



Research Report:  
**Study of Bicyclist and  
Pedestrian Safety  
on Shared Paths**

NSW Roads and Traffic Authority

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# 1. Executive Summary

A shared path is an area open to the public (except a separated footpath) that is designated for, or has as one of its main uses, use by both the riders of bicycles and pedestrians, and includes a length of path for use by both bicycles and pedestrians.

This report summarises the findings of a study conducted in New South Wales exploring the number and nature of conflicts that may be occurring between bicyclists and pedestrians within observation zones on shared paths. Specifically the aims of the study were to determine the:

- Number of conflicts that occur between bicyclists and pedestrians at selected locations within observation zones on shared paths
- Characteristics of any conflicts that may occur.

A total of 672 observation hours at 10 shared path locations in Sydney, Newcastle and Wollongong took place between 12 July and 2 August 2009 from 6:00am to 10:00am and 2:00pm to 6:00pm. Over the 10 locations, 51,031 pedestrians and 12,319 bicyclists were observed. Therefore 19% of shared path users were bicyclist, noting that the observations took place during presumably quieter winter months.

A summary of the observations results follows:

- Only 5 actual conflict incidences between pedestrians and bicyclists were observed over the course of the study. None of the conflicts involved actual contact. Four involved urgent evasive actions and one was a verbal/gesture incident. In four of the five conflicts the parties were travelling in opposite directions and occurred at straight line locations. All of the five bicyclists involved in conflicts were males, however 83% of all bicyclists observed in the study were male.
- Most commonly, pedestrians and bicyclists travelling on shared paths did not encounter each other, that is, 87% of pedestrians did not encounter a bicyclist within the observation zone and 66% of bicyclists did not encounter a pedestrian.
- In situations where pedestrians and bicyclists were in the observation zone at the same time, 91% of pedestrians and 66% of bicyclists were not required to take action to avoid each other. The most common avoidance manoeuvre was for bicyclists to change their line of travel (76% of bicyclists who avoided pedestrians) and to slow down (30% of bicyclists who avoided pedestrians).
- Overall nine out of ten (90%) of bicyclists were observed wearing a helmet. However 45% of 17 to 30 year olds in the study were

observed not wearing a helmet. The highest rate of not wearing helmets observed among 17 to 30 years old cyclists were at:

- Albion Park – 67% not wearing a helmet
  - Lake Illawarra – 55% not wearing a helmet
  - Blackalls Park – 43% not wearing a helmet.
- In terms of the demographics of the users observed on the shared paths, pedestrians were evenly split along gender lines (54% male/46% female) whereas bicyclists were more likely to be male (83% male/17% female). There was a higher proportion of bicyclists (37%) in the 31 to 49 year age groups than pedestrians (29%). Only 10% of bicyclists were over age 50 compared to 17% of pedestrians.

Note: A large number of pedestrians were observed at the Pymont Bridge site and this may have affected the outcome of the observations at that location.

## 1.1. Discussion

The 2006 Austroads Report<sup>1</sup> suggested “that while pedestrian-bicycle collision are rare, the perception of conflict on shared paths is significantly greater than the actual number of conflict events”. The results from the 672 hours of observations of behaviour within observation zones on shared paths supports this statement in the Austroads Report. Only five incidents were observed which could only be classified as ‘near misses’ and no actual contact between bicyclists and pedestrians was observed.

There is no doubt that the perception of danger is much greater than the actual risks of bicyclists and pedestrians on shared paths. However it is apparent that pedestrians do create an obstacle for bicyclists as one in ten bicyclists (11%) in the 10 to 50 metre observations zones made a deliberate move to avoid pedestrians. If one extrapolates that over the length of the shared paths it is easy to see how both bicyclists and pedestrians get the impression that there is potential for collision. This problem is likely to be exacerbated on shared paths with high pedestrian traffic, obstructions and narrow lanes.

Although we conclude the actual risk of injury is quite small, there is still scope to improve safety and the perception of safety on shared paths:

1. Review of shared path standards in terms of minimum width, visual and physical obstructions, lane markings and signage followed by an audit of existing shared paths with the aim of

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<sup>1</sup> *Pedestrian-cyclist conflict minimisation on shared paths and footpaths.*  
Austroads Research Report AP-R287/06

bringing them up to standard, with high priority sites being addressed first.

2. Education of both pedestrians and bicyclist to inform people what a shared path is, educate the public about the rules and encourage courteous behaviour from all parties.

Although not entirely related to the shared paths issue, we found a high rate of non-helmet usage among 13 to 17 year olds at sites with a high proportion of bicyclist in that age group. This suggests education and/or enforcement could be targeted in these areas.

In terms of suggestions for further research, the recording form used listed only running and blocking as pedestrian behaviour contributing to bicyclist and pedestrian. We suggest a review of possible behaviours with a view to adding additional behaviours, in particular "stepping in front" for instances when pedestrians step out in front of bicyclists from behind obstructions such as bus shelters.

Finally, we acknowledge one of the aims of the study was to determine the characteristics of conflicts between bicyclists and pedestrians that may occur. With the five conflicts observed, we have only been able to provide a qualitative analysis of the conflicts even though we had proposed a sample size which we felt would provide such an analysis. By way of explanation, in determining the hours of observations required to achieve a sample of conflicts sufficient for meaningful analysis we assumed that conflicts would occur on 10% or more of bicycle transits. No data was available to base this assumption on and that it was clearly an erroneous assumption. Indeed if this had occurred there would have been over 1,200 conflicts.

We conclude from our experience that the number of hours required to personally observe a sufficient number of conflicts for a statistical analysis would be exorbitant and not cost-effective. If indeed the RTA wishes to follow through with this part of the exercise we suggest the possible use of electronic observations or a follow up with actual injury victims or reported incidents.

## 2. Background & Methodology

This study seeks to explore the number and nature of conflicts that may be occurring between bicyclists and pedestrians within observation zones on shared paths. Specifically the aims of this study are to determine the:

- Number of conflicts that occur between bicyclists and pedestrians at selected locations within observation zones on shared paths
- Characteristics of any conflicts that may occur.

It should be noted that bicycle-pedestrian crashes are generally underreported throughout Australia. The data on the NSW Roads and Traffic Authority (RTA) crash database are sourced from NSW Police crash reports. The crash statistics recorded by the RTA are confined to those crashes which conform to the national guidelines for reporting and classifying road vehicle crashes. The main criteria are:

1. The crash was reported to the Police.
2. The crash occurred on a road open to the public.
3. The crash involved at least one moving road vehicle.
4. The crash involved at least one person killed or injured or at least one motor vehicle being towed away.

A previous investigation of hospital and RTA crash data suggests that non-fatal pedal cycle crashes on the RTA crash database are under-reported.

Crashes that occur on bicycle facilities such as shared zones not within the road reserve (area between the property boundaries on either side of a road open to the public) are specifically not included in the RTA crash database under the national guidelines for reporting crashes.

The RTA crash database does not contain information on the features of the location (such as footpath, cycle path, nature strip etc.) where they are considered a factor in the crash and have been noted by the reporting Police.

The RTA nominated ten shared path locations in Sydney, Newcastle and Wollongong for observation:

- Anzac Parade, Centennial Park.
- Pyrmont Bridge, Darling Harbour.
- Epping Road and Phoenix Street, Lane Cove.
- Victoria Road, Rozelle.
- George Hanley Drive and Cliff Street, North Wollongong.
- Windang and Shellharbour Roads, Lake Illawarra.



- Terry Street, Albion Park.
- Railway Parade, Blackalls Park.
- Brisbane Water Drive, Woy Woy.
- University Drive, Callaghan near Newcastle University.

Maps identifying the above locations are attached in the Appendix.

A Taverner supervisor visited each site prior to the study to determine the most appropriate observation zones for the pinch-point and straight length location at each site. Trained observer staff were given maps detailing the exact stretch of the observation zone shared path to be observed.

### **Observation zones**

At each site a pinch-point and straight length site<sup>2</sup> were identified. The pinch-point was typically an intersection or access point with an observation zone of 5 to 10 metres. Straight length observation zones were typically 20 to 50 metres in length and covered an unobstructed stretch of shared path.

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<sup>2</sup> The Pyrmont Bridge sites had 2 straight length sites, on midway between swinging section and eastern end of bridge and on mid-point of path linking bridge to King Street.

The following observation form was developed and pre-tested to record observations.

Time: ____:____							Conflict		Direction	Bicyclist Behaviour	Pedestrian Behaviour	Environmental Factors	Notes/ Others
Pedestrians	Avoidance	Bicyclists		Avoidance		#	Type						
#1 1-M 2-F	1-0-12 2-13-17 3-18-30 4-31-49 5-50-69 6-70+	1-No bike 2-No avoidance 3-Moved off path 4-Moved to edge 5-Single file	#1 1-M 2-F	1-0-12 2-13-17 3-18-30 4-31-49 5-50-69 6-70+	Hel- met 1-Yes 2-No	1-No ped 2-No avoidance 3-Bell/horn 4-Slowed 5-Line change 6-Dismounted	Ped Bike	1-Impact 2-Aggression 3-Evasive 4-Verbal/ Gesture	1-Same 2-Opposite 3-Cross	1-Speed 2-Blocking 3-No warning 4-Not give way	1-Running 2-Blocking	1-Bad surface 2-Obstruction 3-Narrow path 4-Poor visibility	
#2 1-M 2-F	1-0-12 2-13-17 3-18-30 4-31-49 5-50-69 6-70+	1-No bike 2-No avoidance 3-Moved off path 4-Moved to edge 5-Single file	#2 1-M 2-F	1-0-12 2-13-17 3-18-30 4-31-49 5-50-69 6-70+	Hel- met 1-Yes 2-No	1-No ped 2-No avoidance 3-Bell/horn 4-Slowed 5-Line change 6-Dismounted	Ped Bike	1-Impact 2-Aggression 3-Evasive 4-Verbal/ Gesture	1-Same 2-Opposite 3-Cross	1-Speed 2-Blocking 3-No warning 4-Not give way	1-Running 2-Blocking	1-Bad surface 2-Obstruction 3-Narrow path 4-Poor visibility	

Observers attended a 4 hour training session which included a PowerPoint presentation explaining the purpose of the project, terminology and completing the form. Observers then visited the Anzac Parade location and practised completing the form.

Observations were to be conducted for four hours in the morning (6am to 10am) and for four hours in the afternoon (2pm to 6pm) and on one weekday and one weekend for each location. Observations took place from 12 July 2009 to 2 August 2009.

### 3. Main Findings

#### 3.1. Overview of findings

There was a total of 672 observation hours at 10 shared path locations (see Background & Methodology Section) between 12 July and 2 August 2009. Over the 10 locations 51,031 pedestrians and 12,319 bicyclists were observed. Only 5 actual conflict incidences between pedestrians and bicyclists were observed over the course of the study.

Most commonly pedestrians and bicyclists did not encounter each other, that is, 87% of pedestrians did not encounter a bicyclist within the observation zone and 66% of bicyclists did not encounter a pedestrian.

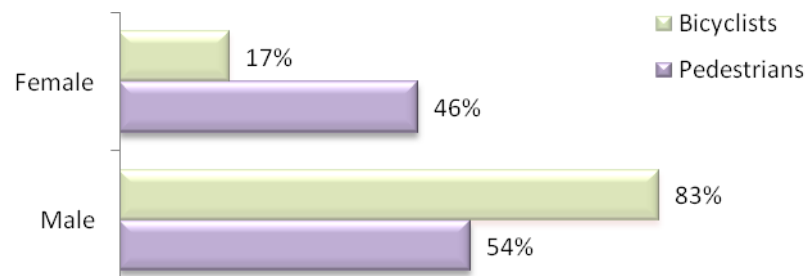
In situations where pedestrians and bicyclists were in the observation zone at the same time, 91% of pedestrians and 66% of bicyclists were required to take no action to avoid each other. The most common avoidance manoeuvre was for bicyclists to change their line of travel (22% of bicyclists who encountered pedestrians) and for bicyclists to slow down (10% of bicyclists who encountered pedestrians).

### 3.2. Profile of pedestrians and bicyclists

Observers recorded the estimated age and gender of all bicyclists and pedestrians in the observation zone. This was sometimes difficult, particularly for bicyclists wearing helmets and passing at speed. However, observers were instructed to record their best guess. Gender was not recorded in only 0.1% of observations and age was not recorded in only 0.4% of observations.

Overall, pedestrians were fairly evenly split along gender lines with 46% female and 54% male. Conversely, four in five bicyclists (83%) were male and only 17% female (Figure 1).

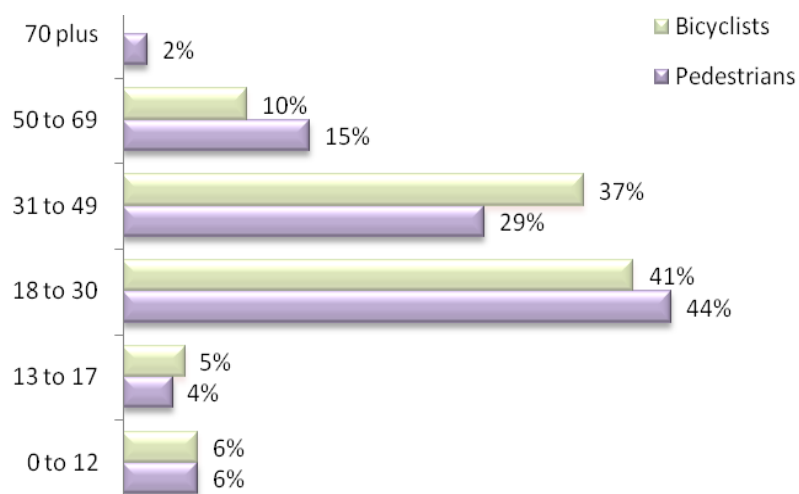
**Figure 1: Gender profile**



Base: All bicyclists (n=12,319) and pedestrians (n=51,031)

Figure 2 shows that the proportions of bicyclists and pedestrians in age groups under 30 were similar. However, there was a higher proportion of bicyclists (37%) in the 31 to 49 year age groups than pedestrians (29%). Only 10% of bicyclists were over age 50 compared to 17% of pedestrians.

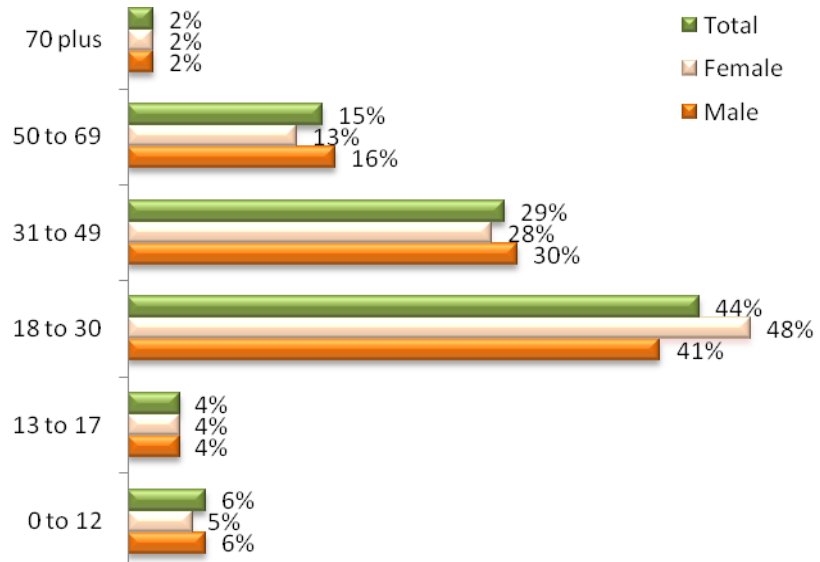
**Figure 2: Age profile**



Base: All bicyclists (n=12,319) and pedestrians (n=51,031)

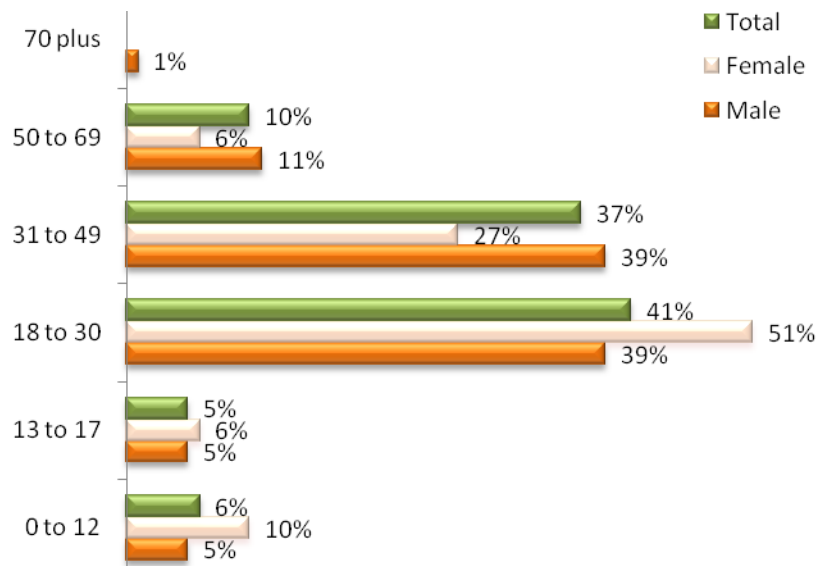
Figures 3 and 4 show the age and the gender profile of pedestrians and bicyclists.

**Figure 3: Pedestrian profile**



Base: All pedestrians (n=51,031)

**Figure 4: Bicyclist profile**



Base: All bicyclists (n=12,319)

The gender profile at all sites was fairly consistent with the exception of Callaghan (Newcastle University) where only 38% of pedestrians were female and 62% were male. Also as would be expected at a University, a higher proportion of pedestrians at Callaghan were aged 18 to 30 years (83%). Table 1 shows that the Lake Illawarra, Albion Park and Blackalls Park sites had a higher proportion of younger pedestrians (aged under 18) than other sites.

**Table 1: Pedestrian profile by site**

	GENDER		AGE					
	Males %	Females %	0-12 %	13-17 %	18-30 %	31-49 %	50-69 %	70+ %
Anzac Parade, Centennial Park	56	43	3	7	56	24	8	2
Pyrmont Bridge, Darling Harbour	55	45	5	3	46	32	14	1
Epping Road, Lane Cove	51	49	5	3	39	34	15	3
Victoria Road, Rozelle	51	49	3	2	45	33	13	3
North Wollongong	48	52	7	6	26	31	27	3
Lake Illawarra	50	50	13	5	16	28	31	7
Albion Park	58	42	25	30	12	18	12	2
Blackalls Park	53	47	14	9	10	19	35	13
Woy Woy	55	45	5	5	23	30	30	6
Callaghan	62	38	1	2	83	9	5	1
<b>Total</b>	<b>54</b>	<b>46</b>	<b>6</b>	<b>4</b>	<b>44</b>	<b>29</b>	<b>15</b>	<b>2</b>

Base: All pedestrians (n=51,031)

Bicyclists were more likely to be males at all sites, with the only sites having more than 20% females being Woy Woy (27%), Blackalls Park (25%) and Centennial Park (23%). The sites with higher proportions of younger pedestrians also had higher proportions of younger bicyclists, including Albion Park (87% aged 0 to 17) and Blackalls Park (50% aged 0 to 17).

**Table 2: Bicyclist profile by site**

	GENDER		AGE					
	Males %	Females %	0-12 %	13-17 %	18-30 %	31-49 %	50-69 %	70+ %
Anzac Parade, Centennial Park	77	23	1	1	53	37	8	1
Pymont Bridge, Darling Harbour	88	11	0	1	49	41	7	0
Epping Road, Lane Cove	88	12	3	2	33	48	14	0
Victoria Road, Rozelle	86	14	2	1	44	43	10	0
North Wollongong	82	18	9	9	33	37	12	1
Lake Illawarra	82	18	19	12	22	33	12	1
Albion Park	87	13	32	55	8	2	2	0
Blackalls Park	75	25	25	25	11	23	16	1
Woy Woy	73	27	12	6	18	41	21	1
Callaghan	85	15	2	1	69	19	9	0
<b>Total</b>	<b>83</b>	<b>17</b>	<b>6</b>	<b>5</b>	<b>41</b>	<b>37</b>	<b>10</b>	<b>0</b>

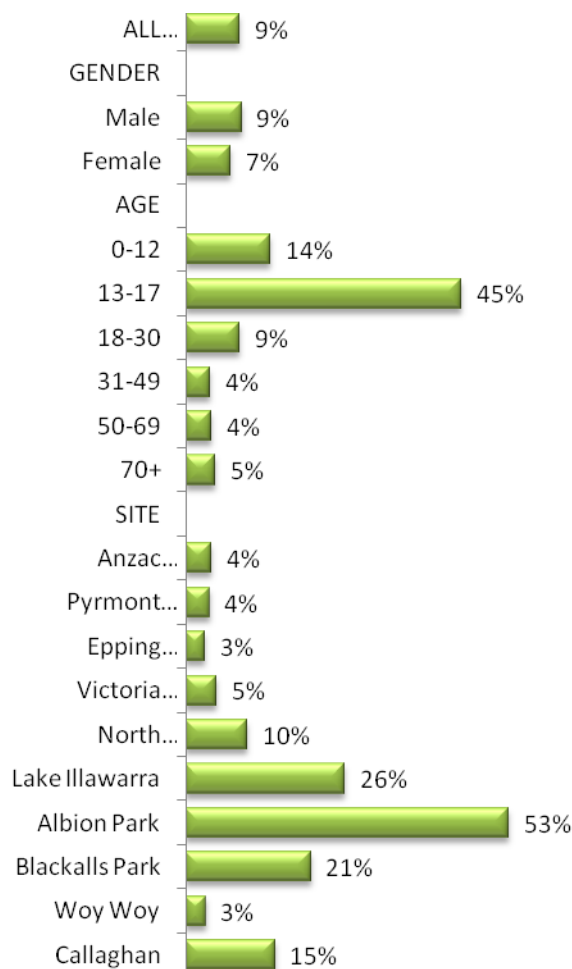
Base: All bicyclists (n=12,319)

### 3.3. Bicyclists' helmet usage

Overall, nine out of ten bicyclists (90%) were observed wearing a helmet. Figure 5 shows the percentage of bicyclist observed not wearing a helmet by gender, age and site. The groups most likely to not wear a helmet were in the 17 to 30 age range and those observed at Albion Park, Lake Illawarra and Blackalls Park. Specifically, the percentages of 17 to 30 year olds not wearing a helmet were as follows:

- Albion Park – 67%
- Lake Illawarra – 55%
- Blackalls Park – 43%.

**Figure 5: Percentage of bicyclists NOT wearing helmet**

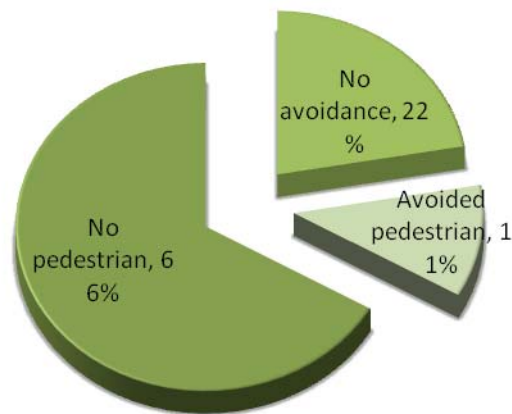


Base: All bicyclists (n=12,319)

### 3.4. Interactions between pedestrians and bicyclists

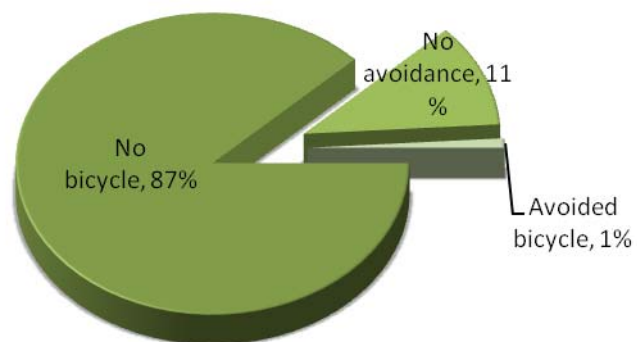
In terms of bicyclist and pedestrian interactions, the majority of both bicyclists (66%) and pedestrians (88%) did not encounter the other as they moved through the observation zones. Bicyclists were more likely to encounter pedestrians in the observation zone with 33% encountering one or more pedestrians and 11% making an avoidance manoeuvre (Figure 6). On the other hand only 1% of pedestrians made a manoeuvre to avoid a bicyclist (Figure 7).

**Figure 6: Bicyclist interactions**



Base: All bicyclists (n=12,319)

**Figure 7: Pedestrian interactions**



Base: All pedestrians (n=51,031)



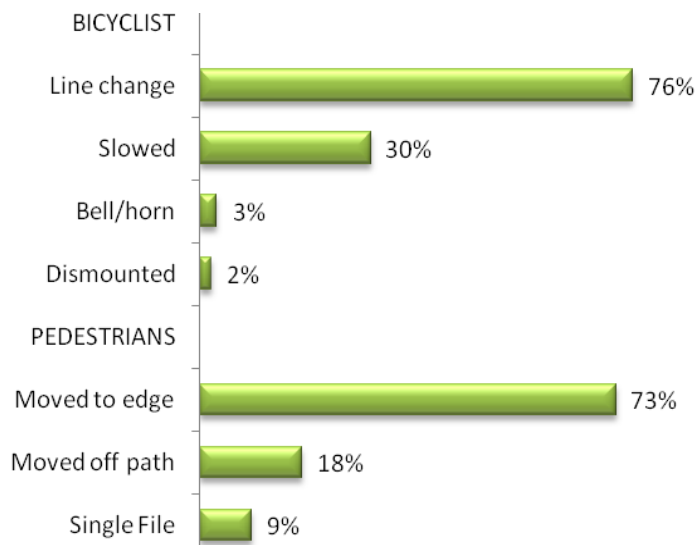
### 3.5. Avoidance behaviour

Figure 8 shows that three in four bicyclists (76%) who made avoidance manoeuvres changed their line of travel and one in three (30%) slowed to avoid pedestrians. We note that 154 bicyclists or 11% of those making an avoidance manoeuvre made two manoeuvres (eg changed line and slowed down) and 5 (<1%) made three avoidance manoeuvres.

Of the 528 pedestrians that made a move to avoid a bicyclist, 73% moved to the edge of the path, 18% actually moved off the path and 9% changed to walking single file.

The fact that the vast majority of interactions between bicyclist and pedestrian required either no avoidance or amenable avoidance suggest there may be a reasonable level of awareness and mutual respect between most pedestrians and bicyclist on shared paths.

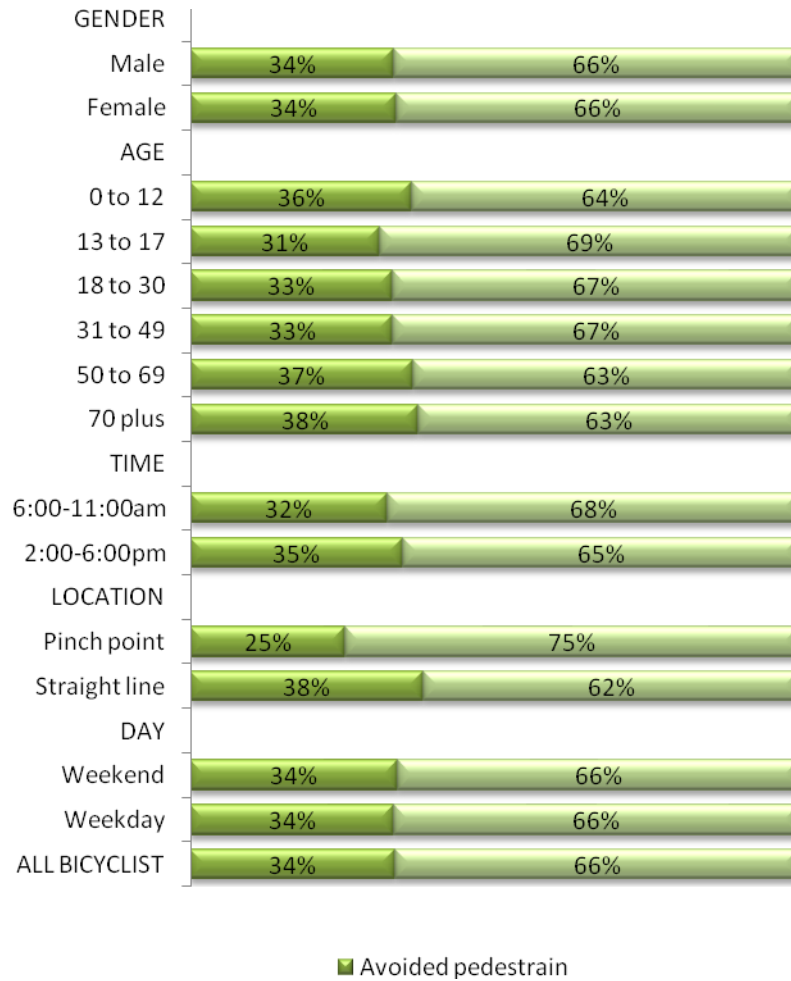
**Figure 8: Type of avoidance**



**Base:** Bicyclist who avoided pedestrians (n=1,361) & Pedestrians who avoided cyclist (n=528)

Figure 9 shows the avoidance behaviour of bicyclists who encountered pedestrians by the various groups. There were no significant differences between bicyclists of different gender and age, however bicyclists observed at straight line locations were more likely to have made an avoidance manoeuvre than those observed at pinch points.

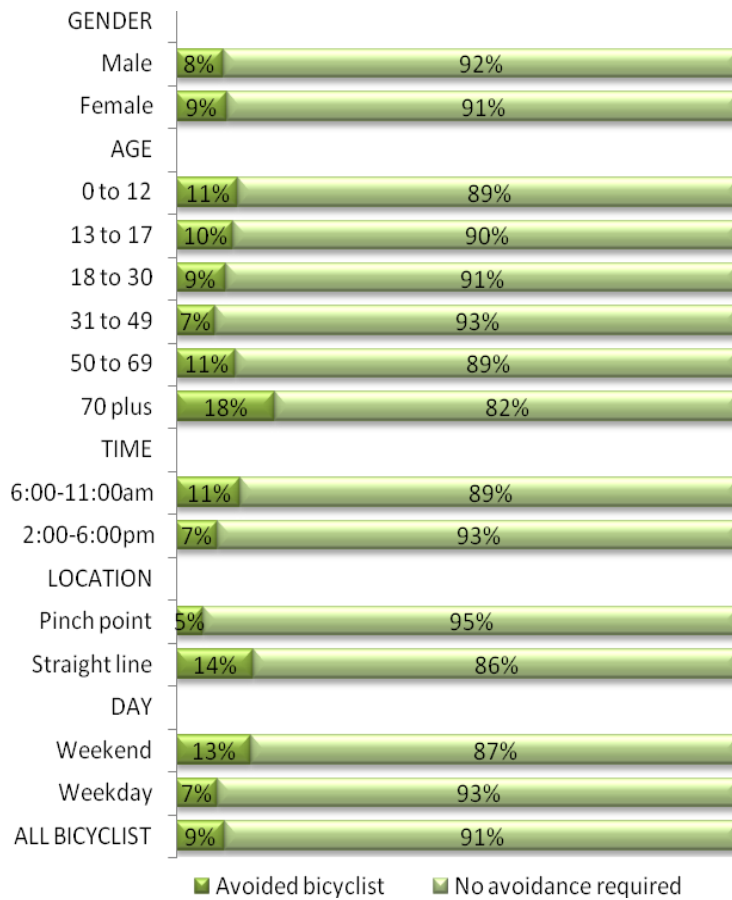
**Figure 9: Bicyclist behaviour to avoid pedestrians by group**



Base: Bicyclists who encountered pedestrians (n=3,994)

The avoidance behaviour of pedestrians who encountered bicyclists by the various groups is shown in Figure 10. Pedestrians were more likely to move to avoid a bicyclist on weekends and at straight line locations. Pedestrians over age 70 were also more likely than other age groups to move to avoid bicyclists, suggesting that this age group perceived a higher level of danger than younger pedestrians.

**Figure 10: Pedestrian behaviour to avoid bicyclist by group**



Base: Pedestrians who encountered bicyclists (n=6,106)

Table 3 shows the numbers of pedestrians and bicyclists observed at each location and the percentage encountering and avoiding each other. In general, locations with a high number of pedestrians to bicyclists also had the highest percentage of bicyclists avoiding pedestrians, most notably Pyrmont Bridge (20%) and Callaghan (39%). Note: The larger number of pedestrians at Pyrmont Bridge may have affected the outcome of the observations at this location. Additionally, the highest percentage of pedestrians avoiding bicyclists was observed at Woy Woy (14%) where there were twice as many bicyclists as pedestrians.

**Table 3: Ratio of pedestrians to bicyclists by site**

	Pedestrians observed #	Bicyclists observed #	Ratio: Pedestrians to bicyclists	Pedestrians encountering bicyclists %	Pedestrians avoiding bicyclists %	Bicyclists encountering pedestrians %	Bicyclists avoiding pedestrians %
Anzac Parade, Centennial Park	4,367	2,788	3:2	15	1.0	21	3.3
Pyrmont Bridge, Darling Harbour	27,659	2,949	9:1	15	0.3	65	20.4
Epping Road, Lane Cove	4,623	1,122	4:1	5	0.3	16	1.2
Victoria Road, Rozelle	3,019	684	4:1	6	1.5	22	9.5
Albion Park	1,615	407	4:1	9	1.0	27	10.1
North Wollongong	4,121	2,165	2:1	15	2.6	27	10.0
Lake Illawarra	1,486	797	2:1	9	1.5	16	2.1
Blackalls Park	727	190	4:1	6	1.5	18	8.9
Woy Woy	331	636	1:2	23	13.6	14	10.5
Callaghan	3,083	581	5:1	8	4.8	44	39.2
<b>Total</b>	<b>51,031</b>	<b>12,319</b>	<b>4:1</b>	<b>12</b>	<b>1.0</b>	<b>33</b>	<b>11.0</b>

The majority of pedestrians avoiding cyclists were observed moving to the edge of the path. This was consistent across all locations. The type of pedestrian avoidance behaviour is likely related to the width of the shared path and the surrounding landscape. There was little difference in pedestrian avoidance behaviour at pinch point and straight line locations.

**Table 4: Pedestrian behaviour to avoid bicyclists by site**

	Pedestrians Encountering bicycle %	Pedestrians avoiding bicyclists %	Pedestrian behaviour to avoid bicyclists		
			Moved to edge %*	Moved off path %*	Single file %*
Anzac Parade, Centennial Park	15	1.0	81	12	7
Pyrmont Bridge, Darling Harbour	14	0.3	56	26	18
Epping Road, Lane Cove	5	0.3	62	38	0
Victoria Road, Rozelle	5	1.5	67	27	7
North Wollongong	15	2.6	52	32	16
Lake Illawarra	9	1.5	87	0	13
Albion Park	9	1.0	56	25	19
Blackalls Park	6	1.5	100	0	0
Woy Woy	23	13.6	84	2	13
Callaghan	8	4.8	91	9	0
Pinch points	12	0.6	71	19	10
Straight Line	12	1.6	73	17	9
<b>Total</b>	<b>12</b>	<b>1.0</b>	<b>73</b>	<b>18</b>	<b>9</b>

\* % of pedestrians avoiding bicyclists

The incidence of bicyclists avoiding pedestrians was observed most frequently at locations with a high pedestrian to bicyclist ratio, most notably Callaghan, Newcastle and Pyrmont Bridge, Darling Harbour (Table 5). We note that only 3% of bicyclists who had to avoid pedestrians (and only 1% of bicyclists encountering pedestrians) signalled with a bell or horn. Use of a bell or horn was most common in the University setting at Callaghan, Newcastle and at Victoria Road, Rozelle which is a rather narrow shared path.

The majority of bicyclists avoiding pedestrians at both pinch point and straight line locations were most likely to change their line of travel, though bicyclists at pinch points were more likely to slow down and were less likely to change their line of travel than those at straight line locations.

**Table 5: Bicyclist behaviour to avoid pedestrians by site**

	Bicyclists encountering pedestrians %	Bicyclists avoiding pedestrians %	Bicyclist behaviour to avoid pedestrians			
			Line change %*	Slowed %*	Bell/horn %*	Dismounted %*
Anzac Parade, Centennial Park	21	3.3	64	34	1	1
Pyrmont Bridge, Darling Harbour	65	20.4	66	30	3	2
Epping Road, Lane Cove	16	1.2	43	57	0	0
Victoria Road, Rozelle	21	9.5	31	63	9	2
North Wollongong	27	10.0	55	44	0	1
Lake Illawarra	16	2.1	76	24	0	0
Albion Park	27	10.1	68	29	0	2
Blackalls Park	18	8.9	71	12	0	18
Woy Woy	14	10.5	82	12	3	4
Callaghan	44	39.2	80	12	9	1
All pinch point locations	19	11	57	38	3	2
All straight line locations	25	15	69	26	3	2

<b>Total</b>	33	11.0	65	29	3	2
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\* % of bicyclists avoiding pedestrians

### 3.6. Conflict details

While a large number of pedestrians (51,031) and bicyclists (12,319) were observed using shared paths, only 5 actual conflicts were observed. These are summarised in Table 6.

**Table 6: Conflict details**

Location	Conflict	Direction of travel	BICYCLIST DETAILS			PEDESTRIAN DETAILS			Environmental Factors
			Age/Gender	Avoidance	Behaviour	Age/Gender	Avoidance	Behaviour	
Anzac Parade, Centennial Park Straight line	Verbal/Gesture	Opposite	Male 31-49	None	Speed	Male 18-30 Male 18-30	Moved to edge	Blocking	None
Note: The path blocked with pedestrians but the bike rider did not slow down just went straight through middle of them									
Callaghan Straight line	Evasive	Opposite	Male 18-30	Line change	Blocking	Male 31-49	Moved to edge	None	Obstruction Poor visibility
Note: Path lights broken									
Pymont Bridge, Darling Harbour Straight line	Evasive	Opposite	Male 50-69	Slowed & Line change	No warning	Female 18-30	Moved to edge	None	None
Note: none									
Pymont Bridge, Darling Harbour Straight line	Evasive	Same	Male 13-17	Dismounted	Speed	Female 31-49 Female 31-49 Male 31-49	None	None	None
Note: Young boy, nearly ran into group of people, put both feet to ground to stop running into them									
Victoria Road, Rozelle Pinch point	Evasive	Opposite	Male 18-30	Line change	None	Male 18-30	Moved off path	None	Obstruction
Note: Near collision when pedestrian came around corner of bus shelter									

The small number of conflicts observed precludes any significant analysis of the causes and behaviours involved, however we make the following observations:

- The commonalities between the five conflicts were:
  - four bicyclists took urgent evasive action
  - in four cases bicyclists and pedestrians were travelling in the opposite direction
  - four of the conflicts occurred at a straight line location
  - all bicyclists were wearing helmets.
- While each of the five bicyclists were male, this is not surprising as most (83%) of the bicyclists observed were male. We also note that the bicyclists were of various ages.
- Two of the five conflicts involved groups of pedestrians and a bicyclist travelling at speed, indicating a need for education of both pedestrians and bicyclists regarding behaviour on shared paths.
- As would be expected, the conflicts occurred at the locations with a high volume of pedestrian traffic, including two at Pymont Bridge where nine pedestrians were observed for every bicyclists.
- Two conflicts involved environmental factors with poor visibility due to broken lighting in one case and a pedestrian coming around the corner of a bus shelter in another.



### 3.7. Location notes

As part of this project, video recordings were made at each location both from the bicyclist and pedestrian perspective. Additionally, a Taverner Supervisor visited each site. The camera person and supervisor provided the following notes on each location:

**Table 7: Notes on shared paths by site**

<b>Anzac Parade, Centennial Park</b>	Shared path just outside Centennial Park. Bicyclist appear to be commuters to the CBD or going to the Park. Pedestrians appear to be going to bus stops on Driver Avenue or to the Park.
<b>Pymont Bridge, Darling Harbour</b>	Very busy pedestrian thoroughfare although the King Street straight line location had a higher proportion of bicyclists than did the Pymont Bridge locations. The definition of cyclist tracks from Anzac Bridge to Darling Harbour (Union St etc) was very poorly defined.
<b>Epping Road, Lane Cove</b>	The tracks along Epping Road and across the Anzac Bridge set the standard. There are bus stops are noteworthy along this path and the interaction of bus passengers with the shared path. Good surface.
<b>Victoria Road, Rozelle</b>	The tracks along Victoria Road are very uncomfortable to ride along, we note the following concerns: 1. The route along Victoria Road from Day St poorly signed. Without the RTA maps, bicyclist would not have known it was a bike track at Day St. At times bicyclist felt uncomfortable riding along a footpath with the odd sign indicating cycling was legal. There was nothing to separate the pedestrian from the cyclist. At time the track was very narrow. 2. Bus Stops on Victoria Road The way the Bus Stops are built is that there is clear vision north so that people sitting at the stop can see approaching buses. The vision south is obscured by advertisements. In many places, there is no space for evasive action for a cyclist heading away from the city should a person step out from the bus stop. They would have no indication of an approaching cyclist until they were in the path of the cyclist. 4. The track over Iron Cove Bridge is very narrow - -
<b>North Wollongong</b>	Track around the cliff is well marked but the volume of pedestrians makes it difficult to ride. At time bicyclists are constrained to the width of the track with a fence on one side and the cliff on the other. Pedestrians encroach onto the bike path and bicyclists have to keep dodging them. Once in the park it is fine as bicyclist could get off the track if necessary.

**Lake Illawarra** Well marked track with good surface and not a lot of pedestrian movement.

**Albion Park** Track is really just a footpath. It disappeared around the shops and you had to ride across a little car park with all the problems of watching out for reversing cars. It seems a bit of a waste as the volume of traffic would be such that most cyclists would ride on the quite wide road. The school kids probably use it.

**Blackalls Park** Excellent two metre wide concrete path.

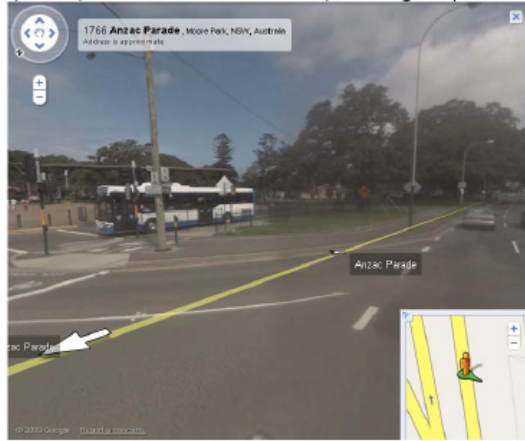
**Woy Woy** There is no distinct bicycle track around Fisherman's Wharf in Woy Woy. Coming from Sonter Ave, there is a no bicycle sign. Coming the other way, there is a marvelous track along the water. When it gets to the turn off to Fisherman's Wharf, it continues straight ahead to the next intersection. However, around Fisherman's Wharf there is no defined track.

**Callaghan** Wide shared path is on Newcastle University property and away from main road.

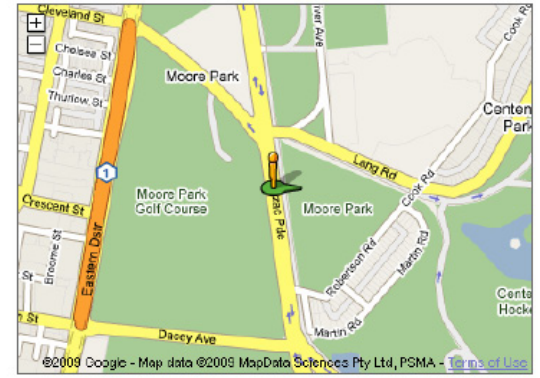
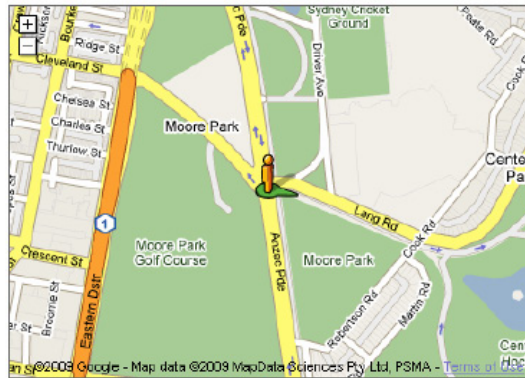
# APPENDIX

## 1. Anzac Parade, Centennial Park

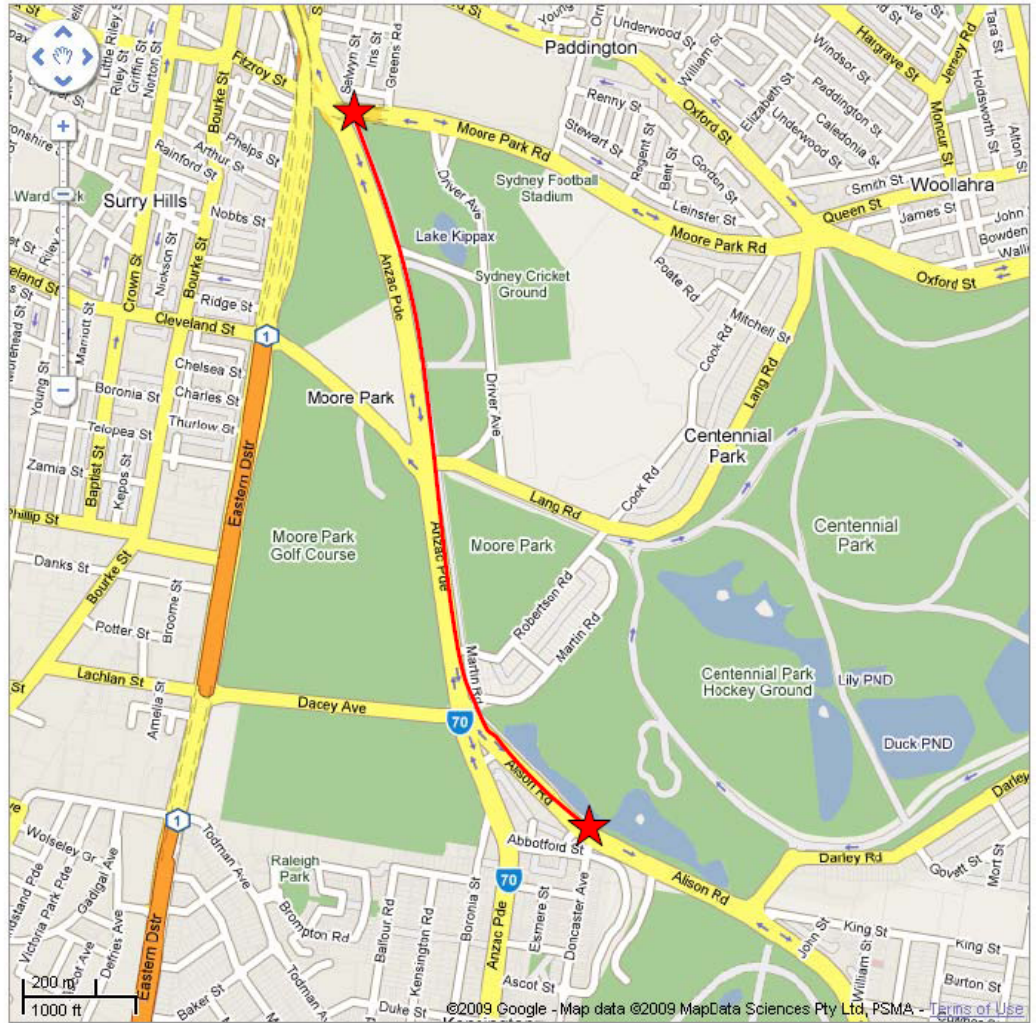
a) Pinch-point at confluence of bus stop, crossing and path



b) Straight length 50-100 m south of Lang Road



Moore Park Road-Anzac Parade intersection to Doncaster Avenue-Alison Road intersection, and return.



## 2. Pyrmont Bridge, Darling Harbour

a) Finch-point at western end of bridge



b) Straight length midway between swinging section and eastern end of bridge



c) Mid point of path linking bridge to King Street

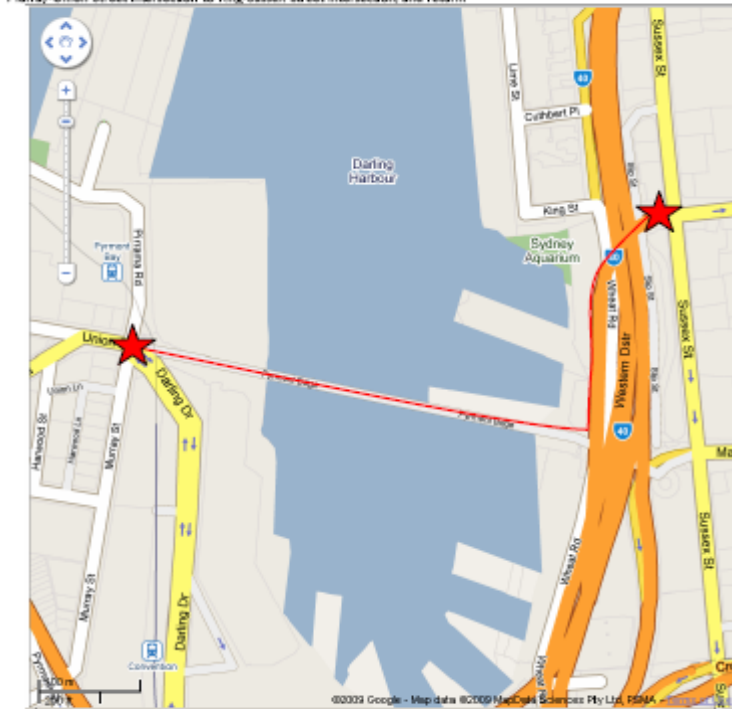


c) Mid point of path linking bridge to King Street



Identified section of the Pymont Bridge shared path to be videoed by a cyclist and pedestrian.

Murray-Union Street intersection to King-Sussex Street intersection, and return.



Note: the cyclist could continue west along Union Street and Miller Street, right into Saunders Street, left into Quarry Master Drive, across the ANZAC Bridge, then up Victoria Road and across the Iron Cove Bridge to Day Street, and return.

### 3. Epping Road and Phoenix Street, Lane Cove

a) Finch-point at southern access to pedestrian overbridge



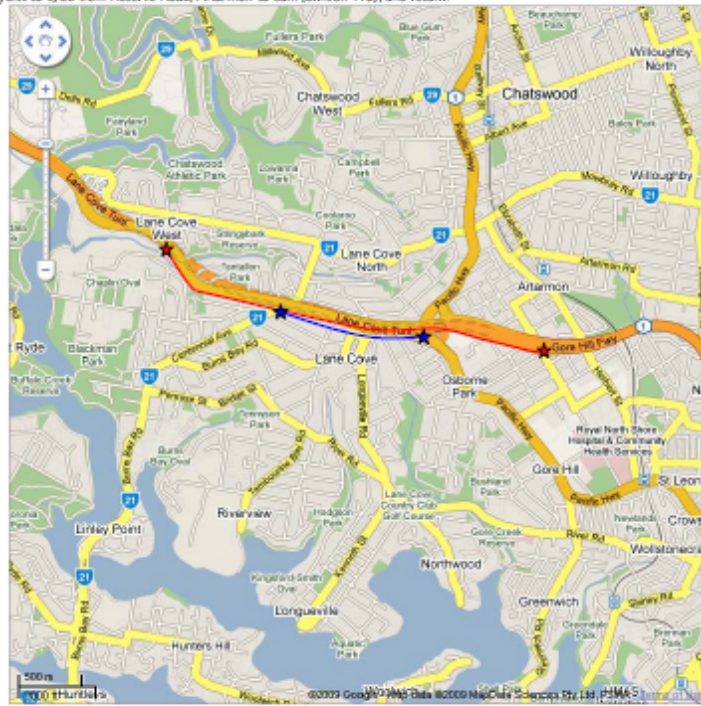
b) Straight length 20-50 m west of Longueville Road  
No good photos available



Identified section of the Epping Road shared path to be videoed by a cyclist and pedestrian.

Pedestrian to walk from Pacific Highway to Centennial Avenue, and return.

Cyclist to cycle from Reserve Road, Artarmon to Sam Johnson Way, and return.



— Cyclist route  
— Pedestrian route



#### 4. Victoria Road, Rozelle

a) Finch-point near bus stop around 50 m south-east of Darling Street

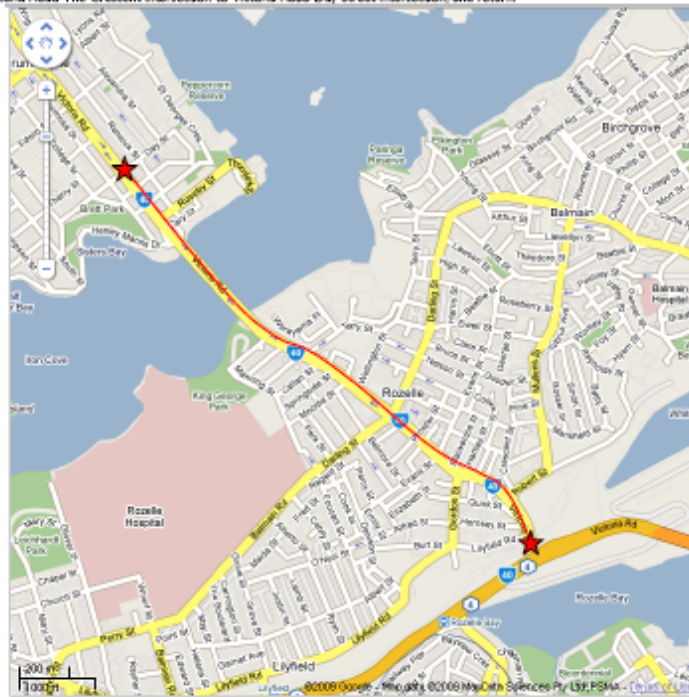


b) Straight length midway between Darling and Wellington Streets



Identified section of the Victoria Road shared path to be videoed by a cyclist and pedestrian.

Victoria Road-The Crescent intersection to Victoria Road-Day Street intersection, and return.

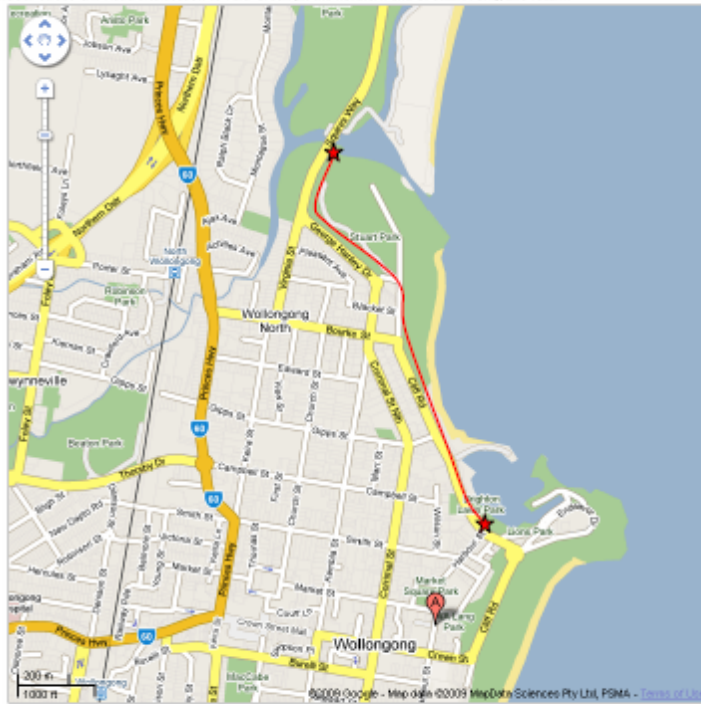


### 5. George Hanley Drive and Cliff Street, North Wollongong



Identified section of the Cliff Road-Stuart Park shared path to be videoed by a cyclist and pedestrian.

Harbour Street-Cliff Road intersection to Para Creek (at the northern end of Stuart Park), and return.



## 6. Windang and Shellharbour Roads, Lake Illawarra

a) Pinch-point at northern end of shared path



b) Straight length midway between pinch-point and Reddall Parade



Identified section of the Reddall Reserve shared path to be videoed by a cyclist and pedestrian.

Reddall Road carpark on eastern side of Shellharbour Road to loop junction on western side of Shellharbour Road, and return.



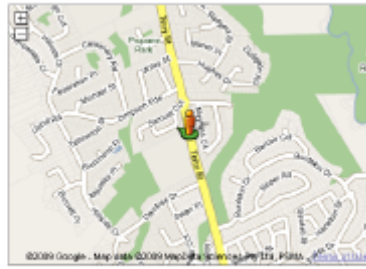
Note: the path goes under Shellharbour Road.

## 7. Terry Street, Albion Park

a) Finch-point near shops north of Simpson Parade

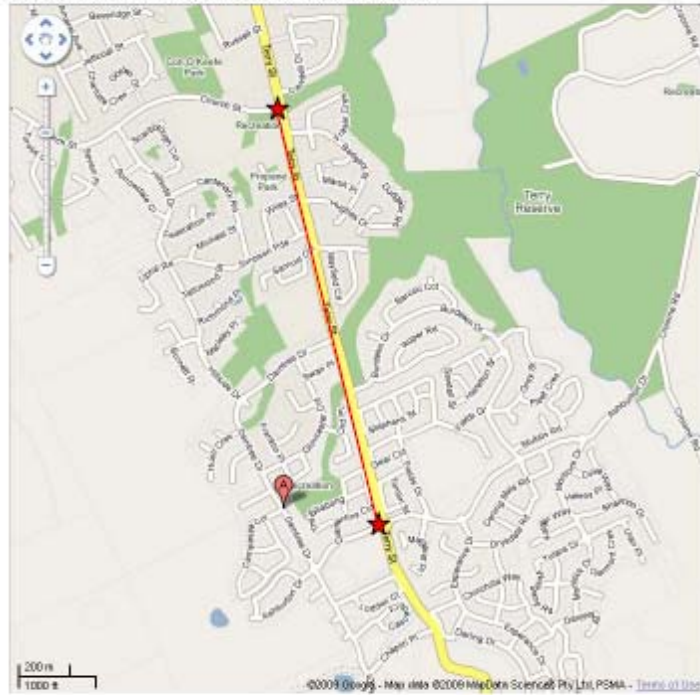


b) Straight length 150-200 m south of Samuel Circuit



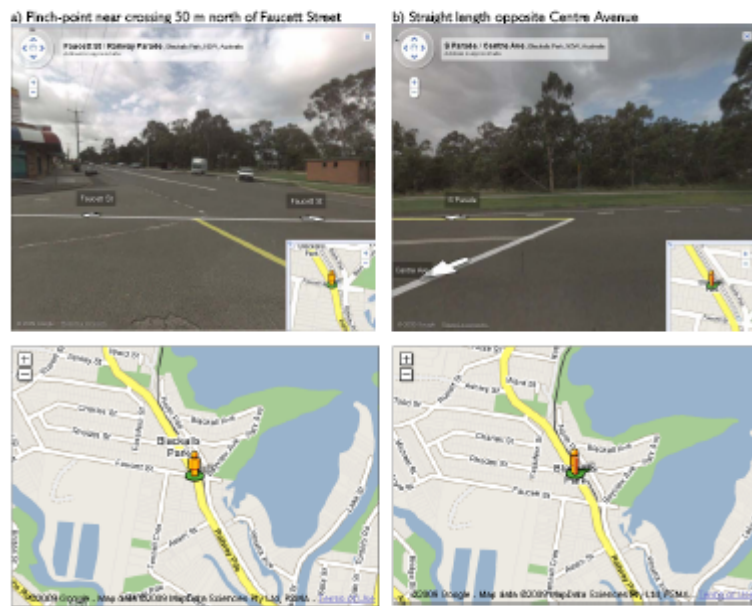
Identified section of the Terry Street shared path to be videoed by a cyclist and pedestrian.

Church-Terry Street intersection to Ashburton Drive-Terry Street intersection.





## 8. Railway Parade, Blackalls Park



Identified section of the Blackalls Park shared path to be videoed by a cyclist and pedestrian.

Pedestrian to walk from Railway Parade-Adam Street intersection to creek just east of Fassifern Street-South Parade intersection, and return.

Cyclist to ride from Lake Street-Railway Parade intersection to Rose Street cul-de-sac, and return.



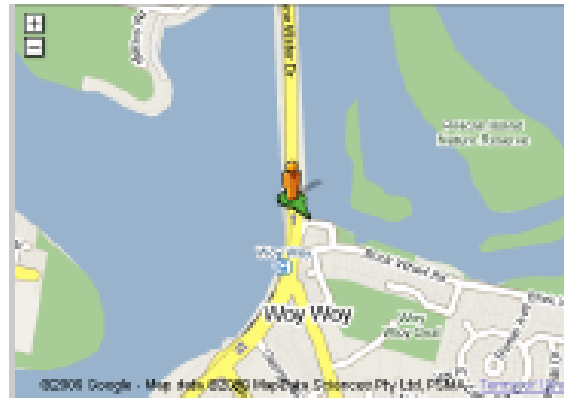
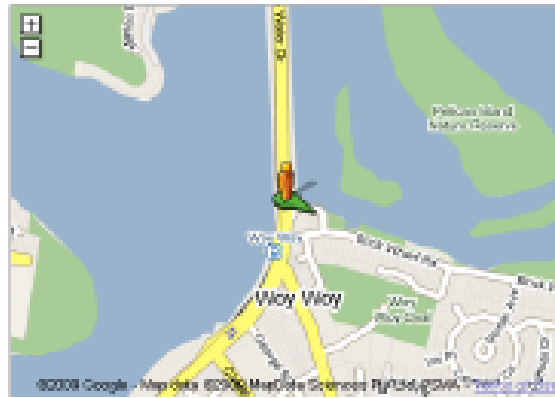
— Cyclist route  
— Pedestrian route

## 9. Brisbane Water Drive, Woy Woy

a) Pinch-point at southern end of shared path



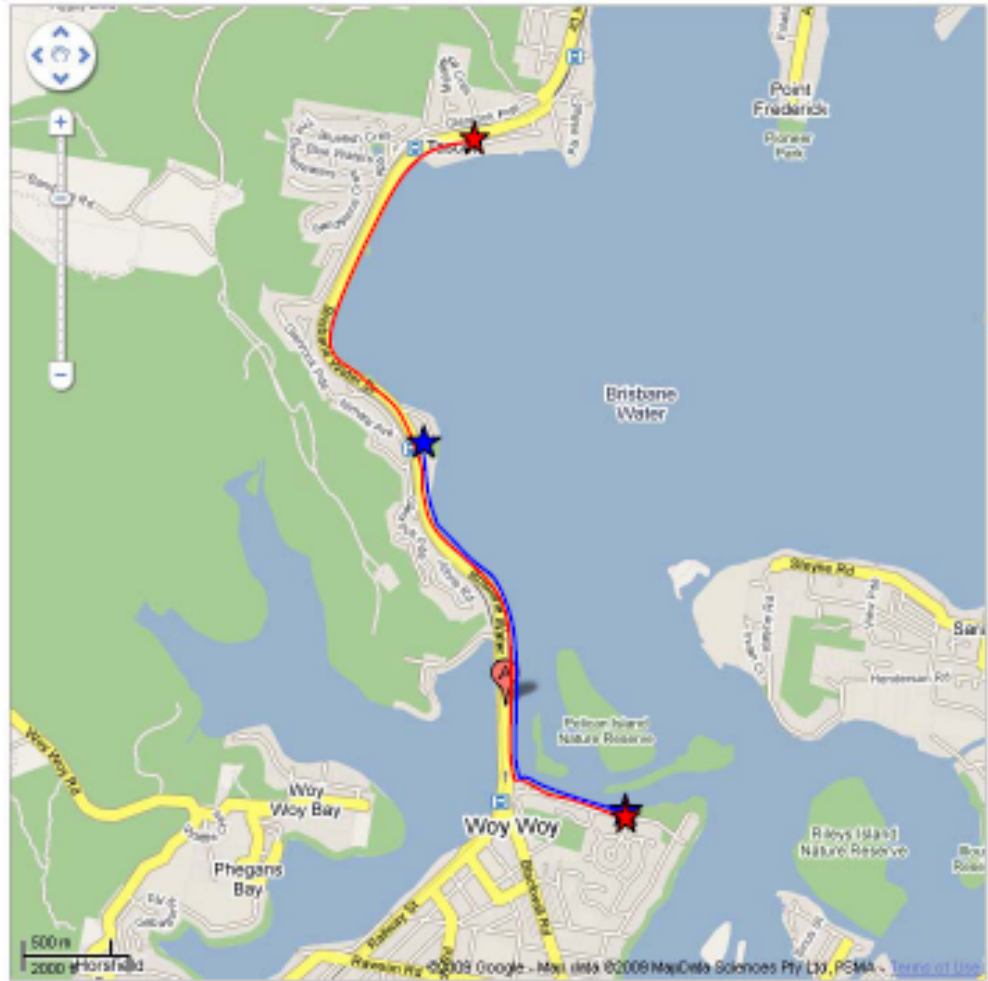
b) Straight length 20-50 m north of pinch-point



Identified section of the Woy Woy shared path to be videoed by a cyclist and pedestrian.

Pedestrian to walk from Sarter Avenue-Brick Wharf Road intersection to Couche Crescent-Brisbane Water Drive intersection, and return.

Cyclist to cycle from Sarter Avenue-Brick Wharf Road intersection to Victory Parade-Brisbane Water Drive intersection, and return.



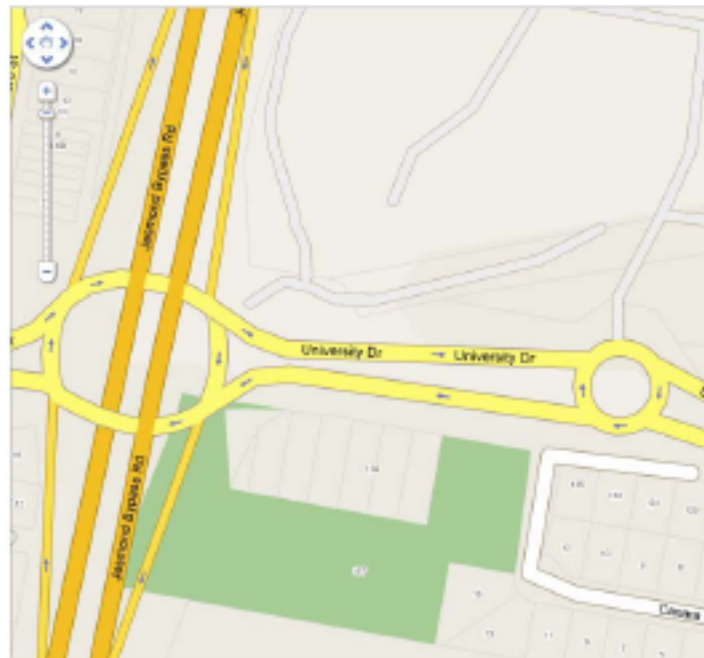
— Cyclist route  
— Pedestrian route

## 10. University Drive, Callaghan near Newcastle University

a) Pinch-point at confluence of several paths



b) Straight length 50-100 m east of pinch-point



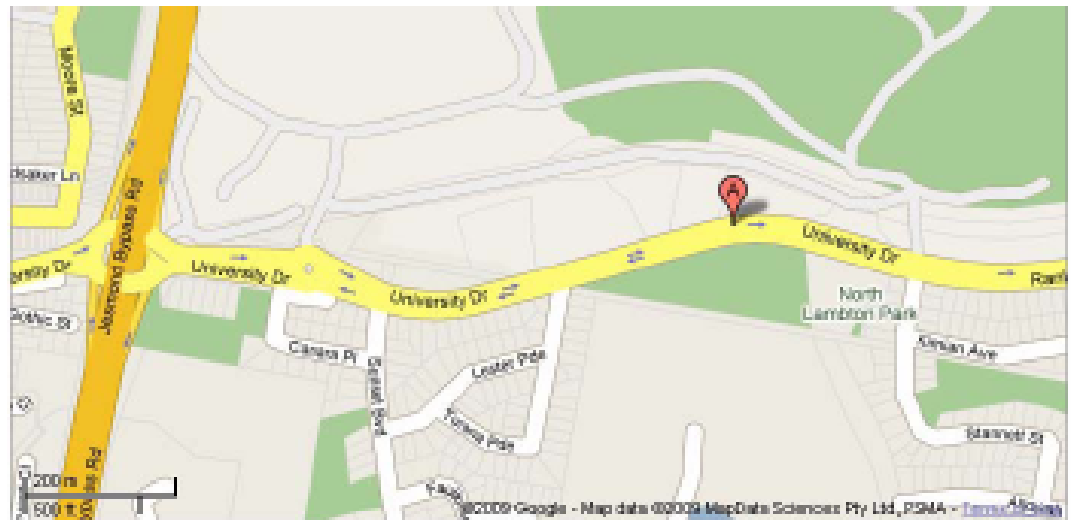
Identified section of the University Drive shared path to be videoed by a cyclist and pedestrian.

Pedestrian to walk from Moore Street to West Entrance Road, and return.

Cyclist to cycle from Moore Street to Main Entrance Road (opposite Stannett Street), and return.



— Cyclist route  
— Pedestrian route





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**TAVERNER**  
RESEARCH