EG Funds Management

Summer Hill Flour Mill Rezoning

Transport Assessment

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ARUP

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Transport Assessment

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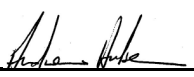
		Signature			

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1 Introduction

1.1 Project Background

Arup was commissioned by EG Funds Management to undertake a transport analysis for the Summer Hill Flour Mill precinct. The site, located in Summer Hill NSW, is proposed to be rezoned to enable mixed use development, including largely medium density residential use and ancillary retail and commercial uses.

The Master Plan for the adjacent McGill Street precinct to the east of the Greenway corridor was adopted by Marrickville Council in November 2009 and assessed a similar type and mix of development. These two precincts are focused on the Lewisham Station public transport hub and utilise the same road system for access.

This report assesses the transport and accessibility impacts resulting from the proposed development at Summer Hill Flour Mill combined with the potential future development on the McGill Street precinct.

1.2 Scope of Study

The scope of this transport assessment involves the following:

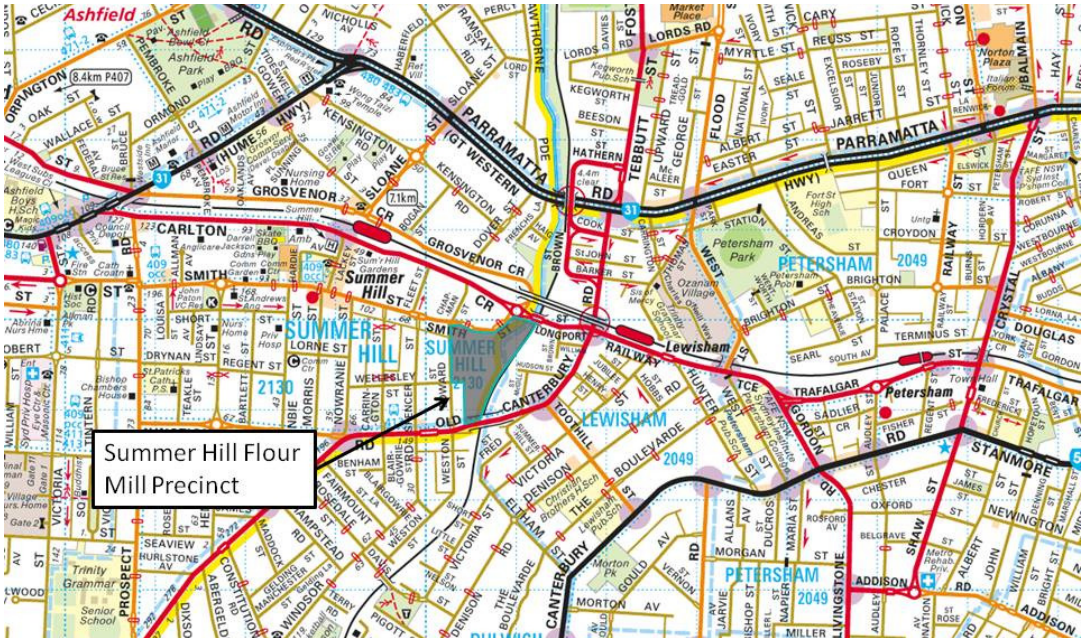
- Documents the current public transport availability for the site including the potential light rail and any future known changes or upgrades.
- AM and PM Peak traffic counts at 5 key intersections surrounding the site.
- Assessment of the travel characteristics for the future residents, employees and visitors to the site based on demographic and journey to work data from the census for the collector districts relevant to this site.
- Determines changes in the level of service and testing of any upgrade works required to accommodate the additional traffic as a result of site development.
- Determines an appropriate form of intersection control required for a number of intersections surrounding the site.
- Considers sustainable travel initiatives such as the provision of car share on the site, public transport accessibility and good bicycle parking provisions to improve the green credentials of the development.
- Provides a full transport assessment for the site including car parking provision and access, traffic generation, trip distribution.

2 Existing Conditions

2.1 Site Analysis

The Summer Hill Flour Mill precinct is located in the suburb of Summer Hill and is bounded by Edward Street to the west, Smith Street to the north, Hawthorne Canal and the Rozelle Goods Line to the east and Old Canterbury Road to the south. The location of the site is presented in Figure 1 below.

Figure 1 Site Location



2.2 Road Network

The site is served by a number of key arterial roads, including:

- Old Canterbury Road
- Parramatta Road
- Railway Terrace / Longport Street / Carlton Crescent

Current daily traffic volumes on selected roads surrounding the Summer Hill Flour Mill precinct is presented in Table 1.

Table 1 Daily Traffic Volumes

Location	Daily Traffic Volume
Longport Street	19,330
Carlton Crescent	7,950
Railway Terrace	17,250
Old Canterbury Road	19,980
Toothill Street	9,490
Smith Street	4,650
Edward Street	2,100

2.3 Traffic Volumes

2.3.1 Existing Site Traffic

The Allied Mills head office functions remain on site although the industrial activity has now ceased. Site observations indicate approximately 40 vehicles are parked in the existing Summer Hill Flour Mill precinct during the day. It is reasonable to assume that of these vehicles, 50% would arrive and depart the site in the AM and PM commuter peak hours.

If the site remained fully operational, it could be expected that a higher level of traffic generation would occur including heavy vehicle movements. For the consolidated site area of approximately 25,000m^2 and applying the site FSR of 1/1 for the industrial zoning, the site could generate 1,250 vehicles / day and 250 vehicles in the evening peak hour based on the rates outlined in the RTA Guide to Traffic Generating Developments for Industry. This level of traffic generation aligns closely with that anticipated from the planned levels of mixed use development as described later in Section 3.3 of this report.

For the McGill Street precinct, morning peak hour traffic counts were undertaken at existing access points to the precinct. This showed 36 vehicles inbound and 24 vehicles outbound generated by the existing residential and commercial uses.

The existing traffic generation for both of these sites is relatively low due to many of the buildings on the sites being underutilised. These sites would have contributed more traffic to the road system when industry was fully operational.

2.3.2 Traffic Surveys

Traffic counts were undertaken at a total of five key intersections surrounding the two sites on Wednesday 9 June 2010. Counts were conducted during the AM (7am – 9am) and PM (4pm – 6pm) commuter peak periods. These counts are representative of traffic conditions during busy times of the year when the local schools are operating. Surveyed intersections (shown in Figure 2) included:

- Old Canterbury Road & Edward Street
- Old Canterbury Road & Toothill Street
- Old Canterbury Road & Railway Terrace
- Longport Street & Grosvenor Crescent
- Smith Street / Edward Street / Chapman Street

Figure 2 Traffic Survey Locations

Source: Google Maps

Full results of these traffic surveys are presented in Appendix A.

2.4 Road Network Operation

On-site observations of traffic conditions at key intersections surrounding the Summer Hill Flour Mill precinct has been undertaken for the purposes of this study. These are described in the sections below:

2.4.1 Old Canterbury Road / Railway Terrace / Longport Street

This intersection is controlled by traffic signals with pedestrian crossing facilities on all approaches. No right turns are permitted in the AM and PM peak hours from any of the four approaches. Significant levels of queuing occurs on Railway Terrace and Longport Street in both commuter peaks. This is largely a result of Railway Terrance being able to carry only one lane of traffic in either direction. On occasions traffic was observed queuing across the intersection. On-site observations indicated however that despite the significant queues, all vehicles were able to clear the intersection in a single signal cycle.

Photograph 1 Old Canterbury Rd / Railway Tce / Longport St Intersection

2.4.2 Old Canterbury Road / Toothill Street

Controlled by traffic signals, this T-intersection provides pedestrian crossing facilities on the southern and western legs. The signals operate on a three phase cycle, with a dedicated right turn phase from the western leg of Old Canterbury Road to Toothill Street provided. With two lanes provided on all approaches, the intersection operates efficiently during peak periods. No significant levels of queuing was observed during on-site observations.

Photograph 2 Old Canterbury Rd / Toothill Street Intersection

2.4.3 Old Canterbury Road / Edward Street

This priority intersection was observed to be operating efficiently for vehicles travelling east-west along Old Canterbury Road. Vehicles turning right out of Edward Street onto Canterbury Road experienced significant delays of up to three minutes due to the high traffic volumes on Old Canterbury Road. Additionally, sight lines for this movement are poor as the intersection is located at the base of the railway overpass.

2.4.4 Edward Street / Smith Street / Chapman Street

This priority intersection was observed to operate well during peak periods. Traffic volumes at this intersection were relatively low, with no significant queues or delays observed. The northern leg of the intersection (Chapman Street) is slightly offset, however due to the low traffic volumes no issues were observed.

2.4.5 Smith Street / Longport Street / Carlton Crescent

This intersection is roundabout controlled, with one central circulating lane. Some vehicles were observed to be queued back from the Longport St / Old Canterbury Rd intersection, however this did not affect the operation of the roundabout.

2.5 Public Transport Provision

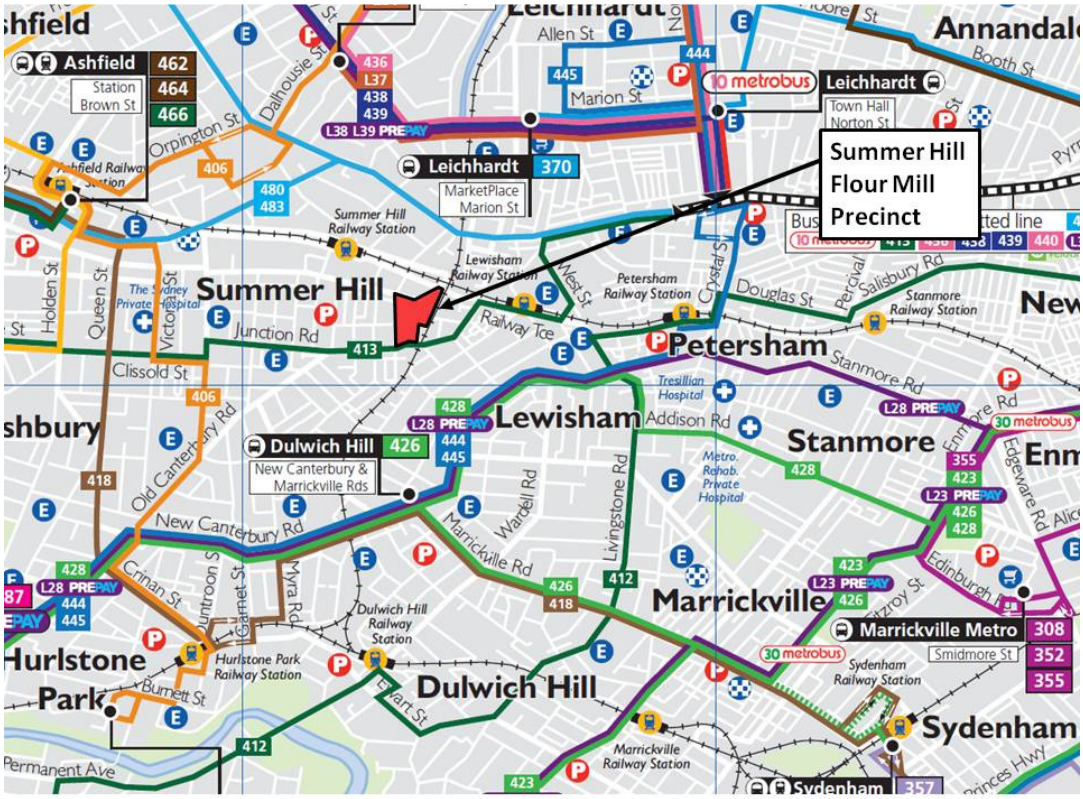
2.5.1 Bus

The site is well connected to existing State Transit routes, with a number of public bus routes operating near the Summer Hill Flour Mill precinct. These are presented in Figure 3.

Route 413 runs directly adjacent to the site along Old Canterbury Road, from Campsie to the City via Ashbury. This bus route stops at the intersection of Edward Street and Old Canterbury Road. Five services are provided in the weekday morning peak hour (8am – 9am).

Additional bus services to local town centres are available within viable walking distance from the precinct. This includes routes servicing Marrickville, Ashfield and Dulwich Hill.

Figure 3 Bus Network Surrounding Summer Hill Flour Mill Precinct



Source: Sydney Buses (2010)

2.5.2 Rail

The precinct is well located for people wishing to use heavy rail as a mode of transport. Both Summer Hill and Lewisham stations are located approximately 500m from the Summer Hill Flour Mill precinct. These stations are located on the Inner West Line of the City Rail network some 8km from the Sydney CBD, with 4 trains travelling to the CBD in peak hours.

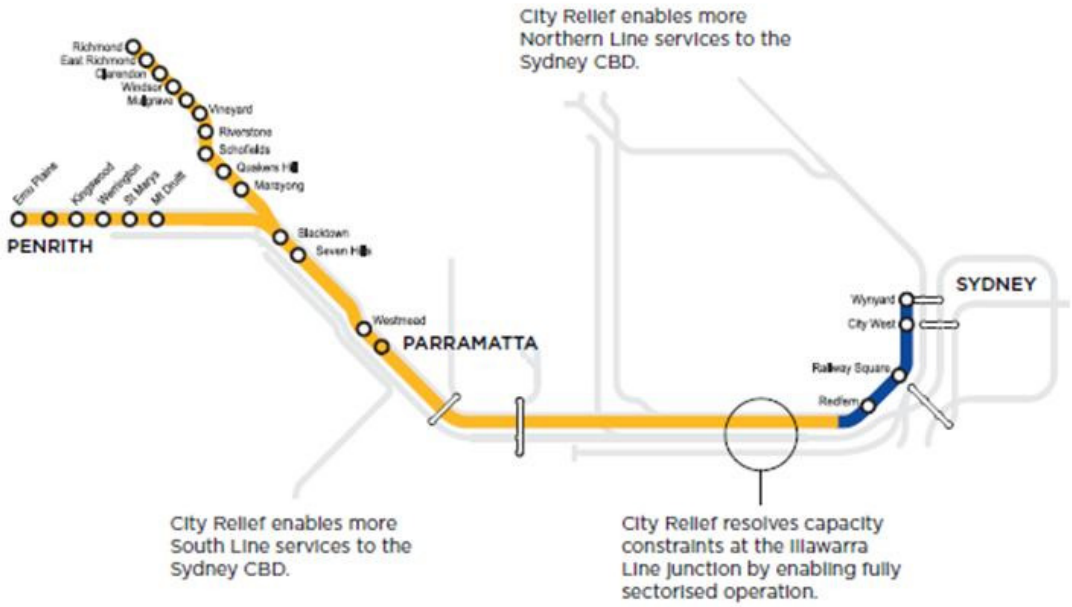
The Metropolitan Transport Plan discusses the following heavy rail projects: City Relief Line, Western Express Services, North West Rail Link, South West Rail Link.

Western Express Project

The City Relief Line and Western Express projects shown in Figure 4 will introduce express train services from Richmond, Penrith, Blacktown and Parramatta. A new five kilometre priority tunnel will be built to separate western services from inner city trains to provide shorter journey times. New platforms will be built at Redfern, Central, Town Hall and Wynyard to cater for these new services. There will be eight new platforms, each long enough to accommodate 12 car trains, between Redfern and Wynyard. Trains will initially be 10 cars long, with capacity for future growth. Ultimately there will be more than 5,000 extra seats from Parramatta in the peak hour.

This project will facilitate improved stopping patterns on the Inner West Line and encourage rail mode share at locations such as Summer Hill and Lewisham.

Figure 4 Western express project (City Relief Line and Western Express Services)

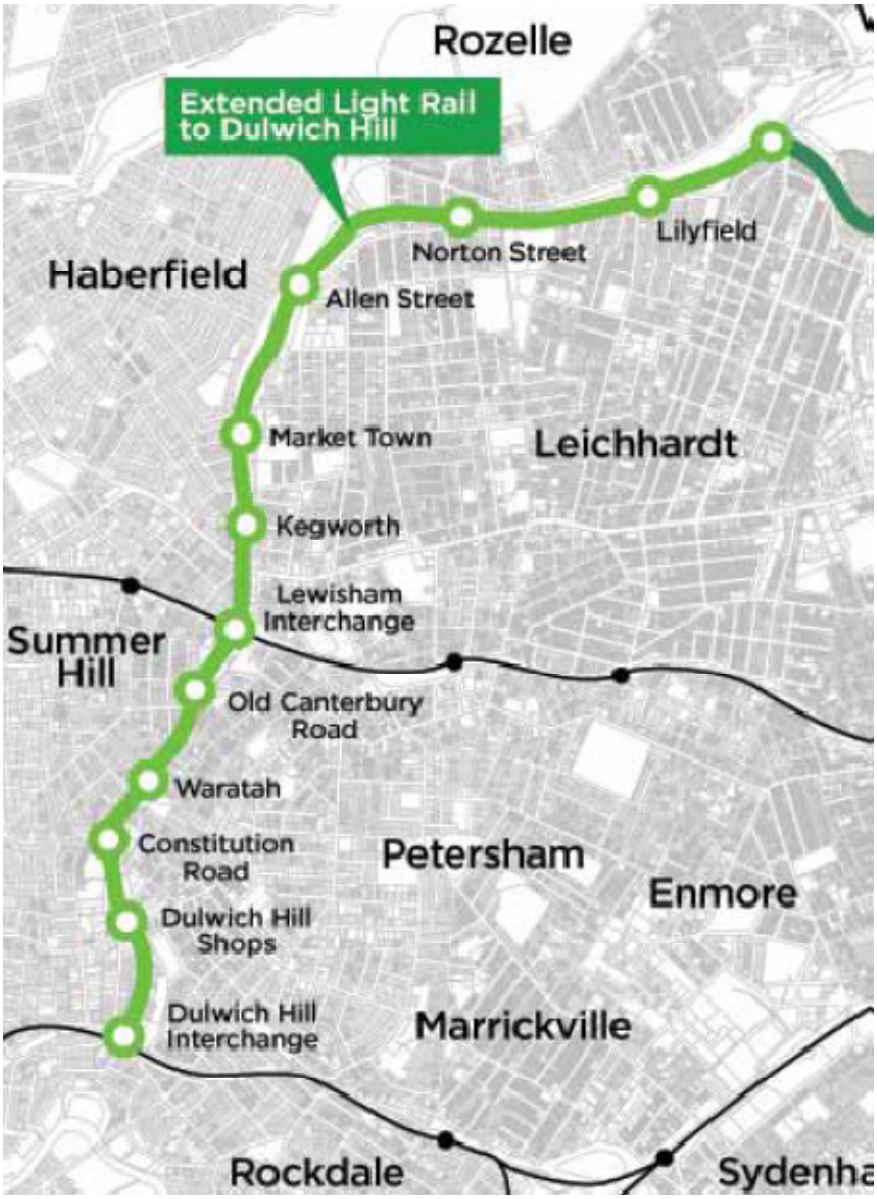


2.5.3 Light Rail

As a component of the NSW Metropolitan Transport Plan, a 5.6km extension of the light rail service is planned to be constructed between Lilyfield and Dulwich Hill (see Figure 5). This includes a station at Lewisham within walking distance of the existing Lewisham heavy rail station, which will act as an interchange between the two transport modes. The line is scheduled to operate from early 2012. Provision of this infrastructure upgrade will increase public transport availability for future residents in the Summer Hill Flour Mill precinct.

Both the McGill and Summer Hill Flour Mills precincts would be best served with the light rail stop located on the east-west through site pedestrian connection between Smith Street and Old Canterbury Road. This would place the station some 150m south of Longport Street with relatively level connections between the stop and the surrounding open space. This also establishes more pedestrian friendly routes between the light rail stop, Lewisham Station and the surrounding residential area. Locating the light rail stop at the heart of these two precincts will transform it into a destination as well as a place of origin.

Figure 5 Inner West Light Rail Extension



Source: NSW Metropolitan Transport Plan (2010)

2.6 Walking and Cycling

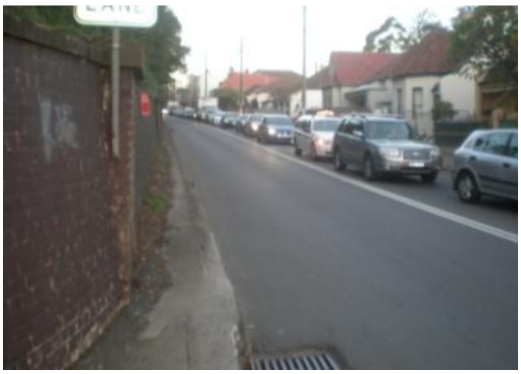
2.6.1 Walking Provision

Local footpaths provide walking access to key destinations surrounding the site. A pedestrian underpass exists at Lewisham Station (entrance via Victoria Street and Thomas Street) which provides through access across the railway line.

A current issue with the pedestrian network is that the northern footpath along Railway Terrace is currently of insufficient width to allow for pedestrian movements (Photograph 3).

Summer Hill Station is within easy walking distance of the Summer Hill Flour Mill site with footpaths along Smith Street and Lackey Street providing a suitable walking route.

Photograph 3 Railway Terrace Footpath



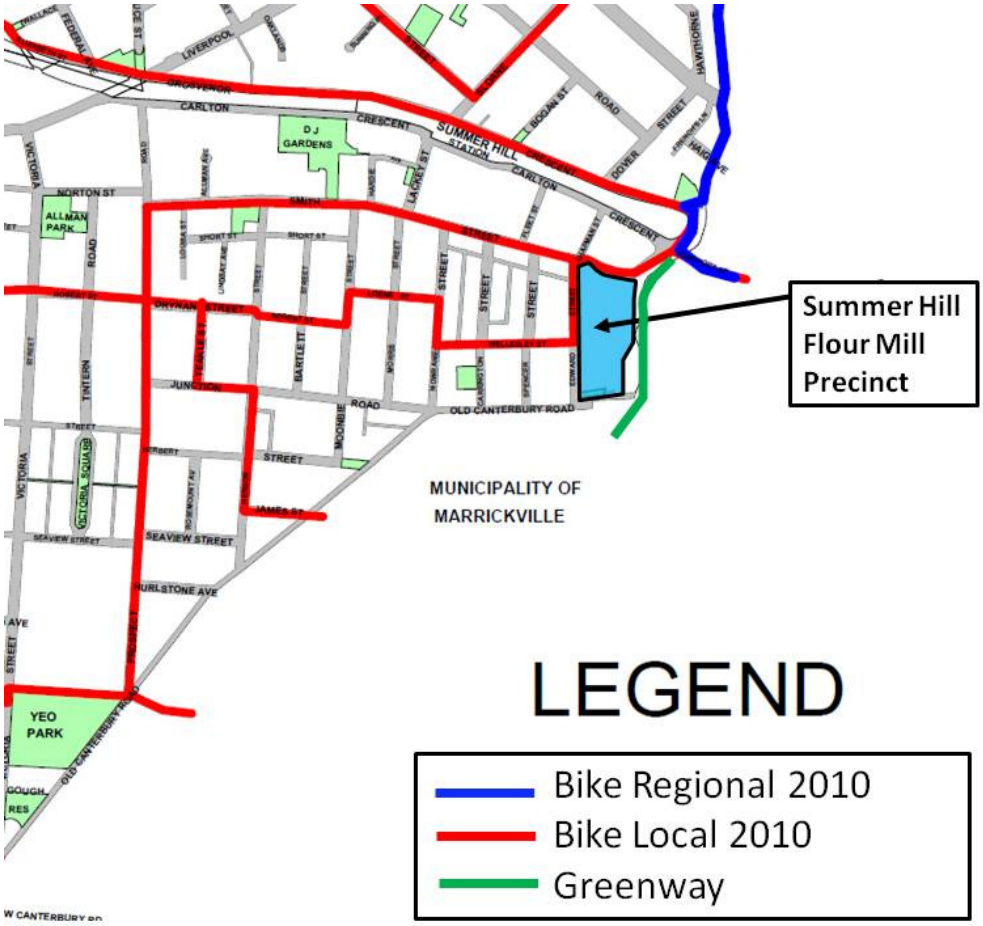
Photograph 4 Signage on Railway Terrace

2.6.2 Cycling Provision

The Summer Hill Flour Mill precinct is located nearby to a number of local cycling routes. An off-road regional route which links Canada Bay, Leichhardt, Ashfield and Marrickville also exists in close proximity to the precinct.

The local cycling network surrounding the site is shown in Figure 6.

Figure 6 Cycling Network Surrounding Site



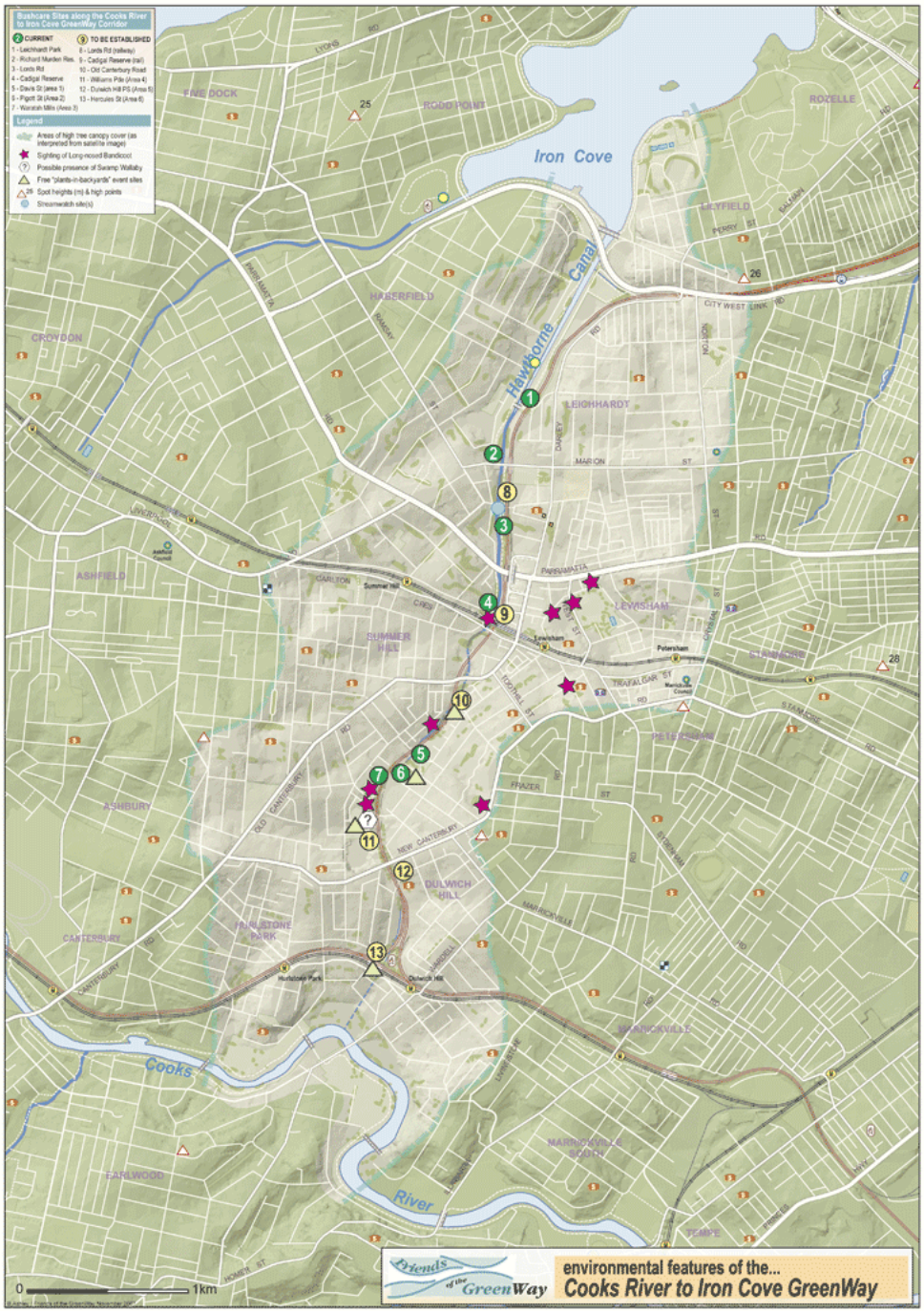
Source: Ashfield Council (2010)

2.6.3 The Cooks River to Iron Cove GreenWay

The Cooks River to Iron Cove GreenWay is an urban green corridor in Sydney's Inner West that connects the Cooks River at Earlwood to Iron Cove Bay at Haberfield. The GreenWay is a community vision for a "recognisable environmental, cultural and non-polluting transport corridor connecting two of Sydney's most important waterways".

The GreenWay corridor passes through Canterbury, Marrickville, Ashfield and Leichhardt Council areas of Sydney's Inner West and incorporates Hawthorne Canal and the Rozelle freight rail corridor. Transport NSW are looking at incorporation of the GreenWay into the light rail project.

Figure 7 The Cooks River to Iron Cove Greenway



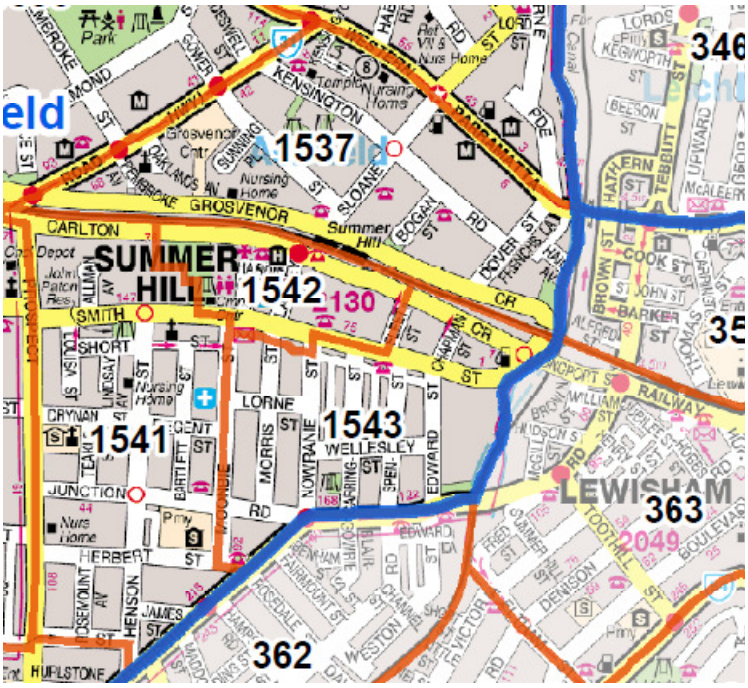
Source: Friends of the GreenWay

2.7 Travel Patterns

2.7.1 Mode Split

The existing 2006 ABS Journey to Work data for the travel zone 1543 surrounding the Summer Hill Flour Mill precinct (see Figure 8) has been analysed for this study.

Figure 8 Travel Zones Surrounding Summer Hill Flour Mill Precinct



Source: Transport Data Centre (2010)

The mode split of workers departing the precinct is indicated in Table 2.

Table 2 Journey to Work Existing Mode Split

Mode	Total Trips	Proportion of Total Trips
One method: Car driver	241	44.8%
One method: Train	179	33.3%
One method: Walked only	33	6.1%
One method: Car passenger	20	3.6%
Two methods: Train and Bus	19	3.5%
One method: Bus	17	3.2%
One method: Bicycle	6	1.1%
One method: Other	4	0.7%
Three methods: Train and two other modes	4	0.7%
One method: Motorbike	3	0.6%
Two methods: Train and Car driver	3	0.6%
Two methods: Train and Car passenger	3	0.6%
Two or Three methods: With Ferry or Tram	3	0.6%
Two or Three methods: Without Ferry or Tram	3	0.6%
TOTAL	**538**	**100.00%**

The analysis indicates that public transport currently accounts for over 40% of work related trips in the area surrounding the site. This is a result of the proximity of Lewisham and Summer Hill railway stations to the precinct. The proportion of people utilising public transport will increase following the planned light rail extension, which includes a station adjacent to the site.

2.7.2 Arrival Location

The final destination of all workers departing from the travel zones surrounding the site, based on 2006 Journey to Work data, is presented in Table 3. A high proportion of residents in this travel zone have Sydney as the work destination which is best served by rail for commuter access. There are also 16% of residents who work in Marrickville or Ashfield local government areas which allows walk, cycle and bus modes to be viable travel options.

Table 3 Final Destination of Workers

Destination LGA	Total Trips	Proportion of Total Trips
Sydney	205	38.1%
Ashfield	54	10.0%
Marrickville	31	5.8%
Leichhardt	26	4.8%
North Sydney	25	4.6%
Ryde	19	3.4%
Auburn	19	3.4%
Bankstown	17	3.2%
Burwood	16	3.0%
Botany Bay	12	2.2%
Canada Bay	12	2.2%
Randwick	10	1.9%
Willoughby	9	1.7%
Canterbury	9	1.7%
Other	*74*	*14.0%*
Total	**538**	**100.00%**

3 Transport Assessment

3.1 Proposed Summer Hill Flour Mill Development

The proposed development of the Summer Hill Flour Mill precinct involves medium density residential development, complemented with ancillary retail and commercial land uses. A total of five sub-precincts (see Figure 9) are proposed within the development. The proposed number of dwellings is between 280 -330 units with the average number for each precinct is indicated in Table 4. A total provision of 3,500 – 4,000 m^2 Commercial GFA and 2,500 – 2,800m^2 Retail GFA are proposed.

Figure 9 Summer Hill Flour Mill Precincts

Table 4 Proposed Dwelling Numbers

Precinct Number	Number of Units				
	1 bed	2 bed	3 bed	4 bed	TOTAL
1	34	40	9	0	**83**
2	0	4	0	0	**4**
3	58	32	9	2	**101**
4	12	8	8	8	**36**
5	14	46	0	6	**66**
Total	**118**	**130**	**26**	**16**	**290**

3.2 Parking Provision

3.2.1 Required Parking

The current Ashfield Council DCP parking rates as outlined in Part C11 (parking) are shown in Table 5.

Table 5 Ashfield Council DCP Parking Rates

Land Use	Parking Rate
Multi-Unit Housing in Residential Zones	• 1 space per unit • Additional space for every five 2-bedroom units • Additional space for every two 3-bedroom units • 1 visitor space for every five dwellings
Commercial Premises	1 space per 40m^2 GFA
Retail Shops	1 space per 40m^2 GFA

The DCP rates for residential and visitor parking are considered appropriate given the need for residents to garage a car which may not be used for journey to work and given the desire to allocate all on-street car parking to visitors and deliveries to the mixed uses in the precinct.

The commercial and retail rates are both considered high for a mixed use precinct such as this with good public transport access, however as a conservative measure the DCP rates have been adopted.

The proposed site uses result in a requirement for 553 parking spaces as shown in Table 6.

Table 6 Required Parking Provision by Precinct

Precinct	**Required Parking Spaces**				
	Residential		Commercial	Retail	**Total**
	Resident	Visitor			
1	96	16	7	9	**129**
2	5	1	71	29	**108**
3	113	20	13	6	**155**
4	46	7	0	10	**67**
5	78	13	4	9	**109**
Total	**338**	**57**	**95**	**63**	**553**

3.2.2 Proposed Parking Provision

The Summer Hill Flour Mill development proposes to provide a total of 450 - 550 underground parking spaces, which would be allocated to residents and other regular users of the site. An additional 50 to 70 on-street parking spaces are to be provided within the precinct. These would be allocated to visitors and other short-stay users. All on-street parking will need to be time restricted with an appropriate allocation of Loading Zones.

3.2.3 On-Street Parking in Surrounding Streets

Marrickville Council has introduced a resident parking scheme with time restricted parking within 250m of Lewisham Station to restrict commuter car parking from occurring on local streets. Ashfield Council has introduced time restricted parking on streets in the Summer Hill town centre adjacent to Summer Hill Station. The majority of other streets are unrestricted.

With the introduction of the light rail stop at Lewisham, it could be expected that additional time restricted parking and resident parking schemes will need to be introduced to manage commuter parking. Drop-off and pick-up zones would be facilitated by the local streets in both the Summer Hill Flour Mill site and the McGill Street site.

3.3 Forecast Traffic Generation

3.3.1 Methodology

For a mixed use site such as this which includes a substantial proportion of residential development supported by retail and commercial uses, it should be expected that some self containment will occur:

- A mix of small retail outlets will service the local residential community on this site and the surrounding area. Commercial uses on the site will also support these uses.
- There is the opportunity for some employees in the commercial uses to live on the site.

The provision of car parking in the Summer Hill Flour Mill precinct will respond to the high public transport accessibility and expected levels of self containment for the complementary land uses. The traffic generation for retail and commercial uses is therefore best calculated based on a turnover of available car spaces rather than typical RTA rates which are based on floor space.

3.3.2 Summer Hill Flour Mill Precinct

Residential traffic generation:

The RTA peak hour rate of 0.4 trips / unit for medium density residential flats has been applied which for 290 units with 338 car spaces is equivalent to 35% of car spaces generating a trip in the peak hour. This is considered appropriate.

Commercial traffic generation:

Applying the RTA rate of 2 trips / 100m^2 GFA for commercial uses would generate 75 vehicle trips in the peak hour. This is equivalent to 80% of car spaces generating a trip in the peak hour. This is considered excessive for a mixture of small commercial uses likely to include designers, service industry and boutique office uses. A more appropriate turnover of 50% of spaces in the peak hour has therefore been applied.

Retail traffic generation:

Applying the RTA rate of 10 trips / 100m^2 GFA for retail use would generate 265 vehicle trips in the peak hour. This is equivalent to each of the 63 retail cars spaces generating 4 vehicle movements in the peak hour. This is considered excessive for a mixture of small retail uses servicing the site and adjacent local precinct. A more appropriate turnover of 2 vehicle movements per space in the peak hour has therefore been applied.

A comparison between the RTA rates for traffic generation and the adopted rates for the precinct is provided in Table 7.

Table 7 Traffic Generation Rates

Land Use	□□affic Generation Rate		Comment
	RTA	Adopted	
Medium density residential flat			
Daily vehicle trip	4/ unit	4/ unit	*RTA rate adopted*
Weekday trip/ hour	0.4/ unit	0.4/ unit	
Commercial			
Daily vehicle trips	10/100m^2 GFA)	5/ space	*Adopted rate based on turnover of spaces*
Weekday trip / hour	2/100m^2 GFA	0.5/ space	
Retail			
Daily vehicle trips	90/100m^2 GFA (121/100m^{2}GLFA	20/ space	*Adopted rate based on turnover of spaces*
Weekday trip /hour	10/100m^2 GFA (12.5/100m^{2}GLFA	2/ space	

A summary of the forecast traffic generation is shown in Table 8.

Table 8 Forecast Traffic Generation – Summer Hill Flour Mill Precinct

Precinct	Forecast Traffic Generation					
	Daily	Peak Hour	Morning Peak		Evening Peak	
			In	*Out*	*In*	*Out*
1	552	56	11	35	40	16
2	951	95	47	19	34	61
3	588	59	13	40	43	16
4	337	34	6	18	23	11
5	460	46	9	28	33	13
Sub Total	**2887**	**289**	**85**	**141**	**172**	**117**

3.3.3 McGill Street Precinct

Arup prepared a report in November 2009 assessing the transport impacts resulting from the proposed McGill Street mixed use development. Traffic generation rates as described in Table 7 have been used to formulate the forecast vehicle trips generated from this development. Located directly adjacent to the east of the Summer Hill Flour Mill precinct, the development was forecast to generate 229 vehicle trips in the AM peak hour and 287 in the PM peak hour (indicated in Table 9).

Table 9 Forecast Traffic Generation – McGill Street Precinct

	Morning Peak Hour Traffic		Afternoon Peak Hour Traffic	
	In	Out	In	Out
Commercial	48	5	5	48
Retail	0	0	29	29
Residential	18	158	123	53
TOTAL	**66**	**163**	**157**	**130**

3.4 Traffic Distribution

The journey to work data as outlined in Section 2.6.3 has been used to determine the current travel distribution for car drivers and passengers. Just under 50% of all trips from this area were made by private vehicle (either car driver or car passenger).

Many of the people who choose to live in the Summer Hill Flour Mill precinct will do so because of the good public transport access, especially when the light rail extension to Dulwich Hill is considered. It could therefore be expected that journey to work by car would be focused more towards the south and west which are not as well serviced by public transport and so the traffic distribution has been adjusted as shown in Table 10.

Table 10 Forecast Traffic Distribution from Summer Hill Flour Mill Precinct

Direction	Existing Distribution	Forecast Distribution
North	19%	20%
East	49%	30%
South	12%	20%
West	20%	30%

Traffic generated from the Summer Hill Flour Mill precinct has been distributed across the road network based on this analysis. Existing traffic generated by the Summer Hill Flour Mill and McGill St precincts (as described in section 2.3.1) has been deducted from this total traffic generation.

The total number of additional vehicles generated at each leg of the five key intersections surrounding the site, following both the proposed Summer Hill Flour Mill and McGill Street developments, is presented in Figure 10 and Figure 11.

Full turning movements for vehicles entering and departing the site entrances are provided as Appendix B.

Figure 10 Traffic Distribution at Key Intersections during AM Peak (8am – 9am)

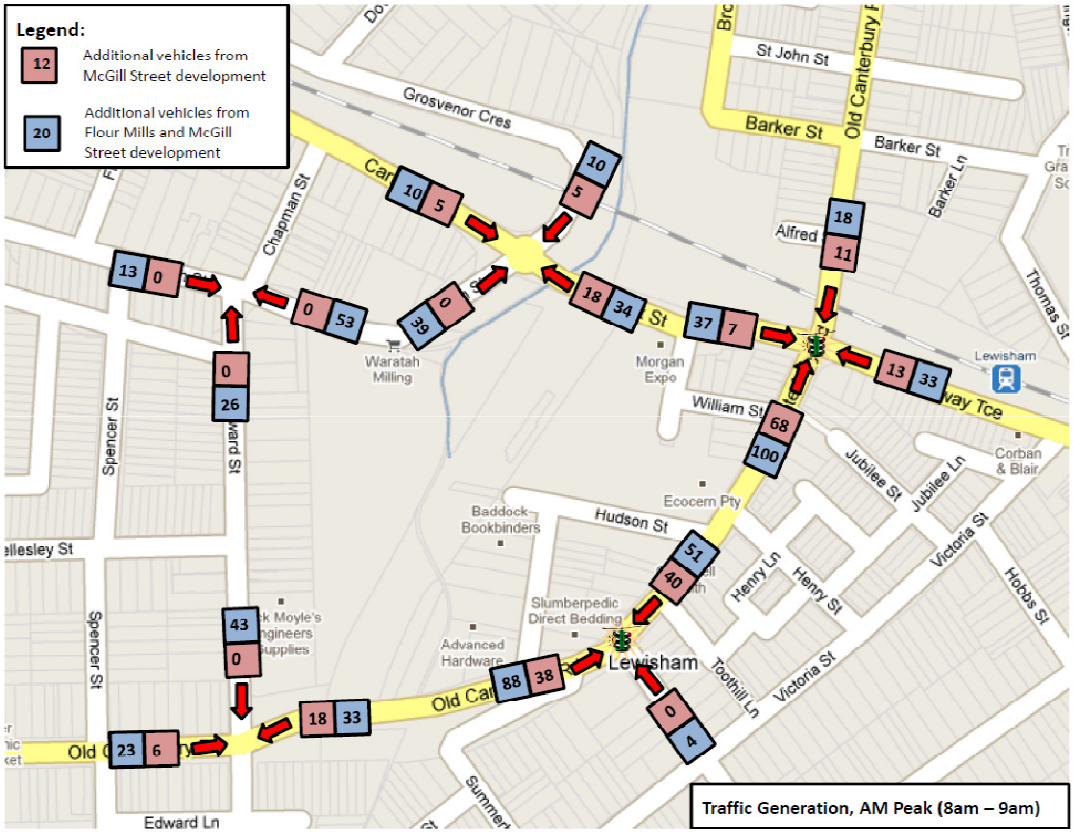
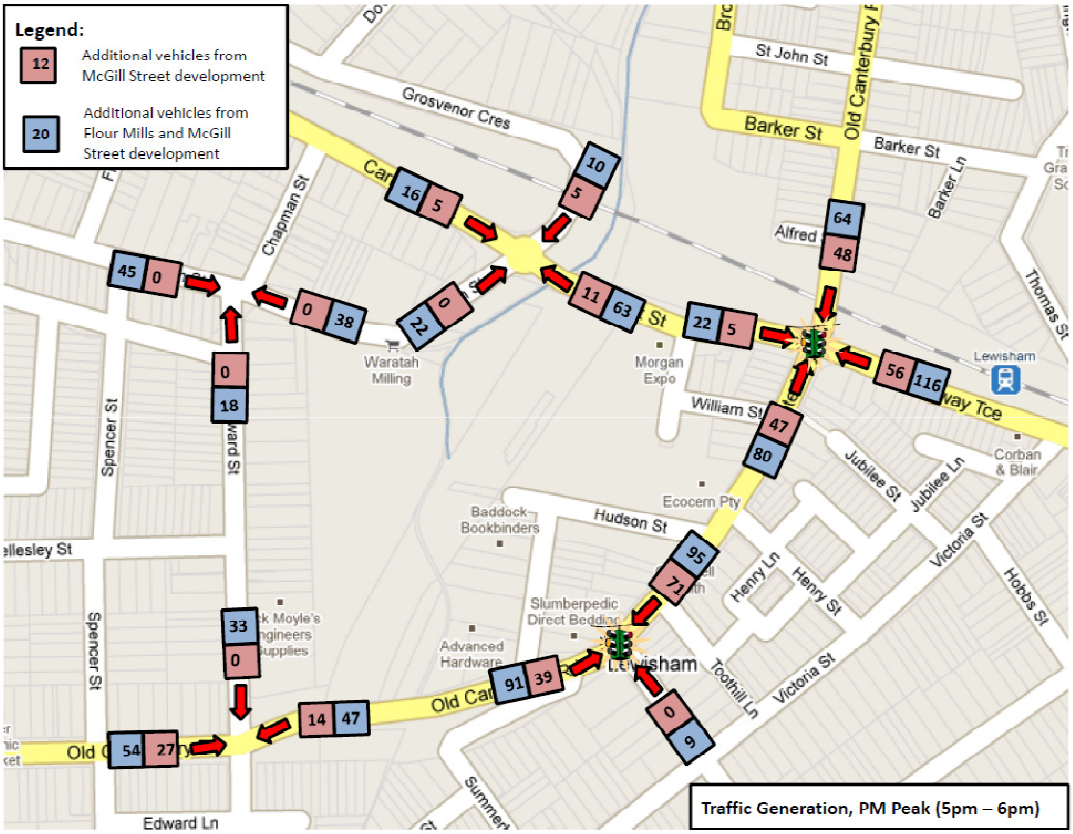


Figure 11 Traffic Distribution at Key Intersections during PM Peak (5pm – 6pm)



3.5 Intersection Performance

3.5.1 Methodology

An analysis of the local road network has been undertaken based on existing traffic volumes and the forecast site traffic generation. The analysis has considered the following scenarios:

- No future development (existing traffic conditions)
- Development of the adjacent McGill Street precinct
- Development of the Summer Hill Flour Mill precinct in addition to the McGill Street precinct

The model has considered traffic levels without the provision of the light rail extension to Dulwich Hill. It is likely however that this light rail extension will be in operation prior to opening of proposed development, and is therefore considered to be a conservative analysis. Provision of this infrastructure upgrade will increase the already significant use of public transport in the area, reducing the impact on the local road network.

3.5.2 SIDRA Analysis

For the purposes of this investigation, an individual intersection traffic control model, SIDRA, has been used to assess the performance of the local road network surrounding the Summer Hill Flour Mill precinct.

The existing intersection performance is assessed in this report in terms of the following four factors for each intersection.

- Degree of Saturation
- Average Delay (seconds per vehicle)
- Level of Service
- Length and direction of peak traffic queue (95^{th} percentile traffic queue)

In urban areas, the performance of the major road network is generally a function of the performance of key intersections. This performance is quantified in terms of Level of Service (LOS), which is an index of the operational performance of traffic at an intersection and is based on the average delay per vehicle. LOS ranges from A = very good to F = highly congested travel conditions, as shown in Table 11.

Table 11 Level of Service Definitions

Description	Level of Service (RTA Definition)	Average Delay per Vehicle (s)
Very Good	A	< 14.5
Good	B	14.5 ≤ 28.5
Satisfactory	C	28.5 ≤ 42.5
Near Capacity	D	42.5 ≤ 56.5
At Capacity	E	56.5 ≤ 70.5
Over Capacity	F	≥ 70.5

Generally it is desirable to aim at achieving a Level of Service of C or better at all major road intersections. However, in practice, it is reasonable for some intersections to operate at Level of Service D at peak times. Another common measure of intersection performance is the degree of saturation (DOS), which provides an overall measure of the capability of the intersection to accommodate additional traffic. A DOS of 1.0 indicates that an intersection is operating at capacity. The desirable maximum degree of saturation for an intersection with traffic signals is 0.9.

3.5.3 Results

Results of the Sidra analysis for the analysed intersections are presented in Table 12. Full results are presented in Appendix C.

Table 12 SIDRA Intersection Results

Intersection	Scenario	Time Period	LOS	DOS	AVD (sec)
Old Canterbury Road and Railway Terrace	Existing	AM Peak	D	0.97	53
		PM Peak	C	0.87	36
	Existing + McGill St	AM Peak	E	1.03	65
		PM Peak	C	0.92	42
	Existing + McGill St + Summer Hill Flour Mill	AM Peak	F	1.06	77
		PM Peak	D	0.98	53
Old Canterbury Road and Toothill Street	Existing	AM Peak	B	0.65	26
		PM Peak	B	0.71	23
	Existing + McGill St[1]	AM Peak	B	0.75	26
		PM Peak	B	0.81	24
	Existing + McGill St + Summer Hill Flour Mill[1]	AM Peak	B	0.78	26
		PM Peak	B	0.84	26
Old Canterbury Road and Edward Street[2]	Existing	AM Peak	n/a	0.50	5
		PM Peak	n/a	0.42	6
	Existing + McGill St	AM Peak	B	0.78	16
		PM Peak	B	0.80	15
	Existing + McGill St + Summer Hill Flour Mill	AM Peak	B	0.79	16
		PM Peak	B	0.86	20
Smith Street / Edward Street / Chapman Street[3]	Existing	AM Peak	n/a	0.20	4
		PM Peak	n/a	0.13	5
	Existing + McGill St	AM Peak	A	0.22	4
		PM Peak	A	0.17	6
	Existing + McGill St + Summer Hill Flour Mill	AM Peak	A	0.23	5
		PM Peak	A	0.21	7
Longport Street & Grosvenor Crescent	Existing	AM Peak	A	0.54	13
		PM Peak	A	0.74	11
	Existing + McGill St	AM Peak	A	0.56	13
		PM Peak	A	0.75	11
	Existing + McGill St + Summer Hill Flour Mill	AM Peak	A	0.61	14
		PM Peak	A	0.80	13

[1] Four way intersection formed by new western approach
[2] Intersection modelled with **traffic signals** following the proposed development, see section 3.8
[3] Intersection modelled with a **roundabout** following the proposed development, see section 3.8

3.5.4 Assessment

Modelling of the local road network has found that four of the five key intersections surrounding the precinct are forecast to operate efficiently (Level of Service A or B) during both the AM and PM commuter peaks, following both the opening of the McGill Street and Summer Hill Flour Mill developments.

The Railway Tce/Old Canterbury Rd intersection currently experiences high levels of queuing, with signal phasing adjusted to allow vehicles to pass through the intersection in a single cycle. Construction of the proposed mixed use developments are forecast to increase delays at the intersection, however not to an unreasonable level where it will adversely impact on surrounding intersections.

With increasing delays to traffic on the sub arterial roads, it could be expected that some through traffic may redistribute to alternative main road routes. There are no opportunities for traffic to divert to local streets to undertake these through trips due to the physical restrictions in the area primarily caused by the railway corridor and discontinuous local road system.

The Summer Hill Flour Mill precinct is forecast to generate approximately 289 vehicle movements in the PM peak hour with the majority of these trips forecast to originate from the western end of the site where traffic volumes are relatively low. Traffic then disperses in a number of directions before reaching the more congested signalised intersections along Old Canterbury Road.

3.6 Future Mode Split

The traffic generation used in this analysis has not considered the introduction of the light rail extension to Dulwich Hill or the potential for improved train access at Lewisham and Summer Hill railway stations, and thus is considered a conservative analysis. Located in the heart of the Summer Hill Flour Mill precinct, the light rail will be an attractive option for people travelling to work, as well as people utilising the retail and commercial precincts within the development. It will increase the non-car mode share to and from the site, resulting in a reduced impact on the local road network.

Additionally to this, it can be expected that the type of residents living in a medium density development such as proposed on the site would have a greater focus on public transport usage and be less reliant on private vehicle use.

The existing mode split of residents departing the precinct to go to work was shown in Table 2 and is compared below in Table 13 with a possible future mode split when the light rail and additional heavy rail and bicycle use is considered.

Table 13 Possible Future Journey to Work Mode Split

Mode	Existing Mode Split	Potential Change	Future Mode Split
Car driver/passenger	48%	-9%	39%
Train	35%	+3%	38%
LRT	0%	+5%	5%
Walk	6%	-	6%
Bus	7%	-	7%
Bicycle	1%	+1%	2%
Motorbike	1%	-	1%
Other	2%	-	2%
TOTAL	**100%**	**-**	**100%**

The analysis indicates that public transport currently accounts for 42% of work related trips in the area surrounding the site but could be as high as 50% due to the transit oriented development nature of the two development precincts. This reduction in car mode share would decrease residential traffic generation by approximately 20% in the peak hours. This is equivalent to 60 vehicle movements being removed in each peak hour for both sites combined.

This further reduction in traffic has been modelled for the key intersection of Old Canterbury Road and Railway Terrace in the morning peak with the results shown in Table 14. The operation in this critical peak stays within Level of Service E for the predicted future traffic flows.

Table 14 SIDRA Intersection Results

Intersection	Scenario	Time Period	LOS	DOS	AVD (sec)
Old Canterbury Road and Railway Terrace	Existing	AM Peak	D	0.97	53
	Existing + McGill St	AM Peak	E	1.02	63
	Existing + McGill St + Summer Hill Flour Mill	AM Peak	E	1.04	70

3.7 Road Classification and Capacity

The road network providing access to the precinct can be described in terms of the hierarchy of each road and the expected daily traffic volume. The key roads providing access to this precinct have a functional classification as Sub-arterial roads with an expected daily traffic volume of up to 20,000 vehicles.

Existing daily traffic volumes on selected roads surrounding the Summer Hill Flour Mill precinct is presented in Table 15.

Table 15 Road Classification and Daily Traffic Volumes

Location	Administrative Road Classification	Functional Road Classification	Expected Daily Traffic Volume[4]	Existing Daily Traffic Volume[5]
Longport Street	Regional	Sub-arterial	10,000 – 20,000	19,330
Carlton Crescent	Regional	Sub-arterial	10,000 – 20,000	7,950
Railway Terrace	State	Sub-arterial	10,000 – 20,000	17,250
Old Canterbury Road	State	Sub-arterial	10,000 – 20,000	19,980
Toothill Street	Regional	Collector	5,000 – 10,000	9,490
Smith Street	Local	Collector	5,000 – 10,000	4,650
Edward Street	Local	Local	2,000 – 4,000	2,100

[4] RTA Road Design Guide – August 1991
[5] Source: RTA count data or factored from peak period counts.

Old Canterbury Road, Longport Street and Railway Terrace are all functioning at the upper end of the expected daily traffic volume range indicating that they are functioning as major roads for longer distance travel in the network. These roads are expected to provide access to development such as proposed in the McGill Street and Summer Hill Flour Mills precinct.

The predicted increase on each street providing access to the combined McGill Street and Summer Hill Flour Mills precinct is shown in Table 16. The key sub-arterial roads providing access are anticipated to experience an increase of between 3% and 9%. Slightly higher percentage increases are expected on the local access streets however these will continue to operate within their functional classification.

Table 16 Predicted AM and PM Peak Traffic Increases

Location	AM Peak			PM Peak		
	Existing	Additional	% change	Existing	Additional	% change
Longport Street	1790	71	4%	1660	85	5%
Carlton Crescent	670	20	3%	915	23	3%
Railway Terrace	1800	57	3%	1645	130	8%
Old Canterbury Road	1770	128	7%	2045	177	9%
Toothill Street	945	62	7%	995	68	7%
Smith Street	475	63	13%	455	60	13%
Edward Street	185	50	27%	235	41	17%

3.8 Recommended Vehicle Access Points and Traffic Management

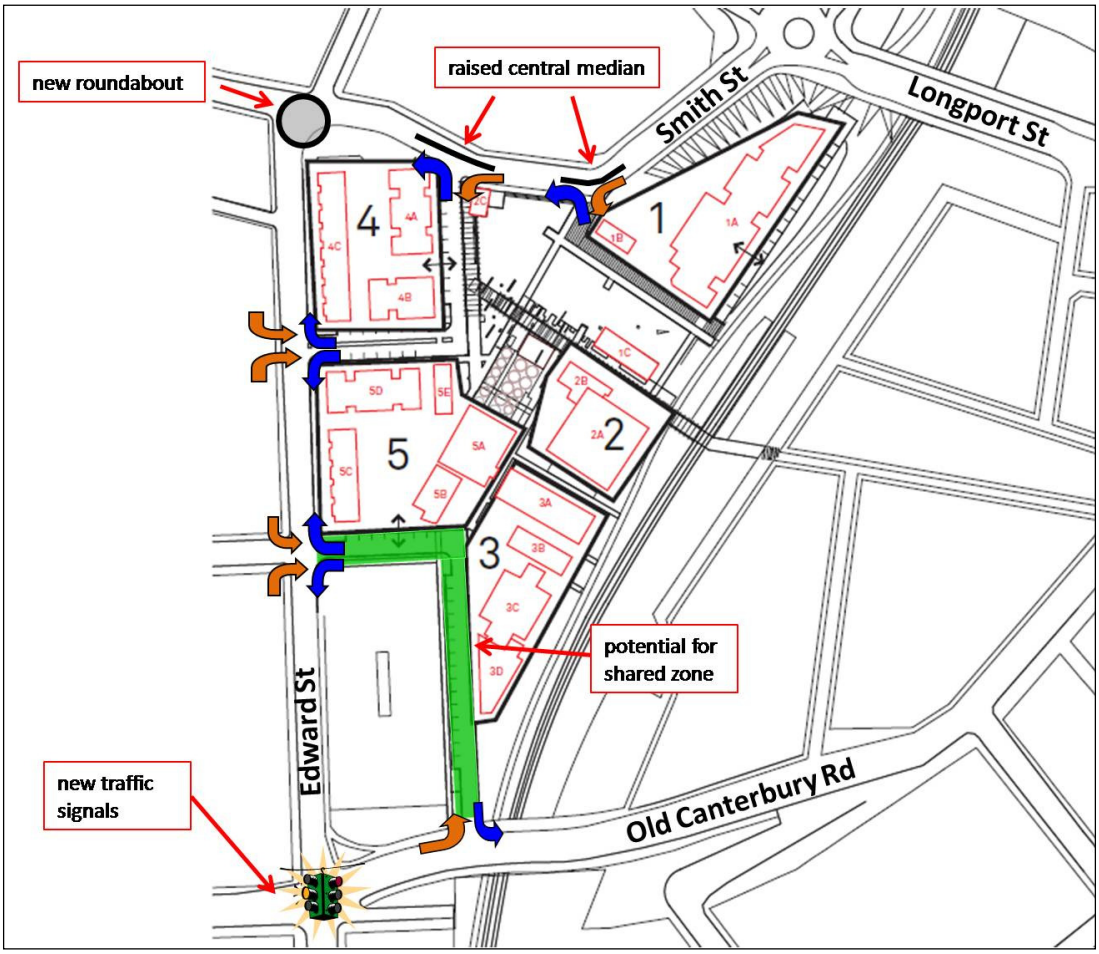
The main access points to the precinct are proposed to be via Old Canterbury Road, Edward Street and Smith Street. These access points will need to be managed as follows:

- Given the significant levels of traffic along Old Canterbury Road, along with its location on a crest, it is recommended that access to the new street to precinct 3 (off Old Canterbury Road) be restricted to left-in/ left-out movements only.
- To alleviate the significant delays forecast for vehicles accessing the precinct via the Edward Street / Old Canterbury Road intersection, a new set of traffic signals is proposed. SIDRA modelling has forecast this intersection to operate satisfactorily following the introduction of traffic signals. This intersection will also assist pedestrians to cross Old Canterbury Road at this location. These traffic signals would be subject to RTA approval.
- All movements into and out of the minor access points on Edward Street (between Old Canterbury Road and Smith Street) would be permitted and controlled by give way signage.
- The two new access points along Smith Street would be restricted to left-in/left-out movements. A central raised median could be utilised to control this restriction, which would improve overall traffic circulation.
- Given the movement restrictions along Smith Street, a new roundabout could be constructed at the Edward Street / Smith Street / Chapman Street intersection. This would ‘clean up’ the intersection, which is currently offset slightly by the northern Chapman Street leg. Further, it would provide improved traffic circulation around the site, particularly given the proposed central medians preventing right turns off Smith Street into the precinct. This would be configured as a minor road roundabout in keeping with other traffic calming devices along Smith Street.

- Existing right turn bans during peak hours at the Railway Tce / Old Canterbury Rd intersection should be maintained.
- The Toothill Street / Old Canterbury Road intersection can remain in its current form as it currently functions well without causing delays to the flow of traffic.
- With traffic volumes on roads within the Summer Hill Flour Mill precinct expected to be low, there are opportunities to provide shared zones with a 10km/h speed limit.

These traffic management measures are illustrated in Figure 12.

Figure 12 Summer Hill Flour Mill Traffic Management



3.9 Sustainable Transport Initiatives

3.9.1 Cycling Facilities

To encourage cycling as a viable form of transport for residents, appropriate facilities are to be provided in the precinct. This will include a dedicated bicycle parking room or secure bicycle parking area in each building that would provide residents with secure and convenient access to the buildings. This area could offer direct access from the building foyer/lobby, and would provide an attractive option for residents who potentially may choose to cycle instead of using private vehicles.

The proposed Greenway will increase cycle access to the precinct linking both north and south and connecting into other east west routes.

3.9.2 Car Share

An opportunity to reduce the reliance on private vehicle would be to utilise the popular car sharing initiatives that are in place across Sydney. Independent studies by the University of Sydney have shown that each car share vehicle normally replaces about 7 private motor vehicles. Car share spaces could easily be provide on the sites internal streets.

Initial contact has been made with two of the larger car share companies. While no car share spaces or 'pods' currently exist within the Lewisham area, companies are expanding and it is likely the initiative will be introduced in the area in the near future. Current car share spaces/pods locations are shown in Figure 13 and Figure 14.

Figure 13 Current 'GoGet' Car Sharing Pick Up/Drop Off Locations

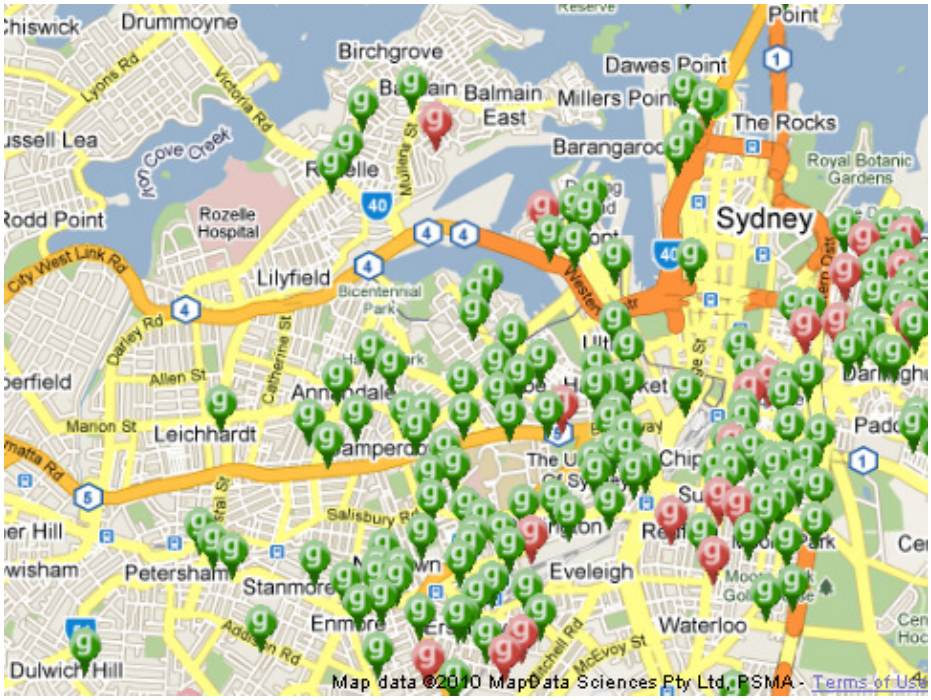
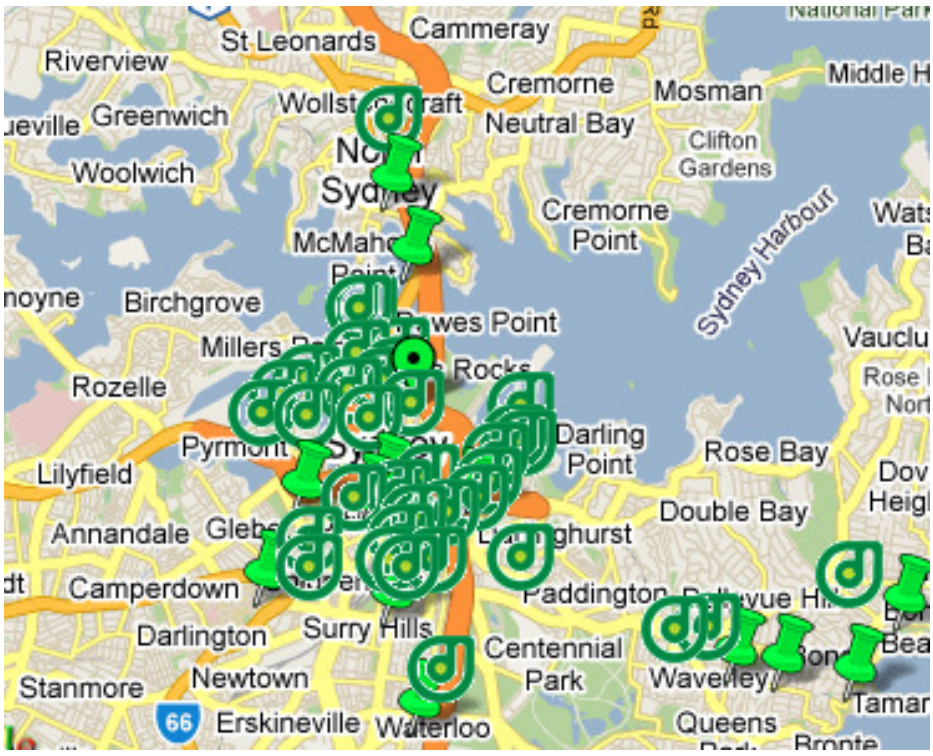


Figure 14 Current 'My Car Club' Car Sharing Pick Up/Drop Off Locations



4 Conclusions

This report has discussed the transport and accessibility impacts relating to the proposed rezoning and development of the Summer Hill Flour Mill precinct. The precinct is well located to operate as a transit oriented development with good access to heavy rail services, buses, future light rail and cycling facilities. The road system adjacent to the site comprises two sub-arterial routes which service access to the precinct with minimal additional traffic on local streets. A number of traffic management devices are proposed on the access road system to facilitate access to the site. The assessment has found no traffic constraint to the proposed rezoning and development. Key findings of the study include:

- The proposed Summer Hill Flour Mill precinct involves medium density residential development, complemented by ancillary retail and commercial land uses.
- On-site observations of traffic conditions at key intersections surrounding the precinct indicate traffic flows satisfactorily, with all vehicles clearing signalised intersections in a single signal cycle, despite long queues forming in peak periods on Railway Terrace.
- The site is well connected to existing State Transit bus routes, with a number of public bus routes operating near the Summer Hill Flour Mill precinct.
- The precinct is well located for heavy rail use, with both Summer Hill and Lewisham stations located approximately 500m from the precinct offering direct access to the Sydney CBD.
- A planned 5.6km extension of the light rail service includes a station at Lewisham adjacent to the sites with connections to the existing heavy rail station. Provision of this infrastructure upgrade will increase public transport availability for future residents in the Summer Hill Flour Mill precinct.
- Local footpaths and the Greenway provide walking access to key destinations surrounding the site, with the precinct well served by a number of local and regional cycling routes.
- The Summer Hill Flour Mill development proposes to provide a total of 450 - 550 underground parking spaces, which would be allocated to residents and other regular users of the site. An additional 50 to 70 on-street parking spaces are to be provided within the precinct. These would be allocated to visitors and other short-stay users. All on-street parking will need to be time restricted with an appropriate allocation of Loading Zones. This complies with the parking provision outlined in the Ashfield Council DCP ensuring adequate on-site provision to prevent overspill onto surrounding streets
- The Summer Hill Flour Mill development is forecast to generate approximately 289 vehicle movements in the peak hour. The majority of these trips are forecast to originate from the western end of the site where traffic volumes are relatively low.
- The site is currently underutilised. If the site remained fully operational for mixed industrial uses, it could be expected that traffic generation would be higher than the existing levels including heavy vehicle movements. For the consolidated site area of approximately 25,000m2 and applying the site FSR of 1/1 for the industrial zoning, the site could generate 1,250 vehicles / day and 250 vehicles in the evening peak hour based on the rates outlined in the RTA Guide to Traffic Generating Developments for Industry. This level of traffic generation aligns closely with that anticipated from the planned levels of mixed use development and would therefore have a similar level of traffic impact on the nearby intersections.
- Modelling of the local road network has found that four of the five key intersections surrounding the precinct are forecast to operate efficiently during the peak hour,

following both the opening of the Summer Hill Flour Mill and the adjacent McGill Street developments.

- The Railway Tce/Old Canterbury Rd intersection currently experiences high levels of queuing, with signal phasing adjusted to allow vehicles to pass through the intersection in a single cycle. Construction of the proposed mixed use developments are forecast to increase delays at the intersection, however not to an unreasonable level where it will adversely impact on surrounding intersections.
- With increasing delays to traffic on the sub arterial roads, it could be expected that some through traffic may redistribute to alternative main road routes. There are no opportunities for traffic to divert to local streets to undertake these through trips due to the physical restrictions in the area primarily caused by the railway corridor and discontinuous local road system.
- The traffic generation used in this analysis has not considered the introduction of the light rail extension to Dulwich Hill, and thus is considered a conservative analysis. Provision of the upgrade will increase the non-car mode share to and from the site, resulting in a reduced impact on the local road network.
- Implementation of sustainable travel initiatives such as the provision of car share on the site, public transport accessibility and good bicycle parking provisions will further reduce the reliance on private vehicle.

Appendix A

Traffic Survey Results

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob. 0418 239019

Client : ARUP
Job No/Name : 3141 LEWISHAM Traffic Counts
Day/Date : Wednesday 9th June 2010

Lights

	NORTH			WEST			SOUTH			EAST			
	Old Canterbury Rd			Longport St			Old Canterbury Rd			Railway Tce			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	17	102	0	26	215	0	21	234	0	2	120	0	737
0715 - 0730	41	129	0	22	196	0	18	267	0	3	154	0	830
0730 - 0745	28	122	0	27	195	0	12	267	0	4	163	0	818
0745 - 0800	28	161	0	29	238	1	16	269	0	7	169	0	918
0800 - 0815	44	158	0	22	220	0	20	244	0	4	181	0	893
0815 - 0830	32	147	0	46	190	0	20	244	0	2	193	0	874
0830 - 0845	33	153	0	55	259	0	13	215	0	9	189	0	926
0845 - 0900	20	131	0	50	232	0	13	230	0	11	165	0	852
Period End	243	1103	0	277	1745	1	133	1970	0	42	1334	0	6848

Heavies

	NORTH			WEST			SOUTH			EAST			
	Old Canterbury Rd			Longport St			Old Canterbury Rd			Railway Tce			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	2	1	0	0	2	0	0	1	1	1	3	0	11
0715 - 0730	2	2	0	1	1	0	0	2	1	0	3	0	12
0730 - 0745	0	1	0	0	2	0	0	0	1	1	2	0	7
0745 - 0800	2	3	0	0	0	0	0	0	1	0	3	0	9
0800 - 0815	0	1	0	0	1	0	0	0	1	2	0	0	5
0815 - 0830	1	4	0	0	0	0	1	2	2	0	0	0	10
0830 - 0845	0	2	0	0	0	0	0	2	0	1	3	0	8
0845 - 0900	4	1	0	0	0	0	3	0	1	1	0	0	10
Period End	11	15	0	1	6	0	4	7	8	6	14	0	72

Lights

	NORTH			WEST			SOUTH			EAST			
	Old Canterbury Rd			Longport St			Old Canterbury Rd			Railway Tce			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	114	514	0	104	844	1	67	1037	0	16	606	0	3303
0715 - 0815	141	570	0	100	849	1	66	1047	0	18	667	0	3459
0730 - 0830	132	588	0	124	843	1	68	1024	0	17	706	0	3503
0745 - 0845	137	619	0	152	907	1	69	972	0	22	732	0	3611
0800 - 0900	129	589	0	173	901	0	66	933	0	26	728	0	3545
PEAK HOUR	129	589	0	173	901	0	66	933	0	26	728	0	3545

Heavies

	NORTH			WEST			SOUTH			EAST			
	Old Canterbury Rd			Longport St			Old Canterbury Rd			Railway Tce			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	6	7	0	1	5	0	0	3	4	2	11	0	39
0715 - 0815	4	7	0	1	4	0	0	2	4	3	8	0	33
0730 - 0830	3	9	0	0	3	0	1	2	5	3	5	0	31
0745 - 0845	3	10	0	0	1	0	1	4	4	3	6	0	32
0800 - 0900	5	8	0	0	1	0	4	4	4	4	3	0	33
PEAK HOUR	5	8	0	0	1	0	4	4	4	4	3	0	33

Combined

	NORTH			WEST			SOUTH			EAST			
	Old Canterbury Rd			Longport St			Old Canterbury Rd			Railway Tce			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	19	103	0	26	217	0	21	235	1	3	123	0	748
0715 - 0730	43	131	0	23	197	0	18	269	1	3	157	0	842
0730 - 0745	28	123	0	27	197	0	12	267	1	5	165	0	825
0745 - 0800	30	164	0	29	238	1	16	269	1	7	172	0	927
0800 - 0815	44	159	0	22	221	0	20	244	1	6	181	0	898
0815 - 0830	33	151	0	46	190	0	21	246	2	2	193	0	884
0830 - 0845	33	155	0	55	259	0	13	217	0	10	192	0	934
0845 - 0900	24	132	0	50	232	0	16	230	1	12	165	0	862
Period End	254	1118	0	278	1751	1	137	1977	8	48	1348	0	6920

Peds

	NORTH	WEST	SOUTH	EAST	
	Old Canterbury Rd	Longport St	Old Canterbury Rd	Railway Tce	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0715	0	0	0	2	2
0715 - 0730	2	2	2	2	8
0730 - 0745	1	0	4	4	9
0745 - 0800	0	0	5	0	5
0800 - 0815	1	0	5	4	10
0815 - 0830	0	1	6	2	9
0830 - 0845	1	0	6	1	8
0845 - 0900	3	0	5	5	13
Period End	8	3	33	20	64

Combined

	NORTH			WEST			SOUTH			EAST			
	Old Canterbury Rd			Longport St			Old Canterbury Rd			Railway Tce			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	120	521	0	105	849	1	67	1040	4	18	617	0	3342
0715 - 0815	145	577	0	101	853	1	66	1049	4	21	675	0	3492
0730 - 0830	135	597	0	124	846	1	69	1026	5	20	711	0	3534
0745 - 0845	140	629	0	152	908	1	70	976	4	25	738	0	3643
0800 - 0900	134	597	0	173	902	0	70	937	4	30	731	0	3578
PEAK HOUR	134	597	0	173	902	0	70	937	4	30	731	0	3578

Peds

	NORTH	WEST	SOUTH	EAST	
	Old Canterbury Rd	Longport St	Old Canterbury Rd	Railway Tce	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0800	3	2	11	8	24
0715 - 0815	4	2	16	10	32
0730 - 0830	2	1	20	10	33
0745 - 0845	2	1	22	7	32
0800 - 0900	5	1	22	12	40
PEAK HR	5	1	22	12	40

R.O.A.R DATA

Reliable, Original & Authentic Results

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Client : ARUP
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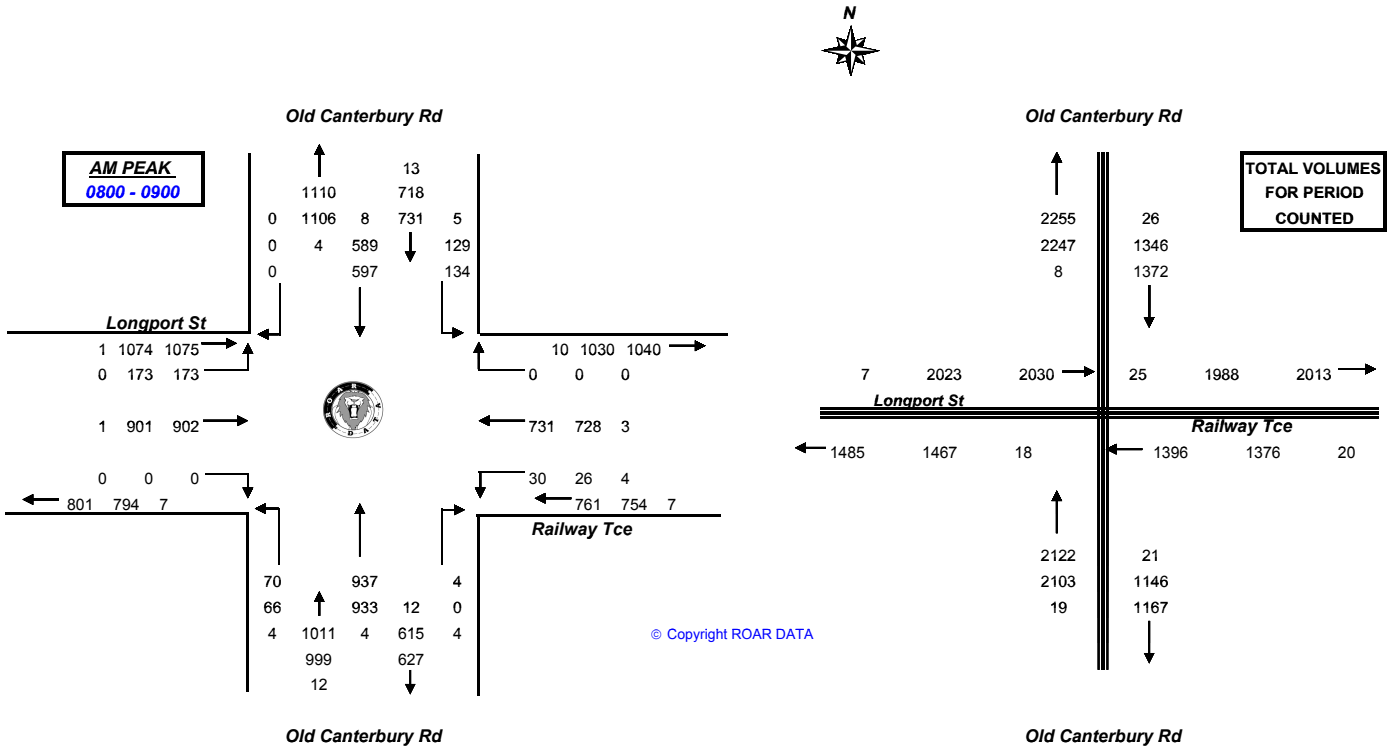

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob. 0418 239019

Client : ARUP
Job No/Name : 3141 LEWISHAM Traffic Counts
Day/Date : Wednesday 9th June 2010

Lights

Time Per	NORTH Old Canterbury Rd L	T	R	WEST Longport St L	T	R	SOUTH Old Canterbury Rd L	T	R	EAST Railway Tce L	T	R	TOT
1600 - 1615	19	296	0	24	120	0	32	160	0	16	208	0	**875**
1615 - 1630	15	260	0	24	153	0	43	127	0	11	226	0	**859**
1630 - 1645	23	291	0	25	108	0	39	141	0	19	216	0	**862**
1645 - 1700	4	248	0	16	151	0	43	146	0	22	215	0	**845**
1700 - 1715	24	317	0	14	162	0	34	169	0	14	196	0	**930**
1715 - 1730	19	311	0	24	165	0	31	169	0	17	202	0	**938**
1730 - 1745	14	264	0	23	180	0	30	156	0	18	213	0	**898**
1745 - 1800	15	335	0	23	179	0	24	174	0	13	196	0	**959**
Period End	**133**	**2322**	**0**	**173**	**1218**	**0**	**276**	**1242**	**0**	**130**	**1672**	**0**	**7166**

Heavies

Time Per	NORTH Old Canterbury Rd L	T	R	WEST Longport St L	T	R	SOUTH Old Canterbury Rd L	T	R	EAST Railway Tce L	T	R	TOT
1600 - 1615	2	0	0	0	1	0	0	3	1	1	4	0	**12**
1615 - 1630	1	1	0	0	1	0	0	6	0	0	2	0	**11**
1630 - 1645	2	1	0	0	2	0	0	1	1	1	5	0	**13**
1645 - 1700	2	0	0	0	1	0	0	3	0	1	3	0	**10**
1700 - 1715	0	0	0	0	0	0	0	0	1	0	1	0	**2**
1715 - 1730	2	0	0	0	0	0	0	0	0	1	2	0	**5**
1730 - 1745	0	2	0	0	1	0	0	0	1	2	1	0	**7**
1745 - 1800	2	0	0	0	0	0	0	0	1	1	1	0	**5**
Period End	**11**	**4**	**0**	**0**	**6**	**0**	**0**	**13**	**5**	**7**	**19**	**0**	**65**

Lights

Peak Time	NORTH Old Canterbury Rd L	T	R	WEST Longport St L	T	R	SOUTH Old Canterbury Rd L	T	R	EAST Railway Tce L	T	R	TOT
1600 - 1700	61	1095	0	89	532	0	157	574	0	68	865	0	**3441**
1615 - 1715	66	1116	0	79	574	0	159	583	0	66	853	0	**3496**
1630 - 1730	70	1167	0	79	586	0	147	625	0	72	829	0	**3575**
1645 - 1745	61	1140	0	77	658	0	138	640	0	71	826	0	**3611**
1700 - 1800	72	1227	0	84	686	0	119	668	0	62	807	0	**3725**
PEAK HOUR	**72**	**1227**	**0**	**84**	**686**	**0**	**119**	**668**	**0**	**62**	**807**	**0**	**3725**

Heavies

Peak Time	NORTH Old Canterbury Rd L	T	R	WEST Longport St L	T	R	SOUTH Old Canterbury Rd L	T	R	EAST Railway Tce L	T	R	TOT
1600 - 1700	7	2	0	0	5	0	0	13	2	3	14	0	**46**
1615 - 1715	5	2	0	0	4	0	0	10	2	2	11	0	**36**
1630 - 1730	6	1	0	0	3	0	0	4	2	3	11	0	**30**
1645 - 1745	4	2	0	0	2	0	0	3	2	4	7	0	**24**
1700 - 1800	4	2	0	0	1	0	0	0	3	4	5	0	**19**
PEAK HOUR	**4**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**4**	**5**	**0**	**19**

Combined

Time Per	NORTH Old Canterbury Rd L	T	R	WEST Longport St L	T	R	SOUTH Old Canterbury Rd L	T	R	EAST Railway Tce L	T	R	TOT
1600 - 1615	21	296	0	24	121	0	32	163	1	17	212	0	**887**
1615 - 1630	16	261	0	24	154	0	43	133	0	11	228	0	**870**
1630 - 1645	25	292	0	25	110	0	39	142	1	20	221	0	**875**
1645 - 1700	6	248	0	16	152	0	43	149	0	23	218	0	**855**
1700 - 1715	24	317	0	14	162	0	34	169	1	14	197	0	**932**
1715 - 1730	21	311	0	24	165	0	31	169	0	18	204	0	**943**
1730 - 1745	14	266	0	23	181	0	30	156	1	20	214	0	**905**
1745 - 1800	17	335	0	23	179	0	24	174	1	14	197	0	**964**
Period End	**144**	**2326**	**0**	**173**	**1224**	**0**	**276**	**1255**	**5**	**137**	**1691**	**0**	**7231**

Peds

Time Per	NORTH Old Canterbury Rd UNCLASSIFIED	WEST Longport St UNCLASSIFIED	SOUTH Old Canterbury Rd UNCLASSIFIED	EAST Railway Tce UNCLASSIFIED	TOT
1600 - 1615	1	0	0	4	**5**
1615 - 1630	0	0	4	2	**6**
1630 - 1645	4	1	0	1	**6**
1645 - 1700	0	2	1	0	**3**
1700 - 1715	1	1	4	3	**9**
1715 - 1730	0	0	4	0	**4**
1730 - 1745	0	0	5	1	**6**
1745 - 1800	0	1	2	1	**4**
Period End	**6**	**5**	**20**	**12**	**43**

Combined

Peak Time	NORTH Old Canterbury Rd L	T	R	WEST Longport St L	T	R	SOUTH Old Canterbury Rd L	T	R	EAST Railway Tce L	T	R	TOT
1600 - 1700	68	1097	0	89	537	0	157	587	2	71	879	0	**3487**
1615 - 1715	71	1118	0	79	578	0	159	593	2	68	864	0	**3532**
1630 - 1730	76	1168	0	79	589	0	147	629	2	75	840	0	**3605**
1645 - 1745	65	1142	0	77	660	0	138	643	2	75	833	0	**3635**
1700 - 1800	76	1229	0	84	687	0	119	668	3	66	812	0	**3744**
PEAK HOUR	**76**	**1229**	**0**	**84**	**687**	**0**	**119**	**668**	**3**	**66**	**812**	**0**	**3744**

Peds

Peak Per	NORTH Old Canterbury Rd UNCLASSIFIED	WEST Longport St UNCLASSIFIED	SOUTH Old Canterbury Rd UNCLASSIFIED	EAST Railway Tce UNCLASSIFIED	TOT
1600 - 1700	5	3	5	7	**20**
1615 - 1715	5	4	9	6	**24**
1630 - 1730	5	4	9	4	**22**
1645 - 1745	1	3	14	4	**22**
1700 - 1800	1	2	15	5	**23**
PEAK HR	**1**	**2**	**15**	**5**	**23**

R.O.A.R DATA

Reliable, Original & Authentic Results

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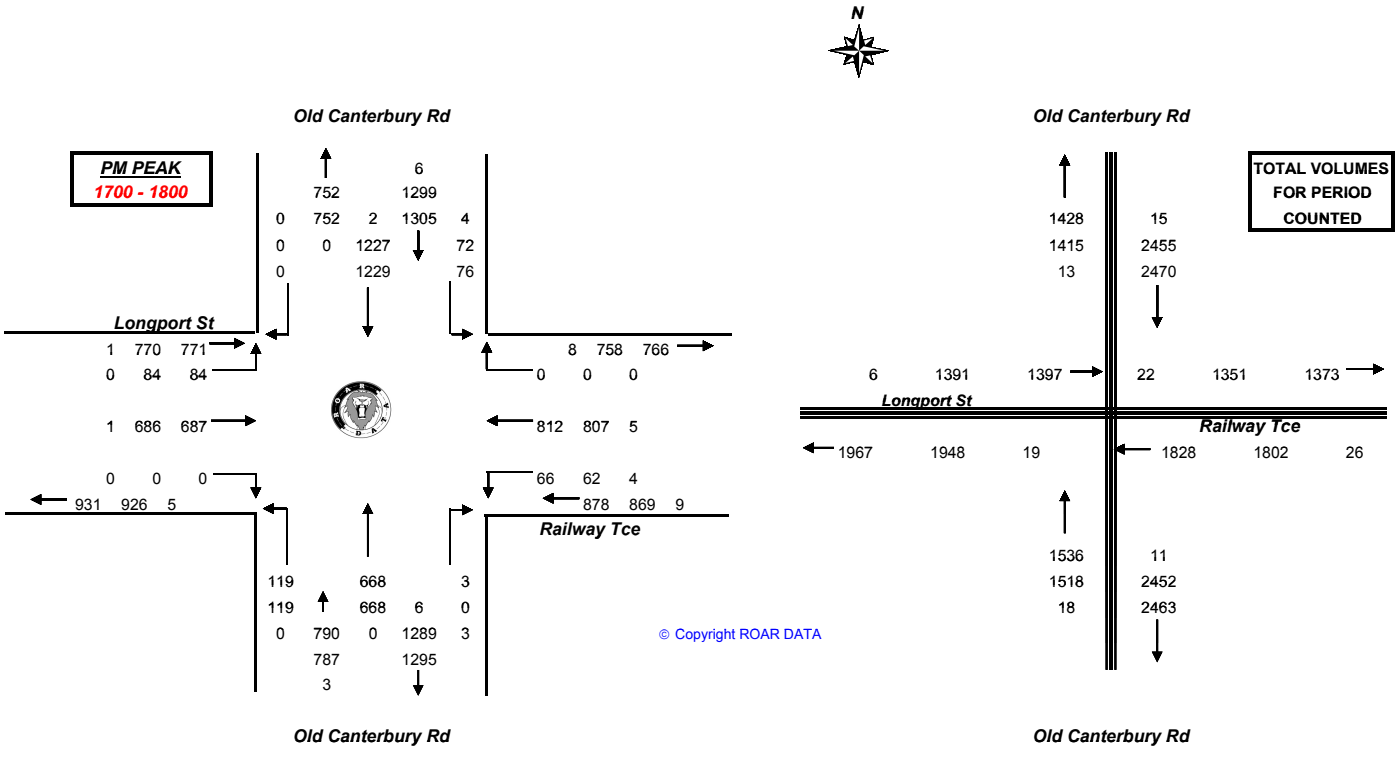

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Client : ARUP

Job No/Name : 3141 LEWISHAM Traffic Counts

Day/Date : Wednesday 9th June 2010

Lights

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Time Per	T	R	L	R	L	T	TOT
0700 - 0715	229	77	17	55	27	83	**488**
0715 - 0730	232	69	15	56	48	91	**511**
0730 - 0745	214	98	18	53	33	95	**511**
0745 - 0800	217	116	27	55	46	109	**570**
0800 - 0815	231	96	35	76	56	126	**620**
0815 - 0830	239	80	51	66	43	92	**571**
0830 - 0845	171	83	50	72	52	97	**525**
0845 - 0900	206	66	25	48	32	112	**489**
Per End	**1739**	**685**	**238**	**481**	**337**	**805**	**4285**

Heavies

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Time Per	T	R	L	R	L	T	TOT
0700 - 0715	2	0	0	0	0	2	**4**
0715 - 0730	2	0	0	0	1	1	**4**
0730 - 0745	2	0	0	0	0	2	**4**
0745 - 0800	0	0	0	0	1	1	**2**
0800 - 0815	2	0	0	0	2	2	**6**
0815 - 0830	2	2	2	2	3	0	**11**
0830 - 0845	4	1	0	0	0	4	**9**
0845 - 0900	4	0	0	0	1	1	**6**
Per End	**18**	**3**	**2**	**2**	**8**	**13**	**46**

Combined

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Time Per	T	R	L	R	L	T	TOT
0700 - 0715	231	77	17	55	27	85	**492**
0715 - 0730	234	69	15	56	49	92	**515**
0730 - 0745	216	98	18	53	33	97	**515**
0745 - 0800	217	116	27	55	47	110	**572**
0800 - 0815	233	96	35	76	58	128	**626**
0815 - 0830	241	82	53	68	46	92	**582**
0830 - 0845	175	84	50	72	52	101	**534**
0845 - 0900	210	66	25	48	33	113	**495**
Per End	**1757**	**688**	**240**	**483**	**345**	**818**	**4331**

Lights

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Peak Per	T	R	L	R	L	T	TOT
0700 - 0800	892	360	77	219	154	378	**2080**
0715 - 0815	894	379	95	240	183	421	**2212**
0730 - 0830	901	390	131	250	178	422	**2272**
0745 - 0845	858	375	163	269	197	424	**2286**
0800 - 0900	847	325	161	262	183	427	**2205**
PEAK HR	**847**	**325**	**161**	**262**	**183**	**427**	**2205**

Heavies

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Peak Per	T	R	L	R	L	T	TOT
0700 - 0800	6	0	0	0	2	6	**14**
0715 - 0815	6	0	0	0	4	6	**16**
0730 - 0830	6	2	2	2	6	5	**23**
0745 - 0845	8	3	2	2	6	7	**28**
0800 - 0900	12	3	2	2	6	7	**32**
PEAK HR	**12**	**3**	**2**	**2**	**6**	**7**	**32**

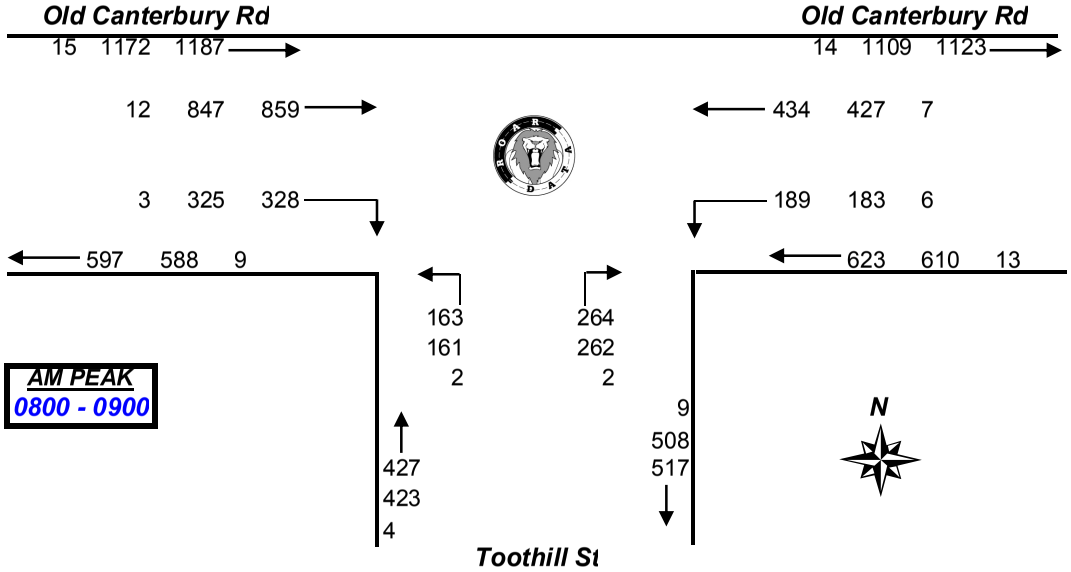
Combined

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Peak Per	T	R	L	R	L	T	TOT
0700 - 0800	898	360	77	219	156	384	**2094**
0715 - 0815	900	379	95	240	187	427	**2228**
0730 - 0830	907	392	133	252	184	427	**2295**
0745 - 0845	866	378	165	271	203	431	**2314**
0800 - 0900	859	328	163	264	189	434	**2237**
PEAK HR	**859**	**328**	**163**	**264**	**189**	**434**	**2237**

Peds

	WEST	SOUTH	EAST	
Time Per	Old	Toothill St	Old	TOT
0700 - 0715	2	2	0	**4**
0715 - 0730	6	4	0	**10**
0730 - 0745	2	1	0	**3**
0745 - 0800	1	1	0	**2**
0800 - 0815	2	0	0	**2**
0815 - 0830	6	2	0	**8**
0830 - 0845	5	0	0	**5**
0845 - 0900	5	1	0	**6**
Per End	**29**	**11**	**0**	**40**

	WEST	SOUTH	EAST	
Peak Per	Old	Toothill St	Old	TOT
0700 - 0800	11	8	0	**19**
0715 - 0815	11	6	0	**17**
0730 - 0830	11	4	0	**15**
0745 - 0845	14	3	0	**17**
0800 - 0900	18	3	0	**21**
PEAK HR	**18**	**3**	**0**	**21**



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Lights

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Time Per	T	R	L	R	L	T	TOT
1600 - 1615	130	34	60	56	54	265	**599**
1615 - 1630	107	34	66	82	59	223	**571**
1630 - 1645	112	43	45	52	58	250	**560**
1645 - 1700	122	61	67	75	57	230	**612**
1700 - 1715	111	54	74	66	64	276	**645**
1715 - 1730	135	49	62	76	60	266	**648**
1730 - 1745	137	42	76	82	38	252	**627**
1745 - 1800	137	45	67	55	80	282	**666**
Per End	**991**	**362**	**517**	**544**	**470**	**2044**	**4928**

Heavies

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Time Per	T	R	L	R	L	T	TOT
1600 - 1615	3	0	0	0	0	1	**4**
1615 - 1630	4	0	0	2	1	0	**7**
1630 - 1645	3	0	0	0	1	1	**5**
1645 - 1700	0	0	0	2	0	1	**3**
1700 - 1715	1	3	0	0	0	0	**4**
1715 - 1730	0	0	0	0	0	1	**1**
1730 - 1745	2	0	0	0	0	3	**5**
1745 - 1800	1	0	0	0	0	1	**2**
Per End	**14**	**3**	**0**	**4**	**2**	**8**	**31**

Combined

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Time Per	T	R	L	R	L	T	TOT
1600 - 1615	133	34	60	56	54	266	**603**
1615 - 1630	111	34	66	84	60	223	**578**
1630 - 1645	115	43	45	52	59	251	**565**
1645 - 1700	122	61	67	77	57	231	**615**
1700 - 1715	112	57	74	66	64	276	**649**
1715 - 1730	135	49	62	76	60	267	**649**
1730 - 1745	139	42	76	82	38	255	**632**
1745 - 1800	138	45	67	55	80	283	**668**
Per End	**1005**	**365**	**517**	**548**	**472**	**2052**	**4959**

Lights

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Peak Per	T	R	L	R	L	T	TOT
1600 - 1700	471	172	238	265	228	968	**2342**
1615 - 1715	452	192	252	275	238	979	**2388**
1630 - 1730	480	207	248	269	239	1022	**2465**
1645 - 1745	505	206	279	299	219	1024	**2532**
1700 - 1800	520	190	279	279	242	1076	**2586**
PEAK HR	**520**	**190**	**279**	**279**	**242**	**1076**	**2586**

Heavies

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Peak Per	T	R	L	R	L	T	TOT
1600 - 1700	10	0	0	4	2	3	**19**
1615 - 1715	8	3	0	4	2	2	**19**
1630 - 1730	4	3	0	2	1	3	**13**
1645 - 1745	3	3	0	2	0	5	**13**
1700 - 1800	4	3	0	0	0	5	**12**
PEAK HR	**4**	**3**	**3**	**0**	**0**	**5**	**12**

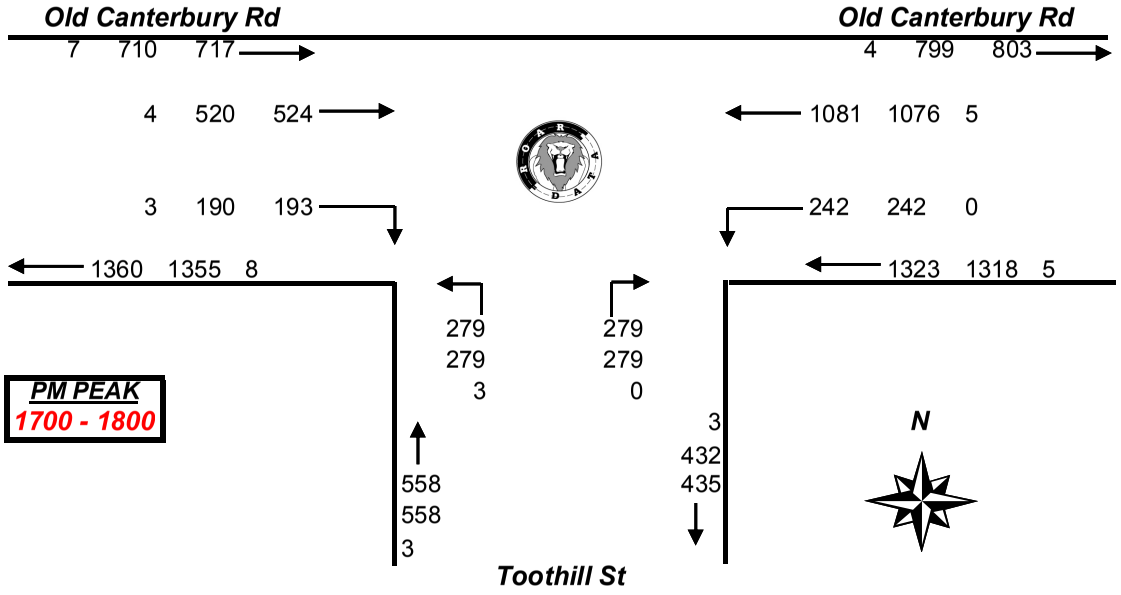
Combined

	WEST		SOUTH		EAST		
	Old		*Toothill St*		*Old*		
Peak Per	T	R	L	R	L	T	TOT
1600 - 1700	481	172	238	269	230	971	**2361**
1615 - 1715	460	195	252	279	240	981	**2407**
1630 - 1730	484	210	248	271	240	1025	**2478**
1645 - 1745	508	209	279	301	219	1029	**2545**
1700 - 1800	524	193	279	279	242	1081	**2598**
PEAK HR	**524**	**193**	**279**	**279**	**242**	**1081**	**2598**

Peds

	WEST	SOUTH	EAST	
Time Per	Old	Toothill St	Old	TOT
1600 - 1615	1	3	0	**4**
1615 - 1630	2	0	0	**2**
1630 - 1645	2	0	0	**2**
1645 - 1700	2	0	0	**2**
1700 - 1715	2	0	0	**2**
1715 - 1730	2	1	0	**3**
1730 - 1745	1	2	0	**3**
1745 - 1800	2	1	0	**3**
Per End	**14**	**7**	**0**	**21**

	WEST	SOUTH	EAST	
Peak Per	Old	Toothill St	Old	TOT
1600 - 1700	7	3	0	**10**
1615 - 1715	8	0	0	**8**
1630 - 1730	8	1	0	**9**
1645 - 1745	7	3	0	**10**
1700 - 1800	7	4	0	**11**
PEAK HR	**7**	**4**	**0**	**11**



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Lights

	NORTH			WEST			SOUTH			EAST			
	Edward St			*Old Canterbury Rd*			*Weston St*			*Old Canterbury Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	19	0	0	9	270	0	2	0	0	1	80	10	**391**
0715 - 0730	11	0	4	8	282	0	4	0	2	2	94	11	**418**
0730 - 0745	17	0	1	9	289	0	2	0	1	0	106	3	**428**
0745 - 0800	24	0	1	8	321	0	3	2	0	0	132	11	**502**
0800 - 0815	20	0	2	10	293	2	1	0	2	1	131	14	**476**
0815 - 0830	28	0	1	3	310	1	0	0	0	0	139	20	**502**
0830 - 0845	16	1	1	10	230	1	1	1	0	0	125	22	**408**
0845 - 0900	21	0	1	13	235	0	1	0	1	0	130	13	**415**
Period End	**156**	**1**	**11**	**70**	**2230**	**4**	**14**	**3**	**6**	**4**	**937**	**104**	**3540**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Edward St			*Old Canterbury Rd*			*Weston St*			*Old Canterbury Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	0	0	0	0	3	0	0	0	0	0	2	0	**5**
0715 - 0730	0	0	0	0	2	0	0	0	0	0	0	1	**3**
0730 - 0745	0	0	1	0	2	0	0	0	0	0	2	0	**5**
0745 - 0800	0	0	0	0	0	0	0	0	0	0	1	0	**1**
0800 - 0815	0	0	0	0	2	0	0	0	0	0	2	0	**4**
0815 - 0830	0	0	0	0	6	0	0	0	0	0	2	0	**8**
0830 - 0845	0	0	0	0	2	0	0	0	0	0	2	0	**4**
0845 - 0900	0	0	0	0	3	0	0	0	0	0	1	0	**4**
Period End	**0**	**0**	**1**	**0**	**20**	**0**	**0**	**0**	**0**	**0**	**12**	**1**	**34**

Lights

	NORTH			WEST			SOUTH			EAST			
	Edward St			*Old Canterbury Rd*			*Weston St*			*Old Canterbury Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	71	0	6	34	1162	0	11	2	3	3	412	35	**1739**
0715 - 0815	72	0	8	35	1185	2	10	2	5	3	463	39	**1824**
0730 - 0830	89	0	5	30	1213	3	6	2	3	1	508	48	**1908**
0745 - 0845	88	1	5	31	1154	4	5	3	2	1	527	67	**1888**
0800 - 0900	85	1	5	36	1068	4	3	1	3	1	525	69	**1801**
PEAK HOUR	**85**	**1**	**5**	**36**	**1068**	**4**	**3**	**1**	**3**	**1**	**525**	**69**	**1801**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Edward St			*Old Canterbury Rd*			*Weston St*			*Old Canterbury Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	0	0	1	0	7	0	0	0	0	0	5	1	**14**
0715 - 0815	0	0	1	0	6	0	0	0	0	0	5	1	**13**
0730 - 0830	0	0	1	0	10	0	0	0	0	0	7	0	**18**
0745 - 0845	0	0	0	0	10	0	0	0	0	0	7	0	**17**
0800 - 0900	0	0	0	0	13	0	0	0	0	0	7	0	**20**
PEAK HOUR	**0**	**0**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**20**

Combined

	NORTH			WEST			SOUTH			EAST			
	Edward St			*Old Canterbury Rd*			*Weston St*			*Old Canterbury Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	19	0	0	9	273	0	2	0	0	1	82	10	**396**
0715 - 0730	11	0	4	8	284	0	4	0	2	2	94	12	**421**
0730 - 0745	17	0	2	9	291	0	2	0	1	0	108	3	**433**
0745 - 0800	24	0	1	8	321	0	3	2	0	0	133	11	**503**
0800 - 0815	20	0	2	10	295	2	1	0	2	1	133	14	**480**
0815 - 0830	28	0	1	3	316	1	0	0	0	0	141	20	**510**
0830 - 0845	16	1	1	10	232	1	1	1	0	0	127	22	**412**
0845 - 0900	21	0	1	13	238	0	1	0	1	0	131	13	**419**
Period End	**156**	**1**	**12**	**70**	**2250**	**4**	**14**	**3**	**6**	**4**	**949**	**105**	**3574**

Peds

	NORTH	WEST	SOUTH	EAST	
	Edward St	*Old Canterbury Rd*	*Weston St*	*Old Canterbury Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0715	0	1	2	0	**3**
0715 - 0730	2	1	2	0	**5**
0730 - 0745	0	0	2	0	**2**
0745 - 0800	0	0	2	0	**2**
0800 - 0815	0	1	0	0	**1**
0815 - 0830	1	0	2	0	**3**
0830 - 0845	3	0	1	0	**4**
0845 - 0900	0	0	0	0	**0**
Period End	**6**	**3**	**11**	**0**	**20**

Combined

	NORTH			WEST			SOUTH			EAST			
	Edward St			*Old Canterbury Rd*			*Weston St*			*Old Canterbury Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	71	0	7	34	1169	0	11	2	3	3	417	36	**1753**
0715 - 0815	72	0	9	35	1191	2	10	2	5	3	468	40	**1837**
0730 - 0830	89	0	6	30	1223	3	6	2	3	1	515	48	**1926**
0745 - 0845	88	1	5	31	1164	4	5	3	2	1	534	67	**1905**
0800 - 0900	85	1	5	36	1081	4	3	1	3	1	532	69	**1821**
PEAK HOUR	**85**	**1**	**5**	**36**	**1081**	**4**	**3**	**1**	**3**	**1**	**532**	**69**	**1821**

Peds

	NORTH	WEST	SOUTH	EAST	
	Edward St	*Old Canterbury Rd*	*Weston St*	*Old Canterbury Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0800	2	2	8	0	**12**
0715 - 0815	2	2	6	0	**10**
0730 - 0830	1	1	6	0	**8**
0745 - 0845	4	1	5	0	**10**
0800 - 0900	4	1	3	0	**8**
PEAK HR	**4**	**1**	**3**	**0**	**8**

R.O.A.R DATA

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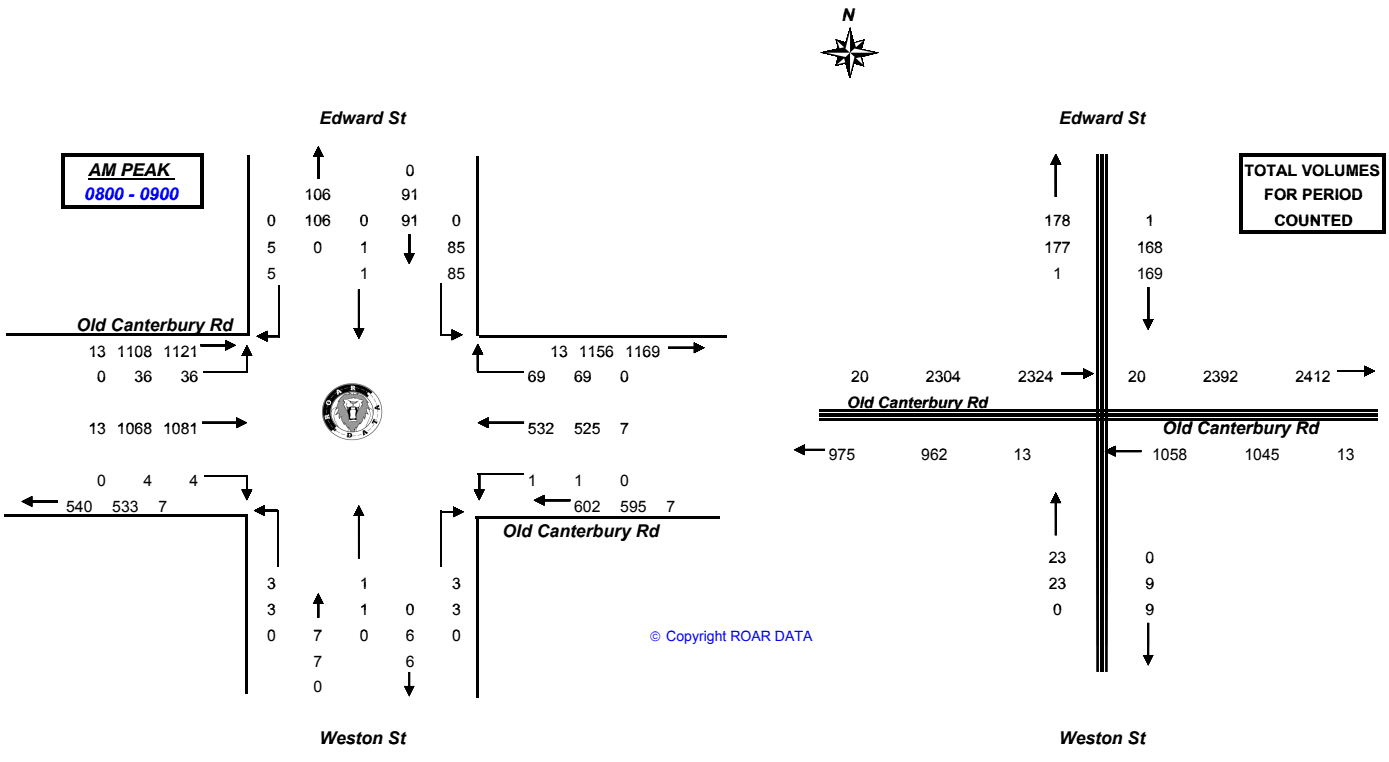

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Lights

Time Per	NORTH Edward St L	T	R	WEST Old Canterbury Rd L	T	R	SOUTH Weston St L	T	R	EAST Old Canterbury Rd L	T	R	TOT
1600 - 1615	14	0	1	3	154	1	0	1	0	5	279	22	**480**
1615 - 1630	8	0	2	5	121	0	0	0	0	1	258	17	**412**
1630 - 1645	12	0	2	4	140	1	0	0	0	2	271	21	**453**
1645 - 1700	21	0	4	3	171	2	2	0	0	5	286	24	**518**
1700 - 1715	17	1	4	5	148	1	0	0	0	3	309	24	**512**
1715 - 1730	22	0	2	9	169	0	1	0	0	6	300	33	**542**
1730 - 1745	21	0	2	11	159	1	2	0	1	3	283	33	**516**
1745 - 1800	24	0	5	8	157	4	3	0	1	1	294	25	**522**
Period End	**139**	**1**	**22**	**48**	**1219**	**10**	**8**	**1**	**2**	**26**	**2280**	**199**	**3955**

Heavies

Time Per	NORTH Edward St L	T	R	WEST Old Canterbury Rd L	T	R	SOUTH Weston St L	T	R	EAST Old Canterbury Rd L	T	R	TOT
1600 - 1615	0	0	0	0	3	0	0	0	0	0	1	0	**4**
1615 - 1630	0	0	0	0	4	0	0	0	0	0	0	0	**4**
1630 - 1645	0	0	0	0	2	0	0	0	0	0	1	0	**3**
1645 - 1700	0	0	0	0	1	0	0	0	0	0	1	0	**2**
1700 - 1715	0	0	0	0	4	0	0	0	0	0	0	0	**4**
1715 - 1730	0	0	0	0	0	0	0	0	0	0	1	0	**1**
1730 - 1745	0	0	0	0	2	0	0	0	0	0	2	0	**4**
1745 - 1800	0	0	0	0	0	0	0	0	0	0	3	0	**3**
Period End	**0**	**0**	**0**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**25**

Lights

Peak Time	NORTH Edward St L	T	R	WEST Old Canterbury Rd L	T	R	SOUTH Weston St L	T	R	EAST Old Canterbury Rd L	T	R	TOT
1600 - 1700	55	0	9	15	586	4	2	1	0	13	1094	84	**1863**
1615 - 1715	58	1	12	17	580	4	2	0	0	11	1124	86	**1895**
1630 - 1730	72	1	12	21	628	4	3	0	0	16	1166	102	**2025**
1645 - 1745	81	1	12	28	647	4	5	0	1	17	1178	114	**2088**
1700 - 1800	84	1	13	33	633	6	6	0	2	13	1186	115	**2092**
PEAK HOUR	**84**	**1**	**13**	**33**	**633**	**6**	**6**	**0**	**2**	**13**	**1186**	**115**	**2092**

Heavies

Peak Time	NORTH Edward St L	T	R	WEST Old Canterbury Rd L	T	R	SOUTH Weston St L	T	R	EAST Old Canterbury Rd L	T	R	TOT
1600 - 1700	0	0	0	0	10	0	0	0	0	0	3	0	**13**
1615 - 1715	0	0	0	0	11	0	0	0	0	0	2	0	**13**
1630 - 1730	0	0	0	0	7	0	0	0	0	0	3	0	**10**
1645 - 1745	0	0	0	0	7	0	0	0	0	0	4	0	**11**
1700 - 1800	0	0	0	0	6	0	0	0	0	0	6	0	**12**
PEAK HOUR	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**12**

Combined

Time Per	NORTH Edward St L	T	R	WEST Old Canterbury Rd L	T	R	SOUTH Weston St L	T	R	EAST Old Canterbury Rd L	T	R	TOT
1600 - 1615	14	0	1	3	157	1	0	1	0	5	280	22	**484**
1615 - 1630	8	0	2	5	125	0	0	0	0	1	258	17	**416**
1630 - 1645	12	0	2	4	142	1	0	0	0	2	272	21	**456**
1645 - 1700	21	0	4	3	172	2	2	0	0	5	287	24	**520**
1700 - 1715	17	1	4	5	152	1	0	0	0	3	309	24	**516**
1715 - 1730	22	0	2	9	169	0	1	0	0	6	301	33	**543**
1730 - 1745	21	0	2	11	161	1	2	0	1	3	285	33	**520**
1745 - 1800	24	0	5	8	157	4	3	0	1	1	297	25	**525**
Period End	**139**	**1**	**22**	**48**	**1235**	**10**	**8**	**1**	**2**	**26**	**2289**	**199**	**3980**

Peds

Time Per	NORTH Edward St UNCLASSIFIED	WEST Old Canterbury Rd UNCLASSIFIED	SOUTH Weston St UNCLASSIFIED	EAST Old Canterbury Rd UNCLASSIFIED	TOT
1600 - 1615	1	0	6	0	**7**
1615 - 1630	3	1	3	0	**7**
1630 - 1645	0	0	1	0	**1**
1645 - 1700	1	0	5	0	**6**
1700 - 1715	4	1	1	0	**6**
1715 - 1730	1	0	0	0	**1**
1730 - 1745	0	1	2	0	**3**
1745 - 1800	1	0	2	0	**3**
Period End	**11**	**3**	**20**	**0**	**34**

Combined

Peak Time	NORTH Edward St L	T	R	WEST Old Canterbury Rd L	T	R	SOUTH Weston St L	T	R	EAST Old Canterbury Rd L	T	R	TOT
1600 - 1700	55	0	9	15	596	4	2	1	0	13	1097	84	**1876**
1615 - 1715	58	1	12	17	591	4	2	0	0	11	1126	86	**1908**
1630 - 1730	72	1	12	21	635	4	3	0	0	16	1169	102	**2035**
1645 - 1745	81	1	12	28	654	4	5	0	1	17	1182	114	**2099**
1700 - 1800	84	1	13	33	639	6	6	0	2	13	1192	115	**2104**
PEAK HOUR	**84**	**1**	**13**	**33**	**639**	**6**	**6**	**0**	**2**	**13**	**1192**	**115**	**2104**

Peds

Peak Per	NORTH Edward St UNCLASSIFIED	WEST Old Canterbury Rd UNCLASSIFIED	SOUTH Weston St UNCLASSIFIED	EAST Old Canterbury Rd UNCLASSIFIED	TOT
1600 - 1700	5	1	15	0	**21**
1615 - 1715	8	2	10	0	**20**
1630 - 1730	6	1	7	0	**14**
1645 - 1745	6	2	8	0	**16**
1700 - 1800	6	2	5	0	**13**
PEAK HR	**6**	**2**	**5**	**0**	**13**

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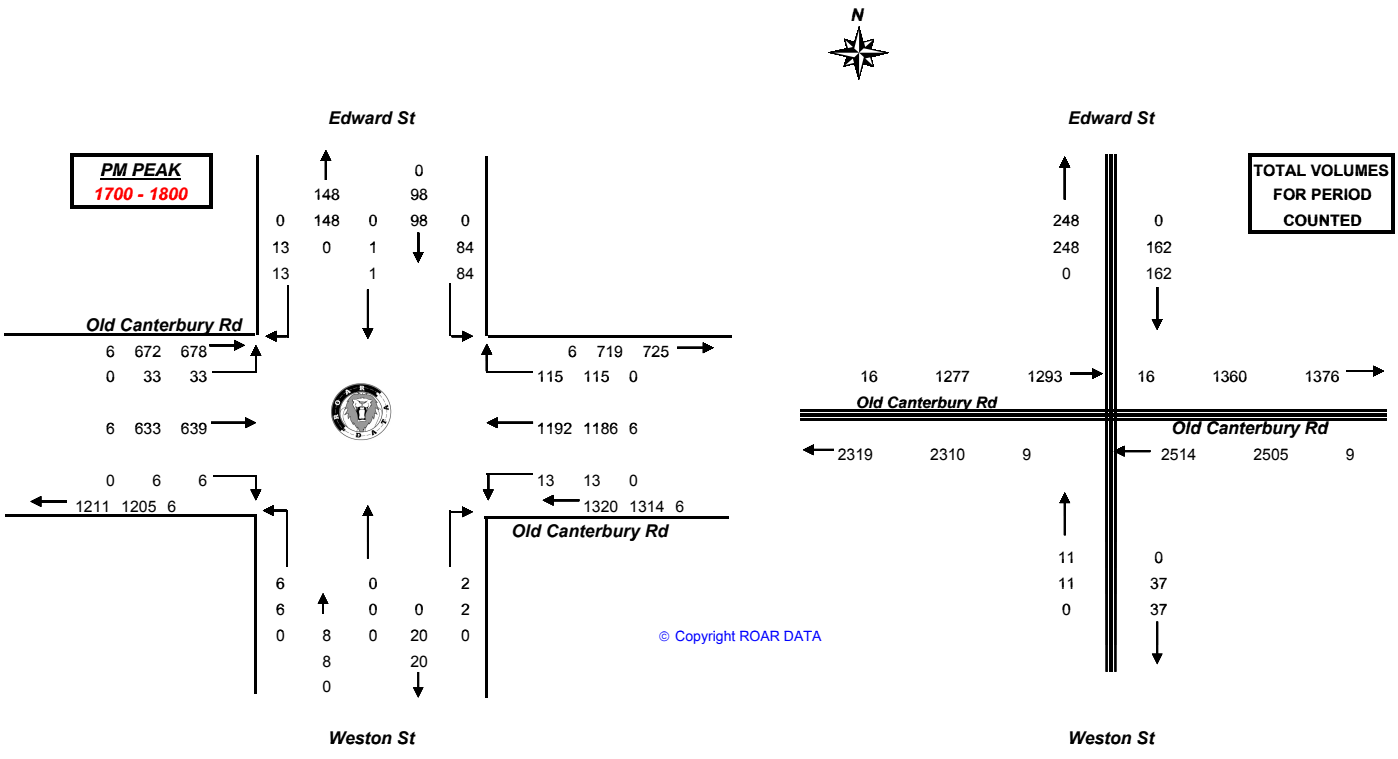

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Lights

	NORTH			WEST			SOUTH			EAST			
	Chapman St			*Smith St*			*Edward St*			*Smith St*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	0	1	0	1	83	13	7	0	14	2	12	0	**133**
0715 - 0730	0	0	0	0	94	9	9	0	8	6	17	0	**143**
0730 - 0745	0	1	0	0	86	10	8	1	6	5	12	0	**129**
0745 - 0800	0	0	0	0	89	17	11	0	9	3	18	0	**147**
0800 - 0815	0	0	0	1	95	8	15	0	6	8	10	0	**143**
0815 - 0830	1	0	0	1	95	23	12	0	4	3	23	0	**162**
0830 - 0845	1	0	0	0	68	13	20	2	16	2	25	0	**147**
0845 - 0900	0	0	1	0	74	22	7	1	17	7	17	0	**146**
Period End	**2**	**2**	**1**	**3**	**684**	**115**	**89**	**4**	**80**	**36**	**134**	**0**	**1150**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Chapman St			*Smith St*			*Edward St*			*Smith St*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	0	0	0	0	0	0	0	0	0	0	0	0	**0**
0715 - 0730	0	0	0	0	0	1	1	0	0	0	0	0	**2**
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	**0**
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	**0**
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	**0**
0815 - 0830	0	0	0	0	0	0	0	0	0	0	0	0	**0**
0830 - 0845	0	0	0	0	0	0	0	0	0	0	0	0	**0**
0845 - 0900	0	0	0	0	0	0	0	0	0	0	1	0	**1**
Period End	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**3**

Lights

	NORTH			WEST			SOUTH			EAST			
	Chapman St			*Smith St*			*Edward St*			*Smith St*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	0	2	0	1	352	49	35	1	37	16	59	0	**552**
0715 - 0815	0	1	0	1	364	44	43	1	29	22	57	0	**562**
0730 - 0830	1	1	0	2	365	58	46	1	25	19	63	0	**581**
0745 - 0845	2	0	0	2	347	61	58	2	35	16	76	0	**599**
0800 - 0900	2	0	1	2	332	66	54	3	43	20	75	0	**598**
PEAK HOUR	**2**	**0**	**1**	**2**	**332**	**66**	**54**	**3**	**43**	**20**	**75**	**0**	**598**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Chapman St			*Smith St*			*Edward St*			*Smith St*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	0	0	0	0	0	1	1	0	0	0	0	0	**2**
0715 - 0815	0	0	0	0	0	1	1	0	0	0	0	0	**2**
0730 - 0830	0	0	0	0	0	0	0	0	0	0	0	0	**0**
0745 - 0845	0	0	0	0	0	0	0	0	0	0	0	0	**0**
0800 - 0900	0	0	0	0	0	0	0	0	0	0	1	0	**1**
PEAK HOUR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**

Combined

	NORTH			WEST			SOUTH			EAST			
	Chapman St			*Smith St*			*Edward St*			*Smith St*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	0	1	0	1	83	13	7	0	14	2	12	0	**133**
0715 - 0730	0	0	0	0	94	10	10	0	8	6	17	0	**145**
0730 - 0745	0	1	0	0	86	10	8	1	6	5	12	0	**129**
0745 - 0800	0	0	0	0	89	17	11	0	9	3	18	0	**147**
0800 - 0815	0	0	0	1	95	8	15	0	6	8	10	0	**143**
0815 - 0830	1	0	0	1	95	23	12	0	4	3	23	0	**162**
0830 - 0845	1	0	0	0	68	13	20	2	16	2	25	0	**147**
0845 - 0900	0	0	1	0	74	22	7	1	17	7	18	0	**147**
Period End	**2**	**2**	**1**	**3**	**684**	**116**	**90**	**4**	**80**	**36**	**135**	**0**	**1153**

Peds

	NORTH	WEST	SOUTH	EAST	
	Chapman St	*Smith St*	*Edward St*	*Smith St*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0715	2	0	0	1	**3**
0715 - 0730	0	1	0	1	**2**
0730 - 0745	2	1	3	1	**7**
0745 - 0800	1	2	4	0	**7**
0800 - 0815	0	0	1	0	**1**
0815 - 0830	0	0	2	1	**3**
0830 - 0845	1	0	3	0	**4**
0845 - 0900	0	0	0	1	**1**
Period End	**6**	**4**	**13**	**5**	**28**

Combined

	NORTH			WEST			SOUTH			EAST			
	Chapman St			*Smith St*			*Edward St*			*Smith St*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	0	2	0	1	352	50	36	1	37	16	59	0	**554**
0715 - 0815	0	1	0	1	364	45	44	1	29	22	57	0	**564**
0730 - 0830	1	1	0	2	365	58	46	1	25	19	63	0	**581**
0745 - 0845	2	0	0	2	347	61	58	2	35	16	76	0	**599**
0800 - 0900	2	0	1	2	332	66	54	3	43	20	76	0	**599**
PEAK HOUR	**2**	**0**	**1**	**2**	**332**	**66**	**54**	**3**	**43**	**20**	**76**	**0**	**599**

Peds

	NORTH	WEST	SOUTH	EAST	
	Chapman St	*Smith St*	*Edward St*	*Smith St*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0800	5	4	7	3	**19**
0715 - 0815	3	4	8	2	**17**
0730 - 0830	3	3	10	2	**18**
0745 - 0845	2	2	10	1	**15**
0800 - 0900	1	0	6	2	**9**
PEAK HR	**1**	**0**	**6**	**2**	**9**

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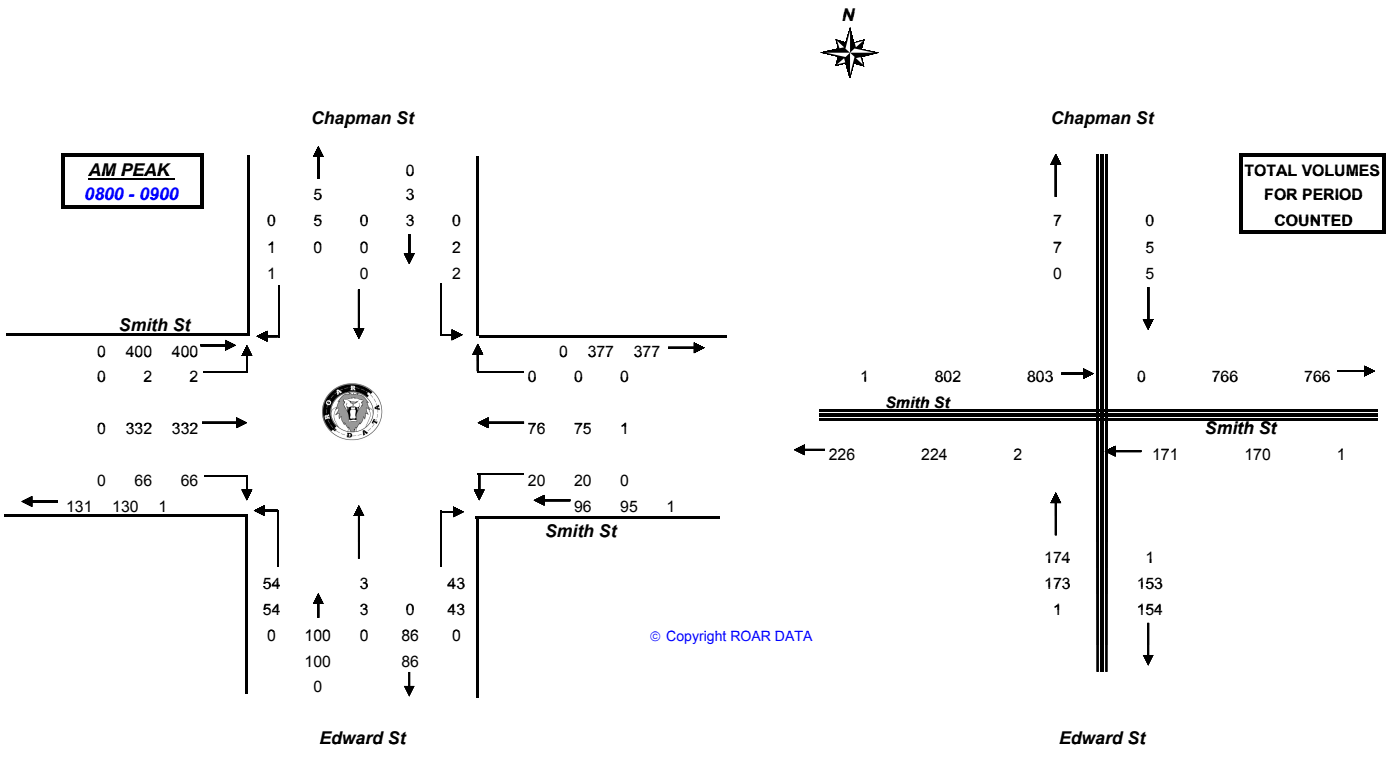

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Client : ARUP
Job No/Name : 3141 LEWISHAM Traffic Counts
Day/Date : Wednesday 9th June 2010

Lights

	NORTH Chapman St			WEST Smith St			SOUTH Edward St			EAST Smith St			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1615	0	0	0	1	33	11	22	0	10	2	50	0	**129**
1615 - 1630	0	0	0	0	42	7	17	0	9	10	39	1	**125**
1630 - 1645	0	0	1	1	39	7	17	1	6	9	37	0	**118**
1645 - 1700	0	0	0	2	25	9	21	1	4	15	32	0	**109**
1700 - 1715	0	0	0	2	41	10	16	2	8	14	35	0	**128**
1715 - 1730	0	0	0	2	44	11	28	0	7	12	53	1	**158**
1730 - 1745	0	0	0	1	52	11	20	1	17	13	43	0	**158**
1745 - 1800	0	0	0	0	41	13	21	0	17	13	43	0	**148**
Period End	**0**	**0**	**1**	**9**	**317**	**79**	**162**	**5**	**78**	**88**	**332**	**2**	**1073**

Heavies

	NORTH Chapman St			WEST Smith St			SOUTH Edward St			EAST Smith St			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1615	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1615 - 1630	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1630 - 1645	0	0	0	0	0	0	0	0	0	0	1	0	**1**
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1715 - 1730	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1730 - 1745	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1745 - 1800	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**

Lights

	NORTH Chapman St			WEST Smith St			SOUTH Edward St			EAST Smith St			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1700	0	0	1	4	139	34	77	2	29	36	158	1	**481**
1615 - 1715	0	0	1	5	147	33	71	4	27	48	143	1	**480**
1630 - 1730	0	0	1	7	149	37	82	4	25	50	157	1	**513**
1645 - 1745	0	0	0	7	162	41	85	4	36	54	163	1	**553**
1700 - 1800	0	0	0	5	178	45	85	3	49	52	174	1	**592**
PEAK HOUR	**0**	**0**	**0**	**5**	**178**	**45**	**85**	**3**	**49**	**52**	**174**	**1**	**592**

Heavies

	NORTH Chapman St			WEST Smith St			SOUTH Edward St			EAST Smith St			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1700	0	0	0	0	0	0	0	0	0	0	1	0	**1**
1615 - 1715	0	0	0	0	0	0	0	0	0	0	1	0	**1**
1630 - 1730	0	0	0	0	0	0	0	0	0	0	1	0	**1**
1645 - 1745	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1700 - 1800	0	0	0	0	0	0	0	0	0	0	0	0	**0**
PEAK HOUR	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Combined

	NORTH Chapman St			WEST Smith St			SOUTH Edward St			EAST Smith St			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1615	0	0	0	1	33	11	22	0	10	2	50	0	**129**
1615 - 1630	0	0	0	0	42	7	17	0	9	10	39	1	**125**
1630 - 1645	0	0	1	1	39	7	17	1	6	9	38	0	**119**
1645 - 1700	0	0	0	2	25	9	21	1	4	15	32	0	**109**
1700 - 1715	0	0	0	2	41	10	16	2	8	14	35	0	**128**
1715 - 1730	0	0	0	2	44	11	28	0	7	12	53	1	**158**
1730 - 1745	0	0	0	1	52	11	20	1	17	13	43	0	**158**
1745 - 1800	0	0	0	0	41	13	21	0	17	13	43	0	**148**
Period End	**0**	**0**	**1**	**9**	**317**	**79**	**162**	**5**	**78**	**88**	**333**	**2**	**1074**

Peds

	NORTH Chapman St	WEST Smith St	SOUTH Edward St	EAST Smith St	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1600 - 1615	2	0	1	0	**3**
1615 - 1630	0	0	1	1	**2**
1630 - 1645	0	0	3	1	**4**
1645 - 1700	0	0	0	3	**3**
1700 - 1715	0	0	2	2	**4**
1715 - 1730	0	0	0	0	**0**
1730 - 1745	0	0	0	0	**0**
1745 - 1800	0	0	0	1	**1**
Period End	**2**	**0**	**7**	**8**	**17**

Combined

	NORTH Chapman St			WEST Smith St			SOUTH Edward St			EAST Smith St			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1700	0	0	1	4	139	34	77	2	29	36	159	1	**482**
1615 - 1715	0	0	1	5	147	33	71	4	27	48	144	1	**481**
1630 - 1730	0	0	1	7	149	37	82	4	25	50	158	1	**514**
1645 - 1745	0	0	0	7	162	41	85	4	36	54	163	1	**553**
1700 - 1800	0	0	0	5	178	45	85	3	49	52	174	1	**592**
PEAK HOUR	**0**	**0**	**0**	**5**	**178**	**45**	**85**	**3**	**49**	**52**	**174**	**1**	**592**

Peds

	NORTH Chapman St	WEST Smith St	SOUTH Edward St	EAST Smith St	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1600 - 1700	2	0	5	5	**12**
1615 - 1715	0	0	6	7	**13**
1630 - 1730	0	0	5	6	**11**
1645 - 1745	0	0	2	5	**7**
1700 - 1800	0	0	2	3	**5**
PEAK HR	**0**	**0**	**2**	**3**	**5**

R.O.A.R DATA

Reliable, Original & Authentic Results

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Client : ARUP
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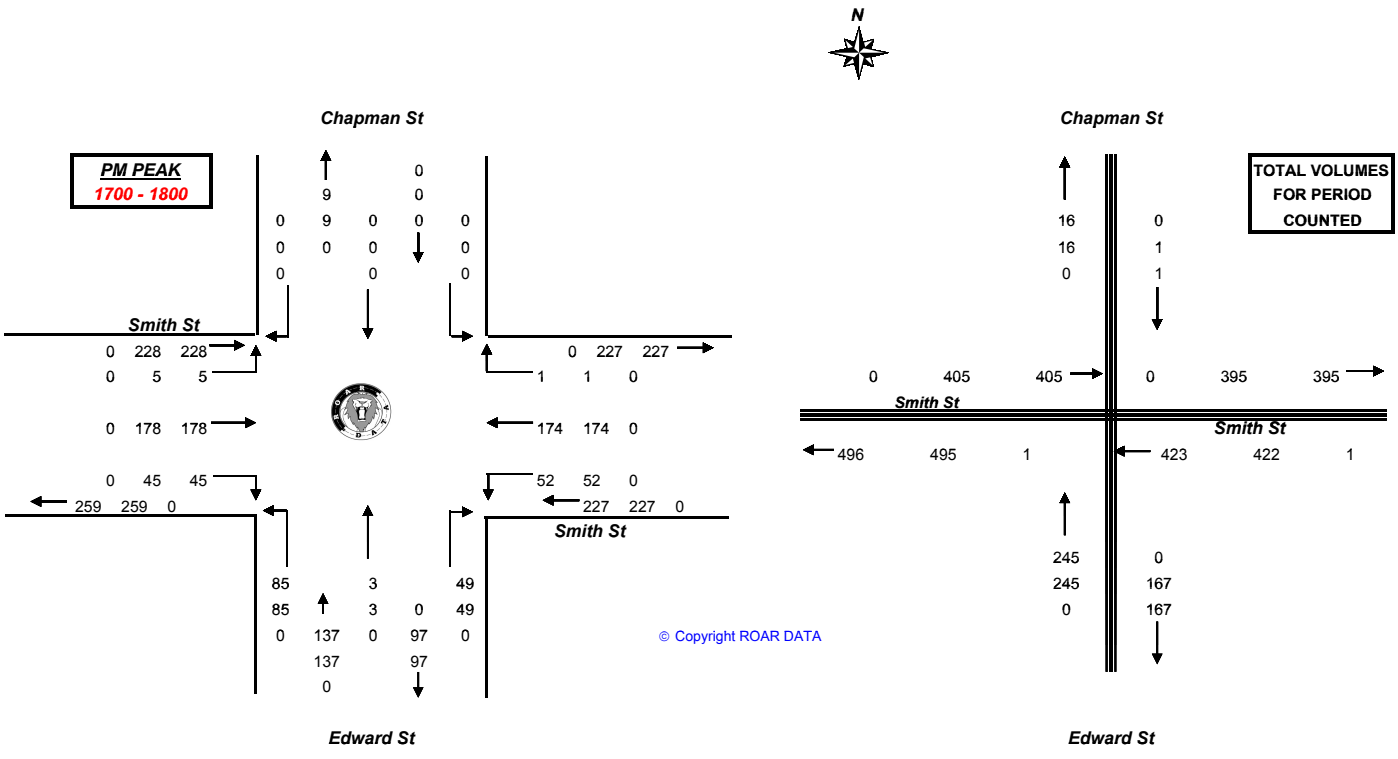
Day/Date : Wednesday 9th June 2010



R.O.A.R. DATA

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Client : ARUP
Job No/Name : 3141 LEWISHAM Traffic Counts
Day/Date : Wednesday 9th June 2010

Lights

	NORTH			WEST			SOUTH			EAST			
	Grosvenor Cr			*Carlton Cr*			*Smith St*			*Longport St*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	74	5	5	6	123	1	0	26	68	8	44	85	**445**
0715 - 0730	88	9	1	4	66	0	0	19	68	10	58	123	**446**
0730 - 0745	68	4	1	0	64	1	0	12	61	12	67	81	**371**
0745 - 0800	100	5	0	1	68	1	0	14	87	13	72	125	**486**
0800 - 0815	103	3	0	6	59	1	1	13	59	7	68	116	**436**
0815 - 0830	77	4	2	2	70	0	0	10	80	17	76	115	**453**
0830 - 0845	109	6	3	3	102	0	1	19	79	22	75	116	**535**
0845 - 0900	98	13	1	8	99	0	1	19	63	13	86	72	**473**
Period End	**717**	**49**	**13**	**30**	**651**	**4**	**3**	**132**	**565**	**102**	**546**	**833**	**3645**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Grosvenor Cr			*Carlton Cr*			*Smith St*			*Longport St*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	0	0	0	0	2	0	0	0	0	0	3	0	**5**
0715 - 0730	0	0	0	0	2	0	0	0	0	0	2	0	**4**
0730 - 0745	0	0	0	0	1	0	0	0	0	0	2	0	**3**
0745 - 0800	0	0	0	0	0	0	0	0	0	0	3	0	**3**
0800 - 0815	0	0	0	0	1	0	0	0	0	0	0	0	**1**
0815 - 0830	0	0	0	0	0	0	0	0	0	0	1	0	**1**
0830 - 0845	0	0	0	0	0	0	0	0	0	0	2	0	**2**
0845 - 0900	0	0	0	0	0	0	0	0	0	0	3	0	**3**
Period End	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**16**	**0**	**22**

Lights

	NORTH			WEST			SOUTH			EAST			
	Grosvenor Cr			*Carlton Cr*			*Smith St*			*Longport St*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	330	23	7	11	321	3	0	71	284	43	241	414	**1748**
0715 - 0815	359	21	2	11	257	3	1	58	275	42	265	445	**1739**
0730 - 0830	348	16	3	9	261	3	1	49	287	49	283	437	**1746**
0745 - 0845	389	18	5	12	299	2	2	56	305	59	291	472	**1910**
0800 - 0900	387	26	6	19	330	1	3	61	281	59	305	419	**1897**
PEAK HOUR	**387**	**26**	**6**	**19**	**330**	**1**	**3**	**61**	**281**	**59**	**305**	**419**	**1897**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Grosvenor Cr			*Carlton Cr*			*Smith St*			*Longport St*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	0	0	0	0	5	0	0	0	0	0	10	0	**15**
0715 - 0815	0	0	0	0	4	0	0	0	0	0	7	0	**11**
0730 - 0830	0	0	0	0	2	0	0	0	0	0	6	0	**8**
0745 - 0845	0	0	0	0	1	0	0	0	0	0	6	0	**7**
0800 - 0900	0	0	0	0	1	0	0	0	0	0	6	0	**7**
PEAK HOUR	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**7**

Combined

	NORTH			WEST			SOUTH			EAST			
	Grosvenor Cr			*Carlton Cr*			*Smith St*			*Longport St*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0715	74	5	5	6	125	1	0	26	68	8	47	85	**450**
0715 - 0730	88	9	1	4	68	0	0	19	68	10	60	123	**450**
0730 - 0745	68	4	1	0	65	1	0	12	61	12	69	81	**374**
0745 - 0800	100	5	0	1	68	1	0	14	87	13	75	125	**489**
0800 - 0815	103	3	0	6	60	1	1	13	59	7	68	116	**437**
0815 - 0830	77	4	2	2	70	0	0	10	80	17	77	115	**454**
0830 - 0845	109	6	3	3	102	0	1	19	79	22	77	116	**537**
0845 - 0900	98	13	1	8	99	0	1	19	63	13	89	72	**476**
Period End	**717**	**49**	**13**	**30**	**657**	**4**	**3**	**132**	**565**	**102**	**562**	**833**	**3667**

Peds

	NORTH	WEST	SOUTH	EAST	
	Grosvenor Cr	*Carlton Cr*	*Smith St*	*Longport St*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0715	0	0	0	2	**2**
0715 - 0730	0	0	3	0	**3**
0730 - 0745	0	0	1	1	**2**
0745 - 0800	0	0	0	1	**1**
0800 - 0815		0	2	0	**2**
0815 - 0830	0	0	7	1	**8**
0830 - 0845	0	0	2	0	**2**
0845 - 0900	0	0	2	0	**2**
Period End	**0**	**0**	**17**	**5**	**22**

Combined

	NORTH			WEST			SOUTH			EAST			
	Grosvenor Cr			*Carlton Cr*			*Smith St*			*Longport St*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0700 - 0800	330	23	7	11	326	3	0	71	284	43	251	414	**1763**
0715 - 0815	359	21	2	11	261	3	1	58	275	42	272	445	**1750**
0730 - 0830	348	16	3	9	263	3	1	49	287	49	289	437	**1754**
0745 - 0845	389	18	5	12	300	2	2	56	305	59	297	472	**1917**
0800 - 0900	387	26	6	19	331	1	3	61	281	59	311	419	**1904**
PEAK HOUR	**387**	**26**	**6**	**19**	**331**	**1**	**3**	**61**	**281**	**59**	**311**	**419**	**1904**

Peds

	NORTH	WEST	SOUTH	EAST	
	Grosvenor Cr	*Carlton Cr*	*Smith St*	*Longport St*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0800	0	0	4	4	**8**
0715 - 0815	0	0	6	2	**8**
0730 - 0830	0	0	10	3	**13**
0745 - 0845	0	0	11	2	**13**
0800 - 0900	0	0	13	1	**14**
PEAK HR	**0**	**0**	**13**	**1**	**14**

R.O.A.R DATA

Reliable, Original & Authentic Results

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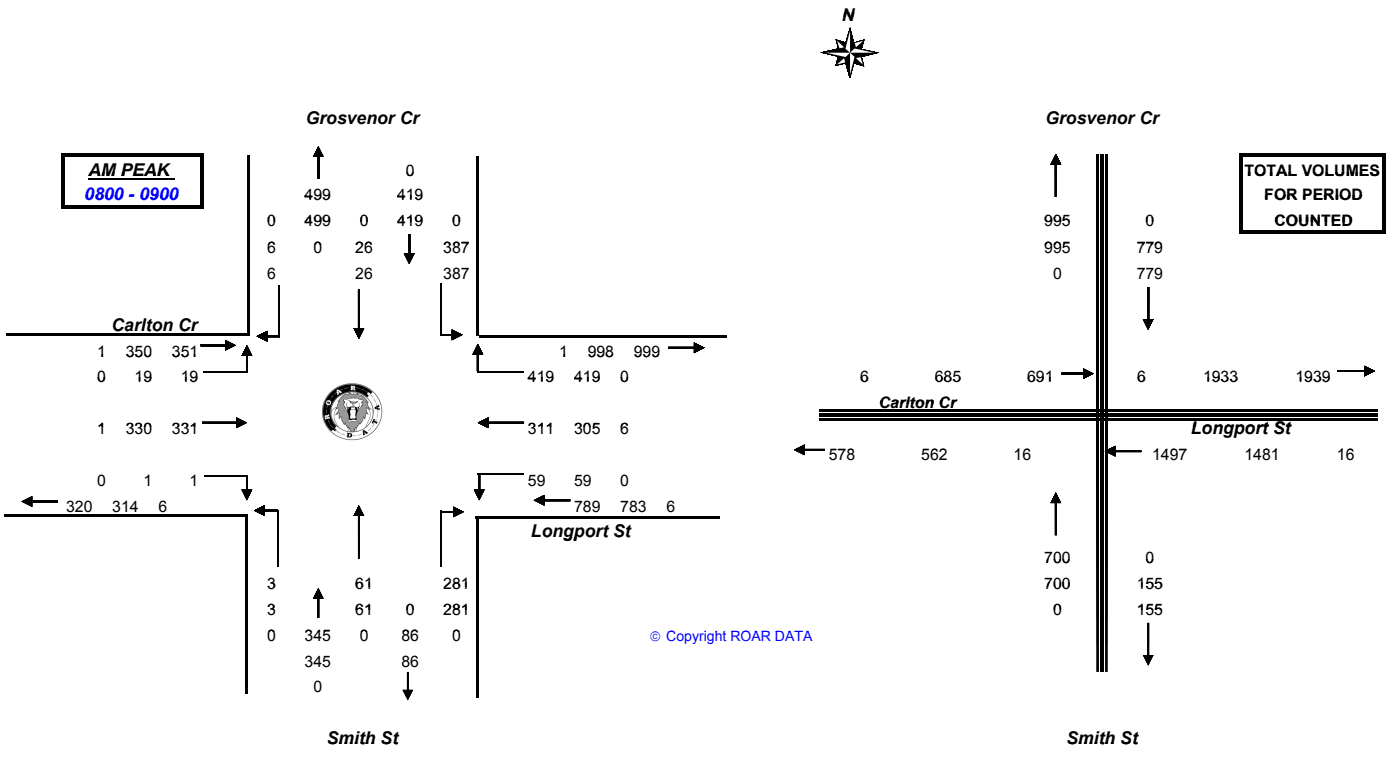
Client : ARUP
Job No/Name : 3141 LEWISHAM Traffic Counts
Day/Date : Wednesday 9th June 2010



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob. 0418 239019

Client : ARUP
Job No/Name : 3141 LEWISHAM Traffic Counts
Day/Date : Wednesday 9th June 2010

Lights

Time Per	NORTH Grosvenor Cr L	T	R	WEST Carlton Cr L	T	R	SOUTH Smith St L	T	R	EAST Longport St L	T	R	TOT
1600 - 1615	48	21	9	14	70	3	2	10	30	24	134	88	**453**
1615 - 1630	52	19	10	23	86	3	6	13	32	27	123	91	**485**
1630 - 1645	41	11	5	13	69	3	2	16	27	28	129	100	**444**
1645 - 1700	46	17	12	14	88	7	3	9	20	23	129	99	**467**
1700 - 1715	60	23	8	15	92	2	1	18	24	24	120	100	**487**
1715 - 1730	48	27	9	22	94	7	0	17	36	30	101	90	**481**
1730 - 1745	54	29	4	16	86	7	3	21	41	22	116	100	**499**
1745 - 1800	60	22	2	6	97	5	1	21	40	23	95	101	**473**
Period End	**409**	**169**	**59**	**123**	**682**	**37**	**18**	**125**	**250**	**201**	**947**	**769**	**3789**

Heavies

Time Per	NORTH Grosvenor Cr L	T	R	WEST Carlton Cr L	T	R	SOUTH Smith St L	T	R	EAST Longport St L	T	R	TOT
1600 - 1615	0	0	0	0	0	0	0	0	0	0	3	0	**3**
1615 - 1630	0	0	0	0	1	0	1	0	0	0	3	0	**5**
1630 - 1645	0	0	0	0	2	0	0	0	0	1	4	0	**7**
1645 - 1700	0	0	0	0	1	0	0	0	0	0	2	0	**3**
1700 - 1715	0	0	0	0	0	0	0	0	0	0	1	0	**1**
1715 - 1730	0	0	0	0	0	0	0	0	0	0	2	0	**2**
1730 - 1745	0	0	0	0	1	0	0	0	0	0	1	0	**2**
1745 - 1800	0	0	0	0	0	0	0	0	0	0	1	0	**1**
Period End	**0**	**0**	**0**	**0**	**5**	**0**	**1**	**0**	**0**	**1**	**17**	**0**	**24**

Lights

Peak Time	NORTH Grosvenor Cr L	T	R	WEST Carlton Cr L	T	R	SOUTH Smith St L	T	R	EAST Longport St L	T	R	TOT
1600 - 1700	187	68	36	64	313	16	13	48	109	102	515	378	**1849**
1615 - 1715	199	70	35	65	335	15	12	56	103	102	501	390	**1883**
1630 - 1730	195	78	34	64	343	19	6	60	107	105	479	389	**1879**
1645 - 1745	208	96	33	67	360	23	7	65	121	99	466	389	**1934**
1700 - 1800	222	101	23	59	369	21	5	77	141	99	432	391	**1940**
PEAK HOUR	**222**	**101**	**23**	**59**	**369**	**21**	**5**	**77**	**141**	**99**	**432**	**391**	**1940**

Heavies

Peak Time	NORTH Grosvenor Cr L	T	R	WEST Carlton Cr L	T	R	SOUTH Smith St L	T	R	EAST Longport St L	T	R	TOT
1600 - 1700	0	0	0	0	4	0	1	0	0	1	12	0	**18**
1615 - 1715	0	0	0	0	4	0	1	0	0	1	10	0	**16**
1630 - 1730	0	0	0	0	3	0	0	0	0	1	9	0	**13**
1645 - 1745	0	0	0	0	2	0	0	0	0	0	6	0	**8**
1700 - 1800	0	0	0	0	1	0	0	0	0	0	5	0	**6**
PEAK HOUR	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**6**

Combined

Time Per	NORTH Grosvenor Cr L	T	R	WEST Carlton Cr L	T	R	SOUTH Smith St L	T	R	EAST Longport St L	T	R	TOT
1600 - 1615	48	21	9	14	70	3	2	10	30	24	137	88	**456**
1615 - 1630	52	19	10	23	87	3	7	13	32	27	126	91	**490**
1630 - 1645	41	11	5	13	71	3	2	16	27	29	133	100	**451**
1645 - 1700	46	17	12	14	89	7	3	9	20	23	131	99	**470**
1700 - 1715	60	23	8	15	92	2	1	18	24	24	121	100	**488**
1715 - 1730	48	27	9	22	94	7	0	17	36	30	103	90	**483**
1730 - 1745	54	29	4	16	87	7	3	21	41	22	117	100	**501**
1745 - 1800	60	22	2	6	97	5	1	21	40	23	96	101	**474**
Period End	**409**	**169**	**59**	**123**	**687**	**37**	**19**	**125**	**250**	**202**	**964**	**769**	**3813**

Peds

Time Per	NORTH Grosvenor Cr UNCLASSIFIED	WEST Carlton Cr UNCLASSIFIED	SOUTH Smith St UNCLASSIFIED	EAST Longport St UNCLASSIFIED	TOT
1600 - 1615	0	0	1	1	**2**
1615 - 1630	0	0	3	1	**4**
1630 - 1645	0	0	0	1	**1**
1645 - 1700	0	1	1	0	**2**
1700 - 1715		0	0	3	**3**
1715 - 1730	0	1	4	0	**5**
1730 - 1745	0	2	1	0	**3**
1745 - 1800	0	1	4	0	**5**
Period End	**0**	**5**	**14**	**6**	**25**

Combined

Peak Time	NORTH Grosvenor Cr L	T	R	WEST Carlton Cr L	T	R	SOUTH Smith St L	T	R	EAST Longport St L	T	R	TOT
1600 - 1700	187	68	36	64	317	16	14	48	109	103	527	378	**1867**
1615 - 1715	199	70	35	65	339	15	13	56	103	103	511	390	**1899**
1630 - 1730	195	78	34	64	346	19	6	60	107	106	488	389	**1892**
1645 - 1745	208	96	33	67	362	23	7	65	121	99	472	389	**1942**
1700 - 1800	222	101	23	59	370	21	5	77	141	99	437	391	**1946**
PEAK HOUR	**222**	**101**	**23**	**59**	**370**	**21**	**5**	**77**	**141**	**99**	**437**	**391**	**1946**

Peds

Peak Per	NORTH Grosvenor Cr UNCLASSIFIED	WEST Carlton Cr UNCLASSIFIED	SOUTH Smith St UNCLASSIFIED	EAST Longport St UNCLASSIFIED	TOT
1600 - 1700	0	1	5	3	**9**
1615 - 1715	0	1	4	5	**10**
1630 - 1730	0	2	5	4	**11**
1645 - 1745	0	4	6	3	**13**
1700 - 1800	0	4	9	3	**16**
PEAK HR	**0**	**4**	**9**	**3**	**16**

R.O.A.R DATA

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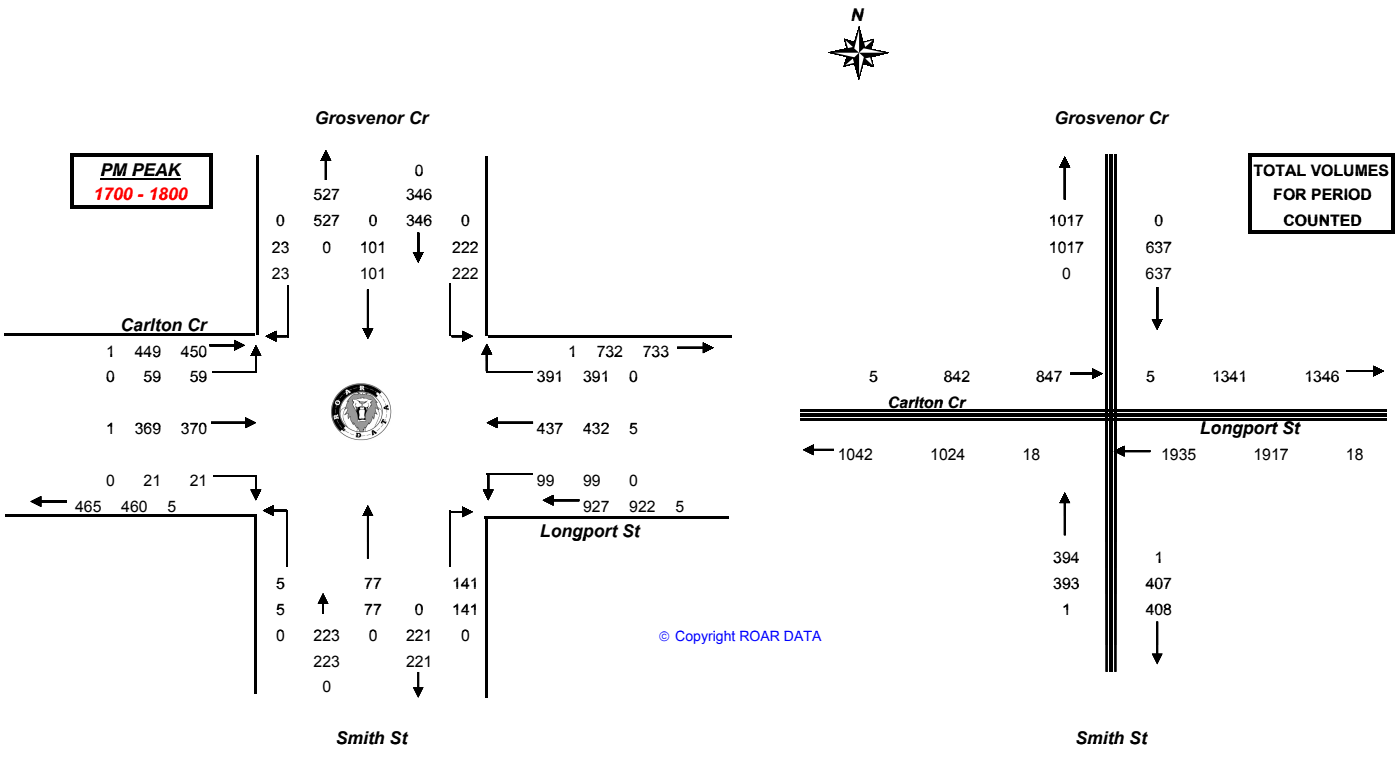
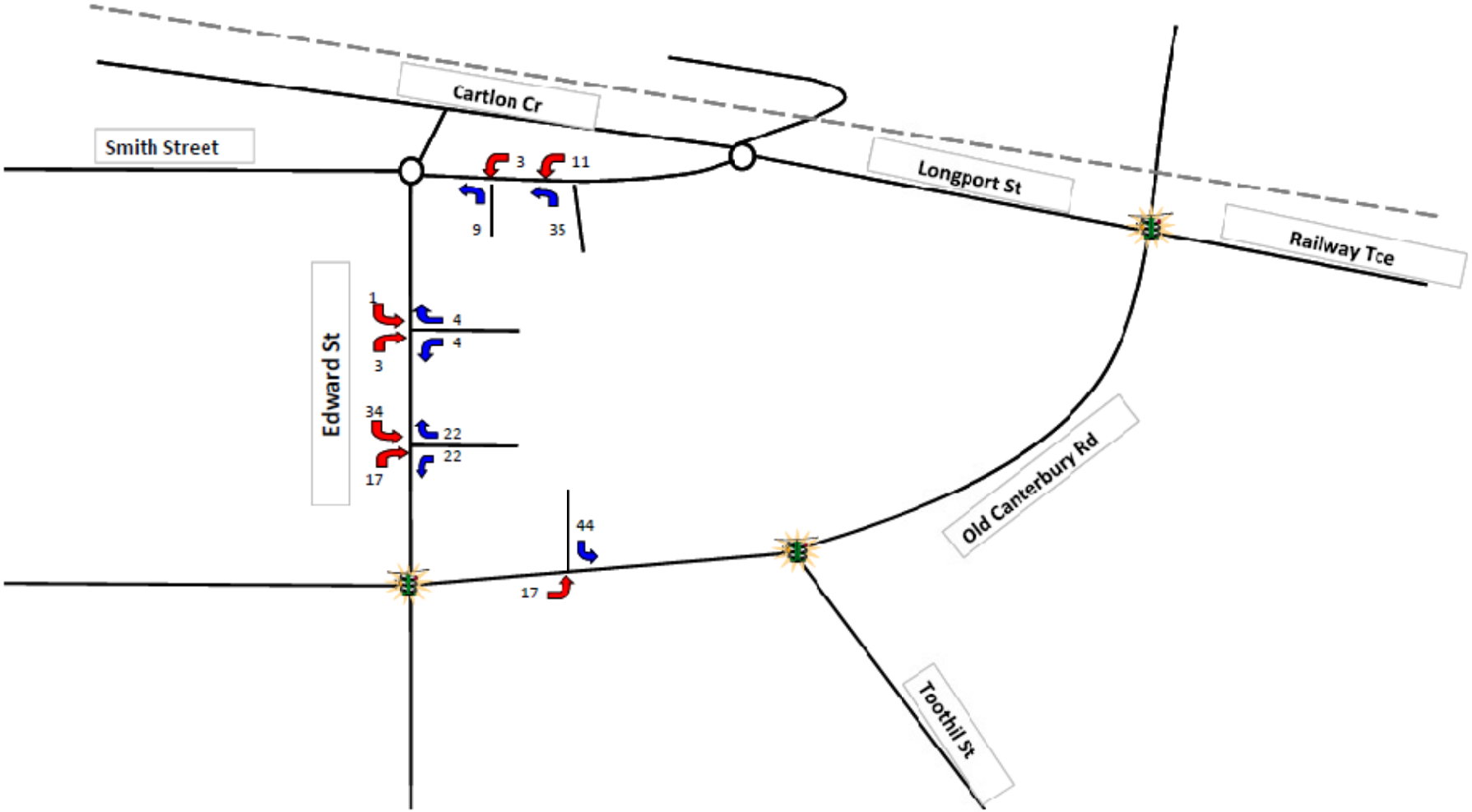


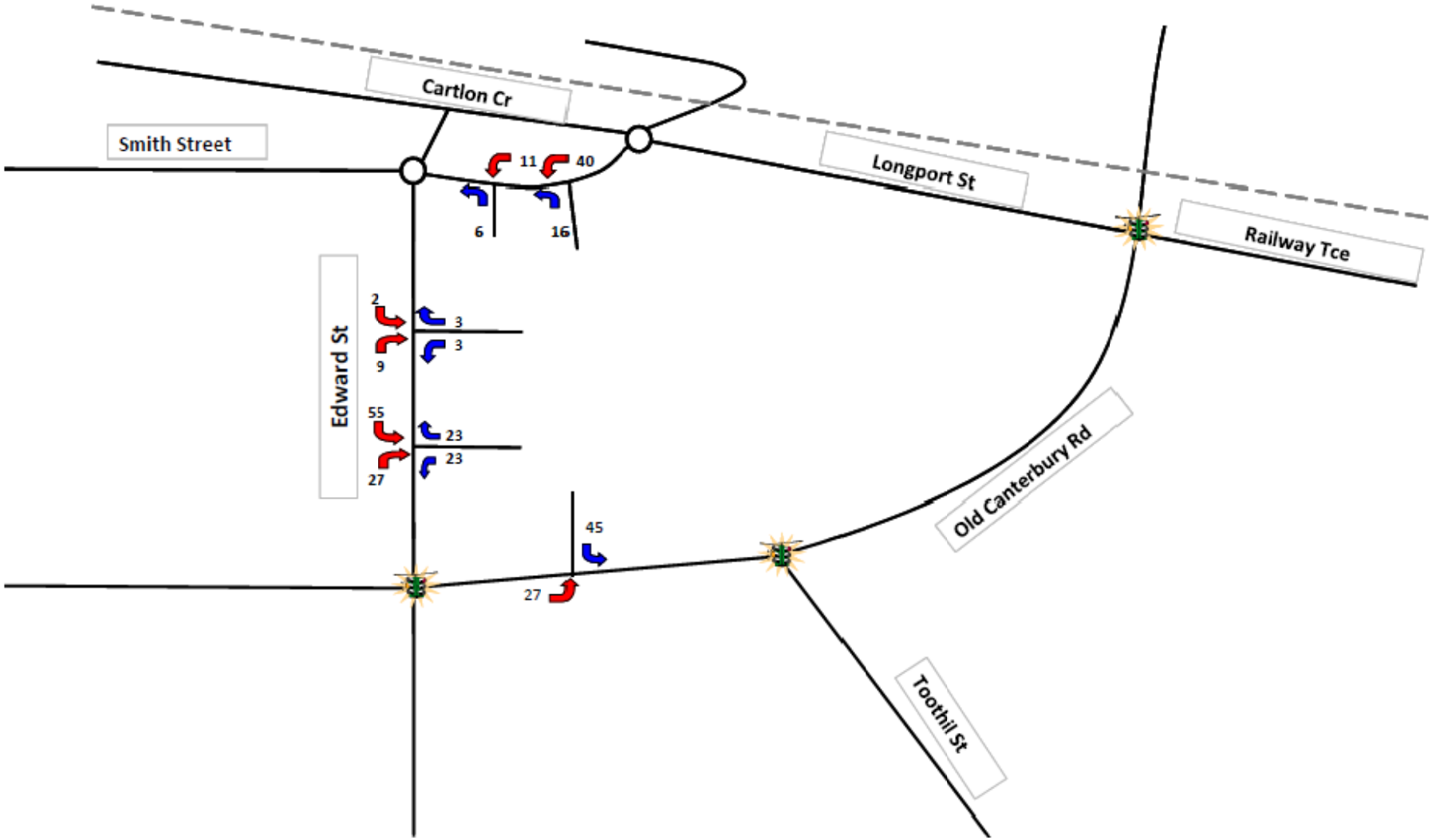
Appendix B

Forecast Vehicle Turning Movements into/out of Summer Hill Flour Mill

Allied Mills Traffic Generation - AM Peak (8am - 9am)



Allied Mills Traffic Generation - PM Peak (4pm - 5pm)



Appendix C

SIDRA Intersection Results

MOVEMENT SUMMARY

Site: AM Existing

Edward St - Smth St
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Edward Street											
1	L	57	0.0	0.064	8.6	LOS A	0.2	1.7	0.19	0.62	48.1
2	T	3	0.0	0.117	13.6	LOS A	0.5	3.8	0.59	0.78	43.2
3	R	45	0.0	0.118	15.0	LOS B	0.5	3.8	0.59	0.86	42.5
Approach		105	0.0	0.118	11.5	LOS B	0.5	3.8	0.37	0.73	45.4
East: Smith Street (East)											
4	L	21	0.0	0.054	9.7	LOS A	0.5	3.5	0.50	0.47	48.7
5	T	80	1.3	0.054	1.5	LOS A	0.5	3.5	0.50	0.00	50.7
6	R	1	0.0	0.053	9.8	LOS A	0.5	3.5	0.50	0.84	48.8
Approach		102	1.0	0.054	3.3	LOS A	0.5	3.5	0.50	0.11	50.3
North: Chapman Street											
7	L	2	0.0	0.003	9.9	LOS A	0.0	0.1	0.40	0.62	47.2
8	T	1	0.0	0.005	12.9	LOS A	0.0	0.2	0.57	0.64	44.0
9	R	1	0.0	0.005	14.1	LOS A	0.0	0.2	0.57	0.72	43.3
Approach		4	0.0	0.005	11.7	LOS A	0.0	0.2	0.48	0.65	45.4
West: Smith Street (West)											
10	L	2	0.0	0.039	8.2	LOS A	0.0	0.0	0.00	1.07	49.0
11	T	349	0.0	0.194	0.4	LOS A	1.5	10.7	0.20	0.00	56.0
12	R	69	0.0	0.195	8.7	LOS A	1.5	10.7	0.25	0.84	48.9
Approach		421	0.0	0.195	1.8	LOS A	1.5	10.7	0.21	0.14	54.6
All Vehicles		633	0.2	0.195	3.7	NA	1.5	10.7	0.28	0.24	52.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: PM Existing

Edward St - Smth St
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Edward Street											
1	L	89	0.0	0.104	9.3	LOS A	0.4	3.0	0.32	0.66	47.5
2	T	3	0.0	0.121	12.5	LOS A	0.6	4.0	0.56	0.75	44.1
3	R	52	0.0	0.120	13.9	LOS A	0.6	4.0	0.56	0.83	43.4
Approach		144	0.0	0.120	11.0	LOS A	0.6	4.0	0.41	0.72	45.9
East: Smith Street (East)											
4	L	55	0.0	0.125	9.0	LOS A	1.1	7.5	0.39	0.57	48.7
5	T	184	0.6	0.125	0.8	LOS A	1.1	7.5	0.39	0.00	52.5
6	R	1	0.0	0.132	9.1	LOS A	1.1	7.5	0.39	0.83	48.7
Approach		240	0.4	0.125	2.7	LOS A	1.1	7.5	0.39	0.13	51.6
North: Chapman Street											
7	L	2	0.0	0.003	9.0	LOS A	0.0	0.1	0.28	0.60	47.7
8	T	1	0.0	0.005	12.2	LOS A	0.0	0.1	0.55	0.62	44.7
9	R	1	0.0	0.005	13.4	LOS A	0.0	0.1	0.55	0.70	44.0
Approach		4	0.0	0.005	10.9	LOS A	0.0	0.1	0.42	0.63	46.0
West: Smith Street (West)											
10	L	5	0.0	0.023	8.2	LOS A	0.0	0.0	0.00	1.01	49.0
11	T	187	0.0	0.117	0.9	LOS A	0.9	6.3	0.30	0.00	54.1
12	R	47	0.0	0.117	9.3	LOS A	0.9	6.3	0.38	0.83	48.7
Approach		240	0.0	0.117	2.7	LOS A	0.9	6.3	0.31	0.19	52.9
All Vehicles		628	0.2	0.125	4.7	NA	1.1	7.5	0.36	0.29	50.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

SIDRA INTERSECTION

MOVEMENT SUMMARY

Site: AM (Existing + Mills) Aug

Edward St - Smth St-Chapman
AM (Existing+Mills Traffic)
August 2010
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Edward Street											
1	L	64	0.0	0.065	4.1	LOS A	0.3	2.3	0.29	0.39	44.4
2	T	3	0.0	0.042	2.7	LOS A	0.3	2.1	0.27	0.26	44.8
3	R	65	0.0	0.042	9.1	LOS A	0.3	2.1	0.27	0.59	41.0
Approach		133	0.0	0.065	6.5	LOS A	0.3	2.3	0.28	0.48	42.6
East: Smith Street (East)											
4	L	42	0.0	0.113	3.7	LOS A	0.8	6.0	0.26	0.38	44.8
5	T	95	1.2	0.113	2.7	LOS A	0.8	6.0	0.26	0.29	45.4
6	R	23	0.0	0.113	11.1	LOS A	0.8	6.0	0.26	0.87	40.9
Approach		160	0.7	0.113	4.2	LOS A	0.8	6.0	0.26	0.40	44.5
North: Chapman Street											
7	L	2	0.0	0.003	5.4	LOS A	0.0	0.1	0.58	0.42	42.9
8	T	1	0.0	0.002	4.8	LOS A	0.0	0.1	0.60	0.39	42.8
9	R	1	0.0	0.002	11.2	LOS A	0.0	0.1	0.60	0.63	40.6
Approach		4	0.0	0.003	6.7	LOS A	0.0	0.1	0.59	0.46	42.2
West: Smith Street (West)											
10	L	2	0.0	0.058	4.1	LOS A	0.2	1.7	0.27	0.42	44.8
11	T	349	0.0	0.232	2.7	LOS A	1.9	13.5	0.27	0.29	45.4
12	R	83	0.0	0.232	9.1	LOS A	1.9	13.5	0.27	0.79	41.8
Approach		435	0.0	0.232	3.9	LOS A	1.9	13.5	0.27	0.39	44.6
All Vehicles		732	0.2	0.232	4.5	LOS A	1.9	13.5	0.27	0.41	44.2

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: PM (Existing+Mills) Aug

Edward St - Smth St-Chapman
PM (Existing+Mills Traffic)
August 2010
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Edward Street											
1	L	94	0.0	0.083	6.2	LOS A	0.5	3.2	0.38	0.49	49.5
2	T	3	0.0	0.056	5.4	LOS A	0.4	2.8	0.41	0.41	49.3
3	R	66	0.0	0.056	12.2	LOS A	0.4	2.8	0.41	0.64	45.1
Approach		163	0.0	0.083	8.7	LOS A	0.5	3.2	0.39	0.55	47.5
East: Smith Street (East)											
4	L	81	0.0	0.206	5.8	LOS A	1.7	11.7	0.30	0.48	50.4
5	T	191	0.5	0.206	4.9	LOS A	1.7	11.7	0.30	0.40	51.0
6	R	23	0.0	0.207	14.0	LOS A	1.7	11.7	0.30	0.87	45.3
Approach		295	0.4	0.206	5.8	LOS A	1.7	11.7	0.30	0.46	50.3
North: Chapman Street											
7	L	2	0.0	0.002	6.7	LOS A	0.0	0.1	0.48	0.45	48.9
8	T	1	0.0	0.002	6.0	LOS A	0.0	0.1	0.50	0.40	49.0
9	R	1	0.0	0.002	12.8	LOS A	0.0	0.1	0.50	0.64	45.8
Approach		4	0.0	0.002	8.1	LOS A	0.0	0.1	0.49	0.49	48.0
West: Smith Street (West)											
10	L	5	0.0	0.039	6.0	LOS A	0.2	1.1	0.27	0.49	50.5
11	T	187	0.0	0.155	4.7	LOS A	1.2	8.6	0.26	0.38	51.2
12	R	95	0.0	0.155	11.6	LOS A	1.2	8.6	0.26	0.76	46.4
Approach		287	0.0	0.155	7.0	LOS A	1.2	8.6	0.26	0.51	49.4
All Vehicles		749	0.1	0.206	6.9	LOS A	1.7	11.7	0.31	0.50	49.3

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: AM (Existing Roundabout)

Edward St - Smth St-Chapman
AM (ExistingRoundabout (No McGill Traffic)
July 2010
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Edward Street											
1	L	57	0.0	0.049	3.9	LOS A	0.2	1.7	0.25	0.38	44.6
2	T	3	0.0	0.035	2.8	LOS A	0.2	1.7	0.27	0.26	44.8
3	R	45	0.0	0.035	9.2	LOS A	0.2	1.7	0.27	0.59	41.0
Approach		105	0.0	0.049	6.1	LOS A	0.2	1.7	0.26	0.46	42.9
East: Smith Street (East)											
4	L	21	0.0	0.089	3.6	LOS A	0.6	4.6	0.23	0.37	45.0
5	T	80	1.2	0.089	2.7	LOS A	0.6	4.6	0.23	0.27	45.6
6	R	26	0.0	0.089	11.0	LOS A	0.6	4.6	0.23	0.87	40.8
Approach		127	0.7	0.089	4.5	LOS A	0.6	4.6	0.23	0.41	44.3
North: Chapman Street											
7	L	2	0.0	0.002	5.3	LOS A	0.0	0.1	0.55	0.42	43.0
8	T	1	0.0	0.002	4.6	LOS A	0.0	0.1	0.57	0.38	42.9
9	R	1	0.0	0.002	11.0	LOS A	0.0	0.1	0.57	0.63	40.7
Approach		4	0.0	0.002	6.5	LOS A	0.0	0.1	0.56	0.46	42.3
West: Smith Street (West)											
10	L	2	0.0	0.055	4.0	LOS A	0.2	1.6	0.24	0.42	44.9
11	T	349	0.0	0.221	2.6	LOS A	1.8	12.6	0.24	0.28	45.6
12	R	69	0.0	0.221	9.0	LOS A	1.8	12.6	0.24	0.81	41.8
Approach		421	0.0	0.221	3.7	LOS A	1.8	12.6	0.24	0.37	44.9
All Vehicles		658	0.1	0.221	4.3	LOS A	1.8	12.6	0.24	0.39	44.4

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: PM (ExistingRoundabout)

Edward St - Smth St-Chapman
PM (ExistingRoundabout(No MiGill Traffic))
July 2010
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Edward Street											
1	L	89	0.0	0.079	6.2	LOS A	0.4	3.0	0.37	0.49	49.6
2	T	3	0.0	0.045	5.4	LOS A	0.3	2.2	0.39	0.41	49.4
3	R	52	0.0	0.045	12.2	LOS A	0.3	2.2	0.39	0.64	45.1
Approach		144	0.0	0.079	8.4	LOS A	0.4	3.0	0.38	0.54	47.8
East: Smith Street (East)											
4	L	55	0.0	0.174	5.5	LOS A	1.4	9.6	0.20	0.46	51.1
5	T	184	0.5	0.174	4.6	LOS A	1.4	9.6	0.20	0.37	51.9
6	R	27	0.0	0.174	13.7	LOS A	1.4	9.6	0.20	0.90	45.3
Approach		266	0.4	0.174	5.7	LOS A	1.4	9.6	0.20	0.45	50.9
North: Chapman Street											
7	L	2	0.0	0.002	6.5	LOS A	0.0	0.1	0.43	0.44	49.2
8	T	1	0.0	0.002	5.7	LOS A	0.0	0.1	0.46	0.39	49.3
9	R	1	0.0	0.002	12.6	LOS A	0.0	0.1	0.46	0.65	45.8
Approach		4	0.0	0.002	7.8	LOS A	0.0	0.1	0.45	0.48	48.3
West: Smith Street (West)											
10	L	5	0.0	0.032	6.0	LOS A	0.1	0.9	0.26	0.48	50.6
11	T	187	0.0	0.128	4.7	LOS A	1.0	6.9	0.24	0.38	51.5
12	R	47	0.0	0.128	11.5	LOS A	1.0	6.9	0.24	0.80	46.6
Approach		240	0.0	0.128	6.0	LOS A	1.0	6.9	0.24	0.47	50.4
All Vehicles		655	0.2	0.174	6.4	LOS A	1.4	9.6	0.25	0.48	50.0

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: AM Existing

Old Canterbury Rd & Toothil Street

Signals - Fixed Time Cycle Time = 90 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Toothil Street											
1	L	174	1.2	0.386	37.5	LOS C	8.2	57.7	0.88	0.79	26.3
3	R	285	0.7	0.632	40.0	LOS C	13.0	91.5	0.95	0.83	25.4
Approach		459	0.9	0.632	39.0	LOS C	13.0	91.5	0.92	0.82	25.8
East: Old Canterbury Rd (east)											
4	L	214	3.0	0.635	37.7	LOS C	14.3	102.0	0.93	0.84	26.6
5	T	454	1.6	0.635	31.1	LOS C	14.7	104.4	0.93	0.80	27.3
Approach		667	2.1	0.635	33.2	LOS C	14.7	104.4	0.93	0.81	27.0
West: Old Canterbury Rd (west)											
11	T	912	0.9	0.654	11.7	LOS A	22.6	159.5	0.69	0.64	37.3
12	R	398	0.8	0.654	29.0	LOS C	16.5	116.3	0.87	0.99	29.7
Approach		1309	0.9	0.654	17.0	LOS B	22.6	159.5	0.74	0.75	34.6
All Vehicles		2436	1.2	0.654	25.6	LOS B	22.6	159.5	0.83	0.78	30.3

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	3	22.8	LOS C	0.0	0.0	0.71	0.71
P7	Across W approach	15	24.9	LOS C	0.0	0.0	0.74	0.74
All Pedestrians		18	24.6				0.74	0.74

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: PM Existing

Old Canterbury Rd & Toothil Street

Signals - Fixed Time Cycle Time = 90 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Toothil Street											
1	L	297	1.1	0.690	41.8	LOS C	13.9	98.0	0.97	0.86	24.9
3	R	294	0.0	0.678	41.6	LOS C	13.6	95.5	0.97	0.85	24.9
Approach		591	0.5	0.690	41.7	LOS C	13.9	98.0	0.97	0.85	24.9
East: Old Canterbury Rd (east)											
4	L	255	0.0	0.707	24.5	LOS B	23.8	167.1	0.83	0.88	32.2
5	T	1138	0.5	0.707	18.1	LOS B	24.2	169.9	0.83	0.75	33.2
Approach		1393	0.4	0.707	19.2	LOS B	24.2	169.9	0.83	0.77	33.0
West: Old Canterbury Rd (west)											
11	T	552	0.8	0.434	7.9	LOS A	13.1	92.0	0.52	0.46	40.7
12	R	203	1.6	0.686	41.1	LOS C	10.5	74.8	1.00	0.98	25.1
Approach		755	1.0	0.686	16.8	LOS B	13.1	92.0	0.65	0.60	34.9
All Vehicles		2738	0.6	0.707	23.4	LOS B	24.2	169.9	0.81	0.74	31.3

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	4	10.3	LOS B	0.0	0.0	0.48	0.48
P7	Across W approach	7	25.7	LOS C	0.0	0.0	0.76	0.76
All Pedestrians		11	20.1				0.65	0.65

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: AM (Existing+McGill Traffic) Aug

Old Canterbury Rd - Toothil St
(Existing + McGill Traffic) Four Way Intersection
August AM Peak (90 sec cycle time)
Signals - Fixed Time Cycle Time = 90 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Toothil St (south)											
1	L	174	1.0	0.369	36.5	LOS C	8.0	56.8	0.87	0.79	26.6
3	R	285	1.0	0.754	44.2	LOS D	14.1	99.4	0.98	0.90	24.2
Approach		459	1.0	0.754	41.3	LOS C	14.1	99.4	0.94	0.86	25.0
East: Old Canterbury Rd (east)											
4	L	228	3.0	0.672	37.2	LOS C	14.8	105.6	0.88	0.84	26.7
5	T	476	2.0	0.672	31.4	LOS C	14.8	105.6	0.89	0.76	27.2
6	R	5	1.0	0.670	38.2	LOS C	14.5	103.3	0.89	0.87	27.0
Approach		709	2.3	0.672	33.3	LOS C	14.8	105.6	0.89	0.79	27.1
North: Acces Rd (north)											
7	L	27	1.0	0.076	34.8	LOS C	1.6	11.6	0.80	0.72	27.2
9	R	4	1.0	0.076	34.9	LOS C	1.6	11.6	0.80	0.72	27.2
Approach		32	1.0	0.076	34.8	LOS C	1.6	11.6	0.80	0.72	27.2
West: Old Canterbury Rd (west)											
10	L	6	0.0	0.738	13.8	LOS A	19.5	137.6	0.52	0.92	38.7
11	T	918	1.0	0.751	8.1	LOS A	19.5	137.6	0.53	0.49	40.4
12	R	425	1.0	0.751	33.0	LOS C	15.9	112.3	0.86	1.03	27.9
Approach		1349	1.0	0.751	16.0	LOS B	19.5	137.6	0.63	0.67	35.4
All Vehicles		2549	1.4	0.754	25.6	LOS B	19.5	137.6	0.76	0.74	30.4

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	3	28.0	LOS C	0.0	0.0	0.79	0.79
P5	Across N approach	32	26.5	LOS C	0.1	0.1	0.77	0.77
P7	Across W approach	16	32.9	LOS D	0.0	0.0	0.86	0.86
All Pedestrians		51	28.6				0.80	0.80

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: PM (Existing+McGill Traffic) Aug

Old Canterbury Rd - Toothil St
(Existing + McGill Traffic) Four Way Intersection
Aug PM Peak (90 sec cycle time)
Signals - Fixed Time Cycle Time = 90 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Toothil St (south)											
1	L	297	1.0	0.690	41.8	LOS C	13.9	97.9	0.97	0.86	24.9
3	R	294	0.0	0.803	47.9	LOS D	15.0	105.3	1.00	0.93	23.2
Approach		591	0.5	0.803	44.9	LOS D	15.0	105.3	0.98	0.89	24.0
East: Old Canterbury Rd (east)											
4	L	283	0.0	0.798	24.1	LOS B	25.3	177.2	0.78	0.90	32.4
5	T	1168	0.0	0.797	17.8	LOS B	25.3	177.2	0.78	0.73	33.4
6	R	16	1.0	0.796	24.5	LOS B	24.7	172.8	0.78	0.94	32.7
Approach		1467	0.0	0.797	19.1	LOS B	25.3	177.2	0.78	0.77	33.2
North: Acces Rd (north)											
7	L	25	1.0	0.087	39.3	LOS C	1.6	11.3	0.86	0.72	25.7
9	R	3	1.0	0.087	39.5	LOS C	1.6	11.3	0.86	0.72	25.6
Approach		28	1.0	0.087	39.3	LOS C	1.6	11.3	0.86	0.72	25.7
West: Old Canterbury Rd (west)											
10	L	20	0.0	0.471	10.9	LOS A	8.2	57.9	0.28	0.90	40.3
11	T	559	1.0	0.472	4.5	LOS A	8.2	57.9	0.28	0.25	44.3
12	R	217	2.0	0.810	48.5	LOS D	11.4	81.2	0.99	1.06	23.1
Approach		796	1.2	0.809	16.6	LOS B	11.4	81.2	0.47	0.49	35.3
All Vehicles		2882	0.5	0.809	23.9	LOS B	25.3	177.2	0.74	0.71	31.2

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	4	15.6	LOS B	0.0	0.0	0.59	0.59
P5	Across N approach	32	14.5	LOS B	0.0	0.0	0.57	0.57
P7	Across W approach	7	34.7	LOS D	0.0	0.0	0.88	0.88
All Pedestrians		43	17.8				0.62	0.62

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: AM (Existing+McGill+Mills Traffic) Aug

Old Canterbury Rd - Toothil St
(Existing + McGill+Mills Traffic) Four Way Intersection
Aug AM Peak (90 sec cycle time)
Signals - Fixed Time Cycle Time = 90 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Toothil St (south)											
1	L	178	1.0	0.377	36.6	LOS C	8.2	58.0	0.87	0.79	26.6
3	R	285	1.0	0.754	44.2	LOS D	14.1	99.4	0.98	0.90	24.2
Approach		463	1.0	0.754	41.3	LOS C	14.1	99.4	0.94	0.86	25.0
East: Old Canterbury Rd (east)											
4	L	228	3.0	0.714	39.2	LOS C	15.6	111.9	0.91	0.86	26.1
5	T	487	2.0	0.714	33.2	LOS C	15.6	111.9	0.92	0.81	26.5
6	R	5	1.0	0.713	40.0	LOS C	15.2	108.4	0.92	0.89	26.4
Approach		721	2.3	0.714	35.2	LOS C	15.6	111.9	0.92	0.83	26.4
North: Acces Rd (north)											
7	L	27	1.0	0.077	34.8	LOS C	1.6	11.6	0.80	0.72	27.2
9	R	4	1.0	0.077	34.9	LOS C	1.6	11.6	0.80	0.72	27.2
Approach		32	1.0	0.077	34.8	LOS C	1.6	11.6	0.80	0.72	27.2
West: Old Canterbury Rd (west)											
10	L	8	0.0	0.766	14.0	LOS A	21.1	149.0	0.55	0.92	38.6
11	T	952	1.0	0.777	8.5	LOS A	21.1	149.0	0.56	0.52	40.0
12	R	444	1.0	0.777	34.7	LOS C	16.9	119.7	0.88	1.05	27.3
Approach		1404	1.0	0.777	16.8	LOS B	21.1	149.0	0.66	0.69	34.9
All Vehicles		2620	1.4	0.777	26.4	LOS B	21.1	149.0	0.78	0.76	30.0

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	3	28.8	LOS C	0.0	0.0	0.80	0.80
P5	Across N approach	32	27.2	LOS C	0.1	0.1	0.78	0.78
P7	Across W approach	16	32.9	LOS D	0.0	0.0	0.86	0.86
All Pedestrians		51	29.1				0.80	0.80

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: PM (Existing+McGill+Mills Traffic) Aug

Old Canterbury Rd - Toothil St
(Existing + McGill+Mills Traffic) Four Way Intersection
August PM Peak (90 sec cycle time)
Signals - Fixed Time Cycle Time = 90 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Toothil St (south)											
1	L	306	1.0	0.712	42.5	LOS C	14.4	101.7	0.98	0.87	24.7
3	R	294	0.0	0.803	47.9	LOS D	15.0	105.3	1.00	0.93	23.2
Approach		600	0.5	0.803	45.1	LOS D	15.0	105.3	0.99	0.90	23.9
East: Old Canterbury Rd (east)											
4	L	312	0.0	0.832	27.3	LOS B	28.4	198.6	0.83	0.92	30.9
5	T	1165	0.0	0.832	21.0	LOS B	28.4	198.6	0.83	0.80	31.6
6	R	16	1.0	0.840	27.7	LOS B	27.6	193.2	0.83	0.97	31.2
Approach		1493	0.0	0.832	22.4	LOS B	28.4	198.6	0.83	0.83	31.5
North: Acces Rd (north)											
7	L	25	1.0	0.087	39.3	LOS C	1.6	11.3	0.86	0.72	25.7
9	R	3	1.0	0.088	39.5	LOS C	1.6	11.3	0.86	0.72	25.6
Approach		28	1.0	0.087	39.4	LOS C	1.6	11.3	0.86	0.72	25.7
West: Old Canterbury Rd (west)											
10	L	20	0.0	0.501	11.0	LOS A	8.9	62.8	0.29	0.90	40.2
11	T	594	1.0	0.501	4.6	LOS A	8.9	62.8	0.29	0.26	44.1
12	R	237	2.0	0.836	51.3	LOS D	12.4	88.3	1.00	1.09	22.4
Approach		851	1.3	0.836	17.8	LOS B	12.4	88.3	0.49	0.51	34.6
All Vehicles		2972	0.5	0.836	25.8	LOS B	28.4	198.6	0.77	0.75	30.3

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	4	16.2	LOS B	0.0	0.0	0.60	0.60
P5	Across N approach	32	15.0	LOS B	0.0	0.0	0.58	0.58
P7	Across W approach	7	34.7	LOS D	0.0	0.0	0.88	0.88
All Pedestrians		43	18.3				0.63	0.63

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: AM Existing

Old Canterbury Rd - Edward St
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Weston Street											
1	L	6	0.0	0.088	40.8	LOS C	0.3	2.1	0.85	0.86	25.3
2	T	2	0.0	0.088	39.5	LOS C	0.3	2.1	0.85	0.92	25.4
3	R	3	0.0	0.211	244.6	LOS F	0.7	4.6	0.99	1.00	7.2
Approach		12	0.0	0.209	96.1	LOS F	0.7	4.6	0.89	0.91	15.1
East: Old Canterbury Rd (east)											
4	L	1	0.0	0.263	6.4	LOS A	0.0	0.0	0.00	0.92	43.3
5	T	542	1.4	0.237	2.7	LOS A	2.6	18.1	0.16	0.00	46.2
6	R	51	0.0	0.237	24.0	LOS B	2.6	18.1	1.00	1.04	32.7
Approach		594	1.2	0.237	4.6	LOS B	2.6	18.1	0.23	0.09	44.6
North: Edward Street											
7	L	94	0.0	0.498	32.6	LOS C	2.3	16.3	0.91	1.06	28.0
8	T	1	0.0	0.132	59.2	LOS E	0.4	3.1	0.94	0.97	20.4
9	R	6	16.7	0.132	60.9	LOS E	0.4	3.1	0.94	0.98	20.4
Approach		101	1.0	0.497	34.6	LOS E	2.3	16.3	0.92	1.06	27.3
West: Old Canterbury Rd (west)											
10	L	32	0.0	0.343	6.4	LOS A	0.0	0.0	0.00	0.90	43.3
11	T	1287	0.8	0.342	2.3	LOS A	5.8	40.5	0.39	0.00	45.4
12	R	3	0.0	0.351	10.8	LOS A	5.8	40.5	0.77	1.00	41.6
Approach		1322	0.8	0.342	2.4	LOS A	5.8	40.5	0.38	0.02	45.3
All Vehicles		2028	0.9	0.497	5.2	NA	5.8	40.5	0.37	0.10	43.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: PM Existing

Old Canterbury Rd - Edward St
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Weston Street											
1	L	6	0.0	0.094	48.8	LOS D	0.3	2.2	0.93	0.97	23.0
2	T	1	0.0	0.096	47.5	LOS D	0.3	2.2	0.93	0.96	23.1
3	R	2	0.0	0.234	407.2	LOS F	0.7	5.0	0.99	1.00	4.6
Approach		9	0.0	0.232	128.3	LOS F	0.7	5.0	0.94	0.98	12.2
East: Old Canterbury Rd (east)											
4	L	14	0.0	0.415	6.4	LOS A	0.0	0.0	0.00	0.91	43.3
5	T	1255	0.5	0.417	2.8	LOS A	7.4	52.0	0.33	0.00	45.5
6	R	121	0.0	0.417	14.2	LOS A	7.4	52.0	0.91	1.12	38.9
Approach		1389	0.5	0.417	3.9	LOS A	7.4	52.0	0.38	0.11	44.8
North: Edward Street											
7	L	88	0.0	0.183	13.6	LOS A	0.8	5.5	0.62	0.85	37.6
8	T	1	0.0	0.175	19.7	LOS B	0.8	5.5	0.68	0.83	33.6
9	R	14	0.0	0.182	49.2	LOS D	0.6	4.0	0.93	0.98	22.9
Approach		103	0.0	0.183	18.4	LOS D	0.8	5.5	0.66	0.87	34.6
West: Old Canterbury Rd (west)											
10	L	35	0.0	0.194	6.4	LOS A	0.0	0.0	0.00	0.88	43.3
11	T	673	0.9	0.194	7.8	LOS A	5.7	40.0	0.49	0.00	40.8
12	R	6	0.0	0.191	22.3	LOS B	5.7	40.0	1.00	1.01	34.2
Approach		714	0.9	0.194	7.9	LOS B	5.7	40.0	0.47	0.05	40.8
All Vehicles		2216	0.6	0.417	6.4	NA	7.4	52.0	0.43	0.13	42.4

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: AM (Existing + McGill) Aug

Old Canterbury Rd - Edward St
AM (Existing + McGill Traffic)
August 2010
Signals - Fixed Time Cycle Time = 50 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Weston Street											
1	L	6	0.0	0.011	18.9	LOS B	0.2	1.2	0.70	0.65	34.3
2	T	2	0.0	0.011	12.6	LOS A	0.2	1.2	0.70	0.45	36.0
3	R	3	0.0	0.011	19.0	LOS B	0.1	1.0	0.70	0.68	34.8
Approach		12	0.0	0.011	17.8	LOS B	0.2	1.2	0.70	0.62	34.7
East: Old Canterbury Rd (east)											
4	L	1	0.0	0.478	17.4	LOS B	9.1	64.5	0.76	0.88	36.8
5	T	561	1.4	0.489	12.8	LOS A	9.1	64.5	0.80	0.68	36.5
6	R	51	0.0	0.489	24.3	LOS B	5.8	40.9	0.89	0.82	32.6
Approach		613	1.2	0.489	13.7	LOS A	9.1	64.5	0.80	0.69	36.1
North: Edward Street											
7	L	94	0.0	0.158	19.8	LOS B	2.5	17.5	0.75	0.74	33.8
8	T	1	0.0	0.014	12.6	LOS A	0.2	1.4	0.70	0.48	35.6
9	R	6	5.3	0.014	19.2	LOS B	0.2	1.4	0.70	0.67	34.4
Approach		101	0.3	0.158	19.7	LOS B	2.5	17.5	0.75	0.73	33.9
West: Old Canterbury Rd (west)											
10	L	32	0.0	0.780	22.6	LOS B	17.1	120.6	0.92	0.99	33.9
11	T	1294	0.8	0.783	16.2	LOS B	17.1	120.6	0.92	0.91	34.3
12	R	3	0.0	0.774	22.6	LOS B	17.0	119.9	0.92	0.99	33.9
Approach		1328	0.8	0.783	16.4	LOS B	17.1	120.6	0.92	0.91	34.2
All Vehicles		2054	0.9	0.783	15.7	LOS B	17.1	120.6	0.87	0.84	34.8

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	21	14.4	LOS B	0.0	0.0	0.76	0.76
P3	Across E approach	21	19.4	LOS B	0.0	0.0	0.88	0.88
P5	Across N approach	21	14.4	LOS B	0.0	0.0	0.76	0.76
P7	Across W approach	21	19.4	LOS B	0.0	0.0	0.88	0.88
All Pedestrians		84	16.9				0.82	0.82

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: PM (Existing + McGill) Aug

Old Canterbury Rd - Edward St
PM (Existing + McGill Traffic)
August 2010
Signals - Fixed Time Cycle Time = 60 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Weston Street											
1	L	6	0.0	0.013	23.9	LOS B	0.2	1.5	0.76	0.65	31.7
2	T	1	0.0	0.008	18.3	LOS B	0.1	0.8	0.77	0.50	32.4
3	R	2	0.0	0.008	24.8	LOS B	0.1	0.8	0.77	0.65	31.7
Approach		9	0.0	0.013	23.5	LOS B	0.2	1.5	0.76	0.64	31.8
East: Old Canterbury Rd (east)											
4	L	14	0.0	0.802	21.7	LOS B	22.6	158.9	0.87	0.97	34.4
5	T	1269	0.6	0.795	16.4	LOS B	22.6	158.9	0.88	0.88	34.1
6	R	121	0.0	0.796	24.7	LOS B	17.8	125.1	0.89	1.00	32.4
Approach		1404	0.5	0.795	17.1	LOS B	22.6	158.9	0.88	0.89	34.0
North: Edward Street											
7	L	88	0.0	0.179	25.1	LOS B	3.0	20.9	0.81	0.75	31.2
8	T	1	0.0	0.034	17.8	LOS B	0.5	3.7	0.76	0.54	32.4
9	R	14	3.4	0.034	24.3	LOS B	0.5	3.7	0.76	0.69	31.6
Approach		103	0.5	0.179	24.9	LOS B	3.0	20.9	0.80	0.74	31.2
West: Old Canterbury Rd (west)											
10	L	35	0.0	0.376	15.3	LOS B	8.3	58.9	0.62	0.87	37.8
11	T	701	1.5	0.376	9.1	LOS A	8.3	58.9	0.63	0.55	39.4
12	R	6	0.0	0.376	15.9	LOS B	8.0	56.6	0.64	0.88	37.5
Approach		742	1.4	0.376	9.5	LOS A	8.3	58.9	0.63	0.56	39.3
All Vehicles		2259	0.8	0.795	15.0	LOS B	22.6	158.9	0.79	0.77	35.4

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	21	12.0	LOS B	0.0	0.0	0.63	0.63
P3	Across E approach	21	24.3	LOS C	0.0	0.0	0.90	0.90
P5	Across N approach	21	12.0	LOS B	0.0	0.0	0.63	0.63
P7	Across W approach	21	24.3	LOS C	0.0	0.0	0.90	0.90
All Pedestrians		84	18.2				0.77	0.77

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Old Canterbury Rd - Edward St
AM (Existing + McGill +Mills Traffic)
August 2010
Signals - Fixed Time Cycle Time = 50 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Weston Street											
1	L	6	0.0	0.011	18.9	LOS B	0.2	1.2	0.70	0.65	34.4
2	T	2	0.0	0.011	13.3	LOS A	0.2	1.2	0.72	0.48	35.4
3	R	3	0.0	0.011	19.8	LOS B	0.1	1.0	0.72	0.67	34.3
Approach		12	0.0	0.011	18.1	LOS B	0.2	1.2	0.71	0.63	34.5
East: Old Canterbury Rd (east)											
4	L	1	0.0	0.598	17.8	LOS B	10.4	74.0	0.79	0.88	36.5
5	T	561	1.4	0.556	13.0	LOS A	10.4	74.0	0.82	0.70	36.3
6	R	66	0.0	0.557	27.5	LOS B	5.1	35.9	0.95	0.82	30.8
Approach		628	1.2	0.556	14.5	LOS B	10.4	74.0	0.83	0.72	35.6
North: Edward Street											
7	L	113	0.0	0.190	20.0	LOS B	3.0	20.9	0.76	0.75	33.7
8	T	1	0.0	0.066	13.0	LOS A	0.9	6.7	0.72	0.54	35.2
9	R	33	5.3	0.066	19.6	LOS B	0.9	6.7	0.72	0.71	34.1
Approach		146	1.2	0.190	19.9	LOS B	3.0	20.9	0.75	0.74	33.8
West: Old Canterbury Rd (west)											
10	L	37	0.0	0.797	23.1	LOS B	17.6	124.2	0.92	1.00	33.6
11	T	1306	0.8	0.794	16.7	LOS B	17.6	124.2	0.92	0.93	33.9
12	R	3	0.0	0.797	23.2	LOS B	17.5	123.5	0.92	1.00	33.6
Approach		1346	0.8	0.794	16.9	LOS B	17.6	124.2	0.92	0.93	33.9
All Vehicles		2133	0.9	0.794	16.4	LOS B	17.6	124.2	0.88	0.85	34.4

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	21	14.4	LOS B	0.0	0.0	0.76	0.76
P3	Across E approach	21	19.4	LOS B	0.0	0.0	0.88	0.88
P5	Across N approach	21	14.4	LOS B	0.0	0.0	0.76	0.76
P7	Across W approach	21	19.4	LOS B	0.0	0.0	0.88	0.88
All Pedestrians		84	16.9				0.82	0.82

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Old Canterbury Rd - Edward St
PM (Existing + McGill + Mills Traffic)
August 2010
Signals - Fixed Time Cycle Time = 60 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Weston Street											
1	L	6	0.0	0.013	23.9	LOS B	0.2	1.5	0.76	0.65	31.7
2	T	1	0.0	0.008	18.4	LOS B	0.1	0.8	0.77	0.50	32.4
3	R	2	0.0	0.008	24.8	LOS B	0.1	0.8	0.77	0.65	31.7
Approach		9	0.0	0.013	23.5	LOS B	0.2	1.5	0.76	0.64	31.8
East: Old Canterbury Rd (east)											
4	L	14	0.0	0.855	27.6	LOS B	28.9	203.2	0.93	1.07	31.4
5	T	1269	0.6	0.863	22.9	LOS B	28.9	203.2	0.94	1.03	30.7
6	R	156	0.0	0.864	33.3	LOS C	20.0	140.9	0.96	1.12	28.5
Approach		1439	0.5	0.863	24.1	LOS B	28.9	203.2	0.94	1.04	30.4
North: Edward Street											
7	L	106	0.0	0.215	25.3	LOS B	3.6	25.0	0.82	0.76	31.1
8	T	1	0.0	0.074	18.1	LOS B	1.1	7.9	0.78	0.57	32.2
9	R	31	3.4	0.074	24.6	LOS B	1.1	7.9	0.78	0.71	31.4
Approach		138	0.8	0.215	25.1	LOS B	3.6	25.0	0.81	0.75	31.1
West: Old Canterbury Rd (west)											
10	L	44	0.0	0.393	15.4	LOS B	8.7	61.5	0.63	0.87	37.7
11	T	720	1.5	0.392	9.5	LOS A	8.7	61.5	0.65	0.56	39.0
12	R	6	0.0	0.394	16.6	LOS B	8.5	60.0	0.66	0.88	37.1
Approach		771	1.4	0.392	9.9	LOS A	8.7	61.5	0.65	0.58	38.9
All Vehicles		2357	0.8	0.863	19.5	LOS B	28.9	203.2	0.84	0.87	32.8

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	21	12.0	LOS B	0.0	0.0	0.63	0.63
P3	Across E approach	21	24.3	LOS C	0.0	0.0	0.90	0.90
P5	Across N approach	21	12.0	LOS B	0.0	0.0	0.63	0.63
P7	Across W approach	21	24.3	LOS C	0.0	0.0	0.90	0.90
All Pedestrians		84	18.2				0.77	0.77

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: AM Existing

Railway Tce - Old Canterbury Rd
Signals - Fixed Time Cycle Time = 120 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Old Canterbury Rd (South)											
1	L	70	1.4	0.196	26.9	LOS B	7.5	52.9	0.63	0.81	30.9
2	T	976	0.4	0.982	68.2	LOS E	71.5	502.1	0.96	1.15	18.4
Approach		1046	0.5	0.982	65.4	LOS E	71.5	502.1	0.94	1.12	18.9
East: Railway Tce											
4	L	25	12.0	0.866	43.6	LOS D	43.5	307.7	0.97	0.97	25.4
5	T	738	0.8	0.862	36.9	LOS C	43.5	307.7	0.97	0.94	25.4
Approach		763	1.2	0.862	37.1	LOS C	43.5	307.7	0.97	0.94	25.4
North: Old Canterbury Rd (North)											
7	L	140	2.1	0.439	29.9	LOS C	16.2	115.3	0.73	0.85	29.7
8	T	629	1.6	0.439	23.4	LOS B	16.5	117.0	0.73	0.64	30.7
Approach		769	1.7	0.439	24.6	LOS B	16.5	117.0	0.73	0.67	30.5
West: Longport Street											
10	L	152	0.0	0.199	26.9	LOS B	7.5	52.5	0.63	0.76	30.4
11	T	908	0.1	0.996	80.7	LOS F	76.4	535.4	0.99	1.25	16.5
Approach		1060	0.1	0.996	73.0	LOS F	76.4	535.4	0.94	1.18	17.7
All Vehicles		3638	0.8	0.996	53.1	LOS D	76.4	535.4	0.90	1.01	21.3

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	23	23.4	LOS C	0.0	0.0	0.63	0.63
P3	Across E approach	11	20.4	LOS C	0.0	0.0	0.58	0.58
P5	Across N approach	2	21.6	LOS C	0.0	0.0	0.60	0.60
P7	Across W approach	5	23.4	LOS C	0.0	0.0	0.63	0.63
All Pedestrians		41	22.5				0.61	0.61

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: PM Existing

Railway Tce - Old Canterbury Rd
Signals - Fixed Time Cycle Time = 120 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Old Canterbury Rd (South)											
1	L	120	0.8	0.173	31.7	LOS C	6.3	44.3	0.69	0.76	28.4
2	T	668	0.0	0.867	43.2	LOS D	39.7	277.6	0.99	0.98	23.6
Approach		788	0.1	0.867	41.4	LOS C	39.7	277.6	0.94	0.94	24.2
East: Railway Tce											
4	L	66	6.1	0.867	38.2	LOS C	48.3	341.2	0.95	0.97	27.0
5	T	812	0.6	0.867	31.7	LOS C	48.3	341.2	0.95	0.92	27.2
Approach		878	1.0	0.867	32.2	LOS C	48.3	341.2	0.95	0.92	27.1
North: Old Canterbury Rd (North)											
7	L	76	5.3	0.859	49.0	LOS D	38.4	270.4	0.99	0.97	23.7
8	T	1229	0.2	0.860	42.3	LOS C	38.7	271.3	0.99	0.96	23.8
Approach		1305	0.5	0.860	42.7	LOS D	38.7	271.3	0.99	0.97	23.8
West: Longport Street											
10	L	84	0.0	0.126	21.7	LOS B	5.0	35.2	0.54	0.76	33.1
11	T	688	0.1	0.632	21.1	LOS B	27.1	189.6	0.75	0.68	31.9
Approach		772	0.1	0.632	21.2	LOS B	27.1	189.6	0.73	0.69	32.0
All Vehicles		3743	0.5	0.867	35.5	LOS C	48.3	341.2	0.92	0.89	26.0

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	23	18.7	LOS B	0.0	0.0	0.56	0.56
P3	Across E approach	11	25.4	LOS C	0.0	0.0	0.65	0.65
P5	Across N approach	2	17.1	LOS B	0.0	0.0	0.53	0.53
P7	Across W approach	5	28.7	LOS C	0.0	0.0	0.69	0.69
All Pedestrians		41	21.6				0.60	0.60

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: AM (Existing+McGill) Aug

Railway Tce - Old Canterbury Rd
AM (Existing + McGill Traffic)
August 2010
Signals - Fixed Time Cycle Time = 120 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Old Canterbury Rd (South)											
1	L	70	1.4	0.205	26.4	LOS B	7.9	55.4	0.63	0.81	31.1
2	T	1044	0.4	1.027	92.2	LOS F	87.8	617.1	0.96	1.29	15.1
Approach		1114	0.5	1.027	88.1	LOS F	87.8	617.1	0.94	1.26	15.6
East: Railway Tce											
4	L	31	12.0	0.895	49.8	LOS D	48.1	340.3	1.00	1.01	23.6
5	T	745	0.8	0.894	43.1	LOS D	48.1	340.3	1.00	1.01	23.6
Approach		776	1.3	0.894	43.3	LOS D	48.1	340.3	1.00	1.01	23.6
North: Old Canterbury Rd (North)											
7	L	140	2.1	0.437	29.3	LOS C	16.2	115.5	0.72	0.85	29.9
8	T	640	1.6	0.437	22.8	LOS B	16.5	117.2	0.72	0.63	31.0
Approach		780	1.7	0.437	23.9	LOS B	16.5	117.2	0.72	0.67	30.8
West: Longport Street											
10	L	154	0.0	0.204	27.6	LOS B	7.6	53.5	0.64	0.76	30.1
11	T	913	0.1	1.021	96.8	LOS F	83.0	581.8	0.99	1.35	14.6
Approach		1067	0.1	1.021	86.8	LOS F	83.0	581.8	0.94	1.26	15.8
All Vehicles		3737	0.8	1.027	65.0	LOS E	87.8	617.1	0.91	1.08	19.0

Level of Service (Aver. Int. Delay): LOS E. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	23	24.1	LOS C	0.0	0.0	0.63	0.63
P3	Across E approach	11	19.8	LOS B	0.0	0.0	0.58	0.58
P5	Across N approach	2	22.2	LOS C	0.0	0.0	0.61	0.61
P7	Across W approach	5	22.8	LOS C	0.0	0.0	0.62	0.62
All Pedestrians		41	22.7				0.61	0.61

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: PM (Existing+McGill) Aug

Railway Tce - Old Canterbury Rd
PM (Existing + McGill Traffic)
August 2010
Signals - Fixed Time Cycle Time = 120 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Old Canterbury Rd (South)											
1	L	120	0.8	0.184	31.9	LOS C	6.6	46.8	0.69	0.76	28.4
2	T	715	0.0	0.918	53.0	LOS D	47.4	331.5	0.99	1.06	21.2
Approach		835	0.1	0.918	49.9	LOS D	47.4	331.5	0.95	1.02	22.0
East: Railway Tce											
4	L	91	6.1	0.922	50.9	LOS D	61.4	434.1	1.00	1.05	23.2
5	T	843	0.6	0.924	44.3	LOS D	61.4	434.1	1.00	1.05	23.2
Approach		934	1.1	0.924	45.0	LOS D	61.4	434.1	1.00	1.05	23.2
North: Old Canterbury Rd (North)											
7	L	76	5.3	0.890	54.0	LOS D	42.5	299.6	1.00	1.02	22.4
8	T	1277	0.2	0.891	47.4	LOS D	42.9	300.5	1.00	1.02	22.5
Approach		1353	0.4	0.891	47.8	LOS D	42.9	300.5	1.00	1.02	22.5
West: Longport Street											
10	L	85	0.0	0.127	21.7	LOS B	5.1	35.4	0.54	0.76	33.1
11	T	692	0.1	0.636	21.2	LOS B	27.3	191.4	0.76	0.68	31.9
Approach		777	0.1	0.636	21.3	LOS B	27.3	191.4	0.73	0.69	32.0
All Vehicles		3899	0.5	0.924	42.3	LOS C	61.4	434.1	0.94	0.96	24.0

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	23	18.7	LOS B	0.0	0.0	0.56	0.56
P3	Across E approach	11	25.4	LOS C	0.0	0.0	0.65	0.65
P5	Across N approach	2	17.1	LOS B	0.0	0.0	0.53	0.53
P7	Across W approach	5	28.7	LOS C	0.0	0.0	0.69	0.69
All Pedestrians		41	21.6				0.60	0.60

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: AM (Existing+McGill+Mills)
Aug

Railway Tce - Old Canterbury Rd
AM (Existing + McGill+MillsTraffic)
August 2010
Signals - Fixed Time Cycle Time = 120 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Old Canterbury Rd (South)											
1	L	70	1.4	0.211	26.5	LOS B	8.1	56.9	0.63	0.81	31.1
2	T	1076	0.4	1.056	111.0	LOS F	98.3	690.3	0.96	1.39	13.3
Approach		1146	0.5	1.056	105.8	LOS F	98.3	690.3	0.94	1.36	13.8
East: Railway Tce											
4	L	35	12.0	0.915	55.4	LOS D	52.7	373.0	1.00	1.05	22.2
5	T	761	0.8	0.917	48.7	LOS D	52.7	373.0	1.00	1.05	22.2
Approach		796	1.3	0.917	49.0	LOS D	52.7	373.0	1.00	1.05	22.2
North: Old Canterbury Rd (North)											
7	L	140	2.1	0.441	29.3	LOS C	16.4	116.6	0.72	0.85	29.9
8	T	647	1.6	0.441	22.8	LOS B	16.7	118.3	0.72	0.63	31.0
Approach		787	1.7	0.441	24.0	LOS B	16.7	118.3	0.72	0.67	30.8
West: Longport Street											
10	L	165	0.0	0.210	27.7	LOS B	7.8	54.9	0.64	0.76	30.1
11	T	932	0.1	1.050	117.6	LOS F	92.8	650.3	1.00	1.47	12.8
Approach		1097	0.1	1.050	104.1	LOS F	92.8	650.3	0.94	1.36	14.0
All Vehicles		3826	0.8	1.056	76.6	LOS F	98.3	690.3	0.91	1.15	17.2

Level of Service (Aver. Int. Delay): LOS F. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	23	24.1	LOS C	0.0	0.0	0.63	0.63
P3	Across E approach	11	19.8	LOS B	0.0	0.0	0.58	0.58
P5	Across N approach	2	22.2	LOS C	0.0	0.0	0.61	0.61
P7	Across W approach	5	22.8	LOS C	0.0	0.0	0.62	0.62
All Pedestrians		41	22.7				0.61	0.61

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: PM (Existing+McGill+Mills)
Aug

Railway Tce - Old Canterbury Rd
PM (Existing + McGill+Mills Traffic)
August 2010
Signals - Fixed Time Cycle Time = 120 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Old Canterbury Rd (South)											
1	L	120	0.8	0.195	32.7	LOS C	7.0	49.1	0.70	0.77	28.1
2	T	748	0.0	0.975	74.1	LOS F	58.4	408.7	0.99	1.20	17.4
Approach		868	0.1	0.975	68.4	LOS E	58.4	408.7	0.95	1.14	18.4
East: Railway Tce											
4	L	99	6.1	0.967	68.0	LOS E	76.8	542.9	1.00	1.15	19.5
5	T	895	0.6	0.968	61.4	LOS E	76.8	542.9	1.00	1.15	19.5
Approach		994	1.2	0.968	62.1	LOS E	76.8	542.9	1.00	1.15	19.5
North: Old Canterbury Rd (North)											
7	L	76	5.3	0.922	61.7	LOS E	46.5	327.7	1.00	1.07	20.7
8	T	1293	0.2	0.921	55.0	LOS D	46.9	328.7	1.00	1.07	20.8
Approach		1369	0.4	0.921	55.4	LOS D	46.9	328.7	1.00	1.07	20.8
West: Longport Street											
10	L	92	0.0	0.128	21.2	LOS B	5.1	35.5	0.53	0.75	33.3
11	T	702	0.1	0.641	20.7	LOS B	27.7	194.1	0.75	0.68	32.1
Approach		794	0.1	0.640	20.8	LOS B	27.7	194.1	0.73	0.69	32.2
All Vehicles		4025	0.5	0.975	53.0	LOS D	76.8	542.9	0.94	1.03	21.3

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on average delay for all vehicle movements.

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	Across S approach	23	18.2	LOS B	0.0	0.0	0.55	0.55
P3	Across E approach	11	26.0	LOS C	0.0	0.0	0.66	0.66
P5	Across N approach	2	16.5	LOS B	0.0	0.0	0.53	0.53
P7	Across W approach	5	29.4	LOS C	0.0	0.0	0.70	0.70
All Pedestrians		41	21.6				0.60	0.60

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: AM Existing

Smith St - Longport St
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Smith Street											
1	L	2	0.0	0.526	15.2	LOS B	5.6	39.4	0.88	1.01	41.7
2	T	59	0.0	0.531	14.3	LOS A	5.6	39.4	0.88	1.00	41.9
3	R	321	0.0	0.529	20.1	LOS B	5.6	39.4	0.88	1.04	39.5
Approach		382	0.0	0.529	19.2	LOS B	5.6	39.4	0.88	1.03	39.9
East: Longport Street											
4	L	62	0.0	0.540	6.4	LOS A	6.7	47.4	0.22	0.48	49.8
5	T	313	2.0	0.540	5.6	LOS A	6.7	47.4	0.22	0.40	50.5
6	R	497	0.0	0.540	11.3	LOS A	6.7	47.4	0.22	0.70	46.0
Approach		872	0.7	0.540	8.9	LOS A	6.7	47.4	0.22	0.58	47.7
North: Grosvenor Crescent											
7	L	409	0.0	0.542	12.6	LOS A	5.8	40.5	0.86	0.94	44.5
8	T	19	0.0	0.541	11.7	LOS A	5.8	40.5	0.86	0.93	44.8
9	R	5	0.0	0.526	17.5	LOS B	5.8	40.5	0.86	0.98	41.9
Approach		434	0.0	0.541	12.6	LOS B	5.8	40.5	0.86	0.94	44.5
West: Carlton Crescent											
10	L	13	0.0	0.505	16.1	LOS B	5.5	38.5	0.93	1.04	42.2
11	T	316	0.3	0.515	15.2	LOS B	5.5	38.5	0.93	1.03	42.4
12	R	2	0.0	0.526	20.9	LOS B	5.5	38.5	0.93	1.07	40.0
Approach		331	0.3	0.515	15.2	LOS B	5.5	38.5	0.93	1.03	42.3
All Vehicles		2018	0.4	0.541	12.7	LOS A	6.7	47.4	0.60	0.82	44.4

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: PM Existing

Smith St - Longport St
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Smith Street											
1	L	5	0.0	0.439	14.2	LOS A	4.1	28.8	0.95	0.98	42.8
2	T	81	0.0	0.422	13.3	LOS A	4.1	28.8	0.95	0.97	43.0
3	R	148	0.0	0.423	19.0	LOS B	4.1	28.8	0.95	0.99	40.5
Approach		235	0.0	0.423	16.9	LOS B	4.1	28.8	0.95	0.98	41.4
East: Longport Street											
4	L	104	0.0	0.739	7.9	LOS A	10.7	75.2	0.71	0.60	46.9
5	T	460	1.1	0.740	7.0	LOS A	10.7	75.2	0.71	0.57	46.8
6	R	412	0.0	0.740	12.7	LOS A	10.7	75.2	0.71	0.69	45.1
Approach		976	0.5	0.740	9.5	LOS A	10.7	75.2	0.71	0.62	46.1
North: Grosvenor Crescent											
7	L	234	0.0	0.436	10.1	LOS A	3.9	27.5	0.79	0.82	46.7
8	T	106	0.0	0.436	9.2	LOS A	3.9	27.5	0.79	0.80	46.5
9	R	24	0.0	0.432	15.0	LOS B	3.9	27.5	0.79	0.89	44.0
Approach		364	0.0	0.436	10.2	LOS B	3.9	27.5	0.79	0.82	46.4
West: Carlton Crescent											
10	L	62	0.0	0.591	13.6	LOS A	6.9	48.3	0.88	0.99	44.2
11	T	389	0.3	0.592	12.7	LOS A	6.9	48.3	0.88	0.98	44.3
12	R	22	0.0	0.597	18.4	LOS B	6.9	48.3	0.88	1.03	41.6
Approach		474	0.2	0.592	13.1	LOS B	6.9	48.3	0.88	0.98	44.2
All Vehicles		2048	0.3	0.740	11.3	LOS A	10.7	75.2	0.79	0.78	45.1

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: AM (Existing+McGill) Aug

Smith St - Longport St-Grosvenor Cr-Carlton
AM (Existing+McGill Traffic)
August 2010
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Smith Street											
1	L	2	0.0	0.526	16.0	LOS B	5.9	41.5	0.90	1.04	41.1
2	T	59	0.0	0.541	15.1	LOS B	5.9	41.5	0.90	1.03	41.2
3	R	321	0.0	0.542	20.9	LOS B	5.9	41.5	0.90	1.06	39.0
Approach		382	0.0	0.543	20.0	LOS B	5.9	41.5	0.90	1.06	39.3
East: Longport Street											
4	L	62	0.0	0.555	6.4	LOS A	7.1	50.0	0.22	0.48	49.7
5	T	322	2.0	0.554	5.6	LOS A	7.1	50.0	0.22	0.40	50.4
6	R	513	0.0	0.555	11.3	LOS A	7.1	50.0	0.22	0.70	45.9
Approach		897	0.7	0.555	8.9	LOS A	7.1	50.0	0.22	0.57	47.7
North: Grosvenor Crescent											
7	L	409	0.0	0.548	12.9	LOS A	5.9	41.5	0.87	0.95	44.3
8	T	19	0.0	0.541	12.0	LOS A	5.9	41.5	0.87	0.94	44.5
9	R	5	0.0	0.526	17.8	LOS B	5.9	41.5	0.87	1.00	41.7
Approach		434	0.0	0.548	12.9	LOS B	5.9	41.5	0.87	0.95	44.2
West: Carlton Crescent											
10	L	13	0.0	0.526	16.6	LOS B	5.7	39.8	0.93	1.06	41.8
11	T	316	0.3	0.525	15.7	LOS B	5.7	39.8	0.93	1.05	41.9
12	R	2	0.0	0.526	21.5	LOS B	5.7	39.8	0.93	1.08	39.6
Approach		331	0.3	0.524	15.8	LOS B	5.7	39.8	0.93	1.05	41.9
All Vehicles		2043	0.4	0.555	13.0	LOS A	7.1	50.0	0.60	0.82	44.2

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: PM Existing (Existing +McGill) Aug

Smith St - Longport St-Grosvenor Cr-Carlton
PM (Existing+McGill Traffic)
August 2010
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Smith Street											
1	L	5	0.0	0.439	14.6	LOS B	4.3	30.0	0.96	0.99	42.4
2	T	81	0.0	0.433	13.7	LOS A	4.3	30.0	0.96	0.99	42.6
3	R	148	0.0	0.433	19.5	LOS B	4.3	30.0	0.96	1.00	40.2
Approach		235	0.0	0.433	17.4	LOS B	4.3	30.0	0.96	1.00	41.0
East: Longport Street											
4	L	104	0.0	0.750	7.9	LOS A	11.0	77.6	0.72	0.60	46.9
5	T	468	1.1	0.749	7.0	LOS A	11.0	77.6	0.72	0.57	46.7
6	R	417	0.0	0.750	12.8	LOS A	11.0	77.6	0.72	0.68	45.1
Approach		989	0.5	0.750	9.5	LOS A	11.0	77.6	0.72	0.62	46.0
North: Grosvenor Crescent											
7	L	234	0.0	0.438	10.2	LOS A	4.0	27.7	0.80	0.83	46.7
8	T	106	0.0	0.438	9.3	LOS A	4.0	27.7	0.80	0.80	46.4
9	R	24	0.0	0.440	15.0	LOS B	4.0	27.7	0.80	0.89	43.9
Approach		364	0.0	0.438	10.2	LOS B	4.0	27.7	0.80	0.82	46.4
West: Carlton Crescent											
10	L	62	0.0	0.597	13.8	LOS A	7.0	49.1	0.89	1.00	44.0
11	T	389	0.3	0.596	12.9	LOS A	7.0	49.1	0.89	0.99	44.2
12	R	22	0.0	0.597	18.6	LOS B	7.0	49.1	0.89	1.04	41.5
Approach		474	0.2	0.596	13.3	LOS B	7.0	49.1	0.89	0.99	44.0
All Vehicles		2062	0.3	0.750	11.4	LOS A	11.0	77.6	0.80	0.78	45.0

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: AM (Existing+McGill+Mills)
Aug

Smith St - Longport St-Grosvenor Cr-Carlton
AM (Existing+McGill + Mills Traffic)
August 2010
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Smith Street											
1	L	2	0.0	0.702	17.8	LOS B	7.4	51.8	0.93	1.11	39.8
2	T	68	0.0	0.605	16.9	LOS B	7.4	51.8	0.93	1.10	39.9
3	R	353	0.0	0.608	22.6	LOS B	7.4	51.8	0.93	1.12	37.9
Approach		423	0.0	0.608	21.7	LOS B	7.4	51.8	0.93	1.12	38.2
East: Longport Street											
4	L	79	0.0	0.576	6.5	LOS A	7.2	50.9	0.26	0.48	49.5
5	T	322	2.0	0.575	5.7	LOS A	7.2	50.9	0.26	0.41	50.1
6	R	513	0.0	0.575	11.4	LOS A	7.2	50.9	0.26	0.69	45.8
Approach		914	0.7	0.576	9.0	LOS A	7.2	50.9	0.26	0.57	47.5
North: Grosvenor Crescent											
7	L	409	0.0	0.573	14.0	LOS A	6.5	45.5	0.90	1.00	43.3
8	T	19	0.0	0.574	13.1	LOS A	6.5	45.5	0.90	0.99	43.5
9	R	5	0.0	0.585	18.8	LOS B	6.5	45.5	0.90	1.03	40.9
Approach		434	0.0	0.573	14.0	LOS B	6.5	45.5	0.90	1.00	43.3
West: Carlton Crescent											
10	L	13	0.0	0.574	19.0	LOS B	6.7	46.8	0.97	1.12	39.9
11	T	316	0.3	0.572	18.1	LOS B	6.7	46.8	0.97	1.11	40.1
12	R	11	0.0	0.585	23.8	LOS B	6.7	46.8	0.97	1.13	38.1
Approach		339	0.3	0.572	18.3	LOS B	6.7	46.8	0.97	1.11	40.0
All Vehicles		2109	0.4	0.608	14.1	LOS A	7.4	51.8	0.64	0.86	43.2

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: PM (Existing+McGill+Mills)
Aug

Smith St - Longport St-Grosvenor Cr-Carlton
PM (Existing+McGill+Mills Traffic)
August 2010
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow 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: Smith Street											
1	L	5	0.0	0.478	16.0	LOS B	5.3	37.1	0.99	1.05	41.3
2	T	86	0.0	0.496	15.1	LOS B	5.3	37.1	0.99	1.05	41.4
3	R	166	0.0	0.495	20.9	LOS B	5.3	37.1	0.99	1.05	39.2
Approach		258	0.0	0.495	18.9	LOS B	5.3	37.1	0.99	1.05	40.0
East: Longport Street											
4	L	159	0.0	0.803	8.9	LOS A	13.8	96.8	0.82	0.65	46.3
5	T	467	1.1	0.803	8.1	LOS A	13.8	96.8	0.82	0.63	46.1
6	R	416	0.0	0.803	13.8	LOS A	13.8	96.8	0.82	0.70	44.8
Approach		1042	0.5	0.803	10.5	LOS A	13.8	96.8	0.82	0.66	45.6
North: Grosvenor Crescent											
7	L	234	0.0	0.455	10.8	LOS A	4.3	30.0	0.82	0.86	46.4
8	T	106	0.0	0.454	9.9	LOS A	4.3	30.0	0.82	0.84	46.3
9	R	24	0.0	0.457	15.6	LOS B	4.3	30.0	0.82	0.91	43.4
Approach		364	0.0	0.455	10.8	LOS B	4.3	30.0	0.82	0.86	46.2
West: Carlton Crescent											
10	L	62	0.0	0.640	15.0	LOS B	8.0	56.4	0.93	1.05	42.9
11	T	389	0.3	0.637	14.2	LOS A	8.0	56.4	0.93	1.04	43.0
12	R	39	0.0	0.638	19.9	LOS B	8.0	56.4	0.93	1.08	40.6
Approach		491	0.2	0.638	14.7	LOS B	8.0	56.4	0.93	1.05	42.8
All Vehicles		2155	0.3	0.803	12.5	LOS A	13.8	96.8	0.87	0.83	44.3

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any vehicle movement.
Roundabout Capacity Model: SIDRA Standard.