combined degree programs will study at NeW Space only, as well as all postgraduate Business students. In the Law School, the Juris Doctor and Master of Laws students will study at NeW Space, as well as all students studying a combined Law/Business or Law/Commerce degree program.

How many students will need to travel to Callaghan and NeW Space

The students studying in the undergraduate Law program who are doing combined programs with other Faculties may need to travel between the two campuses, although depending on the cohort size, there is the potential that lectures could be accessed from NeW Space or online using digital teaching technology. This includes Law/Arts,

Law/Social Science, Law/Science, Law/Communication Studies. This would reduce the need for students to travel between the separate campuses.

#### Details of any existing business and law students and staff that have parking permits

A review of the parking permit registrations show that of the 3284 enrolments in the Faculty of Business and Law, 565 or 17% hold parking permits. Additionally, 988 (30%) of these students are international with just 78 of these students (8%) holding parking permits.

An assessment of the facility and law students enrolments by postcode show that the highest proportion of permits as a percentage of enrolments are held in those areas previously identified as lacking quality public transport options or are too far from the campus to walk or cycle. The postcode zones of Swansea, Belmont, Warners Bay, Toronto and Speers Point have over 30% of enrolments holding parking permits, as do the Port Stephens suburbs of Nelson Bay, Anna Bay, Salamander Bay and Medowie.

*Table 1 Numbers of permits by post code- Lake Macquarie and Port Stephens*

Post Code	Post Code Zone	No of permits	No of enrolments	%
2280	Belmont	30	98	31%
2281	Swansea	13	34	38%
2282	Warners Bay	25	80	31%
2283	Toronto	24	62	39%
2284	Speers Point	7	23	30%
2315	Nelson Bay	9	23	39%
2316	Anna Bay	4	15	27%
2317	Salamander Bay	2	6	33%
2318	Medowie	10	24	42%

Outlying townships such as Kurri Kurri have small numbers of enrolments (10) with 60% (6) holding parking permits although Cessnock has a higher number of enrolments but averages only 30% holding permits.

There are a number of areas with no enrolments holding parking permits however the lowest with parking permits and a reasonable sample size of enrolments are those areas with easy access to quality public transport or within close proximity to Callaghan campus campus. This includes Callaghan (7%), Jesmond (9%), Shortland (11%) and Mayfield/Warabrook (12%) whilst the lowest overall were Carrington (5%), Newcastle West (6%), Wickham and Broadmeadow (9%) and Newcastle (10%).

*Table 2 Numbers of permits by post code- Newcastle*

Post Code	Post Code Zone	No of permits	No of enrolments	%
2294	Carrington	1	19	5%
2302	Newcastle West	1	17	6%
2308	Callaghan	4	58	7%
2299	Jesmond	32	361	9%
2293	Wickham	2	22	9%
2292	Broadmeadow	2	22	9%
2300	Newcastle	16	164	10%
2307	Shortland	9	81	11%
2304	Warabrook/Mayfield	18	149	12%

## Justification of modal share

Modal shift from 10.8% to 42-43% outside the ATZ

The question has been asked how can it be expected that a modal share of just 10.8% for public transport use to Callaghan be increased to 42-43% for public transport use outside the ATZ for NeW Space?

A travel mode survey undertaken by the University of Newcastle for their Callaghan Campus in Term 1, 2013 demonstrated that of the 21,634 people arriving on site, both students and staff, 2339 arrived by bus or train plus an additional 54 arrivals by train that were counted as cyclists for the purpose of that study. This represented 11% of the arrivals on the day surveyed.

*Table 3 Extract from Travel Mode Survey Callaghan Campus Term 1, 2013 (Northern Transport Planning and Engineering June 2013)*

People arrived on the campus in daytime (7.30am - 7.00pm):			
- total	20299	21634	
- came by car (% of total arrivals):	13532 (67%)	14468 (67%)	▲
- as drivers	10678 (53%)	11622 (54%)	▲
- as passengers	2854 (14%)	2846 (13%)	▲
- persons per vehicle	1.27	1.25	
- came by public transport (% of total arrivals):	1882 (9%)	2339 (11%)	▲
- by bus	1192 (6%)	1238 (6%)	▲
- by train	690 (3%)	1101 (5%)	▲
- came as pedestrians (% of total arrivals)	4469 (22%)	4291 (20%)	▲
- came as cyclists (% of total arrivals)	416 (2%)	533 (2%)	▲

These survey results compare with a similar annual travel survey undertaken by the University of NSW which found that 59.4% of survey respondents travelled to the campus by public transport, which was an increase of 10.4% over the prior year and predicted to increase further with the introduction of the South East Light Rail connecting the campus with the Sydney CBD. The results also demonstrated that 36.9% of staff and 65.1% of students travelled by public transport in 2013.

A review of the Journey to Work data available via the JTW Explorer (Bureau of Transport Statistics Tool) for the Jesmond Travel Zone shows a similar result (11%) with the modal split slightly different for staff only being 4% by bus, 3% by train and 4% by other mode, being cycling or taxis.

Comparing the two sets of data would indicate the following mode split between staff and students.

*Table 4 Comparison of modal share for students and staff to Callaghan Campus*

	Total Arrivals	Staff	Students	Note
	21634	3510	18124	
Arrival by car-as drivers	11622 (67%)	2703 (77%)	8919 (49%)	Students 28% lower
Arrival by car as passengers	2846 (13%)	210 (6%)	2636 (15%)	Students twice as high
Arrival by bus	1238 (6%)	140 (4%)	1098 (6%)	Students 50% higher
Arrival by other mode	482 (2%)	140 (4%)	342 (2%)	Students 50% lower
Arrival by train	1155 (5%)	105 (3%)	1050 (6%)	Students twice as high
Arrival as a pedestrian	3297* (15%)	140 (4%)	3157 (17%)	Students 4 times higher
Not stated		70 (2%)		

\*Adjusted for on-street parking arrivals

The differences between staff and student modes is consistent with Bureau of Statistics and Bureau of Transport Statistics findings which are that generally, those with lower incomes tend to walk and take public transport more than those with higher incomes. The opposite trend can be seen for the use of car. These findings are consistent with the travel patterns by labour force status, which shows that unemployed people, including students, are more likely to walk and use public transport than other types of travellers. (Household Travel Survey Report: Sydney 2012/13 – including Newcastle Statistical Subdivision).

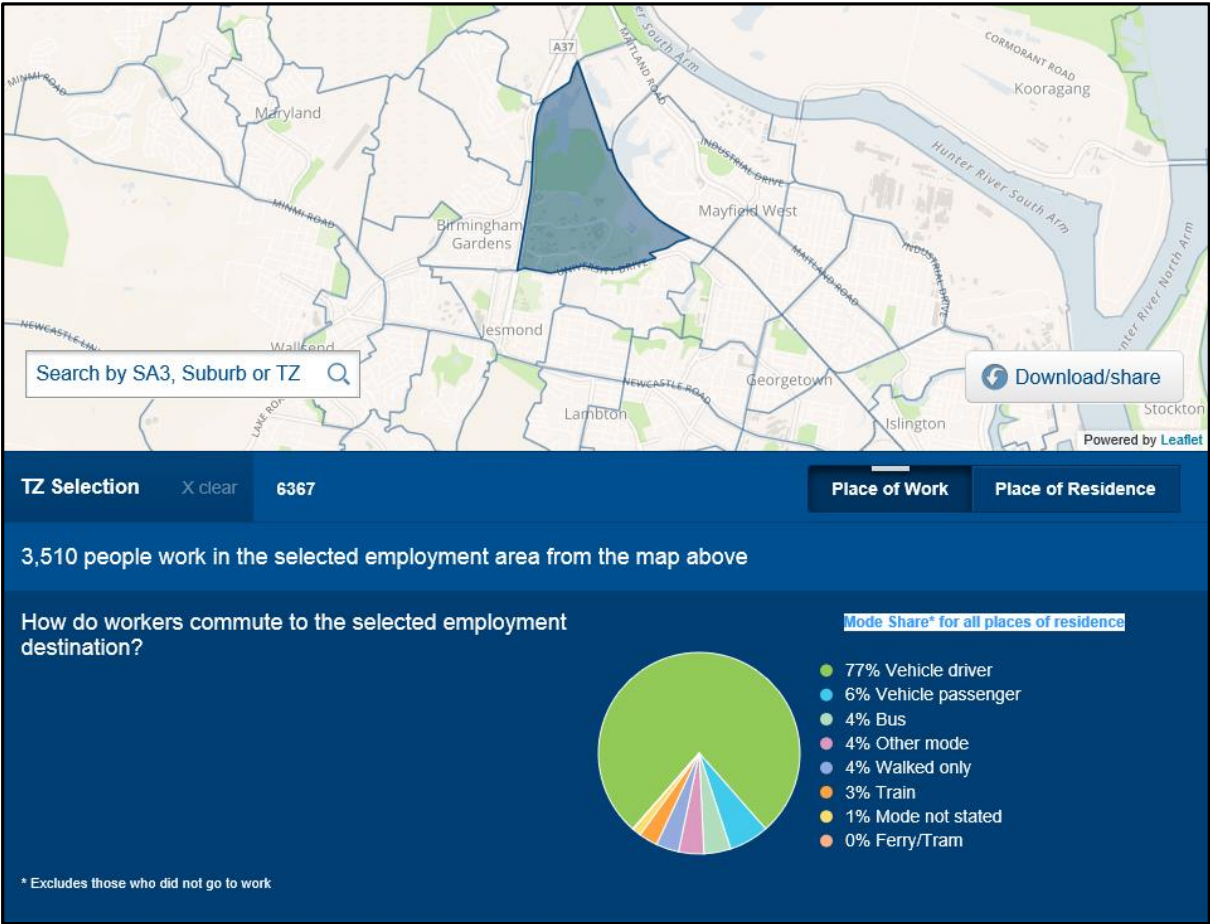


Figure 3 Mode share for workers to Callaghan Campus - extract from Journey to Work Explorer tool (BTS)

The Journey to Work data can also be extracted by the place of residence of the employees to the employment destination. This provides the following mode share by place of origin for staff travelling to Callaghan.

Table 5 Mode share by place of residence for workers at Callaghan Campus (BTS)

	Bus	Other (cyclist/taxi)	Train	Total
Newcastle	6%	6%	3%	15%
Lake Macquarie East	2%	3%	0%	5%
Lake Macquarie West	2%	0%	0%	2%
Maitland	2%	2%	14%	18%
Port Stephens	2%	0%	0%	2%
Lower Hunter	15%	4%	0%	19%
Gosford	0%	0%	20%	20%
Wyong	0%	0%	7%	7%

This data particularly reflects the quality train links between Maitland and the Callaghan Campus (Warabrook Station) whilst there is no train connection available from East Lake Macquarie or Port Stephens. Although there is a train connection from the western side of Lake Macquarie, the travel times associated with this trip (average 1 hour), and the need to change trains at Hamilton, make this journey less appealing compared with driving (40 minutes).

	<b>Option 2</b>	<b>Depart</b> 06:22	<b>Arrive</b> 07:24	<b>Travel time</b> 1 h 2 mins
	<b>Option 3</b>	<b>Depart</b> 07:06	<b>Arrive</b> 07:58	<b>Travel time</b> 52 mins
	<b>Option 4</b>	<b>Depart</b> 07:22	<b>Arrive</b> 08:24	<b>Travel time</b> 1 h 2 mins
	<b>Option 5</b>	<b>Depart</b> 07:50	<b>Arrive</b> 08:58	<b>Travel time</b> 1 h 8 mins

Figure 4 Details of train journeys Morisset to Callaghan with a change of train at Hamilton

By comparison a review of Journey to Work data for Newcastle, specifically the travel zone associated with the area that includes the NeW Space site (TZ6351) provides for a mode share of 7% train, 5% bus, 3% other and 1% ferry. This represents a public transport and cycling mode share of 16%.

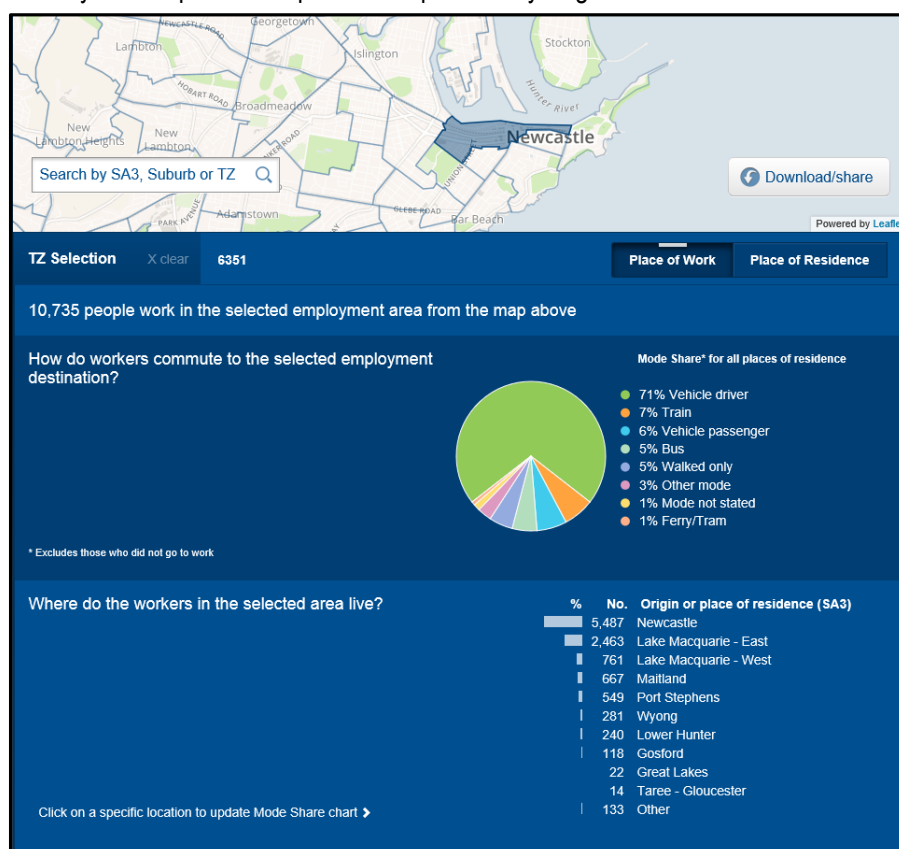


Figure 5 Mode share for workers to Newcastle in the vicinity of NeW Space – JTS Explorer tool (BTS)



When further analysed the mode share by place of residence provides the following details:

*Table 6 – Mode share by place of residence – Newcastle CBD v Callaghan*

	Bus	Other (cyclist/taxi)	Train	Ferry	Total for Newcastle	Total for Callaghan	Difference
Newcastle	8%	5%	2%	1%	16%	15%	+1%
Lake Macquarie East	4%	1%	2%		7%	5%	+2%
Lake Macquarie West	0%	0%	22%		22%	2%	+20%
Maitland	0%	1%	33%		34%	18%	+16%
Port Stephens	5%	1%	1%	5%	12%	2%	+10%
Lower Hunter	2%	0%	8%		10%	19%	-9%
Gosford	0%	0%	44%		44%	20%	+24%
Wyong	2%	0%	22%		29%	7%	+22%
Great Lakes	0%	0%	14%		14%		+14%

Table 6 above also compares the mode share for workers at Callaghan and the mode share for workers in the vicinity of NeW Space. It shows a significant increase in public transport usage, particularly for travellers from Lake Macquarie West, Maitland, Wyong and Gosford although a drop in public transport use from the Lower Hunter.

This increase in the participation rate for public transport use is particularly reflected in the percentage of train journeys and is a reflection of the ease of access for train travel to Newcastle compared with Callaghan.

The journey to work data for existing workers to the CBD reflects better transport connectivity over the Callaghan campus however still represents a high percentage of travellers as drivers. The 2012/13 Household Travel Survey questioned reasons why people travel to work by car and 14 percent responded that they needed to use their car for work trips whilst 15% had employer subsidised parking. Neither of these demands will be applicable at the NeW Space campus. It also reflects a high percentage of workers as opposed to students given the low number of students compared to workers currently based in the CBD. As detailed above, low income people (typical of students) will use public transport or walk as opposed to drive a vehicle.

When correlated with existing student and staff accommodation patterns this provides a ready opportunity for students and staff to access the Newcastle CBD by public transport at a significantly higher rate than to Callaghan Campus. This confirms the assessment that was undertaken in the prior NeW Space Public Transport Demand and Parking Analysis (Seca Solution Nov 2014) which documented the accommodation patterns and choice of public transport available to staff and students living outside the ATZ.

The low public transport mode share for Callaghan is also a reflection of the availability of affordable (\$4.40 per day or \$151.66 for an annual permit) and in some cases free parking within the Callaghan Campus. Except for the congestion that historically has been prevalent at the very beginning of each new study year, there is little disincentive to drive to Callaghan Campus. Recent efforts by the University to improve active transport access by the provision of improved end of trip facilities and a shuttle bus from Warabrook Station to the heart of the campus however would not be reflected in these arrival surveys that were undertaken in early 2013. Relatively speaking, parking within the Newcastle CBD is significantly more expensive than that available at Callaghan. An annual pass, pro-rated over just 25 weeks and 3 days per week on campus equates to just \$2.00 per day at Callaghan. This compares with a monthly parking pass within the Civic West car park off King Street of \$200 which equates to an

annual cost of \$1800 for 9 months of the year, a daily parking rate \$23 per day normal rate or \$9.00 (early bird before 9.30 and 7 hour stay). The hourly parking rate is \$3 per hour for short term parking.

By comparison the on-street metred parking rates on King Street in the vicinity of NeW Space are:

\$2.50 per hour between 9am-11am,

\$4.00 per hour 11am-2pm

\$3.00 per hour between 2pm – 5pm

\$2.50 per hour 9am-noon Saturday

Wright Lane and Lee Wharf parking across the railway line in the Honeysuckle precinct, rates are \$2.50 per hour but have limited 2hr, 4hr and 8hr zones. The parking policy being implemented to support NeW Space acts as an active incentive for staff and students to seek alternate travel options.

The likelihood of students living out of the ATZ and choosing to travel to NeW Space by public transport is further reinforced by a review of Travel Mode data reported by the Bureau of Transport Statistics in its Household Travel Survey Report: 2012/13 which showed that there has been a continued growth in demand for student concession travel by train with 13% growth during the past two years and an overall increase in the past ten years of 20 percent. Demands for bus travel concessions have also been steadily increasing with 30 percent growth over ten years. This category does not include school pass travel and so captures the tertiary student cohort. This consistent growth is the opposite of most other train and bus fare categories as shown in Figure 6.

**Table 4.3.6: Public transport<sup>1</sup> fare type, average weekday 2002/03 to 2012/13**

Fare type	2002/03	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
<b>Train</b>								
Full Fare	61.9%	61.4%	62.1%	64.3%	65.6%	64.2%	62.6%	61.7%
Child Fare	1.8%	1.2%	1.4%	1.6%	0.9%	0.9%	1.2%	1.0%
Free School Pass	7.6%	9.0%	8.6%	7.8%	7.8%	8.4%	8.9%	9.1%
Free Fare Other	4.0%	3.0%	3.0%	4.5%	4.3%	4.0%	3.6%	3.5%
Concession- Pensioner/Aged	7.8%	8.3%	7.9%	6.9%	6.5%	6.7%	6.1%	4.6%
Concession - Student and Other	16.4%	16.4%	16.6%	14.8%	14.3%	15.3%	17.4%	19.8%
Other Fare	0.5%	0.7%	0.3%	0.1%	0.5%	0.3%	0.3%	0.2%
Fare type not provided	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Bus</b>								
Full Fare	36.7%	37.1%	37.0%	37.6%	39.0%	38.1%	36.2%	34.6%
Child Fare	2.4%	0.8%	1.6%	1.9%	1.7%	2.1%	1.7%	2.0%
Free School Pass	24.9%	28.0%	28.3%	27.4%	25.0%	24.4%	25.3%	27.4%
Free Fare Other	4.5%	4.2%	3.0%	3.5%	3.9%	5.0%	4.8%	4.5%
Concession- Pensioner/Aged	12.6%	14.8%	14.4%	13.9%	13.7%	11.5%	10.3%	9.2%
Concession - Student and Other	17.0%	14.0%	14.6%	15.0%	16.3%	18.7%	21.6%	22.2%
Other Fare	1.6%	1.0%	1.0%	0.5%	0.3%	0.2%	0.1%	0.1%
Fare type not provided	0.2%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

<sup>1</sup> Fare type and ticket type is collected for all public transport modes but only train and bus are reported here.

Figure 6 Extract from Household Travel Survey Report 2012/13 showing public transport fare categories over time

Similarly a comparison of the average mode share by full time and part time students over full-time workers shows that on average they are twice as likely to use trains as a mode of travel, three time as likely to use bus travel and more than twice as likely to travel as a vehicle passenger.

**Table 4.7.3: Labour force and mode<sup>1</sup> in 2002/03 and 2012/13 (average weekday)**

Mode	Full-time worker	PT/ Casual/ Voluntary Worker	FT/PT Adult Student	Pensioner	Unemployed/ Keeping House	Primary/ Secondary Student	Child not at school	Other
<b>2002/03</b>								
Vehicle driver	65.1%	65.2%	42.2%	44.8%	60.3%	1.8%	0.0%	20.7%
Vehicle passenger	8.8%	11.8%	15.4%	16.0%	15.1%	60.6%	79.2%	0.0%
Train	6.1%	3.1%	9.5%	4.0%	2.1%	4.0%	0.5%	11.2%
Bus	3.7%	3.5%	10.9%	7.7%	2.5%	12.0%	1.3%	33.9%
Walk only	13.5%	14.6%	19.8%	25.6%	19.1%	18.8%	18.3%	34.2%
Other <sup>2</sup>	2.8%	1.8%	2.2%	1.8%	0.9%	2.8%	0.7%	0.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>2012/13</b>								
Vehicle driver	62.6%	65.6%	36.5%	48.6%	56.6%	2.3%	0.0%	40.2%
Vehicle passenger	7.6%	10.0%	18.7%	17.6%	13.0%	61.3%	76.7%	16.5%
Train	6.7%	4.6%	13.2%	3.0%	2.7%	4.4%	1.1%	10.7%
Bus	4.0%	3.9%	11.6%	6.1%	3.6%	14.2%	2.2%	2.7%
Walk only	16.5%	14.6%	17.6%	22.2%	23.2%	15.2%	19.4%	28.2%
Other <sup>2</sup>	2.6%	1.3%	2.5%	2.5%	0.9%	2.6%	0.7%	1.8%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

*Figure 7 Extract from Household Travel Survey Report 2012/13 showing mode of transport by user category*

If these student travel characteristics are applied to the existing journey to work data for the NeW Space Travel Zone then the likely mode share for students can be predicted. The results of this are shown in Table 7.

*Table 7 Mode share predicted for students travelling to NeW Space based on JtW*

	Bus	Other (cyclist/taxi)	Train	Ferry	Total for Newcastle
Newcastle	24%	5%	4%	1%	34%
Lake Macquarie East	12%	1%	4%		17%
Lake Macquarie West	0%	0%	44%		44%
Maitland	0%	1%	66%		66%
Port Stephens	15%	1%	1%	5%	22%
Lower Hunter	6%	0%	16%		22%
Gosford	0%	0%	88%		88%
Wyong	6%	0%	44%		50%
Great Lakes	0%	0%	28%		28%
				Average	39%

## Justification of living in the ATZ

A review of the 2013 enrolment data by postcode shows that of the 11297 students living in the Newcastle LGA 49% live within the suburbs of Jesmond, Birmingham Gardens, Waratah West, Warabrook, Shortland and Callaghan which all about the Callaghan campus. This shows that there is a strong motivation for students to live close to their place of study. The data also shows however that there is a strong preference for city and coastal living with 26% choosing to live in Newcastle, Newcastle West, Wickham, Carrington, Stockton, Hamilton, Tighes Hill, The Junction and Merewether. 18% live within the suburbs of Mayfield, Waratah, Islington, Adamstown and Kotara whilst the balance, 7% live elsewhere (Broadmeadow, New Lambton, Windale).

An analysis was also undertaken of the Faculty of Business and Law enrolments to identify those students who changed address during the term. For international students this is coming to live in Newcastle, for domestic students it may be the choice to move away from home or to change their place of residence. This data showed that of the 1,445 who changed address, 55% choose to move within the immediate suburbs of their campus, 19% chose to live within the city and coastal strip whilst 12% lived in the broader area between the Callaghan campus and the CBD.

*Table 8 Summary of destination by post code of Faculty of Business and Law enrolees who changed address*

Birmingham Gardens	266
Adamstown/Kotara	30
Merewether/The Junction	30
Broadmeadow	14
Wickham	17
Carrington	14
Stockton	3
Islington	4
Tighes Hill	6
Waratah	99
Jesmond	318
Newcastle	108
Newcastle West	15
Hamilton	41
Mayfield/Warabrook	98
New Lambton	17
Windale	1
Shortland	72
Callaghan	57
<b>Total</b>	<b>1210</b>

This shows that when students do move, 84% (1210 of 1445) would choose to live within what would be considered the ATZ of the future NeW Space.

These pattern of students moving closing to their university campus was emphasised in the Tertiary Travel report (Department of Transport and Main Roads, Travel in south-east Queensland - May 2012) which determined that "when students move out of home they favour residences near campus."



Identifying the current accommodation patterns enables the prediction of future preferences for students studying at NeW Space. This assessment is not only based on where the current students will live once NeW Space is open but rather where the future students for the next 10, 20, 50 years will live when studying at this campus. Applying the existing accommodation patterns to the future cohort it is reasonable to expect that the majority will wish to live within close proximity to the campus, consistent with those currently living close to Callaghan. The appeal to live in the city and the coastal strip will increase as now it also provides the convenience of ready access to the campus, compared with those currently living in this precinct and travelling to Callaghan. These students will now be within the ATZ as will those students currently living in the Mayfield, Waratah area.

The motivation for students to want to live within the ATZ will be influenced not only by the campus location but also by the lifestyle choices that are offered by studying, working and living within Newcastle. Students who would otherwise live at home within the Hunter would be more motivated to move from home when the choice is sharing with friends; living, studying and working in a vibrant coastal city than living in the suburbs around Callaghan with little entertainment or night life. Students can be expected to overcome the barriers of housing costs and rental availability as they always have, by sharing accommodation, passing on leases and grouping together. The opportunities for student employment in the areas of hospitality are high in the ATZ with significant entertainment zones through Darby Street, Beaumont Street, The Junction and generally the CBD. As more people move into the city traditional student employment in retail, supermarkets etc will also increase. These reasons may also influence relocation of some of the existing students as they finalise their studies at NeW Space as well as influencing accommodation choices for those student who will commence their degrees at Callaghan in the year before the new campus opens. As the analysis shows however, the vast majority of existing students could complete their final year at NeW Space, live where they are currently living and still be within a cycling distance or public transport commute to the city.

## Why will 100% of students and staff use non-car based travel within the ATZ

The NeW Space Transport and Accessibility Assessment (Seca Solution 2014) predicted that students and staff living in the ATZ will travel to the campus by public transport (8%), cycle (10%) or live within two kilometres of the NeW Space campus and therefore be able to walk to the campus.

### Public Transport Usage

The NeW Space Transport and Accessibility Assessment (Seca Solution 2014) predicted that 8% of staff and students living within the ATZ shown in Figure 2 above would access NeW Space by public transport. This is lower than the public transport mode share of 10.8% for Callaghan Campus and despite the Tertiary Travel report (Department of Transport and Main Roads, Travel in south-east Queensland - May 2012) which found that *most inner-city university campuses have higher public transport mode shares and lower vehicle mode shares compared to suburban universities*.

The predicted 8% mode share for public transport within the ATZ is conservative when compared with the existing mode share for Callaghan of 10.8% and provides a viable alternative to car usage and parking for both staff and students, particularly those living between the 2 kilometre walking zone and the broader 8 kilometre ATZ boundary.

Opportunities for public transport travel within the ATZ includes train travel between the city and Warabrook Station to the west and the city and Kotara Station to the south with regular services along both routes. The impending truncation of the heavy rail line and associated works will see the new Wickham interchange scheduled to open in late 2016 with shuttle buses meeting trains until the completion of the light rail.

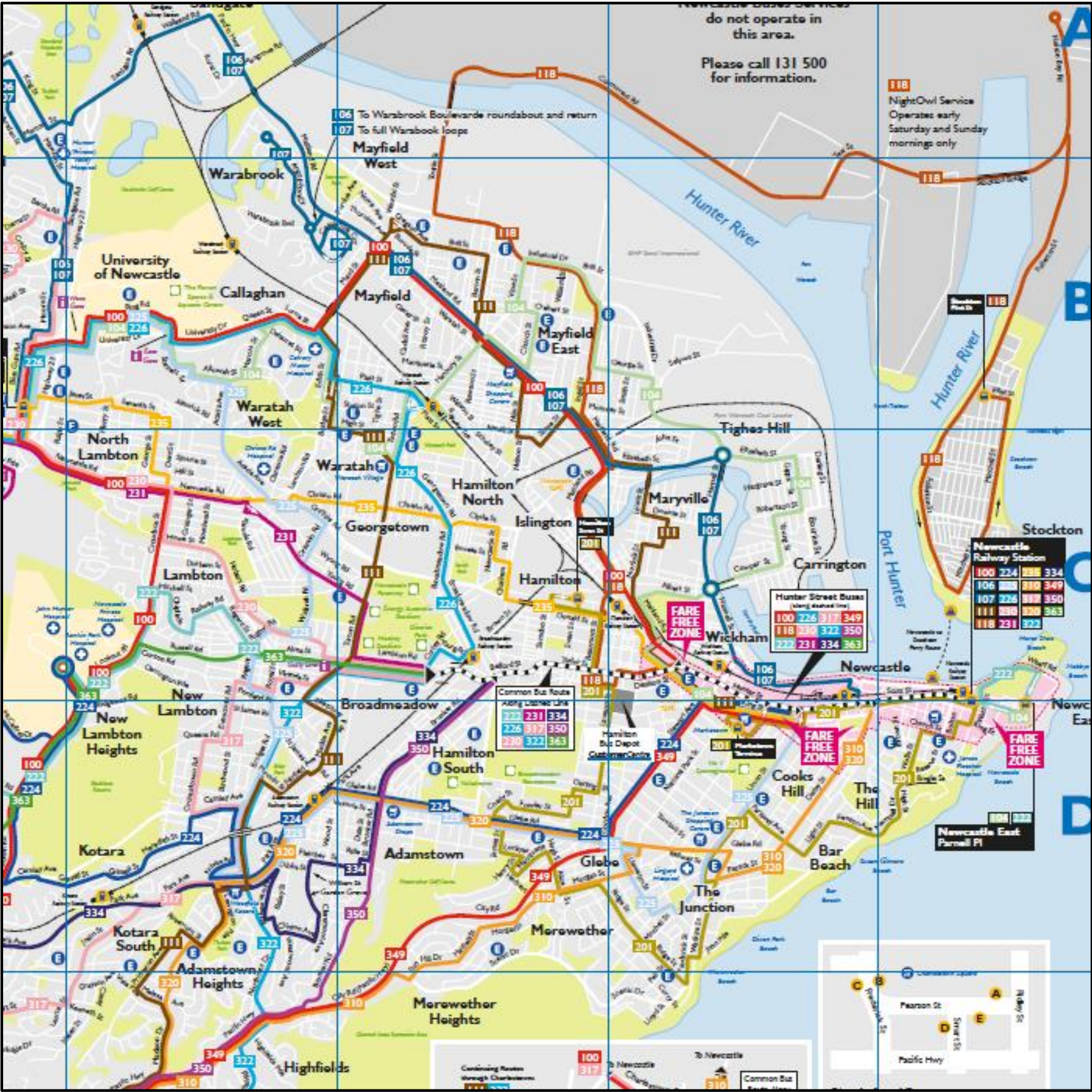
Bus travel in this zone is provided primarily by Newcastle Buses with an extensive range of services (28 routes) accessing the Newcastle CBD. As these bus routes get closer to the city centre, the bus routes overlap and effectively create very short wait times for a bus trip to the NeW Space site. The primary routes that provide connection to suburbs within the ATZ are shown below with non-ATZ suburbs greyed out. Other routes also pass through these various suburbs.

Table 9 Bus Routes that service the ATZ

100	Charlestown-Garden Suburb-JHH-Lambton-Jesmond-University of Newcastle-Mayfield-Tighes Hill-Islington-Newcastle
104	Jesmond-University of Newcastle-Waratah-Mayfield-Mayfield East-Carrington-Wickham-Marketown- Newcastle East
106/107	Jesmond-Birmingham Gardens-Shortland-Sandgate-Warabrook-Mayfield-Honeysuckle-Newcastle
111	Mt Hutton-Charlestown-Kotara-Waratah-Mayfield-Maryville-Newcastle
118	Newcastle-Tighes Hill-Mayfield East-Mayfield North-Kooragang-Stockton (Night Owl)
201	Hamilton-Merewether-The Junction-Bar Beach-The Hill-Newcastle-Marketown
224	Wallsend-Elmore Vale-Rankin Park-JHH-Kotara-Adamstown-Newcastle
235	Maryland-Wallsend-Jesmond-North Lambton-Waratah-Hamilton North-Hamilton-Newcastle
310	Belmont-Valentine-Eleebana-Mt Hutton-Charlestown-Merewether-The Junction-Newcastle
320	Warners Bay-Mt Hutton-Charlestown-Adamstown Heights-Kotara-The Junction-Newcastle
334	Glendale-Cardiff-Macquarie Hills-Cardiff South-Garden Suburb-Kotara-Adamstown-Broadmeadow-Newcastle
350	Swansea Heads-Caves Beach- Swansea-Belmont-Jewells-Gateshead-Charlestown-Adamstown-Broadmeadow-Newcastle
363	Warners Bay-Speers Point-Boolaroo-Argenton-Glendale-Cardiff-JHH-New Lambton-Broadmeadow-Newcastle



Bus Routes in Newcastle





Public transport in the ATZ provides an appealing transport option and compares more favourably than travel to the Callaghan Campus because there are:

- 28 bus routes to Newcastle versus 12 to Callaghan
- Rail services from both the Hunter line and Newcastle Central Coast line terminating within the CBD (Wickham interchange)
- Student concession on public transport with half price tickets and international student fares
- Travel within the ATZ to NeW Space can also be achieved by a single mode of travel.

An exercise was undertaken to assess a series of random locations and plan a trip from there to NeW Space versus to Callaghan Campus. These were undertaken during the middle of the day mid-week. Table 10 below outlines the findings with travel times including walking times at start or end of journey where necessary. The frequency of services to NeW Space is double that of services to Callaghan with the length of journey less than that to Callaghan.

*Table 10 Travel journey options and frequency to Callaghan and NeW Space campus*

Location	NeW Space			Callaghan Campus		
	Service	Frequency	Travel Time	Service	Frequency	Travel Time
Chatham Rd near Merewether High, Broadmeadow	Bus 363/230/224/317	7 min	20min	Bus 226	15—30 mins	35mins (incl 9 min walk each side of bus trip)
	Train Broadmeadow to Civic Station	20-40 mins	21mins (inc 13min walk)	Train Broadmeadow to Hamilton, change to Hunter line to Warabrook	Hourly	50 min (incl 13/20 min each side of trip)
Elizabeth Street, Mayfield	Bus 107/100/140/100	15 mins	15-24mins (later inc 8 min walk)	Bus 100	15-25 mins	22 mins
Morgan Street, Adamstown	Bus 224/320/350/334	7-14mins	14-24mins	Bus 224 to Civic and Train to Warabrook OR Train from Adamstown and change at Hamilton	11/4 hrs	53 mins
				Bus 226/350/225/334	5-10 mins	47-53mins

In conclusion the use of public transport for staff and students living and travelling within the ATZ is a positive travel option with the predicted 8% mode share conservative. Discussions with Transport for NSW have confirmed that there is “plenty of spare capacity” on public transport in Newcastle and so should students and staff chose to use public transport instead of walking or cycling this mode split could increase.

## Walking

A review of the existing student enrolment data by post code for the Newcastle area provides the information shown below in Table 11.

*Table 11 Student enrolment data – Newcastle area (place of residence)*

Birmingham Gardens	2057
Adamstown/Kotara	848
Merewether/The Junction	774
Broadmeadow	151
Wickham	140



Carrington	94
Stockton	117
Islington	125
Tighes Hill	133
Waratah	917
Jesmond	1730
Newcastle	1064
Newcastle West	47
Hamilton	598
Mayfield/Warabrook	893
New Lambton	622
Windale	49
Shortland	332
Callaghan	606
<b>Total</b>	<b>11297</b>

A review of the suburbs within a two kilometre radius of the main entry points to the Callaghan campus shows that there are approximately 5481 enrolments living within this area (Table 12 below). This area is considered an acceptable walking distance within an active transport zone for the Callaghan Campus.

*Table 12 Enrolment data within 2 kilometres of the Callaghan Campus.*

Post Code area	Total enrolments
Birmingham Gardens	2057
Waratah – assume half	458
Jesmond	1730
Mayfield/Warabrook – assume one third	298
Shortland	332
Callaghan	606
<b>Total</b>	<b>5481</b>

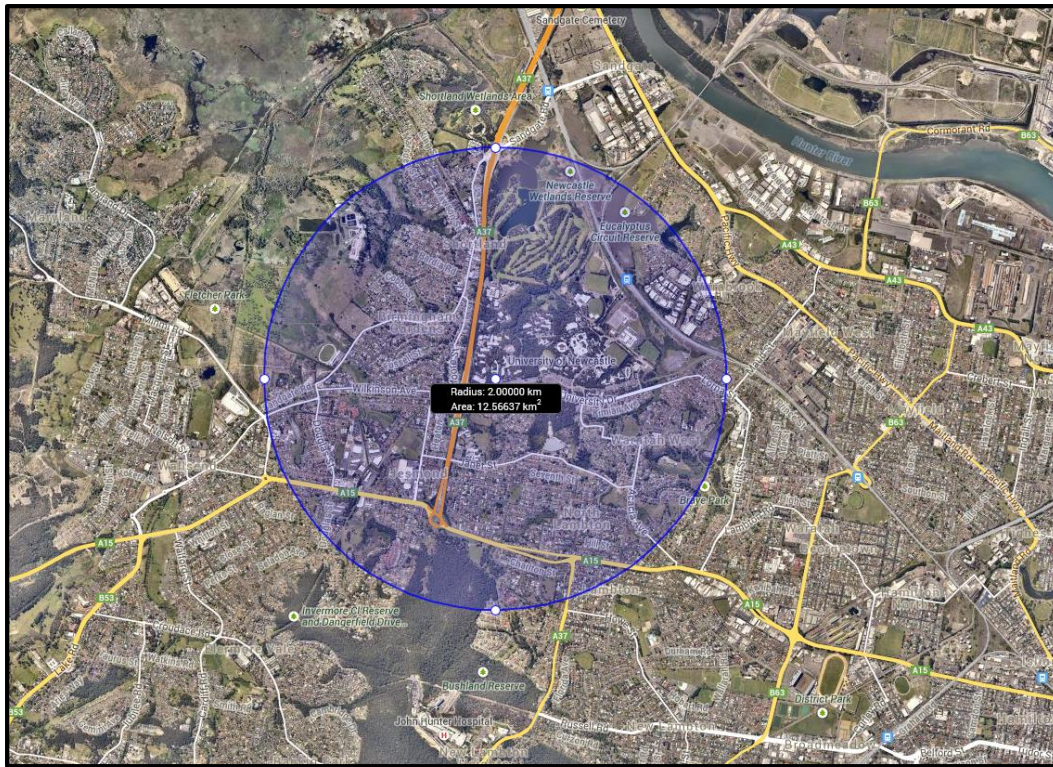


Figure 8 Two kilometre radius from western entry



Figure 9 Two kilometre radius from north (Warabrook) entry



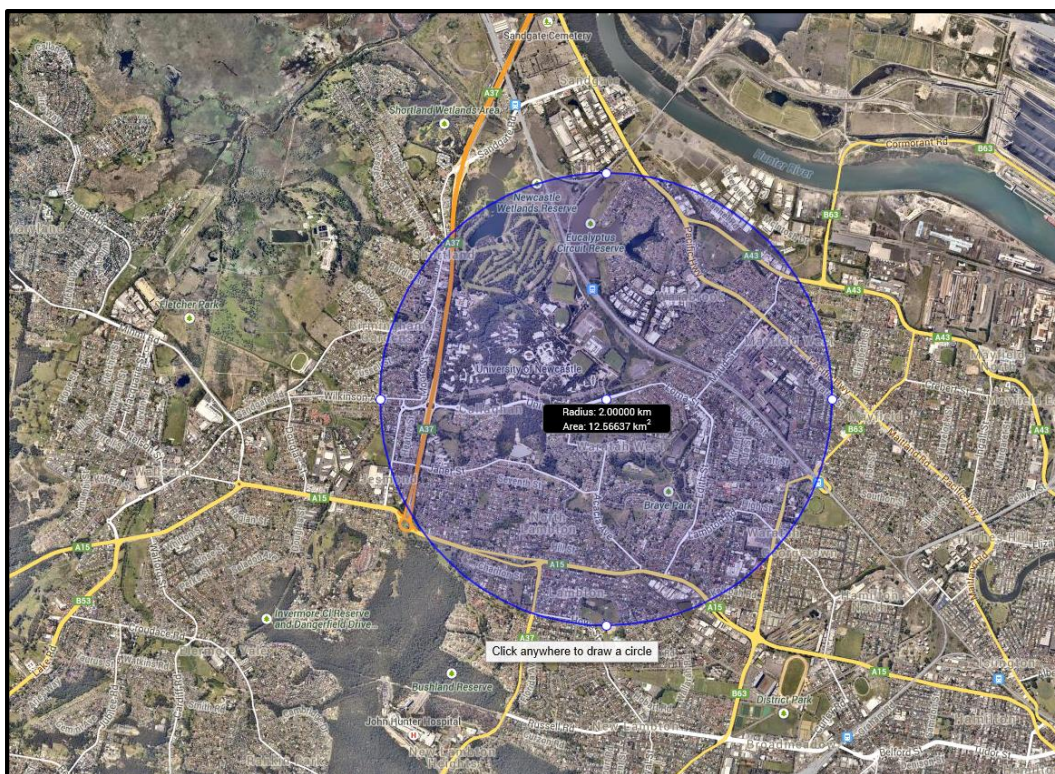


Figure 10 Two kilometre radius from eastern entry

The Travel Modes Survey Semester 1, 2013 (Northern Transport Planning and Engineering Pty Ltd June 2013) identifies that, adjusted for vehicles parked off-site of the campus, an average of 3157 pedestrians accessed the campus during the survey period. Despite the topography of the Callaghan Campus and its environs, particularly to the south and east, 58% of enrolments within this catchment chose to walk to the campus.

The urban environment offered to residents of the CBD and its surrounds are conducive to walking and as the population increases the levels of safety and comfort will also increase, further encouraging walking. To the east of NeW Space the topography is hilly to quite steep however the areas to the west and south of the site, and in the immediate environs of the CBD provide for a much flatter, very walkable city. Higher density development, as envisaged under the Newcastle Urban Renewal Strategy, within the CBD will also see more people living in this area. The area provides footpaths to both sides of the vast majority of the roads and all major road crossings have traffic signals to allow for safe pedestrian movements. There are also facilities within the CBD which help make the walk attractive i.e. shops, cafes, shade and awnings for hot / inclement weather

A review of the JTW Explorer tool shows that of the 1756 people currently living within the vicinity of NeW Space, 18% walk to work. Given that 70%, or 1229 of these residents, work throughout the whole of the Newcastle area, this would represent a much higher walking mode for just those living and working in the city. Unfortunately this level of detail is not readily available. Analysing the travel zone immediately surrounding NeW Space (TZ6351), 17% of residents in this zone walked to work, compared with the mode share for workers in the zone of which only 5% walked. This shows the difficulty of relying on journey to work data for broad catchments, such as all enrolments attending Callaghan or all workers travelling to the CBD, to micro situations such as the travel patterns of people living and working within the CBD. It does however support the premise that a high number of people who choose to live within the CBD are also likely to work (and study) in the CBD and hence be able to walk to work or NeW Space.

This is the premise that underpins the mode share for staff and students who will be living within the ATZ to NeW Space. Allowing for the higher walking rates seen within the CBD, and given that existing mode share for walking to Callaghan within a 2 kilometre radius is in the order of 58%, it is not considered unreasonable to assume that walking to NeW Space will be much higher than this given the more attractive walking environment within the CBD.

In conclusion, the prediction that 82% of students will walk to the campus is supported by this research. This percentage is based upon current accommodation patterns that show that students chose to live within 2 kilometres of their current campus or 2 kilometres of the CBD and that the majority of students moving also choose to live within the two areas.

Should however students and staff prefer not to walk, particularly those that live on the edge of the 2 kilometre walking zone, there is adequate public transport capacity, as advised by Transport for NSW, to cater for these people within the public transport system.

As shown, the frequency and travel times of public transport trips to NeW Space are much more appealing than trips to Callaghan and as such, when combined with the disincentive of paid parking and congestion, will provide an alternative for those who don't wish to walk or cycle to NeW Space and still ensure that active transport options are more cost effective and appealing than driving and parking.



## Park and Ride

The University is undertaking discussions with Hunter Venues, the management arm controlling Hunter Stadium and the surrounding sporting fixtures and facilities in the Broadmeadow precinct, to provide a base for a park and ride facility. A park and ride facility currently operates from the existing stadium capark to the John Hunter Hospital site (Hunter New England Local Health District).

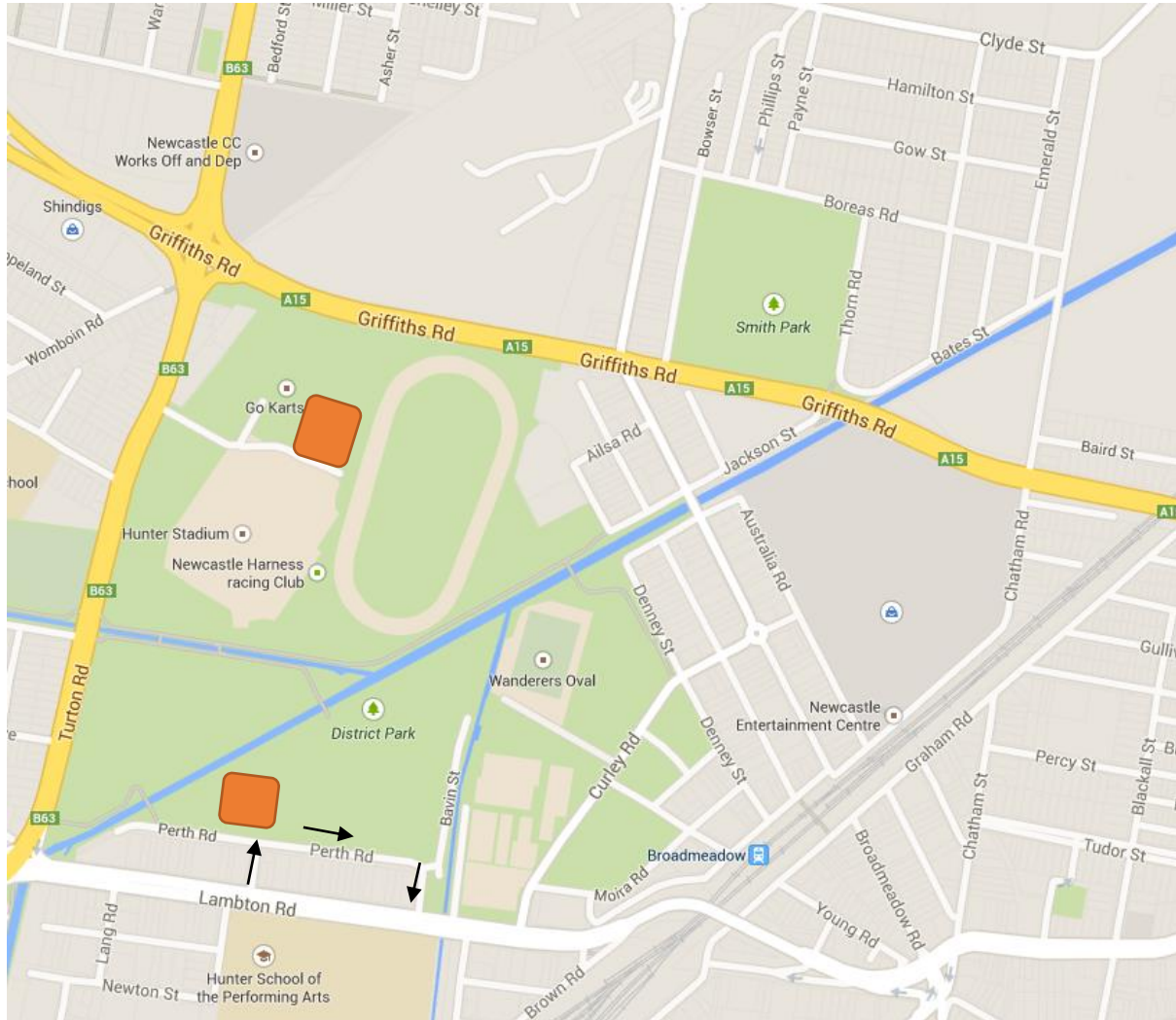


Figure 11 Potential site options for Park and Ride facility

The park and ride will be located within this area subject to capacity at the time. Two sites are being discussed, one with access off Griffiths Road whilst the second would have access to Lambton Road via Perth Road. The final location of the park and ride will be determined and ready to operate prior to the occupation of the NeW Space campus.

## Public Transport Routes

Griffiths Road does not provide current direct access to existing bus routes however Lambton Road provides a significant bus corridor with six routes travelling along here and continuing into the Newcastle CBD. Routes 322, 317, 222, 363, 230 and 231 pass the southern boundary of the entertainment precinct. The range of services provides a regular frequency as shown in the trip planner summaries below with buses available on average every 3-6 minutes and a travel time of 12 minutes to the NeW Space campus. There are existing bus stops on Lambton Road adjacent to Bronte Road however pedestrian facilities are east of these, in the vicinity of the high school (HSPA).



Figure 12 Newcastle bus services between potential Park and Ride location and the Newcastle CBD

	Depart	Arrive	Travel time
<b>+ Option 1</b>	08:10	08:22	12 mins
<b>B</b>			
231			
<b>+ Option 2</b>	08:13	08:26	13 mins
<b>B</b>			
363			
<b>+ Option 3</b>	08:18	08:31	13 mins
<b>B</b>			
322			
<b>+ Option 4</b>	08:24	08:37	13 mins
<b>B</b>			
230			
<b>+ Option 5</b>	08:29	08:41	12 mins
<b>B</b>			
267			
<b>+ Option 6</b>	08:31	08:44	13 mins
<b>B</b>			
222			

### Trip options

	Depart	Arrive	Travel time
<b>+ Option 1</b>	16:35	16:52	17 mins
<b>B</b>			
230			
<b>+ Option 2</b>	16:41	16:58	17 mins
<b>B</b>			
363			
<b>+ Option 3</b>	16:44	17:02	18 mins
<b>B</b>			
317			
<b>+ Option 4</b>	16:50	17:06	16 mins
<b>B</b>			
231			
<b>+ Option 5</b>	16:58	17:15	17 mins
<b>B</b>			
322			
<b>+ Option 6</b>	17:00	17:19	19 mins
<b>B</b>			
222			

Figure 13 Frequency of services between the Park and Ride location and NeW space

The cost of this trip would be \$3.50 each way or \$1.75 for student concession.



Approximate Opal fare for trip option 1:

Card type	Fare
Adult	\$3.50
Child/Youth	\$1.75
Senior/Pensioner	\$1.75

Opal fares are based on trip planning data and are provided as a guide only. In some instances, fares presented in trip results may differ from what Opal charges due to actual tap on/off time and location, off-peak discounts and Opal benefits such as weekly travel rewards. Registered Opal card users can view charges on their Opal activity statement.

## Park and Ride versus Private Vehicle Travel

Park and Ride facilities are popular when they provide convenience and are cost and time effective. The appeal to them as a viable alternative to being a car driver are subject to these factors and will be a balance between all three depending upon the importance someone places on each factor.

The proposed facility is particularly targeting those travellers who do not live along the train corridors and whose bus travel options may involve circuitous and lengthy routes or the need to change buses to undertake their journey, therefore making it less appealing than driving to NeW Space, despite the costs associated with parking. The primary demand for this facility is expected to be those commuters from Lake Macquarie. The bulk of these can easily access the Park and Ride location having travelled along the inner-city bypass or along the Pacific Highway to Northcote Drive ensuring a convenient location.

The cost associated with parking in the CBD has been covered above. Generally parking is readily available within the CBD however the use of timed parking metres (primarily 2 hours) for on-street supply restricts all day or 4 hour parking to public car parks or parking on-street on the fringes of the CBD. 4 hour and 8 hour parking spaces are in heavy demand by workers in the city and are less likely to be readily available after 8.30am.

The availability of parking in the city has been recently investigated by Newcastle City Council in its Parking Surveys (July 2014) however this study is not yet available for review.

Short term parking tends to cost between \$2.50 and \$4 per hour. A student travelling to NeW Space for a 2 hour lecture would firstly be limited in their opportunities to park for the 2 1/2-3 hours necessary to access the campus, complete their lecture and return to their car, assuming that they were not remaining on campus for any time except their lecture. Assuming a 3 hour parking requirement the cost would be \$7.50 - \$12, similar to the cost of all day early bird parking or maximum all day parking costs of around \$8 per day. This would compare with a \$3.50 return bus journey from the proposed park and ride venue which is a much more affordable option.

The University of Newcastle is genuinely focussed on changing travel mode behaviour and encouraging the use of public transport. To ensure its strategy is successful the University has recognised the need to subsidise the park and ride solution and is committed to providing the park and ride solution free for up to 2 years for the forecast demand of 150 users. It will also investigate opportunities to support staff's use of public transport through the development of its workplace travel plan.

## References

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Travel Mode Survey Callaghan Campus Term 1, 2013 (Northern Transport Planning and Engineering June 2013)

JTW Explorer (Bureau of Transport Statistics Tool)

Household Travel Survey Report: Sydney 2012/13 – including Newcastle Statistical Subdivision – ABS 2014

Tertiary Travel report - Department of Transport and Main Roads, Travel in south-east Queensland - May 2012

2013 Travel Survey and Campus Counts – University of NSW 2013

NSW and Sydney Transport Facts – BTS 2012

TransFigures – Public Transport users in Sydney – BTS January 2013

TransFigures – Active Transport in Sydney – March 2013

Active Transport: Adults. An overview of recent evidence Dr Jan Garrard VicHealth December 2009



Appendix

