BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

PLANNING
PROJECT MANAGEMENT
ENGINEERING
CERTIFICATION

Deicorp Projects Petersham Pty Ltd

Traffic and Parking Impact Assessment Report

Regent Street, Petersham
Residential Units & Petersham RSL

Our ref: SY150139
November 2016

Project No.	SY150139
Author	EA
Checked	GB
Approved	GB

Rev No.	Status	Date	Comments
1	Draft	7/11/16	
2	Final	29/11/16	

SYDNEY
Suite 603, Level 6, 12 Century Circuit
Norwest Business Park NSW 2153
P (02) 9659 0005 **F** (02) 9659 0006
E sydney@barkerryanstewart.com.au

CENTRAL COAST
Studio 5, 78 York Street
East Gosford NSW 2250
P (02) 4325 5255
E coast@barkerryanstewart.com.au

HUNTER
Unit 1, 17 Babilla Close
Beresfield NSW 2322
P (02) 4966 8388 **F** (02) 4966 1399
E hunter@barkerryanstewart.com.au

barkerryanstewart.com.au

TABLE OF CONTENTS

SYDNEY
Suite 603, Level 6, 12 Century Circuit
Norwest Business Park NSW 2153
P (02) 9659 0005 F (02) 9659 0006
E sydney@barkerryanstewart.com.au

CENTRAL COAST
Studio 5, 78 York Street
East Gosford NSW 2250
P (02) 4325 5255
E coast@barkerryanstewart.com.au

HUNTER
Unit 1, 17 Babilla Close
Beresfield NSW 2322
P (02) 4966 8388 F (02) 4966 1399
E hunter@barkerryanstewart.com.au

barkerryanstewart.com.au

1 Introduction

Barker Ryan Stewart have been engaged by Deicorp Projects Petersham Pty Ltd to prepare a Traffic and Parking Impact Assessment in accordance with the requirements of the Marrickville DCP 2011 (DCP) and the Road and Maritime Service's (RMS's) 'Guide to Traffic Generating Developments' to accompany a Development Application to Inner West Council for the residential development of 3 residential sites, including the relocation of the Petersham RSL.

The purpose of this report is to assess and address traffic, access, car parking and pedestrian impacts generated by the proposed development. This can be briefly outlined as follows:

- The expected traffic generation to/from the proposed development.
- The impact of the proposed development on the road network.
- Intersection analysis based on traffic counts.
- Vehicle parking provisions.
- Access design requirements.
- Delivery and Waste Collection.
- Provision for pedestrians.
- Availability of public transport.

This Traffic and Parking Impact Assessment Report concludes that the subject site is suitable for the proposed development in relation to traffic impact, car parking provision, vehicle and pedestrian access and safety considerations.

2 Existing Conditions

2.1 Site Location

The sites are located on Regent Street between New Canterbury Road and Trafalgar Street and comprises the following lots:

Site 1
- Lot 1 DP 629058

Site 2
- Lot 1 DP 830175

Site 3
- Lot 1 DP 1208130
- Lot 10 DP 1004198
- Lots A, B & C DP 440676

Site 1 is the existing RSL site on the corner of Regent Street and Fisher Street. The footprint of site 2 covers the existing car park on Regent Street between New Canterbury Road and Fisher Street. Site 3 fronts the entire midblock on Regent Street between Trafalgar Street and Fisher Street, Trafalgar Street between Regen Street and Fozzard Lane, and fronts approximately 40m of Fisher Street.

Petersham railway station is to the north of Trafalgar Street.

Figure 1: Aerial photo (nearmap.com, September 2016)

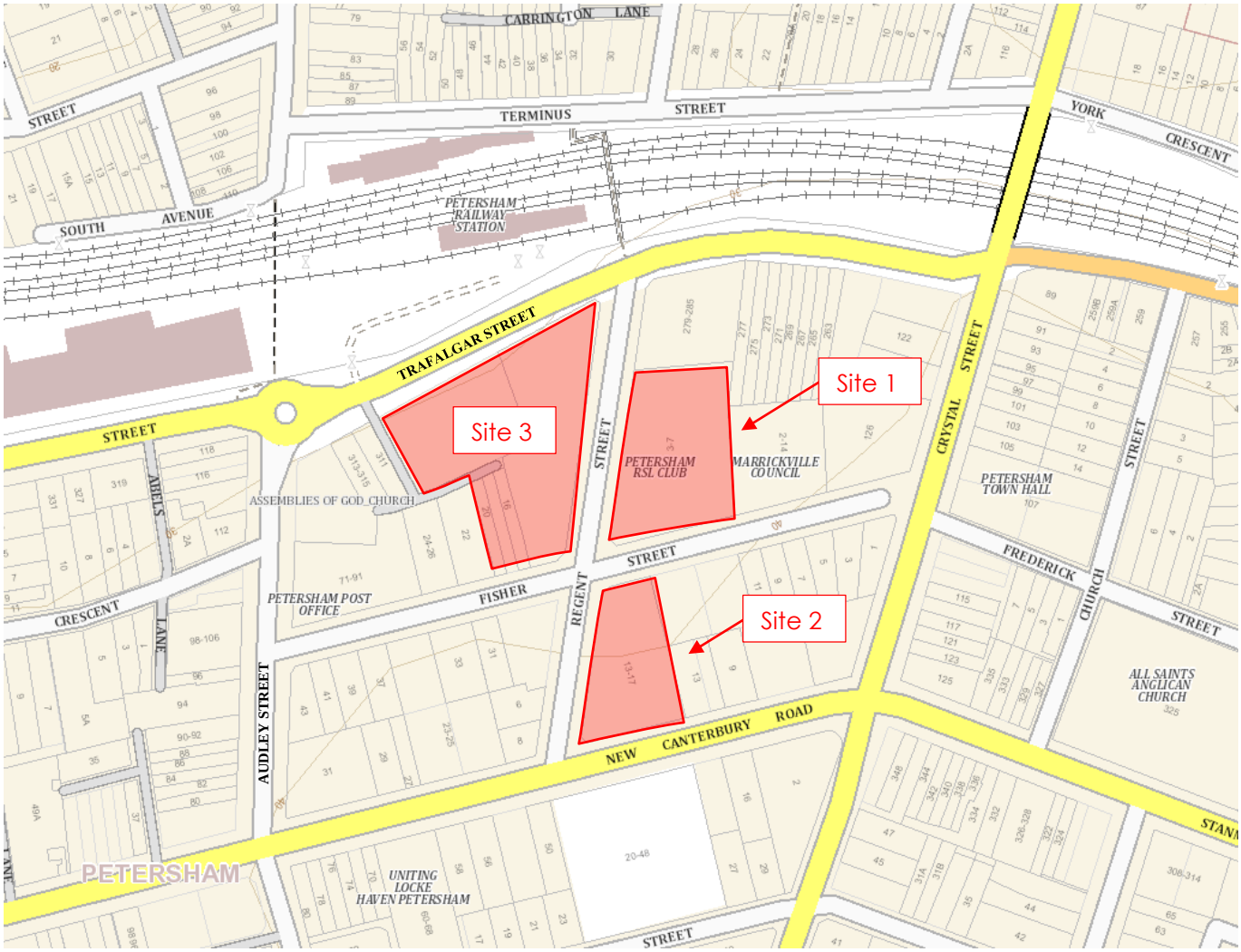


Figure 2: Site location (maps.six.nsw.gov.au)

2.2 Existing Development

Site 1 is the existing RSL site with a public car park at the rear and site 2 is exclusively a car park for the RSL outside of business hours (leased as a public car park during business hours).

Site 3 currently comprises 3 car parks along Regent Street, 3 townhouses on Fisher Street and a number of commercial properties with a combined footprint of approximately 5424m2 on Trafalgar Street.

The existing car parking on sites 1, 2 and 3 is for the use of the Petersham RSL. The car parking arrangement is for 152 on site car parking spaces spread out over 6 separate car parking areas (see Appendix G).

2.3 Existing Road Conditions

As stated above the sites surround Regent Street and Fisher Street, and is in the near vicinity to Audley Street to the west and Crystal Street to the east. Trafalgar Street runs along the north of site 1, to which site 3 has frontage, as site 2 fronts New Canterbury Road to the south. These roads are two-lane, two-way with the exception of Crystal Street and New Canterbury Road which operate with four lanes under clear way conditions during the morning and afternoon peaks.

The speed limits along these roads are default 50km/h aside from New Canterbury Road and Crystal Street which are signposted 60km/h.

Current vehicle access to the sites are predominantly from Regent Street, aside from the commercial premises on site 3 which has access from Trafalgar Street, and the public car park and RSL loading bay which has access from Fisher Street.

There is full width footpath paving and kerb and gutter for all of the surrounding streets to the site. There is also generally restricted kerb-side parking on these streets.

Trafalgar Street

Trafalgar Street runs east-west and is an arterial road under the RMS schedule of classified roads. It has a roundabout at the intersection with Audley Street, a T-junction with Regent Street which only allows left in/left out, and a signalised intersection with Crystal Street. There is a pedestrian operated signalised crossing just to the east of the intersection with Regent Street.

Regent Street

Regent Street runs north-south and is the minor side road between Trafalgar Street and New Canterbury Road. Regent Street cross-roads with Fisher Street as the through road.

Fisher Street

Fisher Street runs east-west between Audley Street and terminates before Crystal Street at the Petersham Service Centre for the Inner West Council.

2.4 Traffic Flows and Volumes

Traffic counts were undertaken during the morning and afternoon peak periods to gauge the performance of the current road system. The survey was conducted by ROAR Data Pty Ltd on Wednesday 26 October 2016 at the intersections shown in Figure 3 below.

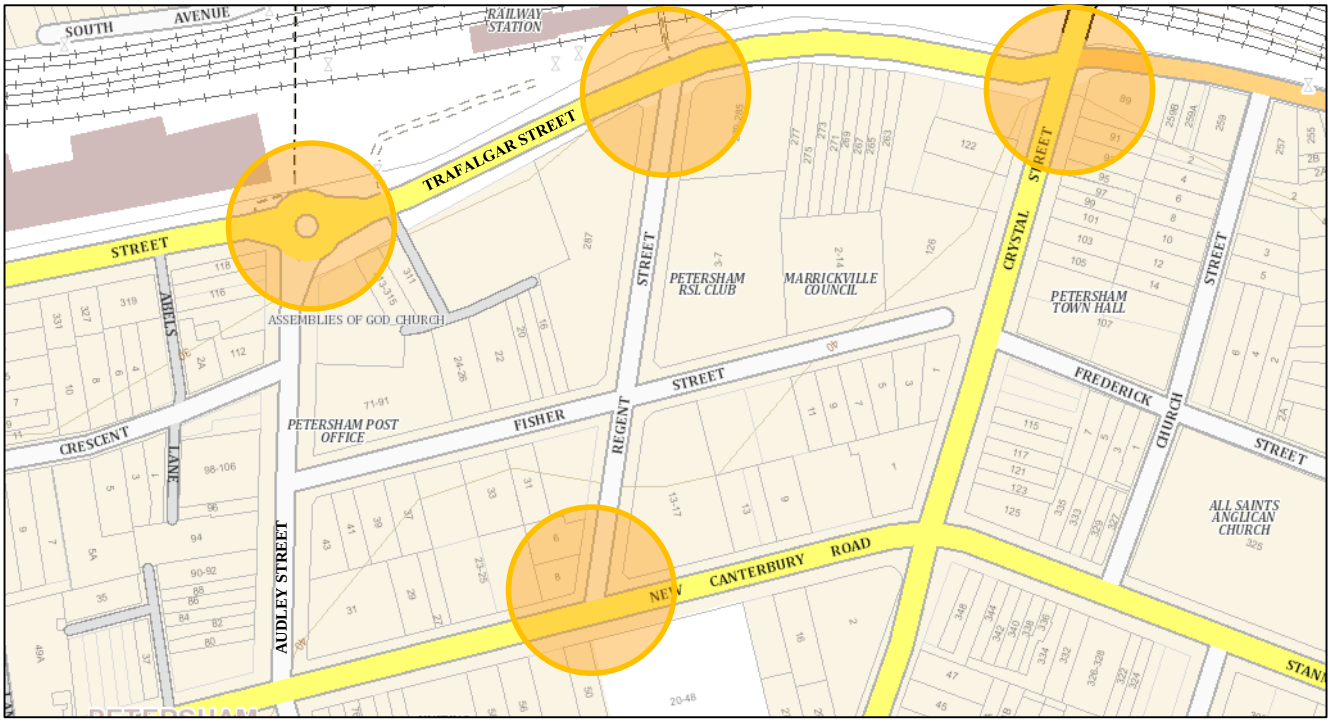


Figure 3: Locations of traffic counts

The traffic counts were taken during the 7am-9am morning peak and the 4pm-6pm evening peak period. The full counts are attached in Appendix A.

The full results of the traffic counts shown below demonstrate the peak periods occurring between 7:15am-8:15am and 4:45pm-5:45pm with the exception of the Regent Street / New Canterbury Road intersection which occurred at 4:30pm-5:30pm.

Trafalgar Street and Audley Street

The results of the traffic counts at the roundabout at Trafalgar Street and Audley Street found that the morning peak occurred between 7:15am-8:15am while the evening peak occurred between 4:45pm-5:45pm as shown in Figure 4 below.

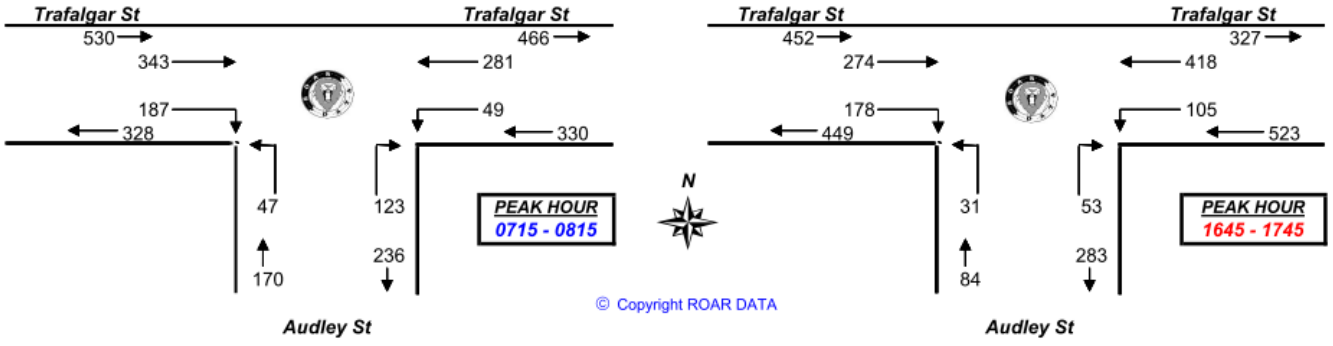


Figure 4: Traffic Counts – Trafalgar Street and Audley Street

Trafalgar Street and Regent Street

The results of the traffic counts at the intersection of Trafalgar Street and Regent Street found that the morning peak occurred between 7:15am-8:15am while the evening peak occurred between 4:45pm-5:45pm as shown in Figure 5 below.

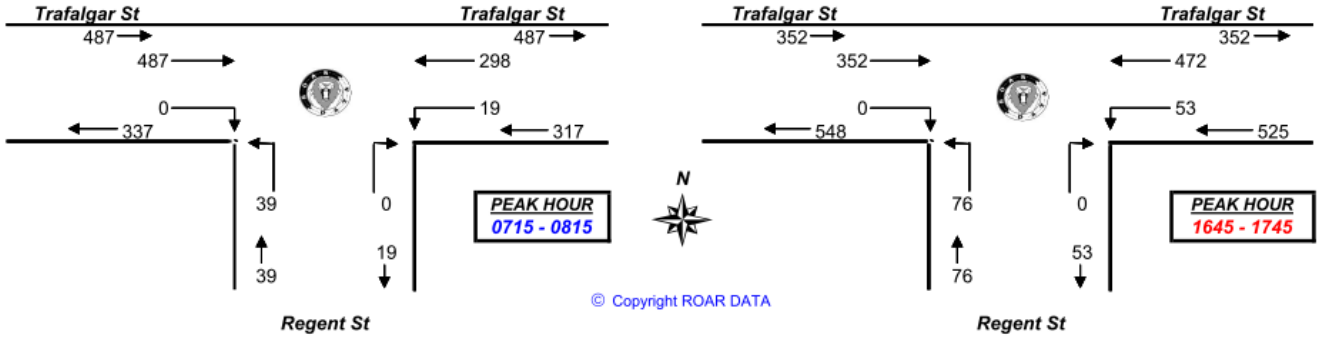


Figure 5: Traffic Counts – Trafalgar Street and Regent Street

Regent Street and New Canterbury Road

The results of the traffic counts at the intersection of Regent Street and New Canterbury Road found that the morning peak occurred between 7:15am-8:15am while the evening peak occurred between 4:30pm-5:30pm as shown in Figure 6 below.

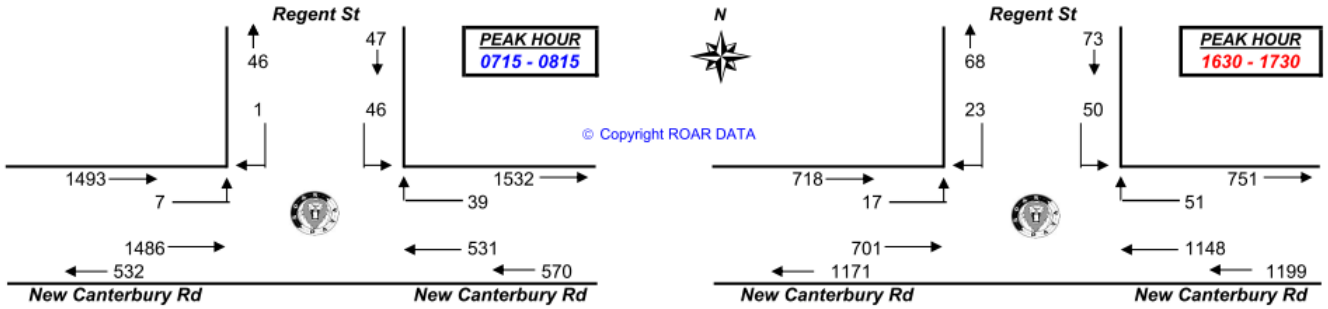


Figure 6: Traffic Counts – Regent Street and New Canterbury Road

Trafalgar Street and Crystal Street

The results of the traffic counts at the intersection of Trafalgar Street and Crystal Street found that the morning peak occurred between 7:15am-8:15am while the evening peak occurred between 4:45pm-5:45pm as shown in Figure 7 below.

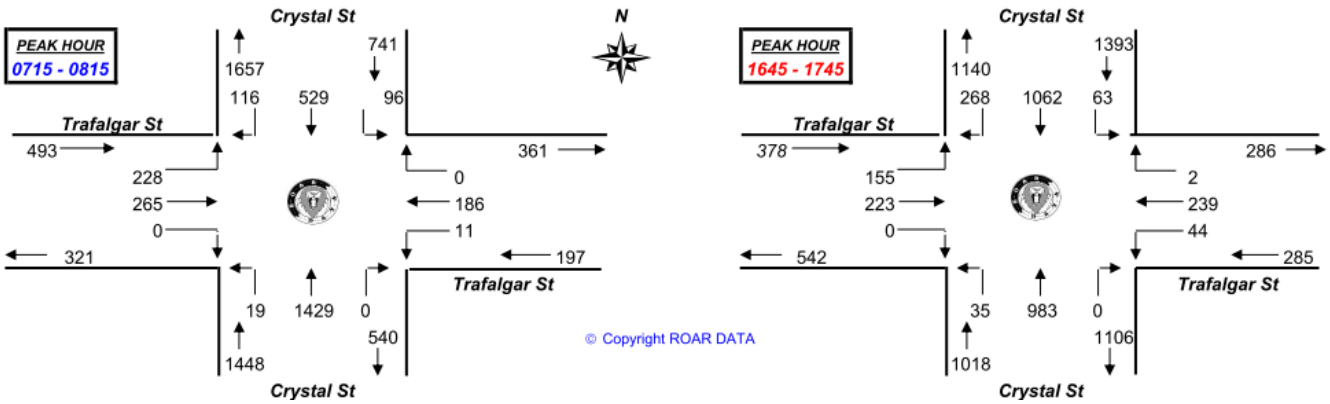


Figure 7: Traffic Counts – Trafalgar Street and Crystal Street

2.5 Public Transport, Pedestrians and Cyclists.

The area is well connected to public transport, with rail and bus connections located directly adjacent to the site.

The site is located along a number of bus routes with bus stops located on Trafalgar Street on either side of Regent Street. The following routes service these stops: 54T2, 412, 444, 445 and N50. The bus maps are attached in Appendix B.

Petersham railway station is located directly opposite site 3 to the north, which is on the T2 Airport, Inner West and South Line. The Sydney Trains Network Map is attached in Appendix C.

The site is well connected with pedestrian footpaths which allow easy access to other buildings within the area including Council's Service Centre and Town Hall to the east, the Petersham railway station to the north, and the strip of shops 150m to the west on Audley Street.

The site is linked with a number of existing recommended on-road cycle paths as shown on the Cycling Marrickville brochure attached in Appendix D.

The site is very well located to all forms of public transport.

3 Proposed Development

3.1 Development Description

The proposal is for 3 residential buildings with 381 units on all 3 sites and the relocation of the existing RSL from site 1 to site 3. The unit breakdown for each site is as follows:-

Site 1:
- 2 studios
- 63 one-bedroom units
- 68 two-bedroom units
- 157 car parking spaces (including 24 Council car parks in the rear at ground level)

Site 2:
- 22 one-bedroom units
- 23 two-bedroom units
- 2 three-bedroom units
- 56 car parking spaces

Site 3:
- 90 on-bedroom units
- 111 two-bedroom units
- RSL 3,599m^2 GFA
- 352 car parking spaces (including 150 RSL car parks)

Note that a Construction Management Plan, including a Construction Traffic Management Plan, would be required to be prepared at the Construction Certificate Stage. This should be required as a condition of development consent and would generally be addressed by the main builder/contractor engaged to undertake the building works.

3.2 Access

The access to site 1 is proposed from Regent Street, site 2 from Fisher Street and site 3 from Trafalgar Street as a left in/left out arrangement.

The entry/exit driveways generally comply with *AS/NZS 2890.1-2004 Parking Facilities – Off Street Car Parking (AS/NZS 2890.1), AS 2890.2-2002 Parking Facilities – Off Street Commercial Vehicle Facilities (AS 2890.2)* and Council's DCP requirements.

The access to site 3 does not strictly comply with the access width requirement. According to Tables 3.1 and 3.2 in *AS/NZS 2890.1*, the site requires an access category 3 width – 6m entry, 4-6m exit plus a 1-3m median. Due to the access only allowing left in/left out traffic, there is no practical need for 2 vehicles to be able to utilise the entry or exit at the same time. There is also sufficient queue length contained within the internal ramp. It is considered that the proposed access will not have any adverse impacts on the operation or safety of entering and exiting vehicles.

The proposed driveway locations comply with *Figure 3.3 – Minimum Sight Distance for Pedestrian Safety AS/NZS 2890.1* and the proposed driveway gradients comply with *AS/NZS 2890.1*.

3.3 Parking

As outlined above it is proposed to provide a total 157 car parking spaces at site 1, 56 car spaces at site 2 and 352 car parking spaces on site 3 including 150 RSL spaces.

Site 1 will also provide 6 motorcycle and 80 bicycle spaces, site 2 will provide 5 motorcycle and 29 bicycle spaces and site 3 will provide 6 motorcycle and 25 bicycle spaces for the RSL, and 6 motorcycle spaces and 121 bicycle spaces for residential use. These motorcycle and bicycle provisions meet the DCP requirements.

The proposed parking facilities have been designed in accordance with the requirements *AS/NZS 2890.1, AS 2890.2* and *AS/NZS 2890.6 – Off-street Parking for People with Disabilities (AS/NZS 2890.1)*.

3.4 Circulation

The proposed ramps and circulation roadways have been designed in accordance with the requirements *AS/NZS 2890.*1.

A swept path assessment in accordance with *AS/NZS 2890.1* B85 vehicle through the car park was undertaken and the proposed car park arrangement was considered to be satisfactory. On the access ramps the swept paths of the B85 and B99 vehicles can by-pass each other simultaneously.

3.5 Service Vehicles

Residential waste will be collected by Council's residential waste services from the loading bay area in site 3. Waste collection from site 1 and 2 will be kerb-side pickup. Commercial waste from the RSL will be collected by a commercial waste contractor.

The loading area on site 3 is via Fozzard Lane and is serviced by a turntable. The largest design vehicle is for a 12m-long HRV delivery vehicle for the RSL which the swept path and turntable are able to facilitate. The swept path analysis for Site 3 is attached in Appendix E.

A Waste and Loading Bay Management Plan should be prepared as a requirement of the consent, outlining the safe operation of the waste collection / loading bay area.

3.6 Public Transport, Pedestrians and Cyclists

As stated above, ample bicycle storage is provided to encourage alternative modes of transport to be utilised by residents.

All other public transport services, as discussed in 2.5 above, will be available to the proposed development. It is considered that the additional residents in the area would not have a significant effect on the capacity of the public transport infrastructure, rather it would add to the viability of these services.

4 Car Parking Assessment

4.1 Parking requirements

The proposed access and car parking provision has been assessed against Marrickville's DCP 2011 Part 2.10 Parking, and RMS's '*Guide to Traffic Generating Developments'*. With reference to

Marrickville DCP 2011

The required parking provision for the proposed different uses of the site are outlined below:

- Residential flat buildings (DCP, Area 1)
  - 0.2 per studio
  - 0.4 per one-bedroom unit
  - 0.8 per two-bedroom unit
  - 1.1 per three-bedroom unit
  - 1 per adaptable unit

- Residential flat buildings (DCP, Area 2)
  - 0.4 per studio
  - 0.5 per one-bedroom unit
  - 1 per two-bedroom unit
  - 1.2 per three-bedroom unit
  - 0.1 per unit for visitors
  - 1 per adaptable unit
  - 0.25 per adaptable unit for visitors

- Motorcycle parking – 5% of car parking requirement rounded up
- Bicycle parking – 1 per 2 units for residents plus 1 per 10 units for visitors

RMS '*Guide to Traffic Generating Development'*

- Residential – Flat building (Metropolitan regional centres (CBD)
  - 0.4 spaces/1 bedroom unit
  - 0.7 spaces/2 bedroom unit
  - 1.2 spaces/3 bedroom unit plus
  - Visitor parking – 1 space/7 units

Figure 8 below outlines the number of car parking spaces required by Marrickville DCP 2011 and RMS Guide for the proposed development.

	Marrickville DCP 2011	RMS Guide	Proposed Parking Provision
Site 1 – 133 Res. units	(DCP Area 1)		
2 studio 63 one-bedroom 68 two-bedroom	2 × 0.2 = 0.4 63 × 0.4 = 25.2 68 × 0.8 = 54.4 Total = **80**	2 x 0.4 = 0.8 63 x 0.4 = 25.2 68 x 0.7 = 47.6 133/7 = 19 (visitors) Total = 92.6 **(93)**	Residential = **133**
Council Car Park (VPA)	**24**	**24**	Council = **24**
Total	**104**	**117**	**Total = 157**
Motorbikes Bicycles	80 × 5% = 4 133 ÷ 2 + 133 ÷ 10 = 79.8 (80)		6 motorcycles 80 bicycles
Site 2 – 47 Res. units	(DCP Area 2)		
22 one-bedroom 23 two-bedroom 2 three-bedroom Visitors	22 × 0.5 = 11 23 × 1 = 23 2 × 1.2 = 2.4 47 × 0.1 = 4.7 Total = 41.1 **(42)**	22 x 0.4 = 8.8 23 x 0.7 = 16.1 2 x 1.2 = 2.4 47/7 = 6.7 (visitors) Total = **34**	Residential = **56**
Motorbikes Bicycles	37 × 5% = 1.8 (2) 47 ÷ 2 + 47 ÷ 10 = 28.2 (29)		5 motorcycles 29 bicycles
Site 3 – 201 Res. units	(DCP Area 1)		
90 one-bedroom 111 two-bedroom	90 × 0.4 = 36 111 × 0.8 = 88.8 Total = 124.8 **(125)**	90 x 0.4 = 36 111 x 0.7 = 77.7 201/7 = 28.7 (visitors) Total = 142.4 **(143)**	Residential = **202**
RSL car park relocation (see section 4.4 below)	**150**	**150**	RSL = **150**
Total	**275**	**293**	**352**
Motorbikes Bicycles	125 × 5% = 6.25 (6) 201 ÷ 2 + 201 ÷ 10 = 120.6 (121)		12 motorcycles 146 bicycles
Total car parking	**Res. = 247** **Council = 24** **RSL = 150** **Total = 421** **Motorbikes = 12** **Bicycles = 230**	**Res. = 270** **Council = 24** **RSL = 150** **Total = 444**	**Res. = 391** **Council = 24** **RSL = 150** **Total = 565** **Motorbikes = 23** **Bicycles = 255**

Figure 8: Car parking requirement and provision

4.2 Parking provision

It is proposed to provide 565 car parking spaces for the entire development, comprising of 391 residential spaces, 24 Council spaces and 150 spaces for the Petersham RSL.

Although the residential component represents an additional 144 spaces compared to the 247 spaces required in accordance with the Marrickville DCP 2011, it meets the minimum car parking requirements of the *Apartment Design Guide*.

78 spaces are to be dedicated to accessible parking for residents, which represents 20% of the residential component of the development. Given that there are 78 adaptable units proposed, this parking allocation complies with the Marrickville DCP requirement allocations outlined in Section 4.1.

The proposed residential parking is discussed in more detail in *'4.3 Residential Parking Assessment'* below.

The proposed 24 Council car parking spaces are to be provided in accordance with the Voluntary Planning Agreement.

The proposed Petersham RSL car parking is discussed in detail in *'Section 4.4 Petersham RSL parking assessment'* below.

A total of 23 motorcycle parking spaces are proposed to be provided. This is in accordance with the spaces required by the Marrickville DCP 2011.

It is proposed to provide bicycle parking for 255 bicycles. This is in accordance with the spaces required by the Marrickville DCP 2011.

4.3 Residential parking assessment

The proposed provision of 391 residential spaces for the 381 units proposed equates to approximately 1 space per unit and is considered satisfactory to cater for the car parking requirements generated by the development.

With respect to parking provision the NSW Department of Planning and Environment's *'Apartment Design Guide'* states:

'1. For development in the following locations:

- *on sites that are within 800 metres of a railway station or light rail stop in the Sydney Metropolitan Area; or*
- *on land zoned, and sites within 400 metres of land zoned, B3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre the minimum car parking requirement for residents and visitors is set out in the* ***Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less***

The car parking needs for a development must be provided off street.'

Based on the requirements of *'Apartment Design Guide'* the minimum parking provision for the residential component of the development is to be in accordance with the minimum requirements of the RMS Guide or the Marrickville DCP. The residential component of the RMS Guide requires 270 parking spaces.

It is proposed to provide a total of 391 residential parking spaces, therefore the proposal meets the minimum parking requirements of SEPP65 (i.e. the RMS Guide).

Although the residential component represents an additional 144 spaces compared to the 247 spaces required in accordance with the Marrickville DCP 2011, it is considered to be warranted and acceptable for the following reasons:

- Strictly complying with the car parking rates outlined in Marrickville Council's DCP would result in a development that would have insufficient car parking to cater for residential component of the development.
- If parking was to be provided in accordance with Marrickville DCP rates it would put pressure on the on street parking in the surrounding road network.
- The provision of bicycle storage for 297 bicycles and 23 motorcycles parking spaces are in accordance with Marrickville DCP's requirements.

4.4 Petersham RSL parking assessment

The proposed car parking provision has been assessed against the requirements of the *Marrickville DCP 2011 2.10 Generic Provisions Parking*, the existing Petersham RSL car parking arrangement and the RMS's *'Guide to Traffic Generating Developments'*.

The required parking provision for the proposed use of a registered club is outlined below:

Marrickville DCP

Note that according to the Marrickville DCP the site is located in Parking Area 1 and the following car parking rate applies:

- Registered Club (Parking Area 1)
  - 1 per 6 staff for patrons & staff

Existing Petersham RSL (existing parking)

The existing Petersham RSL car parking arrangement is for 152 on site car parking spaces spread out over 6 separate car parking areas (see Appendix G).

RMS *'Guide to Traffic Generating Developments'*

The RMS Guide does not have specific parking rates for registered clubs, the Guide states:

"Off-street car parking must be provided to satisfy the average maximum demand. Research has indicated that the demand for parking varies substantially depending on the type of club and cannot readily be related to building floor areas or to the membership. The determination of the number of parking spaces required is therefore based on the characteristics of the proposed development. Comparisons must be drawn with similar clubs."

The figure below outlines the number of car parking spaces required by the Marrickville DCP, the existing Petersham RSL parking arrangements and the requirements of the RMS Guide for the proposed development.

	Marrickville DCP	Existing Petersham RSL (existing parking)	RMS Guide	New Petersham RSL (proposed parking)
New Petersham RSL (registered club) (3,500m² and 90 staff)	- 1 space per 6 staff for patrons and staff = 90/6 = **15**	**152** car parking spaces within 6 separate car parking areas	Comparisons should be drawn with similar clubs = **246** (See parking assessment below)	**150**

Figure 9: Car Parking requirement and provision

Parking Assessment

Marrickville DCP

Based on the requirements of the Marrickville DCP the new Petersham RSL would only be required to provide a maximum of 15 spaces, based on 90 staff employed by the club.

It is not known where the car parking rate provision for registered clubs was derived from for the Marrickville DCP, however it is considered that the rate of 1 space per 6 staff for patrons and staff is grossly inadequate for registered clubs.

As the peak periods of the Petersham RSL occur outside of the road networks morning and evening peak periods of a standard working week, the majority of staff and patrons would still drive to the RSL due to the convenience compared to public transport which is less frequent during the off peak periods. As a result inadequate parking provision would put pressure on available on street parking in the road network in the near vicinity to the club.

Existing Petersham RSL (existing parking)

The Planning Proposal is to essentially relocate the existing 152 on site car parking spaces for the existing Petersham RSL which are currently spread out over 6 car parking areas and to consolidated them into one new, more safe, secure and efficient car park.

The proposed car park would also have only one controlled entry and exit point into the road network which would improve the existing traffic congestion and remove the current conflicts with pedestrians that is experienced in Regent Street during peak periods in the use of the club.

Also the proposed new at grade car parking area together with the removal of all the vehicle crossings to the 6 existing car parking areas would not only encourage people to park their car within the new development (rather than the surrounding street network) it would also enable additional on street parking in Regent Street for the use by the general public.

The existing car parking areas are shown on the attached sketch and a car parking survey of the existing car parking areas was undertaken at 6:30pm on Wednesday 28 September 2016. The results are shown in the Figure 10 below.

	No. car parking spaces available	6:30pm Wednesday 28/9 No. cars parked
Car Park 1	51	51 (full)
Car Park 2	12	12 (full)
Car Park 3	18	18 (full)
Car Park 4	44	24
Car Park 5	12	7
Car Park 6	15	11
Total	152	123

Figure 10: Car parking survey results 28/9/16

The car parking survey showed that during a non-peak night at 6:30pm on Wednesday 28 September 2016 the Petersham RSL had 123 spaces used and 29 spaces available. Note that Car Parks 5 and 6 are for use by employees of the Club and are also leased to Council for the use of their employees and as such are not well advertised, especially at night. When taking this into account it can be concluded that there were only 11 vacant spaces (29 – 7 (Car Park 5) – 11 (Car Park 6)) available for parking during the survey.

Also Car Park 4 is on a relatively steep grade and poorly lit which is the likely reason that this car park was also not fully utilised at night and put pressure on the on street parking in the surrounding streets.

It was observed that 43 vehicles were parked within the on street parking spaces in Regent Street and other streets in the near vicinity of the club.

Note peak periods for registered clubs generally occur on Friday and Saturday nights at which time the existing car parks would be anticipated to be at capacity.

RMS '*Guide to Traffic Generating Developments*'

Based on the requirements of the RMS *'Guide to Traffic Generating Developments'* the minimum parking provision for the Petersham RSL would be drawn from comparisons with similar clubs to determine the average maximum parking demand.

In this regard a comparison of the car parking provision of the existing Petersham RSL Club was undertaken. As stated previously the RSL currently has 152 car parking spaces in 6 separate car parking areas. The existing Petersham RSL club has a gross floor area of 3,868m² and has 90 staff catering for 11,000 members.

Comparison was also made with a number of other clubs that have similar operations to the Petersham RSL Club. The Figure 11 below indicates for each club the number of car parking spaces available, the number of members, the number of staff and the rate of parking provided per staff and per member.

	No. Parking spaces	Staff	Parking spaces per Staff	Members	Parking spaces per members
Canterbury Hurlstone Park RSL	500	210	2.4	30,000	1.7 spaces per 100
Wests Ashfield	448	200	2.24	9,000	5 spaces per 100
Earlwood Bardwell Park RSL (4,200m²)	228	90	2.53	13,100	1.7 spaces per 100
Canada Bay Club	225	60	3.75	20,000	1.1 spaces per 100
Total Average			**2.73**		**2.375** spaces per 100
Proposed New Petersham RSL (3,500m²)	150	90	1.7	11,000	1.4 spaces per 100
New Petersham RSL using comparable rates to other clubs	**246** (parking spaces per staff rate) or **262** (parking spaces per members rate)	90		11,000	

Figure 11: Car parking comparison with other clubs

From Figure 11 above it can be seen that the proposed parking provision for the new Petersham RSL club of 150 spaces at rate of 1.7 spaces per staff and 1.4 spaces per 100 members is fewer than the average of all the clubs outlined in the table. If applying the average rate of parking to the number of staff of the other clubs compared to the proposed new Petersham RSL, the new Petersham RSL would require 246 car parking spaces which is 96 spaces more than that proposed.

Also from Figure 11 the club that is most similar to the proposed new Petersham RSL Club is Earlwood Bardwell Park RSL which has 228 car parking spaces catering for 90 staff and 13,100 members. At 228 car parking spaces this is 78 spaces more than what is proposed for the new Petersham RSL club.

4.4.1 RSL Parking recommendation

While it is acknowledged that the Marrickville DCP looks to restrict the amount of parking to a maximum amount to encourage the use of alternative transport, our recommendation is that 150 car parking spaces should be provided for the new Petersham RSL as it is essentially a relocation of the existing Petersham RSL and its current associated 152 car parking spaces.

The proposed 150 spaces is also fewer than other comparable clubs which is in accordance with the requirements of the RMS *'Guide to Traffic Generating Developments'*.

In summary we based our recommendation on the following:

- It is proposed to essentially relocate the existing on site car parking arrangements for the existing Petersham RSL which is currently spread out over 6 separate car parking areas and to consolidate them into one new, safe, secure, on grade and more efficient car park. In practical terms the proposal should be considered as a transfer of an existing inefficient car parking arrangement to a new and improved car parking arrangement rather than as a new DA restricting the parking provision to that outlined in the Marrickville DCP.

- The proposed car park would have only one controlled entry and exit point into the road network which would improve the existing traffic congestion and remove the current vehicle conflicts with pedestrians that is experienced in Regent Street during peak periods in the use of the club.

- The car parking survey of the existing car parks serving Petersham RSL showed that during a non-peak night at 6:30pm on Wednesday 28 September 2016 the Petersham RSL had 123 spaces used and only 11 spaces available, when considering Car Parks 5 and 6 are for use by employees of the Club and are also leased to Council for the use of their employees. This suggests that the current car parking arrangement is heavily utilised by the existing staff, members and guests to the Petersham RSL.

- The proposed parking provision for the new Petersham RSL club of 150 spaces at rate of 1.7 spaces per staff and 1.4 spaces per 100 members is less than the average of the clubs compared in this assessment. If applying the average rate of parking to the number of staff of the other clubs compared to the proposed new Petersham RSL, the new Petersham RSL would require 246 car parking spaces which is 96 spaces more than proposed.

- The club that is most similar to the proposed new Petersham RSL Club that formed part of this assessment is the Earlwood Bardwell Park RSL which has 228 car parking spaces catering for 90 staff and 13,100 members. At 228 car parking spaces this is 78 spaces more than what is proposed for the new Petersham RSL.

- Given that Council is currently leasing car parking spaces from the Petersham RSL car park for Council staff and public use suggests that there is a shortfall of car parking in the Petersham CBD in the near vicinity to Petersham railway station. Any reduction in parking provided for the new Petersham RSL club compared to the existing car parking arrangements would further exacerbate the shortage of parking in the area.

- Strictly complying with the car parking rates outlined in Marrickville Council's DCP would result in a development that would have significantly insufficient car parking to cater for Petersham RSL's existing members, their guests and staff. As there is an existing expectation of a certain amount of parking available servicing the existing Petersham RSL, a reduction in parking for the new facility would in the short term put stress on the parking available in the existing road network and in the longer term detrimentally impact on the patronage of the club due to the lack of parking available and the associated inconvenience to the members, their guests and staff.

- A large portion of the members and guests to the club are senior in age and they require easy access to the club using their own vehicles parked within a safe, secure and efficient basement car park within the new building. A lack of parking and the consequential forced use of other travel alternatives, including public transport would for some of the members and guests not be a viable safe option for them.

- As the peak periods of the Petersham RSL occur outside of the road networks morning and evening peak periods of a standard working week, the majority of staff and patrons would still drive to the RSL due to its convenience compared to public transport which is less frequent during off peak periods.

- As the peak periods of both the existing Petersham RSL (and the new Petersham RSL facility) does not co-inside with the morning and evening peak periods of a standard working week, the impact of traffic from the proposed development would be minimal.

- The proposed new at grade car parking area together with the removal of all the vehicle crossings to the 6 existing car parking areas would not only encourage people to park their car within the new development (rather than the surrounding street network) it would also enable additional on street parking in Regent Street for the use by the general public.

5 Traffic Assessment

5.1 Traffic Generation

5.1.1 Existing Development

From the RMS's *'Guide to Traffic Generating Developments'*, Section 3 – Land Use Traffic Generation, the existing estimated traffic volumes generated by the existing RSL is outlined in Figure below:

Use	Peak hour vehicle trips rates	Peak hour vehicle trips
Clubs (RSL 3,868m²)	10/100m² GFA	386.8 **(387)**
Industrial (2063m² GFA)	1/100m² GFA	20.6 **(21)**
Dwelling houses (3 houses)	0.85 per dwelling	2.55 **(3)**
	Total	**411**

Figure 12: Traffic generation – Existing site use

5.1.2 Proposed Development

From the RMS's *'Guide to Traffic Generating Developments'*, Section 3 – Land Use Traffic Generation and *'Technical Direction 04a – Updated Surveys'* (TD04a) the proposed estimated traffic volumes generated by the residential units and RSL use are outlined in Figure below.

It is noted that the updated RMS surveys specify a morning and evening peak average rate for residential flat buildings which are shown in Figure 13 below. The morning traffic generation discounts the RSL traffic generation as the RMS Guide states the rate is for the evening peak only.

Use	AM Peak hour vehicle rates	AM Peak hour vehicle trips
Site 1: Residential (133 units)	0.19/unit	25.27 **(26)**
Site 2 Residential (47 units)	0.19/ unit	8.93 **(9)**
Site 3 Residential (201 units)	0.19/unit	38.19 **(39)**
	Total	**74**

Use	PM Peak hour vehicle rates	PM Peak hour vehicle trips
Site 1: Residential (133 units)	0.15/unit	19.95 **(20)**
Site 2 Residential (47 units)	0.15/ unit	**7**
Site 3 Residential (201 units) RSL (3,599m²)	0.15/unit 10/100m² GFA	30.15 359.9 Total = **390**
	Total	**417**

Figure 13: Traffic generation – Proposed morning and evening site use

5.2 Impact of Generated Traffic

Noting that the morning peaks discount the RSL traffic generation, from the anticipated traffic generation rates calculated in Section 5.1 above, it can be seen that there will be an estimated increase of 50 (74-24) in the morning and 6 (417 - 411) vehicle trip movements during the evening peak hour for the proposed development when compared against the existing use. This would represent an extra 16.66 and 2 vehicle movements from each site during the morning and evening peak period respectively. It is considered the proposed development will have a comparable amount of traffic being generated compared to the existing use.

The main reason for the comparable number of traffic generated from the 3 sites is due to the RSL's reduction in GFA almost offsets the increase in residential traffic generation, and the removal of existing commercial space which has a higher traffic generation rate.

It is noted that the high density residential flat dwelling rates obtained from TD04a were surveyed from developments that were close to public transport, greater than six storeys and almost exclusively residential in nature. Residential developments have a much lower traffic generation rate per square meterage of development. For this reason, particularly with high density residential dwellings, the traffic generation rate that was used for the residential component is quite low.

According to the latest available census data from the Australian Bureau of Statistics website, the modal split for residents travelling to work from Petersham were almost even between travelling by car (39.4%) and catching public transport (37.7%). With such a high overall percentage from within Petersham catching public transport, it is considered that the proposed development would likely experience a good modal split due to the close proximity of the Petersham railway station, which would further justify the low traffic generation rates from the residential component of the development.

Travel to work, top responses	Petersham	%	New South Wales	%	Australia	%
Employed people aged 15 years and over						
Car, as driver	1,562	36.6	1,807,358	57.6	6,059,972	60.2
Train	1,006	23.6	193,099	6.2	388,012	3.9
Bus	332	7.8	116,656	3.7	301,187	3.0
Walked only	195	4.6	128,339	4.1	377,043	3.7
Bicycle	130	3.0	23,359	0.7	103,914	1.0
People who travelled to work by public transport	1,591	37.3	433,016	13.8	1,046,721	10.4
People who travelled to work by car as driver or passenger	1,684	39.4	1,971,702	62.8	6,620,840	65.8

In Petersham (State Suburbs), on the day of the Census, the methods of travel to work for employed people were Car, as driver 36.6%, Train 23.6% and Bus 7.8%. Other common responses were Walked only 4.6% and Bicycle 3.0%. On the day, 37.3% of employed people travelled to work on public transport and 39.4% by car (either as driver or as passenger).

Figure 14: Petersham ABS census data – travel modal splits (2011 census)

Due to the reduction in traffic generated by the development, there would be a comparable impact on the surrounding road network from the proposed development when compared with the site's existing use. Notwithstanding this, SIDRA modelling was undertaken for the immediate vicinity of the site and adjacent signalised intersections.

The main traffic impacts of the development will be seen in the am and pm peak hour traffic periods and for traffic assessment purposes the peak hour traffic generation is the important consideration. In most areas the capacity of intersections generally constrain the capacity of the overall road network therefore the impact of the proposal on intersection performance on the local road network needs to be assessed. In this respect the intersections most likely to be impacted by the development include;

1. Trafalgar Street and Audley Street
2. Trafalgar Street and Regent Street
3. Regent Street and New Canterbury Road
4. Trafalgar Street and Crystal Street

Intersection performance has been assessed using the SIDRA modelling software which uses the level of service (delay) model adopted by the Roads and Maritime Services (RMS) in NSW to assess intersection performance. Average delay is used to determine the level of service (LOS) based on the following table sourced from the RMS' *'Guide to Traffic Generating Developments'*.

Table 4.2
Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 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

Figure 15: RMS level of service criteria for intersections

For assessment purposes a LOS D or higher is considered satisfactory intersection operation. In predicting future traffic growth a background traffic growth rate of 2 % per annum has been adopted.

As outlined in Section 2.4 traffic counts were undertaken at the intersection of:

1. Trafalgar Street and Audley Street
2. Trafalgar Street and Regent Street
3. Regent Street and New Canterbury Road
4. Trafalgar Street and Crystal Street

Each of these intersections were modelled using SIDRA for the AM and PM peaks, pre and post development traffic generation rates and for 10 year Sydney average growth at 2% p.a.

All extra AM peak traffic generation was assumed to be leaving the site, while extra PM traffic was estimated to be 50% entering/50% leaving. Site 3 post development traffic will impose 50% of the traffic generated towards the Audley St/Trafalgar St roundabout due to the left in/left out access.

The distribution split for the morning and evening peak hours are shown below.

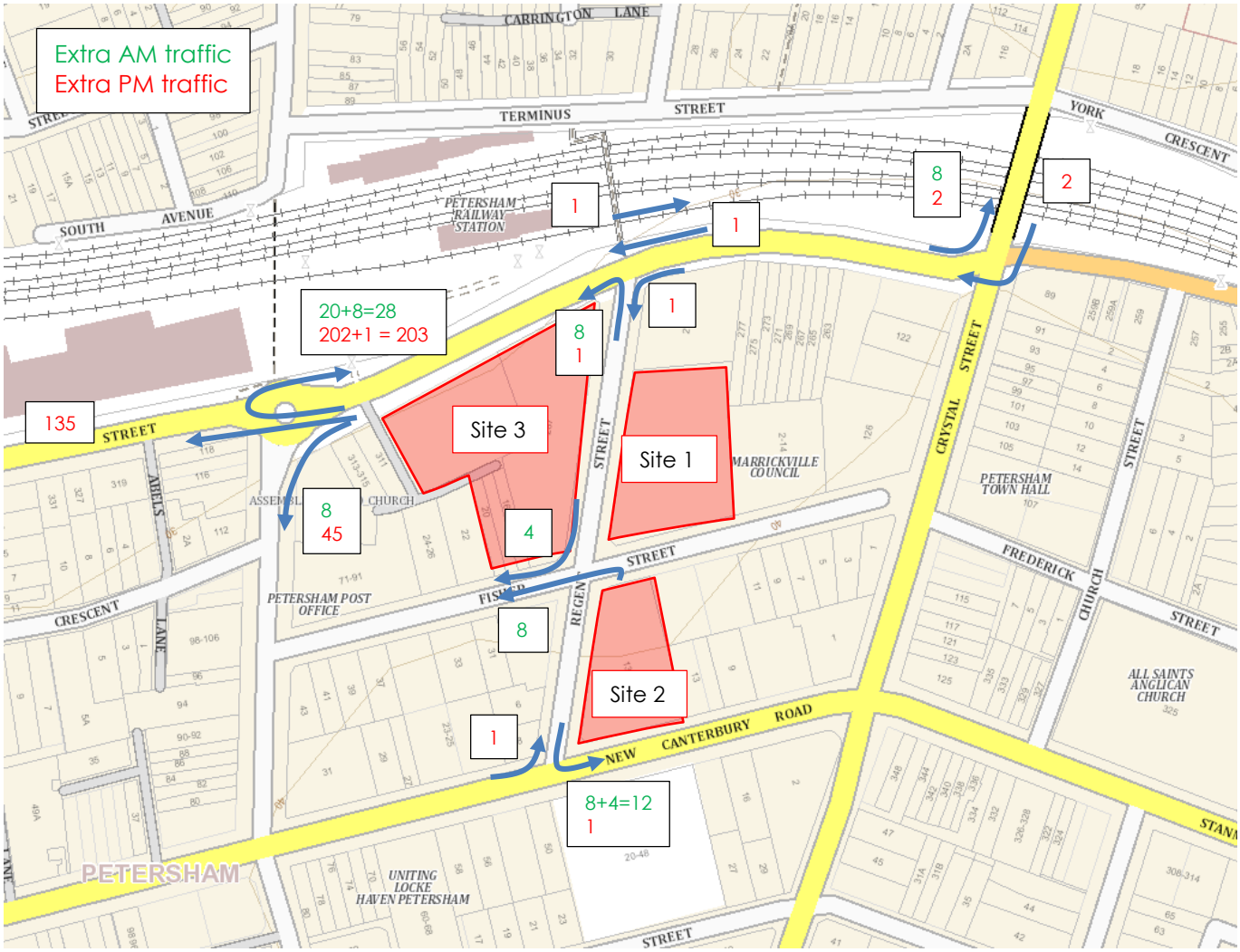


Figure 9: Post development traffic distribution

Trafalgar Street and Audley Street

The Trafalgar Street and Audley Street was modelled for the AM and PM peaks for the following scenarios:

1. Existing traffic generation
2. Existing traffic + development generated traffic
3. Existing traffic + development generated traffic + 10 year growth

In each circumstance the intersection was considered to operate overall at an optimum level of service A, 'Good operation', with the exception of the PM 10-year scenario: the east leg drops from LOS A post development to LOS D.

It is considered that the traffic generated by the development, including 10-year growth projections, would generally not have an adverse impact on this intersection, but would decrease capacity on the eastern leg within acceptable parameters during the afternoon peak period.

Trafalgar Street and Regent Street

The Trafalgar Street and Regent Street intersection was modelled for the AM and PM peaks for the following scenarios:

1. Existing traffic generation
2. Existing traffic + development generated traffic
3. Existing traffic + development generated traffic + 10 year growth

In each circumstance the intersection was considered to operate overall at an optimum level of service A, '*Good operation*'.

It is considered that the traffic generated by the development, including 10 year growth projections, would not have an adverse impact on this intersection.

Regent Street and New Canterbury Road

The Regent Street and New Canterbury Road was modelled for the AM and PM peaks for the following scenarios:

1. Existing traffic generation
2. Existing traffic + development generated traffic
3. Existing traffic + development generated traffic + 10 year growth

The intersection mostly runs well with a LOS A with exception to the right turn from Regent Street with a LOS during both peak periods. This is not surprising as very few vehicles undertake this manoeuvre. During the AM peak, the right turn into Regent Street also has a lower LOS C. This is also expected with a T-junction with an arterial road.

The intersection post development does not experience any drop of level of service during both peak periods. Adding 10-year growth, the right turn drops to a LOS F with the increase of through traffic along New Canterbury Road. It is assumed this issue will normalise with the traffic turning right onto New Canterbury Road instead heading west on Fisher Street to turn right at the signalised intersection with Audley and New Canterbury Road. Notwithstanding, the 10 year growth without the development traffic also drops to LOS F for the right turn out of Regent Street.

It is considered that the traffic generated by the development, including 10 year growth projections, would not have an adverse impact on this intersection.

Trafalgar Street and Crystal Street

The Trafalgar Street and Crystal Street was modelled for the AM and PM peaks for the following scenarios:

1. Existing traffic generation
2. Existing traffic + development generated traffic
3. Existing traffic + development generated traffic + 10 year growth

The intersection overall has a LOS B, with a combination of LOS B and C on all legs. During the AM peak, the north leg of Crystal Street has a LOS A for the through and left turn movement. Post development the LOS of all legs do not decrease during both AM and PM peaks.

Applying 10-year growth, the AM peak drops marginally maintaining the overall LOS B, with the worst leg being the right turn onto Trafalgar Street towards the site with a LOS D nearing capacity. During the PM peak, the intersection's overall LOS drops to D, with the eastern leg of Trafalgar Street nearing capacity, along with the right turn from Crystal Street towards the site, and the through movement from the western leg of Trafalgar Street all with a LOS E. Sensitivity analysis shows that the first instance of the LOS exceeding D occurs on year 5 at the eastern leg of Trafalgar Street. It is recommended that the phasing is further investigated to assist with the increase in traffic.

Notwithstanding the above, due to the comparable traffic generation from the site, post development volumes would add an estimated 4 vehicle movements to the intersection. It is noted that the 10-year post development operation does not decrease when compared to the intersection's current 10-year growth.

It is considered that the traffic generated by the development, including 10 year growth projections, would not have an adverse impact on this intersection.

5.3 State Environmental Planning Policy (Infrastructure)

Trafalgar Street is an arterial road under the authority of RMS, the application will therefore be referred to the RMS for comment.

6 Conclusion/Recommendations

This Traffic and Parking Impact Assessment has been prepared in accordance with the requirements of the Marrickville DCP 2011 and the RMS *'Guide to Traffic Generating Developments'* to accompany a Development Application for the construction of a mixed development (residential apartments and Petersham RSL).

The proposed residential car parking (565 spaces, including 77 accessible spaces), Council car park (24 spaces) and Petersham RSL car park (150 spaces) are considered satisfactory in terms of the car parking provision required to cater for the development.

The development also incorporates 255 bicycle spaces and 23 motor bike spaces in accordance with the requirements of the Marrickville DCP 2011.

The proposed parking and loading facilities have been designed in accordance with the requirements of AS/NZS 2890.1 – Off Street Car Parking, AS 2890.2 – Off-Street Commercial Vehicle Facilities and AS/NZS 2890.6 - Off-street Parking for People with Disabilities. The car parking facilities are also considered practical and safe ensuring that all traffic generated by the development can enter and exit the site in a forward direction.

There is only a minor increase in traffic generated by the development. SIDRA analysis was undertaken of the Trafalgar Street/Audley Street, Trafalgar Street/Regent Street, Regent Street/New Canterbury Road and Trafalgar Street/Crystal Street intersections. When modelled for both the am and am peaks for the existing traffic + development generated traffic + 10 year growth will continue to have an overall satisfactory level of service which does not change significantly from the existing use. This determination is well evidenced by the marginal increase in overall peak hour traffic.

On site 3, residential waste will be collected by Council's Residential Waste Services from the Waste Collection bay within the development. Commercial waste will be collected by a Commercial Waste collection operator. Waste collection from site 1 and 2 will be kerbside.

The site is very well located to all forms of public transport. This would minimise the need for residents and their visitors and council/commercial staff and their customers of the proposed development to drive their own vehicles to and from their various activities.

The Traffic and Parking Impact Assessment concludes that the subject site is suitable for the proposed development in relation to the impact of traffic, car parking provision, vehicle and pedestrian access and safety considerations.

7 References

Australian Standards, *'AS/NZS 2890.1:2004 Off-Street Car Parking'*.

Australian Standards, *'AS 2890.2:2002 Off-Street Commercial Vehicle Facilities'*.

Australian Standards, 'AS/NZS 2890.6:2002 Off-Street Parking for People with Disabilities'.

Roads and Maritime Services, *'Guide to Traffic Generating Developments'* Version 2.2 dated October 2002.

Roads and Maritime Services, *'Traffic control at work sites'* Version 3.0 dated September 2003.

Roads and Maritime Services, *'Road Design Guide'*.

Roads and Maritime Services, *'Annual Average Daily Traffic Data Northern Region 2005'* http://www.rta.nsw.gov.au/trafficinformation/downloads/aadtdata_dl1.html

Austroads *'Guide to Traffic Engineering Practice, Traffic Studies – Part 3'*

Austroads *'Guide to Traffic Engineering Practice, Intersections at Grade – Part 5'*

NSW Department of Planning, *'SEPP (Infrastructure) 2007'*

Marrickville DCP 2011

Appendix A

Traffic Counts

Trafalgar St & Audley St

To

Earl Aninipoc

at ***BarkerRyanStewart***

your results for

PETERSHAM RSL Traffic Counts

supplied by

R.O.A.R. DATA Pty. Ltd.

www.roardata.com.au

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

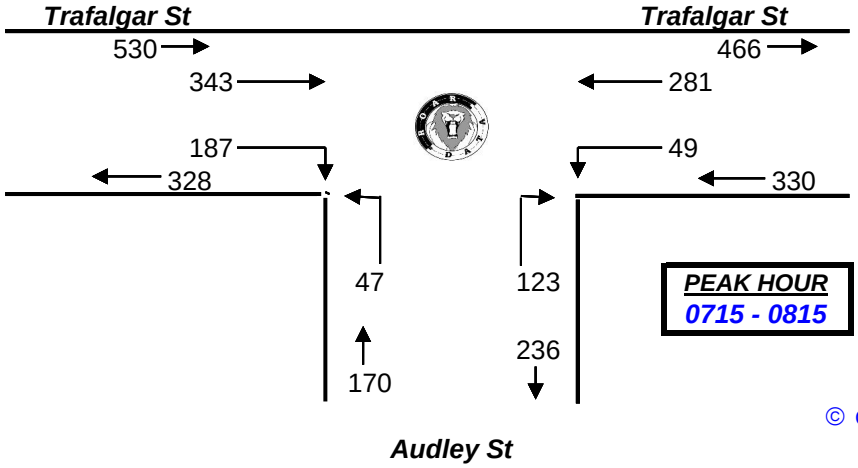
Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

All Vehicles

	WEST		SOUTH		EAST		
	Trafalgar St		*Audley St*		*Trafalgar St*		
Time Per	**T**	**R**	**L**	**R**	**L**	**T**	**TOTAL**
0700 - 0715	81	52	8	15	7	43	**206**
0715 - 0730	98	37	9	28	17	63	**252**
0730 - 0745	85	54	12	20	11	62	**244**
0745 - 0800	80	51	19	38	11	83	**282**
0800 - 0815	80	45	7	37	10	73	**252**
0815 - 0830	67	48	11	29	15	77	**247**
0830 - 0845	75	46	8	33	12	50	**224**
0845 - 0900	59	49	4	24	18	60	**214**
Period End	**625**	**382**	**78**	**224**	**101**	**511**	**1921**

	WEST		SOUTH		EAST		
	Trafalgar St		*Audley St*		*Trafalgar St*		
Peak Per	**T**	**R**	**L**	**R**	**L**	**T**	**TOTAL**
0700 - 0800	344	194	48	101	46	251	**984**
0715 - 0815	343	187	47	123	49	281	**1030**
0730 - 0830	312	198	49	124	47	295	**1025**
0745 - 0845	302	190	45	137	48	283	**1005**
0800 - 0900	281	188	30	123	55	260	**937**

PEAK HR	**343**	**187**	**47**	**123**	**49**	**281**	**1030**

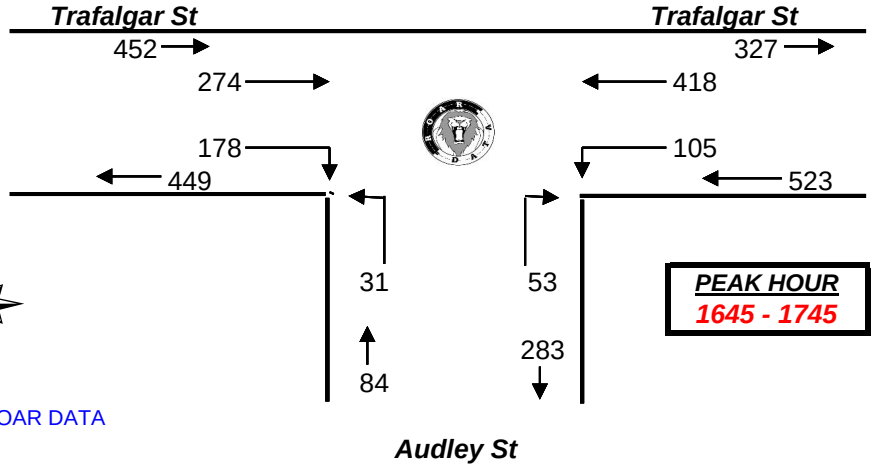


All Vehicles

	WEST		SOUTH		EAST		
	Trafalgar St		*Audley St*		*Trafalgar St*		
Time Per	**T**	**R**	**L**	**R**	**L**	**T**	**TOTAL**
1600 - 1615	59	45	9	10	28	66	**217**
1615 - 1630	68	46	8	16	32	105	**275**
1630 - 1645	64	60	10	7	19	80	**240**
1645 - 1700	60	44	7	12	25	96	**244**
1700 - 1715	74	54	7	16	20	102	**273**
1715 - 1730	83	44	7	12	25	116	**287**
1730 - 1745	57	36	10	13	35	104	**255**
1745 - 1800	66	37	9	9	29	89	**239**
Period End	**531**	**366**	**67**	**95**	**213**	**758**	**2030**

	WEST		SOUTH		EAST		
	Trafalgar St		*Audley St*		*Trafalgar St*		
Peak Per	**T**	**R**	**L**	**R**	**L**	**T**	**TOTAL**
1600 - 1700	251	195	34	45	104	347	**976**
1615 - 1715	266	204	32	51	96	383	**1032**
1630 - 1730	281	202	31	47	89	394	**1044**
1645 - 1745	274	178	31	53	105	418	**1059**
1700 - 1800	280	171	33	50	109	411	**1054**

PEAK HR	**274**	**178**	**31**	**53**	**105**	**418**	**1059**

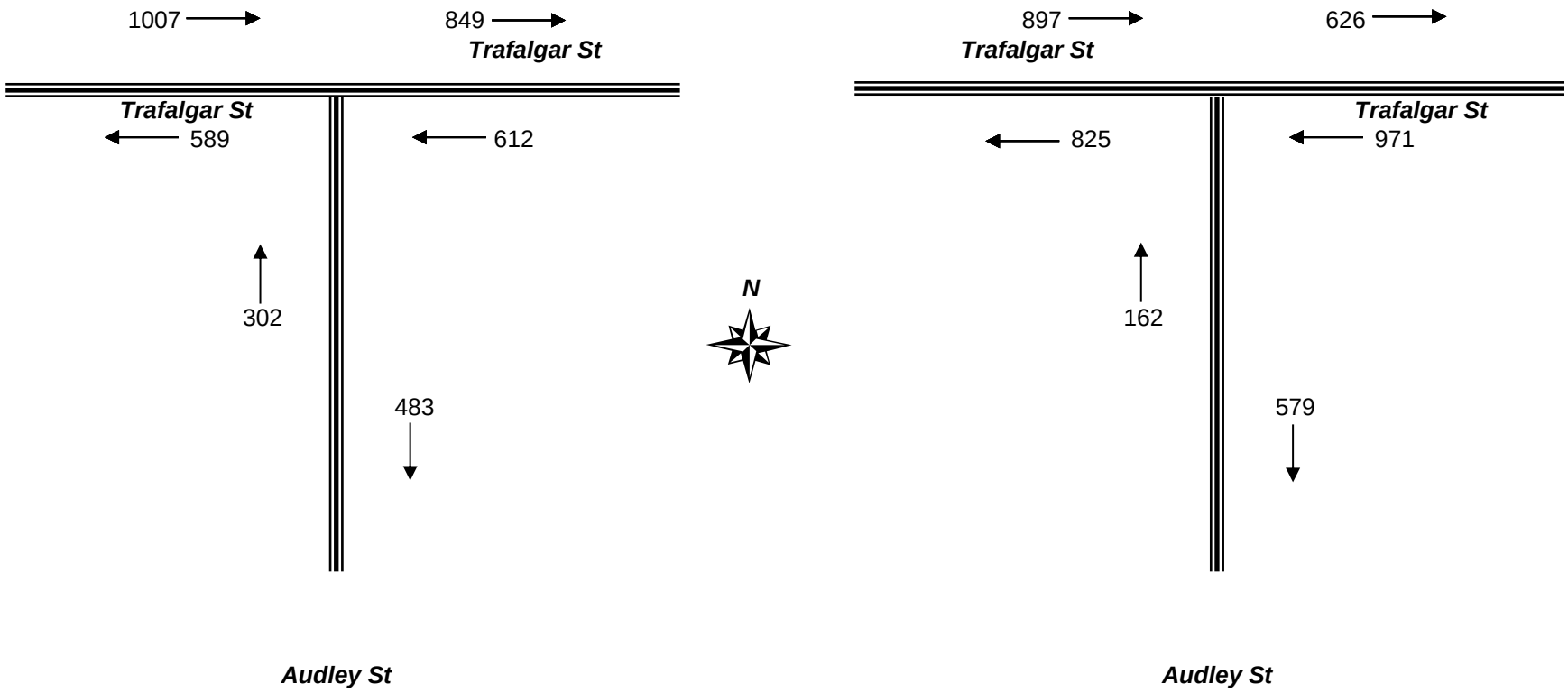


N

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

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

TOTAL VOLUMES FOR COUNT PERIODS

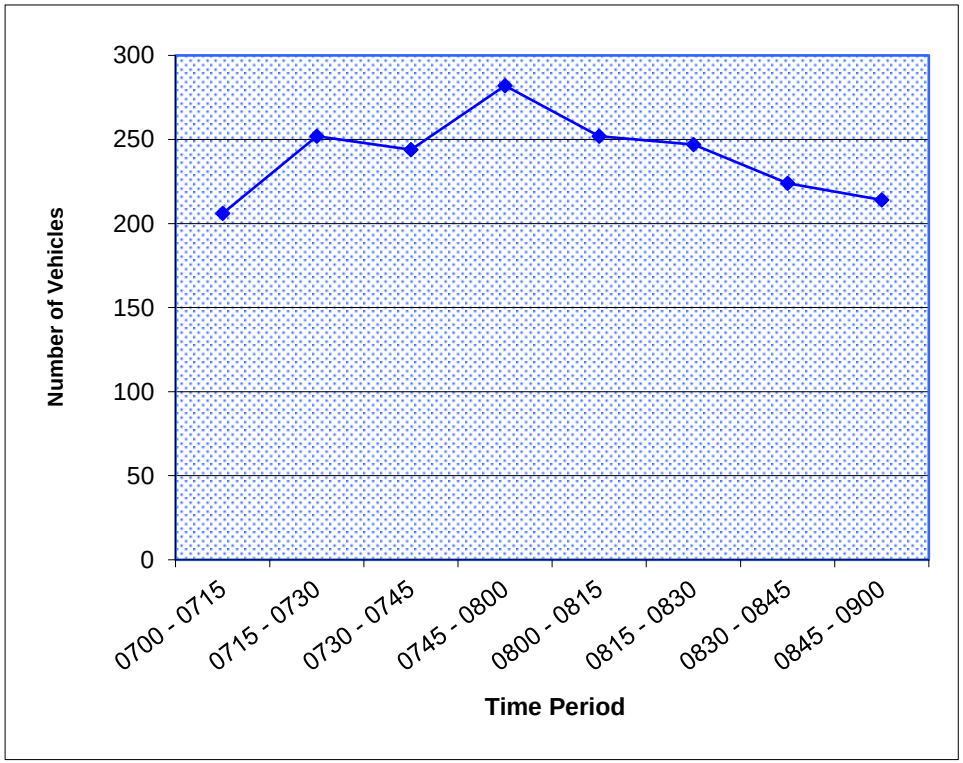


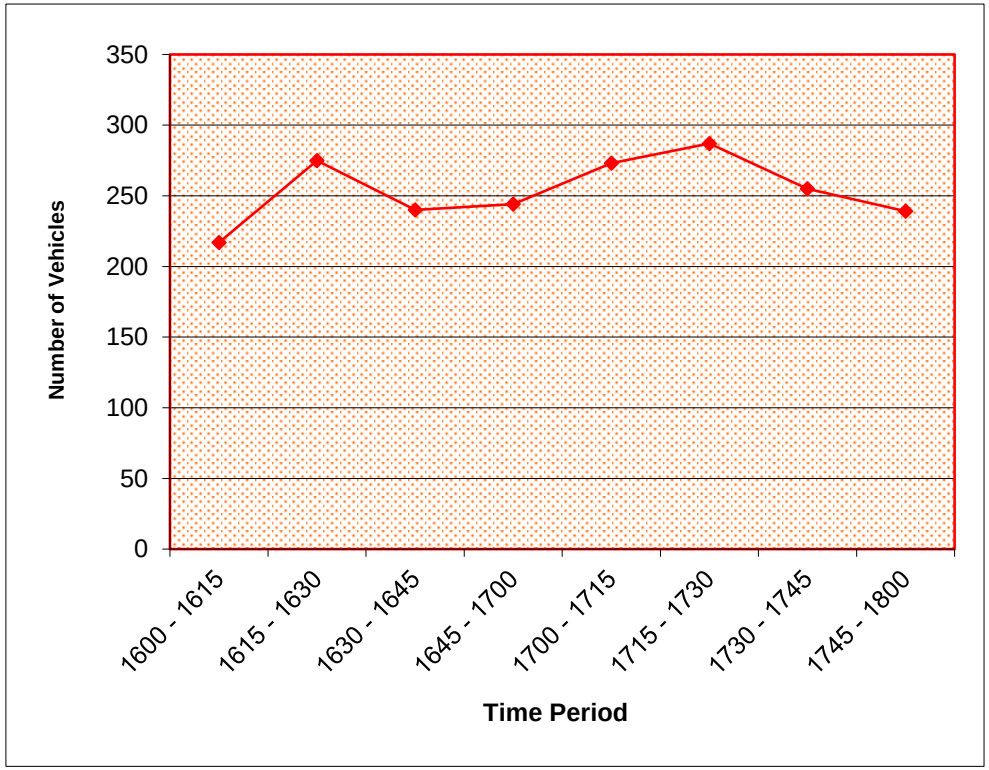
R.O.A.R DATA
Reliable, Original & Authentic Results
Ph.88196847, Mob.0418-239019

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

AM ***PM***

Audley St & Trafalgar St



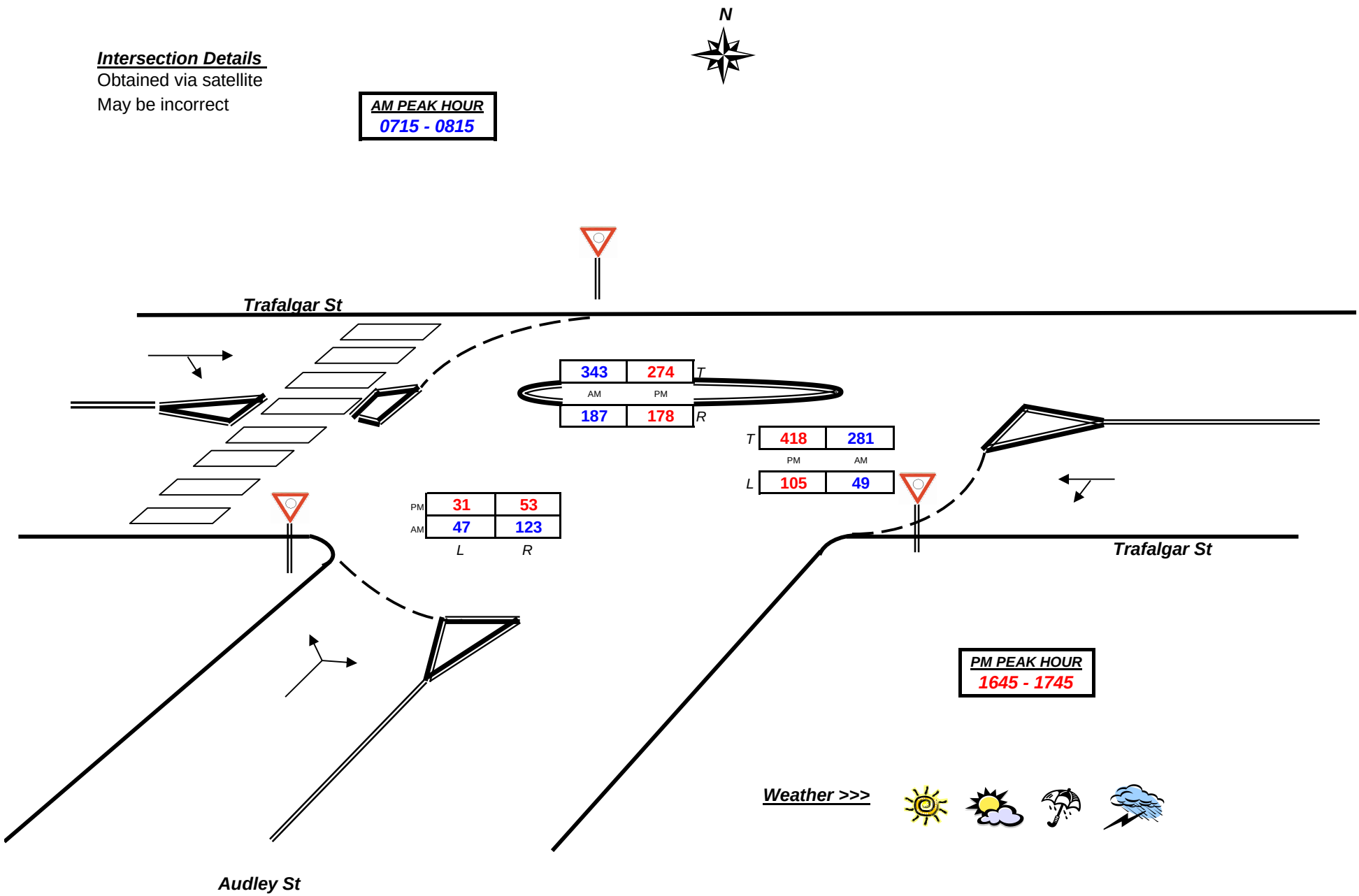


R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Mob.0418-239019

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

Intersection Details
Obtained via satellite
May be incorrect

AM PEAK HOUR
0715 - 0815



PM PEAK HOUR
1645 - 1745

Weather >>>

Regent St & Trafalgar St

To

Earl Aninipoc

at ***BarkerRyanStewart***

your results for

PETERSHAM RSL Traffic Counts

supplied by

R.O.A.R. DATA Pty. Ltd.

www.roardata.com.au

R.O.A.R. DATA

Reliable, Original & Authentic Results

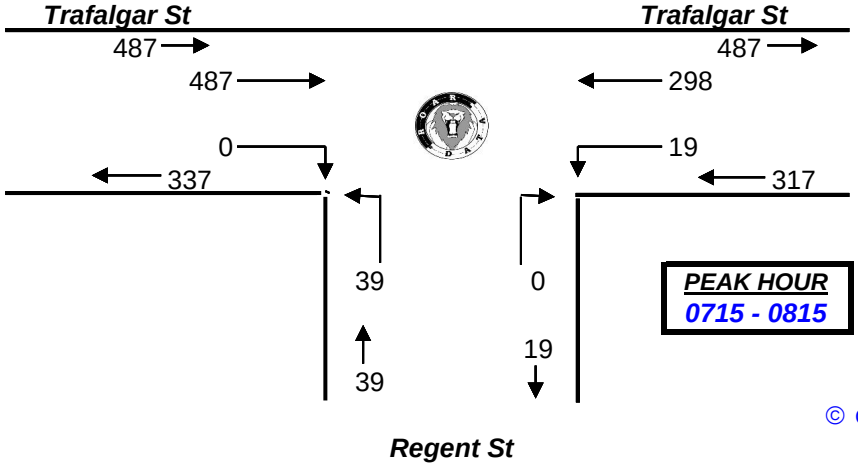
Ph.88196847, Mob.0418-239019

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

All Vehicles

	WEST		SOUTH		EAST		
	Trafalgar St		*Regent St*		*Trafalgar St*		
Time Per	**T**	**R**	**L**	**R**	**L**	**T**	**TOTAL**
0700 - 0715	99	0	11	0	1	41	**152**
0715 - 0730	128	0	13	0	4	76	**221**
0730 - 0745	112	0	10	0	2	64	**188**
0745 - 0800	123	0	9	0	7	89	**228**
0800 - 0815	124	0	7	0	6	69	**206**
0815 - 0830	95	0	14	0	5	86	**200**
0830 - 0845	112	0	12	0	6	49	**179**
0845 - 0900	86	0	9	0	9	73	**177**
Period End	**879**	**0**	**85**	**0**	**40**	**547**	**1551**

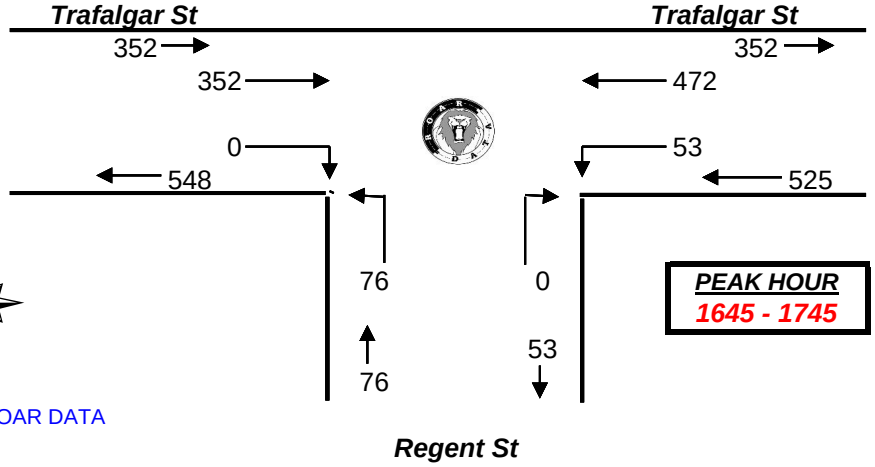
	WEST		SOUTH		EAST		
	Trafalgar St		*Regent St*		*Trafalgar St*		
Peak Per	**T**	**R**	**L**	**R**	**L**	**T**	**TOTAL**
0700 - 0800	462	0	43	0	14	270	**789**
0715 - 0815	487	0	39	0	19	298	**843**
0730 - 0830	454	0	40	0	20	308	**822**
0745 - 0845	454	0	42	0	24	293	**813**
0800 - 0900	417	0	42	0	26	277	**762**
PEAK HR	**487**	**0**	**39**	**0**	**19**	**298**	**843**



All Vehicles

	WEST		SOUTH		EAST		
	Trafalgar St		*Regent St*		*Trafalgar St*		
Time Per	**T**	**R**	**L**	**R**	**L**	**T**	**TOTAL**
1600 - 1615	70	0	14	0	10	78	**172**
1615 - 1630	84	0	16	0	7	120	**227**
1630 - 1645	70	0	8	0	12	97	**187**
1645 - 1700	75	0	9	0	22	111	**217**
1700 - 1715	100	0	28	0	5	102	**235**
1715 - 1730	102	0	26	0	7	121	**256**
1730 - 1745	75	0	13	0	19	138	**245**
1745 - 1800	79	0	9	0	8	93	**189**
Period End	**655**	**0**	**123**	**0**	**90**	**860**	**1728**

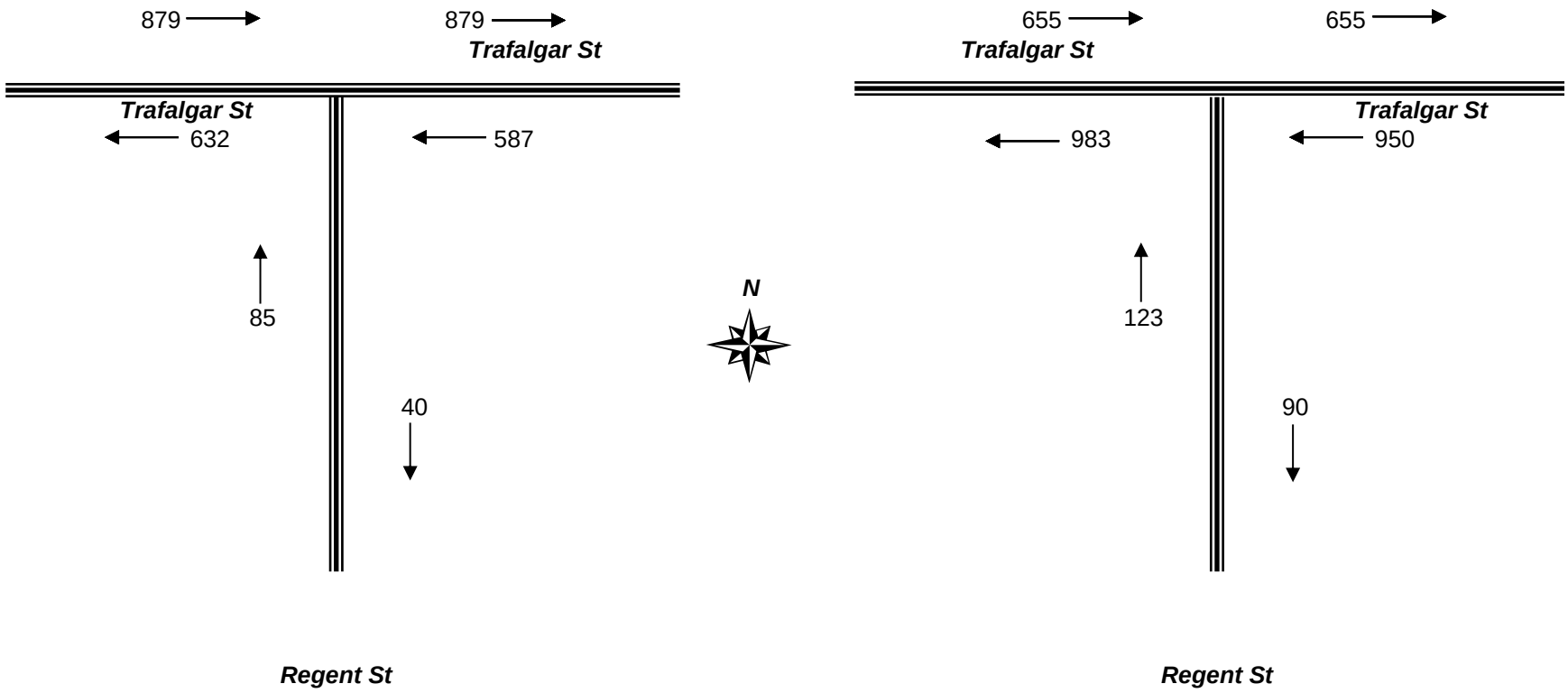
	WEST		SOUTH		EAST		
	Trafalgar St		*Regent St*		*Trafalgar St*		
Peak Per	**T**	**R**	**L**	**R**	**L**	**T**	**TOTAL**
1600 - 1700	299	0	47	0	51	406	**803**
1615 - 1715	329	0	61	0	46	430	**866**
1630 - 1730	347	0	71	0	46	431	**895**
1645 - 1745	352	0	76	0	53	472	**953**
1700 - 1800	356	0	76	0	39	454	**925**
PEAK HR	**352**	**0**	**76**	**0**	**53**	**472**	**953**



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

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

TOTAL VOLUMES FOR COUNT PERIODS

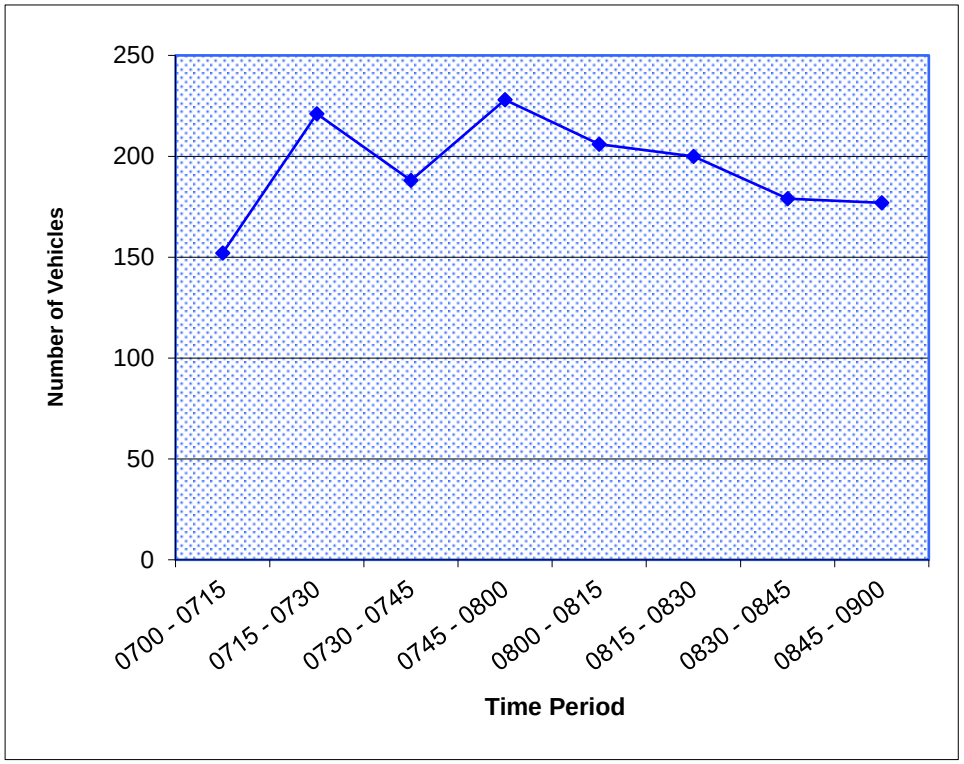


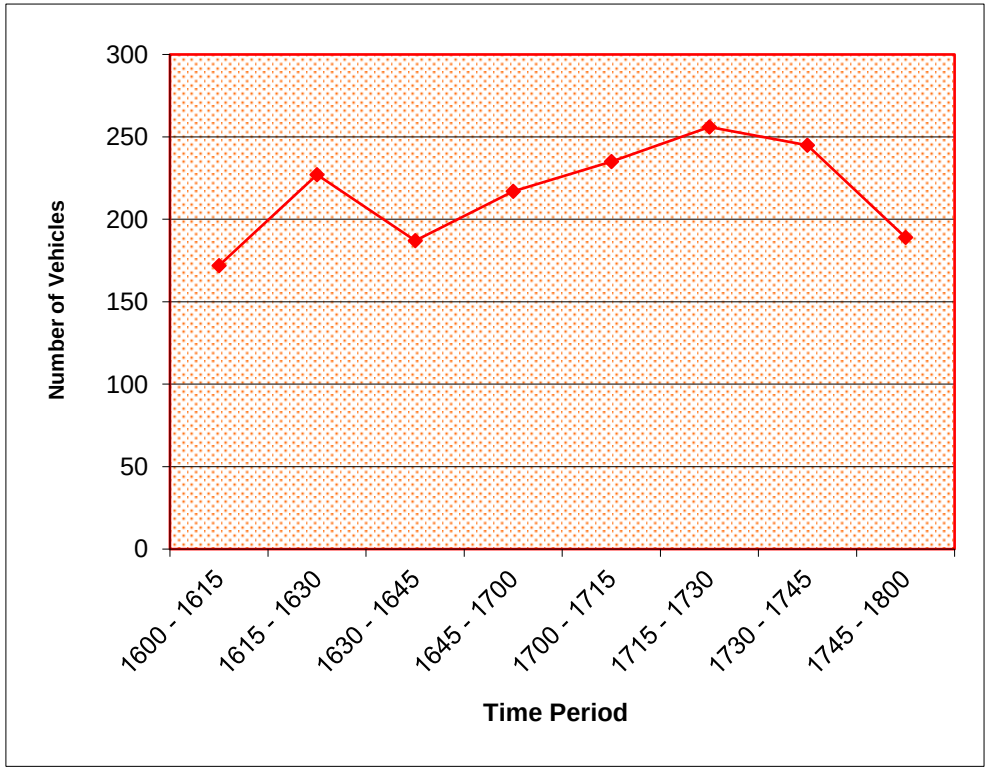
R.O.A.R DATA
Reliable, Original & Authentic Results
Ph.88196847, Mob.0418-239019

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

AM ***PM***

Regent St & Trafalgar St





R.O.A.R. DATA

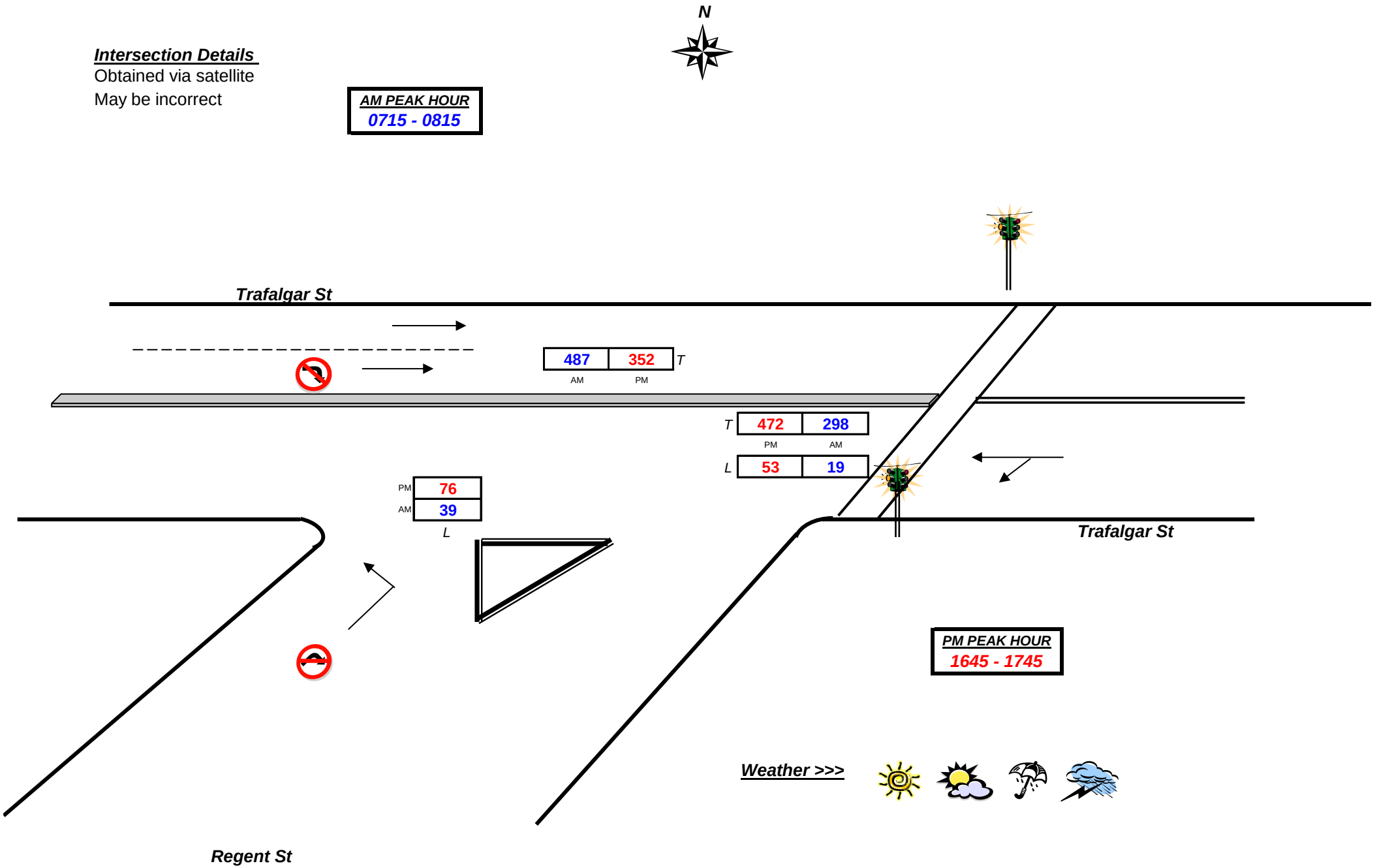
Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

Intersection Details
Obtained via satellite
May be incorrect

AM PEAK HOUR
0715 - 0815



PM PEAK HOUR
1645 - 1745

Weather >>>

Crystal St & Trafalgar St

To

Earl Aninipoc

at ***BarkerRyanStewart***

your results for

PETERSHAM RSL Traffic Counts

supplied by

R.O.A.R. DATA Pty. Ltd.

www.roardata.com.au

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

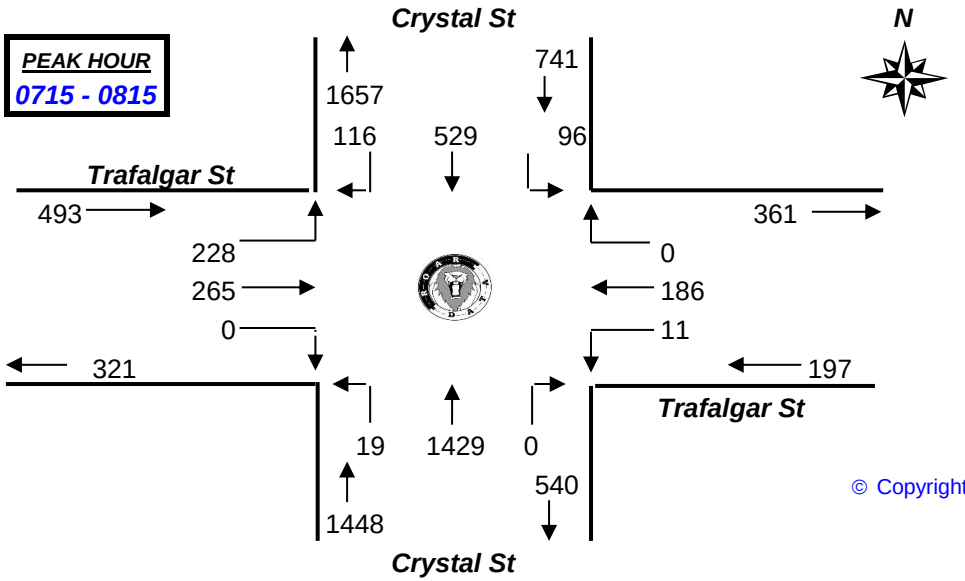
Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

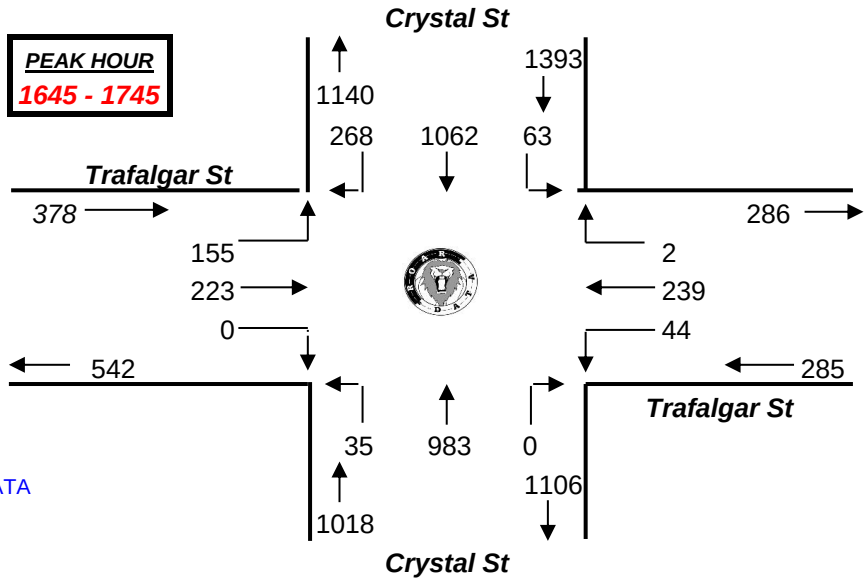
All Vehicles	NORTH Crystal St			WEST Trafalgar St			SOUTH Crystal St			EAST Trafalgar St			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	10	122	26	51	41	0	1	314	0	1	22	1	**589**
0715 - 0730	20	127	27	65	66	0	1	376	0	0	44	0	**726**
0730 - 0745	15	135	29	55	58	0	5	308	0	2	40	0	**647**
0745 - 0800	26	139	39	67	57	0	6	383	0	2	50	0	**769**
0800 - 0815	35	128	21	41	84	0	7	362	0	7	52	0	**737**
0815 - 0830	28	123	26	57	48	0	7	280	0	0	51	0	**620**
0830 - 0845	18	181	27	51	52	0	5	349	0	2	36	0	**721**
0845 - 0900	34	151	41	55	58	0	4	327	0	2	33	0	**705**
Period End	**186**	**1106**	**236**	**442**	**464**	**0**	**36**	**2699**	**0**	**16**	**328**	**1**	**5514**

All Vehicles	NORTH Crystal St			WEST Trafalgar St			SOUTH Crystal St			EAST Trafalgar St			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1615	16	266	46	35	27	0	5	193	0	5	36	0	**629**
1615 - 1630	23	260	68	46	52	0	13	238	0	9	63	0	**772**
1630 - 1645	17	275	52	29	50	0	2	234	0	3	57	0	**719**
1645 - 1700	17	267	74	35	38	0	10	300	0	7	59	1	**808**
1700 - 1715	20	289	54	36	59	0	4	177	0	19	38	0	**696**
1715 - 1730	12	269	78	46	67	0	7	229	0	7	60	1	**776**
1730 - 1745	14	237	62	38	59	0	14	277	0	11	82	0	**794**
1745 - 1800	23	308	59	25	44	0	2	233	0	6	44	0	**744**
Period End	**142**	**2171**	**493**	**290**	**396**	**0**	**57**	**1881**	**0**	**67**	**439**	**2**	**5938**

	NORTH Crystal St			WEST Trafalgar St			SOUTH Crystal St			EAST Trafalgar St			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	71	523	121	238	222	0	13	1381	0	5	156	1	**2731**
0715 - 0815	96	529	116	228	265	0	19	1429	0	11	186	0	**2879**
0730 - 0830	104	525	115	220	247	0	25	1333	0	11	193	0	**2773**
0745 - 0845	107	571	113	216	241	0	25	1374	0	11	189	0	**2847**
0800 - 0900	115	583	115	204	242	0	23	1318	0	11	172	0	**2783**
PEAK HOUR	**96**	**529**	**116**	**228**	**265**	**0**	**19**	**1429**	**0**	**11**	**186**	**0**	**2879**

	NORTH Crystal St			WEST Trafalgar St			SOUTH Crystal St			EAST Trafalgar St			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1700	73	1068	240	145	167	0	30	965	0	24	215	1	**2928**
1615 - 1715	77	1091	248	146	199	0	29	949	0	38	217	1	**2995**
1630 - 1730	66	1100	258	146	214	0	23	940	0	36	214	2	**2999**
1645 - 1745	63	1062	268	155	223	0	35	983	0	44	239	2	**3074**
1700 - 1800	69	1103	253	145	229	0	27	916	0	43	224	1	**3010**
PEAK HOUR	**63**	**1062**	**268**	**155**	**223**	**0**	**35**	**983**	**0**	**44**	**239**	**2**	**3074**



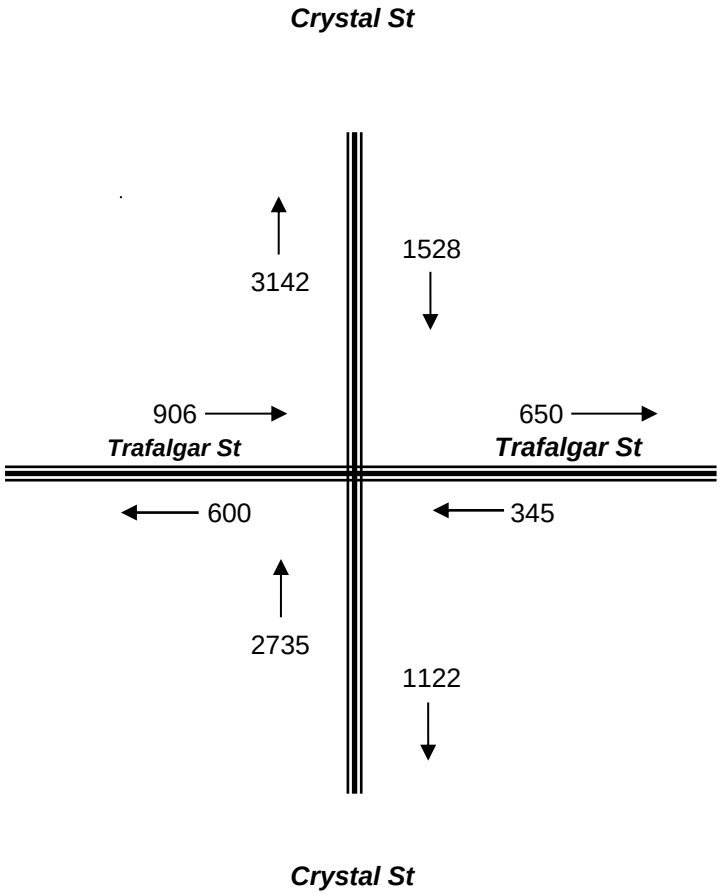


R.O.A.R DATA
Reliable, Original & Authentic Results
Ph.88196847, Mob.0418-239019

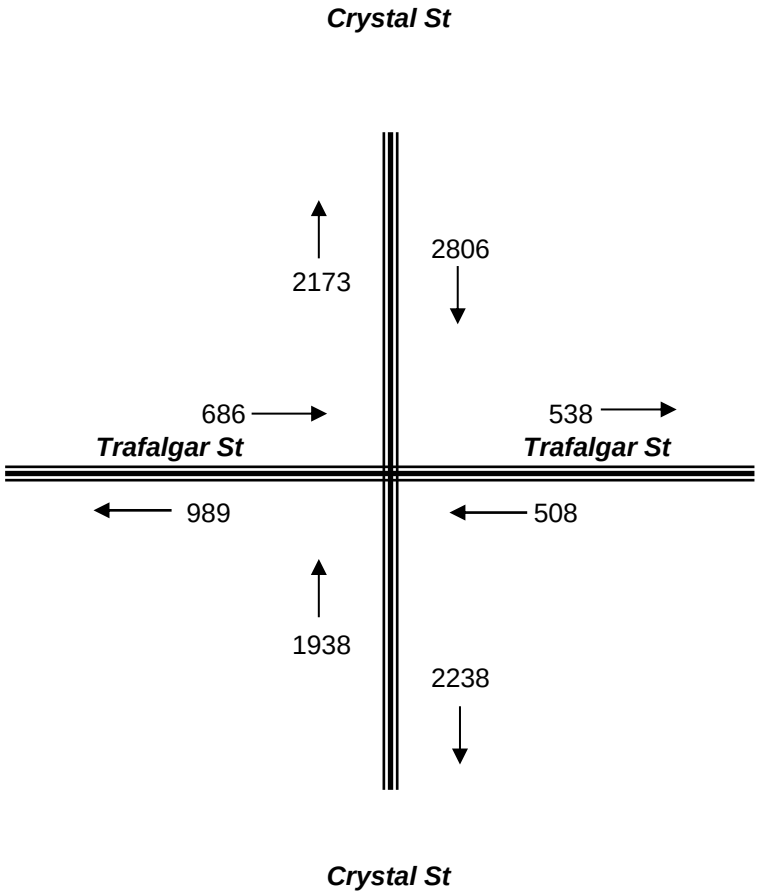
Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

TOTAL VOLUMES FOR COUNT PERIODS

AM



PM

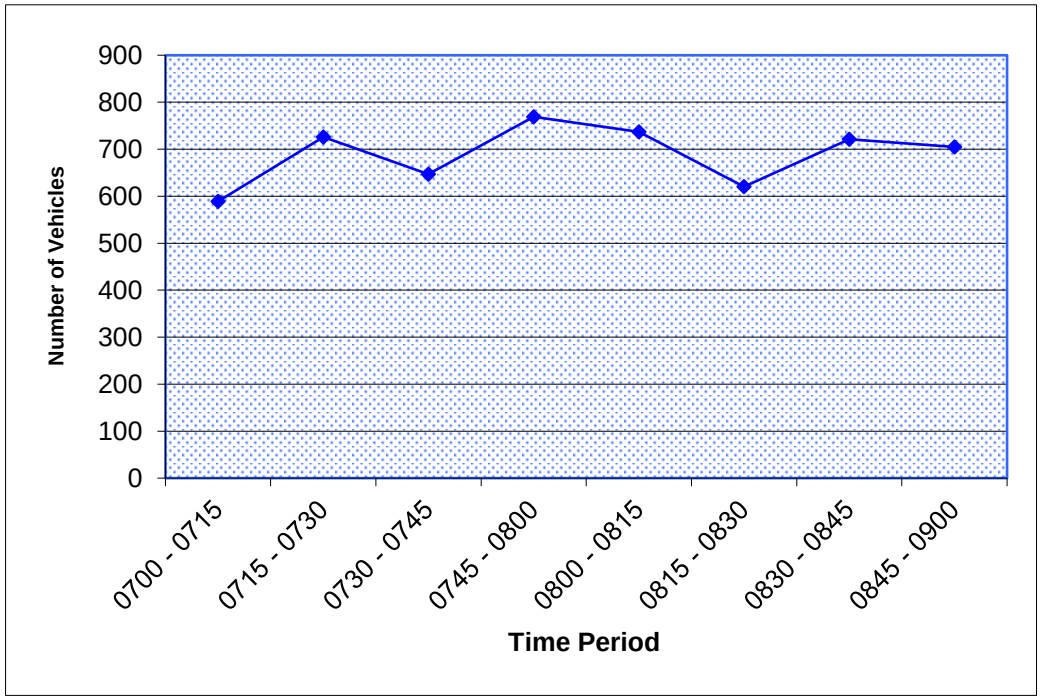


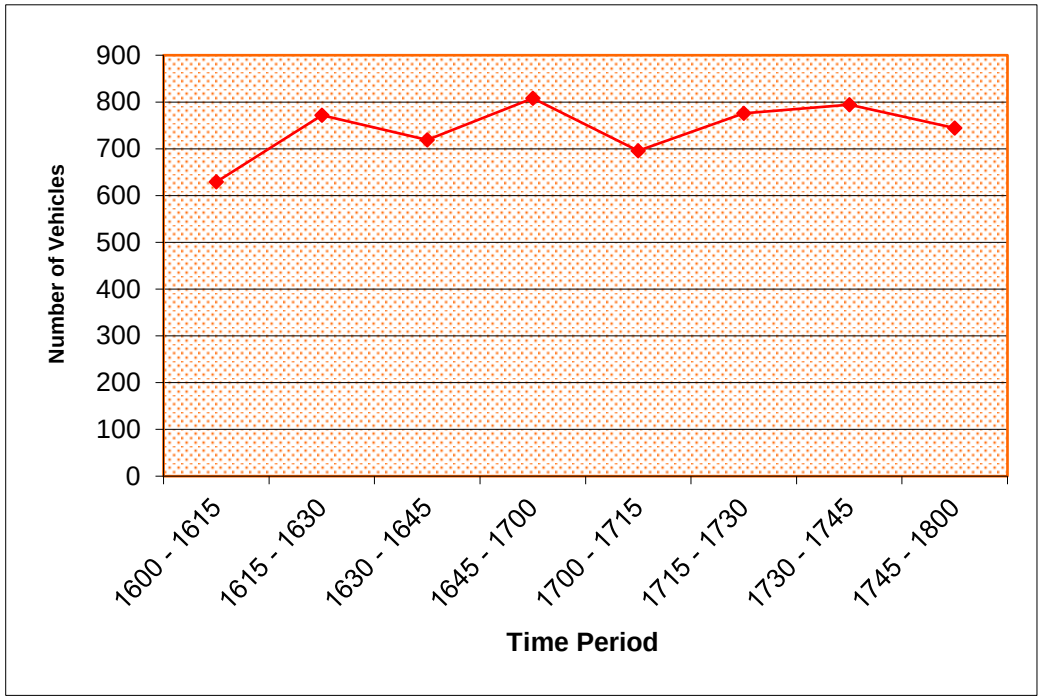
R.O.A.R DATA
Reliable, Original & Authentic Results
Ph.88196847, Mob.0418-239019

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

AM ***PM***

Crystal St & Trafalgar St





R.O.A.R. DATA

Reliable, Original & Authentic Results

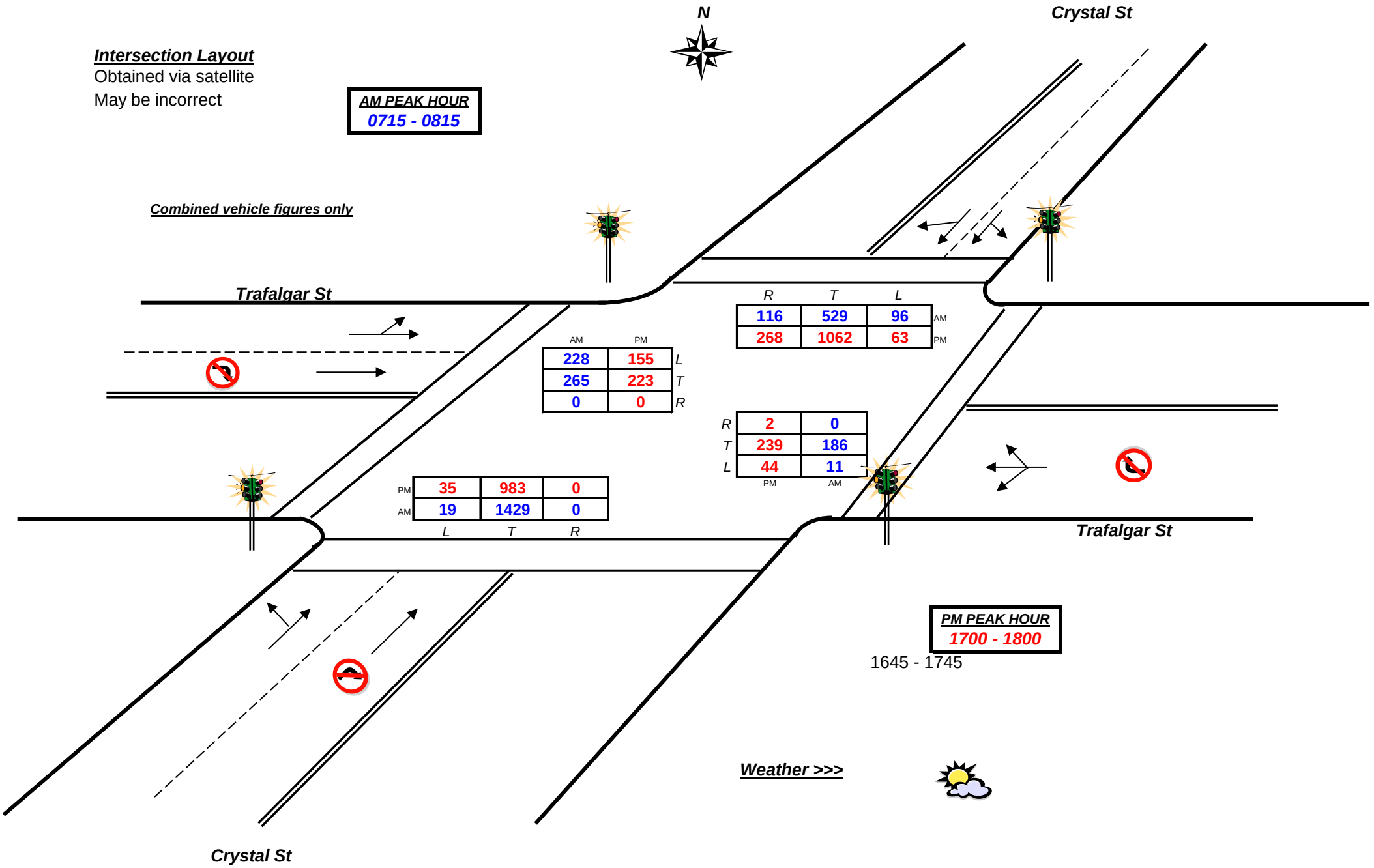
Ph.88196847, Mob.0418-239019

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

Intersection Layout
Obtained via satellite
May be incorrect

AM PEAK HOUR
0715 - 0815

Combined vehicle figures only



	AM	PM
L	228	155
T	265	223
R	0	0

	R	T	L	
AM	116	529	96	AM
PM	268	1062	63	PM

	R	T	L
PM	35	983	0
AM	19	1429	0

	PM	AM
R	2	0
T	239	186
L	44	11

PM PEAK HOUR
1700 - 1800
1645 - 1745

Weather >>>

New Canterbury Rd & Regent St

To

Earl Aninipoc

at ***BarkerRyanStewart***

your results for

PETERSHAM RSL Traffic Counts

supplied by

R.O.A.R. DATA Pty. Ltd.

www.roardata.com.au

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : BarkerRyanStewart

Job No/Name : 6246 PETERSHAM RSL Traffic Counts

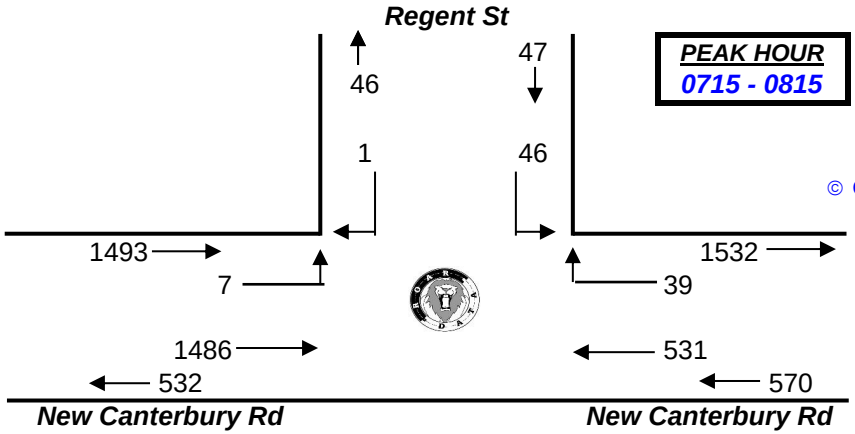
Day/Date : Wednesday 26th October 2016

All Vehicles

	WEST		NORTH		EAST		
	New		*Regent St*		*New*		
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**TOTAL**
0700 - 0715	2	362	2	17	127	12	**522**
0715 - 0730	0	390	1	8	137	10	**546**
0730 - 0745	5	351	0	15	141	11	**523**
0745 - 0800	1	373	0	10	118	8	**510**
0800 - 0815	1	372	0	13	135	10	**531**
0815 - 0830	3	328	3	8	142	10	**494**
0830 - 0845	2	347	1	16	122	12	**500**
0845 - 0900	2	269	0	7	86	11	**375**
Period End	**16**	**2792**	**7**	**94**	**1008**	**84**	**4001**

	WEST		NORTH		EAST		
	New		*Regent St*		*New*		
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**TOTAL**
0700 - 0800	8	1476	3	50	523	41	**2101**
0715 - 0815	7	1486	1	46	531	39	**2110**
0730 - 0830	10	1424	3	46	536	39	**2058**
0745 - 0845	7	1420	4	47	517	40	**2035**
0800 - 0900	8	1316	4	44	485	43	**1900**

PEAK HR	**7**	**1486**	**1**	**46**	**531**	**39**	**2110**

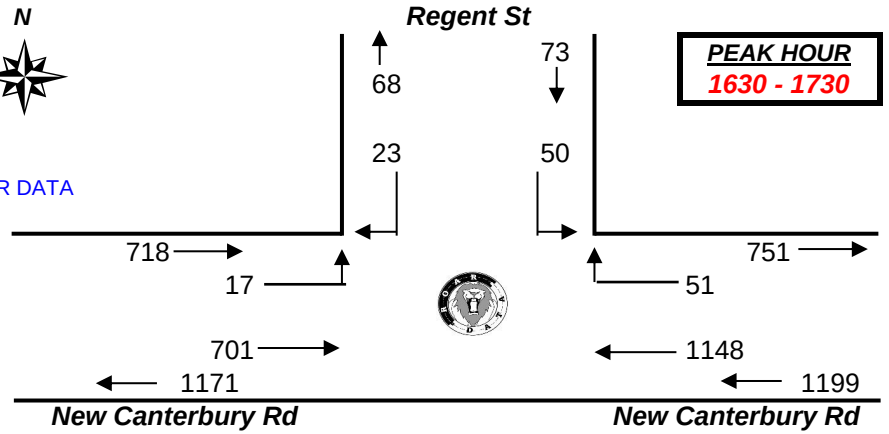


All Vehicles

	WEST		NORTH		EAST		
	New		*Regent St*		*New*		
Time Per	**L**	**T**	**R**	**L**	**T**	**R**	**TOTAL**
1600 - 1615	0	153	9	20	265	12	**459**
1615 - 1630	5	163	3	9	284	8	**472**
1630 - 1645	4	163	7	8	303	5	**490**
1645 - 1700	4	165	10	12	281	6	**478**
1700 - 1715	6	188	2	16	275	15	**502**
1715 - 1730	3	185	4	14	289	25	**520**
1730 - 1745	4	142	3	8	312	13	**482**
1745 - 1800	4	207	1	8	256	5	**481**
Period End	**30**	**1366**	**39**	**95**	**2265**	**89**	**3884**

	WEST		NORTH		EAST		
	New		*Regent St*		*New*		
Peak Per	**L**	**T**	**R**	**L**	**T**	**R**	**TOTAL**
1600 - 1700	13	644	29	49	1133	31	**1899**
1615 - 1715	19	679	22	45	1143	34	**1942**
1630 - 1730	17	701	23	50	1148	51	**1990**
1645 - 1745	17	680	19	50	1157	59	**1982**
1700 - 1800	17	722	10	46	1132	58	**1985**

PEAK HOUR	**17**	**701**	**23**	**50**	**1148**	**51**	**1990**

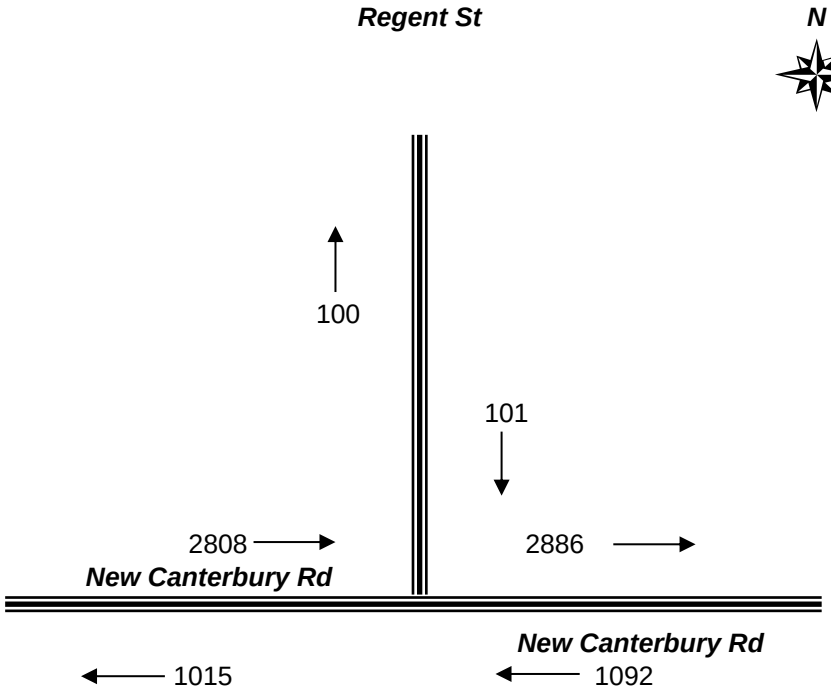


R.O.A.R DATA
Reliable, Original & Authentic Results
Ph.88196847, Mob.0418-239019

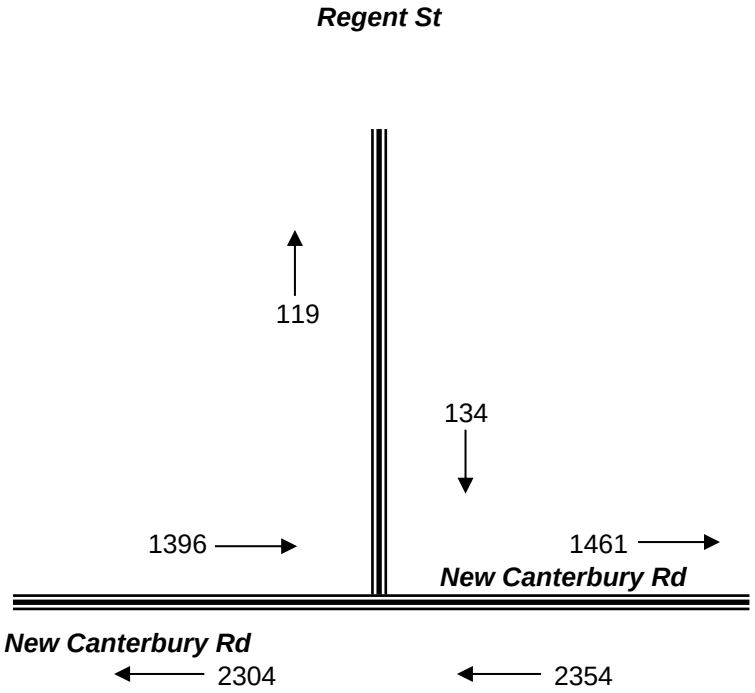
Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

TOTAL VOLUMES FOR COUNT PERIODS

AM



PM

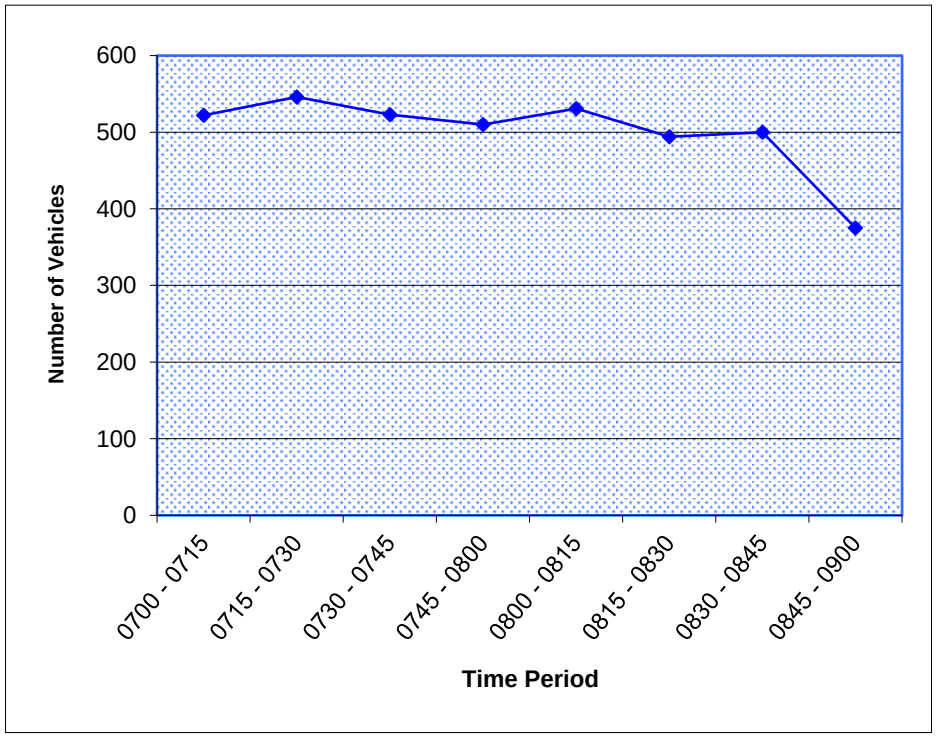


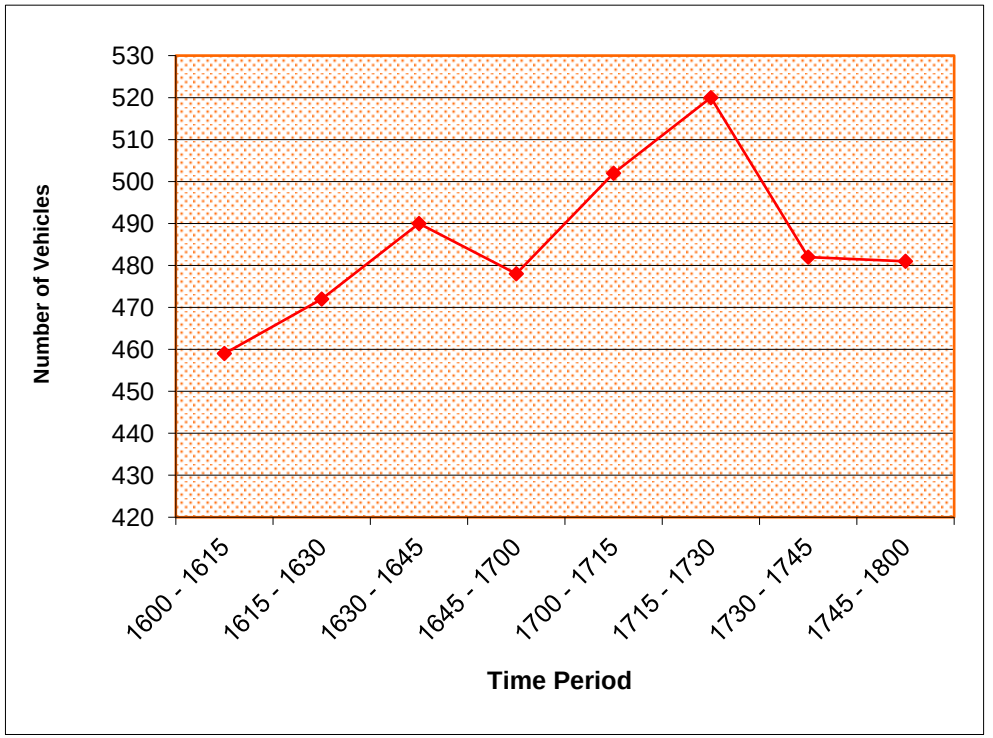
R.O.A.R DATA
Reliable, Original & Authentic Results
Ph.88196847, Mob.0418-239019

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

AM ***PM***

New Canterbury Rd & Regent St



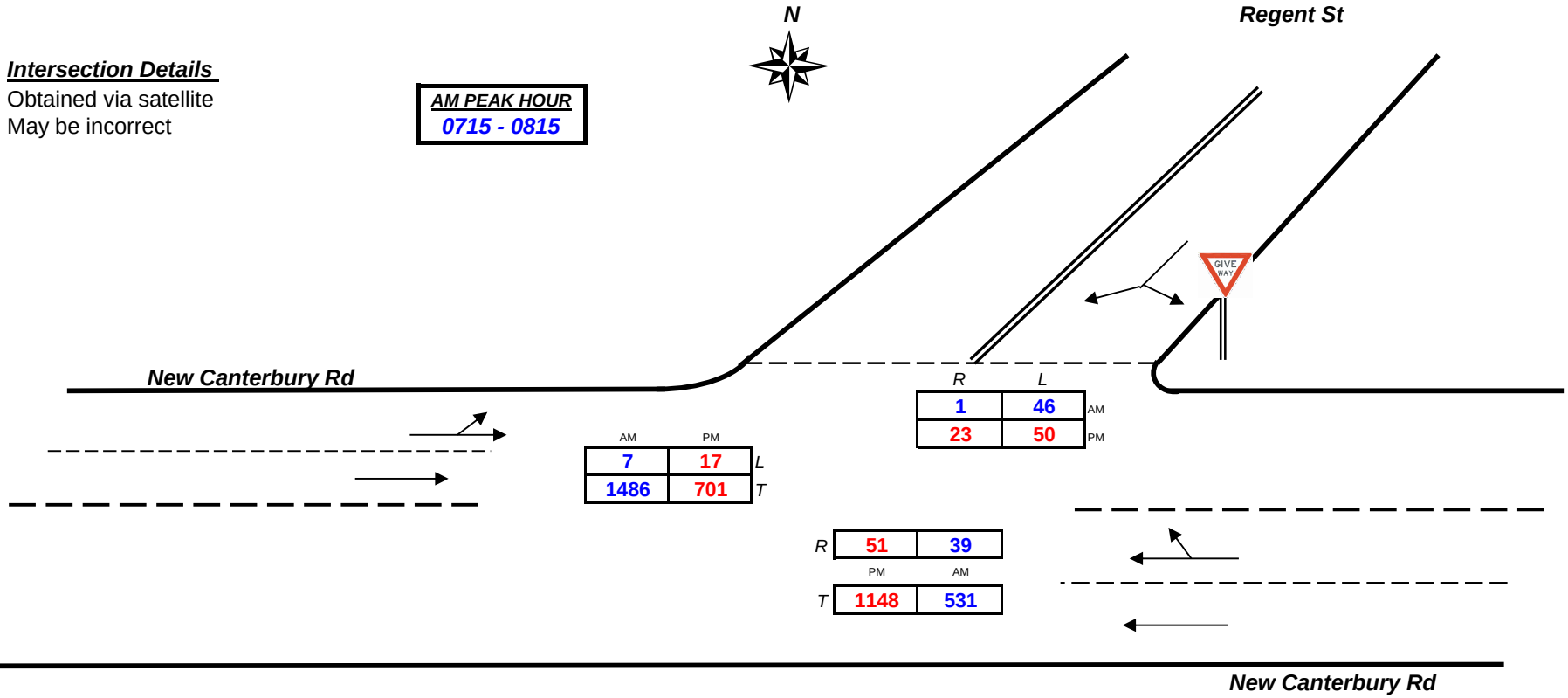


R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Mob.0418-239019

Client : BarkerRyanStewart
Job No/Name : 6246 PETERSHAM RSL Traffic Counts
Day/Date : Wednesday 26th October 2016

Intersection Details
Obtained via satellite
May be incorrect

AM PEAK HOUR
0715 - 0815



PM PEAK HOUR
1630 - 1730

Weather >>>

Appendix B

Bus Maps

Continues on Western Region Guide
Continues on Western Region Guide
Continues on Northern Region Guide

For route information in this area, refer to Western Region Guide.

To Eastwood, Denistone East, Macquarie, Ryde, West Ryde & Parramatta: 500 501 507 510 515 518 520 527 X15 X18 X00

505 506 X06 To Woolwich, Macquarie & East Ryde

Parramatta via Rydalmere 525

Olympic Park Ferry Wharf 526

Ryde & Macquarie 458 459 M41

M20 To Gore Hill

M30 To Spit Junction

Bankstown Bus Service Inset

Bankstown 487 (Centro Interchange)

Bankstown 487

Lidcombe 401 (Church Street)

Rookwood 408 (Cemetery)

Continues on main map

Sydney City Bus Service Inset

Milsons Point

Walsh Bay

412 426 439
413 428 470
422 431
423 438
L23 L28 PREPAY
L38 L39 PREPAY

City - Circular Quay B F T 303 X03 (Alfred St)

PREPAY 7am - 7pm weekdays

Circular Quay Railway Station

City - Martin Place B T (Castlereagh St)

441 City - Art Gallery ("Boy" Charlton Pool)

City - QVB B T 442 (York St)

389

504 X04

City - Town Hall B 502 (Kent St - AM, Park St - PM)

City - Belmore Park B T (Pitt St)

433 436 480 483

M20 M50 L37 M30 M10 440 308

City - Domain B 461 504 X04 (Riley St & St Marys Rd)

To North Bondi 389

To Bondi Jn 352

To Bronte 440

Buses running along dotted line: 422 423 426 428 436 438 439 440 461 470 480 483 L23 L28 PREPAY L38 L39 PREPAY

X03 M20 M50 303 352

Continues on main map

Continues on main map

Continues on main map

Miranda Bus Service Inset

Continues on main map

Sans Souci B 303 X03 (Wellington St)

Miranda B T 477 478 (Station, Kiora Rd)

Dolls Point 476

Kangaroo Point

Sylvania

Sylvania Waters

Taren Point

Caringbah

Continues on Miranda Inset (far left)

Buses running along dotted line: 461 480 483 M10 413 436 438 439 440 L38 L39 PREPAY

Continues on Sydney City inset map (left)

Continues on Bankstown inset map

Continues on Miranda inset map

Buses running along dotted line: 407 408 415 466

Buses running along dotted line: 458 459 M41 462 464 466 L39 PREPAY

Buses running along dotted line: 505 506 X06 LANE COVE RIVER

Buses running along dotted line: 500 501 507 510 515 518 520 527 X15 X18 X00

Continues on Northern Region Guide

Continues on Eastern Region Guide

For route information in this area, refer to Eastern Region Guide.

Legend

- bus route(s)
- bus terminus
- diversion / extended route
- 354 indicates route number
- rail line with station
- shopping centre
- educational institute
- hospital
- police station
- place of interest

transport mode symbols: B bus, T train, F ferry, L light rail, kiss'n'ride, airport line

Fare and ticketing information is available in our ticket guide or by visiting www.sydneybuses.info

As at 4 October 2015
Cartography by TransitGraphics

0 kilometres 1
approximate distance

State Transit
Inner West

Appendix C

Sydney Trains Network Maps

Sydney Trains Network

Transport Sydney Trains

It's easy to travel with us

Plan your trip

Visit **transportnsw.info**

Opal is your ticket to travel

Get it before you travel from a shop nearby or visit **opal.com.au**

Appendix D

Cycle Marrickville Brochure

Road rules

Under Australian Road Rules, a bike is considered to be a vehicle and therefore is required to obey road rules, including stopping at red lights and stop signs and giving way to pedestrials and other vehicles when entering a road.

Bike riders can:

- Pass other vehicles on the left, except when those vehicles are indicating and turning left
- Travel to the front line of traffic on the left hand side of stationary vehicles, except when those vehicles are indicating and turning left
- Take up a whole traffic lane
- Ride a maximum of two abreast in a lane, so long as they are not more than 1.5 metres apart

Bicycle riders cannot ride on footpaths unless:

- the rider is under 12 years old, or
- the rider is accompanying a rider under 12 years old, or
- the footpath is designated a 'shared path' (see 'Footpaths and shared paths' below).

When riding a bicycle you are required by law to wear an approved helmet that is securely fitted and fastened.

Footpaths and shared paths

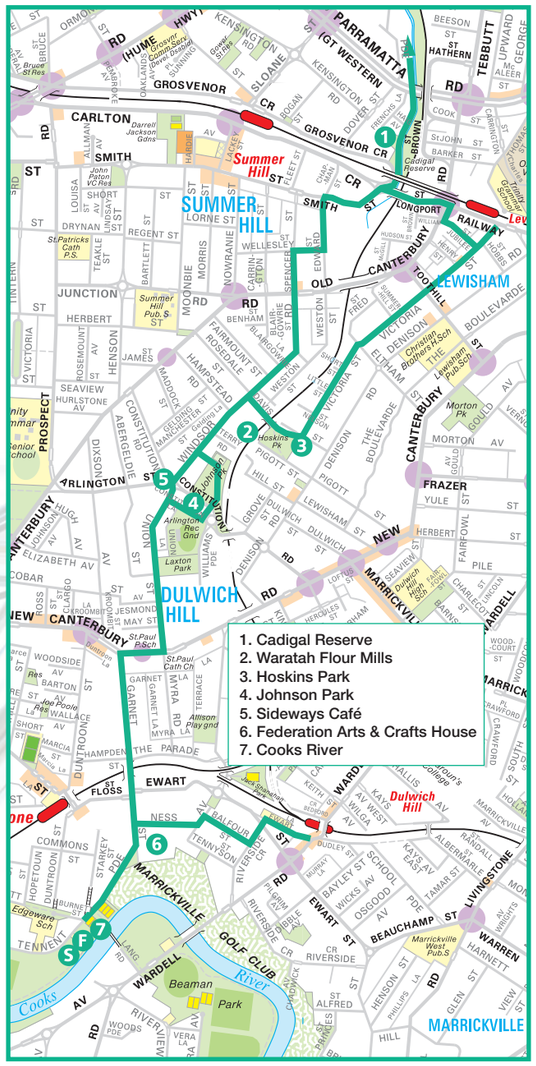
It is illegal to ride on a footpath in NSW – those riding illegally can be fined by NSW Police. The only exception to this rule applies to children under 12 years old or an adult accompanying a child under 12 years old, or when the footpath is designated a 'shared path'.

Shared paths are for the use of both pedestrians and bike riders. They are designated by an image of a pedestrian and bicycle on the pavement or on a street sign.

On shared paths, pedestrians always have right of way – bike riders should slow down, ring their bell to warn of approach, keep to the left and ride in a safe and courteous manner.

Please keep in mind that not all pedestrians can head a bell or see you approaching on your bike.

THE GREENWAY



Recreational rides

We've come up with four recreational rides that take in the delights of Marrickville and will enable you to get out and explore on your bike the best the area has to offer.

Most routes start and finish at railway stations, indicated by "S" and "F" symbols on the maps. You can take your bike on the train for free, except during peak travel periods Monday–Friday where you'll need to purchase a child fare ticket for the bike.

This condition doesn't apply to Opal card users, who do not need to pay a separate fare for the bike.

We've also assigned each route a difficulty, based on factors including gradient, the number of vehicles likely to be along the route and the length of the route.

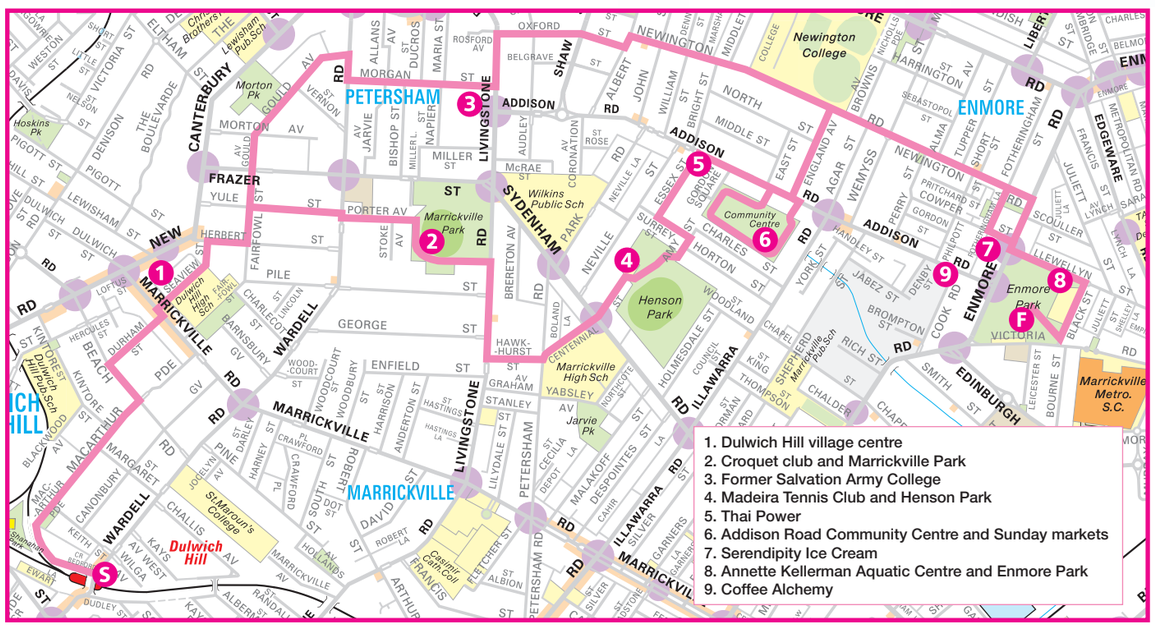
Cooks River: Explore the Cooks River foreshore and its many parks, play areas and reserves.
Difficulty: Easy **Length**: 2.5km one way, 5km loop

Dulwich Hill – Enmore: Visit hidden gems and tranquil parks dotted across Marrickville's heart.
Difficulty: Moderate **Length**: 6km one way

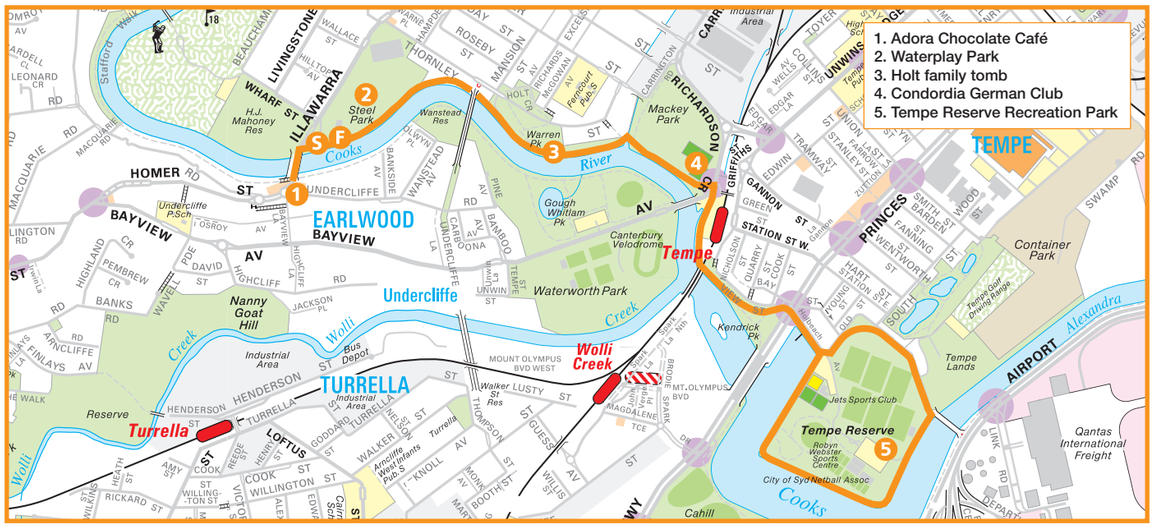
The GreenWay: Explore the delights, sights and sounds of the GreenWay environmental corridor.
Difficulty: Easy/Moderate **Length**: 4km one way

Lewisham–Newtown: Take in the undiscovered northern side of Marrickville through to bustling Newtown.
Difficulty: Moderate **Length**: 5.5km one way

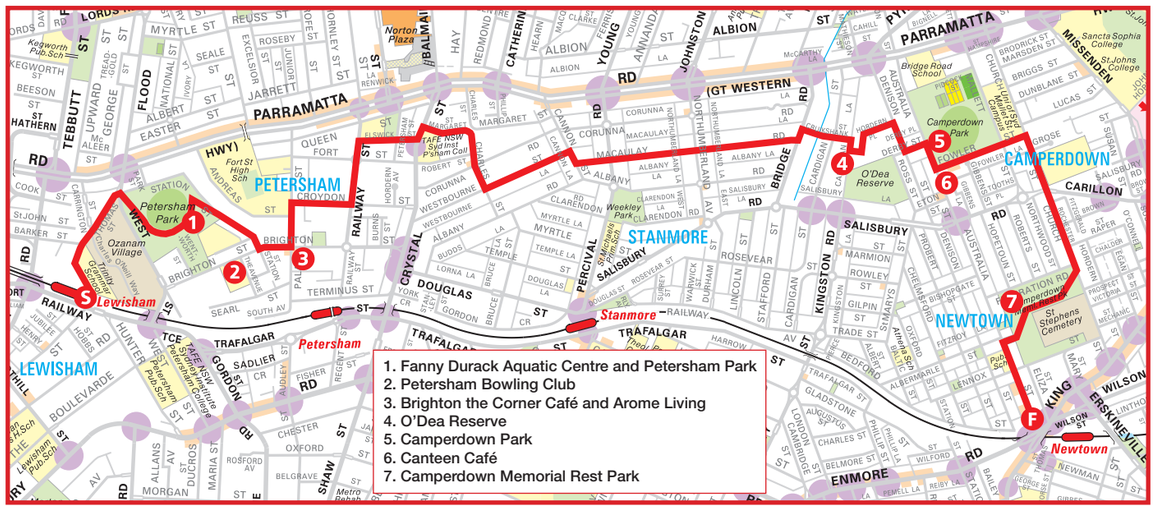
DULWICH HILL – ENMORE



COOKS RIVER



LEWISHAM – NEWTOWN



Free Cycle Confidence courses

City Cycle is designed to improve your cycle skills and confidence while riding. Tailored to encourage safer cycling across the city, this course will give you the flair you need to take to two wheels.

You will learn how to develop your riding skills and bolster your confidence in a quiet off-road location before proceeding out on-road as a group, while learning about some of the best on-road routes in the local area.

Suitable for novice and more regular riders alike.

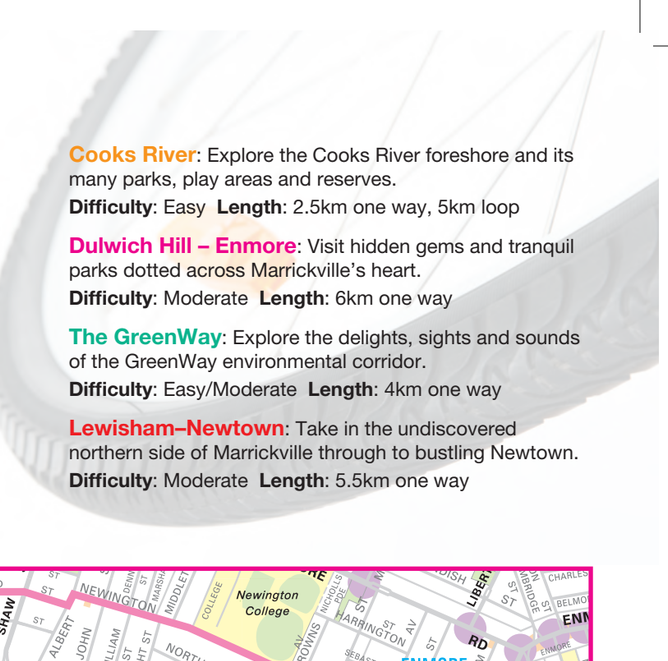
For details and course dates visit:
www.marrickville.nsw.gov.au/cycle

Websites for more information

Find a host of information on cycling in Marrickville – including finding your local bicycle user group, enrolling for a free cycle confidence course and setting up and maintaining your bike – by visiting:
www.marrickville.nsw.gov.au/cycle

For more information about the GreenWay visit:
www.greenway.org.au

Rec Post is Marrickville Council's online hub for all recreation activities in the Marrickville area:
recpost.marrickville.nsw.gov.au



cycling marrickville

MARRICKVILLE council

Cycle Marrickville

- RECOMMENDED CYCLE ROUTES ON-ROAD
- CYCLE ROUTES ON-ROAD HEAVY TRAFFIC
- SHARED PATHS OR OFF-ROAD CYCLE ROUTES
- STEEP CYCLE ROUTES (ARROWS POINT UPHILL)
- Marrickville — RAILWAY WITH STATION
- MARRICKVILLE — SUBURB NAME
- BIKE SHOP
- GREEN LIVING CENTRE
- TOILETS
- TRAFFIC LIGHTS
- MUNICIPAL BOUNDARY

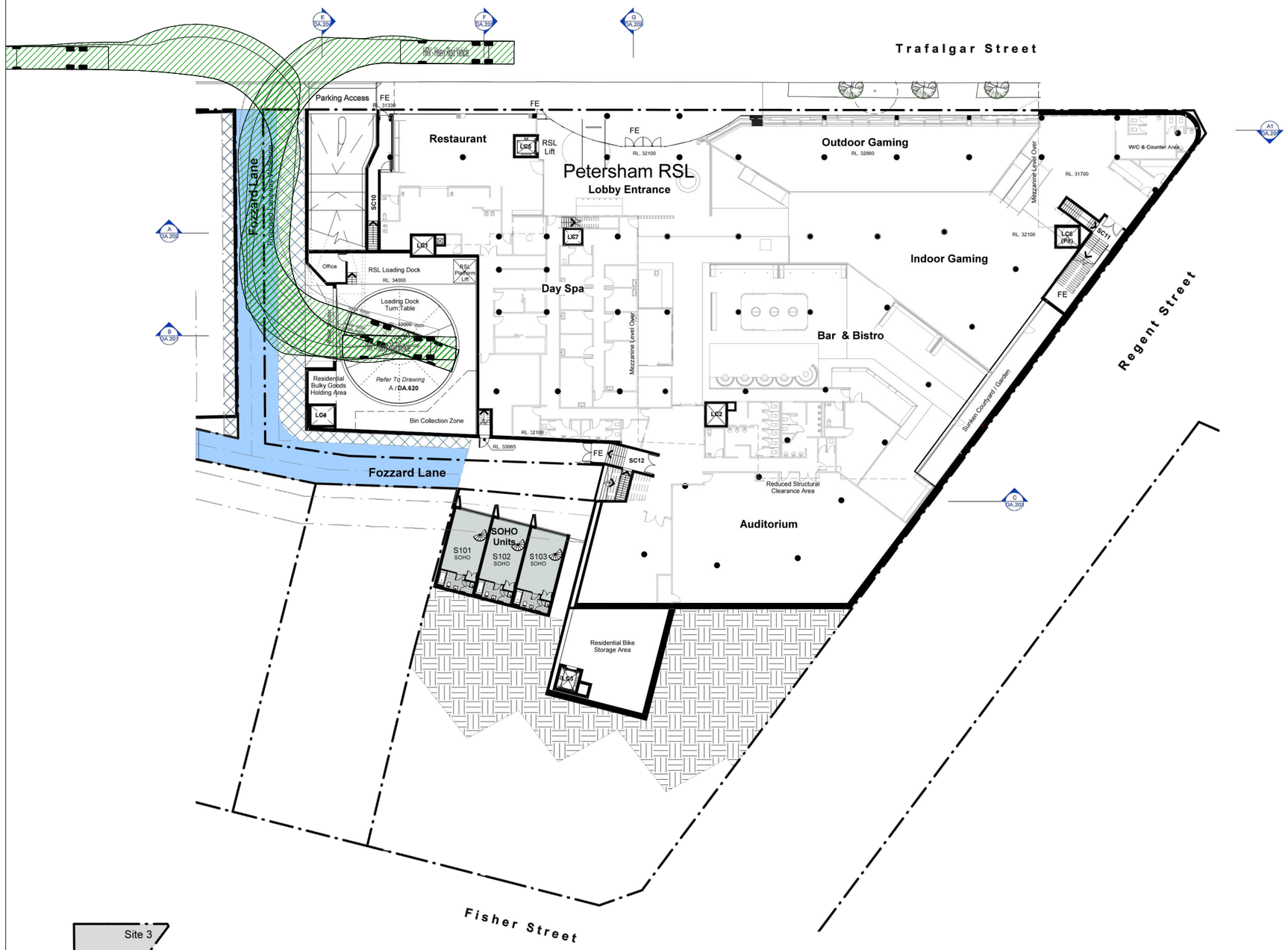
0 100 200 300 400 500 600 700 800 900 1000
0 Scale 1Kilometre

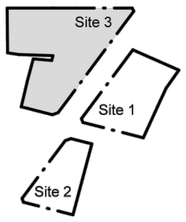
This map is customised using maps published in the Sydway Street Directory of Greater Sydney Edition 17.

Version 16-77-7

Appendix E

Loading Bay Swept Path





General Notes

Architectural Drawings To Be Read In Conjunction With All Other Design Consultants Detailed Drawings, Reports And Specifications.

Site Survey Based On Drawing Received By Petersham RSL Carried Out By Usher & Company Consulting Surveyors - Refer To Drawing **4566-DET**

All Levels Indicated Taken To Australian Height Datum (AHD) Levels Prefixed With **'RL.** Are Interpreted From Existing Survey Information, Final Levels To Be Determined On Detail Review Of Existing Footpath Levels

Drawings Are **Not** To Be Scaled From. Use Only Figured Dimensions Where Indicated

NORDON · JAGO ARCHITECTS

CNR PARRAMATTA RD & JOHNSTON ST - PO BOX 254 - ANNANDALE - NSW 2038 - T.02 9564 8800 F.02 9517 2833
STEPHEN J. NORDON REGISTRATION No. NSW - 4704 GRAHAM P. JAGO REGISTRATION No. NSW - 4926

Development Application

Rev	Description	Date
A	Full Updated Plan Issue	29.06.16

NOT For Construction

PRELIMINARY ISSUE *Draft Issue Rev[B] 19.10.06*

Scale Bar 1:250 — 0m 2.5m 5m 7.5m 10m 12.5m 25m

Proposed Mixed Use Devlopment - Site 3 - Trafalgar Street, PETERSHAM

C:\Local Files\DEI00614\DEI00614_DA Model_MR Local File_Site 3_RSL_160831.rvt

TITLE

Plan Level B1 - Ground Floor RSL

JOB No.	DEI00614
DATE	21.09.2015
SCALE	A1 @ As indicated
DWG No.	DA.099 A

Appendix F

Sidra Analysis

MOVEMENT SUMMARY

Site: Trafalgar St/Audley St - AM ex

AM Existing
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Audley Street											
1	L2	47	5.0	0.178	6.3	LOS A	1.0	7.3	0.50	0.68	51.0
3	R2	123	5.0	0.178	9.8	LOS A	1.0	7.3	0.50	0.68	51.5
Approach		170	5.0	0.178	8.9	LOS A	1.0	7.3	0.50	0.68	51.4
East: Trafalgar Street											
4	L2	49	5.0	0.308	5.9	LOS A	1.9	14.2	0.46	0.56	52.4
5	T1	281	5.0	0.308	6.0	LOS A	1.9	14.2	0.46	0.56	53.4
Approach		330	5.0	0.308	5.9	LOS A	1.9	14.2	0.46	0.56	53.2
West: Trafalgar Street											
11	T1	343	5.0	0.440	5.6	LOS A	3.4	24.6	0.44	0.57	52.8
12	R2	187	5.0	0.440	9.0	LOS A	3.4	24.6	0.44	0.57	52.4
Approach		530	5.0	0.440	6.8	LOS A	3.4	24.6	0.44	0.57	52.6
All Vehicles		1030	5.0	0.440	6.9	LOS A	3.4	24.6	0.45	0.59	52.6

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Audley St - AM post dev

AM post development
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Audley Street											
1	L2	47	5.0	0.183	6.5	LOS A	1.0	7.5	0.52	0.69	50.9
3	R2	123	5.0	0.183	10.0	LOS A	1.0	7.5	0.52	0.69	51.4
Approach		170	5.0	0.183	9.0	LOS A	1.0	7.5	0.52	0.69	51.3
East: Trafalgar Street											
4	L2	57	5.0	0.339	5.9	LOS A	2.2	16.3	0.48	0.58	52.1
5	T1	281	5.0	0.339	6.0	LOS A	2.2	16.3	0.48	0.58	53.1
6u	U	28	0.0	0.339	11.0	LOS A	2.2	16.3	0.48	0.58	53.5
Approach		366	4.6	0.339	6.4	LOS A	2.2	16.3	0.48	0.58	53.0
West: Trafalgar Street											
11	T1	343	5.0	0.456	5.9	LOS A	3.5	25.2	0.48	0.59	52.6
12	R2	187	5.0	0.456	9.3	LOS A	3.5	25.2	0.48	0.59	52.2
Approach		530	5.0	0.456	7.1	LOS A	3.5	25.2	0.48	0.59	52.5
All Vehicles		1066	4.9	0.456	7.1	LOS A	3.5	25.2	0.49	0.61	52.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Audley St - AM post dev + 10yrs

AM post development + 10yrs
Roundabout
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Audley Street											
1	L2	56	5.0	0.234	7.0	LOS A	1.4	10.2	0.60	0.73	50.5
3	R2	148	5.0	0.234	10.5	LOS A	1.4	10.2	0.60	0.73	51.1
Approach		204	5.0	0.234	9.6	LOS A	1.4	10.2	0.60	0.73	50.9
East: Trafalgar Street											
4	L2	68	5.0	0.425	6.3	LOS A	3.1	22.3	0.57	0.63	51.8
5	T1	337	5.0	0.425	6.4	LOS A	3.1	22.3	0.57	0.63	52.7
6u	U	34	0.0	0.425	11.4	LOS A	3.1	22.3	0.57	0.63	53.1
Approach		439	4.6	0.425	6.8	LOS A	3.1	22.3	0.57	0.63	52.6
West: Trafalgar Street											
11	T1	412	5.0	0.565	6.3	LOS A	4.9	35.5	0.60	0.63	52.2
12	R2	224	5.0	0.565	9.7	LOS A	4.9	35.5	0.60	0.63	51.9
Approach		636	5.0	0.565	7.5	LOS A	4.9	35.5	0.60	0.63	52.1
All Vehicles		1279	4.9	0.565	7.6	LOS A	4.9	35.5	0.59	0.65	52.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Audley St - PM ex

PM Existing
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Audley Street											
1	L2	31	5.0	0.100	7.0	LOS A	0.5	4.0	0.57	0.70	50.7
3	R2	53	5.0	0.100	10.6	LOS A	0.5	4.0	0.57	0.70	51.3
Approach		84	5.0	0.100	9.3	LOS A	0.5	4.0	0.57	0.70	51.1
East: Trafalgar Street											
4	L2	105	5.0	0.464	6.0	LOS A	3.4	24.6	0.50	0.58	52.3
5	T1	418	5.0	0.464	6.1	LOS A	3.4	24.6	0.50	0.58	53.2
Approach		523	5.0	0.464	6.1	LOS A	3.4	24.6	0.50	0.58	53.0
West: Trafalgar Street											
11	T1	274	5.0	0.335	5.0	LOS A	2.4	17.7	0.25	0.53	53.3
12	R2	178	5.0	0.335	8.4	LOS A	2.4	17.7	0.25	0.53	52.9
Approach		452	5.0	0.335	6.3	LOS A	2.4	17.7	0.25	0.53	53.1
All Vehicles		1059	5.0	0.464	6.4	LOS A	3.4	24.6	0.40	0.57	52.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Audley St - PM post dev

PM post dev
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Audley Street											
1	L2	31	5.0	0.158	10.0	LOS A	1.0	7.5	0.83	0.85	48.7
3	R2	53	5.0	0.158	13.5	LOS A	1.0	7.5	0.83	0.85	49.2
Approach		84	5.0	0.158	12.2	LOS A	1.0	7.5	0.83	0.85	49.0
East: Trafalgar Street											
4	L2	160	5.0	0.793	8.3	LOS A	12.0	87.0	0.86	0.71	50.3
5	T1	553	5.0	0.793	8.4	LOS A	12.0	87.0	0.86	0.71	51.2
6u	U	203	0.0	0.793	13.3	LOS A	12.0	87.0	0.86	0.71	51.5
Approach		916	3.9	0.793	9.5	LOS A	12.0	87.0	0.86	0.71	51.1
West: Trafalgar Street											
11	T1	274	5.0	0.455	6.7	LOS A	3.4	24.7	0.62	0.68	52.0
12	R2	178	5.0	0.455	10.1	LOS A	3.4	24.7	0.62	0.68	51.7
Approach		452	5.0	0.455	8.0	LOS A	3.4	24.7	0.62	0.68	51.9
All Vehicles		1452	4.3	0.793	9.2	LOS A	12.0	87.0	0.78	0.71	51.2

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Audley St - PM post dev + 10yrs

PM post dev + 10yrs
Roundabout
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Audley Street											
1	L2	37	5.0	0.257	12.6	LOS A	1.8	13.2	0.94	0.94	47.1
3	R2	64	5.0	0.257	16.1	LOS B	1.8	13.2	0.94	0.94	47.6
Approach		101	5.0	0.257	14.8	LOS B	1.8	13.2	0.94	0.94	47.4
East: Trafalgar Street											
4	L2	192	5.0	0.994	41.7	LOS C	56.1	406.1	1.00	1.46	34.7
5	T1	664	5.0	0.994	41.9	LOS C	56.1	406.1	1.00	1.46	35.1
6u	U	244	0.0	0.994	46.7	LOS D	56.1	406.1	1.00	1.46	35.2
Approach		1099	3.9	0.994	42.9	LOS D	56.1	406.1	1.00	1.46	35.0
West: Trafalgar Street											
11	T1	329	5.0	0.578	7.9	LOS A	5.2	38.2	0.75	0.77	51.4
12	R2	214	5.0	0.578	11.3	LOS A	5.2	38.2	0.75	0.77	51.0
Approach		542	5.0	0.578	9.3	LOS A	5.2	38.2	0.75	0.77	51.2
All Vehicles		1742	4.3	0.994	30.8	LOS C	56.1	406.1	0.92	1.22	39.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Regent St/New Cant Rd - AM ex

Regent St/New Cant Rd - AM ex
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: New Canterbury Road											
5	T1	531	5.0	0.260	2.2	LOS A	1.8	12.9	0.08	0.04	57.6
6	R2	39	5.0	0.260	31.5	LOS C	1.8	12.9	0.91	0.45	40.2
Approach		570	5.0	0.260	4.2	NA	1.8	12.9	0.14	0.07	56.0
North: Regent Street											
7	L2	46	5.0	0.080	12.8	LOS A	0.3	1.9	0.67	0.86	46.8
9	R2	1	5.0	0.080	161.8	LOS F	0.2	1.6	0.93	0.97	33.5
Approach		47	5.0	0.080	15.9	LOS B	0.3	1.9	0.67	0.86	46.4
West: New Canterbury Road											
10	L2	7	5.0	0.402	5.6	LOS A	0.0	0.0	0.00	0.01	58.0
11	T1	1486	5.0	0.402	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1493	5.0	0.402	0.1	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		2110	5.0	0.402	1.6	NA	1.8	12.9	0.05	0.04	58.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Regent St/New Cant Rd - AM post dev

Regent St/New Cant Rd - AM post development
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: New Canterbury Road											
5	T1	531	5.0	0.260	2.2	LOS A	1.8	12.9	0.08	0.04	57.6
6	R2	39	5.0	0.260	31.5	LOS C	1.8	12.9	0.91	0.45	40.2
Approach		570	5.0	0.260	4.2	NA	1.8	12.9	0.14	0.07	56.0
North: Regent Street											
7	L2	58	5.0	0.098	13.2	LOS A	0.3	2.4	0.68	0.86	46.7
9	R2	1	5.0	0.098	163.3	LOS F	0.3	2.0	0.92	0.97	35.5
Approach		59	5.0	0.098	15.8	LOS B	0.3	2.4	0.68	0.87	46.5
West: New Canterbury Road											
10	L2	7	5.0	0.402	5.6	LOS A	0.0	0.0	0.00	0.01	58.0
11	T1	1486	5.0	0.402	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1493	5.0	0.402	0.1	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		2122	5.0	0.402	1.6	NA	1.8	12.9	0.06	0.04	58.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Regent St/New Cant Rd - AM post dev + 10yrs

Regent St/New Cant Rd - AM post development + 10yrs
Giveway / Yield (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: New Canterbury Road											
5	T1	637	5.0	0.343	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6	R2	47	5.0	0.604	82.5	LOS F	2.0	14.6	0.98	1.07	25.1
Approach		684	5.0	0.604	5.7	NA	2.0	14.6	0.07	0.07	54.7
North: Regent Street											
7	L2	70	5.0	0.182	14.9	LOS B	0.6	4.4	0.75	0.90	45.2
9	R2	1	5.0	0.182	515.8	LOS F	0.5	3.5	0.99	1.00	9.3
Approach		71	5.0	0.182	23.4	LOS B	0.6	4.4	0.76	0.90	42.4
West: New Canterbury Road											
10	L2	8	5.0	0.482	5.7	LOS A	0.0	0.0	0.00	0.01	57.9
11	T1	1783	5.0	0.482	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		1792	5.0	0.482	0.1	NA	0.0	0.0	0.00	0.00	59.8
All Vehicles		2546	5.0	0.604	2.3	NA	2.0	14.6	0.04	0.05	57.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Regent St/New Cant Rd - PM ex

Regent St/New Cant Rd - PM ex
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: New Canterbury Road											
5	T1	1148	5.0	0.351	0.7	LOS A	1.5	10.6	0.10	0.03	58.9
6	R2	51	5.0	0.351	12.3	LOS A	1.5	10.6	0.23	0.07	55.7
Approach		1199	5.0	0.351	1.2	NA	1.5	10.6	0.11	0.03	58.8
North: Regent Street											
7	L2	50	5.0	0.055	7.2	LOS A	0.2	1.4	0.40	0.64	52.2
9	R2	23	5.0	0.786	277.4	LOS F	2.6	18.7	0.99	1.10	10.7
Approach		73	5.0	0.786	92.4	LOS F	2.6	18.7	0.59	0.78	23.5
West: New Canterbury Road											
10	L2	17	5.0	0.193	5.6	LOS A	0.0	0.0	0.00	0.03	57.8
11	T1	701	5.0	0.193	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		718	5.0	0.193	0.2	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		1990	5.0	0.786	4.2	NA	2.6	18.7	0.08	0.05	56.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Regent St/New Cant Rd - PM post dev

Regent St/New Cant Rd - PM post development
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: New Canterbury Road											
5	T1	1148	5.0	0.350	0.7	LOS A	1.4	10.5	0.10	0.03	58.9
6	R2	51	5.0	0.350	12.3	LOS A	1.4	10.5	0.23	0.07	55.7
Approach		1199	5.0	0.350	1.2	NA	1.4	10.5	0.10	0.03	58.8
North: Regent Street											
7	L2	52	5.0	0.058	7.3	LOS A	0.2	1.5	0.40	0.64	52.1
9	R2	23	5.0	0.781	273.3	LOS F	2.5	18.5	0.99	1.10	10.9
Approach		75	5.0	0.781	88.8	LOS F	2.5	18.5	0.58	0.78	24.1
West: New Canterbury Road											
10	L2	11	5.0	0.192	5.6	LOS A	0.0	0.0	0.00	0.02	57.9
11	T1	701	5.0	0.192	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		712	5.0	0.192	0.1	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		1986	5.0	0.781	4.1	NA	2.5	18.5	0.08	0.05	56.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Regent St/New Cant Rd - PM post dev + 10yrs

Regent St/New Cant Rd - PM post development + 10yrs
Giveway / Yield (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: New Canterbury Road											
5	T1	1378	5.0	0.432	1.2	LOS A	2.5	18.4	0.13	0.03	58.4
6	R2	61	5.0	0.432	15.6	LOS B	2.5	18.4	0.32	0.07	54.5
Approach		1439	5.0	0.432	1.8	NA	2.5	18.4	0.14	0.03	58.2
North: Regent Street											
7	L2	62	5.0	0.075	7.8	LOS A	0.3	1.9	0.45	0.68	51.8
9	R2	28	5.0	3.077	4325.0	LOS F	30.7	224.1	1.00	1.80	0.8
Approach		90	5.0	3.077	1331.7	LOS F	30.7	224.1	0.62	1.02	2.6
West: New Canterbury Road											
10	L2	13	5.0	0.230	5.6	LOS A	0.0	0.0	0.00	0.02	57.9
11	T1	841	5.0	0.230	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		854	5.0	0.230	0.1	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		2383	5.0	3.077	51.4	NA	30.7	224.1	0.11	0.06	32.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Regent St - AM ex

AM existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Regent Street											
1	L2	39	5.0	0.041	7.0	LOS A	0.1	1.0	0.37	0.61	52.3
Approach		39	5.0	0.041	7.0	LOS A	0.1	1.0	0.37	0.61	52.3
East: Trafalgar Street											
4	L2	19	5.0	0.011	5.6	LOS A	0.0	0.0	0.00	0.58	53.4
5	T1	298	5.0	0.158	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		317	5.0	0.158	0.4	NA	0.0	0.0	0.00	0.03	59.5
West: Trafalgar Street											
11	T1	487	5.0	0.215	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		487	5.0	0.215	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		843	5.0	0.215	0.5	NA	0.1	1.0	0.02	0.04	59.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Regent St - AM post dev

AM post development
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Regent Street											
1	L2	47	5.0	0.049	7.0	LOS A	0.2	1.3	0.37	0.62	52.3
Approach		47	5.0	0.049	7.0	LOS A	0.2	1.3	0.37	0.62	52.3
East: Trafalgar Street											
4	L2	19	5.0	0.011	5.6	LOS A	0.0	0.0	0.00	0.58	53.4
5	T1	298	5.0	0.158	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		317	5.0	0.158	0.4	NA	0.0	0.0	0.00	0.03	59.5
West: Trafalgar Street											
11	T1	487	5.0	0.215	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		487	5.0	0.215	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		851	5.0	0.215	0.5	NA	0.2	1.3	0.02	0.05	59.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Regent St - AM post dev + 10yrs

AM post development + 10yrs
Giveway / Yield (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Regent Street											
1	L2	56	5.0	0.064	7.4	LOS A	0.2	1.6	0.41	0.65	52.1
Approach		56	5.0	0.064	7.4	LOS A	0.2	1.6	0.41	0.65	52.1
East: Trafalgar Street											
4	L2	23	5.0	0.013	5.6	LOS A	0.0	0.0	0.00	0.58	53.4
5	T1	358	5.0	0.189	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		380	5.0	0.189	0.4	NA	0.0	0.0	0.00	0.03	59.5
West: Trafalgar Street											
11	T1	584	5.0	0.258	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		584	5.0	0.258	0.0	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		1021	5.0	0.258	0.6	NA	0.2	1.6	0.02	0.05	59.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Regent St - PM ex

PM existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Regent Street											
1	L2	76	5.0	0.100	8.3	LOS A	0.3	2.6	0.49	0.73	51.4
Approach		76	5.0	0.100	8.3	LOS A	0.3	2.6	0.49	0.73	51.4
East: Trafalgar Street											
4	L2	53	5.0	0.030	5.6	LOS A	0.0	0.0	0.00	0.58	53.4
5	T1	472	5.0	0.250	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		525	5.0	0.250	0.6	NA	0.0	0.0	0.00	0.06	59.2
West: Trafalgar Street											
11	T1	352	5.0	0.155	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		352	5.0	0.155	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		953	5.0	0.250	1.0	NA	0.3	2.6	0.04	0.09	58.8

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Regent St - PM post dev

PM post development
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Regent Street											
1	L2	77	5.0	0.102	8.3	LOS A	0.4	2.6	0.49	0.73	51.4
Approach		77	5.0	0.102	8.3	LOS A	0.4	2.6	0.49	0.73	51.4
East: Trafalgar Street											
4	L2	54	5.0	0.030	5.6	LOS A	0.0	0.0	0.00	0.58	53.4
5	T1	473	5.0	0.250	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		527	5.0	0.250	0.6	NA	0.0	0.0	0.00	0.06	59.2
West: Trafalgar Street											
11	T1	354	5.0	0.156	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		354	5.0	0.156	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		958	5.0	0.250	1.0	NA	0.4	2.6	0.04	0.09	58.8

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Trafalgar St/Regent St - PM post dev + 10yrs

PM post development + 10yrs
Giveway / Yield (Two-Way)
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Regent Street											
1	L2	92	5.0	0.140	9.3	LOS A	0.5	3.6	0.54	0.80	50.7
Approach		92	5.0	0.140	9.3	LOS A	0.5	3.6	0.54	0.80	50.7
East: Trafalgar Street											
4	L2	65	5.0	0.036	5.6	LOS A	0.0	0.0	0.00	0.58	53.4
5	T1	568	5.0	0.301	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		632	5.0	0.301	0.6	NA	0.0	0.0	0.00	0.06	59.2
West: Trafalgar Street											
11	T1	425	5.0	0.187	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		425	5.0	0.187	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		1150	5.0	0.301	1.1	NA	0.5	3.6	0.04	0.10	58.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Crystal St/Trafalgar St - AM ex

AM existing
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Crystal Street											
1	L2	19	5.0	0.885	34.2	LOS C	26.0	189.9	0.99	1.12	39.9
2	T1	1429	5.0	0.885	28.6	LOS C	26.0	190.2	0.99	1.12	40.8
Approach		1448	5.0	0.885	28.7	LOS C	26.0	190.2	0.99	1.12	40.8
East: Trafalgar Street											
4	L2	11	5.0	0.628	32.5	LOS C	5.8	42.1	0.98	0.82	40.6
5	T1	186	5.0	0.628	26.9	LOS B	5.8	42.1	0.98	0.82	41.5
Approach		197	5.0	0.628	27.3	LOS B	5.8	42.1	0.98	0.82	41.4
North: Crystal Street											
7	L2	96	5.0	0.478	11.8	LOS A	8.8	63.9	0.56	0.55	52.2
8	T1	529	5.0	0.478	7.8	LOS A	8.8	63.9	0.60	0.57	52.3
9	R2	116	5.0	0.478	25.8	LOS B	4.5	32.8	0.93	0.77	42.1
Approach		741	5.0	0.478	11.1	LOS A	8.8	63.9	0.65	0.60	50.3
West: Trafalgar Street											
10	L2	228	5.0	0.347	20.7	LOS B	4.9	36.1	0.77	0.77	43.7
11	T1	265	5.0	0.842	33.1	LOS C	9.0	65.5	1.00	1.02	38.9
Approach		493	5.0	0.842	27.4	LOS B	9.0	65.5	0.89	0.91	41.0
All Vehicles		2879	5.0	0.885	23.9	LOS B	26.0	190.2	0.88	0.93	43.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	24.4	LOS C	0.1	0.1	0.90	0.90
P2	East Full Crossing	50	6.1	LOS A	0.0	0.0	0.45	0.45
P3	North Full Crossing	50	24.4	LOS C	0.1	0.1	0.90	0.90
P4	West Full Crossing	50	16.2	LOS B	0.1	0.1	0.73	0.73
All Pedestrians		200	17.7	LOS B			0.75	0.75

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Crystal St/Trafalgar St - AM post dev

AM post development
Signals - Fixed Time Isolated Cycle Time = 60 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Crystal Street											
1	L2	19	5.0	0.885	34.2	LOS C	26.0	189.9	0.99	1.12	39.9
2	T1	1429	5.0	0.885	28.6	LOS C	26.0	190.2	0.99	1.12	40.8
Approach		1448	5.0	0.885	28.7	LOS C	26.0	190.2	0.99	1.12	40.8
East: Trafalgar Street											
4	L2	11	5.0	0.628	32.5	LOS C	5.8	42.1	0.98	0.82	40.6
5	T1	186	5.0	0.628	26.9	LOS B	5.8	42.1	0.98	0.82	41.5
Approach		197	5.0	0.628	27.3	LOS B	5.8	42.1	0.98	0.82	41.4
North: Crystal Street											
7	L2	96	5.0	0.478	11.8	LOS A	8.8	63.9	0.56	0.55	52.2
8	T1	529	5.0	0.478	7.8	LOS A	8.8	63.9	0.60	0.57	52.3
9	R2	116	5.0	0.478	25.8	LOS B	4.5	32.8	0.93	0.77	42.1
Approach		741	5.0	0.478	11.1	LOS A	8.8	63.9	0.65	0.60	50.3
West: Trafalgar Street											
10	L2	236	5.0	0.359	20.8	LOS B	5.1	37.5	0.77	0.78	43.7
11	T1	265	5.0	0.842	33.1	LOS C	9.0	65.5	1.00	1.02	38.9
Approach		501	5.0	0.842	27.3	LOS B	9.0	65.5	0.89	0.91	41.0
All Vehicles		2887	5.0	0.885	23.9	LOS B	26.0	190.2	0.88	0.93	43.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	24.4	LOS C	0.1	0.1	0.90	0.90
P2	East Full Crossing	50	6.1	LOS A	0.0	0.0	0.45	0.45
P3	North Full Crossing	50	24.4	LOS C	0.1	0.1	0.90	0.90
P4	West Full Crossing	50	16.2	LOS B	0.1	0.1	0.73	0.73
All Pedestrians		200	17.7	LOS B			0.75	0.75

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Crystal St/Trafalgar St - AM post dev + 10yrs

AM post development + 10yrs
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Practical Cycle Time)
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Crystal Street											
1	L2	23	5.0	0.863	32.4	LOS C	38.2	278.7	0.94	0.95	40.7
2	T1	1715	5.0	0.863	26.8	LOS B	38.2	279.0	0.94	0.95	41.7
Approach		1738	5.0	0.863	26.8	LOS B	38.2	279.0	0.94	0.95	41.7
East: Trafalgar Street											
4	L2	13	5.0	0.628	42.0	LOS C	9.8	71.3	0.97	0.81	36.7
5	T1	223	5.0	0.628	36.4	LOS C	9.8	71.3	0.97	0.81	37.4
Approach		236	5.0	0.628	36.7	LOS C	9.8	71.3	0.97	0.81	37.4
North: Crystal Street											
7	L2	115	5.0	0.601	14.5	LOS A	18.1	132.3	0.60	0.59	50.3
8	T1	635	5.0	0.601	8.9	LOS A	18.1	132.3	0.60	0.59	51.7
9	R2	139	5.0	0.648	44.3	LOS D	6.2	44.9	1.00	0.91	34.1
Approach		889	5.0	0.648	15.2	LOS B	18.1	132.3	0.66	0.64	47.7
West: Trafalgar Street											
10	L2	283	5.0	0.474	31.4	LOS C	9.9	72.5	0.84	0.81	38.8
11	T1	318	5.0	0.842	44.7	LOS D	15.3	112.0	1.00	1.00	34.6
Approach		601	5.0	0.842	38.4	LOS C	15.3	112.0	0.93	0.91	36.5
All Vehicles		3464	5.0	0.863	26.5	LOS B	38.2	279.0	0.87	0.85	41.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	60	37.4	LOS D	0.1	0.1	0.91	0.91
P2	East Full Crossing	60	6.8	LOS A	0.1	0.1	0.39	0.39
P3	North Full Crossing	60	39.3	LOS D	0.1	0.1	0.94	0.94
P4	West Full Crossing	60	15.1	LOS B	0.1	0.1	0.58	0.58
All Pedestrians		240	24.7	LOS C			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Crystal St/Trafalgar St - PM ex

PM existing
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Crystal Street											
1	L2	35	5.0	0.788	31.6	LOS C	17.3	126.4	0.96	0.93	41.0
2	T1	983	5.0	0.788	25.9	LOS B	17.4	126.8	0.96	0.93	42.0
Approach		1018	5.0	0.788	26.1	LOS B	17.4	126.8	0.96	0.93	42.0
East: Trafalgar Street											
4	L2	44	5.0	0.769	38.1	LOS C	10.2	74.6	1.00	0.93	38.0
5	T1	239	5.0	0.769	32.5	LOS C	10.2	74.6	1.00	0.93	38.8
6	R2	2	5.0	0.769	38.0	LOS C	10.2	74.6	1.00	0.93	37.9
Approach		285	5.0	0.769	33.4	LOS C	10.2	74.6	1.00	0.93	38.6
North: Crystal Street											
7	L2	63	5.0	0.798	18.1	LOS B	25.8	188.6	0.81	0.78	48.2
8	T1	1062	5.0	0.798	15.2	LOS B	25.8	188.6	0.83	0.83	47.5
9	R2	268	5.0	0.798	33.4	LOS C	13.9	101.2	0.97	1.06	38.9
Approach		1393	5.0	0.798	18.8	LOS B	25.8	188.6	0.86	0.87	45.6
West: Trafalgar Street											
10	L2	155	5.0	0.178	16.5	LOS B	3.0	21.8	0.59	0.72	46.1
11	T1	223	5.0	0.590	28.4	LOS B	7.2	52.4	0.96	0.79	40.9
Approach		378	5.0	0.590	23.5	LOS B	7.2	52.4	0.81	0.76	42.9
All Vehicles		3074	5.0	0.798	23.2	LOS B	25.8	188.6	0.90	0.88	43.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	29.3	LOS C	0.1	0.1	0.92	0.92
P2	East Full Crossing	50	6.9	LOS A	0.0	0.0	0.44	0.44
P3	North Full Crossing	50	29.3	LOS C	0.1	0.1	0.92	0.92
P4	West Full Crossing	50	22.4	LOS C	0.1	0.1	0.80	0.80
All Pedestrians		200	22.0	LOS C			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Crystal St/Trafalgar St - PM ex + 10yrs

PM existing
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Crystal Street											
1	L2	42	5.0	0.853	55.9	LOS D	43.1	314.7	0.99	0.94	32.2
2	T1	1180	5.0	0.853	50.3	LOS D	43.2	315.7	0.99	0.94	32.8
Approach		1222	5.0	0.853	50.5	LOS D	43.2	315.7	0.99	0.94	32.8
East: Trafalgar Street											
4	L2	53	5.0	0.851	73.8	LOS F	26.2	191.2	1.00	0.97	27.7
5	T1	287	5.0	0.851	68.2	LOS E	26.2	191.2	1.00	0.97	28.1
6	R2	2	5.0	0.851	73.7	LOS F	26.2	191.2	1.00	0.97	27.6
Approach		342	5.0	0.851	69.1	LOS E	26.2	191.2	1.00	0.97	28.1
North: Crystal Street											
7	L2	76	5.0	0.863	23.5	LOS B	61.5	449.0	0.83	0.79	45.0
8	T1	1274	5.0	0.863	25.0	LOS B	61.5	449.0	0.86	0.85	42.1
9	R2	322	5.0	0.863	65.6	LOS E	33.4	244.0	1.00	1.16	29.0
Approach		1672	5.0	0.863	32.7	LOS C	61.5	449.0	0.88	0.91	38.9
West: Trafalgar Street											
10	L2	186	5.0	0.192	24.2	LOS B	6.8	49.8	0.55	0.72	42.0
11	T1	268	5.0	0.644	57.4	LOS E	17.8	130.3	0.97	0.82	30.9
Approach		454	5.0	0.644	43.8	LOS D	17.8	130.3	0.79	0.78	34.7
All Vehicles		3689	5.0	0.863	43.3	LOS D	61.5	449.0	0.92	0.91	35.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	60	53.9	LOS E	0.2	0.2	0.85	0.85
P2	East Full Crossing	60	8.4	LOS A	0.1	0.1	0.33	0.33
P3	North Full Crossing	60	55.6	LOS E	0.2	0.2	0.86	0.86
P4	West Full Crossing	60	35.5	LOS D	0.2	0.2	0.69	0.69
All Pedestrians		240	38.3	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Crystal St/Trafalgar St - PM post dev

PM post development
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Crystal Street											
1	L2	35	5.0	0.788	31.6	LOS C	17.3	126.4	0.96	0.93	41.0
2	T1	983	5.0	0.788	25.9	LOS B	17.4	126.8	0.96	0.93	42.0
Approach		1018	5.0	0.788	26.1	LOS B	17.4	126.8	0.96	0.93	42.0
East: Trafalgar Street											
4	L2	44	5.0	0.769	38.1	LOS C	10.2	74.6	1.00	0.93	38.0
5	T1	239	5.0	0.769	32.5	LOS C	10.2	74.6	1.00	0.93	38.8
6	R2	2	5.0	0.769	38.0	LOS C	10.2	74.6	1.00	0.93	37.9
Approach		285	5.0	0.769	33.4	LOS C	10.2	74.6	1.00	0.93	38.6
North: Crystal Street											
7	L2	63	5.0	0.799	18.3	LOS B	26.0	190.0	0.81	0.79	48.2
8	T1	1062	5.0	0.799	15.2	LOS B	26.0	190.0	0.84	0.83	47.5
9	R2	270	5.0	0.799	33.6	LOS C	13.9	101.4	0.97	1.06	38.8
Approach		1395	5.0	0.799	18.9	LOS B	26.0	190.0	0.86	0.88	45.5
West: Trafalgar Street											
10	L2	157	5.0	0.180	16.5	LOS B	3.0	22.1	0.60	0.72	46.1
11	T1	223	5.0	0.590	28.4	LOS B	7.2	52.4	0.96	0.79	40.9
Approach		380	5.0	0.590	23.5	LOS B	7.2	52.4	0.81	0.76	42.9
All Vehicles		3078	5.0	0.799	23.2	LOS B	26.0	190.0	0.90	0.88	43.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	29.3	LOS C	0.1	0.1	0.92	0.92
P2	East Full Crossing	50	6.9	LOS A	0.0	0.0	0.44	0.44
P3	North Full Crossing	50	29.3	LOS C	0.1	0.1	0.92	0.92
P4	West Full Crossing	50	22.4	LOS C	0.1	0.1	0.80	0.80
All Pedestrians		200	22.0	LOS C			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Crystal St/Trafalgar St - PM post dev + 6 years

PM post development + 6yrs
Signals - Fixed Time Isolated Cycle Time = 110 seconds (Practical Cycle Time)
Design Life Analysis (Final Year): Results for 6 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Crystal Street											
1	L2	39	5.0	0.811	42.3	LOS C	29.1	212.4	0.97	0.91	36.6
2	T1	1101	5.0	0.811	36.6	LOS C	29.2	213.1	0.97	0.91	37.4
Approach		1140	5.0	0.811	36.8	LOS C	29.2	213.1	0.97	0.91	37.4
East: Trafalgar Street											
4	L2	49	5.0	0.830	57.1	LOS E	18.2	132.6	1.00	0.97	31.7
5	T1	268	5.0	0.830	51.5	LOS D	18.2	132.6	1.00	0.97	32.3
6	R2	2	5.0	0.830	57.0	LOS E	18.2	132.6	1.00	0.97	31.6
Approach		319	5.0	0.830	52.4	LOS D	18.2	132.6	1.00	0.97	32.2
North: Crystal Street											
7	L2	71	5.0	0.824	19.1	LOS B	40.6	296.7	0.79	0.75	47.6
8	T1	1189	5.0	0.824	18.4	LOS B	40.6	296.7	0.82	0.81	45.6
9	R2	302	5.0	0.824	47.9	LOS D	23.1	168.8	0.98	1.11	33.7
Approach		1562	5.0	0.824	24.1	LOS B	40.6	296.7	0.85	0.87	42.8
West: Trafalgar Street											
10	L2	176	5.0	0.189	20.6	LOS B	5.0	36.2	0.57	0.72	43.8
11	T1	250	5.0	0.632	43.4	LOS D	12.4	90.7	0.97	0.81	35.1
Approach		426	5.0	0.632	34.0	LOS C	12.4	90.7	0.80	0.77	38.2
All Vehicles		3447	5.0	0.830	32.2	LOS C	40.6	296.7	0.90	0.88	39.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	56	42.9	LOS E	0.2	0.2	0.88	0.88
P2	East Full Crossing	56	7.3	LOS A	0.1	0.1	0.36	0.36
P3	North Full Crossing	56	44.7	LOS E	0.2	0.2	0.90	0.90
P4	West Full Crossing	56	28.4	LOS C	0.1	0.1	0.72	0.72
All Pedestrians		224	30.8	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Crystal St/Trafalgar St - PM post dev + 10yrs

PM post development + 10yrs
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)
Design Life Analysis (Final Year): Results for 10 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Crystal Street											
1	L2	42	5.0	0.853	55.9	LOS D	43.1	314.7	0.99	0.94	32.2
2	T1	1180	5.0	0.853	50.3	LOS D	43.2	315.7	0.99	0.94	32.8
Approach		1222	5.0	0.853	50.5	LOS D	43.2	315.7	0.99	0.94	32.8
East: Trafalgar Street											
4	L2	53	5.0	0.851	73.8	LOS F	26.2	191.2	1.00	0.97	27.7
5	T1	287	5.0	0.851	68.2	LOS E	26.2	191.2	1.00	0.97	28.1
6	R2	2	5.0	0.851	73.7	LOS F	26.2	191.2	1.00	0.97	27.6
Approach		342	5.0	0.851	69.1	LOS E	26.2	191.2	1.00	0.97	28.1
North: Crystal Street											
7	L2	76	5.0	0.864	23.6	LOS B	61.8	451.1	0.83	0.79	45.0
8	T1	1274	5.0	0.864	25.0	LOS B	61.8	451.1	0.86	0.85	42.1
9	R2	324	5.0	0.864	66.0	LOS E	33.6	245.4	1.00	1.16	28.9
Approach		1674	5.0	0.864	32.9	LOS C	61.8	451.1	0.89	0.91	38.8
West: Trafalgar Street											
10	L2	188	5.0	0.195	24.2	LOS B	6.9	50.5	0.55	0.72	42.0
11	T1	268	5.0	0.644	57.4	LOS E	17.8	130.3	0.97	0.82	30.9
Approach		456	5.0	0.644	43.7	LOS D	17.8	130.3	0.79	0.78	34.7
All Vehicles		3694	5.0	0.864	43.4	LOS D	61.8	451.1	0.92	0.91	34.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

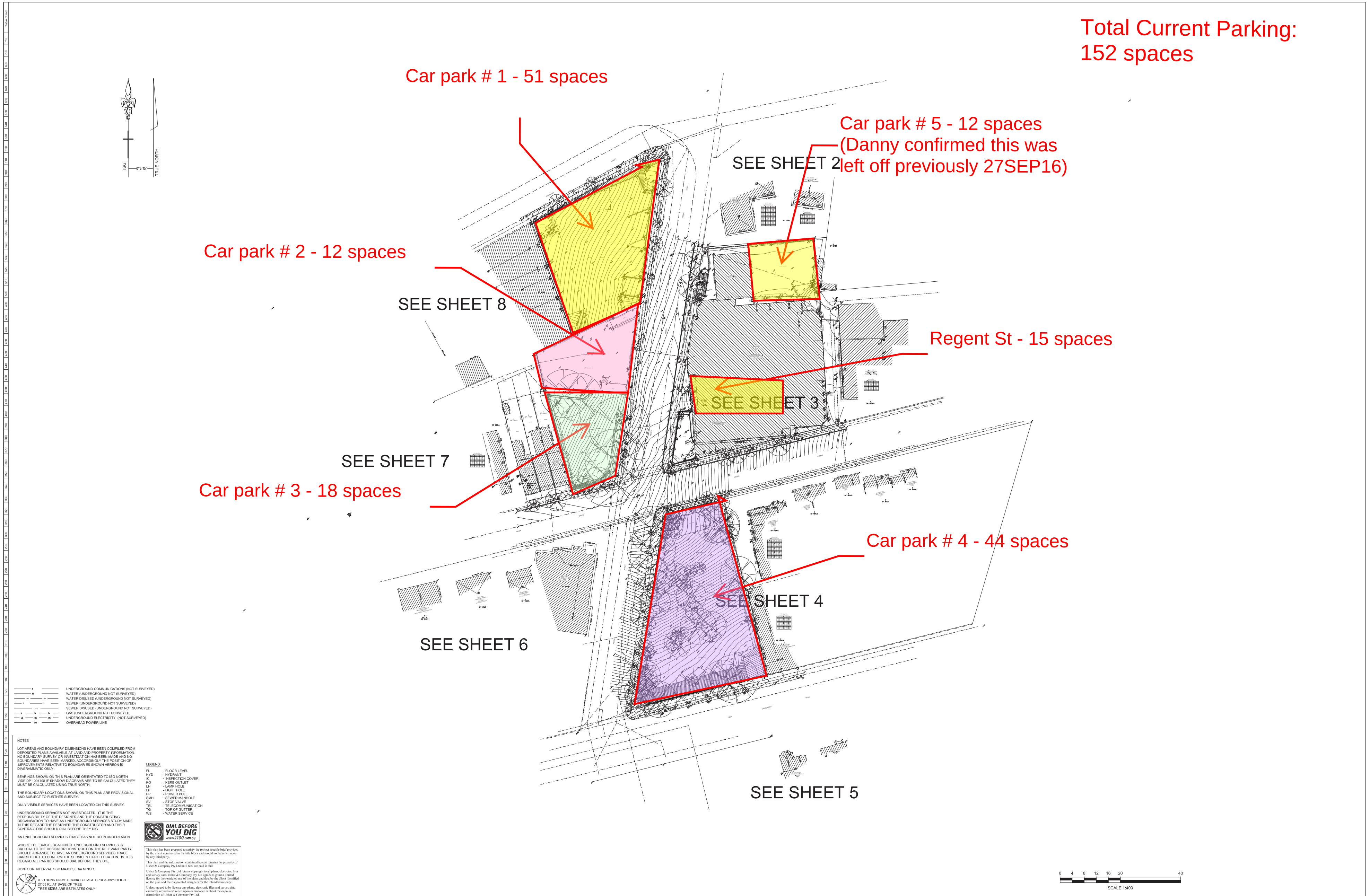
Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	60	53.9	LOS E	0.2	0.2	0.85	0.85
P2	East Full Crossing	60	8.4	LOS A	0.1	0.1	0.33	0.33
P3	North Full Crossing	60	55.6	LOS E	0.2	0.2	0.86	0.86
P4	West Full Crossing	60	35.5	LOS D	0.2	0.2	0.69	0.69
All Pedestrians		240	38.3	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Appendix G

Existing Petersham RSL parking



WHERE THE EXACT LOCATION OF UNDERGROUND SERVICES IS CRITICAL TO THE DESIGN OR CONSTRUCTION THE RELEVANT PARTY SHOULD ARRANGE TO HAVE AN UNDERGROUND SERVICES TRACE CARRIED OUT TO CONFIRM THE SERVICES EXACT LOCATION. IN THIS REGARD ALL PARTIES SHOULD DIAL BEFORE THEY DIG.

CONTOUR INTERVAL 1.0m MAJOR, 0.1m MINOR.

0.3 TRUNK DIAMETER/6m FOLIAGE SPREAD/8m HEIGHT
27.63 RL AT BASE OF TREE
TREE SIZES ARE ESTIMATES ONLY

DIAL BEFORE YOU DIG
www.1100.com.au

SCALE 1:400

USHER & COMPANY
Surveying & Land Development Consultants
A.B.N. 70 128 414 602
Suite 23, 1-3 Havilah Street, Chatswood NSW 2057
PO Box 1199, CHATSWOOD NSW 2057
Phone: (02) 9411 8166
Fax: (02) 9411 8177
Email: admin@usherandcompany.com.au

APPROVED

Amendments

ISSUE	DATE	DETAILS
PRELIM	05-10-2012	
1	12-10-2012	
2	24-10-2012	SERVICES UPDATED

PLAN:
SHOWING DETAIL AND LEVELS
PETERSHAM RSL CLUB
No.3-7 REGENT ST, No.287-295 TRAFALGAR ST, No.13-15 REGENT ST & No.16-20 FISHER ST, PETERSHAM
BEING LOT 1 IN DP 629058, LOT 10 IN DP 1004198, LOT 1 IN DP 830175 & LOTS A, B & C IN DP 440676

LGA: MARRICKVILLE
SUBURB: PETERSHAM
ORIGIN: SSM 103977, RL 37.856 AHD, CLASS LB, ORDER L2, SCIMS 03/10/2012

REDUCTION RATIO: 1:400
DATUM: AHD
DATE OF SURVEY: SEPTEMBER 2012
SURVEYED BY: NS/AM
DRAWN BY: LL

CLIENT: MECONE
PLAN REFERENCE: 4566-DET
SHEET 1 OF 8 SHEETS

AO
ISSUE: 2