

## *Traffic Report*

### **Cranbrook School Development Review**

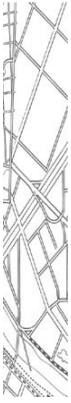
11 January 2007

Prepared for

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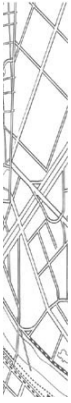
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# 1. Introduction

This report has been prepared by Masson Wilson Twiney in response to a brief by Woollahra Council in relation to a development application submitted by Cranbrook School for a development at 6 and 6A Kent Road, Rose Bay. Consideration of the DA has been deferred by Council, to allow, amongst other items, preparation of this independent traffic report addressing a number of specific matters.

These matters are addressed in this report and include:

1. a full traffic count and analysis
2. the impact on traffic in New South Head Road during peak times and out of peak times
3. the loss of parking spaces
4. the safety of pedestrians and students
5. the traffic impacts of bus movements to and from Cranbrook School
6. the issue of the RTA traffic lights at New South Head Road and Kent Road intersection having particular regards to the programming for turn movements, adequacy of waiting bays, queuing and additional delays experienced by residents in Kent Road as a consequence of the changes to the traffic lights
7. pick up and set down issues including the staggering of times and the effect of the use of car pooling and supervised management of the pick up and drop off process
8. exploring the benefits/viability of bus pick up and set down being rerouted to Lyne Park rather than to the school site
9. review of the variances with the applicant's report
10. the impact of traffic in Iluka Street, Elanora Street and Manion Avenue.

The brief for this study is provided in Appendix A. In preparing this report, we have reviewed:

- the Development Application traffic report<sup>1</sup> prepared by Colston Budd Hunt & Kafes,
- supplementary information<sup>2</sup> prepared by Colston Budd Hunt & Kafes

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<sup>1</sup> "Traffic Report for Proposed Cranbrook Preparatory School Redevelopment," CBHK, August 2005

<sup>2</sup> Letter from CBHK to Mark O'Hara of Cranbrook School, 18 August 2006

- the Statement of Environmental Effects<sup>3</sup> prepared by JBA Urban Planning
- response to public submissions<sup>4</sup> prepared by JBA Urban Planning
- peer review of CBHK report<sup>5</sup> by John Coady Consulting Pty Ltd
- Development Application Assessment Report for DA508/2005/1, dated 18 September 2006.

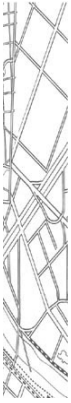
Following substantial completion of this report, we have also sighted a draft of the "Operational Traffic Management Plan" which addresses in whole or part some of the issues raised in this report. As that document is only in draft form, this report has not been updated to reflect any additional information provided therein.

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<sup>3</sup> "Stage 1 Development Application Statement of Environmental Effects, Cranbrook Junior and Preparatory School, Dangar Precinct, Kent Road, Rose Bay," JBA Urban Planning, August 2005

<sup>4</sup> "Response to Public Submissions, Cranbrook Junior and Preparatory School, Dangar Precinct, Kent Road, Rose Bay," JBA Urban Planning, August 2005

<sup>5</sup> Letter to General Manager Woollahra Council from John Coady, 18 September 2006



## 2. Development Application DA508/2005

### 2.1 Description of the Proposed Development

The DA is for a preparatory and junior school development at 6 and 6A Kent Road, Rose Bay, which comprises the land occupied by the former Rose Bay Bowling Club, and land known as Dangar Playing Fields. The DA is the first of a planned staged development.

The proposed preparatory and junior school buildings would have an enrolment of 460 students, (being 150 in the preparatory school and 310 in the junior school) and 45 staff. In addition to classrooms, there would also be a multi-purpose hall, an administration centre, a library and IT centre, a canteen, a staff room, a gymnasium and four tennis courts. The proposed development would result in the existing four playing fields on the site being retained, although their layout and orientation would be altered.

An internal circulation road is proposed to accommodate the morning drop off and afternoon pick up activity, and off-street parking for 70 cars is proposed. Afternoon pick up times are proposed to be staggered as follows:

- Kindergarten 2:40pm
- Years 1-2 2:50pm
- Years 3-4 3:00pm
- Years 5-6 3:10pm.

Access is proposed to be to and from Kent Road, with a secondary access on Iluka Street for staff parking only on school days. The development includes proposed changes to the alignment and kerbside parking on Kent Road. These include:

- lengthening of the eastbound right turn lane from New South Road into Kent Road to provide a minimum storage length of 50m
- widening of the Kent Road carriageway by around 1.3m to provide two northbound lanes and a single southbound lane between New South Head Road and the first Golf Club site access

- adjustment and relocation of the traffic signals at the intersection between New South Head Road and Kent Road.

The DA was submitted in August 2005, and included a traffic report by consultants Colston Budd Hunt and Kafes (CBHK). It was referred to the Sydney Regional Development Advisory Committee and Local Traffic Committee. The applicant has lodged an appeal with the Land & Environment Court against the deemed refusal of the application. Consideration of the DA was deferred at a Council meeting in September 2006 to allow the applicant and staff to confer on a number of matters, and to allow preparation of this independent traffic report.

## **2.2 Sporting Activity**

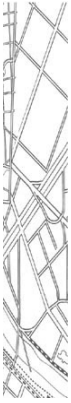
As noted in Section 2.1, the existing four playing fields on the site would be retained, albeit in a reconfigured arrangement. The proposed four tennis courts would not be lit and so would be available only for daytime use.

The CBHK report includes a Traffic Management Plan for the management of traffic and parking during weekday afternoon sport and weekend sport periods. The main feature of this is that during these periods, vehicles would be permitted to enter the school from Iluka Street. All exits would be to Kent Road and a marshal would control access.

## **2.3 External Road Improvements**

The DA proposes widening of Kent Road to provide separate left and right turn lanes at its intersection with New South Head Road, and extension of the right turn bay for vehicles turning into Kent Road.

The Roads and Traffic Authority through the Regional Development Advisory Committee was consulted regarding this proposal, noting that the RTA advised it has a concurrence role (not an approval role) in respect of this proposal. The RTA advised that it concurs with the proposal subject to Council's approval and imposition of conditions which specify that all pick/set down of students is to occur on site, and that the design and construction are to be in accordance with RTA requirements, and are to be at no cost to the RTA.



## 3. Existing Traffic Conditions

### 3.1 Traffic Surveys

Surveys of vehicle movements were conducted for this study at the intersections of New South Head Road with O'Sullivan Road, Elanora Street, Kent Road, Newcastle Street, and Dover Road, and also the intersection of Iluka Street and Manion Avenue. The surveys were conducted on:

- Saturday 4 November 2006 between 10:00am and 1:00pm,
- Saturday 11 November 2006 between 7:00am and 1:00pm,
- Thursday 9 November 2006 between 7:00am and 9:30am, and
- Thursday 9 November 2006 between 2:00pm and 5:00pm.

Prior to the surveys, Cranbrook School confirmed with Council's Executive Planner that there would be no unusual activity at the school during this period. The surveys can therefore be considered to reflect typical activity at the school for this time of year.

The survey on Saturday 4 November was affected by wet weather conditions, and a number of the planned sporting fixtures were cancelled on that day. The survey was therefore repeated in part on Saturday 11 November. The repeat survey included only the intersections of New South Head Road with Kent Road and Elanora Street, and the intersection of Iluka Street and Manion Avenue. The hours were extended to cover the sporting fixtures planned for that day, as confirmed by Cranbrook School.

The full survey results for the four survey periods are presented in Appendix B.

In order to examine the periods during which the proposed development is most likely to have its impacts on local traffic conditions, the peak hours have been identified as:

- Saturday 11 November 2006 between 11:45am and 12:45am
- Thursday 9 November 2006 between 8:00am and 9:00am
- Thursday 9 November 2006 between 2:30pm and 3:30pm.

The resulting peak hour two way volumes at key locations as surveyed are summarised in Table 3.1.

**Table 3.1 – Surveyed Two Way Traffic Volumes (vph)**

Road	Location	Saturday	Saturday	Thursday	Thursday
		11/11/2006 11:45-12:45	4/11/2006 11:45-12:45	9/11/2006 8:00-9:00	9/11/2006 14:30-15:30
Dover Rd	South of New South Head Rd	-	622	702	641
Elanora St	South of New South Head Rd	137	106	170	136
Iluka St	East of Manion Ave	27	15	88	68
	West of Manion Ave	115	77	149	121
Kent Rd	South of New South Head Rd	249	164	276	243
Manion Ave	South of Iluka St	88	62	65	53
Newcastle St	South of New South Head Rd	-	455	453	490
New South Head Rd	West of O'Sullivan Rd	-	2,366	2,809	2,766
	West of Elanora St	-	2,178	2,990	2,608
	West of Kent Rd	2,695	2,238	2,949	2,572
	West of Newcastle St	-	1,810	2,629	2,220
	West of Dover Rd	-	1,733	2,624	2,153
O'Sullivan Rd	South of New South Head Rd	-	856	906	850

For the purposes of the analysis which follows, the Saturday peak hourly volumes at the intersections along New South Head Road were determined by adjusting the results from the 4 November survey to reflect the additional traffic surveyed on 11 November. This amounted to the addition of around 300 vehicles per hour eastbound and 120 vehicles per hour westbound along New South Head Road during the peak hour.

The resulting peak hour turning movements at the intersections used in the analysis which follows are presented in **Figures 1 to 3** of this report.

The results from the various CBHK and MWT surveys of Saturday traffic activity are compared in Table 3.2 below for the "morning" and "midday" hours. It is expected that on the day that a number of sporting activities were cancelled (Saturday 4th November), the early morning games operated as usual, so the morning peak hour results reflect likely conditions during school sporting events.

CBHK reported "morning" and "midday" peak hour results for Saturday traffic activity. The actual time of these peak hours varied, with the "morning" peak occurring from 9:15 to 10:15 without sport and from 9:00 to 10:00 with sport. The "midday" peak occurred from 11:15 to 12:15 without sport, and from 11:45 to 12:45 with sport.

**Table 3.2 – Comparison of CBHK and MWT Surveyed Saturday Traffic Volumes (veh/hr)**

	Holidays No Sport <sup>1</sup>	Winter Sport <sup>1</sup>	Reduced Summer Sport <sup>2</sup>	Summer Sport <sup>2</sup>
	17 Jul 04	7 Aug 04	4 Nov 06	11 Nov 06
<b>Morning</b>				
Kent Rd				
South of New South Head Rd	-	-	107	103
Elanora St				
South of New South Head Rd	95	390	175	107
Iluka St				
East of Manion Ave	-	180	56	44
West of Manion Ave	-	380	157	83
Manion Ave				
South of Iluka St	-	260	103	49
<b>Midday</b>				
Kent Rd				
South of New South Head Rd	-	-	164	249
Elanora St				
South of New South Head Rd	125	295	106	137
Iluka St				
East of Manion Ave	-	104	15	27
West of Manion Ave	-	270	77	115
Manion Ave				
South of Iluka St	-	174	62	88

1. Count by CBHK 2. Count by MWT

The results confirm that the traffic conditions in Elanora Street, Iluka Street and Manion Avenue are at their busiest during winter sport activities, as surveyed by CBHK in 2004.

The surveys suggest that without sporting activity Elanora Street carries around 110 to 125 vehicles per hour during the Saturday midday peak. During the midday peak, summer sport activities generated around 30 additional vehicle trips in Elanora Street, and winter sport activities generated around 170 additional vehicle trips in Elanora Street.

During the midday peak, summer sport did not result in significant increases in traffic volumes above the background conditions without sport (i.e. reduced summer sport survey). Elevated traffic levels on Elanora Street, Iluka Street and Manion Avenue on the morning of Saturday 4<sup>th</sup> November are believed to be attributable to the confused situation with sport being cancelled due to the rain on the day.

Elevated traffic levels on Kent Road on the afternoon of Saturday 11 November are believed to be partly attributable to differences in activity at the Golf Club on a rainy day compared to a non rainy day.

### 3.2 Intersection Operating Conditions

The existing traffic conditions for the intersections along New South Head Road were analysed using SCATES intersection analysis program, in accordance with Council's

brief. SCATES determines the average delay that vehicles encounter, the degree of saturation of the intersection, and the level of service. The degree of saturation, known as the x-value, is the ratio of the arrival rate of vehicles to the capacity of the approach. In addition, SCATES also takes into account the coordination of signal phasing along a route.

The unsignalised intersections of New South Head Road with Elanora Street, and Iluka Street with Manion Avenue were analysed using SIDRA Intersection, which also determines the characteristics discussed above. SIDRA Intersection allows for more refinement of data to reflect the geometry and driver behaviour at the intersection than INTANAL, which is the program specified in Council's brief.

SCATES and SIDRA Intersection provide analyses of the operating conditions which can be compared to the performance criteria set out in Table 3.3.

**Table 3.3 – Level of Service Criteria**

Level of Service	Average Delay per Vehicle (secs/veh)	Signals & Roundabouts	Give Way & Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & Spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode
F	> 70	Extra capacity required	Extreme delay, traffic signals or other major treatment required

Adapted from RTA Guide to Traffic Generating Developments, 2002.

The degree of saturation can also affect the level of service experienced by drivers. As a guide, at signalised intersections, an x-value of less than 0.80 represents very good operation, 0.80 to 0.85 is satisfactory operation, 0.85 to 0.90 is poor but manageable, and over 0.90 is poor with extra capacity required. At unsignalised intersections, less than 0.60 represents very good operation, 0.60 to 0.65 is satisfactory operation, 0.65 to 0.75 suggests alternative control of more capacity may be required, and over 0.75, other major treatment is required.

The results of the SCATES analysis of the signalised intersections are presented in Table 3.4. The coordinated delays shown below are the delays expected under SCATS control (RTA signal co-ordination program) of the system under investigation. It is noted that the SCATES model includes estimated volumes at the pedestrian signals near Norwich Road and the new signals at the access road to Lyne Park and Rose Bay Wharf.

**Table 3.4 – Existing Signalised Intersection Operating Conditions MWT Surveys**

Intersection	Control	X-Value			Average Delay (sec/veh)			Level of Service		
		Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM
NSH/O’Sullivan Rd	signals	0.65	0.82	0.73	9	9	7	A	A	A
NSH/Kent Rd	signals	0.56	0.78	0.57	2	2	4	A	A	A
NSH/Newcastle St	signals	0.65	0.88	0.71	7	6	2	A	A	A
NSH/Dover Rd	signals	0.62	0.76	0.64	5	4	3	A	A	A

Note: Average Delay is over all movements at signals

The SCATES results demonstrate satisfactory operation of the signalised intersections during the surveyed peak periods.

Detailed results for the intersection of New South Head Road and Kent Road are provided below, obtained from the SCATES model. As required by Council’s brief, this breakdown includes degree of saturation, delay and level of service for each turning movement in and out of the intersection of New South Head Road and Kent Road during the morning and evening peak hours. It should be noted that SCATES does not correctly model the filter right turn (i.e. time without a green arrow) into Kent Road, and only allows these vehicles to turn on the green arrow. This would tend to slightly overestimate the average delays experienced by this movement. Also, the coordinated delays for each individual movement output by SCATES would normally be slightly higher than the coordinated delays over the intersection as a whole as presented in Table 3.4, as they are calculated for isolated operation and do not reflect the benefits of coordination. This is a feature of the program that cannot be changed.

**Table 3.5 – Existing New South Head Rd/Kent Rd Conditions by Movement MWT Surveys**

Movement	X-Value			Average Delay (sec/veh)			Level of Service		
	Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM
Right into Kent	0.63	0.79	0.69	5.0	5.0	5.0	A	A	A
Left out of Kent	0.14	0.16	0.15	14.6	24.3	11.9	B	B	A
Right out of Kent	0.28	0.32	0.28	29.0	40.1	23.7	C	C	B
Left into Kent	0.40	0.57	0.41	0.0	0.0	0.0	A	A	A

The unsignalised intersections were analysed using SIDRA Intersection, and the results are presented below. It is noted that the operation of the intersection of New South Head Road and Elanora Street is significantly impacted by the adjacent signals at the road leading to Lyne Park.

**Table 3.6 – Existing Unsignalised Intersection Operating Conditions MWT Surveys**

Intersection	Control	X-Value			Average Delay (sec/veh)			Level of Service		
		Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM
NSH/Elanora St	priority	1.00	1.00	1.00	>120	>120	>120	F	F	F
Iluka/Manion	priority	0.05	0.04	0.03	5.0	5.1	5.1	A	A	A

The results indicate that the intersection of Iluka Street and Manion Avenue operates at a good level of service with spare capacity and only short delays to traffic during the peak periods.

Observations indicate that vehicles turning into and out of Elanora Street tend to wait for vehicles in New South Head Road to stop at the signals before they are able to proceed. The SIDRA Intersection analysis indicates excessive delays for the vehicles turning right out of Elanora Street into New South Head Road during the three periods being investigated. In reality, this delay does not occur, as drivers are able to turn when the traffic in New South Head Road is stopped. Delays to turning vehicles are therefore related to the timing of those signals. The high degree of saturation reported by SIDRA reflects the limited capacity for the right turn movement out of Elanora Street. Notwithstanding the assistance of the nearby traffic signals, vehicles turning right in and out of Elanora Street do experience significant delays during peak periods and there is little spare capacity to accommodate additional traffic.

Our observations also indicate that some drivers illegally block the Elanora Street intersection while queuing in New South Head Road, even when vehicles are obviously queued waiting to turn in or out. This intersection would benefit from "Keep Clear" markings.

### **3.3 School Pick Up Activity**

Observations were made of the activity associated with parents collecting boys in the afternoon from both the existing preparatory school in Kent Road and the junior school in Rose Bay Avenue.

Parents at the preparatory school make use of a "No Parking" zone adjacent to the school which can accommodate around eight cars. Up to 20 cars were observed to queue, with 12 cars queued in Kent Road waiting to get to the 8 kerbside pick up spaces. All pickup activity in Kent Road took place via the formal pickup line. Students were closely monitored by teachers, and the pickups took place from no more than two to three cars at a time in the "No Parking" zone. A couple of cars arrived at the pick up area when the student was not ready; these drivers proceeded a little farther down Kent Road, where they waited in a free kerbside parking space. When the students arrived, they were then escorted to the waiting car.

Parents at the junior school make use of a "No Parking" zone adjacent to the school which can accommodate up to about 12 cars. Up to 33 cars were observed to queue in Rose Bay Avenue, with up to 21 cars queued in Victoria Road waiting to enter the No Parking zone. There were some parking spaces available in Rose Bay Avenue, and some parents legally parked and walked to collect boys, while others illegally stopped across driveways and walked across Rose Bay Avenue to collect boys. It is estimated that this accounted for another 10 to 15 cars which would have otherwise joined the queue. Students were not monitored as closely at the Junior School, and pickups occurred from no more than three to four cars at a time. A

student assisted by checking the line of waiting cars, then running back to advise the relevant student to be ready to be picked up.

At both locations, parents arrived before the school finishing time, and waited in the "No Parking" zone. The queues peaked shortly after the school finishing times.

### 3.4 Comparison with CBHK Weekday Results

This section provides a brief comparison between the weekday traffic survey results obtained by MWT and those by CBHK. Table 3.7 summarises and compares the two way traffic volumes at key locations for the morning and evening weekday peak hours.

**Table 3.7 – Surveyed Weekday MWT and CBHK Two Way Traffic Volumes (vph)**

Road	Location	MWT	CBHK	MWT	CBHK
		9/11/2006	2005	9/11/2006	2005
		8:00-9:00	7:30-8:30	14:30-15:30	14:30-15:30
Dover Rd	South of New South Head Rd	702	750	641	690
Elanora St	South of New South Head Rd	170	85	136	150
Iluka St	East of Manion Ave	88	11	68	25
	West of Manion Ave	149	85	121	150
Kent Rd	South of New South Head Rd	276	365	243	235
Manion Ave	South of Iluka St	65	76	53	125
Newcastle St	South of New South Head Rd	453	395	490	445
New South Head Rd	West of O'Sullivan Rd	2,809	3,365	2,766	2,875
	West of Elanora St	2,990	3,380	2,608	2,840
	West of Kent Rd	2,949	3,330	2,572	2,745
	West of Newcastle St	2,629	3,175	2,220	2,640
	West of Dover Rd	2,624	3,180	2,153	2,615
O'Sullivan Rd	South of New South Head Rd	906	925	850	775

The results indicate that the traffic volumes on New South Head Road were typically higher during the CBHK surveys than the MWT surveys. This is particularly noticeable during the morning peak hour, when the volume on New South Head Road near Kent Road was about 380 vehicles per hour more than during the MWT survey.

The SCATES model was rerun using the volumes surveyed by CBHK, and the results are presented below, together with the results of the analysis using the MWT surveyed volumes.

**Table 3.8 – Existing MWT and CBHK Signalised Intersection Operating Conditions**

Intersection	X-Value		Average Delay (sec/veh)		Level of Service	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
<b>MWT Survey</b>						
NSH/O'Sullivan Rd	0.82	0.73	9	7	A	A
NSH/Kent Rd	0.78	0.57	2	4	A	A
NSH/Newcastle St	0.88	0.71	6	2	A	A
NSH/Dover Rd	0.76	0.64	4	3	A	A
<b>CBHK Survey</b>						
NSH/O'Sullivan Rd	0.99	0.72	59	5	E	A
NSH/Kent Rd	0.85	0.61	3	3	A	A
NSH/Newcastle St	0.95	0.84	4	2	A	A
NSH/Dover Rd	0.90	0.75	21	6	B	A

Note: Average Delay is over all movements at signals

The SCATES model produces similar results using both the MWT and CBHK survey results. The exception to this is the intersection of O'Sullivan Road, for which SCATES produces a Level of Service E. The CBHK surveys found a significantly higher volume of traffic turning right from O'Sullivan Road than the MWT survey, which caused SCATES to increase the allocation of green time to this movement. This in turn reduced the time available for other movements, leaving other movements with insufficient capacity. It is unclear why there was such a difference between the surveyed volumes on these movements.

**Table 3.9 – Existing MWT and CBHK New South Head/Kent Rd Conditions by Movement**

Movement	X-Value		Average Delay (sec/veh)		Level of Service	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
<b>MWT Survey</b>						
Right into Kent	0.78	0.57	5.0	5.0	A	A
Left out of Kent	0.16	0.20	25.5	25.5	B	B
Right out of Kent	0.33	0.41	41.7	42.2	C	D
Left into Kent	0.57	0.41	0.0	0.0	A	A
<b>CBHK Survey</b>						
Right into Kent	0.85	0.61	4.9	5.0	A	A
Left out of Kent	0.20	0.20	22.2	26.6	B	B
Right out of Kent	0.51	0.41	45.5	42.9	D	D
Left into Kent	0.62	0.45	0.0	0.0	A	A

The MWT and CBHK results are similar for the delays and degrees of saturation of the existing movements into and out of Kent Road. The reported Level of Service differs only for the right turn out of Kent Road during the morning peak, which is the result of a simple rounding of the average delay up in one instance and down in the other, while the actual difference between the conditions being reported by SCATES would be negligible.



## 4. Future Traffic Analysis

### 4.1 Future Weekday Traffic Activity

The proposed school will increase the student population on the site by 310 from 150 to 460, and the staff by 25 from 20 to 45. These students and staff would be relocated from the Bellevue Hill campus.

The CBHK report presents the findings of questionnaire surveys of travel modes of students and staff at both the existing preparatory and junior schools, which are summarised as follows for travel by car:

**Table 4.1 – School Travel Mode Information from CBHK Report**

	Preparatory School		Junior School	
	Morning	Afternoon	Morning	Afternoon
<b>Staff</b>				
Number of Staff	20	20	25	25
Percentage by Car	100	100	88	88
Staff by Car	20	20	22	22
Staff per Car <sup>A</sup>	1	1	1	1
Number of Cars	20	20	22	22
<b>Students</b>				
Number of Students	150	150	310	310
Percentage by Car	99	99	85	77
Students by Car	148	148	264	239
Students per Car	1.2	1.2	1.6 to 1.8	1.6 to 1.8
Number of Cars	123	123	146 to 165	133 to 149
Observed	100 to 120	100 to 120	150	110

<sup>A</sup> Assumed, not explicitly stated in CBHK report

The observed totals are generally consistent with those calculated from the questionnaire surveys, taking into account absenteeism and that some boys attend After School Care.

The report also states that some 30 students at the preparatory school have brothers at the junior school. The total demand for pick up and drop off by car would therefore be somewhat less than the combined total of the existing activity at the preparatory and junior schools. Using the rates in Table 4.1, the 30 students would reduce the combined total by some 25 to 30 cars.

Based on the results of the questionnaire survey, the future development can be expected to generate some 244 to 263 student car arrivals and departures in Kent Road in the morning, and 231 to 247 student car arrivals and departures in Kent Road in the afternoon. Staff would generate some 42 car arrivals in the morning and 42 car departures in the afternoon in Iluka Street and Elanora Street.

In terms of additional traffic in Kent Road associated with students of the school, the development would generate:

- 121 to 140 arrivals and departures in the morning (242 to 280 vehicle trips)
- 108 to 124 arrivals and departures in the afternoon (216 to 248 vehicle trips).

The additional trips would be drawn away from the Bellevue Hill campus.

These trips would not all occur during the peak hour, as these figures relate to total staff and students. Staff may delay their departure from the site at the end of the school day, and some students would remain for After School Care or sporting or other events. The school has advised that morning drop offs would tend to be spread randomly between 7:00am and 8:40am. From our experience of school traffic activity, it is expected that the majority of the morning activity would occur in the half hour before school starts, with some departures after school starts due to parents staying for reading groups or the like.

It has been assumed that the morning and afternoon traffic would all be generated within the hour before and after school. The traffic would not be spread evenly across the hour under investigation, noting that in the afternoon, school finishing times are to be staggered between 2:40 and 3:20, and that some younger boys would wait until their older brother/s have finished to be collected. The implications of peaks of traffic within that hour are considered in Section 4.5 of this report.

As a slight simplification, it has been assumed that the 20 preparatory school staff who presently park on Kent Road (as advised by JBA Urban Planning in their response to issues) will relocate to the new staff carpark off Iluka Street. As will be discussed in Chapter 5, the full staff demand would not be met in the Iluka Street carpark, but the minor difference in the resulting traffic volumes from this assumption would not be sufficient to significantly affect the outcome of the analysis. It has also been assumed that some 30 vehicles which presently use Elanora Street and Iluka Street to access the Bowling Club car park would divert to the Kent Road access.

## 4.2 Future Weekday Traffic Volumes

The resulting peak hour turning movements are presented in **Figures 4 and 5**, and two way volumes are summarised in Table 4.2.

**Table 4.2 – Existing and Future Weekday Peak Hours Two Way Traffic Volumes (vph)**

Road	Location	8:00-9:00		14:15-15:15	
		Existing	Future	Existing	Future
Dover Rd	Sth of New South Head Rd	702	702	641	641
Elanora St	Sth of New South Head Rd	170	152	136	118
Iluka St	East of Manion Ave	88	70	68	50
	West of Manion Ave	149	131	121	103
Kent Rd	Sth of New South Head Rd	276	596	243	531
Manion Ave	South of Iluka St	65	65	53	53
Newcastle St	Sth of New South Head Rd	453	453	490	490
New South Head Rd	West of O'Sullivan Rd	2,809	2,967	2,766	2,746
	West of Elanora St	2,990	3,062	2,608	2,672
	West of Kent Rd	2,949	3,065	2,572	2,680
	West of Newcastle St	2,629	2,629	2,220	2,220
	West of Dover Rd	2,624	2,624	2,153	2,153
O'Sullivan Rd	Sth of New South Head Rd	906	906	850	850

The results indicate that the most significant impacts on traffic volumes can be expected to occur on Kent Road, as it would provide the main access for the school. It is considered that Kent Road operates as a collector road, and it provides access to the Royal Sydney Golf Club and has signal controlled access to and from New South Head Road. Collector roads typically carry 250 to 1,000 vehicles per hour, and it is generally acknowledged that residential amenity begins to decline at around 500 vehicles per hour. It is however considered that the future volumes on Kent Road would be acceptable due to the distinct peaking of activity associated with the school. The peak volumes reported in Table 4.2 would occur over a very short period during school terms only, with significantly lower volumes at most times of the day. The peak volumes would occur only between New South Head Road and the school driveway, a distance of only about 110m across five property frontages. In addition, residential amenity is a function of other factors, including traffic speed and composition. Kent Road is subject to a 40kph school zone during the times that traffic volumes would peak, and the number of heavy vehicles is very low. Night time and Sunday volumes when residents are most sensitive to traffic would not be affected by the school.

Weekday morning and afternoon peak volumes can be expected to decline on Elanora Street and Iluka Street. This is the result of the relocation of some school drop off and pick up traffic activity from the bowling club to Kent Road. The traffic activity associated with staff would be more than offset by the reduction in student activity. Traffic volumes in Manion Avenue would not be affected during the weekday before and after school periods.

### 4.3 Future Saturday Traffic Activity

The busiest period of the year with regard to Saturday traffic impacts would be winter, when Rugby would be played on the sports fields. It was not possible for MWT to survey activity in the vicinity of the site during winter sports activities, so adjustment for these conditions is required.

JBA Urban Planning presents a Sporting Programme Student Management Plan which outlines the likely use of the fields. From that plan, the fields would be used on around 28 Saturdays each year (11 winter and 17 summer), leaving 24 Saturdays that they are not used by the school, but are used for passive recreation by local residents. Wet weather cancellations are not "made up" on another weekend.

- Rugby and soccer: the school uses its own fields and also Woollahra Ovals 2 and 3 until 12pm only. Season is 11 Saturdays during school term. The development will not change the level of rugby/soccer activity on the fields.
- Holiday camps: 9am to 12pm on three days in school holidays
- Basketball: summer only competition 20 Saturdays per year 8:00am to 3:30pm, training 7:30 to 8:00am and 3:30 to 5:30pm weekdays
- Tennis winter and summer: 8:00am to 12:30pm on ten Saturdays per season and 8:00am to 4:30pm on ten Saturdays per year, minimal spectators.
- Gymnasium: may be used for wet weather training or indoor sports
- Cricket: existing three practice wickets will remain and there would be no increase in cricket activity.

As mentioned, the busiest time of year for Saturday sporting activity is winter. The development would not significantly alter the level of activity associated with winter sports, rather it would alter the distribution of traffic to and from the school because of the changed access arrangements.

In order to assess the future winter sport conditions on New South Head Road, an existing conditions scenario with no sporting activity was developed based on the results of the various surveys. For the "midday" peak conditions, this involved comparing the midday peak results from the two MWT surveys to determine the contribution of summer sport traffic to traffic conditions. This assumes that by the midday peak, the sport activity on 4 November was reduced to zero due to the cancellation of sport on that day. The summer sport traffic was then removed from the road system to simulate conditions with no sporting activity. The volume of traffic generated during winter sport was then estimated and added to the background conditions without sport. The estimate of winter sport activity is described below.

The CBHK surveys compare the Saturday traffic volumes in Elanora Street with and without sporting activity, which suggests that the winter sport activity generates an additional 90 veh/hr into and 80 veh/hr out of Elanora St between 11:45 and 12:45 (the "midday" peak hour).

We have accepted these figures for the purposes of this analysis, however, the CBHK study does not provide information on traffic generated on Kent Road during the Saturday peaks. Comparison of the MWT "summer sport" and "no sport" conditions described above indicates an additional 85 vehicle trips per hour on Kent Road during the "midday" peak, so it can be expected that winter sport would also generate some traffic on Kent Road. It should be noted that some of this additional traffic may

have been attributable to possible unusually high activity at the golf course, due to the rain on 4 November and the upcoming Australian Golf Tournament, which together may have created a peak in activity by members on 11 November.

The two Woollahra fields are used only until 12pm, so during the midday peak, it can be expected that players would depart from those fields but no new players would arrive. During the midday peak hour on a busy Saturday, it is therefore estimated that:

- 2 teams of 15 players arrive to play on each of 4 fields = 120 players arrive
- 2 teams of 15 players depart from each of 6 fields = 180 players depart

Assuming one player per car, the midday traffic generation would be 300 vehicle trips per hour. In practice, there are a number of factors which would influence the traffic generation, such as:

- Some cars would bring or take away more than one player, possibly staying for several games, which would reduce the number of vehicle trips during the peak hour.
- Some parents may not stay for the game, dropping off boys beforehand, and collecting them afterwards, which would increase the number of vehicle trips generated.
- Some parents may park in Lyne Park, and so vehicle trips would not be generated in Kent Road, Elanora Street or Iluka Street.

For the purpose of this assessment, the traffic generated by the winter sport activity is assumed to be 300 vehicle trips per hour. Of these trips, 170 trips are on Elanora Street (as determined by CBHK) and the balance of 130 are assumed to be on Kent Road.

Under the proposed scheme, sporting traffic would enter the school from either Kent Road or Iluka Street (via Elanora Street), and depart to Kent Road only. Thus, the existing departing volumes would be redistributed to Kent Road, and a proportion of the entering traffic would be redistributed to Kent Road. "Sport" traffic currently using Manion Avenue to access the car park would continue to do so. For the purpose of this assessment, it has been assumed that of the sporting traffic currently entering Elanora Street from the west (and not continuing along Manion Avenue to the car park), 50 per cent would use Elanora Street and 50 per cent would use Kent Road, while all of the sporting traffic currently entering Elanora Street from the east (and not continuing along Manion Avenue to the car park) would use Kent Road. It is assumed sporting traffic currently using Kent Road would continue to use Kent Road.

The scenario so analysed represents a highest case outcome for Kent Road. A highest case scenario for Elanora and related Streets would be continuation of the present situation which requires no further analysis.

#### 4.4 Future Saturday Traffic Volumes

The resulting future Saturday winter sport midday peak hour turning movements are presented in **Figure 6**, and two way volumes are summarised in Table 4.3, which also compares existing and future conditions with no sport, summer sport and winter sport.

It should be noted that at present, the sport-related traffic in Elanora Street divides between entering the site and parking farther along Manion Avenue. The distribution of traffic applied here assumes that in the future, all sport-related traffic using Elanora Street would enter the school from Iluka Street.

**Table 4.3 – Existing and Future Saturday Midday Peak Two Way Traffic Volumes (vph)**

Road	Location	No Sport	Summer Sport		Winter Sport	
		Ex & Fut	Existing	Future	Existing	Future
Elanora St	Sth of New South Head Rd	101	137	149	271	215
Iluka St	East of Manion Ave	14	27	37	98	39
	West of Manion Ave	76	115	125	246	190
Kent Rd	Sth of New South Head Rd	164	249	237	294	350
Manion Ave	South of Iluka St	62	88	88	156	152
New South Head Rd	West of Elanora St	2,569	2,664	2,664	2,824	2,824
	West of Kent Rd	2,624	2,695	2,679	2,739	2,783

The results demonstrate that during winter sport, traffic volumes on Kent Road would be expected to remain well below the 500 vehicles per hour threshold beyond which residential amenity would be expected to decline. Volumes on Elanora Street, Iluka Street and Manion Avenue would be reduced below the existing levels on sporting days with the proposed traffic management plan.

#### 4.5 Future Intersection Operating Conditions

The operation of the signalised intersections along New South Head Road was reanalysed using SCATES to determine what impact the additional traffic can be expected to have on their operating conditions. The results are presented below for the weekday morning and afternoon peaks and the Saturday "midday" peak.

**Table 4.4 – Existing and Future Signalised Intersection Operating Conditions**

Intersection	Control	X-Value			Average Delay (sec/veh)			Level of Service		
		Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM
<b>Existing</b>										
NSH/O'Sullivan Rd	signals	0.65	0.82	0.73	9	9	7	A	A	A
NSH/Kent Rd	signals	0.56	0.78	0.57	2	2	4	A	A	A
NSH/Newcastle St	signals	0.65	0.88	0.71	7	6	2	A	A	A
NSH/Dover Rd	signals	0.62	0.76	0.64	5	4	3	A	A	A
<b>Future – Kent Rd Upgraded</b>										
NSH/O'Sullivan Rd	signals	0.67	0.83	0.75	9	7	7	A	A	A
NSH/Kent Rd	signals	0.59	0.85	0.65	3	7	8	A	A	A
NSH/Newcastle St	signals	0.66	0.88	0.71	8	6	5	A	A	A
NSH/Dover Rd	signals	0.62	0.76	0.64	5	4	3	A	A	A

Notes: Average Delay is over all movements at signals

Existing Saturday is with summer sport, Future Saturday is with winter sport

The results indicate that the additional traffic would result in only marginal changes to the overall operation of the intersections. If the CBHK surveys were used as the basis of the analysis rather than the MWT surveys, it is expected that the changes in overall conditions would also be marginal. The intersections would continue to operate at satisfactory Levels of Service.

The detailed results from SCATES for the movements in and out of Kent Road are presented in Table 4.5.

**Table 4.5 – Existing and Future New South Head Rd/Kent Rd Conditions by Movement**

Movement	X-Value			Average Delay (sec/veh)			Level of Service		
	Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM
<b>Existing</b>									
Right into Kent	0.56	0.78	0.57	5.0	5.0	5.0	A	A	A
Left out of Kent	0.16	0.16	0.20	23.3	25.5	25.5	B	B	B
Right out of Kent	0.36	0.33	0.41	41.9	41.7	42.2	C	C	D
Left into Kent	0.40	0.57	0.41	0.0	0.0	0.0	A	A	A
<b>Future – Kent Rd Upgrade</b>									
Right into Kent	0.59	0.85	0.65	5.0	5.0	5.0	A	A	A
Left out of Kent	0.19	0.25	0.25	22.1	22.2	20.5	B	B	B
Right out of Kent	0.11	0.29	0.22	40.1	41.3	40.8	C	C	C
Left into Kent	0.42	0.60	0.45	0.0	0.0	0.0	A	A	A

Note: Existing Saturday is with summer sport, Future Saturday is with winter sport

The results indicate that with the additional traffic and the upgrading of the intersection, delays and Levels of Service would be maintained at present levels or slightly better.

The unsignalised intersections were reanalysed using SIDRA to determine what impact the changes in traffic conditions can be expected to have on their operating conditions. The results are presented below.

**Table 4.6 – Existing and Future Unsignalised Intersection Conditions MWT Surveys**

Intersection	Scenario	X-Value			Average Delay (sec/veh)			Level of Service		
		Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM	Sat AM	Thu AM	Thu PM
NSH/Elanora St	Existing	1.00	1.00	1.00	>120	>120	>120	F	F	F
	Future	1.00	1.00	1.00	>120	>120	>120	F	F	F
Iluka/Manion	Existing	0.05	0.04	0.03	5.0	5.1	5.1	A	A	A
	Future	0.05	0.05	0.03	5.0	5.0	5.1	A	A	A

The results indicate that the changed traffic conditions would not significantly affect the operation of the unsignalised intersections. It is expected that vehicles entering and exiting Elanora Street at New South Head Road would continue to be able to use gaps in the traffic resulting from the nearby signals. The average delays to vehicles turning into and out of Elanora Street would be slightly less than at present as the volume of turning traffic would be reduced.





## 5. Parking and Internal Road Design Review

### 5.1 Parking Provision

#### 5.1.1 *On-Site Car Parking*

Woollahra Council's Car Parking code requires primary schools to provide a minimum of 0.5 car parking spaces per 100m<sup>2</sup> gross floor area. The development proposes some 6,300m<sup>2</sup> GFA, and so requires a minimum of 32 car parking spaces.

The development proposes 70 spaces on-site, with 34 staff spaces being located off Iluka Street, and 36 other spaces located with access off Kent Road under the weekday traffic management conditions.

As discussed in Section 4.1, staff would generate a demand for 42 car parking spaces during weekday school hours. Thus while the overall day-to-day demand for staff parking would be met on-site, and the requirements of the DCP are met, the parking is located in two areas with no vehicular access between them. The layout of the staff parking area off Iluka Street is not favourable with regard to turning a vehicle around to exit if all spaces are already occupied. It is expected that a parking management regime would be implemented which would allocate particular spaces to individual staff to limit the need for staff to circulate on the public roads to find an available space when the main staff area was full.

The "Staff Car Park Access Procedure" provides details of how vehicle and pedestrian access from Iluka Street would be controlled, but does not indicate what would occur if a driver arrived when the school reception was unattended, or if a driver was denied access for any reason. The layout of the end of Iluka Street and of the car park area is unlikely to be sufficient to allow a delivery vehicle to turn around to exit Iluka Street in a forward direction.

It is understood that some parents stay later during the morning to assist with reading and the like. It is not known how many parents would require a parking space during this period on a typical day, and whether or not the 15 spaces located immediately off Kent Road would be sufficient. If these spaces do not meet that demand, it is suggested that the parking management plan allow for these parents to use the

angled spaces on the northern side of the internal road, with egress permitted until an appropriate time.

The parking management plan will need to be refined to address these two issues.

On 11 winter weekends each year, sporting activity at the school is expected to generate a peak demand in excess of the 105 spaces proposed to be available on-site out of school hours. With six fields in use, and assuming one car per player, the demand for parking would be for around 180 spaces at changeover times. As discussed in Section 4.3, a number of factors will affect the parking demand (such as number of players per car, parents who do not stay during a game, and parents who park in Lyne Park) however, it is anticipated that the demand will exceed the available on-site parking during winter sport activities.

During existing Saturday sport, informal parking is available within the school site on the former Bowling Club car park, and on the bowling greens. The number of cars which can park on the site is not known, and it has not been possible for MWT to survey the demand at the school or at the Woollahra Ovals during the busiest winter sport period.

### **5.1.2 *Loss of On-Street Parking***

The proposed widening of Kent Road and modifications to the school access are expected to result in the loss of seven on-street car parking spaces in Kent Road.

CBHK's surveys of parking demand in Kent Road revealed some 20 to 30 vacant spaces outside of school hours. This suggests that the loss of seven spaces would not reduce the available parking below the demand outside of school hours.

During school hours, 20 school staff currently park on Kent Road. The relocation of these vehicles onto the school site would make more on-street spaces available for other users. The removal of the 20 staff cars would more than offset the loss of seven spaces on Kent Road for weekday parking conditions during school hours.

The loss of seven on-street spaces on Kent Road is not expected to significantly impact on the availability of parking. It would be possible to reinstate lost parking on Kent Road on weekends if Council so desired.

## **5.2 Internal Road Design**

It is noted that the design of the proposed internal road has been amended at its eastern end since the original application was lodged, with the amended scheme being presented in PD Mayoh drawing "Cranbrook School Dangar Precinct Masterplan Traffic Scheme A – September 2006 Revision 1 25.9.06". The amendment relocates the eastern roundabout farther from the adjoining property.

The Development Application under consideration is for Stage 1, and as such, some details regarding parking layouts would be refined as the application process progresses. The internal road design is as follows:

- Between Kent Road and the eastern roundabout – single travel lane in each direction, with parallel and angle parking bays on the southern side, and 90° parking bays on the northern side.
- Between the eastern and western roundabouts – single travel lane in each direction, with parallel queuing space available along both kerbs, and 90° parking bays on both kerbs. A pick up/drop off area is located on the northern kerb. The 90° parking bays are set back from the kerb so that queuing vehicles would block the spaces.
- removable bollards at each end of the road, limiting access through from Iluka Street, and also access past the eastern roundabout during school days.

It is unclear who is expected to make use of the 90° parking bays on either side of the internal road, and therefore whether or not drivers would be trying to access these spaces during the periods that parents are likely to be queuing for the drop off/pick up zone. It is understood that the retractable bollards at the eastern end of the internal road would be in place during the school day, so access to and from these spaces would not be available during the day.

It is unclear from the linemarking on the plans how the roadway is expected to function. The road appears to have sufficient width for a travel lane and a parking lane in each direction, however there is also provision for angle parking bays behind the parking lane. The linemarking around the eastern roundabout is also unclear and it is recommended that the applicant be asked to revise this plan to clarify the lane arrangements.

### **5.3 Pedestrian Safety of Internal Road**

It is understood that the retractable bollards at the eastern end of internal road would be in place during the school day, so that vehicles would not be able to access the internal road. Car access from Kent Road would be limited to the 15 parking spaces at the eastern end of the site. The internal road would therefore be a pedestrian zone during the school day. This would ensure that students and vehicles were separated during the school day, which is satisfactory, assuming that any vehicles parked in the spaces adjacent to the internal roadway would not be moved during the day. This needs to be clarified.

A pedestrian footpath is proposed to link to Kent Road, immediately to the north of the driveway, which would satisfactorily separate pedestrians from vehicles.

Two marked pedestrian crossings (zebra crossings) are planned near the eastern end of the internal road, on either side the roundabout. The roadway around the eastern

roundabout is proposed to be fenced, so that pedestrians would cross only at the marked crossings.

#### ***Eastern Marked Crossing***

A number of car parking bays are proposed on the approach to the eastern marked crossing. These include three angle parking bays closest to the crossing (to be used as forward in, reverse out) and five parallel bays which would be accessed via a reverse park manoeuvre. These spaces are located within the zone that would typically be subject to "No Stopping" restrictions for a marked crossing, to assist visibility between drivers and pedestrians. The bend in the road would assist visibility of pedestrians on the crossing for drivers entering the school, but cars parked in the angled bays would restrict visibility to pedestrians waiting on the kerb or about to step onto the crossing. Also, should the cars in the angle bays reverse out to then exit the site in a forward direction (without travelling around the roundabout), they would reverse across the pedestrian crossing. The safety of pedestrians would be compromised by the presence of the angled parking spaces.

Further consideration needs to be given to this aspect.

#### ***Western Marked Crossing***

The marked crossing on the western side of the roundabout crosses four lanes of the road (two travel lanes and two queuing lanes). This is contrary to current practice, which limits marked crossings to two lanes only. It is recommended that the layout be amended to reduce the crossing distance.

The angle parking spaces on the northern side of the internal road are located within the area which would usually be subject to "No Stopping" restrictions, and cars parked in these spaces would restrict visibility between drivers and pedestrians about to cross the road. As noted previously, it is not clear whether these spaces would be in use during the morning and afternoon drop off and pick up activity, but as they would be used during Saturday sporting activity, pedestrian safety would be compromised.

The parking/queuing lane extends through the marked crossing, which is not satisfactory.

Again, this aspect requires further design examination by the applicant.

### **5.4 Pick up and Drop off Capacity**

The "Drop-off and Pick-up Traffic Management Plan" indicates that the pick-up area is located on the northern side of the internal road adjacent to the K-2 school. The boys in years 3 to 6 would be escorted across the driveway at a crossing by teachers. It is assumed this means the marked crossing shown immediately to the west of the eastern roundabout.

No staggering of morning drop off activity is proposed. It is understood that the afternoon pick up times are proposed to be staggered as follows:

- Kindergarten 2:40pm
- Years 1-2 2:50pm
- Years 3-4 3:00pm
- Years 5-6 3:10pm.

#### **5.4.1 Vehicle Queuing Capacity**

It is assumed for this analysis that the number of students in kindergarten, years 1 and 2 is approximately even, and that the number of students in years 3 to 6 is approximately even. The number of students and vehicles estimated to be using the pick up facility on a typical afternoon would therefore be as follows, based on the travel mode information presented in Table 4.1:

- 2:40pm – 40 kindergarten students in 33 cars (say 10 kindergarten boys wait for older brother/s) – 99% by car, 1.2 students per car
- 2:50pm – 80 year 1 and 2 students in 66 cars (say 20 Year 1 and 2 boys wait for older brother/s) – 99% by car, 1.2 students per car
- 3:00pm – 155 year 3-4 students and (say) 15 K-2 students in 75 cars – 77% by car, 1.6 students per car excluding prep boys
- 3:10pm – 155 year 5-6 students and (say) 15 K-2 students in 75 cars – 77% by car, 1.6 students per car excluding prep boys.

The pick up area therefore requires capacity to accommodate at least 75 pick ups in a ten minute period. This implies an average of one pick up every 8 seconds. In order to achieve this level of activity, and assuming an average of say 30 seconds per pick up (allowing time for the driver to stop, the boy/s to be called, get the bags and boys into the car, do up the seat belt and the driver to pull out), there would need to be at least four pick up spaces operating independently and simultaneously.

The Australian Standard for off-street car parking suggests that the 98th percentile queue should be accommodated within available storage area for access to mechanical parking installations (such as car stackers). Given that pick ups would occur every school day we consider a 98th percentile queue to be an appropriate design parameter for the subject site. As a guide, application of queuing theory suggests that with a demand of 75 cars per 10 minutes feeding to four independent pick up zones, each operating at a capacity of one pick up every 30 seconds, the 98th percentile length of the queue which forms would be 28 cars. The “queue” includes four cars in the pick up zone itself, so the 98th percentile queue extending to the pick up zone would be 24 cars. This assumes random arrivals of the 75 cars over the 10 minute period, and that the four spaces would operate independently, i.e. a car would be able to enter and leave a pick up space regardless of whether or not the spaces in front or behind were occupied. In reality, pick up zones such as this do not tend to operate entirely independently, and a car waiting in the pick up zone

would tend to block the car/s behind, or a car waiting in the queue would not be able to enter a free pick up space if the spaces on either side are occupied.

During the morning peak, the drop-off times would not be staggered, and it is unclear whether any formal drop-off management is planned, such as having teachers supervising boys as they get out of cars. The school has advised that drop off activity would occur between 7:00am and 8:40am, and we expect that the busiest period would be during the 30 minutes immediately before school starts. From Table 4.1, it is expected that some 260 cars would drop off students before school. Using the same queuing theory assumptions as above, and assuming that two thirds of the drop-off activity occurs within a 30 minute period, the 98th percentile queue would be 15 cars, being 4 cars dropping students off, and 11 cars waiting.

Obviously, these calculations assume an intensive management of drop off and pick up activity. Based on the procedures observed at the preparatory school, we consider this to be possible.

The space available for queuing will depend on exactly where the pick up and drop off takes place, which is not clear from the plans. It is estimated that if the pick up zone starts at the western end of the 11 angle parking bays, there would be some 280m of queuing length available within the site. This assumes that drivers can queue around the western roundabout, and does not allow for vehicles to keep clear of the marked crossings near the eastern roundabout. With some reduction in available queuing due to the crossings, it is expected that 40 cars would be able to queue.

The traffic management plan does not indicate what drivers would do if a boy was not ready to be collected when the driver reached the pick up zone. This should be clarified.

To accommodate queuing, it is recommended that the western roundabout be designed to permit two travel lanes around the circulating island, the outer one being for queued cars, and the inner one for cars needing to bypass the queue. This would require an outside diameter of 23.6m, which is larger than the 20m shown.

It is recommended that the applicant provide additional information about the planned pick up and drop off activity, including an assessment of the likely queues, either based on empirical observations of existing conditions, or theoretical analysis. This will need to take into account the number of drop off/pick up spaces, the rate at which students are dropped off or picked up, and the effects of parents arriving before or after the allocated 10 minute period in the afternoon. It is our expectation that the afternoon pick up is the critical period, and that efficiency would be gained by providing two separate pick up areas rather than a single area.

#### 5.4.2 *Student Waiting Area*

Another factor determining the capacity of the pick up and drop off area is the capacity of the area available for the boys to wait for their parents. It is not clear from the plans exactly what area would be available for the boys to wait, however a clear area approximately 26m long appears to be available for waiting. This area is partially under cover (approx. 15m x 5m) and partially uncovered (approx. 11.5m x 6.5m). An area immediately adjacent to the roadway would need to be kept clear for the safety of students and to allow access to the cars. The available area is therefore estimated at approximately 120m<sup>2</sup>.

Based on the likely distribution of activity, this area could be expected to accommodate:

- 2:40pm – 50 kindergarten students
- 2:50pm – 100 year 1 and 2 students and 10 kindergarten students = 110 students
- 3:00pm – 155 year 3-4 students and 30 K-2 students = 185 students
- 3:10pm – 155 year 5-6 students and (say) 15 K-2 students = 170 students.

Thus the number of students waiting would peak at around 185 students at 3:00pm.

Pedestrian capacity analysis methods incorporate measures which relate the density of pedestrians to Levels of Service (i.e. comfort) ranging from A to F, with A representing the best conditions and F representing the worst conditions. The theory is based on the average body ellipse profile of adults, i.e., the amount of space they take up. Clearly, the profile of children is smaller than adults, however all the boys would also have school bags which would tend to increase the amount of space they require while waiting. The peak concentration of 185 students in 120m<sup>2</sup> is equivalent to 0.65m<sup>2</sup> per student. In a queuing situation, this is on the border between Level of Service C and D based on the standard adult body ellipse profile. Taking the school bags into account, and the need for students to pass freely from the waiting area to the kerb, it is considered that the space available as suggested by the plans would not be sufficient to satisfactorily accommodate the peak number of students and maintain free and easy access to the cars.

However as noted above, it is not clear from the plans or the Pick Up and Drop Off Traffic Management Plan what area would be used by the boys waiting for their parents. If additional space was available, the Level of Service would be improved above that determined above.

This should be clarified.

#### 5.5 **Bus Movements**

Buses would not be used for transporting boys to and from the school on a daily basis, but would be used occasionally for school excursions. CBHK has provided information regarding the existing bus services used by the junior school, including for camps,

swimming carnival, cricket and excursions. These activities are infrequent and would not have any significant impact on the overall operation of the surrounding road network. It is recommended that bus activity be managed so that it does not coincide with the morning drop off or afternoon pick up activity.

The internal road is not designed to allow buses to enter and then exit from Kent Road. It is understood that buses would access the school from Iuka Street and exit to Kent Road. If the diameter of the western roundabout was increased to 25-30m, it would be large enough to accommodate bus turning movements, which would allow all bus activity to take place to and from Kent Road only. We recommend that this be investigated because the narrow width of Iuka Street renders its use by buses undesirable.

The travel mode surveys presented by CBHK indicate that some 12% and 19% of junior school boys currently catch the bus to and from school respectively. These boys use State Transit services which operate along New South Head Road. There are bus stops on New South Head Road in the vicinity of Kent Road. These boys would walk to these bus stops, and where necessary, cross New South Head Road at Kent Road, where pedestrian crossing signals are provided.

The option of rerouting buses to Lyne Park rather than the school site is not considered to be warranted by the number of buses which would access the school. The information presented by CBHK regarding bus use indicates that there are a number of "one off" events each year which would generate buses, including the school camp (16 bus trips per day on two days), music camp (6 bus trips per day on two days) and swimming carnival (28 bus trips on one day). During Terms 1 and 4, cricket generates 3 buses picking up and dropping off on Fridays (12 vehicle trips). Relocating the buses to Lyne Park would require (on occasions) a significant number of boys to cross New South Road to access the buses. Excursions throughout the year average less than two buses per month over 40 weeks.

Should buses be relocated to Lyne Park, significant numbers of students would need to be walked across New South Head Road to access the buses. The increase in risk exposure by the students is not considered to be justified by the relatively small number of buses involved. A preferred arrangement would be for bus drop offs and pick ups to take place within the school. Such movements should be timed not to coincide with the before and after school arrival/departure period.

## 5.6 Summary of Internal Road Layout

A number of aspects regarding the use of the internal road are not clear, and it is recommended that clarification be sought from the applicant regarding:

- linemarking of the roadway and roundabouts
- apparent parking lane across angle parking bays
- school day allocation of spaces on the internal road

- what area is available for boys waiting for parents to arrive
- what drivers do if boy is not ready when the car reaches the pick up zone
- details of the operation of the pick up activity in the afternoon peak, including an assessment of queuing as described previously.

Some aspects of the layout are considered to compromise pedestrian safety and should be amended:

- the proximity of the pedestrian crossings on either side of the eastern roundabout to parking bays,
- the crossing length of the western marked crossing
- extension of the queuing/parking lane through the western marked crossing.

These need to be addressed in a manner that complies with relevant RTA Technical Directions and Australian Standards.

It is recommended that consideration be given to increasing the size of the western roundabout to allow for two circulating lanes and to allow buses to turn around on the site rather than using Iluka Street.



## 6. Summary and Conclusions

### 6.1 Summary

#### *The Proposed Development*

- The DA is for a preparatory and junior school development at 6 and 6A Kent Road, Rose Bay.
- The existing preparatory school has 150 students, and the development proposes 310 students in years 3 to 6 being relocated from the Bellevue Hill campus.
- An internal circulation road is proposed off Kent Road to accommodate the morning drop off and afternoon pick up activity, and off-street parking for 70 cars is proposed.
- A secondary access off Iluka Street would provide access to staff car parking.
- Upgrading of the intersection of New South Head Road and Kent Road is proposed.
- The existing four playing fields would be retained in a reconfigured arrangement.
- During sport activities, entry from Iluka Street would be permitted, with all vehicles exiting to Kent Road.

#### *Existing Traffic Conditions*

- Surveys of vehicle movements were undertaken at nearby intersections during morning and afternoon peak periods on a Thursday, and during the morning on two Saturdays.
- The intersections were analysed using SCATES and SIDRA Intersection analysis programs and generally operate at good or workable levels of service during the peak hours.
- Detailed results for the intersection of New South Head Road and Kent Road are provided in this report.
- School pick up activity was observed at both the existing preparatory school and junior school. Long queues formed at both locations, blocking the public roads.
- The traffic conditions surveyed by MWT were less busy than those surveyed by the school's traffic consultant (CBHK).

#### *Future Traffic Analysis*

- The development is expected to generate some additional 220 to 280 vehicle trips in Kent Road, which would be drawn away from the Bellevue Hill campus.

- The surveys by CBHK suggest that winter sport (the busiest period) currently generates 295 and 170 vehicle trips per hour in Elanora Street during the Saturday morning and midday peak hours respectively.
- Due to the proposed access arrangements the most significant impacts on weekday peak traffic would be on Kent Road, with reductions in traffic on Elanora Street and Iluka Street.
- The additional traffic would result in only marginal changes to the overall operation of nearby intersections.
- With the additional traffic and the upgrading of the Kent Road intersection, delays and Levels of Service for movements into and out of Kent Road would be maintained at present levels or slightly better.

#### ***Parking and Internal Road Design Review***

- The provision of car parking exceeds the minimum requirements of Council's DCP, however additional details regarding parking management should be sought from the applicant.
- The loss of seven on-street spaces from Kent Road is not expected to significantly alter the availability of parking.
- A number of details require clarification from the applicant regarding the expected management of the internal roadway. These are detailed in the body of this report.
- Further consideration needs to be given to the layout of the marked crossings on the internal road to ensure the safety of pedestrians.
- It is recommended that additional details be sought from the applicant regarding the drop off and pick up activity, and student waiting areas as detailed in this report.
- We recommend that consideration be given to increasing the size of the western roundabout to allow buses to enter from and exit to Kent Road because the narrow width of Iluka Street renders its use by buses undesirable.
- The option of relocating buses to Lyne Park is not considered to be warranted.

## **6.2 Conclusions**

Subject to satisfactory resolution of the design and management issues outlined in this report, the proposed development of a preparatory and junior school at 6 and 6A Kent Road would have satisfactory impacts on the surrounding road system.

If Council was minded to approve the application then satisfactory clarification of the following aspects should be provided either prior to consent or as a condition of consent:

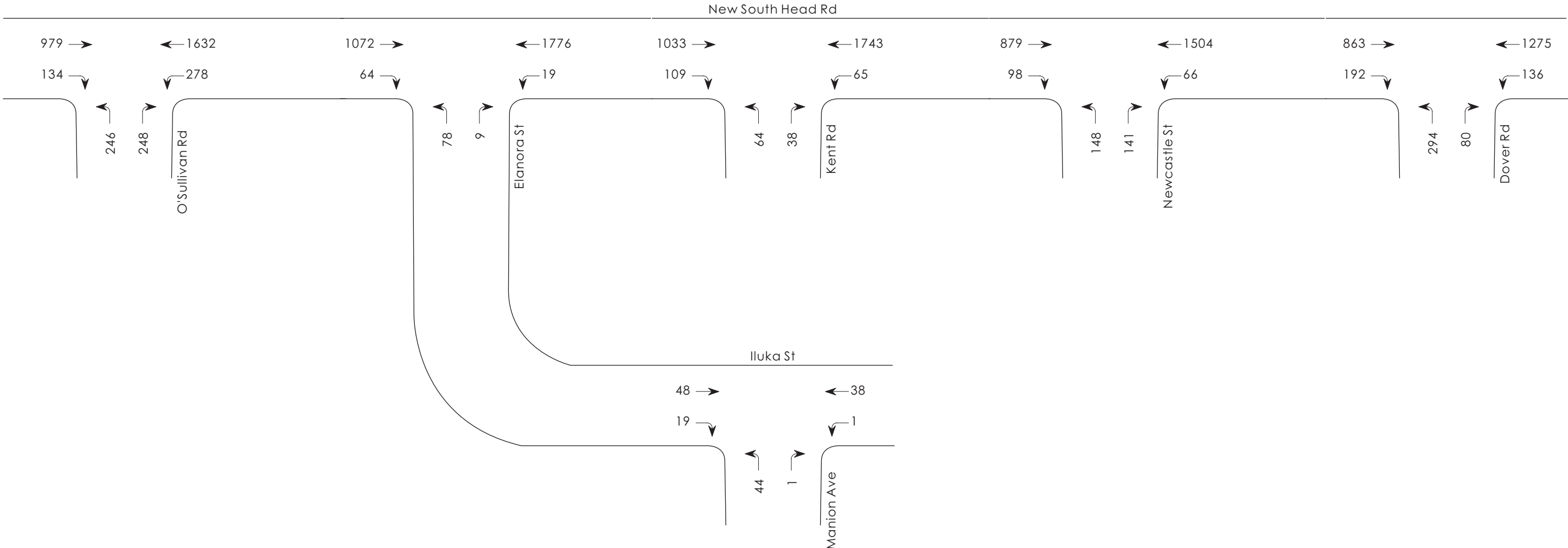
- the layout and operation of the two internal roundabouts including line marking and how queuing through them would be arranged
- the proposed use of the additional roadway lane adjacent to the 90 degree parking spaces

- how parking spaces would be allocated to staff
- how parking on the internal road would be managed to enable use by visitors during the school day
- what space would be available for students to wait in prior to being picked up and how waiting would be managed to minimise pick up times
- what would a driver be directed to do if a student was not present at the pick up point
- a detailed queuing analysis to demonstrate that pick up and drop-off traffic would not queue back out onto Kent Road
- design details for the pedestrian crossings demonstrating that visibility to/from them and parking adjacent to them would comply with relevant Australian Standards and RTA Technical Directions
- details showing how occasional bus visits to the site could be accommodated on site without buses having to use Iluka Street.

The school's draft "Operational Traffic Management Plan" would provide a suitable mechanism for the applicant to address these issues.

# EXISTING WEEKDAY AM PEAK HOUR TRAFFIC

CRANBROOK SCHOOL ROSE BAY



# EXISTING WEEKDAY PM PEAK HOUR TRAFFIC

CRANBROOK SCHOOL ROSE BAY

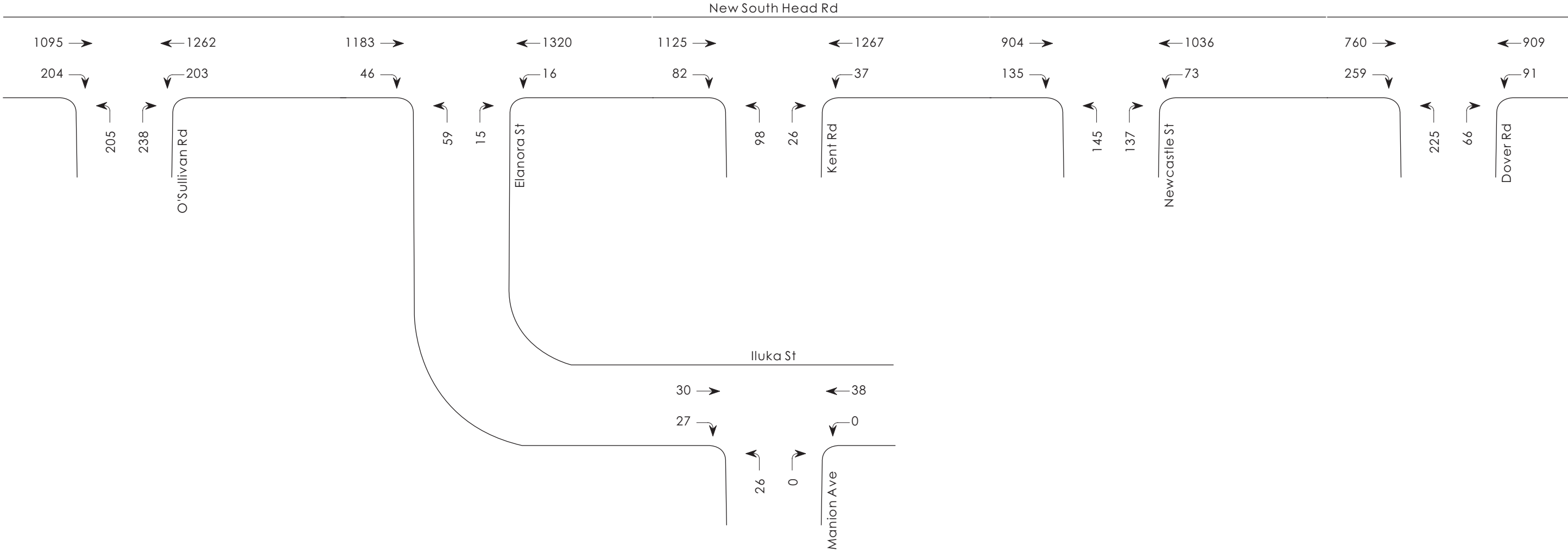
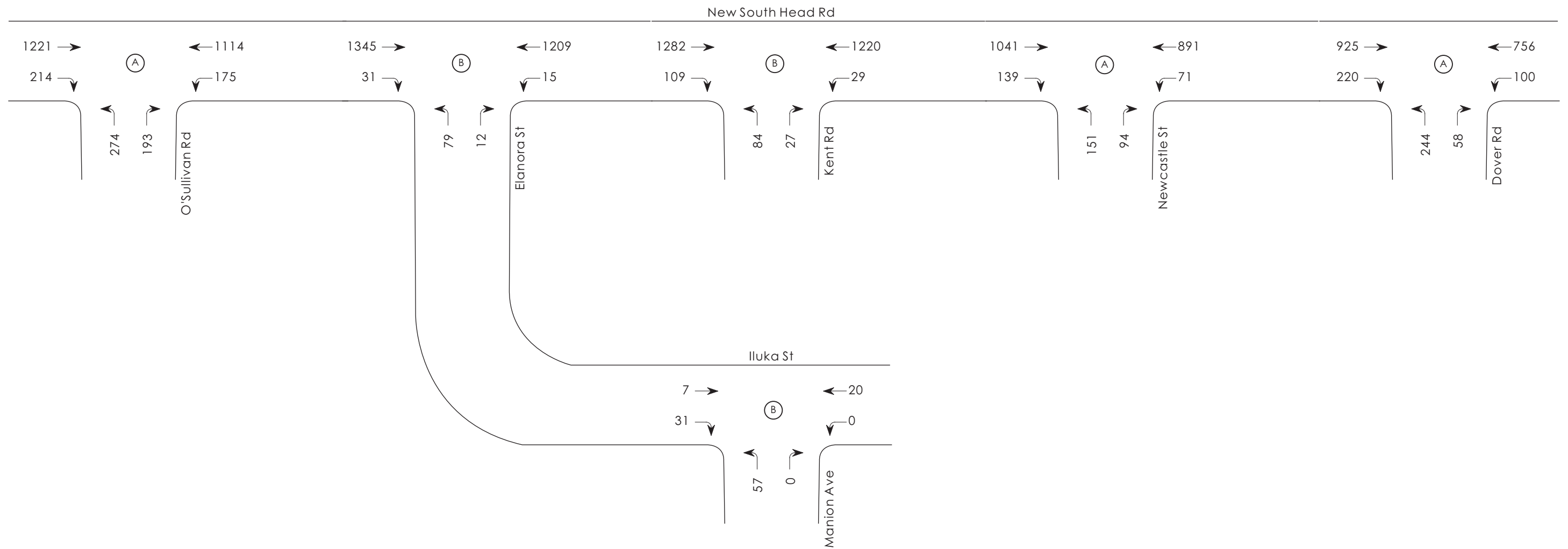


Figure 2

# EXISTING SATURDAY PEAK HOUR TRAFFIC

CRANBROOK SCHOOL ROSE BAY

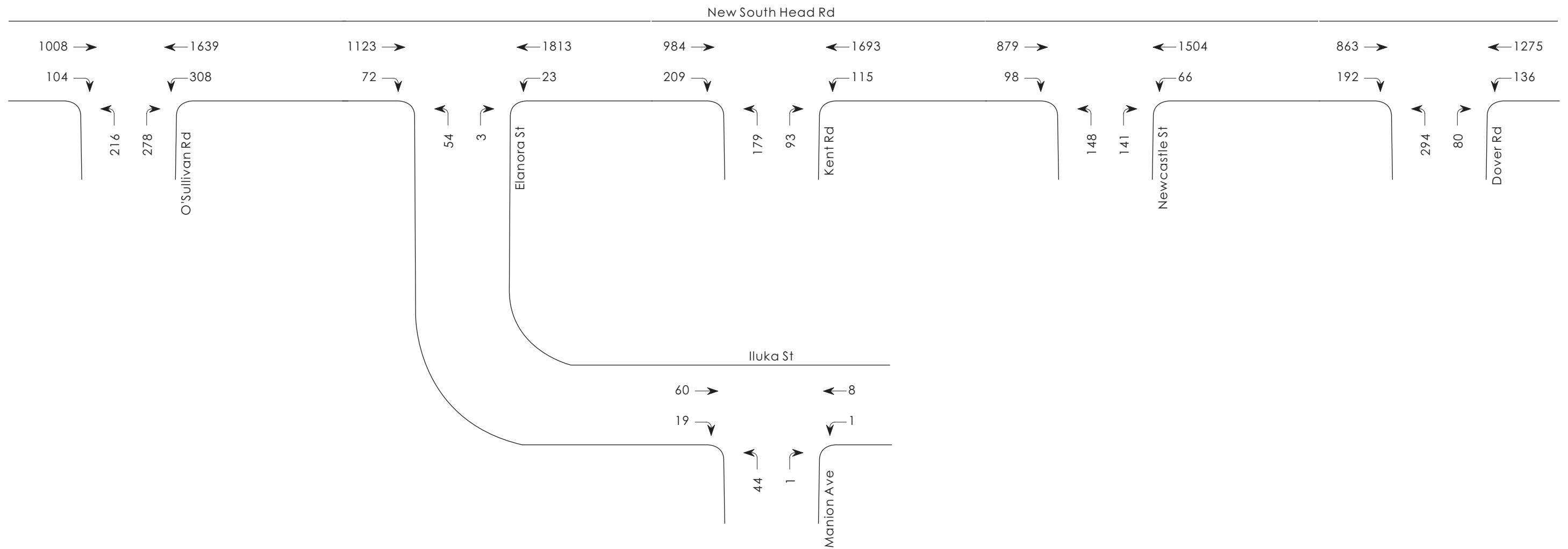


**Key**

- (A) Adjusted from Saturday 4 November (11:45-12:45)
- (B) Saturday 11 November

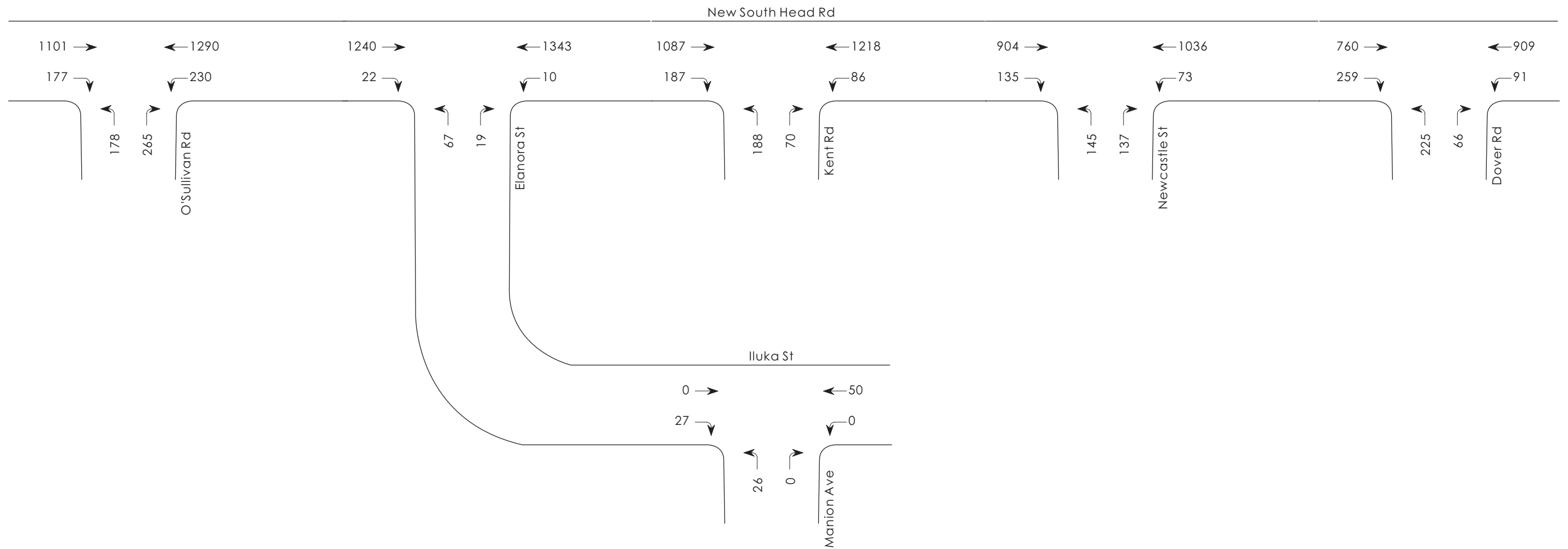
# FUTURE WEEKDAY AM PEAK HOUR TRAFFIC

CRANBROOK SCHOOL ROSE BAY



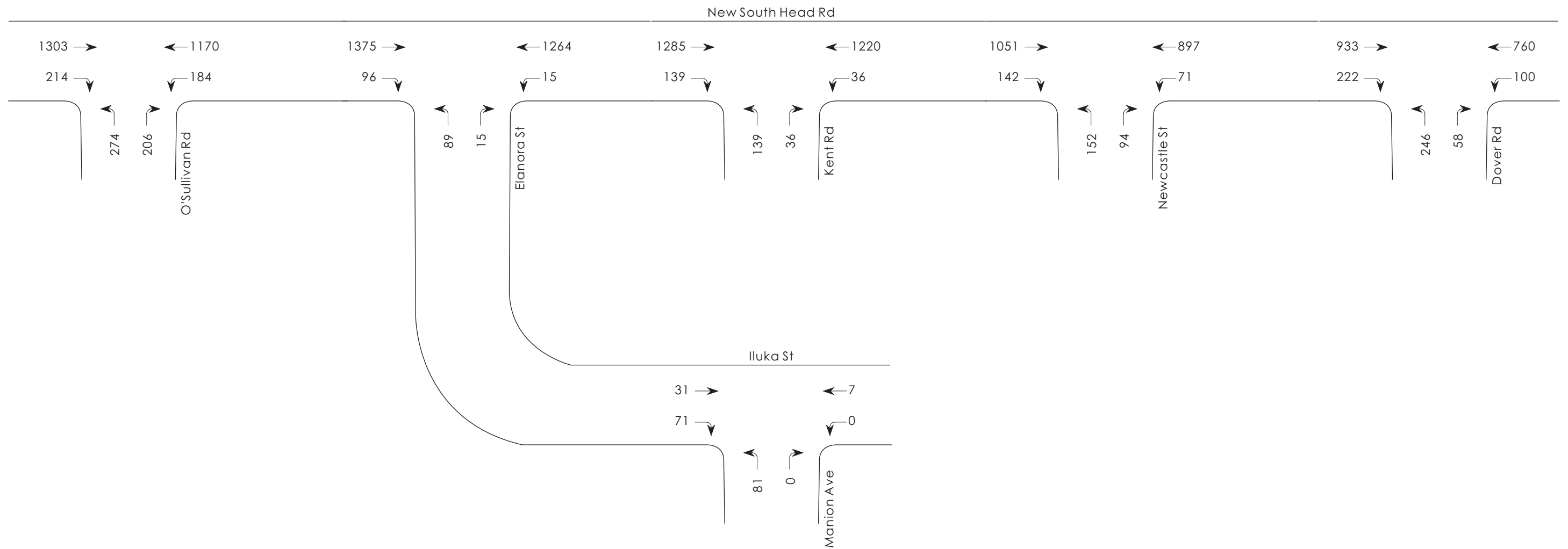
# FUTURE WEEKDAY PM PEAK HOUR TRAFFIC

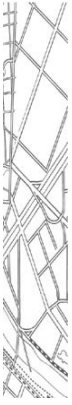
CRANBROOK SCHOOL ROSE BAY



# FUTURE WINTER SPORT SATURDAY MIDDAY PEAK HOUR TRAFFIC

CRANBROOK SCHOOL ROSE BAY



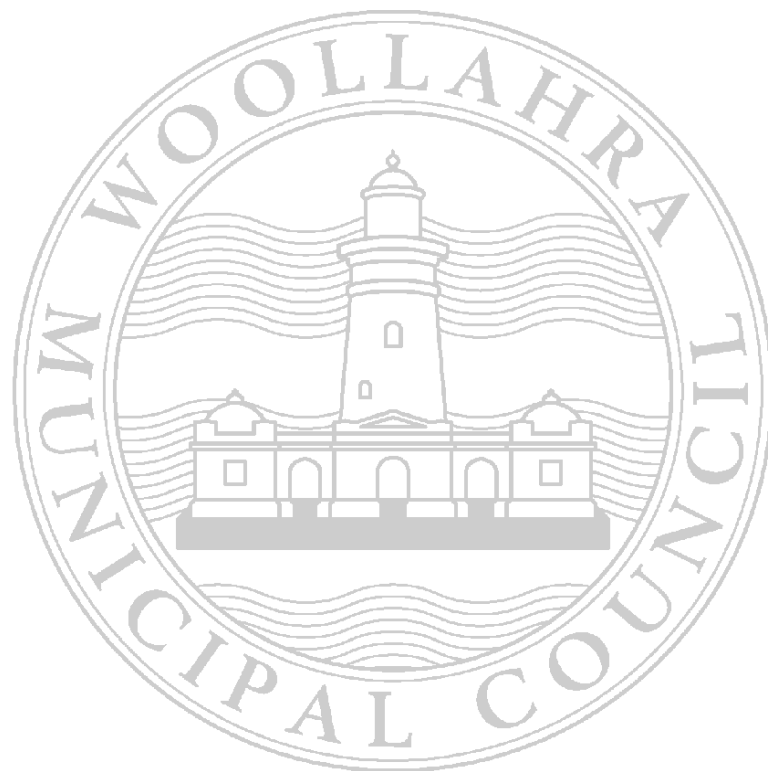


## **Appendix A - Project Brief**

# TRAFFIC REPORT

## 6 & 6A KENT ROAD, ROSE BAY

### PROJECT BRIEF



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## 1.0 INTRODUCTION

Traffic and parking have been identified as major issues regarding the assessment of a development application for a preparatory and junior school development on land at 6 & 6A Kent Road, Rose Bay. As a consequence the Council has decided to obtain an independent comprehensive traffic report to assist it in its assessment of the application.

## 2.0 BACKGROUND

Development application DA508/2005 (the DA) was submitted in August 2005 by Cranbrook School for a preparatory and junior school development at 6 & 6A Kent Road, Rose Bay (comprising land occupied by the former Rose Bay Bowling Club and land known as Dangar Playing Fields). The applicant is proposing a staged development and the DA is the first/initial DA in that process.

Presently there is an existing preparatory school on 6A Kent Road although the majority of that property comprises playing fields used by the Cranbrook School.

The proposed preparatory and junior school buildings will have a maximum gross floor area of 6,300m<sup>2</sup> with an enrollment of 460 students (150 in the preparatory school and 310 in the junior school) and 45 staff. A science building, music room, prac room, gymnasium and tennis courts are proposed in addition to the classrooms for boys ranging from kindergarten to year 6.

The development features an internal circulation road to accommodate the morning drop-off and afternoon pick-up of students. Off-street carparking for 70 vehicles is proposed.

Documentation submitted with the DA included a traffic report prepared by Colston Budd Hunt and Kafes and by a civil services report prepared by Hyder Consulting.

The DA was referred to the Sydney Regional Development Advisory Committee under the provisions of *State Environmental Planning Policy No. 11 – Traffic Generating Development* because it involved changes to traffic conditions on New South Head Road. It was also referred to the Local Traffic Committee due to proposed changes to the alignment and kerbside parking on Kent Road.

The applicant has lodged an appeal with the Land & Environment Court against the deemed refusal of the DA.

Consideration of the DA was deferred at a Council meeting on 25 September 2006 as follows:

*That consideration of the matter be deferred to allow the applicant and staff to confer on the following matters, and that Council initiate parts A1 and K:*

*A1 Preparation of an independent comprehensive traffic report addressing in detail the following matters:*

- 1. a full traffic count and analysis,*
- 2. the impact on traffic in New South Head Road during peak times and out of peak times, (3 or 4 times during different periods)*
- 3. the loss of parking spaces,*

4. *the safety of pedestrians and students,*
5. *the traffic impacts of bus movements to and from Cranbrook School,*
6. *the issue of the RTA traffic lights at the New South Head Road and Kent Road intersection having particular regards to the programming for turn movements, adequacy of waiting bays, queuing and additional delays experienced by residents in Kent Road as a consequence of the changes to the traffic lights,*
7. *Pick up and set down issues including the staggering of times and the effect of the use of car pooling and supervised management of the pick up and drop off process,*
8. *Exploring the benefits/viability of bus pick up and set down being re-routed to Lyne Park rather than to the school site.*
9. *review of the variances with the applicants report,*
10. *the impact on traffic in Iluka Street, Elanora Street and Manion Avenue.*

- A2 *The applicant to provide an Operational Traffic Management Plan for Council's approval at DA stage, covering the issues in part A1 of the recommendation including bus turning circles, loss of parking and the effects of proposed changes to Kent and New South Head Roads.*
- B. *Landscaping to be further examined including issues of low water use having regard to water conservation, the use of Australian native plants and the adequacy of the proposed screening.*
- C. *Further examination of the set backs to the New South Head Road properties including the original position of the round about.*
- D. *The tennis courts to be synthetic tennis courts in order to reduce noise and to be predominately green in colour.*
- E. *Dilapidation reports to be prepared for No 4A Kent Road, Rose Bay.*
- F. *Consideration being given to moving the music and multi purpose rooms away from adjoining properties.*
- G. *The provision of public art.*
- H. *The use of the tennis courts to be conditioned that they are not to be used prior to 7.30am or after 7.00pm on week days, prior to 8.00am or after 5.00pm on Saturdays and prior to 10.00am and after 2.00pm Sundays.*
- I. *That the design of all buildings incorporate state of the art design principles to minimise water and energy uses.*
- J. *Restrictions on the hours of use of the gymnasium.*

- K. That legal advice be obtained on Council's ability to grant approval of the application under the amended legislation given that the application was lodged with Council prior to the legislation being amended.*

The brief is to prepare the comprehensive, independent traffic report referred to in item A1 of the above reasons for deferral of the DA.

### **3.0 PROJECT OBJECTIVE**

The principal objective is to prepare an independent, comprehensive traffic report in relation to the development proposed by the DA specifically addressing the ten (10) points contained in item A1 of the Council's reasons for deferral. The report is to be prepared in accordance with industry best practice standards with data collection, analysis and assessment based on established and recognised methodologies and criteria.

### **4.0 PROJECT TASKS**

The following specific tasks are to be undertaken by the consultant in preparing the traffic report:

- i. Carry out traffic counts for streets which are likely to be impacted by increased traffic including counts for weekdays and for Saturdays during both school periods and non-school periods. The counts are to be taken at times when activities are 'typical' for usual school operations and in this regard you are to contact our project manager.
- ii. Establish the traffic movements within the surrounding street network based on the traffic generation of the proposed development.
- iii. Analyse the operation of intersections in the surrounding street network and in particular the intersections of New South Head Road with O'Sullivan Road, Elanora Street, Kent Road, Newcastle Street and Dover Road for school periods and non-school periods and for the existing and proposed vehicular movements using SCATES and INTANAL programs. This analysis is to include a detailed breakdown on intersection saturation, delay and level of service for each turning movement in and out of the intersection of New South Head Road and Kent Road in both the am and pm peak periods before and after the development.
- iv. Determine the level of service (LOS) for intersections within the surrounding street network using the SCATES and INTANAL programs based on both the existing and proposed vehicular movements.
- v. Assess the design/capacity of the proposed internal circulation road to accommodate student drop-off and pick-up operations and vehicular (including bus) movements. This assessment is to include a dynamic analysis of the operation of the internal road having regard to the likely peak parking accumulation, the period of time required for drop-off and pick-up, the available areas for drop-off and pick-up and the design and geometry of the internal road..
- vi. Assess the design of the road with regard to student safety.
- vii. Determine the likely demand for carparking associated with the proposed development and assess the adequacy of the proposed on-site carparking provision to

accommodate for such demand for both weekdays and Saturdays during school term periods.

- viii. Review the documentation submitted in relation to the DA which relates to traffic and parking matters.
- ix. Make an assessment of the proposed development against the provisions of the Council's planning controls which relate to traffic and parking matters and in particular the provisions of *Woollahra Local Environmental Plan 1995*, the *Development Control Plan for Off-Street Carparking Provision and Servicing Facilities* and the *School and College Development Control Plan*. This assessment is to consider the likely range of impacts based on expected 'high' and 'low' traffic generation and 'high' and 'low' peak parking accumulation.
- x. Prepare a comprehensive report that addresses in detail the points contained in item A1 of the Council's reasons for deferral of the DA, as referred to above.

## **5.0 DOCUMENT FORMAT**

The report is to:

- i. refer to each of the points contained in item A1 of the Council's reasons for deferral of the DA with an individual response to each point.
- ii. include details of the methodologies used to establish conclusions reached and such methodologies are to be explained in plain English and are to be fully referenced
- iii. include the results of all surveys and traffic counts - data sheets are to form appendices to the report
- iv. reach clear and unambiguous conclusions and recommendations
- v. be finally submitted as an unbound A4 boxed set and include tables, photographs and other graphics as may be considered by the consultant to be necessary
- vi. be submitted in an electronic format, i.e. PDF copy on CD or DVD ROM

## **6.0 PROJECT TIMETABLE**

The consultant is required to complete the traffic report in accordance with the items 4.0 and 5.0 above within a timeframe to be agreed between the Council's project manager and the consultant.

## **7.0 CONSULTANT**

A qualified traffic consultant/engineer with a particular knowledge and experience in dealing with traffic and parking issues related to school developments.

The consultant is required to submit information relating to their experience, including examples of similar relevant projects, their qualifications and their affiliations with professional bodies. A project manager is to be identified who will act as the principal liaison with Council's project manager for this project, Council's Executive Planner Peter Kauter.

The consultant will have skills and experience in data collection, analysis and evaluation of traffic and carparking. Experience in dealing with traffic and parking related matters in the Land and Environment Court is desirable.

Except for the data collection sub-consultants may only be employed with the prior permission of Council's project manager. Where such permission is given it will be for nominated people who satisfy the required skills and to whom the same conditions referred to above apply.

The consultant will complete the schedules in Section 3 of the Woollahra Municipal Council's Quotation Form as part of their quotation. See attachment.

## **8.0 CONFLICT OF INTEREST**

All members of the consultant team must declare whether they have any conflict of interest as described in the Council's *Code of Conduct – A guide for contractors, consultants and suppliers* or in connection with the applicant for the DA, the Cranbrook School, or any of the applicant's and/or objector's consultants in connection with this DA.

Except with the prior permission of the Council's project manager, other professional engagements will not be undertaken in the Woollahra Municipal Council local government area for the duration of the project that could be construed as producing a conflict of interest.

## **9.0 PROJECT FEE**

The consultant is required to submit a fee structure with their response to the brief. The fee structure is to show:

- i. A breakdown of the estimated times for the tasks to be undertaken.
- ii. The person responsible for each task and the associated fee for the task.
- iii. The estimated costs associated with research, materials and travel.

Payment will occur progressively by cheque at the draft and final stage. Eighty percent (80%) of the agreed fee will be paid upon receipt of all draft documents referred to in section 4. The remaining 20% will form the final payment, to be made after the final documents are submitted to Council's satisfaction.

Invoices for the payment of fees must be submitted to the Council's project manager. Invoices must clearly state the stage for which payment is sought and the tasks completed to the satisfaction of the Council's project manager. Each invoice must state the consultant's ABN and must indicate the GST component.

The fee will be set by negotiation and agreement between the Council's project manager and the consultant.

## **10.0 LIAISON, MEETINGS**

The Council officer managing this project is Peter Kauter, Executive Planner, who may be telephoned on 9391 7156, faxed on 9391 7044 or e-mailed at peter.kauter@woollahra.nsw.gov.au. Liaison discussions by telephone are expected on a minimum basis of once a week, with one meeting at Council to discuss the project and receive the background documents. Documents are to be received at Council at least 1 working day prior to any meeting, to allow for perusal.

## **11.0 OWNERSHIP AND COPYRIGHT**

The ownership and copyright of any information and originals of all maps, reports, graphics, plans, photographic prints and negatives supplied as a progress, preliminary draft and a final report are to be vested with Council.

The Council may, upon written request, permit the consultant to utilise information gained in the course of the project for the purpose of learned papers or other publications, provided that these are appropriately acknowledged and the confidentiality of information is respected.

## **12.0 AVAILABLE INFORMATION**

- i All documentation submitted by the applicant with the DA including architectural plans, statement of environmental effects and all appendices
- ii Submissions received as a result of notification and advertising of the DA
- iii All Council reports, minutes of meetings and comments from internal and external referral bodies
- iv Copies of relevant planning documents including *Woollahra Local Environmental Plan 1995*, *Development Control Plan for Off Street Car Parking Provision and Servicing Facilities* and *School and College Development Control Plan*
- v Aerial photographs

## **13.0 MISCELLANEOUS CONDITIONS**

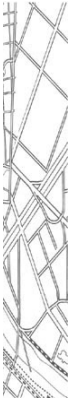
Unless otherwise agreed to by the Council's project manager, all draft documents produced by the consultant must remain confidential and are only to be made available to the Council's project manager throughout the project's duration. Following approval of the report all documents will be made available for public use.

The consultant must return all resource material, information and other property provided by the Council at the completion of the project, or sooner if requested. Any information or Council material lost or damaged whilst in the consultant's possession must be replaced at the consultant's expense.

Before engagement, the consultant must provide evidence of their current professional indemnity insurance.

#### **14.0 ACCEPTANCE**

Written confirmation of the terms of this brief is required before formal engagement of the consultant occurs and any work commences on the project.



## **Appendix B - Traffic Survey Results**



## **R.O.A.R. DATA**

*Reliable, Original & Authentic Results*

83 Church St, Ryde NSW 2112.

Ph.88196847, Fax 88196849, Mob.0418-239019

### **FIELD SURVEY REPORT**

Day / date : Saturday 4<sup>th</sup> November 06  
Client : Masson Wilson Twiney  
Job No/Name : 1552 Woolahra Traffic Surveys  
ATTENTION : Penny Dalton

The survey went well except for the bad weather. I did however find out that vehicles were parking in Elenora St before getting to Iluka St and people would walk across the golf course. They would then return and drive off this would explain some of the vehicles not arriving at Iluka. There are car park accesses on the northern side of New South Head Rd as well as Norwich Rd between Kent and Newcastle. This street was a little busy with car park signage directing vehicles down it. If there is any further way I can help you please contact me.

REGARDS  
GREG HILL



# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

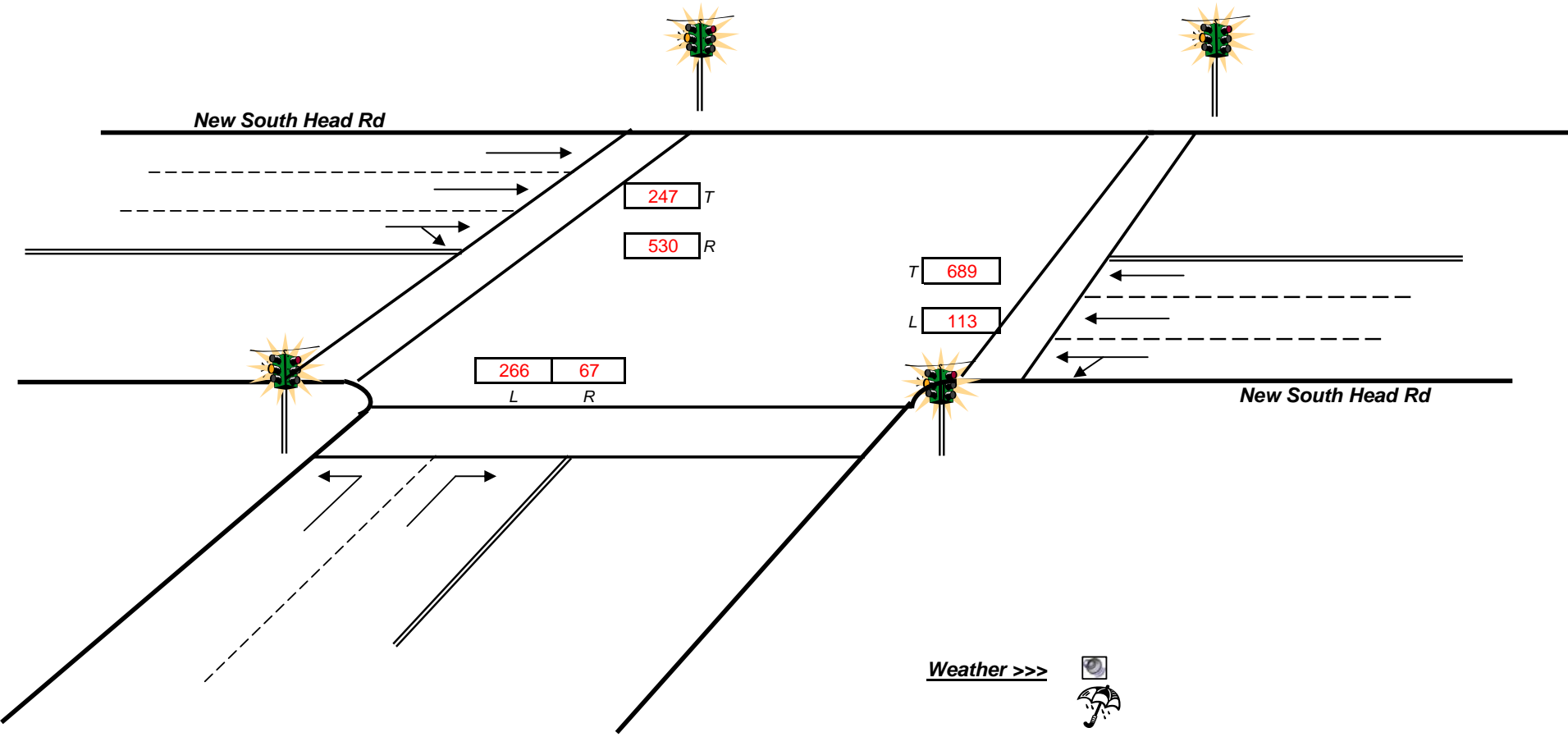
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006

## Intersection Details



**PEAK HOUR**  
**1000 - 1100**



Weather >>>



Dover Rd



# R.O.A.R. DATA

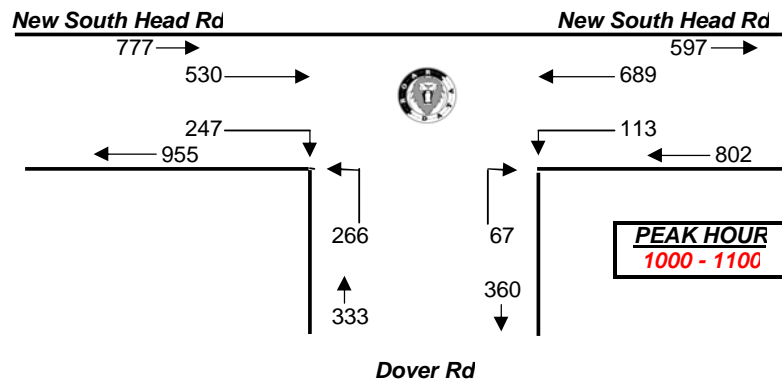
Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

All Vehicles

Time Per	WEST		SOUTH		EAST		TOTAL
	New South	Dover Rd	Dover Rd	New South	New South	New South	
	R	L	R	L	R	L	
1000 - 1015	60	128	57	20	180	31	476
1015 - 1030	62	106	69	19	180	30	466
1030 - 1045	65	154	63	16	179	31	508
1045 - 1100	60	142	77	12	150	21	462
1100 - 1115	66	138	58	15	138	24	439
1115 - 1130	50	150	59	21	168	28	476
1130 - 1145	58	134	62	12	159	26	451
1145 - 1200	55	156	51	16	169	31	478
1200 - 1215	47	149	60	14	157	27	454
1215 - 1230	52	153	71	10	163	26	475
1230 - 1245	66	171	62	18	151	16	484
1245 - 1300	69	163	56	15	175	13	491
<b>Period End</b>	<b>710</b>	<b>1744</b>	<b>745</b>	<b>188</b>	<b>1969</b>	<b>304</b>	<b>5660</b>

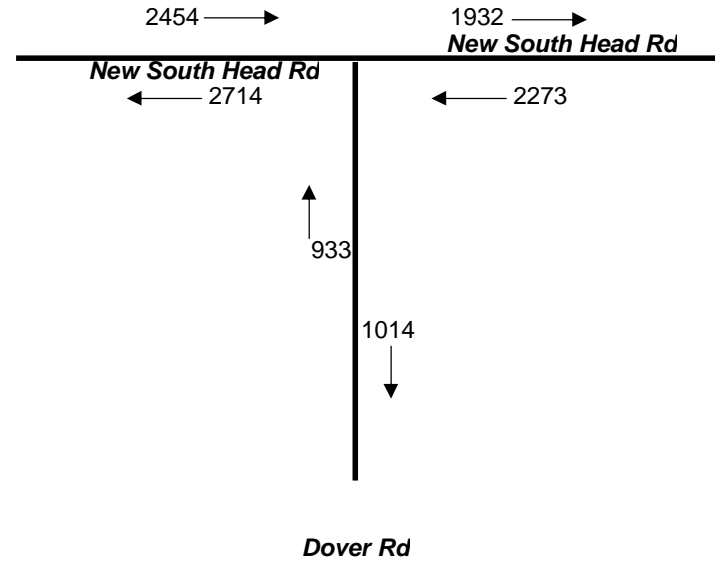
Peak Per	WEST		SOUTH		EAST		TOTAL
	New South	Dover Rd	Dover Rd	New South	New South	New South	
	R	L	R	L	R	L	
<b>1000 - 1100</b>	247	530	266	67	689	113	1912
1015 - 1115	253	540	267	62	647	106	1875
1030 - 1130	241	584	257	64	635	104	1885
1045 - 1145	234	564	256	60	615	99	1828
1100 - 1200	229	578	230	64	634	109	1844
1115 - 1215	210	589	232	63	653	112	1859
1130 - 1230	212	592	244	52	648	110	1858
1145 - 1245	220	629	244	58	640	100	1891
1200 - 1300	234	636	249	57	646	82	1904
<b>PEAK HR</b>	<b>247</b>	<b>530</b>	<b>266</b>	<b>67</b>	<b>689</b>	<b>113</b>	<b>1912</b>



Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 4th November 2006



**TOTAL VOLUMES**  
**FOR COUNT**  
**PERIOD**



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## R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006

<b>Peds</b>	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b><i>New South</i></b>	<b><i>Dover Rd</i></b>	<b><i>New South</i></b>	<b>TOT</b>
1000 - 1015	24	21	18	<b>63</b>
1015 - 1030	27	13	27	<b>67</b>
1030 - 1045	46	17	34	<b>97</b>
1045 - 1100	41	32	36	<b>109</b>
1100 - 1115	39	18	21	<b>78</b>
1115 - 1130	36	19	30	<b>85</b>
1130 - 1145	41	27	47	<b>115</b>
1145 - 1200	29	11	21	<b>61</b>
1200 - 1215	34	13	33	<b>80</b>
1215 - 1230	21	14	27	<b>62</b>
1230 - 1245	28	11	25	<b>64</b>
1245 - 1300	35	11	34	<b>80</b>
<b>Per End</b>	<b>401</b>	<b>207</b>	<b>353</b>	<b>961</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b><u>New South</u></b>	<b><u>Dover Rd</u></b>	<b><u>New South</u></b>	<b>TOT</b>
<b>1000 - 1100</b>	138	83	115	<b>336</b>
1015 - 1115	153	80	118	<b>351</b>
1030 - 1130	162	86	121	<b>369</b>
1045 - 1145	157	96	134	<b>387</b>
1100 - 1200	145	75	119	<b>339</b>
1115 - 1215	140	70	131	<b>341</b>
1130 - 1230	125	65	128	<b>318</b>
1145 - 1245	112	49	106	<b>267</b>
1200 - 1300	118	49	119	<b>286</b>

<b>PEAK HR</b>	<b>138</b>	<b>83</b>	<b>115</b>	<b>336</b>
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# R.O.A.R. DATA

Reliable, Original & Authentic Results

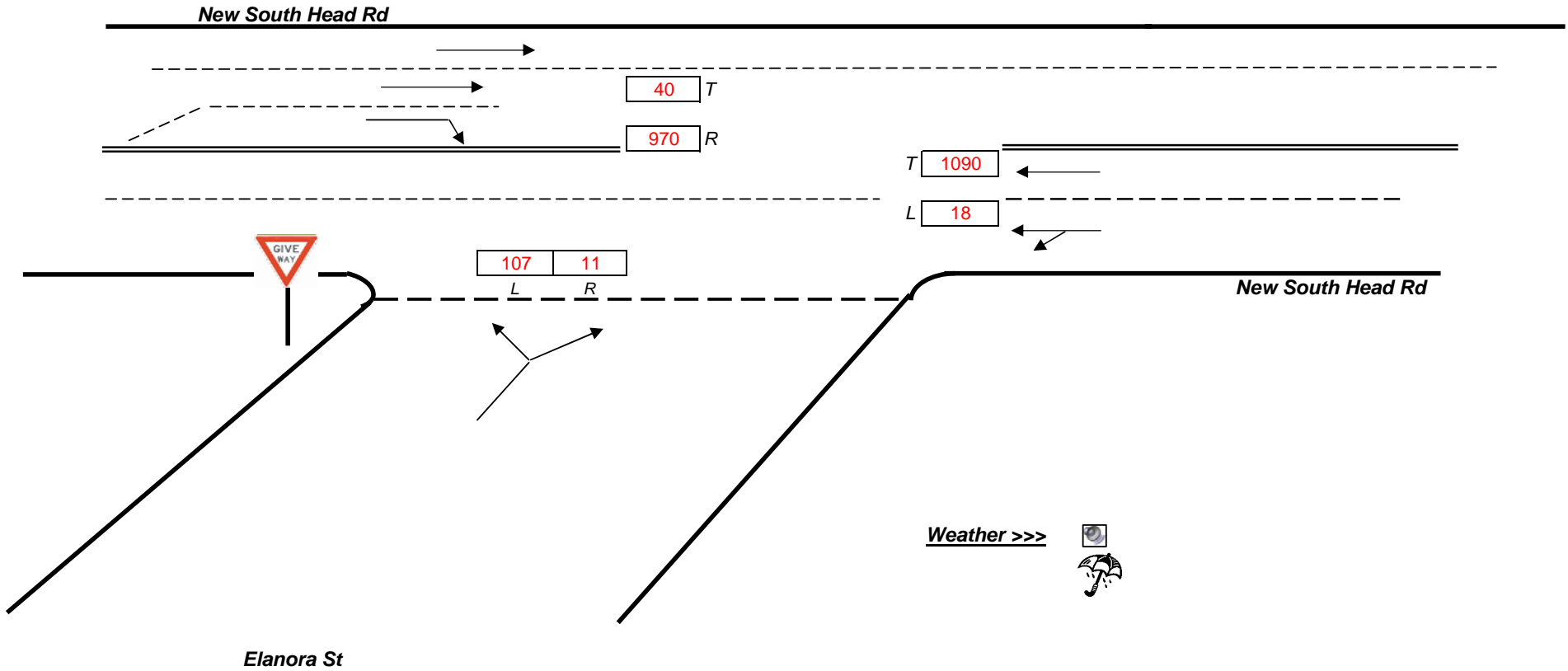
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006



## Intersection Details

**PEAK HOUR**  
**1030 - 1130**





# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 4th November 2006

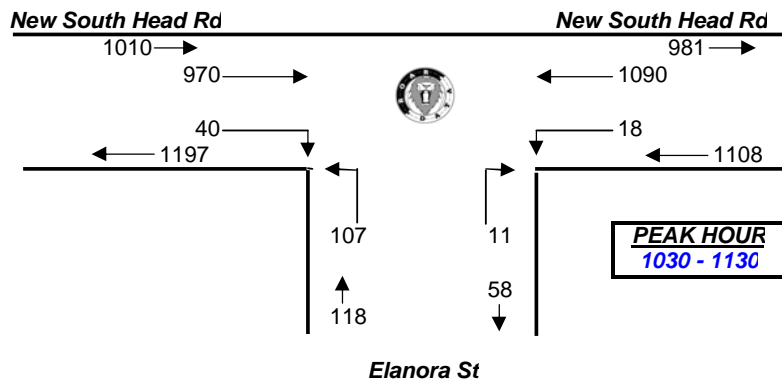
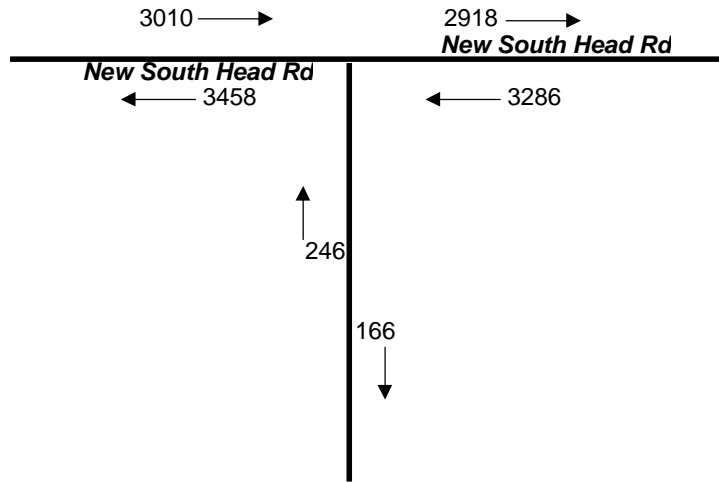
All Vehicles

Time Per	WEST		SOUTH		EAST		TOTAL
	New South	Elanora St	Elanora St	New South	New South	New South	
	R	L	R	L	R	L	
1000 - 1015	13	215	34	4	270	2	538
1015 - 1030	11	207	17	1	260	4	500
1030 - 1045	11	258	40	3	310	3	625
1045 - 1100	11	247	12	3	276	6	555
1100 - 1115	8	248	37	5	240	7	545
1115 - 1130	10	217	18	0	264	2	511
1130 - 1145	12	219	7	3	259	3	503
1145 - 1200	8	234	20	4	284	4	554
1200 - 1215	8	253	8	0	285	4	558
1215 - 1230	7	283	13	1	290	9	603
1230 - 1245	9	246	8	1	222	2	488
1245 - 1300	10	265	6	1	278	2	562
<b>Period End</b>	<b>118</b>	<b>2892</b>	<b>220</b>	<b>26</b>	<b>3238</b>	<b>48</b>	<b>6542</b>

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South	Elanora St	Elanora St	New South	New South	New South	
	R	L	R	L	R	L	
1000 - 1100	46	927	103	11	1116	15	2218
1015 - 1115	41	960	106	12	1086	20	2225
<b>1030 - 1130</b>	<b>40</b>	<b>970</b>	<b>107</b>	<b>11</b>	<b>1090</b>	<b>18</b>	<b>2236</b>
1045 - 1145	41	931	74	11	1039	18	2114
1100 - 1200	38	918	82	12	1047	16	2113
1115 - 1215	38	923	53	7	1092	13	2126
1130 - 1230	35	989	48	8	1118	20	2218
1145 - 1245	32	1016	49	6	1081	19	2203
1200 - 1300	34	1047	35	3	1075	17	2211
<b>PEAK HR</b>	<b>40</b>	<b>970</b>	<b>107</b>	<b>11</b>	<b>1090</b>	<b>18</b>	<b>2236</b>



**TOTAL VOLUMES  
FOR COUNT  
PERIOD**



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# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 4th November 2006

<b>Peds</b>	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>Elanora St</b>	<b>New South</b>	<b>TOT</b>
1000 - 1015	0	3	1	4
1015 - 1030	0	1	1	2
1030 - 1045	0	6	1	7
1045 - 1100	2	5	0	7
1100 - 1115	2	0	0	2
1115 - 1130	0	4	5	9
1130 - 1145	0	4	5	9
1145 - 1200	0	3	3	6
1200 - 1215	0	5	3	8
1215 - 1230	0	5	0	5
1230 - 1245	0	3	0	3
1245 - 1300	0	5	2	7
<b>Per End</b>	<b>4</b>	<b>44</b>	<b>21</b>	<b>69</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>Elanora St</b>	<b>New South</b>	<b>TOT</b>
1000 - 1100	2	15	3	20
1015 - 1115	4	12	2	18
<b>1030 - 1130</b>	4	15	6	25
1045 - 1145	4	13	10	27
1100 - 1200	2	11	13	26
1115 - 1215	0	16	16	32
1130 - 1230	0	17	11	28
1145 - 1245	0	16	6	22
1200 - 1300	0	18	5	23

<b>PEAK HR</b>	<b>4</b>	<b>15</b>	<b>6</b>	<b>25</b>
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# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

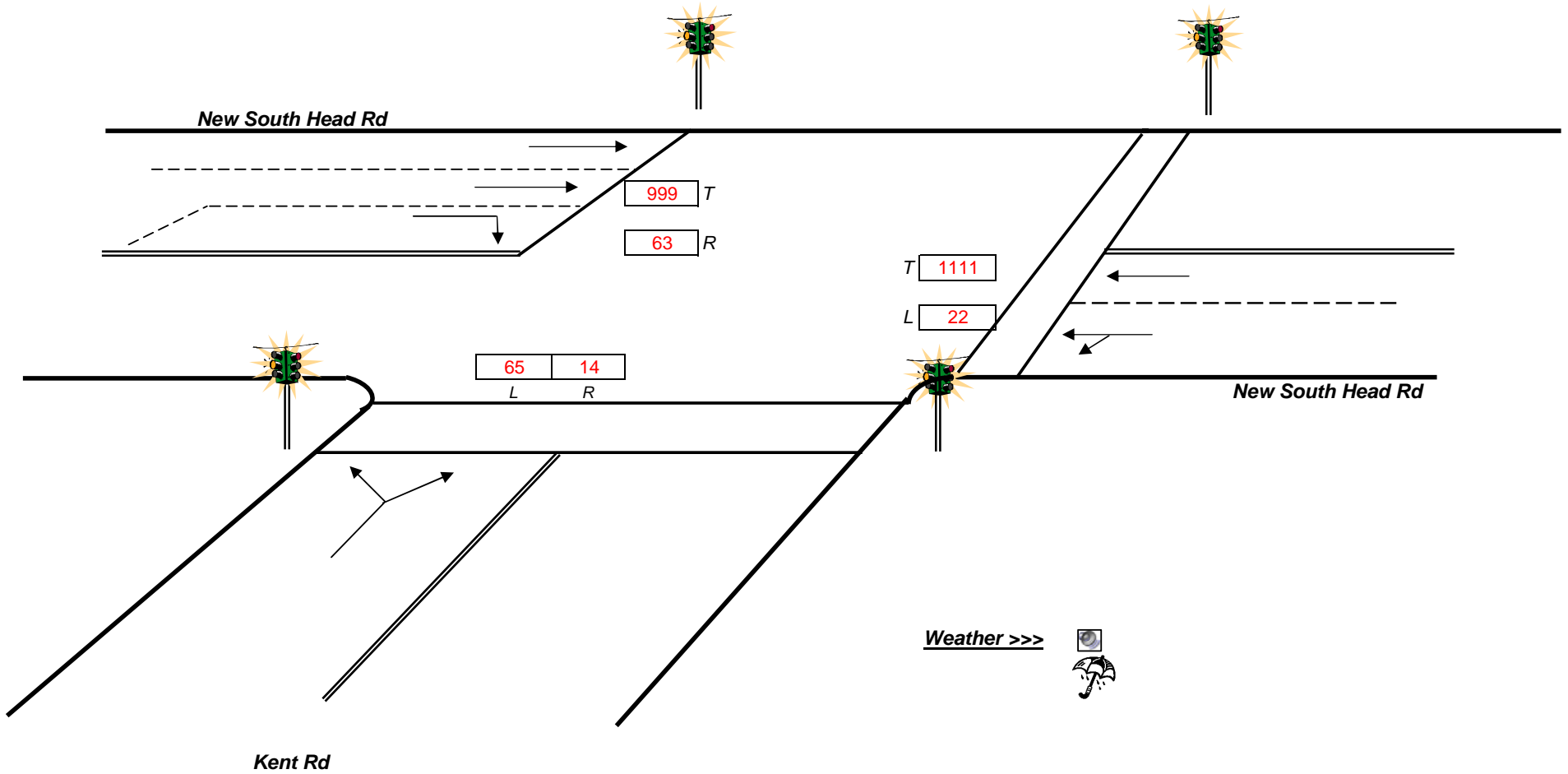
Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006

## Intersection Details



**PEAK HOUR**  
**1145 - 1245**

Combined figure only





# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849.

Mobile.041823901€

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 4th November 2006

PEDS				
	WEST	SOUTH	EAST	
Time Per	New South	Kent Rd	New South	TOT
1000 - 1015	0	5	3	8
1015 - 1030	0	4	3	7
1030 - 1045	0	7	1	8
1045 - 1100	0	4	1	5
1100 - 1115	0	7	1	8
1115 - 1130	0	3	3	6
1130 - 1145	0	6	3	9
1145 - 1200	0	4	0	4
1200 - 1215	0	2	2	4
1215 - 1230	0	3	0	3
1230 - 1245	0	6	2	8
1245 - 1300	0	7	0	7
<b>Per End</b>	<b>0</b>	<b>58</b>	<b>19</b>	<b>77</b>

PEDS				
	WEST	SOUTH	EAST	
Peak Per	New South	Kent Rd	New South	TOT
1000 - 1100	0	20	8	28
1015 - 1115	0	22	6	28
1030 - 1130	0	21	6	27
1045 - 1145	0	20	8	28
1100 - 1200	0	20	7	27
1115 - 1215	0	15	8	23
1130 - 1230	0	15	5	20
<b>1145 - 1245</b>	0	15	4	19
1200 - 1300	0	18	4	22
<b>PEAK HR</b>	<b>0</b>	<b>15</b>	<b>4</b>	<b>19</b>

Lights	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Time Per	T	R	L	R	L	T	TOT
1000 - 1015	215	10	7	3	1	271	507
1015 - 1030	183	12	12	0	4	266	477
1030 - 1045	237	10	11	0	3	293	554
1045 - 1100	239	11	18	4	1	269	542
1100 - 1115	249	11	8	3	3	242	516
1115 - 1130	193	20	14	2	3	244	476
1130 - 1145	206	12	14	3	4	249	488
1145 - 1200	226	19	27	6	4	275	557
1200 - 1215	228	17	18	3	8	261	535
1215 - 1230	267	15	11	3	5	293	594
1230 - 1245	270	12	9	2	5	276	574
1245 - 1300	210	17	14	3	4	234	482
<b>Per End</b>	<b>2723</b>	<b>166</b>	<b>163</b>	<b>32</b>	<b>45</b>	<b>3173</b>	<b>6302</b>

Heavies								
	WEST		SOUTH		EAST			
Time Per	New South		Kent Rd		New South		TOT	
Time Per	T	R	L	R	L	T	TOT	
1000 - 1015	3	0	0	0	0	2	5	
1015 - 1030	5	0	0	0	0	2	7	
1030 - 1045	1	0	0	0	0	1	2	
1045 - 1100	3	0	0	0	0	3	6	
1100 - 1115	0	0	0	0	0	2	2	
1115 - 1130	3	0	0	0	0	3	6	
1130 - 1145	4	0	0	0	0	4	8	
1145 - 1200	4	0	0	0	0	2	6	
1200 - 1215	1	0	0	0	0	2	3	
1215 - 1230	2	0	0	0	0	1	3	
1230 - 1245	1	0	0	0	0	1	2	
1245 - 1300	2	0	0	0	0	2	4	
<b>Per End</b>	<b>29</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>54</b>	

Combined								
	WEST		SOUTH		EAST			
Time Per	New South		Kent Rd		New South		TOT	
Time Per	T	R	L	R	L	T	TOT	
1000 - 1015	218	10	7	3	1	273	512	
1015 - 1030	188	12	12	0	4	268	484	
1030 - 1045	238	10	11	0	3	294	556	
1045 - 1100	242	11	18	4	1	272	548	
1100 - 1115	249	11	8	3	3	244	518	
1115 - 1130	196	20	14	2	3	247	482	
1130 - 1145	210	12	14	3	4	253	496	
1145 - 1200	230	19	27	6	4	277	563	
1200 - 1215	229	17	18	3	8	263	538	
1215 - 1230	269	15	11	3	5	294	597	
1230 - 1245	271	12	9	2	5	277	576	
1245 - 1300	212	17	14	3	4	236	486	
<b>Per End</b>	<b>2752</b>	<b>166</b>	<b>163</b>	<b>32</b>	<b>45</b>	<b>3198</b>	<b>6356</b>	

Lights	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Peak Per	T	R	L	R	L	T	TOT
1000 - 1100	874	43	48	7	9	1099	2080
1015 - 1115	908	44	49	7	11	1070	2089
1030 - 1130	918	52	51	9	10	1048	2088
1045 - 1145	887	54	54	12	11	1004	2022
1100 - 1200	874	62	63	14	14	1010	2037
1115 - 1215	853	68	73	14	19	1029	2056
1130 - 1230	927	63	70	15	21	1078	2174
<b>1145 - 1245</b>	991	63	65	14	22	1105	2260
1200 - 1300	975	61	52	11	22	1064	2185
<b>PEAK HR</b>	<b>991</b>	<b>63</b>	<b>65</b>	<b>14</b>	<b>22</b>	<b>1105</b>	<b>2260</b>

Heavies								
	WEST		SOUTH		EAST			
Peak Per	New South		Kent Rd		New South		TOT	
Peak Per	T	R	L	R	L	T	TOT	
1000 - 1100	12	0	0	0	0	8	20	
1015 - 1115	9	0	0	0	0	8	17	
1030 - 1130	7	0	0	0	0	9	16	
1045 - 1145	10	0	0	0	0	12	22	
1100 - 1200	11	0	0	0	0	11	22	
1115 - 1215	12	0	0	0	0	11	23	
1130 - 1230	11	0	0	0	0	9	20	
<b>1145 - 1245</b>	8	0	0	0	0	6	14	
1200 - 1300	6	0	0	0	0	6	12	
<b>PEAK HR</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>14</b>	

Combined								
	WEST		SOUTH		EAST			
Peak Per	New South		Kent Rd		New South		TOT	
Peak Per	T	R	L	R	L	T	TOT	
1000 - 1100	886	43	48	7	9	1107	2100	
1015 - 1115	917	44	49	7	11	1078	2106	
1030 - 1130	925	52	51	9	10	1057	2104	
1045 - 1145	897	54	54	12	11	1016	2044	
1100 - 1200	885	62	63	14	14	1021	2059	
1115 - 1215	865	68	73	14	19	1040	2079	
1130 - 1230	938	63	70	15	21	1087	2194	
<b>1145 - 1245</b>	999	63	65	14	22	1111	2274	
1200 - 1300	981	61	52	11	22	1070	2197	
<b>PEAK HR</b>	<b>999</b>	<b>63</b>	<b>65</b>	<b>14</b>	<b>22</b>	<b>1111</b>	<b>2274</b>	



# R.O.A.R. DATA

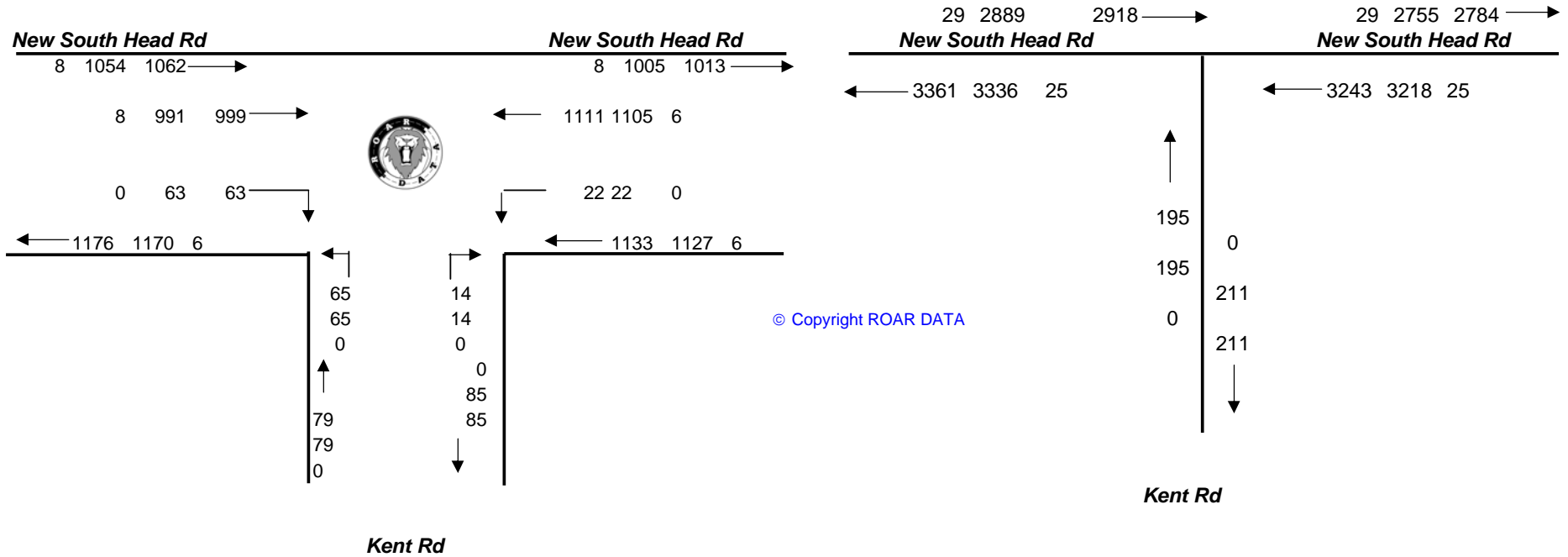
Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006

**PEAK HOUR**  
**1145 - 1245**

**TOTAL VOLUMES**  
**FOR COUNT**  
**PERIOD**





# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

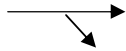
Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006

## Intersection Details



**PEAK HOUR**  
**1000 - 1100**

**Iluka St**

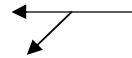


38 T

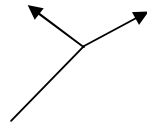
9 R

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64	0
L	R



**Iluka St**

**PM PEAK HOUR**  
**1600 - 1700**

Weather >>>



**Manion Ave**



**R.O.A.R. DATA**  
 Reliable, Original & Authentic Results  
 Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 4th November 2006

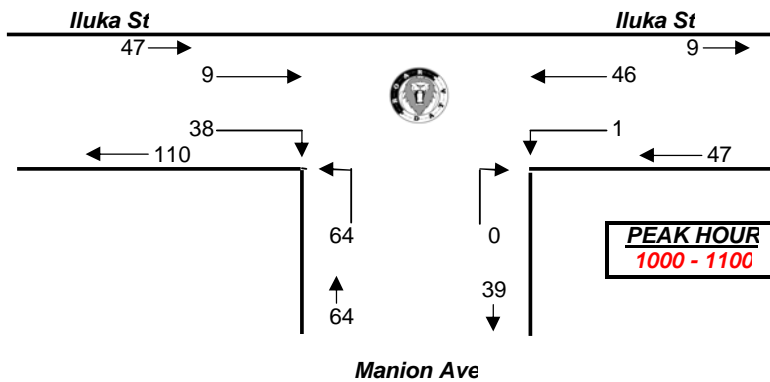
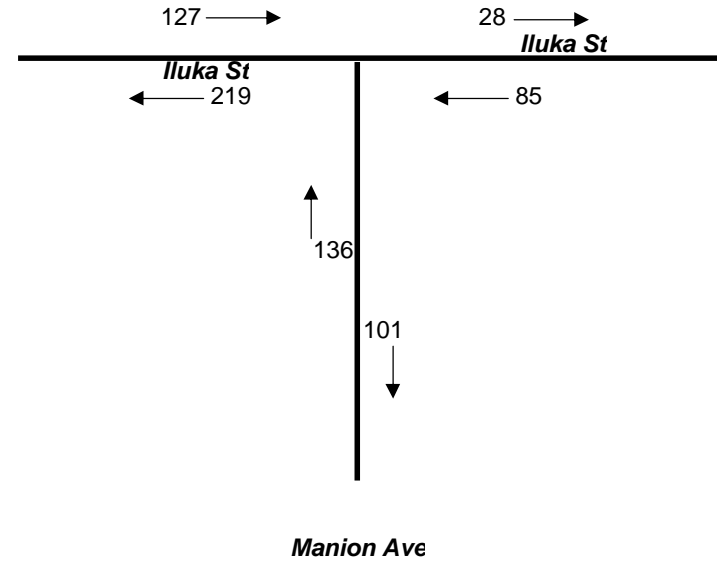
All Vehicles

Time Per	WEST Iluka St		SOUTH Manion Ave		EAST Iluka St		TOTAL
	R	L	L	R	L	R	
1000 - 1015	10	3	15	0	22	0	50
1015 - 1030	8	4	9	0	6	1	28
1030 - 1045	10	1	29	0	14	0	54
1045 - 1100	10	1	11	0	4	0	26
1100 - 1115	5	4	14	0	24	0	47
1115 - 1130	9	1	13	0	1	0	24
1130 - 1145	9	2	7	0	3	0	21
1145 - 1200	7	1	11	0	2	0	21
1200 - 1215	5	5	10	0	1	0	21
1215 - 1230	10	2	6	0	4	0	22
1230 - 1245	8	0	5	0	0	0	13
1245 - 1300	8	4	6	0	2	1	21
<b>Period End</b>	<b>99</b>	<b>28</b>	<b>136</b>	<b>0</b>	<b>83</b>	<b>2</b>	<b>348</b>

Peak Per	WEST Iluka St		SOUTH Manion Ave		EAST Iluka St		TOTAL
	R	L	L	R	L	R	
<b>1000 - 1100</b>	38	9	64	0	46	1	158
1015 - 1115	33	10	63	0	48	1	155
1030 - 1130	34	7	67	0	43	0	151
1045 - 1145	33	8	45	0	32	0	118
1100 - 1200	30	8	45	0	30	0	113
1115 - 1215	30	9	41	0	7	0	87
1130 - 1230	31	10	34	0	10	0	85
1145 - 1245	30	8	32	0	7	0	77
1200 - 1300	31	11	27	0	7	1	77
<b>PEAK HR</b>	<b>38</b>	<b>9</b>	<b>64</b>	<b>0</b>	<b>46</b>	<b>1</b>	<b>158</b>



**TOTAL VOLUMES  
FOR COUNT  
PERIOD**



**PEAK HOUR  
1000 - 1100**

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## R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006

<b>Peds</b>	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b><i>Iluka St</i></b>	<b><i>Manion Ave</i></b>	<b><i>Iluka St</i></b>	<b>TOT</b>
1000 - 1015	2	1	1	4
1015 - 1030	3	1	3	7
1030 - 1045	1	2	0	3
1045 - 1100	0	2	0	2
1100 - 1115	2	1	0	3
1115 - 1130	3	1	1	5
1130 - 1145	1	1	1	3
1145 - 1200	0	2	0	2
1200 - 1215	1	0	1	2
1215 - 1230	1	0	1	2
1230 - 1245	1	0	2	3
1245 - 1300	0	0	0	0
<b>Per End</b>	<b>15</b>	<b>11</b>	<b>10</b>	<b>36</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b><u>Iluka St</u></b>	<b><u>Manion Ave</u></b>	<b><u>Iluka St</u></b>	<b>TOT</b>
<b>1000 - 1100</b>	6	6	4	16
1015 - 1115	6	6	3	15
1030 - 1130	6	6	1	13
1045 - 1145	6	5	2	13
1100 - 1200	6	5	2	13
1115 - 1215	5	4	3	12
1130 - 1230	3	3	3	9
1145 - 1245	3	2	4	9
1200 - 1300	3	0	4	7

<b>PEAK HR</b>	<b>6</b>	<b>6</b>	<b>4</b>	<b>16</b>
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# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

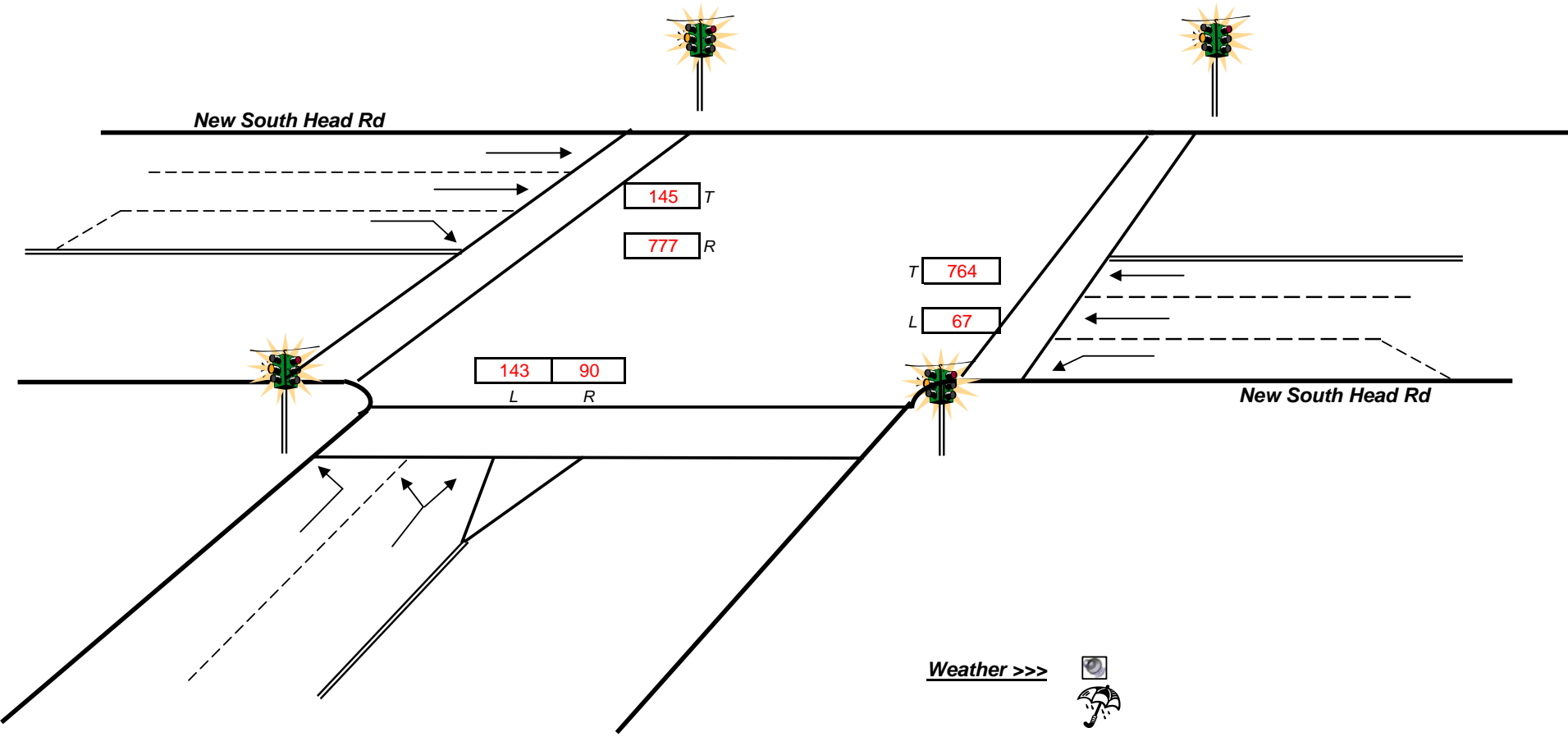
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006

## Intersection Details



**PEAK HOUR**  
**1200 - 1300**



Weather >>>



**Newcastle St**



# R.O.A.R. DATA

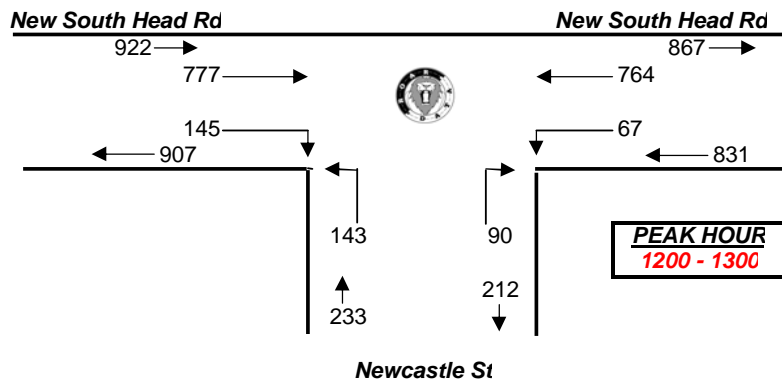
Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

All Vehicles

Time Per	WEST		SOUTH		EAST		TOTAL
	New South		Newcastle St		New South		
	R	I	L	R	I	L	
1000 - 1015	23	170	26	17	208	20	464
1015 - 1030	28	160	34	16	230	17	485
1030 - 1045	31	189	29	23	227	23	522
1045 - 1100	37	178	46	15	185	17	478
1100 - 1115	37	184	31	14	167	26	459
1115 - 1130	34	174	42	25	185	18	478
1130 - 1145	19	168	34	25	195	15	456
1145 - 1200	30	181	39	26	206	19	501
1200 - 1215	41	170	37	30	184	17	479
1215 - 1230	39	195	41	17	192	20	504
1230 - 1245	29	199	34	21	193	15	491
1245 - 1300	36	213	31	22	195	15	512
<b>Period End</b>	<b>384</b>	<b>2181</b>	<b>424</b>	<b>251</b>	<b>2367</b>	<b>222</b>	<b>5829</b>

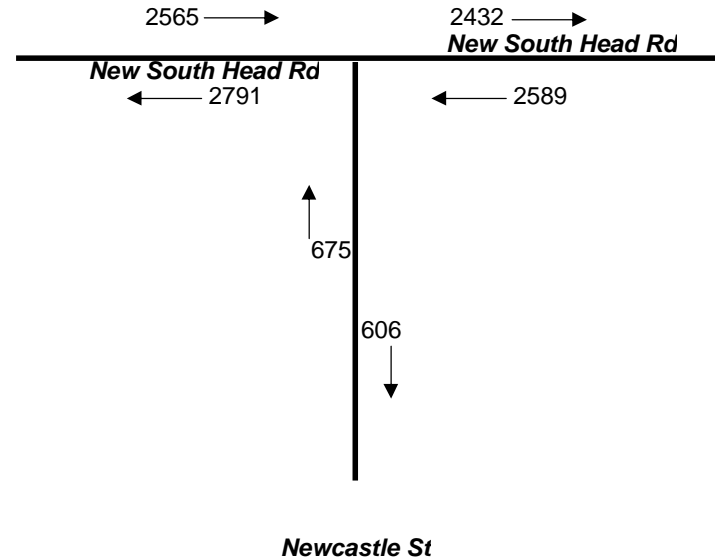
Peak Per	WEST		SOUTH		EAST		TOTAL
	New South		Newcastle St		New South		
	R	I	L	R	I	L	
1000 - 1100	119	697	135	71	850	77	1949
1015 - 1115	133	711	140	68	809	83	1944
1030 - 1130	139	725	148	77	764	84	1937
1045 - 1145	127	704	153	79	732	76	1871
1100 - 1200	120	707	146	90	753	78	1894
1115 - 1215	124	693	152	106	770	69	1914
1130 - 1230	129	714	151	98	777	71	1940
1145 - 1245	139	745	151	94	775	71	1975
<b>1200 - 1300</b>	<b>145</b>	<b>777</b>	<b>143</b>	<b>90</b>	<b>764</b>	<b>67</b>	<b>1986</b>
<b>PEAK HR</b>	<b>145</b>	<b>777</b>	<b>143</b>	<b>90</b>	<b>764</b>	<b>67</b>	<b>1986</b>



Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 4th November 2006



**TOTAL VOLUMES FOR COUNT PERIOD**



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## R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006

<b>Peds</b>	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>Newcastle St</b>	<b>New South</b>	<b>TOT</b>
1000 - 1015	26	24	23	<b>73</b>
1015 - 1030	17	15	19	<b>51</b>
1030 - 1045	14	16	29	<b>59</b>
1045 - 1100	13	21	38	<b>72</b>
1100 - 1115	15	32	30	<b>77</b>
1115 - 1130	16	13	26	<b>55</b>
1130 - 1145	8	16	27	<b>51</b>
1145 - 1200	17	14	37	<b>68</b>
1200 - 1215	9	22	40	<b>71</b>
1215 - 1230	19	15	30	<b>64</b>
1230 - 1245	18	27	44	<b>89</b>
1245 - 1300	24	12	27	<b>63</b>
<b>Per End</b>	<b>196</b>	<b>227</b>	<b>370</b>	<b>793</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>Newcastle St</b>	<b>New South</b>	<b>TOT</b>
1000 - 1100	70	76	109	<b>255</b>
1015 - 1115	59	84	116	<b>259</b>
1030 - 1130	58	82	123	<b>263</b>
1045 - 1145	52	82	121	<b>255</b>
1100 - 1200	56	75	120	<b>251</b>
1115 - 1215	50	65	130	<b>245</b>
1130 - 1230	53	67	134	<b>254</b>
1145 - 1245	63	78	151	<b>292</b>
<b>1200 - 1300</b>	70	76	141	<b>287</b>

<b>PEAK HR</b>	<b>70</b>	<b>76</b>	<b>141</b>	<b>287</b>
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# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

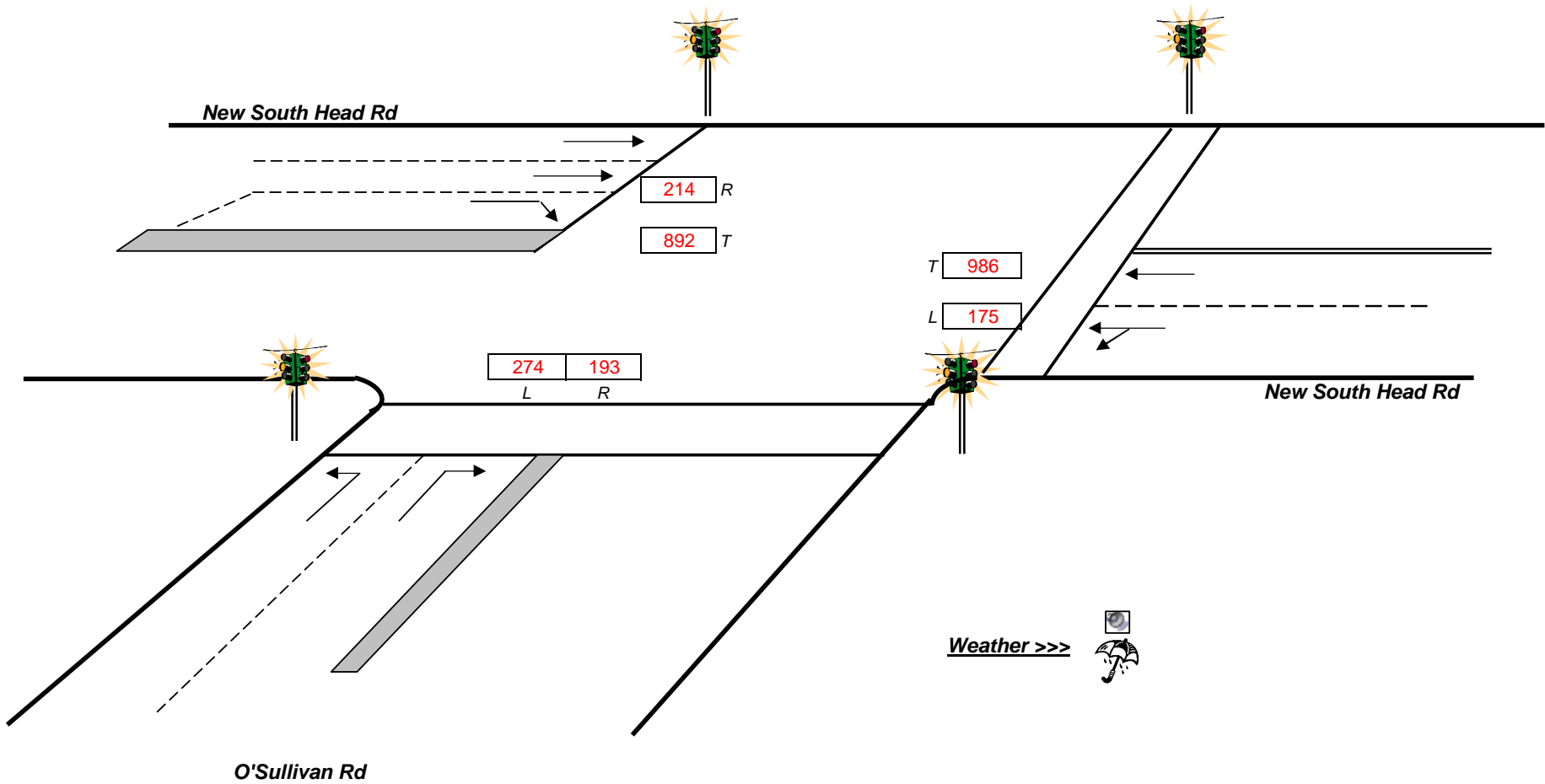
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006

## Intersection Details



**PEAK HOUR**  
**1145 - 1245**



Weather >>>





# R.O.A.R. DATA

Reliable, Original & Authentic Results

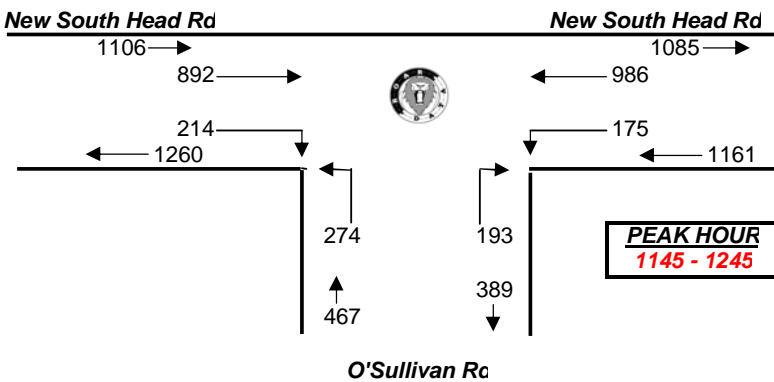
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 4th November 2006

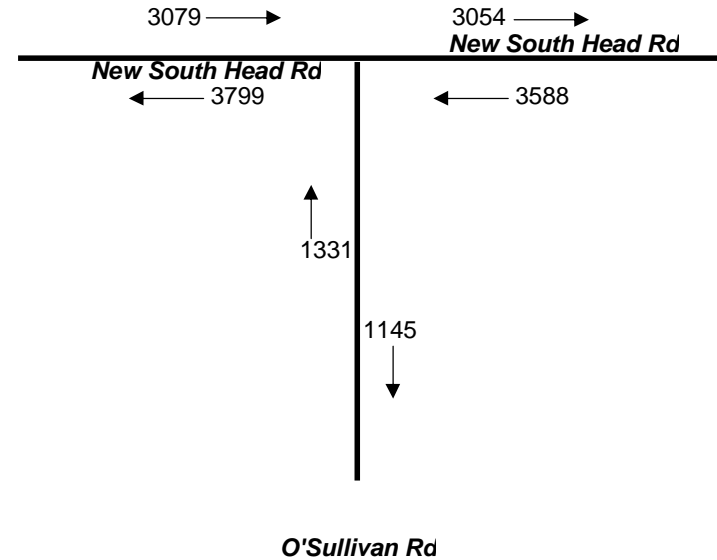
All Vehicles

Time Per	WEST		SOUTH		EAST		TOTAL
	New South	O'Sullivan Rd	New South	O'Sullivan Rd	New South	O'Sullivan Rd	
1000 - 1015	38	185	67	43	267	51	651
1015 - 1030	43	186	57	38	268	55	647
1030 - 1045	48	213	67	49	303	55	735
1045 - 1100	32	207	65	54	244	44	646
1100 - 1115	52	211	52	42	241	45	643
1115 - 1130	57	214	75	54	262	46	708
1130 - 1145	42	184	59	29	212	50	576
1145 - 1200	61	210	75	49	266	52	713
1200 - 1215	55	245	78	54	251	39	722
1215 - 1230	44	201	56	43	246	44	634
1230 - 1245	54	236	65	47	223	40	665
1245 - 1300	56	205	58	55	242	42	658
<b>Period End</b>	<b>582</b>	<b>2497</b>	<b>774</b>	<b>557</b>	<b>3025</b>	<b>563</b>	<b>7998</b>

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South	O'Sullivan Rd	New South	O'Sullivan Rd	New South	O'Sullivan Rd	
1000 - 1100	161	791	256	184	1082	205	2679
1015 - 1115	175	817	241	183	1056	199	2671
1030 - 1130	189	845	259	199	1050	190	2732
1045 - 1145	183	816	251	179	959	185	2573
1100 - 1200	212	819	261	174	981	193	2640
1115 - 1215	215	853	287	186	991	187	2719
1130 - 1230	202	840	268	175	975	185	2645
<b>1145 - 1245</b>	<b>214</b>	<b>892</b>	<b>274</b>	<b>193</b>	<b>986</b>	<b>175</b>	<b>2734</b>
1200 - 1300	209	887	257	199	962	165	2679
<b>PEAK HR</b>	<b>214</b>	<b>892</b>	<b>274</b>	<b>193</b>	<b>986</b>	<b>175</b>	<b>2734</b>



**TOTAL VOLUMES FOR COUNT PERIOD**



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## R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 4th November 2006

Peds	WEST	SOUTH	EAST	
Time Per	<u>New South</u>	<u>O'Sullivan Rd</u>	<u>New South</u>	TOT
1000 - 1015	0	3	1	4
1015 - 1030	5	2	6	13
1030 - 1045	1	9	1	11
1045 - 1100	0	7	7	14
1100 - 1115	2	10	8	20
1115 - 1130	0	5	4	9
1130 - 1145	0	5	5	10
1145 - 1200	0	5	5	10
1200 - 1215	0	4	1	5
1215 - 1230	0	3	8	11
1230 - 1245	0	2	3	5
1245 - 1300	0	10	7	17
<b>Per End</b>	<b>8</b>	<b>65</b>	<b>56</b>	<b>129</b>

	WEST	SOUTH	EAST	
Peak Per	<u>New South</u>	<u>O'Sullivan Rd</u>	<u>New South</u>	TOT
1000 - 1100	6	21	15	42
1015 - 1115	8	28	22	58
1030 - 1130	3	31	20	54
1045 - 1145	2	27	24	53
1100 - 1200	2	25	22	49
1115 - 1215	0	19	15	34
1130 - 1230	0	17	19	36
<b>1145 - 1245</b>	0	14	17	31
1200 - 1300	0	19	19	38

<b>PEAK HR</b>	<b>0</b>	<b>14</b>	<b>17</b>	<b>31</b>
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# R.O.A.R. DATA

Reliable, Original & Authentic Results

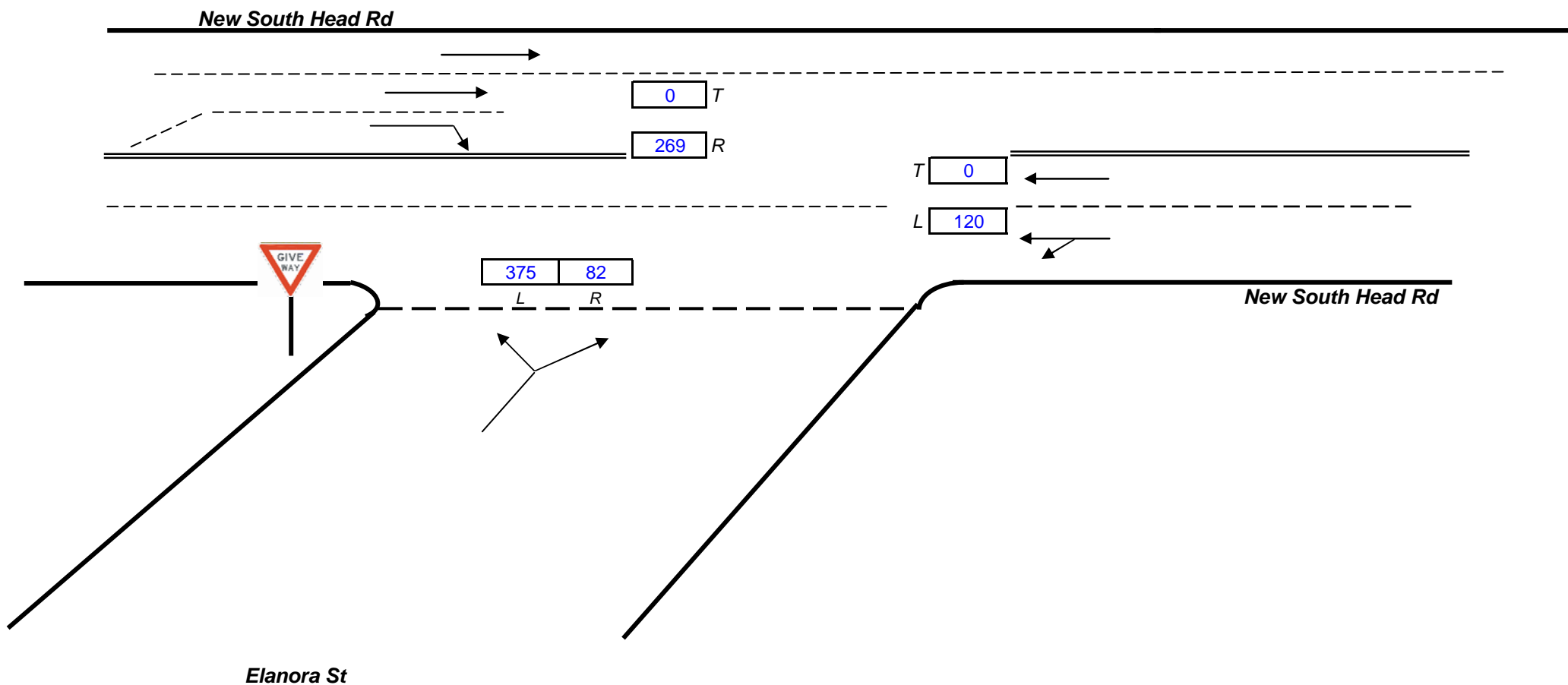
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 11th November 2006



## Intersection Details

**PEAK HOUR**  
**0730 - 0830**





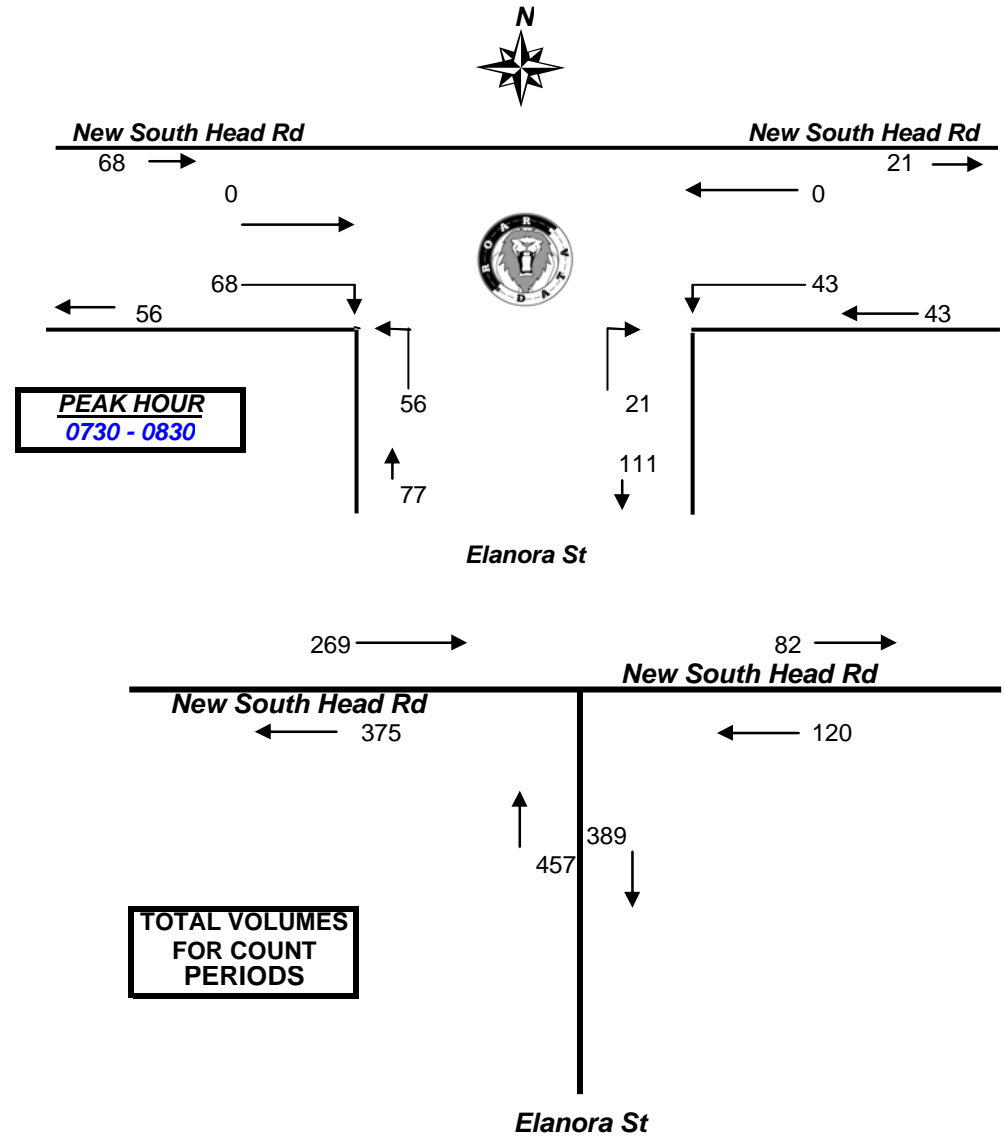
# R.O.A.R. DATA

**Reliable, Original & Authentic Results**

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 11th November 2006

All Vehicles Time Per	WEST New South Head		SOUTH Elanora St		EAST New South Head		TOTAL
	R	I	L	R	I	L	
0700 - 0715	2	0	3	2	0	1	8
0715 - 0730	5	0	5	0	0	2	12
0730 - 0745	24	0	9	6	0	17	56
0745 - 0800	20	0	22	6	0	12	60
0800 - 0815	11	0	12	7	0	6	36
0815 - 0830	13	0	13	2	0	8	36
0830 - 0845	21	0	20	3	0	6	50
0845 - 0900	11	0	13	4	0	4	32
0900 - 0915	11	0	17	3	0	4	35
0915 - 0930	6	0	16	2	0	0	24
0930 - 0945	9	0	13	2	0	0	24
0945 - 1000	10	0	8	1	0	5	24
1000 - 1015	11	0	25	6	0	6	48
1015 - 1030	11	0	33	9	0	6	59
1030 - 1045	12	0	16	5	0	7	40
1045 - 1100	13	0	14	1	0	4	32
1100 - 1115	5	0	27	3	0	4	39
1115 - 1130	12	0	9	2	0	5	28
1130 - 1145	16	0	14	4	0	5	39
1145 - 1200	9	0	27	6	0	2	44
1200 - 1215	3	0	13	0	0	5	21
1215 - 1230	10	0	14	4	0	4	32
1230 - 1245	9	0	25	2	0	4	40
1245 - 1300	15	0	7	2	0	3	27
<b>Period End</b>	<b>269</b>	<b>0</b>	<b>375</b>	<b>82</b>	<b>0</b>	<b>120</b>	<b>846</b>





# R.O.A.R DATA

**Reliable, Original & Authentic Results**

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney

Job No/Name : 1552 Woollahra Traffic Counts

Day/Date : Saturday 11th November 2006

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South Head		Elanora St		New South Head		
	R	I	L	R	I	L	
0700 - 0800	51	0	39	14	0	32	136
0715 - 0815	60	0	48	19	0	37	164
<b>0730 - 0830</b>	<b>68</b>	<b>0</b>	<b>56</b>	<b>21</b>	<b>0</b>	<b>43</b>	<b>188</b>
0745 - 0845	65	0	67	18	0	32	182
0800 - 0900	56	0	58	16	0	24	154
0815 - 0915	56	0	63	12	0	22	153
0830 - 0930	49	0	66	12	0	14	141
0845 - 0945	37	0	59	11	0	8	115
0900 - 1000	36	0	54	8	0	9	107
0915 - 1015	36	0	62	11	0	11	120
0930 - 1030	41	0	79	18	0	17	155
0945 - 1045	44	0	82	21	0	24	171
1000 - 1100	47	0	88	21	0	23	179
1015 - 1115	41	0	90	18	0	21	170
1030 - 1130	42	0	66	11	0	20	139
1045 - 1145	46	0	64	10	0	18	138
1100 - 1200	42	0	77	15	0	16	150
1115 - 1215	40	0	63	12	0	17	132
1130 - 1230	38	0	68	14	0	16	136
1145 - 1245	31	0	79	12	0	15	137
1200 - 1300	37	0	59	8	0	16	120

<b>PEAK HR</b>	<b>68</b>	<b>0</b>	<b>56</b>	<b>21</b>	<b>0</b>	<b>43</b>	<b>188</b>
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# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 11th November 2006

<b>Peds</b>	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>Elanora St</b>	<b>New South</b>	<b>TOT</b>
0700 - 0715	2	11	0	13
0715 - 0730	1	8	5	14
0730 - 0745	0	6	0	6
0745 - 0800	0	9	3	12
0800 - 0815	1	4	4	9
0815 - 0830	2	7	2	11
0830 - 0845	2	7	3	12
0845 - 0900	3	12	3	18
0900 - 0915	1	20	1	22
0915 - 0930	2	16	0	18
0930 - 0945	0	11	4	15
0945 - 1000	0	9	0	9
1000 - 1015	0	11	0	11
1015 - 1030	0	11	7	18
1030 - 1045	0	3	1	4
1045 - 1100	0	17	8	25
1100 - 1115	0	13	1	14
1115 - 1130	0	3	3	6
1130 - 1145	1	6	5	12
1145 - 1200	0	9	9	18
1200 - 1215	1	7	4	12
1215 - 1230	0	10	2	12
1230 - 1245	0	2	2	4
1245 - 1300	1	5	4	10
<b>Per End</b>	<b>17</b>	<b>217</b>	<b>71</b>	<b>305</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>Elanora St</b>	<b>New South</b>	<b>TOT</b>
0700 - 0800	3	34	8	45
0715 - 0815	2	27	12	41
0730 - 0830	3	26	9	38
0745 - 0845	5	27	12	44
0800 - 0900	8	30	12	50
0815 - 0915	8	46	9	63
0830 - 0930	8	55	7	70
0845 - 0945	6	59	8	73
0900 - 1000	3	56	5	64
0915 - 1015	2	47	4	53
0930 - 1030	0	42	11	53
0945 - 1045	0	34	8	42
1000 - 1100	0	42	16	58
1015 - 1115	0	44	17	61
1030 - 1130	0	36	13	49
1045 - 1145	1	39	17	57
1100 - 1200	1	31	18	50
1115 - 1215	2	25	21	48
1130 - 1230	2	32	20	54
1145 - 1245	1	28	17	46
1200 - 1300	2	24	12	38

<b>PEAK HR</b>	<b>3</b>	<b>26</b>	<b>9</b>	<b>38</b>
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# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

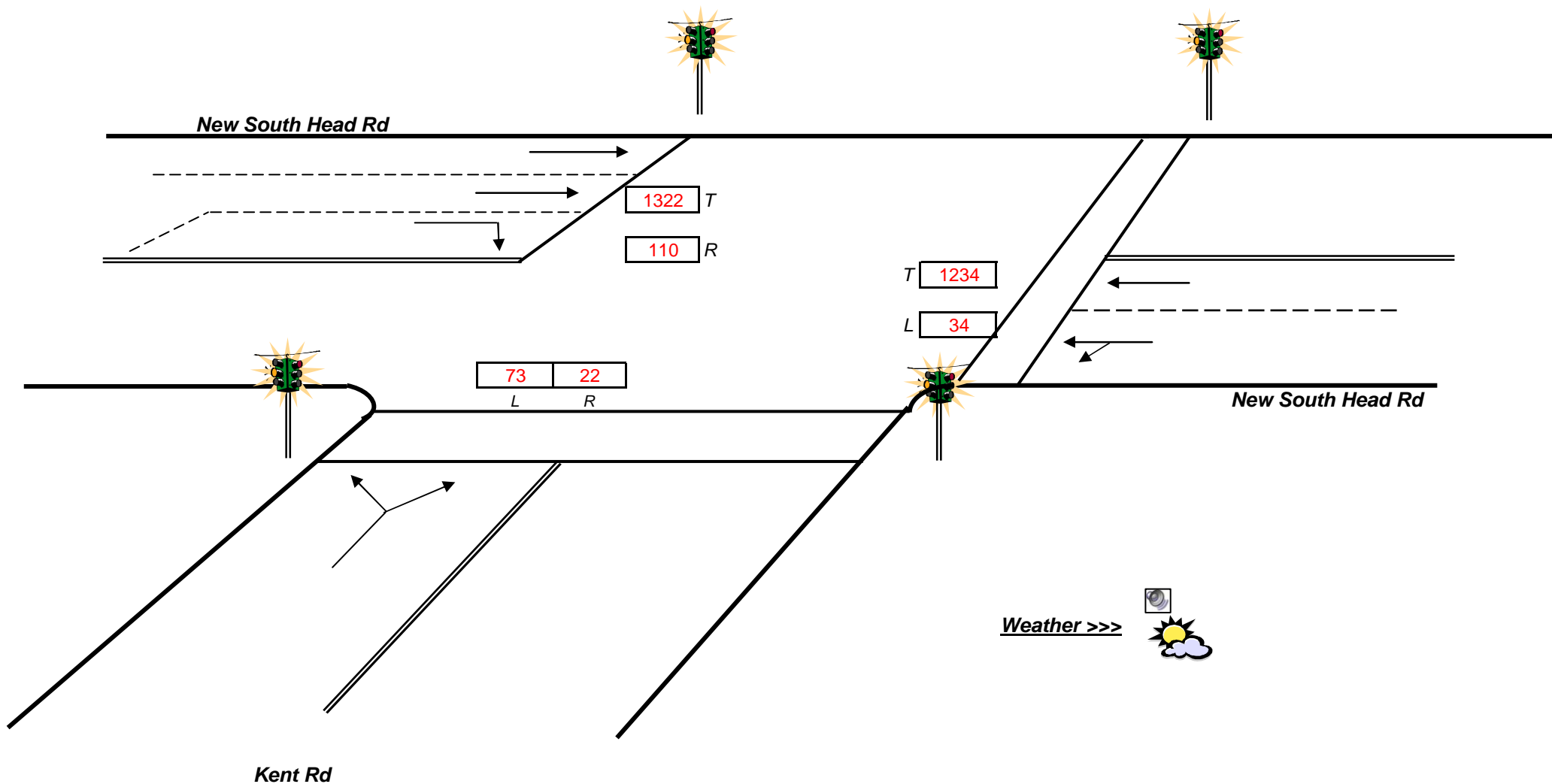
Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 11th November 2006



## Intersection Details

**PEAK HOUR**  
**1130 - 1230**

Combined figure only





# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 11th November 2006

Lights	WEST		SOUTH		EAST		TOT		Heavies	WEST		SOUTH		EAST		TOT		Combined	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South					New South		Kent Rd		New South					New South		Kent Rd		New South		
Time Per	I	R	L	R	L	I		Time Per	I	R	L	R	L	I		Time Per	I	R	L	R	L	I			
0700 - 0715	70	20	7	1	1	93	<b>192</b>	0700 - 0715	1	0	0	0	0	1	<b>2</b>	0700 - 0715	71	20	7	1	1	94	<b>194</b>		
0715 - 0730	98	48	1	4	4	141	<b>296</b>	0715 - 0730	1	0	1	0	0	2	<b>4</b>	0715 - 0730	99	48	2	4	4	143	<b>300</b>		
0730 - 0745	97	33	17	0	4	158	<b>309</b>	0730 - 0745	1	0	0	0	0	0	<b>1</b>	0730 - 0745	98	33	17	0	4	158	<b>310</b>		
0745 - 0800	169	8	7	3	8	188	<b>383</b>	0745 - 0800	1	0	0	0	0	1	<b>2</b>	0745 - 0800	170	8	7	3	8	189	<b>385</b>		
0800 - 0815	123	6	3	3	5	180	<b>320</b>	0800 - 0815	2	0	0	0	0	2	<b>4</b>	0800 - 0815	125	6	3	3	5	182	<b>324</b>		
0815 - 0830	263	15	8	5	2	201	<b>494</b>	0815 - 0830	1	0	0	0	0	2	<b>3</b>	0815 - 0830	264	15	8	5	2	203	<b>497</b>		
0830 - 0845	154	5	13	2	5	190	<b>369</b>	0830 - 0845	1	0	0	0	0	5	<b>6</b>	0830 - 0845	155	5	13	2	5	195	<b>375</b>		
0845 - 0900	178	12	10	1	5	233	<b>439</b>	0845 - 0900	2	0	0	0	0	2	<b>4</b>	0845 - 0900	180	12	10	1	5	235	<b>443</b>		
0900 - 0915	194	10	6	4	3	223	<b>440</b>	0900 - 0915	2	0	0	0	0	1	<b>3</b>	0900 - 0915	196	10	6	4	3	224	<b>443</b>		
0915 - 0930	195	8	9	7	6	255	<b>480</b>	0915 - 0930	3	0	0	0	0	0	<b>3</b>	0915 - 0930	198	8	9	7	6	255	<b>483</b>		
0930 - 0945	200	12	7	1	1	283	<b>504</b>	0930 - 0945	3	0	0	0	0	4	<b>7</b>	0930 - 0945	203	12	7	1	1	287	<b>511</b>		
0945 - 1000	208	11	12	1	5	314	<b>551</b>	0945 - 1000	1	0	0	0	0	0	<b>1</b>	0945 - 1000	209	11	12	1	5	314	<b>552</b>		
1000 - 1015	212	9	5	8	6	278	<b>518</b>	1000 - 1015	2	0	0	0	0	3	<b>5</b>	1000 - 1015	214	9	5	8	6	281	<b>523</b>		
1015 - 1030	245	9	3	1	1	306	<b>565</b>	1015 - 1030	1	0	0	0	0	4	<b>5</b>	1015 - 1030	246	9	3	1	1	310	<b>570</b>		
1030 - 1045	219	7	11	4	4	277	<b>522</b>	1030 - 1045	3	1	0	0	0	3	<b>7</b>	1030 - 1045	222	8	11	4	4	280	<b>529</b>		
1045 - 1100	252	7	15	3	6	298	<b>581</b>	1045 - 1100	2	0	0	1	0	1	<b>4</b>	1045 - 1100	254	7	15	4	6	299	<b>585</b>		
1100 - 1115	305	8	14	3	4	294	<b>628</b>	1100 - 1115	1	0	0	0	0	3	<b>4</b>	1100 - 1115	306	8	14	3	4	297	<b>632</b>		
1115 - 1130	282	22	10	6	5	275	<b>600</b>	1115 - 1130	2	0	0	0	0	2	<b>4</b>	1115 - 1130	284	22	10	6	5	277	<b>604</b>		
1130 - 1145	341	21	13	3	9	332	<b>719</b>	1130 - 1145	2	0	0	0	0	2	<b>4</b>	1130 - 1145	343	21	13	3	9	334	<b>723</b>		
1145 - 1200	260	15	13	3	8	298	<b>597</b>	1145 - 1200	1	0	0	0	0	1	<b>2</b>	1145 - 1200	261	15	13	3	8	299	<b>599</b>		
1200 - 1215	320	30	21	9	7	307	<b>694</b>	1200 - 1215	2	1	0	0	0	3	<b>6</b>	1200 - 1215	322	31	21	9	7	310	<b>700</b>		
1215 - 1230	393	43	26	7	10	291	<b>770</b>	1215 - 1230	3	0	0	0	0	0	<b>3</b>	1215 - 1230	396	43	26	7	10	291	<b>773</b>		
1230 - 1245	302	19	24	8	4	316	<b>673</b>	1230 - 1245	1	1	0	0	0	4	<b>6</b>	1230 - 1245	303	20	24	8	4	320	<b>679</b>		
1245 - 1300	351	15	22	4	1	302	<b>695</b>	1245 - 1300	3	0	0	0	0	3	<b>6</b>	1245 - 1300	354	15	22	4	1	305	<b>701</b>		
<b>Per End</b>	<b>5431</b>	<b>393</b>	<b>277</b>	<b>91</b>	<b>114</b>	<b>6033</b>	<b>12339</b>	<b>Per End</b>	<b>42</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>49</b>	<b>96</b>	<b>Per End</b>	<b>5473</b>	<b>396</b>	<b>278</b>	<b>92</b>	<b>114</b>	<b>6082</b>	<b>12435</b>		



# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 11th November 2006

Lights	WEST		SOUTH		EAST		TOT	Heavies	WEST		SOUTH		EAST		TOT	Combined	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South				New South		Kent Rd		New South				New South		Kent Rd		New South		
Peak Per	I	R	L	R	L	I		Peak Per	I	R	L	R	L	I		Peak Per	I	R	L	R	L	I	
0700 - 0800	434	109	32	8	17	580	<b>1180</b>	0700 - 0800	4	0	1	0	0	4	<b>9</b>	0700 - 0800	438	109	33	8	17	584	<b>1189</b>
0715 - 0815	487	95	28	10	21	667	<b>1308</b>	0715 - 0815	5	0	1	0	0	5	<b>11</b>	0715 - 0815	492	95	29	10	21	672	<b>1319</b>
0730 - 0830	652	62	35	11	19	727	<b>1506</b>	0730 - 0830	5	0	0	0	0	5	<b>10</b>	0730 - 0830	657	62	35	11	19	732	<b>1516</b>
0745 - 0845	709	34	31	13	20	759	<b>1566</b>	0745 - 0845	5	0	0	0	0	10	<b>15</b>	0745 - 0845	714	34	31	13	20	769	<b>1581</b>
0800 - 0900	718	38	34	11	17	804	<b>1622</b>	0800 - 0900	6	0	0	0	0	11	<b>17</b>	0800 - 0900	724	38	34	11	17	815	<b>1639</b>
0815 - 0915	789	42	37	12	15	847	<b>1742</b>	0815 - 0915	6	0	0	0	0	10	<b>16</b>	0815 - 0915	795	42	37	12	15	857	<b>1758</b>
0830 - 0930	721	35	38	14	19	901	<b>1728</b>	0830 - 0930	8	0	0	0	0	8	<b>16</b>	0830 - 0930	729	35	38	14	19	909	<b>1744</b>
0845 - 0945	767	42	32	13	15	994	<b>1863</b>	0845 - 0945	10	0	0	0	0	7	<b>17</b>	0845 - 0945	777	42	32	13	15	1001	<b>1880</b>
0900 - 1000	797	41	34	13	15	1075	<b>1975</b>	0900 - 1000	9	0	0	0	0	5	<b>14</b>	0900 - 1000	806	41	34	13	15	1080	<b>1989</b>
0915 - 1015	815	40	33	17	18	1130	<b>2053</b>	0915 - 1015	9	0	0	0	0	7	<b>16</b>	0915 - 1015	824	40	33	17	18	1137	<b>2069</b>
0930 - 1030	865	41	27	11	13	1181	<b>2138</b>	0930 - 1030	7	0	0	0	0	11	<b>18</b>	0930 - 1030	872	41	27	11	13	1192	<b>2156</b>
0945 - 1045	884	36	31	14	16	1175	<b>2156</b>	0945 - 1045	7	1	0	0	0	10	<b>18</b>	0945 - 1045	891	37	31	14	16	1185	<b>2174</b>
1000 - 1100	928	32	34	16	17	1159	<b>2186</b>	1000 - 1100	8	1	0	1	0	11	<b>21</b>	1000 - 1100	936	33	34	17	17	1170	<b>2207</b>
1015 - 1115	1021	31	43	11	15	1175	<b>2296</b>	1015 - 1115	7	1	0	1	0	11	<b>20</b>	1015 - 1115	1028	32	43	12	15	1186	<b>2316</b>
1030 - 1130	1058	44	50	16	19	1144	<b>2331</b>	1030 - 1130	8	1	0	1	0	9	<b>19</b>	1030 - 1130	1066	45	50	17	19	1153	<b>2350</b>
1045 - 1145	1180	58	52	15	24	1199	<b>2528</b>	1045 - 1145	7	0	0	1	0	8	<b>16</b>	1045 - 1145	1187	58	52	16	24	1207	<b>2544</b>
1100 - 1200	1188	66	50	15	26	1199	<b>2544</b>	1100 - 1200	6	0	0	0	0	8	<b>14</b>	1100 - 1200	1194	66	50	15	26	1207	<b>2558</b>
1115 - 1215	1203	88	57	21	29	1212	<b>2610</b>	1115 - 1215	7	1	0	0	0	8	<b>16</b>	1115 - 1215	1210	89	57	21	29	1220	<b>2626</b>
<b>1130 - 1230</b>	1314	109	73	22	34	1228	<b>2780</b>	<b>1130 - 1230</b>	8	1	0	0	0	6	<b>15</b>	<b>1130 - 1230</b>	1322	110	73	22	34	1234	<b>2795</b>
1145 - 1245	1275	107	84	27	29	1212	<b>2734</b>	1145 - 1245	7	2	0	0	0	8	<b>17</b>	1145 - 1245	1282	109	84	27	29	1220	<b>2751</b>
1200 - 1300	1366	107	93	28	22	1216	<b>2832</b>	1200 - 1300	9	2	0	0	0	10	<b>21</b>	1200 - 1300	1375	109	93	28	22	1226	<b>2853</b>
<b>PEAK HR</b>	<b>1314</b>	<b>109</b>	<b>73</b>	<b>22</b>	<b>34</b>	<b>1228</b>	<b>2780</b>	<b>PEAK HR</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>15</b>	<b>PEAK HR</b>	<b>1322</b>	<b>110</b>	<b>73</b>	<b>22</b>	<b>34</b>	<b>1234</b>	<b>2795</b>



# R.O.A.R. DATA

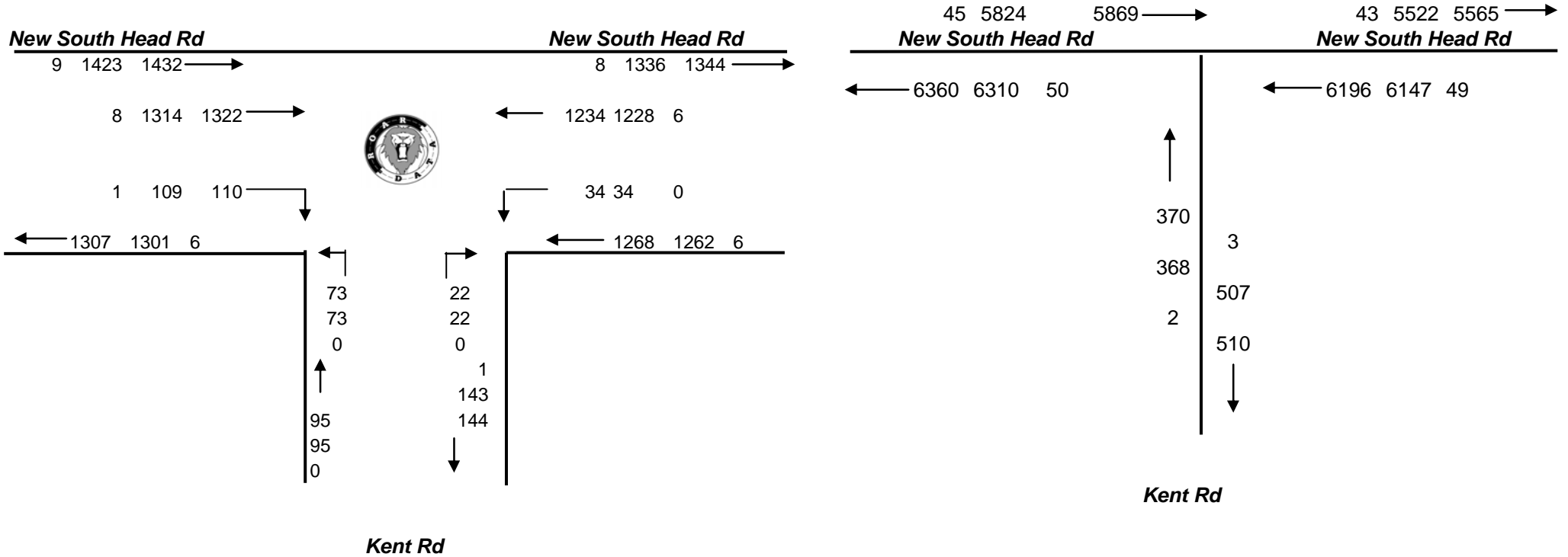
Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 11th November 2006

**PEAK HOUR**  
**1130 - 1230**

**TOTAL VOLUMES**  
**FOR COUNT**  
**PERIOD**





# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 11th November 2006

<b>Peds</b>	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>Kent Rd</b>	<b>New South</b>	<b>TOT</b>
0700 - 0715	0	7	3	10
0715 - 0730	0	6	3	9
0730 - 0745	0	8	3	11
0745 - 0800	0	6	1	7
0800 - 0815	0	6	3	9
0815 - 0830	0	6	3	9
0830 - 0845	0	9	3	12
0845 - 0900	1	18	1	20
0900 - 0915	0	17	4	21
0915 - 0930	0	15	4	19
0930 - 0945	0	14	6	20
0945 - 1000	0	15	1	16
1000 - 1015	0	9	6	15
1015 - 1030	0	9	6	15
1030 - 1045	0	10	6	16
1045 - 1100	0	10	4	14
1100 - 1115	3	14	1	18
1115 - 1130	0	9	0	9
1130 - 1145	0	5	2	7
1145 - 1200	0	5	4	9
1200 - 1215	0	5	1	6
1215 - 1230	0	10	0	10
1230 - 1245	0	4	1	5
1245 - 1300	0	5	2	7
<b>Per End</b>	<b>4</b>	<b>222</b>	<b>68</b>	<b>294</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>Kent Rd</b>	<b>New South</b>	<b>TOT</b>
0700 - 0800	0	27	10	37
0715 - 0815	0	26	10	36
0730 - 0830	0	26	10	36
0745 - 0845	0	27	10	37
0800 - 0900	1	39	10	50
0815 - 0915	1	50	11	62
0830 - 0930	1	59	12	72
0845 - 0945	1	64	15	80
0900 - 1000	0	61	15	76
0915 - 1015	0	53	17	70
0930 - 1030	0	47	19	66
0945 - 1045	0	43	19	62
1000 - 1100	0	38	22	60
1015 - 1115	3	43	17	63
1030 - 1130	3	43	11	57
1045 - 1145	3	38	7	48
1100 - 1200	3	33	7	43
1115 - 1215	0	24	7	31
<b>1130 - 1230</b>	0	25	7	32
1145 - 1245	0	24	6	30
1200 - 1300	0	24	4	28

<b>PEAK HR</b>	<b>0</b>	<b>25</b>	<b>7</b>	<b>32</b>
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# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

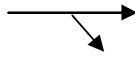
Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Saturday 11th November 2006

## Intersection Details



**PEAK HOUR**  
**0730 - 0830**

**Iluka St**

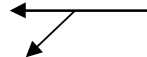


76 T

29 R

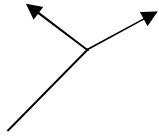
T 43

L 3

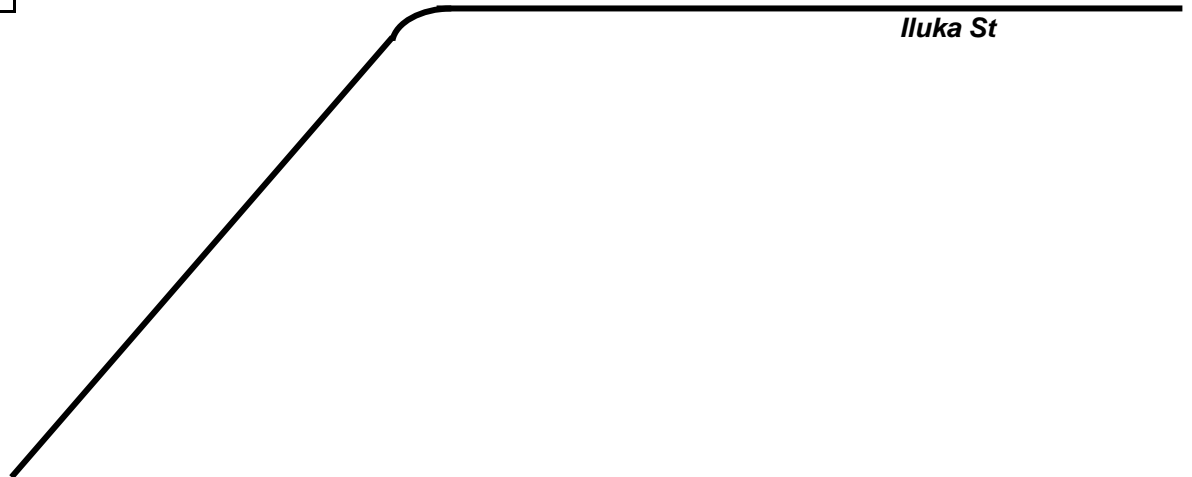
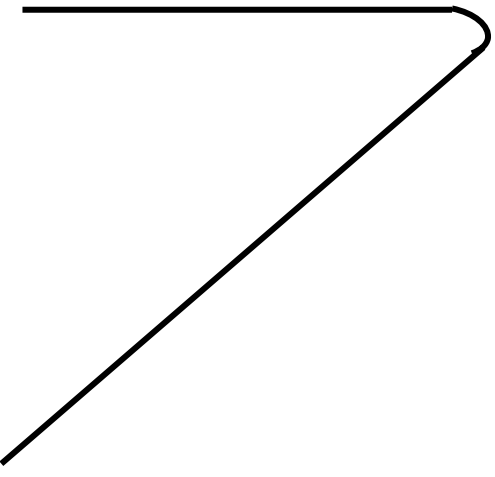


28 | 5

L R



**Iluka St**



**Manion Ave**



# R.O.A.R. DATA

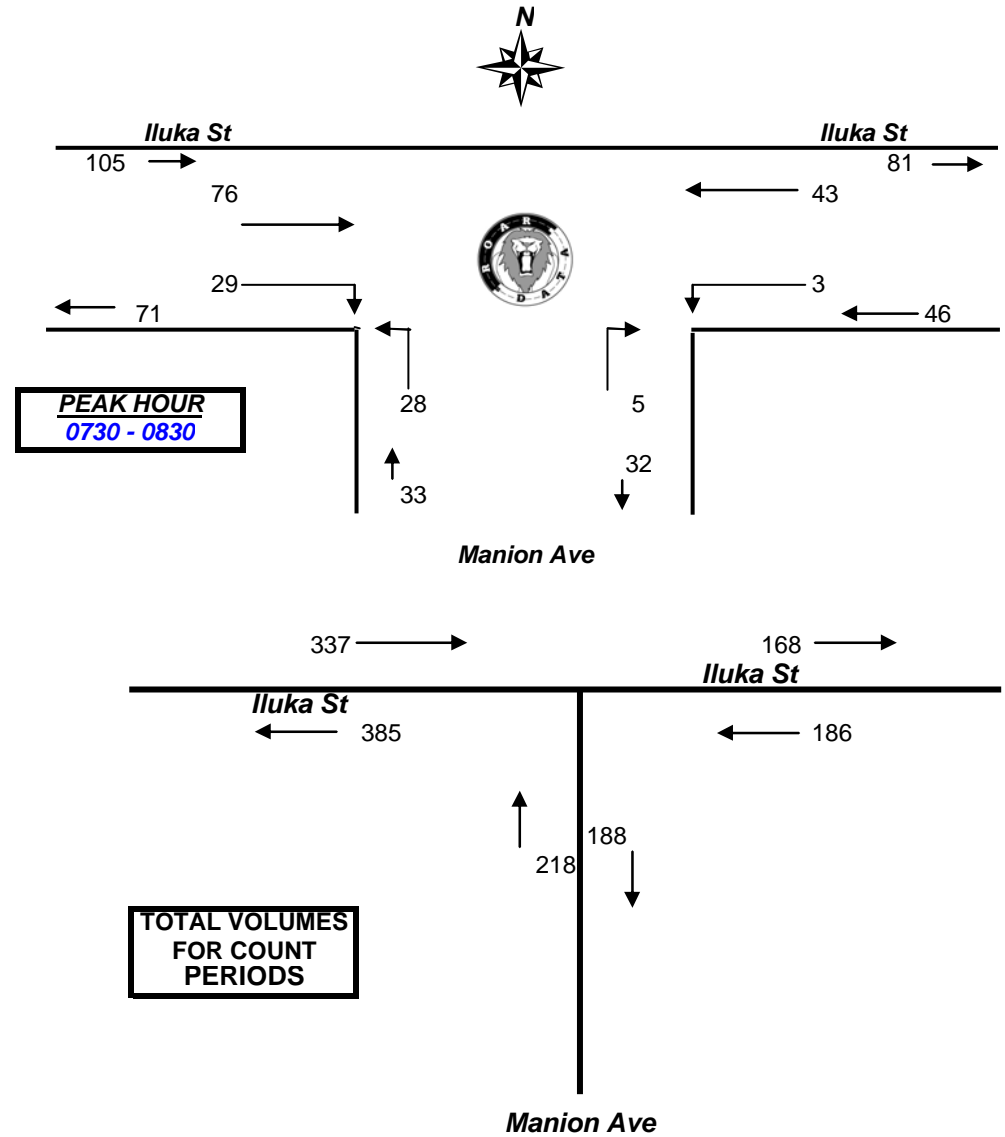
**Reliable, Original & Authentic Results**

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 11th November 2006

All Vehicles

Time Per	WEST <i>Iluka St</i>		SOUTH <i>Manion Ave</i>		EAST <i>Iluka St</i>		TOTAL
	R	I	L	R	I	L	
0700 - 0715	4	0	5	0	1	0	10
0715 - 0730	5	4	5	1	1	0	16
0730 - 0745	8	34	2	2	18	0	64
0745 - 0800	7	19	14	1	10	0	51
0800 - 0815	9	9	3	1	6	0	28
0815 - 0830	5	14	9	1	9	3	41
0830 - 0845	11	10	8	0	8	1	38
0845 - 0900	10	4	15	2	6	2	39
0900 - 0915	3	8	8	2	12	0	33
0915 - 0930	2	4	9	0	4	1	20
0930 - 0945	6	2	5	1	3	1	18
0945 - 1000	7	5	4	0	1	0	17
1000 - 1015	6	5	14	0	17	0	42
1015 - 1030	8	4	9	0	20	0	41
1030 - 1045	15	6	9	0	5	0	35
1045 - 1100	8	1	7	0	5	0	21
1100 - 1115	6	3	4	0	19	0	32
1115 - 1130	13	2	6	0	4	0	25
1130 - 1145	13	6	9	0	1	0	29
1145 - 1200	4	2	27	0	5	0	38
1200 - 1215	6	0	8	0	3	0	17
1215 - 1230	10	2	13	0	5	0	30
1230 - 1245	11	3	9	0	7	0	30
1245 - 1300	3	10	5	0	8	0	26
<b>Period End</b>	<b>180</b>	<b>157</b>	<b>207</b>	<b>11</b>	<b>178</b>	<b>8</b>	<b>741</b>





# R.O.A.R DATA

**Reliable, Original & Authentic Results**

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney

Job No/Name : 1552 Woollahra Traffic Counts

Day/Date : Saturday 11th November 2006

Peak Per	WEST <i>Iluka St</i>		SOUTH <i>Manion Ave</i>		EAST <i>Iluka St</i>		TOTAL
	R	I	L	R	I	L	
0700 - 0800	24	57	26	4	30	0	141
0715 - 0815	29	66	24	5	35	0	159
<b>0730 - 0830</b>	29	76	28	5	43	3	184
0745 - 0845	32	52	34	3	33	4	158
0800 - 0900	35	37	35	4	29	6	146
0815 - 0915	29	36	40	5	35	6	151
0830 - 0930	26	26	40	4	30	4	130
0845 - 0945	21	18	37	5	25	4	110
0900 - 1000	18	19	26	3	20	2	88
0915 - 1015	21	16	32	1	25	2	97
0930 - 1030	27	16	32	1	41	1	118
0945 - 1045	36	20	36	0	43	0	135
1000 - 1100	37	16	39	0	47	0	139
1015 - 1115	37	14	29	0	49	0	129
1030 - 1130	42	12	26	0	33	0	113
1045 - 1145	40	12	26	0	29	0	107
1100 - 1200	36	13	46	0	29	0	124
1115 - 1215	36	10	50	0	13	0	109
1130 - 1230	33	10	57	0	14	0	114
1145 - 1245	31	7	57	0	20	0	115
1200 - 1300	30	15	35	0	23	0	103

<b>PEAK HR</b>	<b>29</b>	<b>76</b>	<b>28</b>	<b>5</b>	<b>43</b>	<b>3</b>	<b>184</b>
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# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Saturday 11th November 2006

<b>Peds</b>	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>Iluka St</b>	<b>Manion Ave</b>	<b>Iluka St</b>	<b>TOT</b>
0700 - 0715	0	0	2	2
0715 - 0730	0	0	0	0
0730 - 0745	0	0	2	2
0745 - 0800	0	1	0	1
0800 - 0815	0	0	5	5
0815 - 0830	0	0	1	1
0830 - 0845	0	1	4	5
0845 - 0900	2	2	3	7
0900 - 0915	0	0	1	1
0915 - 0930	0	1	2	3
0930 - 0945	0	1	3	4
0945 - 1000	0	1	0	1
1000 - 1015	0	2	4	6
1015 - 1030	0	5	3	8
1030 - 1045	1	3	1	5
1045 - 1100	0	1	1	2
1100 - 1115	0	0	0	0
1115 - 1130	1	2	3	6
1130 - 1145	0	0	1	1
1145 - 1200	0	0	3	3
1200 - 1215	1	0	4	5
1215 - 1230	1	2	0	3
1230 - 1245	0	1	1	2
1245 - 1300	2	2	1	5
<b>Per End</b>	<b>8</b>	<b>25</b>	<b>45</b>	<b>78</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>Iluka St</b>	<b>Manion Ave</b>	<b>Iluka St</b>	<b>TOT</b>
0700 - 0800	0	1	4	5
0715 - 0815	0	1	7	8
0730 - 0830	0	1	8	9
0745 - 0845	0	2	10	12
0800 - 0900	2	3	13	18
0815 - 0915	2	3	9	14
0830 - 0930	2	4	10	16
0845 - 0945	2	4	9	15
0900 - 1000	0	3	6	9
0915 - 1015	0	5	9	14
0930 - 1030	0	9	10	19
0945 - 1045	1	11	8	20
1000 - 1100	1	11	9	21
1015 - 1115	1	9	5	15
1030 - 1130	2	6	5	13
1045 - 1145	1	3	5	9
1100 - 1200	1	2	7	10
1115 - 1215	2	2	11	15
1130 - 1230	2	2	8	12
1145 - 1245	2	3	8	13
1200 - 1300	4	5	6	15

<b>PEAK HR</b>	<b>0</b>	<b>1</b>	<b>8</b>	<b>9</b>
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## **R.O.A.R. DATA**

*Reliable, Original & Authentic Results*

83 Church St, Ryde NSW 2112.

Ph.88196847, Fax 88196849, Mob.0418-239019

### **FIELD SURVEY REPORT**

Day / date : Thursday 9<sup>th</sup> November 06  
Client : Masson Wilson Twiney  
Job No/Name : 1552 Woolahra Traffic Surveys  
ATTENTION : Penny Dalton

Surveys went well and the result looks good as far as figures go. There is that issue in Elenora Ave with vehicles missing etc. but there is a couple things that happen there. There are a good number of ferry commuters that seem to use the street for parking which shows in the pedestrians crossing at the Elenora intersection on the eastern leg mainly. There are also many residents vehicles there are actually approximately 45 between the Iluka and New South Head Rd locations. All the other figures are good but again there is a large car park between the O,Sullivan and Elenora Ave intersections. There is also Norwich Rd between Newcastle and Kent Rd. If you have any questions please contact me.

REGARDS  
GREG HILL



# R.O.A.R. DATA

Reliable, Original & Authentic Results

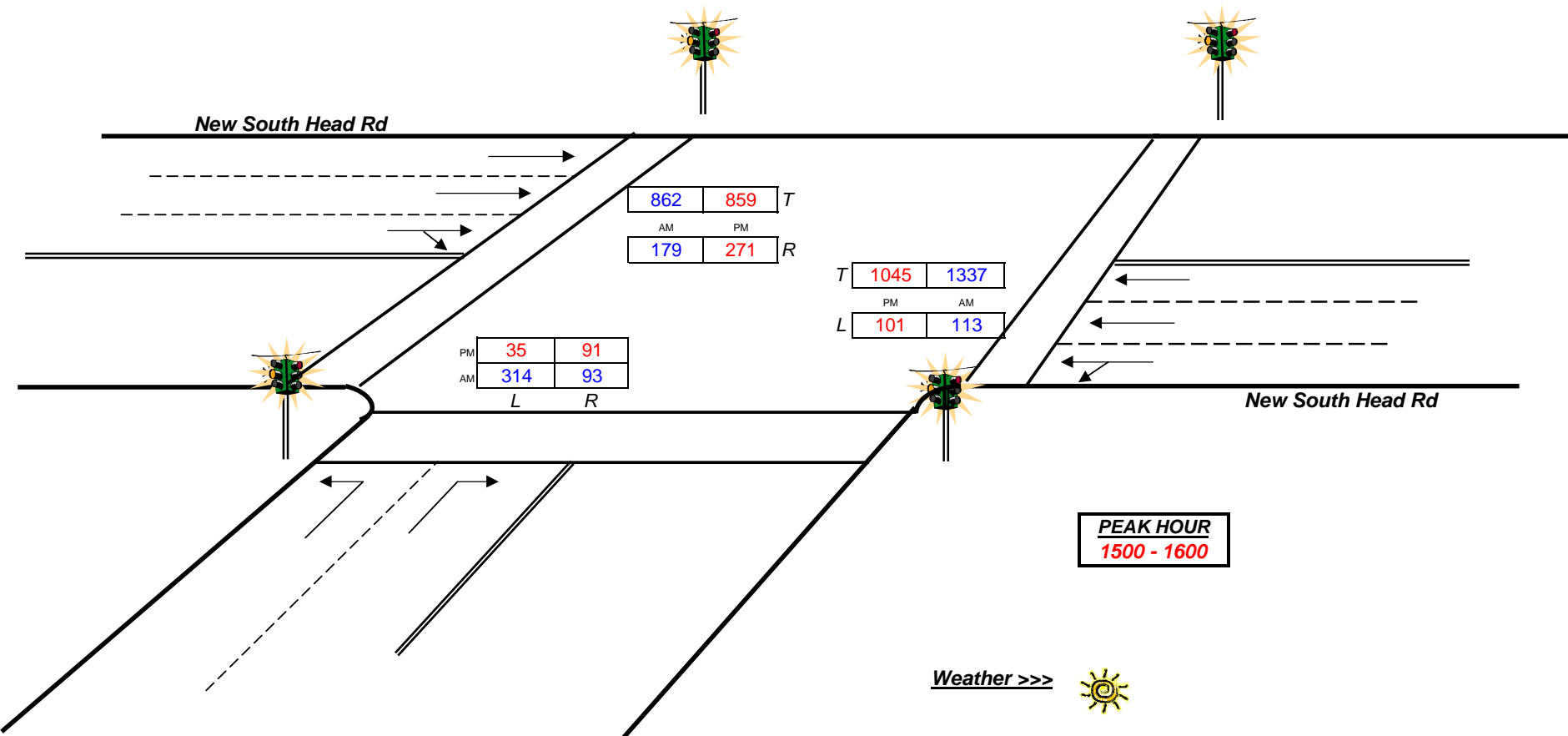
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

## Intersection Details



**PEAK HOUR**  
0745 - 0845



862	859	T
AM	PM	
179	271	R

T	1045	1337
	PM	AM
L	101	113

PM	35	91
AM	314	93
	L	R

**PEAK HOUR**  
1500 - 1600

Weather >>>



Dover Rd



**R.O.A.R. DATA**  
 Reliable, Original & Authentic Results  
 Ph.88196847, Fax 88196849, Mob.0418-239011

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

All Vehicles	WEST		SOUTH		EAST		TOTAL
	New South		Dover Rd		New South		
	R	I	L	R	I	L	
0700 - 0715	34	202	53	13	203	23	528
0715 - 0730	35	148	64	11	197	12	467
0730 - 0745	36	148	87	12	240	24	547
0745 - 0800	41	184	78	21	284	17	625
0800 - 0815	38	253	93	22	318	28	752
0815 - 0830	40	238	70	32	415	33	828
0830 - 0845	60	187	73	18	320	35	693
0845 - 0900	54	185	58	8	222	40	567
0900 - 0915	49	125	80	24	230	35	543
0915 - 0930	42	143	59	13	224	19	500
<b>Period End</b>	<b>429</b>	<b>1813</b>	<b>715</b>	<b>174</b>	<b>2653</b>	<b>266</b>	<b>6050</b>

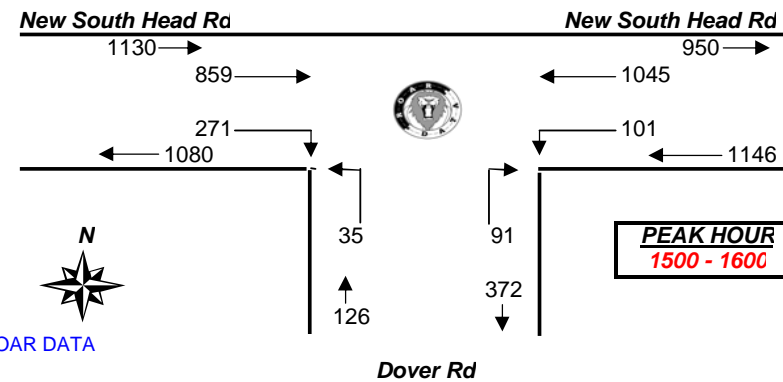
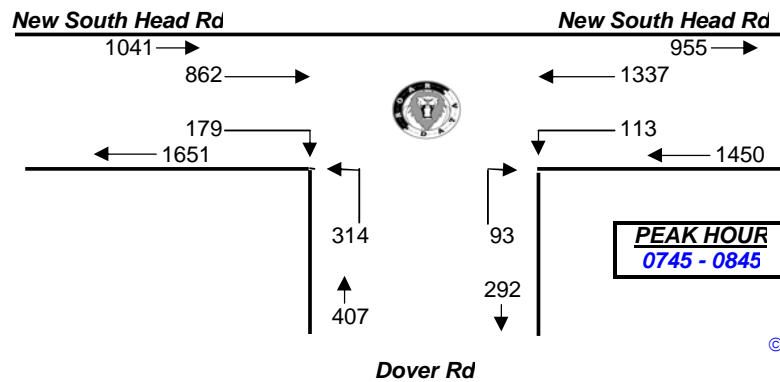
All Vehicles	WEST		SOUTH		EAST		TOTAL
	New South		Dover Rd		New South		
	R	I	L	R	I	L	
1400 - 1415	40	132	46	13	135	28	394
1415 - 1430	43	145	35	13	147	18	401
1430 - 1445	57	177	50	13	175	26	498
1445 - 1500	57	157	62	10	205	21	512
1500 - 1515	64	191	58	21	267	18	619
1515 - 1530	81	235	55	22	262	26	681
1530 - 1545	55	235	60	27	305	32	714
1545 - 1600	71	198	53	21	211	25	579
1600 - 1615	68	190	52	23	207	27	567
1615 - 1630	70	194	53	18	227	28	590
1630 - 1645	80	179	48	21	165	26	519
1645 - 1700	78	187	59	15	178	20	537
<b>Period End</b>	<b>764</b>	<b>2220</b>	<b>631</b>	<b>217</b>	<b>2484</b>	<b>295</b>	<b>6611</b>

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South		Dover Rd		New South		
	R	I	L	R	I	L	
0700 - 0800	146	682	282	57	924	76	2167
0715 - 0815	150	733	322	66	1039	81	2391
0730 - 0830	155	823	328	87	1257	102	2752
<b>0745 - 0845</b>	<b>179</b>	<b>862</b>	<b>314</b>	<b>93</b>	<b>1337</b>	<b>113</b>	<b>2898</b>
0800 - 0900	192	863	294	80	1275	136	2840
0815 - 0915	203	735	281	82	1187	143	2631
0830 - 0930	205	640	270	63	996	129	2303

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South		Dover Rd		New South		
	R	I	L	R	I	L	
1400 - 1500	197	611	193	49	662	93	1805
1415 - 1515	221	670	205	57	794	83	2030
1430 - 1530	259	760	225	66	909	91	2310
1445 - 1545	257	818	235	80	1039	97	2526
<b>1500 - 1600</b>	<b>271</b>	<b>859</b>	<b>226</b>	<b>91</b>	<b>1045</b>	<b>101</b>	<b>2593</b>
1515 - 1615	275	858	220	93	985	110	2541
1530 - 1630	264	817	218	89	950	112	2450
1545 - 1645	289	761	206	83	810	106	2255
1600 - 1700	296	750	212	77	777	101	2213
<b>PEAK HR</b>	<b>271</b>	<b>859</b>	<b>35</b>	<b>91</b>	<b>1045</b>	<b>101</b>	<b>2593</b>

<b>PEAK HR</b>	<b>179</b>	<b>862</b>	<b>314</b>	<b>93</b>	<b>1337</b>	<b>113</b>	<b>2898</b>
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<b>PEAK HR</b>	<b>271</b>	<b>859</b>	<b>35</b>	<b>91</b>	<b>1045</b>	<b>101</b>	<b>2593</b>
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# R.O.A.R DATA

**Reliable, Original & Authentic Results**

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney

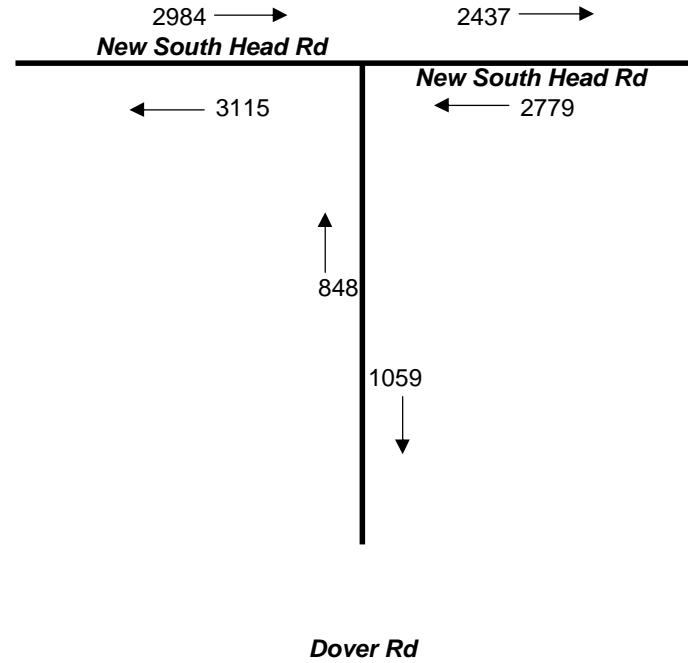
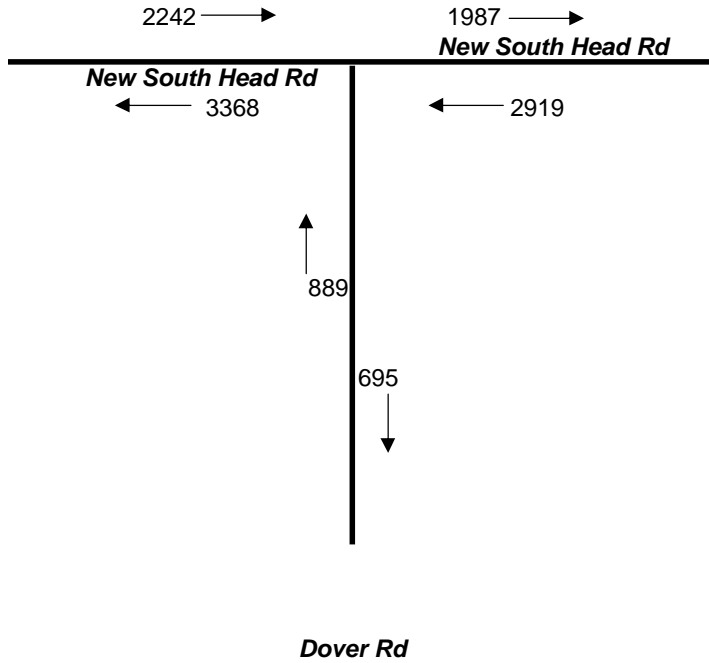
Job No/Name : 1552 Woollahra Traffic Counts

Day/Date : Thursday 9th November 2006

**AM**

**TOTAL VOLUMES  
FOR COUNT  
PERIOD**

**PM**





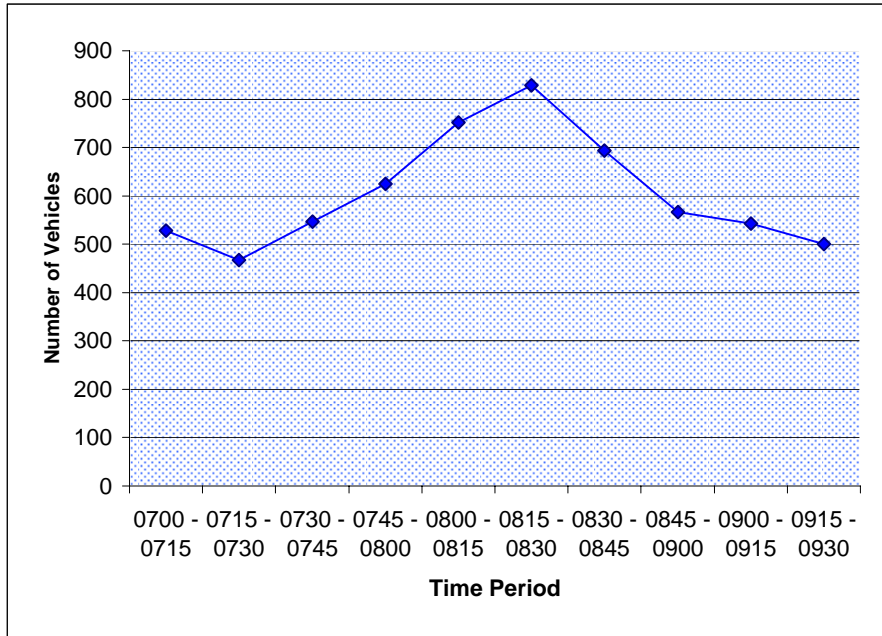
# R.O.A.R DATA

**Reliable, Original & Authentic Results**

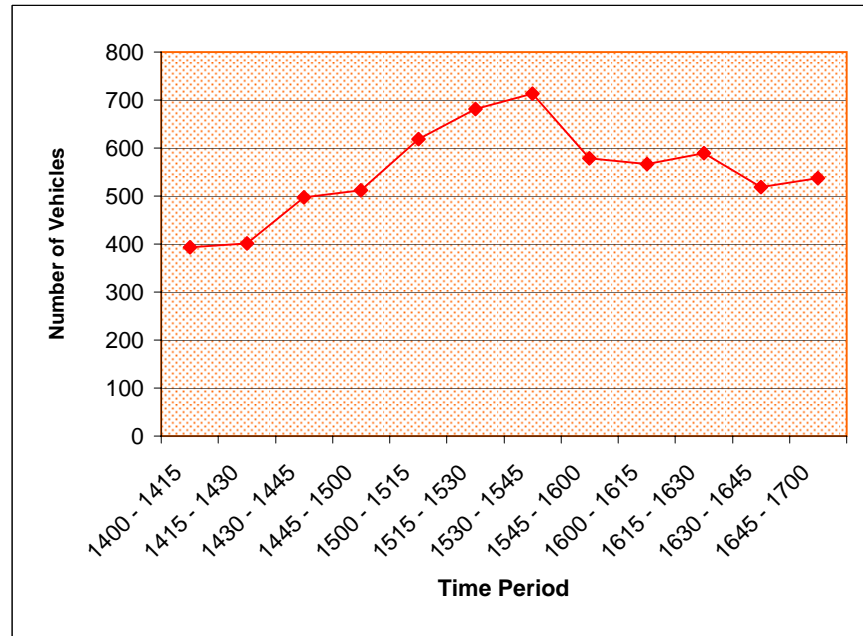
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

AM



PM





# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

<b>Peds</b>				
	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>Dover Rd</b>	<b>New South</b>	<b>TOT</b>
0700 - 0715	11	1	4	16
0715 - 0730	11	2	13	26
0730 - 0745	20	10	22	52
0745 - 0800	19	11	12	42
0800 - 0815	30	11	20	61
0815 - 0830	25	15	19	59
0830 - 0845	15	15	18	48
0845 - 0900	14	16	27	57
0900 - 0915	10	13	21	44
0915 - 0930	14	13	23	50
<b>Per End</b>	<b>169</b>	<b>107</b>	<b>179</b>	<b>455</b>

<b>Peds</b>				
	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>Dover Rd</b>	<b>New South</b>	<b>TOT</b>
1400 - 1415	24	12	40	76
1415 - 1430	27	17	29	73
1430 - 1445	36	12	28	76
1445 - 1500	38	13	21	72
1500 - 1515	53	18	34	105
1515 - 1530	57	16	56	129
1530 - 1545	58	18	53	129
1545 - 1600	57	13	34	104
1600 - 1615	48	19	32	99
1615 - 1630	41	24	41	106
1630 - 1645	38	14	32	84
1645 - 1700	32	9	28	69
<b>Per End</b>	<b>509</b>	<b>185</b>	<b>428</b>	<b>1122</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>Dover Rd</b>	<b>New South</b>	<b>TOT</b>
0700 - 0800	61	24	51	136
0715 - 0815	80	34	67	181
0730 - 0830	94	47	73	214
<b>0745 - 0845</b>	89	52	69	210
0800 - 0900	84	57	84	225
0815 - 0915	64	59	85	208
0830 - 0930	53	57	89	199

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>Dover Rd</b>	<b>New South</b>	<b>TOT</b>
1400 - 1500	125	54	118	297
1415 - 1515	154	60	112	326
1430 - 1530	184	59	139	382
1445 - 1545	206	65	164	435
<b>1500 - 1600</b>	225	65	177	467
1515 - 1615	220	66	175	461
1530 - 1630	204	74	160	438
1545 - 1645	184	70	139	393
1600 - 1700	159	66	133	358

<b>PEAK HR</b>	<b>89</b>	<b>52</b>	<b>69</b>	<b>210</b>
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<b>PEAK HR</b>	<b>225</b>	<b>65</b>	<b>177</b>	<b>467</b>
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# R.O.A.R. DATA

Reliable, Original & Authentic Results

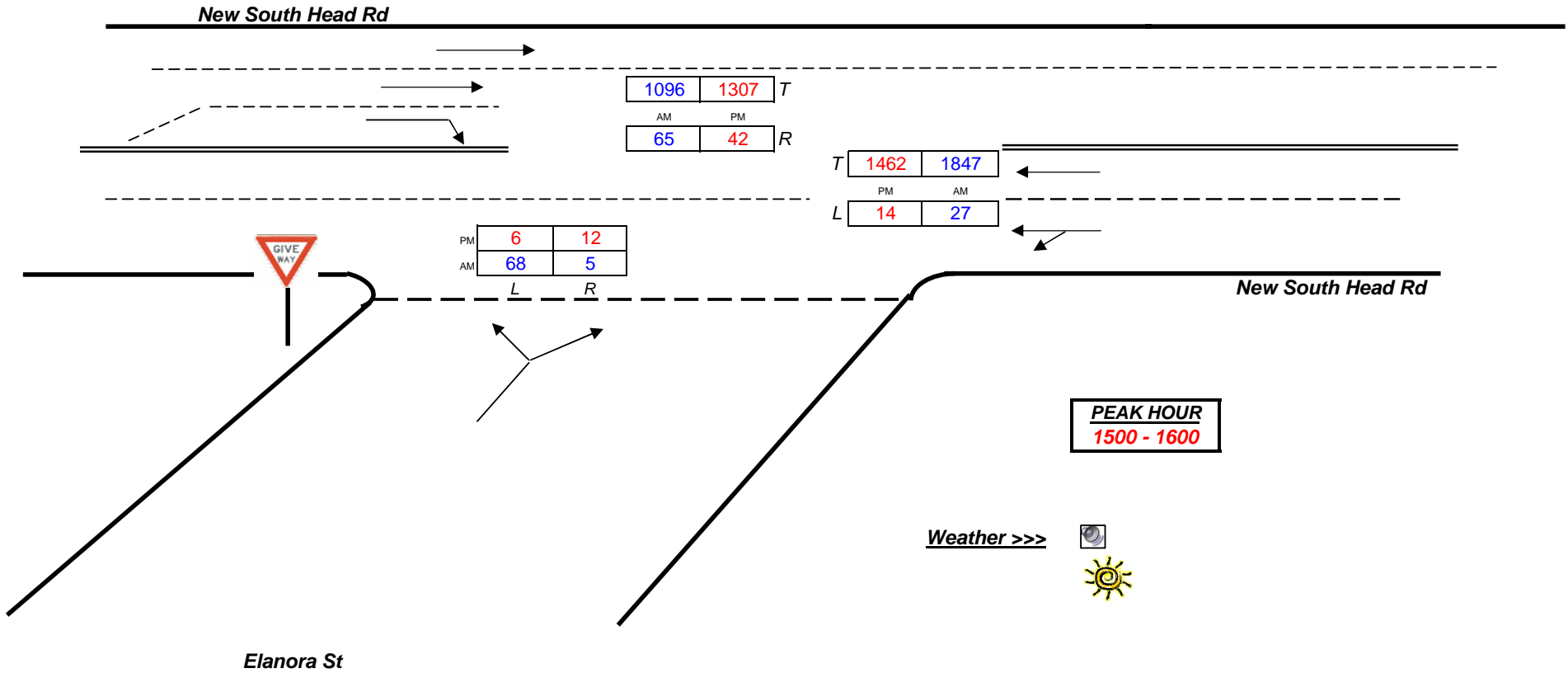
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006



## Intersection Details

**PEAK HOUR**  
0745 - 0845





**R.O.A.R. DATA**  
 Reliable, Original & Authentic Results  
 Ph.88196847, Fax 88196849, Mob.0418-239011

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

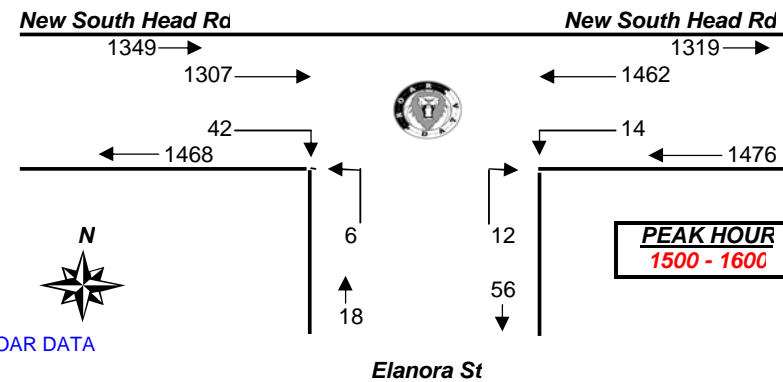
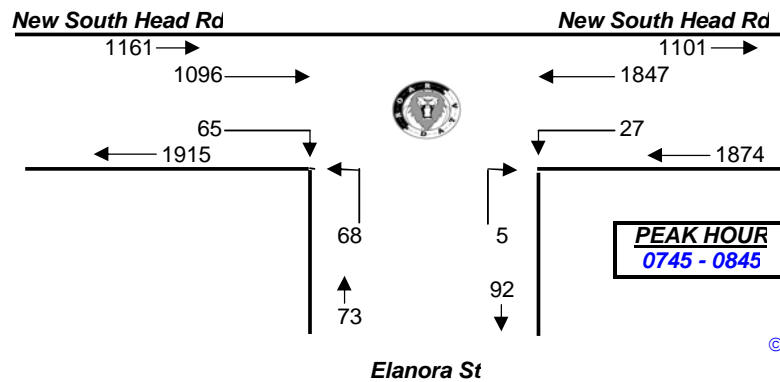
All Vehicles	WEST		SOUTH		EAST		TOTAL
	New South		Elanora St		New South		
	R	I	L	R	I	L	
0700 - 0715	3	222	8	0	302	0	535
0715 - 0730	6	209	8	1	338	0	562
0730 - 0745	4	194	19	0	375	4	596
0745 - 0800	10	266	19	1	431	9	736
0800 - 0815	12	337	23	1	489	3	865
0815 - 0830	13	246	8	1	473	5	746
0830 - 0845	30	247	18	2	454	10	761
0845 - 0900	9	242	29	5	360	1	646
0900 - 0915	6	217	10	5	311	2	551
0915 - 0930	2	203	7	5	341	3	561
<b>Period End</b>	<b>95</b>	<b>2383</b>	<b>149</b>	<b>21</b>	<b>3874</b>	<b>37</b>	<b>6559</b>

All Vehicles	WEST		SOUTH		EAST		TOTAL
	New South		Elanora St		New South		
	R	I	L	R	I	L	
1400 - 1415	5	198	3	4	200	3	413
1415 - 1430	15	229	6	2	231	7	490
1430 - 1445	22	250	21	7	257	8	565
1445 - 1500	10	279	19	4	342	2	656
1500 - 1515	8	287	9	2	371	1	678
1515 - 1530	6	367	10	2	350	5	740
1530 - 1545	18	336	8	1	387	3	753
1545 - 1600	10	317	13	7	354	5	706
1600 - 1615	6	284	9	2	362	3	666
1615 - 1630	12	278	9	1	300	1	601
1630 - 1645	19	286	9	1	295	2	612
1645 - 1700	18	325	19	2	289	4	657
<b>Period End</b>	<b>149</b>	<b>3436</b>	<b>135</b>	<b>35</b>	<b>3738</b>	<b>44</b>	<b>7537</b>

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South		Elanora St		New South		
	R	I	L	R	I	L	
0700 - 0800	23	891	54	2	1446	13	2429
0715 - 0815	32	1006	69	3	1633	16	2759
0730 - 0830	39	1043	69	3	1768	21	2943
<b>0745 - 0845</b>	<b>65</b>	<b>1096</b>	<b>68</b>	<b>5</b>	<b>1847</b>	<b>27</b>	<b>3108</b>
0800 - 0900	64	1072	78	9	1776	19	3018
0815 - 0915	58	952	65	13	1598	18	2704
0830 - 0930	47	909	64	17	1466	16	2519

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South		Elanora St		New South		
	R	I	L	R	I	L	
1400 - 1500	52	956	49	17	1030	20	2124
1415 - 1515	55	1045	55	15	1201	18	2389
1430 - 1530	46	1183	59	15	1320	16	2639
1445 - 1545	42	1269	46	9	1450	11	2827
<b>1500 - 1600</b>	<b>42</b>	<b>1307</b>	<b>40</b>	<b>12</b>	<b>1462</b>	<b>14</b>	<b>2877</b>
1515 - 1615	40	1304	40	12	1453	16	2865
1530 - 1630	46	1215	39	11	1403	12	2726
1545 - 1645	47	1165	40	11	1311	11	2585
1600 - 1700	55	1173	46	6	1246	10	2536
<b>PEAK HR</b>	<b>42</b>	<b>1307</b>	<b>6</b>	<b>12</b>	<b>1462</b>	<b>14</b>	<b>2877</b>

<b>PEAK HR</b>	<b>65</b>	<b>1096</b>	<b>68</b>	<b>5</b>	<b>1847</b>	<b>27</b>	<b>3108</b>
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# R.O.A.R DATA

**Reliable, Original & Authentic Results**

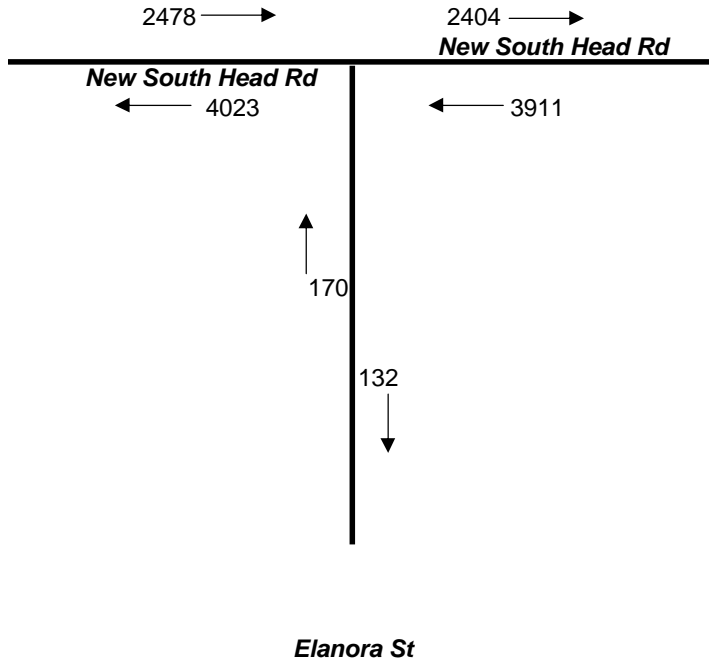
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

**AM**

**TOTAL VOLUMES  
FOR COUNT  
PERIOD**

**PM**





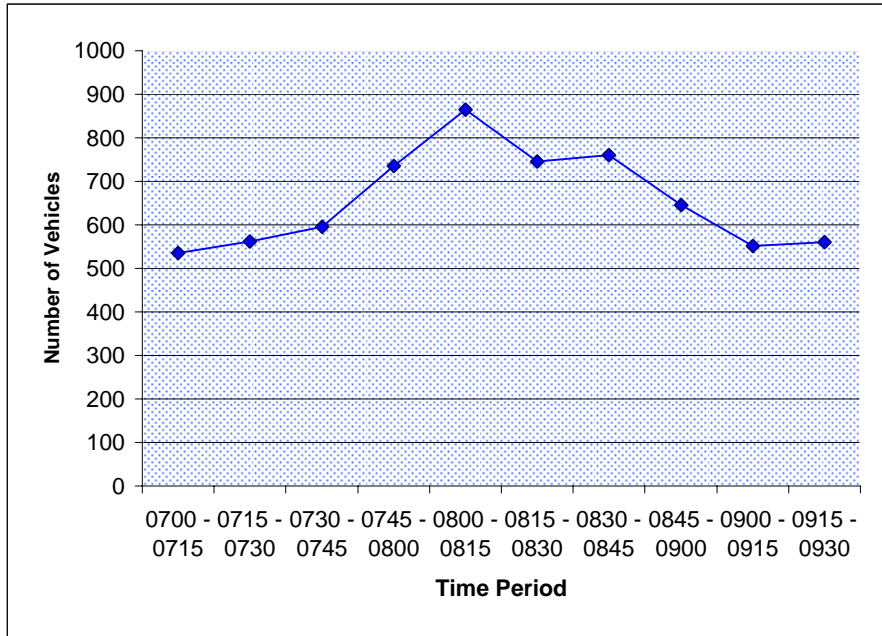
# R.O.A.R DATA

**Reliable, Original & Authentic Results**

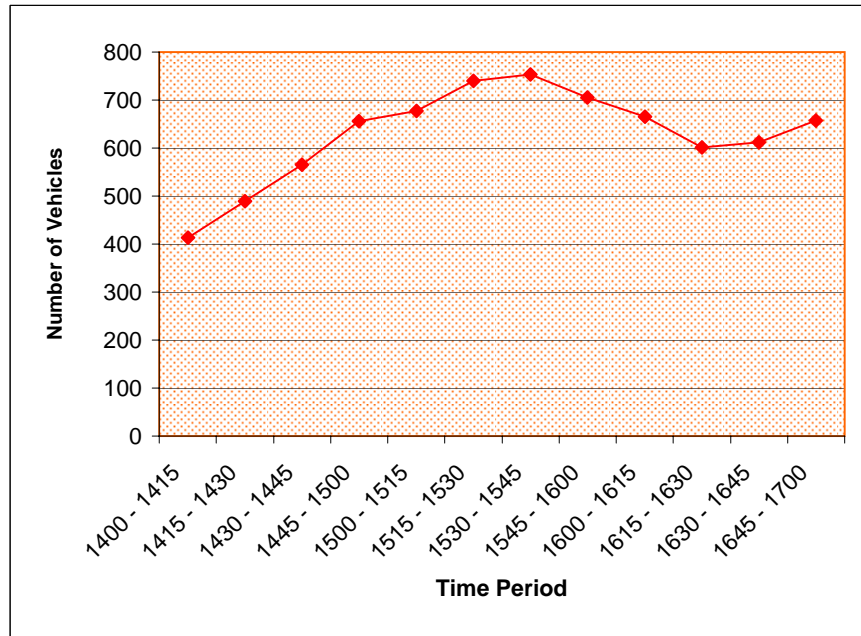
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

AM



PM





# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

<b>Peds</b>				
	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>Elanora St</b>	<b>New South</b>	<b>TOT</b>
0700 - 0715	2	2	14	<b>18</b>
0715 - 0730	6	9	3	<b>18</b>
0730 - 0745	0	4	5	<b>9</b>
0745 - 0800	3	1	24	<b>28</b>
0800 - 0815	2	1	30	<b>33</b>
0815 - 0830	0	3	3	<b>6</b>
0830 - 0845	0	2	24	<b>26</b>
0845 - 0900	2	9	2	<b>13</b>
0900 - 0915	0	8	4	<b>12</b>
0915 - 0930	0	12	1	<b>13</b>
<b>Per End</b>	<b>15</b>	<b>51</b>	<b>110</b>	<b>176</b>

<b>Peds</b>				
	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>Elanora St</b>	<b>New South</b>	<b>TOT</b>
1400 - 1415	0	1	3	<b>4</b>
1415 - 1430	1	0	0	<b>1</b>
1430 - 1445	0	3	3	<b>6</b>
1445 - 1500	0	0	1	<b>1</b>
1500 - 1515	1	3	2	<b>6</b>
1515 - 1530	0	2	0	<b>2</b>
1530 - 1545	0	9	2	<b>11</b>
1545 - 1600	0	3	1	<b>4</b>
1600 - 1615	0	9	3	<b>12</b>
1615 - 1630	1	0	0	<b>1</b>
1630 - 1645	0	3	5	<b>8</b>
1645 - 1700	0	2	4	<b>6</b>
<b>Per End</b>	<b>3</b>	<b>35</b>	<b>24</b>	<b>62</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>Elanora St</b>	<b>New South</b>	<b>TOT</b>
0700 - 0800	11	16	46	<b>73</b>
0715 - 0815	11	15	62	<b>88</b>
0730 - 0830	5	9	62	<b>76</b>
<b>0745 - 0845</b>	<b>5</b>	<b>7</b>	<b>81</b>	<b>93</b>
0800 - 0900	4	15	59	<b>78</b>
0815 - 0915	2	22	33	<b>57</b>
0830 - 0930	2	31	31	<b>64</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>Elanora St</b>	<b>New South</b>	<b>TOT</b>
1400 - 1500	1	4	7	<b>12</b>
1415 - 1515	2	6	6	<b>14</b>
1430 - 1530	1	8	6	<b>15</b>
1445 - 1545	1	14	5	<b>20</b>
<b>1500 - 1600</b>	<b>1</b>	<b>17</b>	<b>5</b>	<b>23</b>
1515 - 1615	0	23	6	<b>29</b>
1530 - 1630	1	21	6	<b>28</b>
1545 - 1645	1	15	9	<b>25</b>
1600 - 1700	1	14	12	<b>27</b>

<b>PEAK HR</b>	<b>5</b>	<b>7</b>	<b>81</b>	<b>93</b>
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<b>PEAK HR</b>	<b>1</b>	<b>17</b>	<b>5</b>	<b>23</b>
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# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

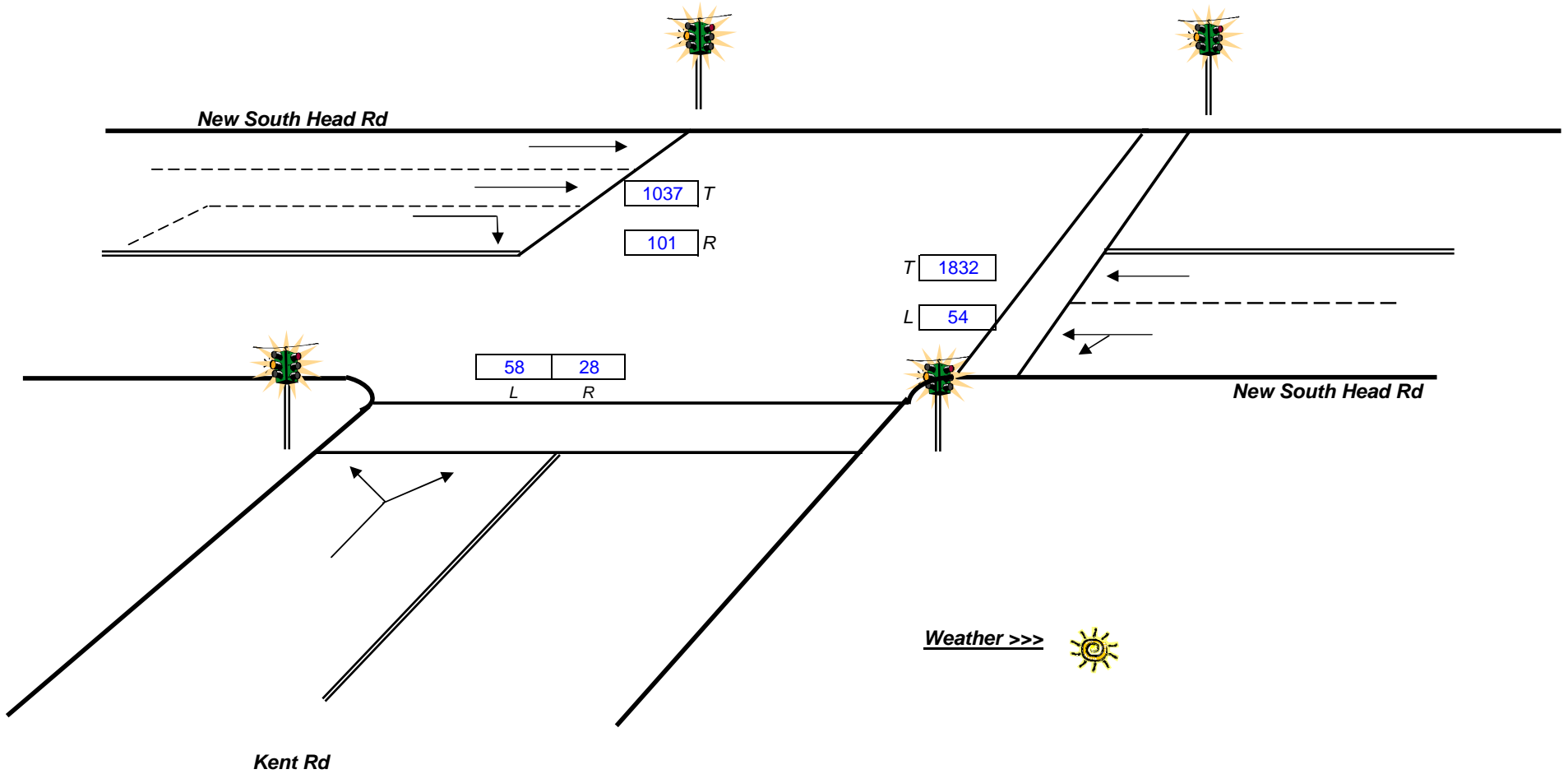
Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

## Intersection Details



**PEAK HOUR**  
**0745 - 0845**

Combined figure only





# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.

Mobile.041823901€

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

PEDS	WEST	SOUTH	EAST	TOT
Time Per	New South	Kent Rd	New South	
0700 - 0715	0	4	4	8
0715 - 0730	0	6	3	9
0730 - 0745	1	6	8	15
0745 - 0800	1	5	8	14
0800 - 0815	0	4	21	25
0815 - 0830	0	6	7	13
0830 - 0845	1	10	5	16
0845 - 0900	1	9	4	14
0900 - 0915	1	9	9	19
0915 - 0930	0	15	2	17
<b>Per End</b>	<b>5</b>	<b>74</b>	<b>71</b>	<b>150</b>

PEDS	WEST	SOUTH	EAST	TOT
Peak Per	New South	Kent Rd	New South	
0700 - 0800	2	21	23	46
0715 - 0815	2	21	40	63
0730 - 0830	2	21	44	67
<b>0745 - 0845</b>	<b>2</b>	<b>25</b>	<b>41</b>	<b>68</b>
0800 - 0900	2	29	37	68
0815 - 0915	3	34	25	62
0830 - 0930	3	43	20	66
<b>PEAK HR</b>	<b>2</b>	<b>25</b>	<b>41</b>	<b>68</b>

Lights	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Time Per	T	R	L	R	L	T	
0700 - 0715	202	17	11	3	5	291	529
0715 - 0730	183	17	4	0	3	299	506
0730 - 0745	168	20	7	0	3	363	561
0745 - 0800	227	18	12	2	2	428	689
0800 - 0815	287	26	9	6	9	439	776
0815 - 0830	282	22	12	0	20	497	833
0830 - 0845	223	35	24	20	22	446	770
0845 - 0900	224	26	18	12	13	343	636
0900 - 0915	205	20	4	8	12	335	584
0915 - 0930	172	8	9	5	8	320	522
<b>Per End</b>	<b>2173</b>	<b>209</b>	<b>110</b>	<b>56</b>	<b>97</b>	<b>3761</b>	<b>6406</b>

Heavies	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Time Per	T	R	L	R	L	T	
0700 - 0715	5	0	0	0	0	2	7
0715 - 0730	3	0	0	0	0	5	8
0730 - 0745	4	1	0	0	0	6	11
0745 - 0800	5	0	1	0	0	8	14
0800 - 0815	5	0	0	0	0	6	11
0815 - 0830	5	0	0	0	1	6	12
0830 - 0845	3	0	0	0	0	2	5
0845 - 0900	4	0	1	0	0	4	9
0900 - 0915	4	0	0	0	0	3	7
0915 - 0930	3	0	0	0	0	4	7
<b>Per End</b>	<b>41</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>46</b>	<b>91</b>

Combined	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Time Per	T	R	L	R	L	T	
0700 - 0715	207	17	11	3	5	293	536
0715 - 0730	186	17	4	0	3	304	514
0730 - 0745	172	21	7	0	3	369	572
0745 - 0800	232	18	13	2	2	436	703
0800 - 0815	292	26	9	6	9	445	787
0815 - 0830	287	22	12	0	21	503	845
0830 - 0845	226	35	24	20	22	448	775
0845 - 0900	228	26	19	12	13	347	645
0900 - 0915	209	20	4	8	12	338	591
0915 - 0930	175	8	9	5	8	324	529
<b>Per End</b>	<b>2214</b>	<b>210</b>	<b>112</b>	<b>56</b>	<b>98</b>	<b>3807</b>	<b>6497</b>

Lights	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Peak Per	T	R	L	R	L	T	
0700 - 0800	780	72	34	5	13	1381	2285
0715 - 0815	865	81	32	8	17	1529	2532
0730 - 0830	964	86	40	8	34	1727	2859
<b>0745 - 0845</b>	<b>1019</b>	<b>101</b>	<b>57</b>	<b>28</b>	<b>53</b>	<b>1810</b>	<b>3068</b>
0800 - 0900	1016	109	63	38	64	1725	3015
0815 - 0915	934	103	58	40	67	1621	2823
0830 - 0930	824	89	55	45	55	1444	2512

Heavies	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Peak Per	T	R	L	R	L	T	
0700 - 0800	17	1	1	0	0	21	40
0715 - 0815	17	1	1	0	0	25	44
0730 - 0830	19	1	1	0	1	26	48
<b>0745 - 0845</b>	<b>18</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>22</b>	<b>42</b>
0800 - 0900	17	0	1	0	1	18	37
0815 - 0915	16	0	1	0	1	15	33
0830 - 0930	14	0	1	0	0	13	28

Combined	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Peak Per	T	R	L	R	L	T	
0700 - 0800	797	73	35	5	13	1402	2325
0715 - 0815	882	82	33	8	17	1554	2576
0730 - 0830	983	87	41	8	35	1753	2907
<b>0745 - 0845</b>	<b>1037</b>	<b>101</b>	<b>58</b>	<b>28</b>	<b>54</b>	<b>1832</b>	<b>3110</b>
0800 - 0900	1033	109	64	38	65	1743	3052
0815 - 0915	950	103	59	40	68	1636	2856
0830 - 0930	838	89	56	45	55	1457	2540

<b>PEAK HR</b>	<b>1019</b>	<b>101</b>	<b>57</b>	<b>28</b>	<b>53</b>	<b>1810</b>	<b>3068</b>
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<b>PEAK HR</b>	<b>18</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>22</b>	<b>42</b>
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<b>PEAK HR</b>	<b>1037</b>	<b>101</b>	<b>58</b>	<b>28</b>	<b>54</b>	<b>1832</b>	<b>3110</b>
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# R.O.A.R. DATA

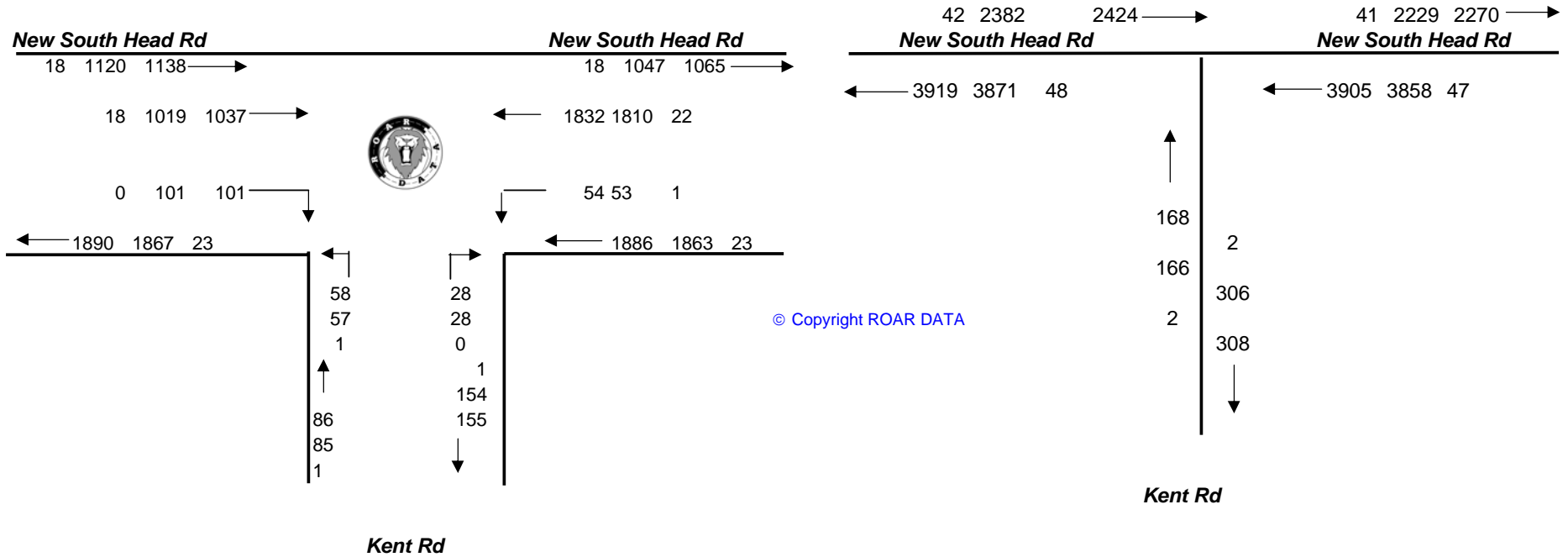
**Reliable, Original & Authentic Results**

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

**AM PEAK**  
**0745 - 0845**

**TOTAL VOLUMES**  
**FOR COUNT**  
**PERIOD**





# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

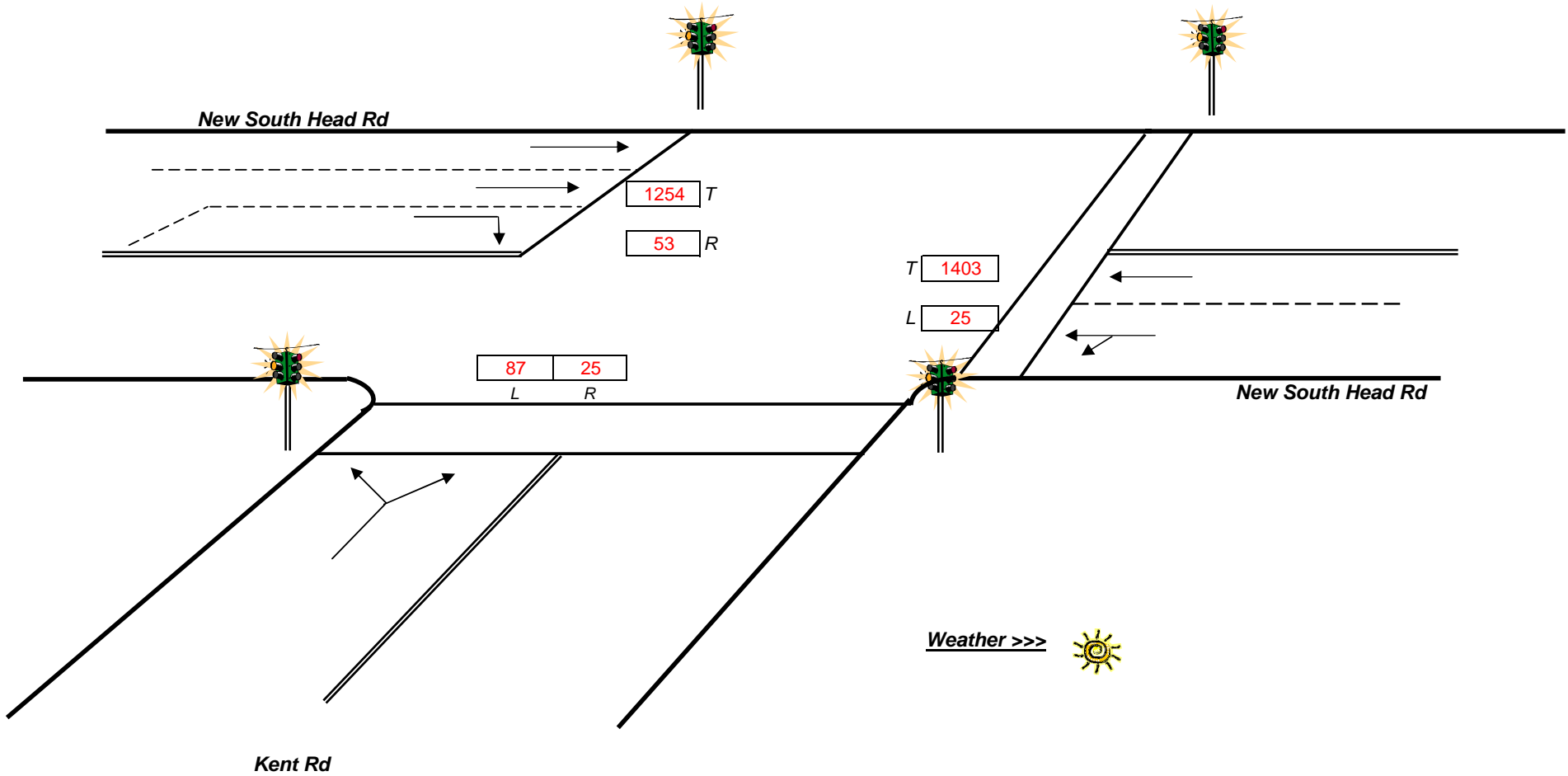
Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

## Intersection Details



**PEAK HOUR**  
**1500 - 1600**

Combined figure only





# R.O.A.R. DATA

**Reliable, Original & Authentic Results!**

Ph.88196847, Fax 88196849.

Mobile.041823901€

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

PEDS	WEST	SOUTH	EAST	TOT
Time Per	New South	Kent Rd	New South	
1400 - 1415	0	0	1	1
1415 - 1430	0	4	2	6
1430 - 1445	0	5	5	10
1445 - 1500	0	4	2	6
1500 - 1515	0	15	2	17
1515 - 1530	0	1	4	5
1530 - 1545	0	12	7	19
1545 - 1600	0	11	6	17
1600 - 1615	0	9	11	20
1615 - 1630	0	6	11	17
1630 - 1645	0	5	10	15
1645 - 1700	0	5	13	18
<b>Per End</b>	<b>0</b>	<b>77</b>	<b>74</b>	<b>151</b>

PEDS	WEST	SOUTH	EAST	TOT
Peak Per	New South	Kent Rd	New South	
1400 - 1500	0	13	10	23
1415 - 1515	0	28	11	39
1430 - 1530	0	25	13	38
1445 - 1545	0	32	15	47
<b>1500 - 1600</b>	0	39	19	<b>58</b>
1515 - 1615	0	33	28	61
1530 - 1630	0	38	35	73
1545 - 1645	0	31	38	69
1600 - 1700	0	25	45	70
<b>PEAK HR</b>	<b>0</b>	<b>39</b>	<b>19</b>	<b>58</b>

Lights	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Time Per	T	R	L	R	L	T	
1400 - 1415	186	6	9	8	6	195	410
1415 - 1430	211	11	11	4	8	212	457
1430 - 1445	243	24	20	7	15	253	562
1445 - 1500	240	33	39	9	9	299	629
1500 - 1515	256	21	30	8	6	341	662
1515 - 1530	371	4	9	2	7	349	742
1530 - 1545	324	11	20	5	6	368	734
1545 - 1600	286	17	28	10	6	316	663
1600 - 1615	264	13	55	15	7	300	654
1615 - 1630	276	12	25	10	8	279	610
1630 - 1645	279	6	36	9	5	261	596
1645 - 1700	298	12	24	8	4	273	619
<b>Per End</b>	<b>3234</b>	<b>170</b>	<b>306</b>	<b>95</b>	<b>87</b>	<b>3446</b>	<b>7338</b>

Heavies	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Time Per	T	R	L	R	L	T	
1400 - 1415	6	1	0	0	0	5	12
1415 - 1430	6	0	1	0	0	4	11
1430 - 1445	4	0	0	0	0	5	9
1445 - 1500	3	0	0	0	0	6	9
1500 - 1515	3	0	0	0	0	6	9
1515 - 1530	5	0	0	0	0	8	13
1530 - 1545	6	0	0	0	0	10	16
1545 - 1600	3	0	0	0	0	5	8
1600 - 1615	7	0	0	0	0	4	11
1615 - 1630	2	0	0	0	0	1	3
1630 - 1645	5	0	0	0	0	2	7
1645 - 1700	2	0	0	0	0	4	6
<b>Per End</b>	<b>52</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>60</b>	<b>114</b>

Combined	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Time Per	T	R	L	R	L	T	
1400 - 1415	192	7	9	8	6	200	422
1415 - 1430	217	11	12	4	8	216	468
1430 - 1445	247	24	20	7	15	258	571
1445 - 1500	243	33	39	9	9	305	638
1500 - 1515	259	21	30	8	6	347	671
1515 - 1530	376	4	9	2	7	357	755
1530 - 1545	330	11	20	5	6	378	750
1545 - 1600	289	17	28	10	6	321	671
1600 - 1615	271	13	55	15	7	304	665
1615 - 1630	278	12	25	10	8	280	613
1630 - 1645	284	6	36	9	5	263	603
1645 - 1700	300	12	24	8	4	277	625
<b>Per End</b>	<b>3286</b>	<b>171</b>	<b>307</b>	<b>95</b>	<b>87</b>	<b>3506</b>	<b>7452</b>

Lights	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Peak Per	T	R	L	R	L	T	
1400 - 1500	880	74	79	28	38	959	2058
1415 - 1515	950	89	100	28	38	1105	2310
1430 - 1530	1110	82	98	26	37	1242	2595
1445 - 1545	1191	69	98	24	28	1357	2767
<b>1500 - 1600</b>	1237	53	87	25	25	1374	<b>2801</b>
1515 - 1615	1245	45	112	32	26	1333	2793
1530 - 1630	1150	53	128	40	27	1263	2661
1545 - 1645	1105	48	144	44	26	1156	2523
1600 - 1700	1117	43	140	42	24	1113	2479
<b>PEAK HR</b>	<b>1237</b>	<b>53</b>	<b>87</b>	<b>25</b>	<b>25</b>	<b>1374</b>	<b>2801</b>

Heavies	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Peak Per	T	R	L	R	L	T	
1400 - 1500	19	1	1	0	0	20	41
1415 - 1515	16	0	1	0	0	21	38
1430 - 1530	15	0	0	0	0	25	40
1445 - 1545	17	0	0	0	0	30	47
<b>1500 - 1600</b>	17	0	0	0	0	29	<b>46</b>
1515 - 1615	21	0	0	0	0	27	48
1530 - 1630	18	0	0	0	0	20	38
1545 - 1645	17	0	0	0	0	12	29
1600 - 1700	16	0	0	0	0	11	27
<b>PEAK HR</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>46</b>

Combined	WEST		SOUTH		EAST		TOT
	New South		Kent Rd		New South		
Peak Per	T	R	L	R	L	T	
1400 - 1500	899	75	80	28	38	979	2099
1415 - 1515	966	89	101	28	38	1126	2348
1430 - 1530	1125	82	98	26	37	1267	2635
1445 - 1545	1208	69	98	24	28	1387	2814
<b>1500 - 1600</b>	1254	53	87	25	25	1403	<b>2847</b>
1515 - 1615	1266	45	112	32	26	1360	2841
1530 - 1630	1168	53	128	40	27	1283	2699
1545 - 1645	1122	48	144	44	26	1168	2552
1600 - 1700	1133	43	140	42	24	1124	2506
<b>PEAK HR</b>	<b>1254</b>	<b>53</b>	<b>87</b>	<b>25</b>	<b>25</b>	<b>1403</b>	<b>2847</b>



# R.O.A.R. DATA

Reliable, Original & Authentic Results

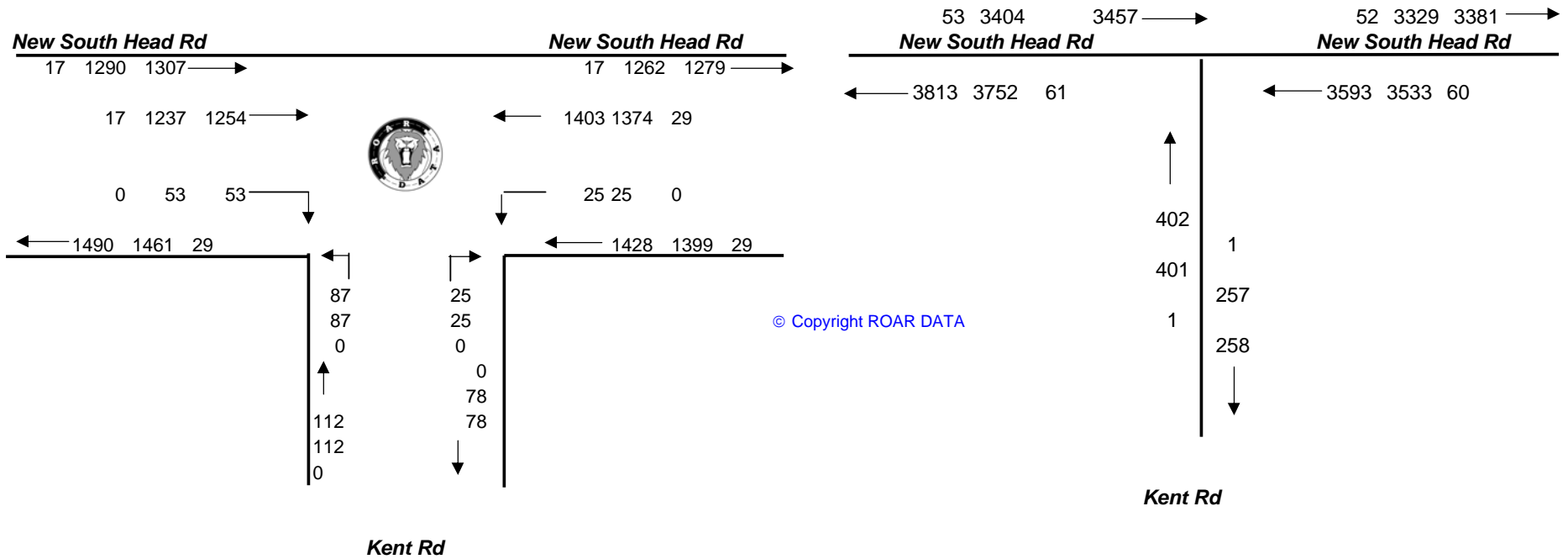
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

**PM PEAK**  
**1500 - 1600**



**TOTAL VOLUMES**  
**FOR COUNT**  
**PERIOD**





# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

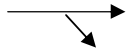
Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

## Intersection Details



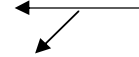
**PEAK HOUR**  
**0745 - 0845**

*Iluka St*

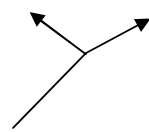


T	46	38
	AM	PM
R	26	26

36	30	T
	PM	AM
0	1	L



PM	23	0
AM	49	1
	L	R



*Iluka St*

**PM PEAK HOUR**  
**1415 - 1515**

*Manion Ave*



**R.O.A.R. DATA**  
 Reliable, Original & Authentic Results  
 Ph.88196847, Fax 88196849, Mob.0418-239011

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

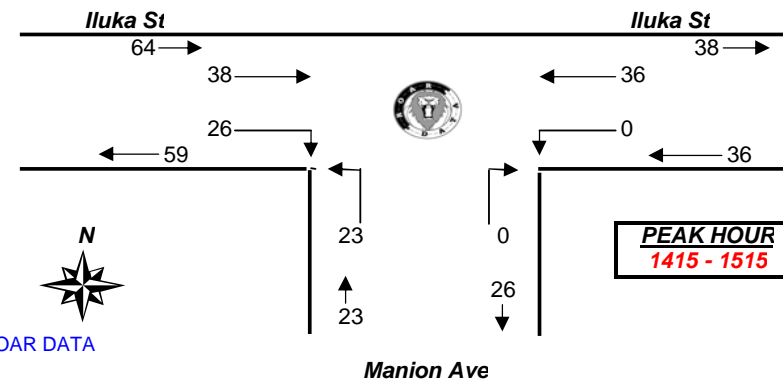
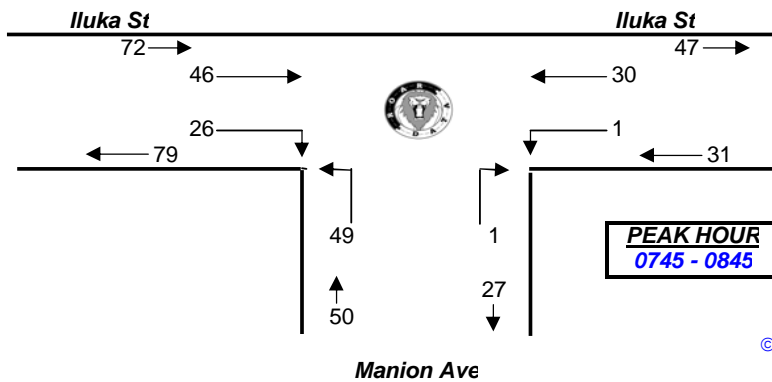
Time Per	WEST		SOUTH		EAST		TOTAL
	Iluka St		Manion Ave		Iluka St		
	R	L	L	R	L	R	
0700 - 0715	2	1	6	0	1	0	10
0715 - 0730	3	0	8	0	0	0	11
0730 - 0745	1	1	12	0	4	1	19
0745 - 0800	9	4	13	0	3	0	29
0800 - 0815	3	4	13	1	7	0	28
0815 - 0830	5	10	8	0	1	0	24
0830 - 0845	9	28	15	0	19	1	72
0845 - 0900	2	6	8	0	11	0	27
0900 - 0915	5	2	5	0	7	0	19
0915 - 0930	3	1	8	0	1	0	13
<b>Period End</b>	<b>42</b>	<b>57</b>	<b>96</b>	<b>1</b>	<b>54</b>	<b>2</b>	<b>252</b>

Time Per	WEST		SOUTH		EAST		TOTAL
	Iluka St		Manion Ave		Iluka St		
	R	L	L	R	L	R	
1400 - 1415	6	1	6	0	2	0	15
1415 - 1430	10	13	4	0	1	0	28
1430 - 1445	4	16	7	0	21	0	48
1445 - 1500	8	5	9	0	9	0	31
1500 - 1515	4	4	3	0	5	0	16
1515 - 1530	11	5	7	0	3	0	26
1530 - 1545	5	9	3	1	3	0	21
1545 - 1600	5	6	8	0	7	0	26
1600 - 1615	3	4	4	0	6	0	17
1615 - 1630	7	2	2	0	2	0	13
1630 - 1645	10	4	5	0	2	0	21
1645 - 1700	8	5	4	0	5	0	22
<b>Period End</b>	<b>81</b>	<b>74</b>	<b>62</b>	<b>1</b>	<b>66</b>	<b>0</b>	<b>284</b>

Peak Per	WEST		SOUTH		EAST		TOTAL
	Iluka St		Manion Ave		Iluka St		
	R	L	L	R	L	R	
0700 - 0800	15	6	39	0	8	1	69
0715 - 0815	16	9	46	1	14	1	87
0730 - 0830	18	19	46	1	15	1	100
<b>0745 - 0845</b>	<b>26</b>	<b>46</b>	<b>49</b>	<b>1</b>	<b>30</b>	<b>1</b>	<b>153</b>
0800 - 0900	19	48	44	1	38	1	151
0815 - 0915	21	46	36	0	38	1	142
0830 - 0930	19	37	36	0	38	1	131

Peak Per	WEST		SOUTH		EAST		TOTAL
	Iluka St		Manion Ave		Iluka St		
	R	L	L	R	L	R	
1400 - 1500	28	35	26	0	33	0	122
<b>1415 - 1515</b>	<b>26</b>	<b>38</b>	<b>23</b>	<b>0</b>	<b>36</b>	<b>0</b>	<b>123</b>
1430 - 1530	27	30	26	0	38	0	121
1445 - 1545	28	23	22	1	20	0	94
1500 - 1600	25	24	21	1	18	0	89
1515 - 1615	24	24	22	1	19	0	90
1530 - 1630	20	21	17	1	18	0	77
1545 - 1645	25	16	19	0	17	0	77
1600 - 1700	28	15	15	0	15	0	73
<b>PEAK HR</b>	<b>26</b>	<b>38</b>	<b>23</b>	<b>0</b>	<b>36</b>	<b>0</b>	<b>123</b>

<b>PEAK HR</b>	<b>26</b>	<b>46</b>	<b>49</b>	<b>1</b>	<b>30</b>	<b>1</b>	<b>153</b>
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# R.O.A.R DATA

**Reliable, Original & Authentic Results**

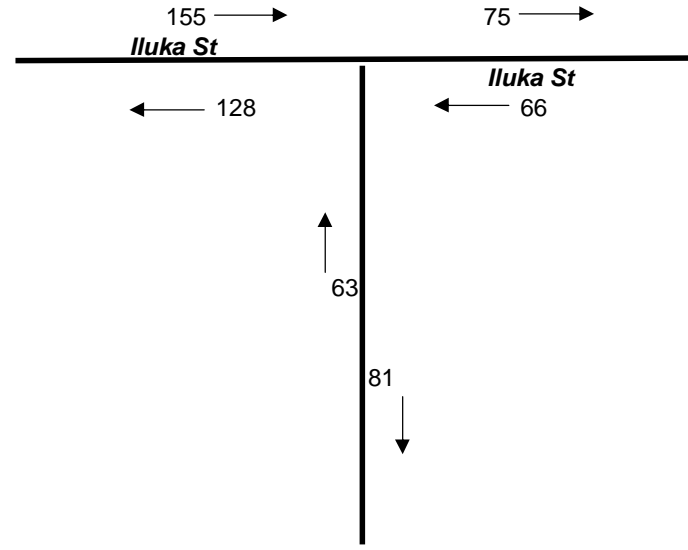
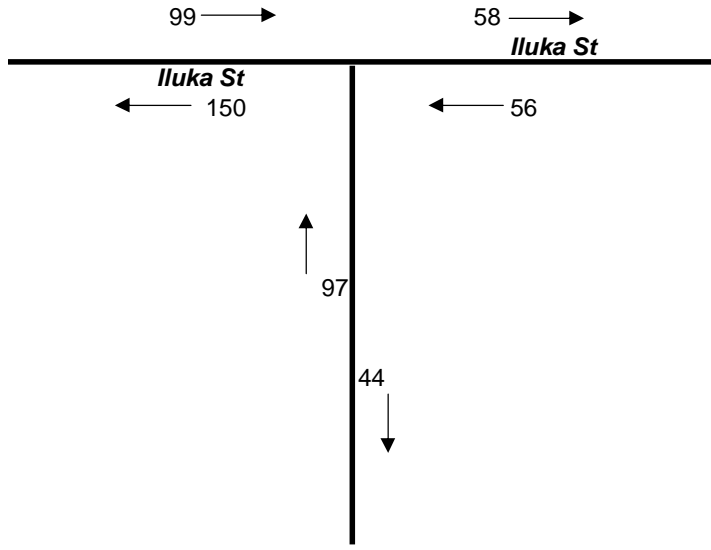
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

**TOTAL VOLUMES  
FOR COUNT  
PERIOD**

**AM**

**PM**



**Manion Ave**

**Manion Ave**



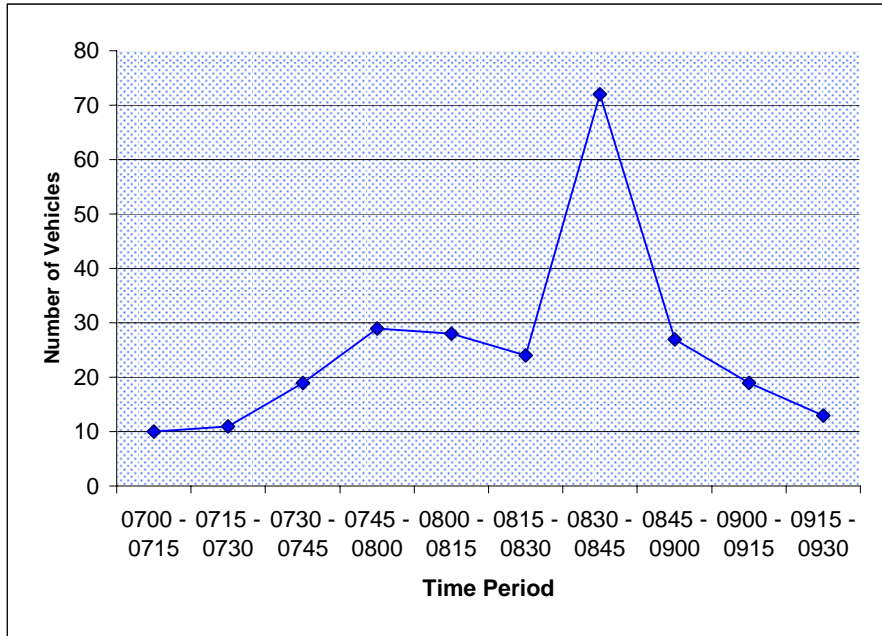
# R.O.A.R DATA

**Reliable, Original & Authentic Results**

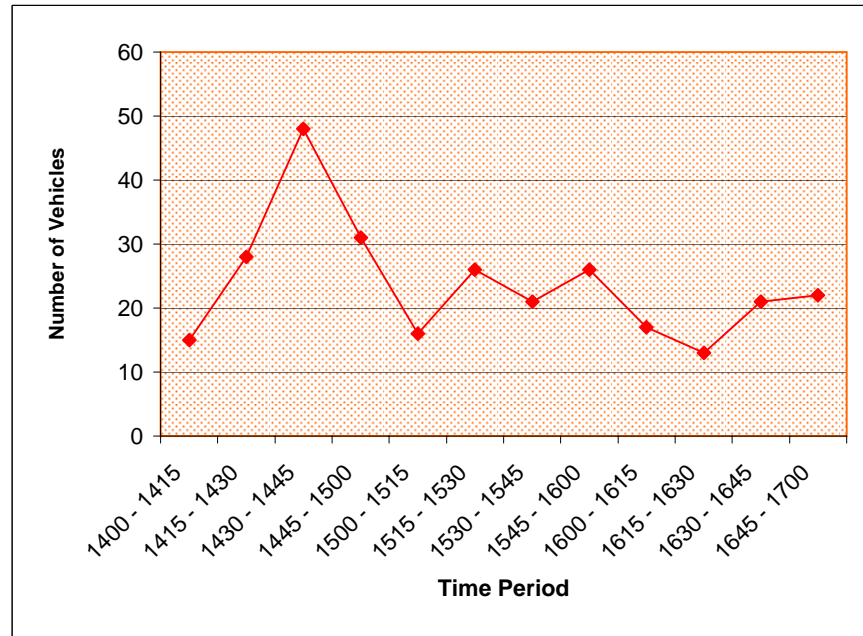
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

AM



PM





# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

<b>Peds</b>				
	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<i>Iluka St</i>	<i>Manion Ave</i>	<i>Iluka St</i>	<b>TOT</b>
0700 - 0715	10	2	4	<b>16</b>
0715 - 0730	4	0	1	<b>5</b>
0730 - 0745	9	5	7	<b>21</b>
0745 - 0800	6	5	6	<b>17</b>
0800 - 0815	5	0	11	<b>16</b>
0815 - 0830	2	2	8	<b>12</b>
0830 - 0845	7	3	6	<b>16</b>
0845 - 0900	0	4	4	<b>8</b>
0900 - 0915	1	0	1	<b>2</b>
0915 - 0930	1	1	1	<b>3</b>
<b>Per End</b>	<b>45</b>	<b>22</b>	<b>49</b>	<b>116</b>

<b>Peds</b>				
	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<i>Iluka St</i>	<i>Manion Ave</i>	<i>Iluka St</i>	<b>TOT</b>
1400 - 1415	2	0	2	<b>4</b>
1415 - 1430	3	1	6	<b>10</b>
1430 - 1445	4	2	3	<b>9</b>
1445 - 1500	2	0	2	<b>4</b>
1500 - 1515	5	1	2	<b>8</b>
1515 - 1530	2	1	2	<b>5</b>
1530 - 1545	2	1	7	<b>10</b>
1545 - 1600	6	0	3	<b>9</b>
1600 - 1615	3	0	0	<b>3</b>
1615 - 1630	2	2	1	<b>5</b>
1630 - 1645	7	5	3	<b>15</b>
1645 - 1700	1	1	7	<b>9</b>
<b>Per End</b>	<b>39</b>	<b>14</b>	<b>38</b>	<b>91</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<i>Iluka St</i>	<i>Manion Ave</i>	<i>Iluka St</i>	<b>TOT</b>
0700 - 0800	29	12	18	<b>59</b>
0715 - 0815	24	10	25	<b>59</b>
0730 - 0830	22	12	32	<b>66</b>
<b>0745 - 0845</b>	20	10	31	<b>61</b>
0800 - 0900	14	9	29	<b>52</b>
0815 - 0915	10	9	19	<b>38</b>
0830 - 0930	9	8	12	<b>29</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<i>Iluka St</i>	<i>Manion Ave</i>	<i>Iluka St</i>	<b>TOT</b>
1400 - 1500	11	3	13	<b>27</b>
<b>1415 - 1515</b>	14	4	13	<b>31</b>
1430 - 1530	13	4	9	<b>26</b>
1445 - 1545	11	3	13	<b>27</b>
1500 - 1600	15	3	14	<b>32</b>
1515 - 1615	13	2	12	<b>27</b>
1530 - 1630	13	3	11	<b>27</b>
1545 - 1645	18	7	7	<b>32</b>
1600 - 1700	13	8	11	<b>32</b>

<b>PEAK HR</b>	<b>20</b>	<b>10</b>	<b>31</b>	<b>61</b>
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<b>PEAK HR</b>	<b>14</b>	<b>4</b>	<b>13</b>	<b>31</b>
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# R.O.A.R. DATA

Reliable, Original & Authentic Results

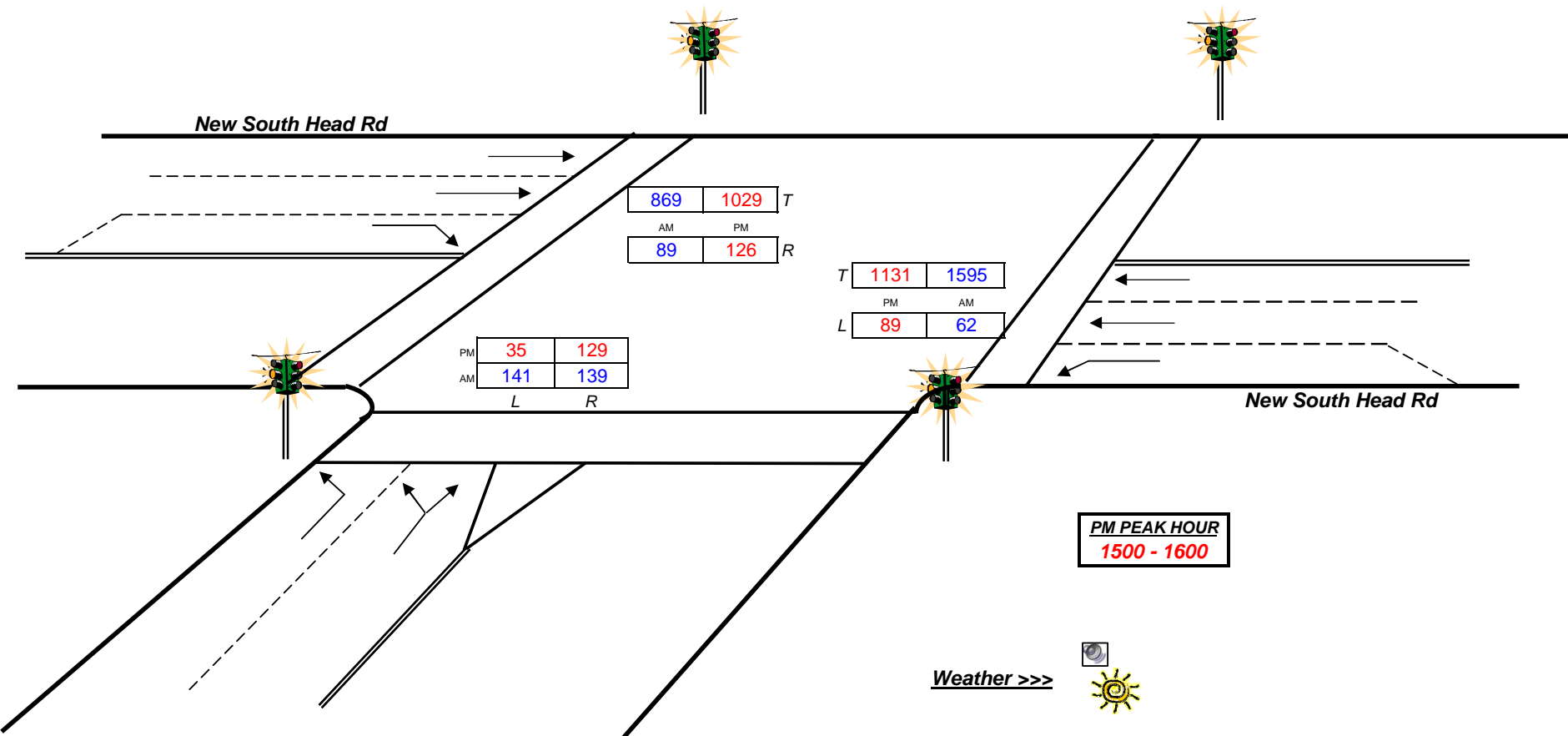
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

## Intersection Details



**AM PEAK HOUR**  
0745 - 0845



869	1029	T
AM	PM	
89	126	R

T	1131	1595
	PM	AM
L	89	62

PM	35	129
AM	141	139
	L	R

**PM PEAK HOUR**  
1500 - 1600

Weather >>>



Newcastle St

New South Head Rd

New South Head Rd



**R.O.A.R. DATA**  
 Reliable, Original & Authentic Results  
 Ph.88196847, Fax 88196849, Mob.0418-239011

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

All Vehicles	WEST		SOUTH		EAST		TOTAL
	New South		Newcastle St		New South		
	R	I	L	R	I	L	
0700 - 0715	14	194	26	25	245	11	515
0715 - 0730	7	158	27	13	235	4	444
0730 - 0745	20	163	39	31	314	12	579
0745 - 0800	16	187	32	28	380	11	654
0800 - 0815	20	223	37	37	369	10	696
0815 - 0830	30	254	42	39	454	23	842
0830 - 0845	23	205	30	35	392	18	703
0845 - 0900	25	197	39	30	289	15	595
0900 - 0915	33	165	35	21	303	22	579
0915 - 0930	29	147	38	26	261	18	519
<b>Period End</b>	<b>217</b>	<b>1893</b>	<b>345</b>	<b>285</b>	<b>3242</b>	<b>144</b>	<b>6126</b>

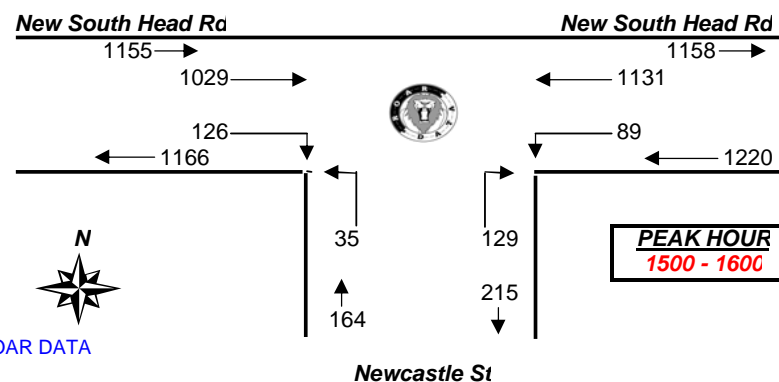
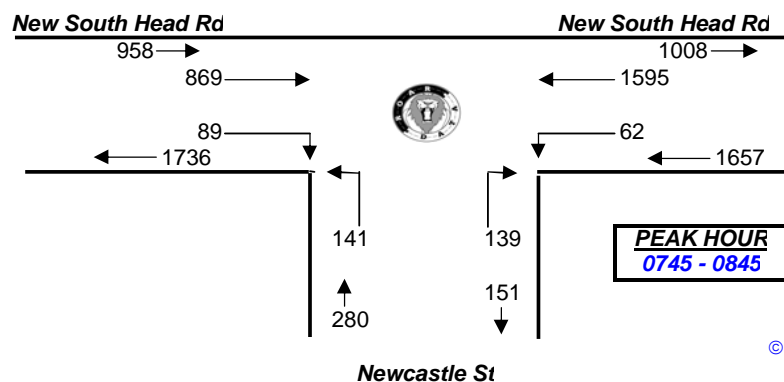
All Vehicles	WEST		SOUTH		EAST		TOTAL
	New South		Newcastle St		New South		
	R	I	L	R	I	L	
1400 - 1415	30	150	31	18	158	18	405
1415 - 1430	26	175	35	21	170	14	441
1430 - 1445	34	192	42	29	213	10	520
1445 - 1500	43	211	34	34	262	12	596
1500 - 1515	26	219	38	40	294	25	642
1515 - 1530	32	282	31	34	267	26	672
1530 - 1545	27	276	34	22	331	28	718
1545 - 1600	41	252	36	33	239	10	611
1600 - 1615	36	214	38	35	251	17	591
1615 - 1630	34	248	24	29	250	17	602
1630 - 1645	35	232	41	26	198	18	550
1645 - 1700	34	257	31	33	203	20	578
<b>Period End</b>	<b>398</b>	<b>2708</b>	<b>415</b>	<b>354</b>	<b>2836</b>	<b>215</b>	<b>6926</b>

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South		Newcastle St		New South		
	R	I	L	R	I	L	
0700 - 0800	57	702	124	97	1174	38	2192
0715 - 0815	63	731	135	109	1298	37	2373
0730 - 0830	86	827	150	135	1517	56	2771
<b>0745 - 0845</b>	<b>89</b>	<b>869</b>	<b>141</b>	<b>139</b>	<b>1595</b>	<b>62</b>	<b>2895</b>
0800 - 0900	98	879	148	141	1504	66	2836
0815 - 0915	111	821	146	125	1438	78	2719
0830 - 0930	110	714	142	112	1245	73	2396

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South		Newcastle St		New South		
	R	I	L	R	I	L	
1400 - 1500	133	728	142	102	803	54	1962
1415 - 1515	129	797	149	124	939	61	2199
1430 - 1530	135	904	145	137	1036	73	2430
1445 - 1545	128	988	137	130	1154	91	2628
<b>1500 - 1600</b>	<b>126</b>	<b>1029</b>	<b>139</b>	<b>129</b>	<b>1131</b>	<b>89</b>	<b>2643</b>
1515 - 1615	136	1024	139	124	1088	81	2592
1530 - 1630	138	990	132	119	1071	72	2522
1545 - 1645	146	946	139	123	938	62	2354
1600 - 1700	139	951	134	123	902	72	2321

<b>PEAK HR</b>	<b>89</b>	<b>869</b>	<b>141</b>	<b>139</b>	<b>1595</b>	<b>62</b>	<b>2895</b>
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<b>PEAK HR</b>	<b>126</b>	<b>1029</b>	<b>139</b>	<b>129</b>	<b>1131</b>	<b>89</b>	<b>2643</b>
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# R.O.A.R DATA

**Reliable, Original & Authentic Results**

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney

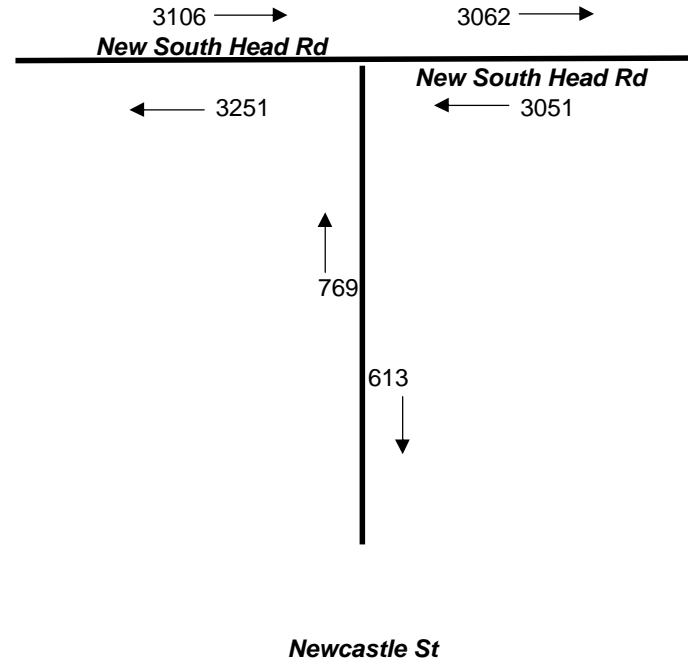
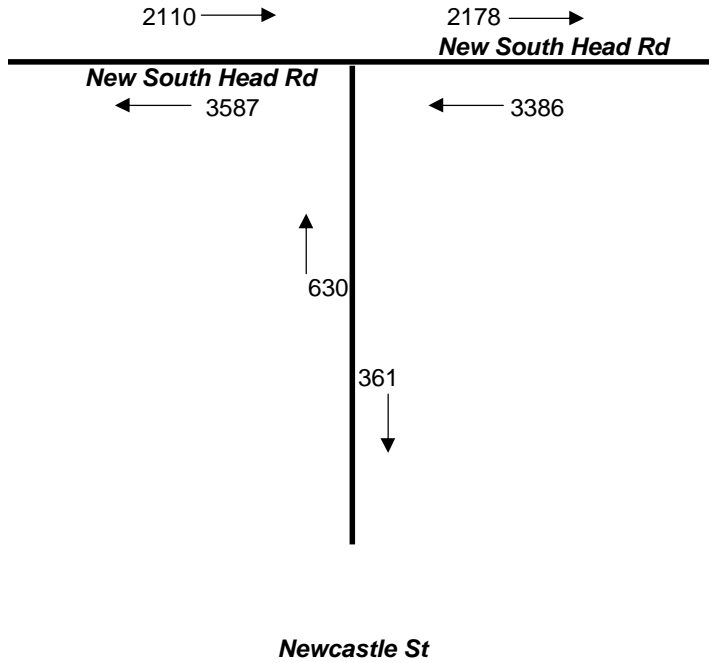
Job No/Name : 1552 Woollahra Traffic Counts

Day/Date : Thursday 9th November 2006

**AM**

**TOTAL VOLUMES  
FOR COUNT  
PERIOD**

**PM**





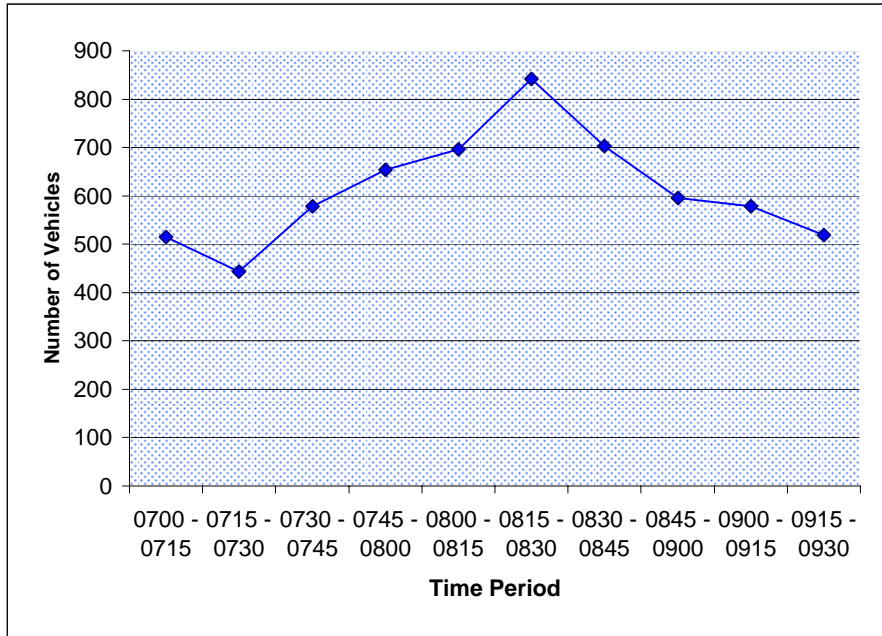
# R.O.A.R DATA

**Reliable, Original & Authentic Results**

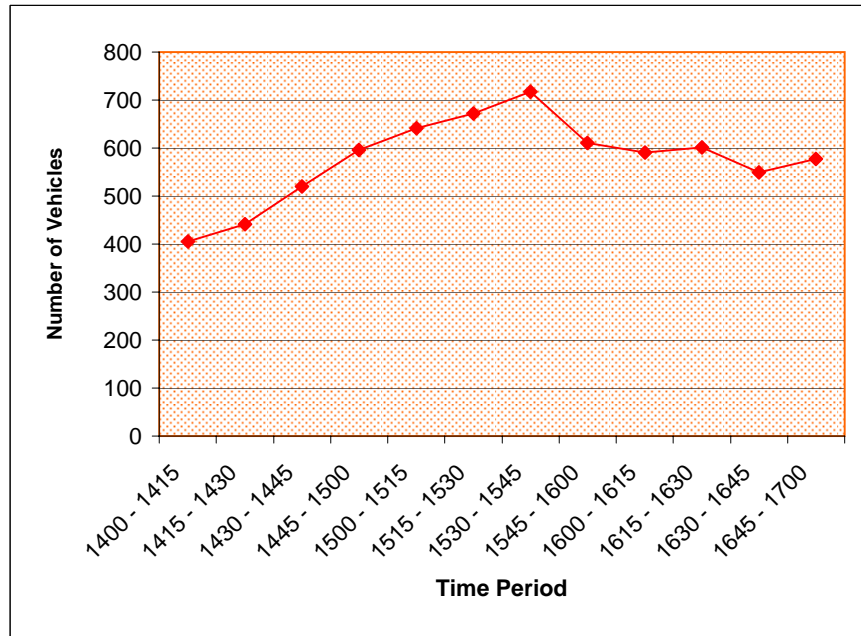
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

AM



PM





# R.O.A.R. DATA

*Reliable, Original & Authentic Results*

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

<b>Peds</b>				
	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>Newcastle St</b>	<b>New South</b>	<b>TOT</b>
0700 - 0715	9	6	7	<b>22</b>
0715 - 0730	4	9	3	<b>16</b>
0730 - 0745	6	7	9	<b>22</b>
0745 - 0800	6	7	5	<b>18</b>
0800 - 0815	12	12	4	<b>28</b>
0815 - 0830	11	11	10	<b>32</b>
0830 - 0845	10	12	7	<b>29</b>
0845 - 0900	13	18	12	<b>43</b>
0900 - 0915	6	25	9	<b>40</b>
0915 - 0930	8	21	7	<b>36</b>
<b>Per End</b>	<b>85</b>	<b>128</b>	<b>73</b>	<b>286</b>

<b>Peds</b>				
	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>Newcastle St</b>	<b>New South</b>	<b>TOT</b>
1400 - 1415	7	10	24	<b>41</b>
1415 - 1430	13	22	16	<b>51</b>
1430 - 1445	13	11	18	<b>42</b>
1445 - 1500	10	25	22	<b>57</b>
1500 - 1515	13	14	30	<b>57</b>
1515 - 1530	24	19	30	<b>73</b>
1530 - 1545	21	16	52	<b>89</b>
1545 - 1600	25	25	45	<b>95</b>
1600 - 1615	12	19	34	<b>65</b>
1615 - 1630	15	20	31	<b>66</b>
1630 - 1645	16	15	26	<b>57</b>
1645 - 1700	13	6	6	<b>25</b>
<b>Per End</b>	<b>182</b>	<b>202</b>	<b>334</b>	<b>718</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>Newcastle St</b>	<b>New South</b>	<b>TOT</b>
0700 - 0800	25	29	24	<b>78</b>
0715 - 0815	28	35	21	<b>84</b>
0730 - 0830	35	37	28	<b>100</b>
<b>0745 - 0845</b>	<b>39</b>	<b>42</b>	<b>26</b>	<b>107</b>
0800 - 0900	46	53	33	<b>132</b>
0815 - 0915	40	66	38	<b>144</b>
0830 - 0930	37	76	35	<b>148</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>Newcastle St</b>	<b>New South</b>	<b>TOT</b>
1400 - 1500	43	68	80	<b>191</b>
1415 - 1515	49	72	86	<b>207</b>
1430 - 1530	60	69	100	<b>229</b>
1445 - 1545	68	74	134	<b>276</b>
<b>1500 - 1600</b>	<b>83</b>	<b>74</b>	<b>157</b>	<b>314</b>
1515 - 1615	82	79	161	<b>322</b>
1530 - 1630	73	80	162	<b>315</b>
1545 - 1645	68	79	136	<b>283</b>
1600 - 1700	56	60	97	<b>213</b>

<b>PEAK HR</b>	<b>39</b>	<b>42</b>	<b>26</b>	<b>107</b>
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<b>PEAK HR</b>	<b>83</b>	<b>74</b>	<b>157</b>	<b>314</b>
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# R.O.A.R. DATA

Reliable, Original & Authentic Results

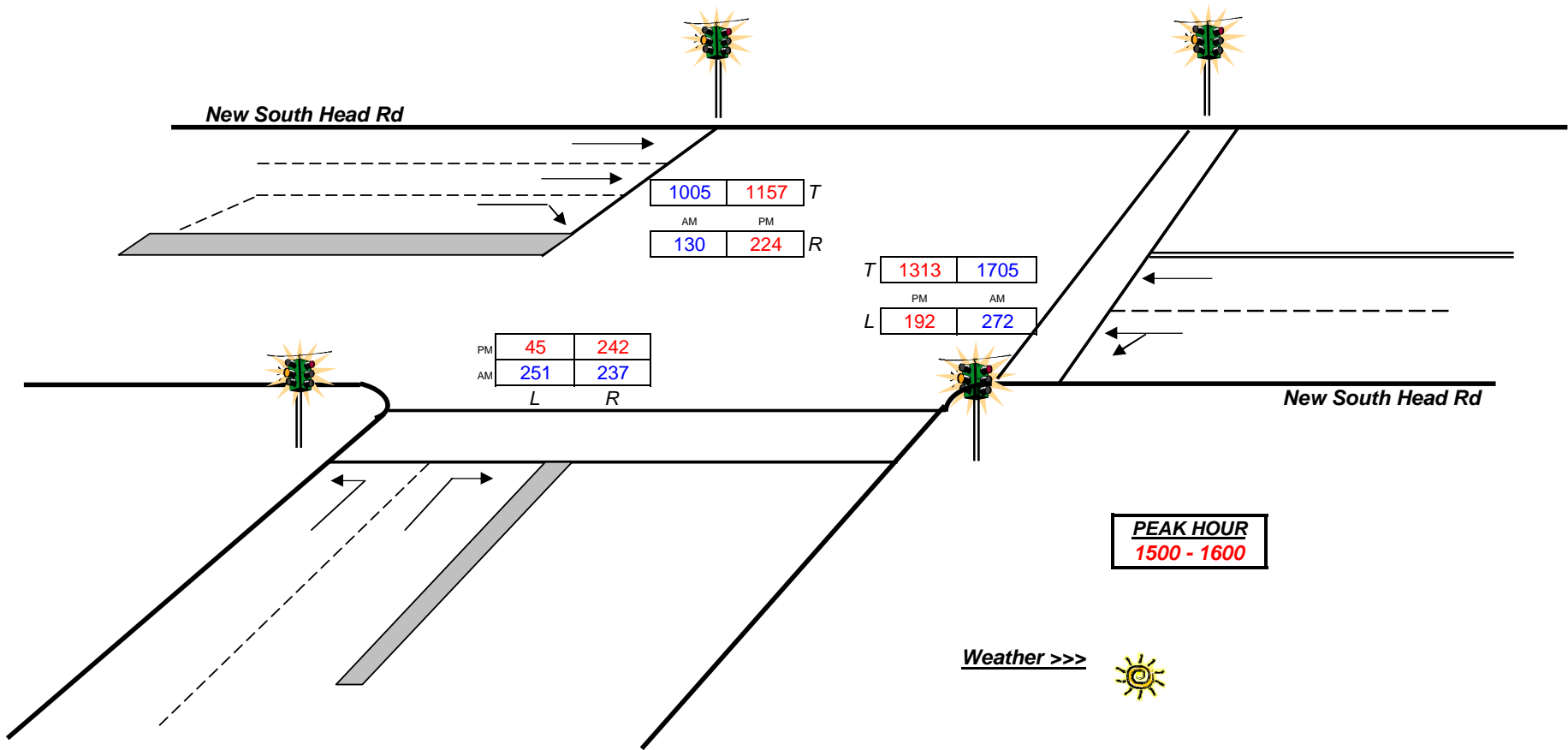
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

## Intersection Details



**PEAK HOUR**  
0745 - 0845



**PEAK HOUR**  
1500 - 1600

Weather >>>



O'Sullivan Rd

New South Head Rd

New South Head Rd



**R.O.A.R. DATA**  
 Reliable, Original & Authentic Results  
 Ph.88196847, Fax 88196849, Mob.0418-239011

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

All Vehicles	WEST		SOUTH		EAST		TOTAL
	New South		O'Sullivan Rc		New South		
	R	I	L	R	I	L	
0700 - 0715	20	194	59	41	268	38	620
0715 - 0730	28	195	62	32	310	13	640
0730 - 0745	25	184	77	39	377	23	725
0745 - 0800	22	225	68	50	421	44	830
0800 - 0815	55	296	68	58	416	59	952
0815 - 0830	28	247	64	62	454	80	935
0830 - 0845	25	237	51	67	414	89	883
0845 - 0900	26	199	63	61	348	50	747
0900 - 0915	42	189	70	51	293	41	686
0915 - 0930	56	173	62	28	322	54	695
<b>Period End</b>	<b>327</b>	<b>2139</b>	<b>644</b>	<b>489</b>	<b>3623</b>	<b>491</b>	<b>7713</b>

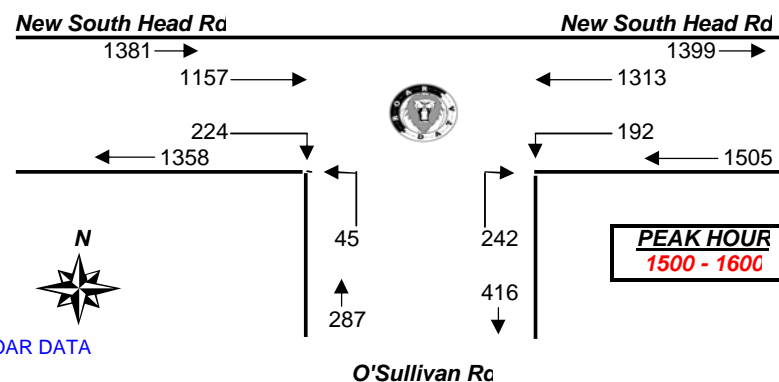
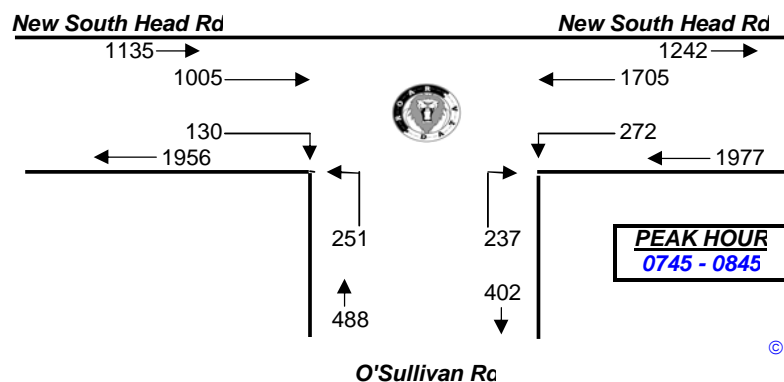
All Vehicles	WEST		SOUTH		EAST		TOTAL
	New South		O'Sullivan Rc		New South		
	R	I	L	R	I	L	
1400 - 1415	54	175	42	28	188	38	525
1415 - 1430	38	203	45	52	205	32	575
1430 - 1445	53	240	65	54	273	48	733
1445 - 1500	43	241	60	57	314	55	770
1500 - 1515	54	264	35	48	344	49	794
1515 - 1530	54	350	45	79	331	51	910
1530 - 1545	52	280	42	57	328	54	813
1545 - 1600	64	263	58	58	310	38	791
1600 - 1615	52	249	43	45	330	51	770
1615 - 1630	52	237	49	53	255	59	705
1630 - 1645	62	282	45	52	268	56	765
1645 - 1700	54	289	42	70	260	52	767
<b>Period End</b>	<b>632</b>	<b>3073</b>	<b>571</b>	<b>653</b>	<b>3406</b>	<b>583</b>	<b>8918</b>

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South		O'Sullivan Rc		New South		
	R	I	L	R	I	L	
0700 - 0800	95	798	266	162	1376	118	2815
0715 - 0815	130	900	275	179	1524	139	3147
0730 - 0830	130	952	277	209	1668	206	3442
<b>0745 - 0845</b>	<b>130</b>	<b>1005</b>	<b>251</b>	<b>237</b>	<b>1705</b>	<b>272</b>	<b>3600</b>
0800 - 0900	134	979	246	248	1632	278	3517
0815 - 0915	121	872	248	241	1509	260	3251
0830 - 0930	149	798	246	207	1377	234	3011

Peak Per	WEST		SOUTH		EAST		TOTAL
	New South		O'Sullivan Rc		New South		
	R	I	L	R	I	L	
1400 - 1500	188	859	212	191	980	173	2603
1415 - 1515	188	948	205	211	1136	184	2872
1430 - 1530	204	1095	205	238	1262	203	3207
1445 - 1545	203	1135	182	241	1317	209	3287
<b>1500 - 1600</b>	<b>224</b>	<b>1157</b>	<b>180</b>	<b>242</b>	<b>1313</b>	<b>192</b>	<b>3308</b>
1515 - 1615	222	1142	188	239	1299	194	3284
1530 - 1630	220	1029	192	213	1223	202	3079
1545 - 1645	230	1031	195	208	1163	204	3031
1600 - 1700	220	1057	179	220	1113	218	3007
<b>PEAK HR</b>	<b>224</b>	<b>1157</b>	<b>45</b>	<b>242</b>	<b>1313</b>	<b>192</b>	<b>3308</b>

<b>PEAK HR</b>	<b>130</b>	<b>1005</b>	<b>251</b>	<b>237</b>	<b>1705</b>	<b>272</b>	<b>3600</b>
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<b>PEAK HR</b>	<b>224</b>	<b>1157</b>	<b>45</b>	<b>242</b>	<b>1313</b>	<b>192</b>	<b>3308</b>
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# R.O.A.R DATA

**Reliable, Original & Authentic Results**

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney

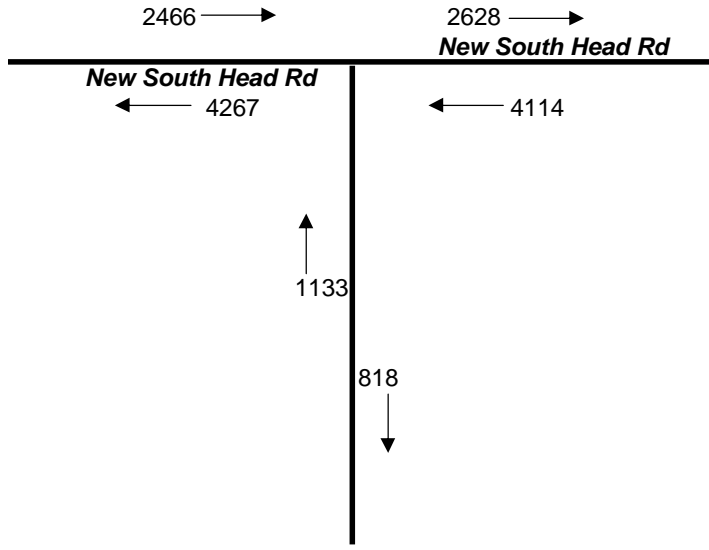
Job No/Name : 1552 Woollahra Traffic Counts

Day/Date : Thursday 9th November 2006

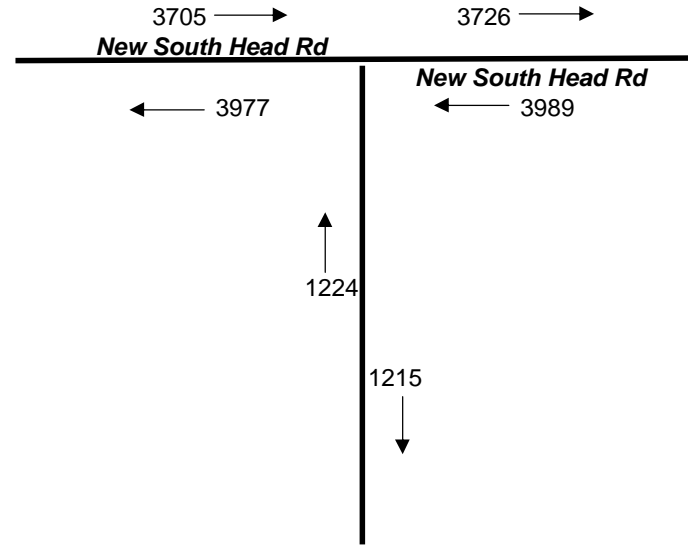
**AM**

**TOTAL VOLUMES  
FOR COUNT  
PERIOD**

**PM**



**O'Sullivan Rd**



**O'Sullivan Rd**



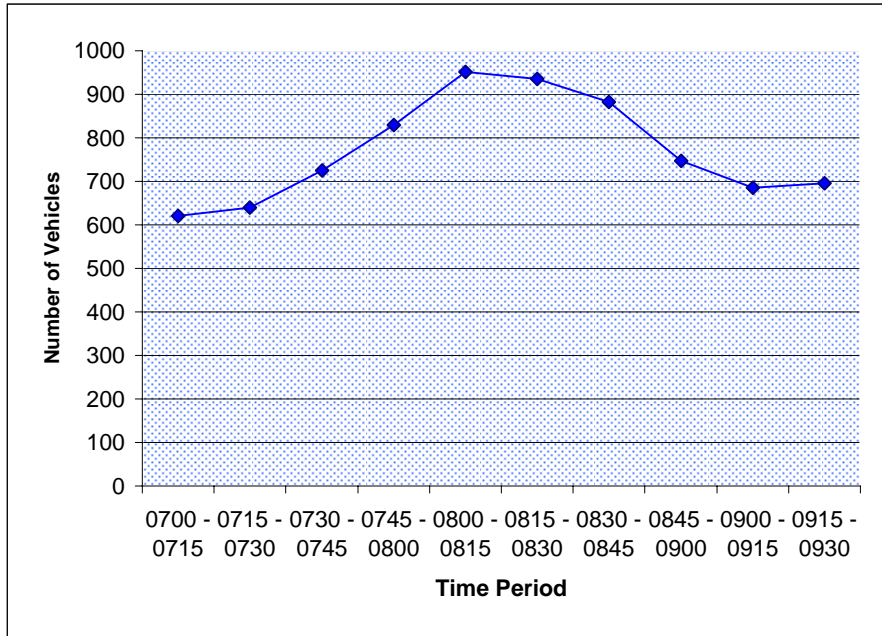
# R.O.A.R DATA

**Reliable, Original & Authentic Results**

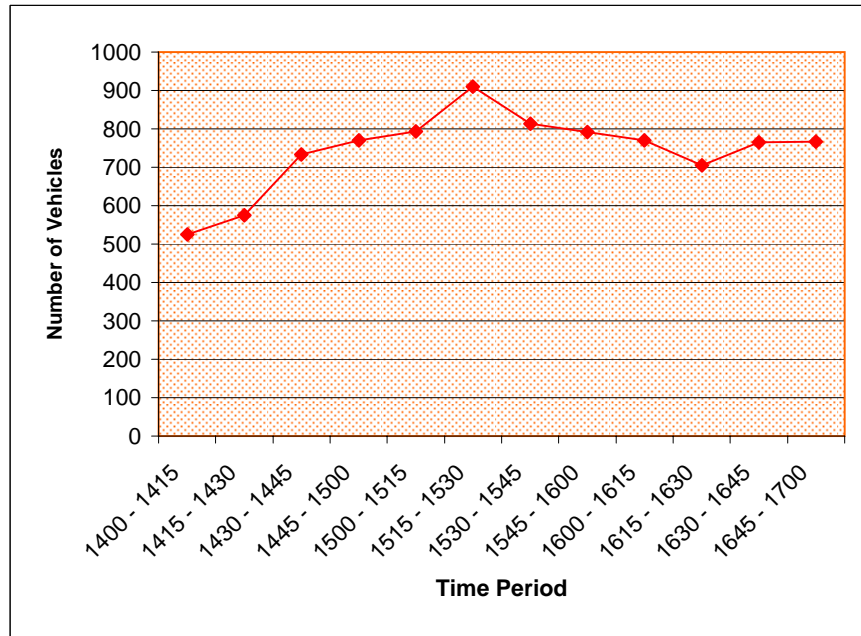
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
Job No/Name : 1552 Woollahra Traffic Counts  
Day/Date : Thursday 9th November 2006

AM



PM





# R.O.A.R. DATA

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Ph.88196847, Fax 88196849, Mob.0418-239019

Client : Masson Wilson Twiney  
 Job No/Name : 1552 Woollahra Traffic Counts  
 Day/Date : Thursday 9th November 2006

<b>Peds</b>				
	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>O'Sullivan Rd</b>	<b>New South</b>	<b>TOT</b>
0700 - 0715	0	3	14	17
0715 - 0730	0	8	9	17
0730 - 0745	0	3	17	20
0745 - 0800	0	2	24	26
0800 - 0815	5	8	23	36
0815 - 0830	0	2	9	11
0830 - 0845	0	1	12	13
0845 - 0900	0	2	14	16
0900 - 0915	0	5	2	7
0915 - 0930	0	1	3	4
<b>Per End</b>	<b>5</b>	<b>35</b>	<b>127</b>	<b>167</b>

<b>Peds</b>				
	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Time Per</b>	<b>New South</b>	<b>O'Sullivan Rd</b>	<b>New South</b>	<b>TOT</b>
1400 - 1415	0	1	1	2
1415 - 1430	0	1	5	6
1430 - 1445	0	6	6	12
1445 - 1500	0	2	7	9
1500 - 1515	0	5	4	9
1515 - 1530	0	6	6	12
1530 - 1545	0	6	13	19
1545 - 1600	0	4	5	9
1600 - 1615	0	6	10	16
1615 - 1630	0	12	16	28
1630 - 1645	0	4	16	20
1645 - 1700	2	7	7	16
<b>Per End</b>	<b>2</b>	<b>60</b>	<b>96</b>	<b>158</b>

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>O'Sullivan Rd</b>	<b>New South</b>	<b>TOT</b>
0700 - 0800	0	16	64	80
0715 - 0815	5	21	73	99
0730 - 0830	5	15	73	93
<b>0745 - 0845</b>	5	13	68	86
0800 - 0900	5	13	58	76
0815 - 0915	0	10	37	47
0830 - 0930	0	9	31	40

	<b>WEST</b>	<b>SOUTH</b>	<b>EAST</b>	
<b>Peak Per</b>	<b>New South</b>	<b>O'Sullivan Rd</b>	<b>New South</b>	<b>TOT</b>
1400 - 1500	0	10	19	29
1415 - 1515	0	14	22	36
1430 - 1530	0	19	23	42
1445 - 1545	0	19	30	49
<b>1500 - 1600</b>	0	21	28	49
1515 - 1615	0	22	34	56
1530 - 1630	0	28	44	72
1545 - 1645	0	26	47	73
1600 - 1700	2	29	49	80

<b>PEAK HR</b>	<b>5</b>	<b>13</b>	<b>68</b>	<b>86</b>
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<b>PEAK HR</b>	<b>0</b>	<b>21</b>	<b>28</b>	<b>49</b>
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