



1A - 29 Bowen Street and 6 – 18 Moriarty Road, Chatswood Transport Impact Assessment

Client //	Platine Group
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Transport Impact Assessment

Issue: B-Dr 24/05/19

Client: Platine Group

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GTA Consultants Office: NSW

Quality Record

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1. Introduction

1.1 Background

A revised Planning Proposal has been lodged with Willoughby City Council for land at 1A - 29 Bowen Street and 6-18 Moriarty Road, Chatswood. The Planning Proposal seeks to amend the zoning of the western side of Bowen Street and the southern side of Moriarty Road (currently zoned R2 - Low Density Residential, under Willoughby Local Environment Plan [LEP] 2012) to R4 - High Density Residential Development, with a maximum permissible floor to space ratio (FSR) of 2.5:1.

Platine engaged GTA Consultants (GTA) to complete a transport impact assessment considering the Planning Proposal and indicative site layout.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

- i Existing traffic and parking conditions surrounding the site
- ii Suitability of the proposed parking in terms of supply (quantum) and layout
- iii Service vehicle requirements
- iv Pedestrian and bicycle requirements
- v The traffic generating characteristics of the proposed development
- vi Suitability of the proposed access arrangements for the site
- vii The transport impact of the Planning Proposal on the surrounding road network.

1.3 References

In preparing this report, reference has been made to the following:

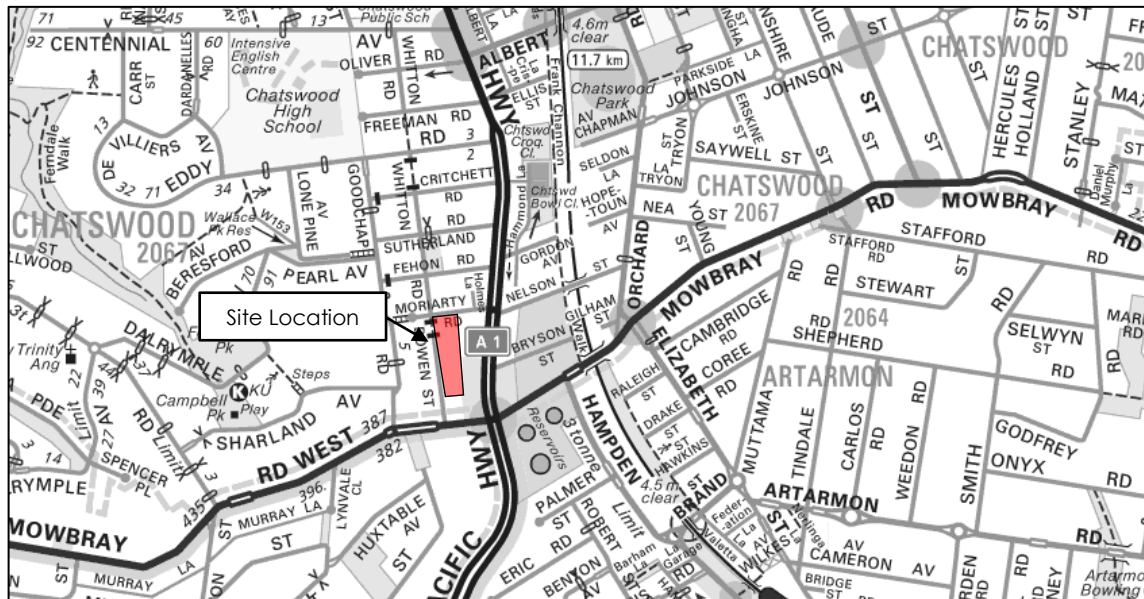
- o Inspections of the site and its surrounds
- o Willoughby Council Development Control Plan (DCP) 2017
- o Willoughby City Council LEP 2012
- o Traffic and car parking surveys undertaken by GTA on Tuesday 16 May 2017 and Saturday 20 May 2017 as referenced in the context of this report
- o Conceptual plans for the proposed development prepared by PBD Architects, dated August 2018
- o Other documents and data as referenced in this report.

2. Existing Conditions

The subject site is located at 1A - 29 Bowen Street and 6-18 Moriarty Road, Chatswood. The site covers an area of 6,716 square metres and has a frontage of 150 metres to Bowen Street and 50 metres to Moriarty Road. The site currently has a land use classification of low density residential. The surrounding properties include residential uses, with some retail and commercial uses nearby. The site is currently occupied by 12 detached low density residential dwellings.

The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject site and its environs



Basemap source: Sydney

2.1 Road Network

2.1.1 Adjoining Roads

Bowen Street

Bowen Street is a local road and in the vicinity of the site is aligned in a north-south direction. It is a two-way road configured with one travel lane in each direction. It has a 13-metre wide carriageway, set within a 19-metre wide road reserve (approximately). Bowen Street forms a cul-de-sac at its northern end, with a connection to Moriarty Road provided for pedestrians and cyclists only. Bowen Street has a speed limit of 50 km/h.

Kerbside parking is permitted along both sides of Bowen Street, which is subject to two-hour time restrictions (2P – Everyday Authorised Residents Vehicles Excepted Area 2).

Bowen Street is shown in Figure 2.2 and Figure 2.3.

Figure 2.2: Bowen Street (looking north)**Figure 2.3: Bowen Street (looking south)**

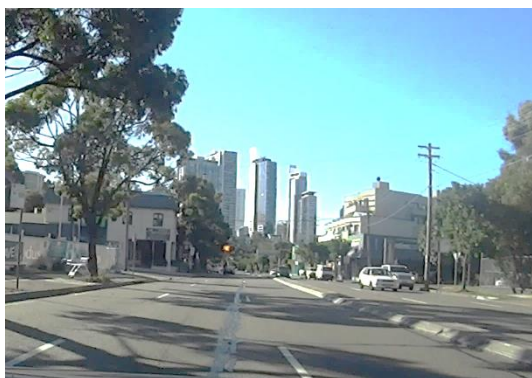
Pacific Highway

The Pacific Highway is classified as a State Road and in the vicinity of the site is aligned in a north-south direction. It is a two-way road configured with three travel lanes in each direction and a median, which restricts turns at some intersections. The Pacific Highway has an 18-metre wide carriageway, set within a 26-metre wide road reserve (approximately).

The Pacific Highway has a posted speed limit of 60 km/h.

Kerbside parking is permitted outside of clearway times on the western side of the Pacific Highway, subject to time restrictions (1P - 8:30am to 6:00pm on Monday to Friday and 8:30am to 12:30pm on Saturdays).

The Pacific Highway is shown in Figure 2.4 and Figure 2.5.

Figure 2.4: Pacific Highway (looking north)**Figure 2.5: Pacific Highway (looking south)**

Mowbray Road West

Mowbray Road West is classified as a Regional Road and in the vicinity of the site is aligned in the east-west direction. It is a two-way road configured with two travel lanes in the eastbound direction, with an additional left turn lane at the approach to the Pacific Highway. It has two travel lanes in the westbound direction from the Pacific Highway, reducing to one westbound travel lane near Bowen Street. Mowbray Road has a 13-metre wide carriageway, set within a 20-metre wide road reserve (approximately).

Mowbray Road has a posted speed limit of 50 km/h.

Kerbside parking is not permitted on Mowbray Road West in the immediate vicinity of the site.

Mowbray Road West is shown in Figure 2.6 and Figure 2.7.

Figure 2.6: Mowbray Road West (looking east)



Figure 2.7: Mowbray Road West (looking west)



Goodchap Road

Goodchap Road functions as a collector road and in the vicinity of the site is aligned in a north-south direction. The southern segment of the road, within 120 metres of Mowbray Road West, is a two-way road configured with a seven-metre wide carriageway, set within a 16-metre wide road reserve (approximately). Kerbside parking is not permitted within this segment of the road.

The northern segment is also a two-way road, configured with a nine-metre wide carriageway and set within a 20-metre wide road reserve (approximately). Unrestricted kerbside parking is permitted on this segment of Goodchap Road.

Goodchap Road is subject to a three-tonne load limit, and has a speed limit of 50 km/h.

Goodchap Road is shown in Figure 2.8 and Figure 2.9.

Figure 2.8: Goodchap Road (looking north)



Figure 2.9: Goodchap Road (looking south)



Moriarty Road

Moriarty Road functions as a local road and in the vicinity of the site is aligned in an east-west direction. It is a two-way road configured with one travel lane in each direction. It has a 12-metre wide carriageway, set within a 20-metre wide road reserve (approximately). Moriarty Road has a posted speed limit of 50 km/h.

Kerbside parking is permitted on the road, with some spaces subject to two hour time restrictions (2P – Everyday Authorised Residents Vehicles Excepted Area 2), with some unrestricted spaces.

Moriarty Road is shown in Figure 2.10 and Figure 2.11.

Figure 2.10: Moriarty Road (looking north)



Figure 2.11: Moriarty Road (looking east)



2.1.2 Surrounding Intersections

The following intersections are located in the vicinity of the site:

- Pacific Highway/ Mowbray Road (signalised). Right turns are not permitted from Mowbray Road West into the Pacific Highway, nor from Pacific Highway to Mowbray Road West.
- Mowbray Road West/ Bowen Street (priority-controlled).
- Mowbray Road West/ Goodchap Road (priority-controlled).
- Pacific Highway/ Moriarty Road (priority-controlled). The median on the Pacific Highway restricts movements at Moriarty Road to left in and left out only.

2.2 Traffic Volumes

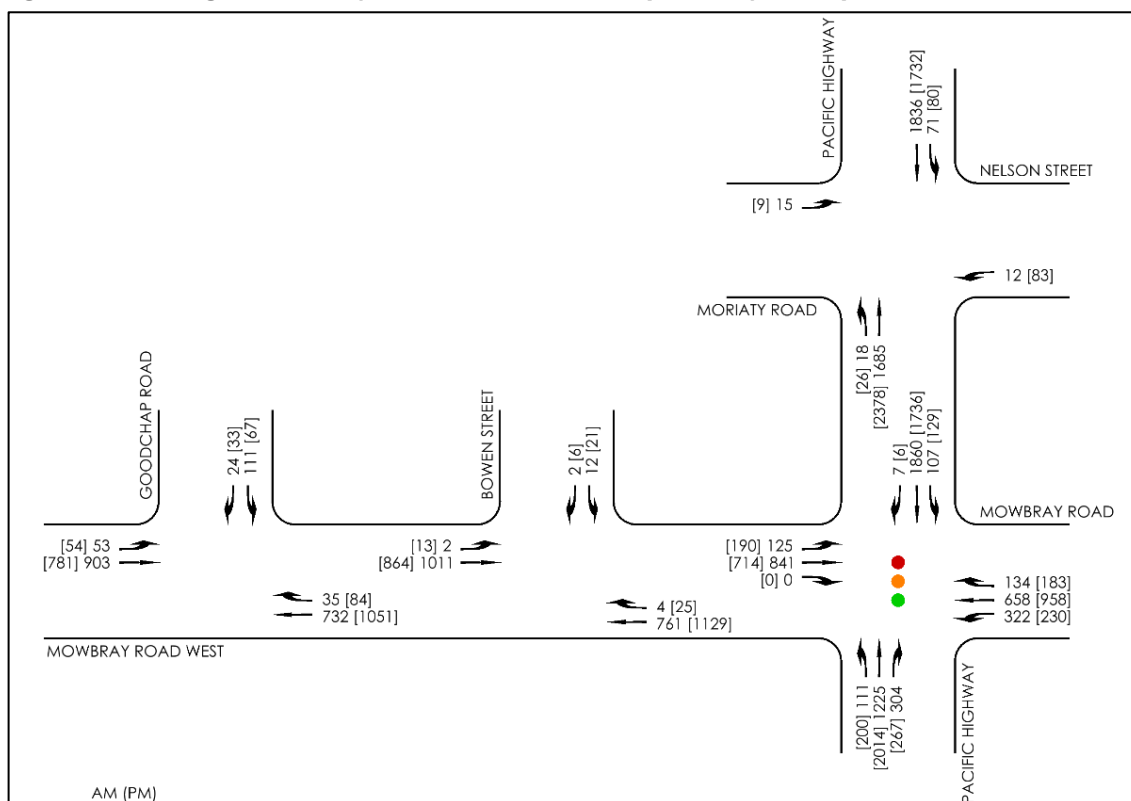
GTA commissioned traffic movement counts at the above key intersections on Tuesday 16 May 2017 during the following peak periods:

- 7am to 10am
- 4pm to 7pm.

The intersections have been surveyed due to their proximity to the site (within 200 metres) and the potential for traffic generated by the Planning Proposal to use these intersections (refer to Section 5.4).

The morning peak hour occurred between 7:30am and 8:30am and the evening peak hour occurred between 5pm and 6pm. The AM and PM peak hour turning movements are presented in Figure 2.12, with full results contained in Appendix A.

Figure 2.12: Existing AM and PM peak hour traffic volumes (vehicles per hour)



2.3 Intersection Operation

The operation of the key intersections has been assessed using SIDRA Intersection¹, a computer-based modelling package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by the Roads and Maritime Services, is vehicle delay. SIDRA Intersection determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 2.1 shows the criteria that SIDRA Intersection adopts in assessing the level of service. The basis for level of service according to Roads and Maritime Services (Roads and Maritime) is delay. A level of service of D or better is generally considered acceptable operation.

It is noted that average delay per vehicle is expressed in seconds per vehicle (sec/veh) and is measured for the movement with the highest average delay per vehicle at priority intersections, and over all movements at signalised intersections. The degree of saturation is the ratio of the arrival rate of vehicles to the capacity.

¹ Program used under license from Akcelik & Associates Pty Ltd.

Table 2.1: SIDRA Intersection level of service criteria

Level of Service	Average delay per vehicle (sec/veh)	Traffic signals, roundabout	Give way and stop sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Table 2.2 presents a summary of the existing operation of the intersection, with full results presented in Appendix B of this report.

Table 2.2: Existing intersection operating conditions

Intersection	Peak	Degree of saturation	Average Delay (sec/veh)	95th percentile queue (m)	Level of service
Pacific Highway/ Mowbray Road	AM	0.99	69	314	E
	PM	0.95	57	415	E
Mowbray Road West/ Bowen Street ^[1]	AM	0.01	12	1	A
	PM	0.04	24	1	B
Mowbray Road West/ Goodchap Road ^[1]	AM	0.40	18	7	B
	PM	0.38	32	9	C
Pacific Highway/ Moriarty Road ^[1]	AM	0.36	9	1	A
	PM	0.02	11	1	A

[1] Delay for unsignalised intersections based on worst movement reported.

On the basis of the intersection analysis and site observations, there is significant traffic congestion through the Chatswood Town Centre, with the intersection of the Pacific Highway and Mowbray Road experiencing peak period queuing and delays.

Much of the congestion at the intersection of Mowbray Road West/ Bowen Street is influenced by the major signalised intersection of the Pacific Highway and Mowbray Road.

Similarly, the southbound Pacific Highway traffic at Moriarty Road is also affected by the intersection of the Pacific Highway and Mowbray Road. The southern and western approaches of this intersection currently experience minimal queuing and delays during both the AM and PM peak periods.

The intersections of the Pacific Highway/ Moriarty Road and Mowbray Road West/ Bowen Street have sufficient spare capacity to cater for the traffic generated by the proposed development with future development traffic entering via Moriarty Road from the Pacific Highway and exiting via Bowen Street and Moriarty Road.

The intersection of Mowbray Road West and Goodchap Road currently operates satisfactorily with minimal queues and delays on all approaches.

2.4 Car Parking

2.4.1 Supply

GTA compiled an inventory of publicly available on-street car parking along Bowen Street. The inventory identified a total of 44 on-street spaces car parking spaces, which have a two hour restriction everyday with local residents exempt from the time restrictions.

2.4.2 Demand

Parking demand surveys were undertaken by GTA within the nominated area during the following periods:

- Tuesday 16 May 2017 between 2pm and 9pm
- Saturday 20 May 2017 between 1pm and 9pm.

The survey results are presented in Figure 2.13.

Figure 2.13: Car parking occupancy in Bowen Street (occupied spaces)

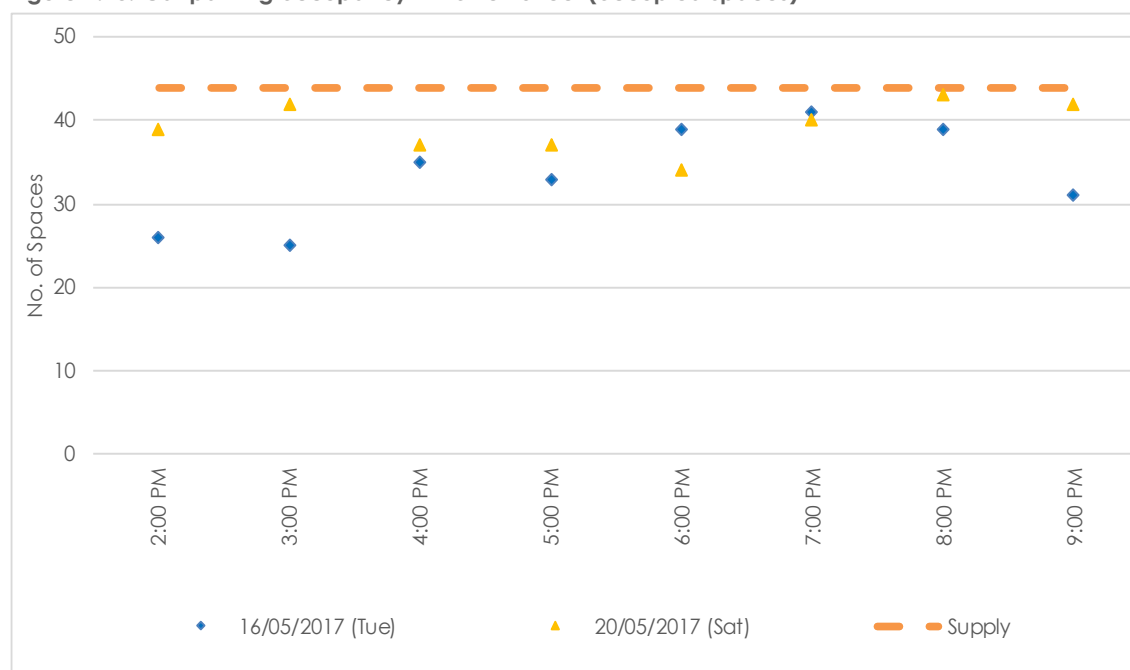


Figure 2.13 indicates that the surveyed public on-street car parking demand along Bowen Street is high during the weekday evening (6pm to 8pm) and generally high during the weekend afternoon and evening when The Great Northern Hotel (located on the corner of Mowbray Road West and the Pacific Highway) is busy. The surveyed peak demand is equal to an occupancy rate of 93 per cent (three vacant spaces) on the Tuesday night and an occupancy rate of 98 per cent (one vacant space) on the Saturday night.

In addition to car parking demand surveys, turnover and duration of stay surveys were also undertaken. These surveys help understand whether on-street car parking demands are short-stay or long-stay demands.

The results indicate that the majority of vehicles parked on Bowen Street were parked for under two hours during the surveyed periods. Specifically, 81 per cent of peak parking demands on Bowen Street were short-stay demands on a Tuesday night and 67 per cent on a Saturday night, with these demands likely to be from the patrons of The Great Northern Hotel.

On this basis, only 19 per cent of peak parking demand on a Tuesday and 33 per cent on a Saturday along Bowen Street could be considered as providing for resident car parking demand.

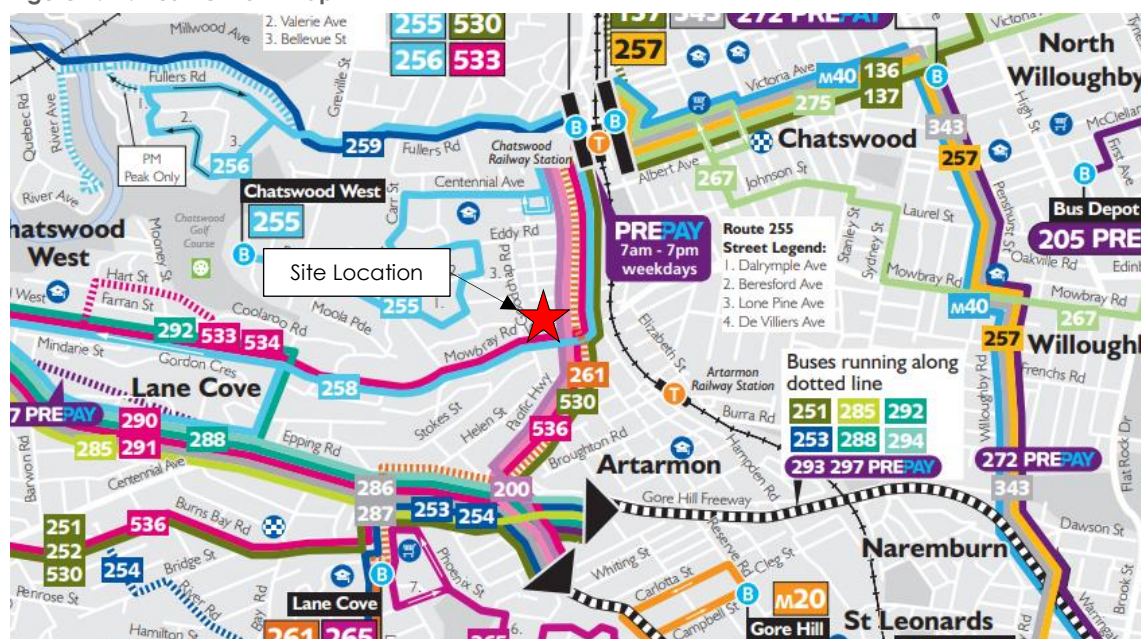
2.5 Public Transport

The subject site is well served by public transport services with Chatswood Transport Interchange located approximately 1.1 kilometres northeast of the site. Chatswood has undergone major redevelopment in recent years and is considered a major node in the CityRail network. Chatswood Railway Station is served by the Northern, North Shore and Western Lines. In the future, Chatswood will also serve as a major interchange for the North-West rail link. The rail journey time between Chatswood and Town Hall is 23 minutes.

Chatswood Interchange also functions as one of the main bus interchanges in the northern suburbs of Sydney.

The rail and bus services available near the site are shown in Figure 2.14 and summarised in Table 2.3.

Figure 2.14: Bus Network Map



Source: <https://transportnsw.info/document/1697/region-guide-north-shore-west.pdf>, accessed 10 August 2018

Table 2.3: Public transport provision

Service	Route	Route description	Location of stop	Walking distance to nearest stop	Frequency peak/ off peak
Rail	Northern Line, North Shore Line, Western Line	Hornsby or Epping to the City, Berowra to Parramatta via City, Emu Plains or Richmond to Chatswood	Chatswood Rail Station	1.1km	3-15 min./ 5-30 min.
			Artarmon Rail Station	950m	
Bus	258, 533, 534	Chatswood Bus Interchange	Mowbray Road opposite Chatswood South Uniting Church	25m	10-20 min./ 30-60 min.
		West Ryde, Ryde – Devlin Street, Sydney Olympic Park, Lane Cove – Mars Road	Mowbray Road near Pacific Highway	20m	
	143, 144, 200, 261, 530, 536, 627, 628	Chatswood Bus Interchange	Pacific Highway after Mowbray Road (northbound)	150m	
	143, 144, 200, 261, 530, 536, 627, 628	Burwood Station, Bondi Junction, Castle Hill, City - King Street Wharf, Gladesville, Manly	Pacific Highway before Mowbray Road (southbound)	180m	10-15 min./ 15-30 min.
	136/137, 143/144, 200, 255/256, 257/258, 259, 261, 267, 275, 343, 530, 533/534, 536, M40	Manly, Dee Why and Mona Vale, Manly, Bondi Junction Chatswood West, Balmoral/ Lane Cove Industrial Crows Nest, City - Wynyard via Willoughby and North Sydney Castle Cove/ Killarney Heights/ Frenchs Forest, Warringah Mall/ Davidson/ Belrose, Duffys Forest via Frenchs Forest and Terrey Hills, Sydney Olympic Park via Mowbray Rd and Ryde Gladesville via Lane Cove and Hunters Hill, Parramatta, Lindfield, Macquarie University via UTS Ku-ring-gai, Lindfield and West Lindfield Bondi Junction, Hornsby to Town Hall via Chatswood	Chatswood Bus Interchange	1.1km	

The site is also located close to taxi services, with the nearest designated taxi rank located on Victoria Avenue, 950 metres north of the site.

2.6 Pedestrian and Cycle Infrastructure

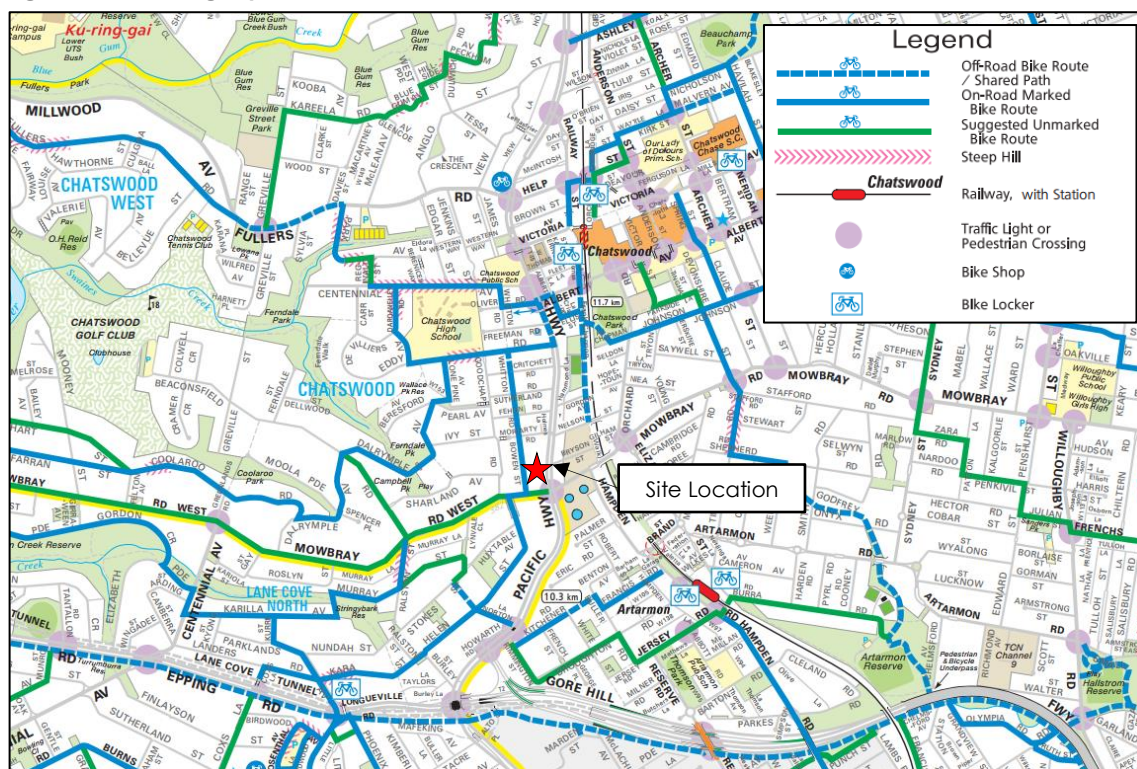
Pedestrian paths are located as follows:

- Bowen Street – 1.2-metre wide path
- Pacific Highway (both sides) – Four-metre wide path
- Mowbray Road (both sides) – 1.5-metre wide path
- Mowbray Road West (both sides) – 1.5-metre wide path
- Moriarty Road (both sides) – Two-metre wide path.

The intersection of Mowbray Road and the Pacific Highway has signalised pedestrian crossings on all four approaches. There is also pedestrian refuge on Mowbray Road West, approximately 40 metres west of Bowen Street.

Willoughby City Council is committed to promoting cycling and providing safe cycle routes within the Willoughby area. A number of shared and dedicated cycle paths are provided throughout the area as illustrated in Figure 2.15.

Figure 2.15: Willoughby Council Bike Plan



Source: <http://www.willoughby.nsw.gov.au/>, accessed 13 August 2018

The northern section of Bowen Street has a shared path for the use of bicycles and pedestrians only, with no vehicular access is permitted, as shown in Figure 2.16.

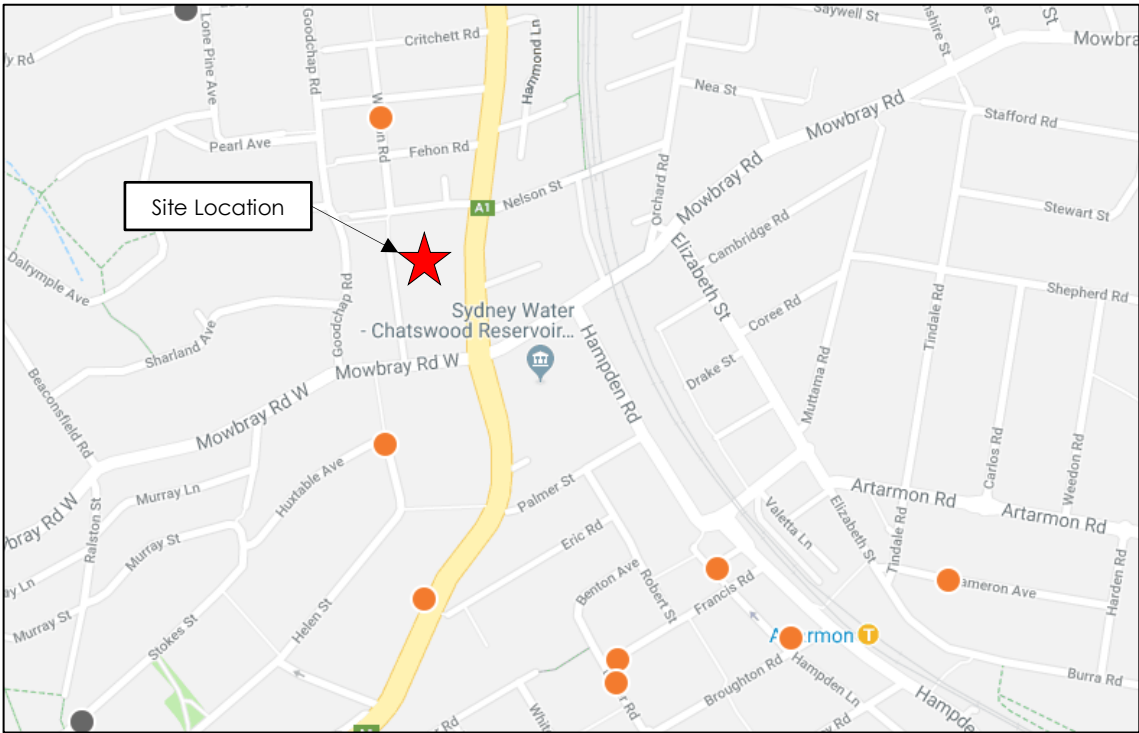
Figure 2.16: Bowen Street shared path



2.7 Local Car Sharing Initiatives

A number of GoGet car sharing pods are located in the vicinity of the site, with the locations closest to the site shown in Figure 2.17.

Figure 2.17: Nearby GoGet pods



Source: <https://www.goget.com.au/> accessed 13 August 2018

The locations for the closest three pods are as follows:

- Helen Street, Lane Cove North – Approximately 200 metres walking distance
- Whitton Road near Sutherland Road, Chatswood – Approximately 250 metres walking distance
- Pacific Highway, Chatswood (opposite Eric Road) – Approximately 600 metres walking distance.

2.8 Road Safety History

An analysis of the road safety history of the area has been undertaken based on crash data provided by Roads and Maritime for the five-year period from 1 July 2011 to 30 June 2016.

The data includes crashes that comply with the national guidelines for reporting and classifying road vehicle crashes based on the following criteria:

- The crash was reported to the police
- The crash occurred on a road open to the public
- The crash involved at least one moving vehicle
- The crash involved at least one person being killed or injured or at least one motor vehicle being towed away.

The locations of the reported crashes are shown in Figure 2.18.

Figure 2.18: Reported crash locations 1 July 2011 to 30 June 2016

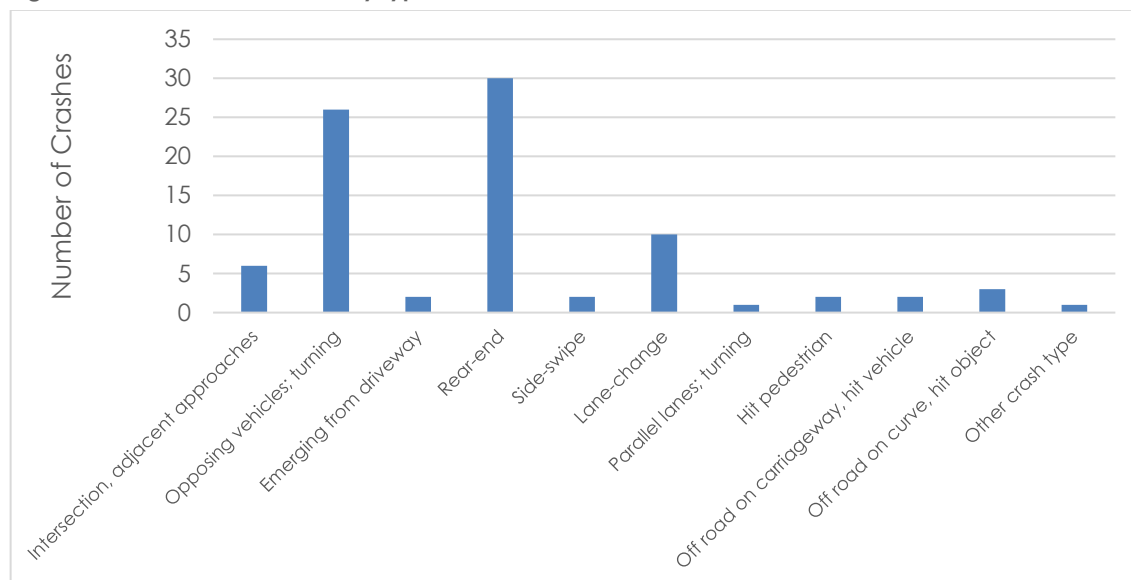


The following key statistics can be drawn from the crash data:

- No fatalities were recorded during the five-year period
- Four crashes involved vehicles turning right from Bowen Street into Mowbray Road West
- Six crashes involved vehicles turning right from Mowbray Road West into Bowen Street
- Two crashes involved pedestrians.

Figure 2.19 outlines the number and type of different crashes that occurred around the subject site over the last five years.

Figure 2.19: Crash occurrence by type



2.9 Pacific Highway Clearway

Roads and Maritime recently extended the existing weekday clearway restriction on the Pacific Highway and introduced new weekend clearway restrictions on the Pacific Highway between Fullers Road/ Help Street at Chatswood and Longueville Road/ Gore Hill Freeway at Artarmon.

The clearway proposal required the displacement of approximately 15 car parking spaces from the Pacific Highway between Felon Road and Bryson Street. Willoughby Council proposes to provide angled parking along Moriarty Road to accommodate these displaced spaces.

Based on site measurements, the existing 14 on-street spaces along the southern side of Moriarty Road, would be able to be reconfigured to accommodate up to 26 angled spaces. This represents an increase of 12 on-street spaces on Moriarty Road.

3. Development Proposal

3.1 Land Uses

The Planning Proposal intends to amend the existing planning controls imposed on the site to permit R4 - High Density Residential development, with a maximum permissible FSR of 2.5:1.

The proposal includes demolition of the existing buildings and the construction of two residential buildings with one, two and three bedrooms apartments, accommodating the uses summarised in Table 3.1.

Table 3.1: Development schedule

Use	Type	Number/ size	Mix
Residential	1 bedroom	39 units	21%
	2 bedroom	129 units	69%
	3 bedroom	19 units	10%
Total		187 units	100%

Table 3.1 indicates that the proposed development anticipates 187 residential apartments, half of which will be adaptable as per Clause C6.3 of the DCP 2016.

The development proposal in the context of the surrounding area is shown in Figure 3.1.

Figure 3.1: Proposed subject site



Source: Conceptual plan, PBD Architects, dated April 2019

3.2 Vehicle Access

Vehicular access to and from the basement car park and loading area would be provided via two accesses linking with Moriarty Road and Bowen Street. A shared parking basement is

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proposed to allow better accessibility for residents, tenants and visitors of both buildings to enter and exit via either Moriarty Road or Bowen Street.

The removal of the existing driveways for the detached dwellings as part of the Planning Proposal would result in the reduction in the number of driveway crossovers provided from eight to one crossover along Bowen Street and from four to one crossover along Moriarty Road. The consolidation of accesses will reduce the potential pedestrian and vehicle conflict areas along the frontages of the site and provide opportunity to increase the on-street parking provision along Bowen Street and Moriarty Road.

As part of the Planning Proposal to reduce potential conflicts between turning traffic at the intersection of Mowbray Road West and Bowen Street, it is recommended to allow left-in and left-out movements only to and from Mowbray Road West. This will be complemented by the opening of the northern section of Bowen Street to allow for southbound traffic only via left-in movements from Moriarty Road. Appropriate left-turn only treatment with a central median and signage will be provided at the intersection of Moriarty Road/ Bowen Street intersection to ensure compliance. The proposed intersection layout will be detailed during the Development Application (DA) stage.

3.3 Car Parking Provision

3.3.1 DCP Car Parking Requirements

The car parking requirements for different development types outside railway precincts and major public transport corridors are set out in Willoughby City Council's Development Control Plan 2006 (DCP 2016) Part C – General Development Guidelines.

Table 3.2 summarises the car parking requirements relevant to the Planning Proposal, which lies outside the Artarmon Railway Precinct and does not adjoin the Pacific Highway major public transport corridor.

Table 3.2: DCP 2016 car parking requirements

Description	Use	Size/ quantity	DCP parking rate	DCP parking requirement (spaces)
Residential flats outside Railway Precincts/ major public transport corridors	1 bedroom	39 units	1 space per unit	39
	2 bedroom	129 units	1.2 spaces per unit	155
	3 bedroom	19 units	1.5 spaces per unit	28
	Sub-Total			222
	Visitor	187 units	0.25 per unit	47
Total				269

Note: where the parking spaces required is not a whole number, DCP 2016 states that the number of spaces required is to be rounded down to the nearest whole number.

Based on the DCP 2016 car parking requirements, the proposed development is required to provide 269 car parking spaces. Plans for the proposed development indicate this requirement is capable of being accommodated on site within the basement levels.

3.3.2 Accessible Parking

DCP 2016 provides requirements for the number of accessible parking spaces to be provided.

For residential uses, a proportion of the adaptable housing dwellings are to have accessible car parking spaces, resulting in a requirement for 19 accessible car parking spaces for 94 adaptable dwellings.

For other uses, accessible parking spaces are required to be provided at the greater of:

- One accessible space; or
- Three per cent of total car parking spaces.

Based on the DCP 2016 and 94 adaptable apartments, the Planning Proposal is required to provide 19 accessible car parking spaces for residential use. These requirements can be satisfactorily accommodated within the basement car park.

3.4 Motorcycle Parking

DCP 2016 requires motorcycle parking to be provided at a rate of one space per 25 car parking spaces. Based on the proposed provision of 269 car parking spaces, the proposed development is required to provide 11 motorcycle parking spaces on-site to meet the requirements of the DCP. There is adequate space within the proposed basement car parking area to meet this requirement.

3.5 Bicycle Parking

DCP 2016 contains a guide to bicycle parking facilities for different types of developments as summarised in Table 3.3.

Table 3.3: DCP 2016 bicycle parking guide

Description	Suggested parking rate		Size/ quantity	Suggested parking provision	
	Bicycle lockers	Bicycle spaces		Bicycle lockers	Bicycle spaces
Residential	1 per 10 units	1 per 12 units	187 dwellings	19	16

Based on the bicycle parking guide, the DCP 2016 suggests that the Planning Proposal incorporate at least 19 bicycle lockers and 16 bicycle spaces to meet the requirements. There is adequate space within the proposed basement car parking area to meet these requirements.

3.6 Loading Facilities

The loading requirements for different development types are contained in DCP 2016, noting that residential developments exceeding 12 apartments are to provide for removalist trucks to park, load and unload on-site.

One loading bay is required to cater for the waste collection activities and deliveries associated with the residential uses.

3.6.1 Proposed Loading Arrangements

One loading bay is required with vehicle access proposed either via Moriarty Road or Bowen Street. The loading bay should be designed to cater for vehicles up to 8.8-metre medium rigid

vehicles (which also accommodates the standard eight-metre long Willoughby City Council rear loading waste collection vehicle) and to allow them to enter and exit in a forward direction.

To accommodate service vehicles, it is recommended that height clearance of 4.5 metres be provided in accordance with the Australian Standard for Parking Facilities Part 2: Off-street Commercial Vehicle Facilities (AS2890.2). This would be adequate for the Willoughby City Council rear loading waste collection vehicles, for which height clearance of 4.3 metres is required by DCP 2016.

Low service vehicle activity would be expected for the development, with opportunities for any smaller short-stay deliveries (e.g. couriers) to use the loading bay. It is anticipated that the proposed loading facility would adequately service the development (with an appropriate management plan), to be detailed during the DA stage.

3.7 Pedestrian Facilities

Pedestrian access to the residential uses would be from both Moriarty Road and Bowen Street. A walk through is proposed at ground level through the site, which includes public space.

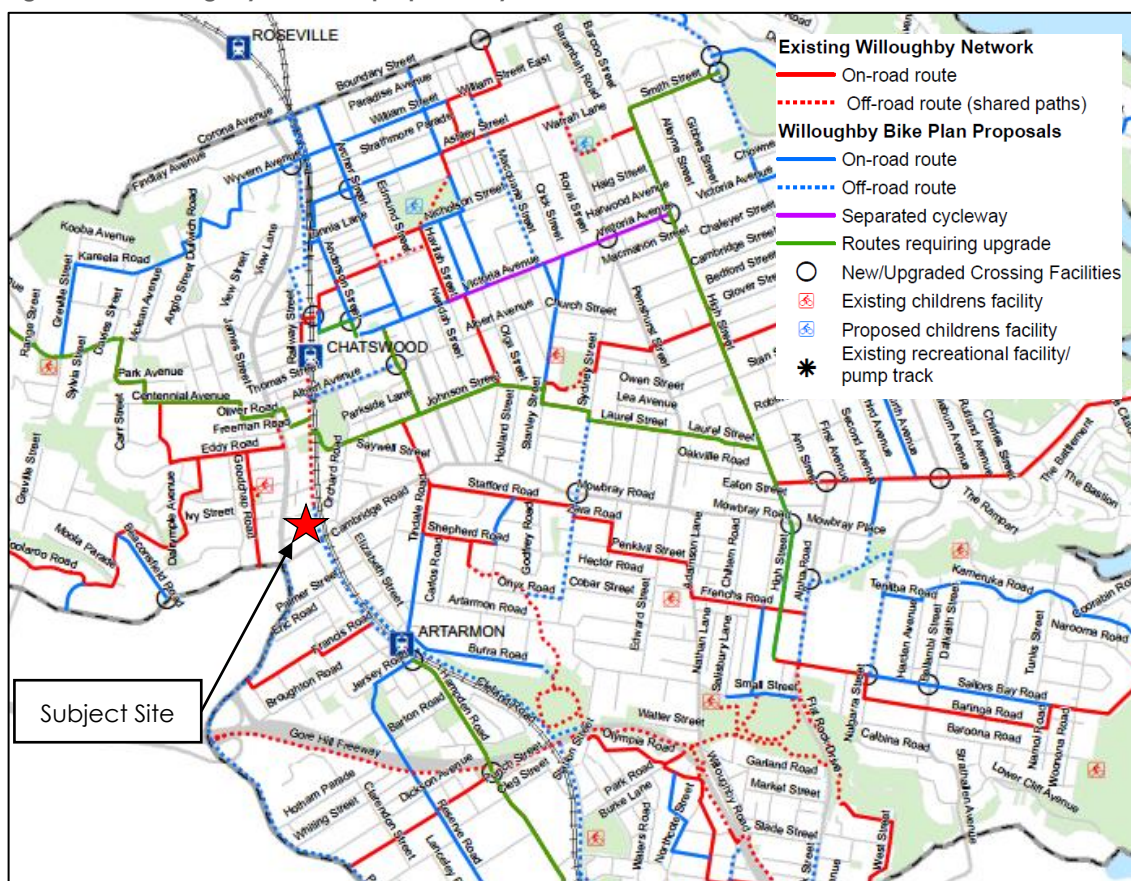
4. Sustainable Transport Infrastructure

This chapter discusses potential measures that could encourage alternative means of travel to the private car and encourage the use of more environmentally sustainable forms of travel.

4.1 Cycle Network

Willoughby Bike Plan (2012) identified and prioritised 27 proposed cycle routes to be implemented in Willoughby Local Government Area. These routes would also indirectly benefit cyclists of the subject site by improving cycling accessibility in and around Chatswood CBD and are shown in Figure 4.1.

Figure 4.1: Willoughby Bike Plan proposed cycle routes



Source: Willoughby Bike Plan (2012)

4.2 Bicycle Parking Facilities

DCP 2016 contains general requirements for bicycle parking facilities as follows:

- i Enable wheels and frame to be locked to the device without damaging the bicycle
- ii Be placed in public view and well-lit for security purposes
- iii Be in a convenient and accessible location outside pedestrian and vehicular movement paths
- iv Be protected from the weather.

DCP 2016 requires that the design of bicycle parking facilities be in accordance with Australian Standard for Parking Facilities Part 3: Bicycle Parking Facilities (AS2890.3).

Bicycle lockers are intended for use by residents and therefore should be included within the secure areas of the building noting that where security devices are provided for resident car parking, these are acceptable and can replace bike lockers. Bicycle rails are intended for use by visitors and employees, and as such need to be located in publicly accessible areas within close proximity to the site.

4.3 Pedestrian Network

The site is identified as a prioritised pedestrian area in the Chatswood CBD – Council's Draft Planning and Urban Design Strategy (2016). As such, considerations should be given in terms of improvements to pedestrian access across the Pacific Highway.

The site is located within a well-connected pedestrian network that provides access to key destinations within Chatswood such as Chatswood Transport Interchange and the retail precinct along Victoria Avenue. Pedestrian paths are provided on both sides of the roads in the immediate vicinity of the site.

As previously noted, it is proposed with the opening of the northern section of Bowen Street, the section would be designed as a Category 2 shared zone. The shared zone will include kerbs and traffic calming devices and treatments to regulate traffic speeds to 10 km/h. This maintains the existing high-quality pedestrian environment that provides connection between Mowbray Road and the Pacific Highway towards the Chatswood CBD.

The proposal will also provide a minimum of three metres and a typical four-metre front setback along Bowen Street and Moriarty Road. These setbacks would spatially define the roads and ensure adequate visibility for pedestrians and cars, complement the streetscape and allow for landscaping and open space which make them pedestrian-friendly.

The increased level and quality of lighting along Bowen Street and Moriarty Road from the proposed lighting along building frontages will encourage night time use and increase the activity and passive surveillance of an area. This enhances pedestrian's sense of safety in an area.

4.4 Public Transport

As discussed previously, the site is easily accessible by public transport with Chatswood Interchange and Railway Station located within 1.1km and Artarmon Railway Station within 950 metres. The site, being within 50 metres of the Pacific Highway major public transport corridor, is well served by high frequency and highly accessible buses travelling along the Pacific Highway

as well as Mowbray Road and making use of Chatswood Interchange. The proximity to public transport will increase the use of public transport by residents and employees and discourage the use of private motor vehicles.

4.5 Local Car Sharing Initiatives

As discussed previously, GoGet car share offer pods throughout Chatswood with the service aiming to reduce the reliance on use of private motor vehicles. Memberships for the car share service are available for both personal and business use.

Based on the consolidation of driveways of existing detached dwellings along Bowen Street as part of the Planning Proposal, there would an opportunity to provide on-street car share parking spaces.

4.6 Transport Access Guide

A Transport Access Guide (TAG) would accompany a Green Travel Plan for the development that provides travel information for people travelling to and from the site using the sustainable forms of transport available – walking, cycling and public transport. The TAG provides a simple quick visual look at a location making it easy to see the relationship of a site to train stations, bus stops, car share pods and walking and cycling routes.

Such TAGs encourage the use of non-vehicle mode transport and can reduce associated greenhouse gas emissions and traffic congestion while improving health through active transport choices.

They can be presented in different forms, such as a map printed on the back of business cards or envelopes with complimentary slips to define more comprehensive information. Best practice suggest that the information should be as concise, simple and site centred as possible and where possible provided on a single side sheet. If instructions are too complex, residents and staff are likely to ignore them.

The information presented in the TAG could also be incorporated onto public transport noticeboards that would make residents and visitors more aware of the alternative transport options available.

5. Traffic Impact Assessment

5.1 Traffic Generation

5.1.1 Existing Use

Traffic generation estimates for the existing development have been sourced from the Roads and Maritime *Technical Direction TDT 2013/ 04 Guide to Traffic Generating Developments Updated traffic surveys* (TDT 2013/ 04).

TDT 2013/ 04 provides updated rates for low density residential dwellings, with an average rate of 0.95 trips per dwelling for the weekday morning peak hour while an average rate of 0.99 trips per dwelling for the weekday evening peak hour.

Application of this rate to the existing 12 detached dwellings on the site results in a peak hour traffic generation of 12 vehicle trips during both the morning and evening peak hours

5.1.2 Planning Proposal

Traffic generation estimates for the Planning Proposal have been sourced from the Roads and Maritime (formerly RTA) *Guide to Traffic Generating Developments* (2002).

Roads and Maritime's 2002 guide provides a peak hour trip generation rate of 0.29 vehicle per unit, for high density residential flat dwellings for metropolitan regional centres. Application of this rate to the proposed development results in a peak hour traffic generation of 54 vehicle trips, as set out in Table 5.1.

Table 5.1: Traffic generation estimates

Land use	Size	AM/ PM peak hour	
		Rate	Trips/ Hr
Residential	187 units	0.29 trips per unit	54

5.1.3 Additional Traffic Generation

Taking into account the traffic generated by the existing uses on the site, the Planning Proposal is anticipated to generate an additional 42 vehicle movements in a weekday morning and evening peak hours.

5.2 Future Access Options

Six options have been investigated as part of the assessment, with the key advantages and disadvantages of each options being reviewed from a safety, vehicle delay, accessibility and road network capacity perspective, with the findings summarised in Table 5.2.

Table 5.2: Future access options assessment

Option	Advantages	Disadvantages
1. Do Nothing	<ul style="list-style-type: none"> Minor increase in delay: Keep Clear zone – providing gaps for vehicles to enter from Mowbray Road West and exit from Bowen Street Full and direct accessibility to/ from Bowen Street Maintain existing (similar and familiar) movements Relieve pressure on the intersection of Pacific Highway and Mowbray Road 	<ul style="list-style-type: none"> Potential increase in crashes due to increased conflicting volumes. Turning traffic may affect capacity of Mowbray Road West
2. Left-in/ Left-out from/ to Mowbray Road West at Bowen Street	<ul style="list-style-type: none"> Potential reduction in crashes due to reduced conflicting volumes Improved operation at the intersection of Mowbray Road West and Bowen Street Site accessible from both Bowen Street and Moriarty Road with internal basement connectivity 	<ul style="list-style-type: none"> Limited accessibility to/from Bowen Street for existing residents and Great Northern Hotel patrons Diverted traffic will affect capacity of the intersection of Mowbray Road West/ Goodchap Road (level of service D to E)
3. Left-in/ Left-out from/ to Mowbray Road West at Bowen Street with left-in from Moriarty Road to Bowen Street	<ul style="list-style-type: none"> Potential reduction in crashes due to reduced conflicting volumes Improved operation at the intersection of Mowbray Road West and Bowen Street Provide re-circulation route with proposed angled parking along Moriarty Road after implementation of Clearway 	<ul style="list-style-type: none"> Limited accessibility to/from Bowen Street Diverted traffic will affect capacity of the intersection of Mowbray Road West/ Goodchap Road (level of service D to E)
4. Left-in/ Left-out from/ to Mowbray Road West with right-out from Bowen Street to Moriarty Road	<ul style="list-style-type: none"> Potential reduction in crashes due to reduced conflicting volumes Improved operation at the intersection of Mowbray Road West and Bowen Street Improved operation at the intersection of Pacific Highway and Mowbray Road 	<ul style="list-style-type: none"> Limited accessibility to/from Bowen Street Rat-running traffic will affect capacity of the Pacific Highway north of site.
5. Left-in/ Left-out from/ to Mowbray Road West with reopening of the western end of Moriarty Road to connect to Goodchap Road	<ul style="list-style-type: none"> Potential reduction in crashes due to reduced conflicting volumes Improved operation at the intersection of Mowbray Road West and Bowen Street 	<ul style="list-style-type: none"> Based on site observation on the existing steep gradient, a road connection between Moriarty Road and Goodchap Road would most likely not be safe. Increased pressure on the intersection of Goodchap Road and Mowbray Road

Option	Advantages	Disadvantages
6. Signalisation of Mowbray Road West and Bowen Street	<ul style="list-style-type: none"> ○ Provide safer turning to/from Bowen Street 	<ul style="list-style-type: none"> ○ Roads and Maritime unlikely to support – potentially impact the operation of intersection of Pacific Highway and Mowbray Road – 90 metres west of intersection ○ Potential increase in crashes due to increased conflicting volumes along Mowbray Road West and Pacific Highway if not managed appropriately.

5.3 Future Options

Based on the above option review, three future options were adopted for further SIDRA Intersection assessments:

- Option 1: Do-nothing
- Option 2: Left-in/ left-out at Mowbray Road West/ Bowen Street intersection
- Option 3 (Preferred): Left-in/ left-out at Mowbray Road West/ Bowen Street intersection, with the reopening of access (left-in only) from Moriarty Road to Bowen Street.

5.4 Distribution and Assignment

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including the:

- Configuration of the arterial road network in the immediate vicinity of the site
- Existing operation of intersections providing access between the local and arterial road network
- Surrounding employment centres, retail centres and schools in relation to the site
- Configuration and location of the basement car park access
- Configuration of access driveways to the site.

Considering these criteria, for the purposes of estimating vehicle movements, the assumed directional distributions are shown in:

- Option 1: Figure 5.1 and Figure 5.2
- Option 2: Figure 5.3 and Figure 5.4
- Option 3: Figure 5.5 and Figure 5.6.

Figure 5.1: Option 1 traffic arrival distribution

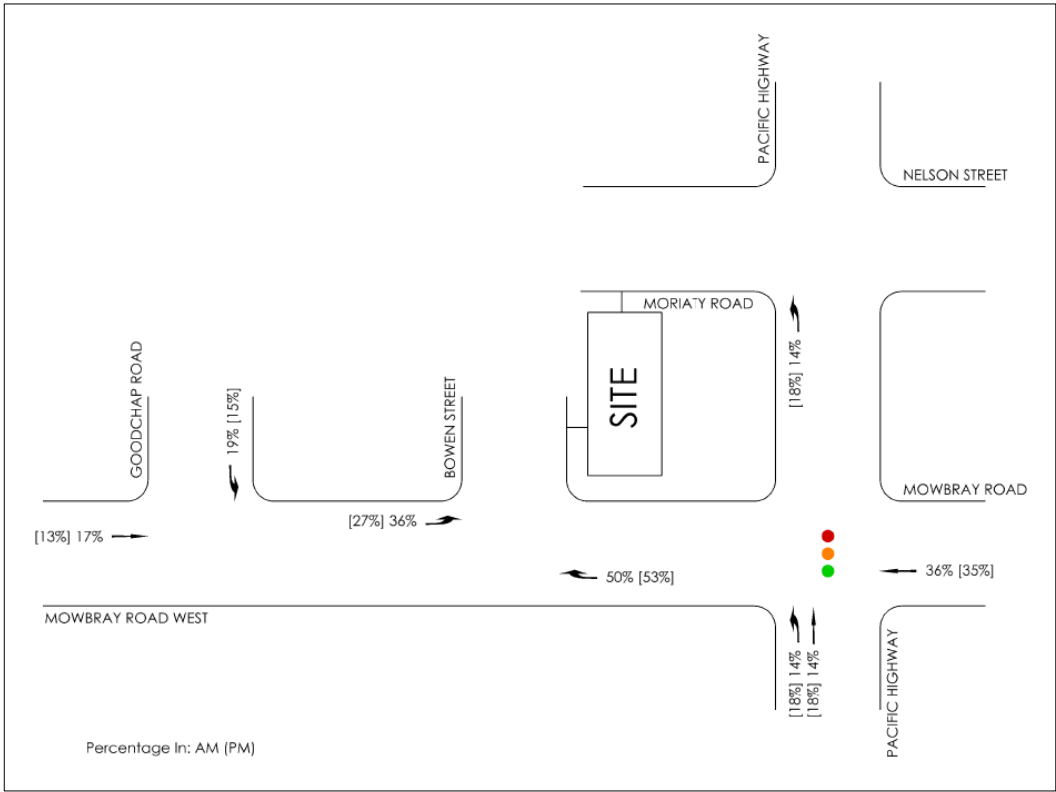


Figure 5.2: Option 1 traffic departure distribution

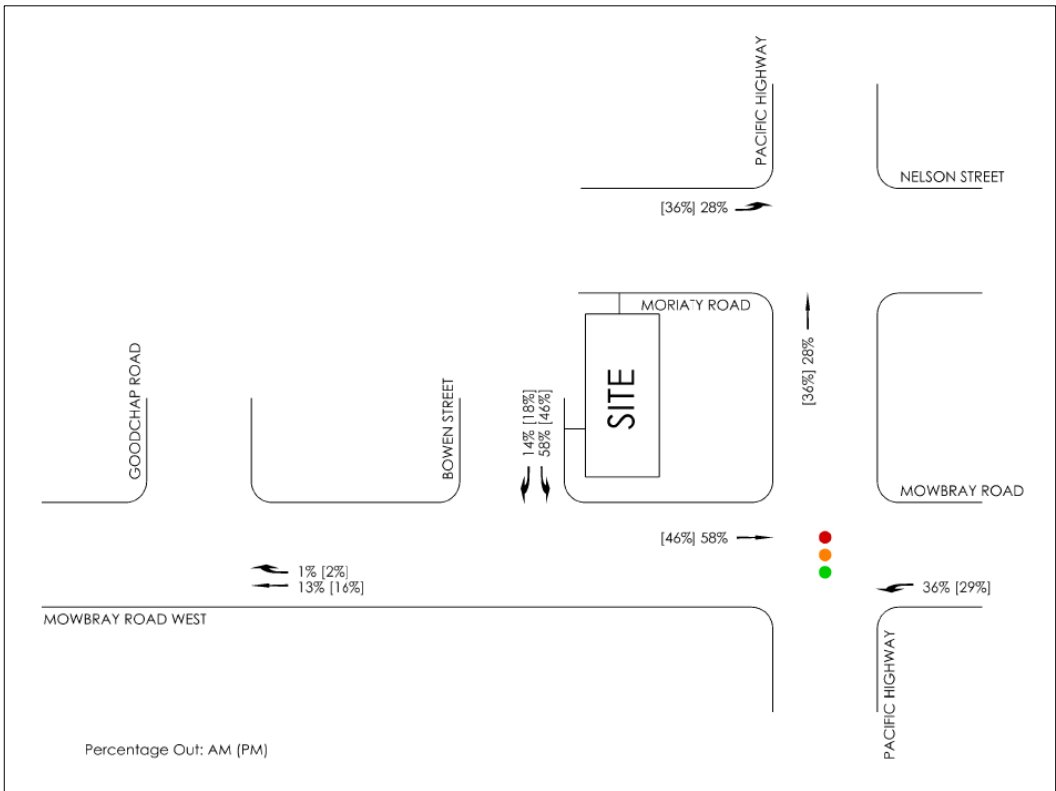


Figure 5.3: Option 2 traffic arrival distribution

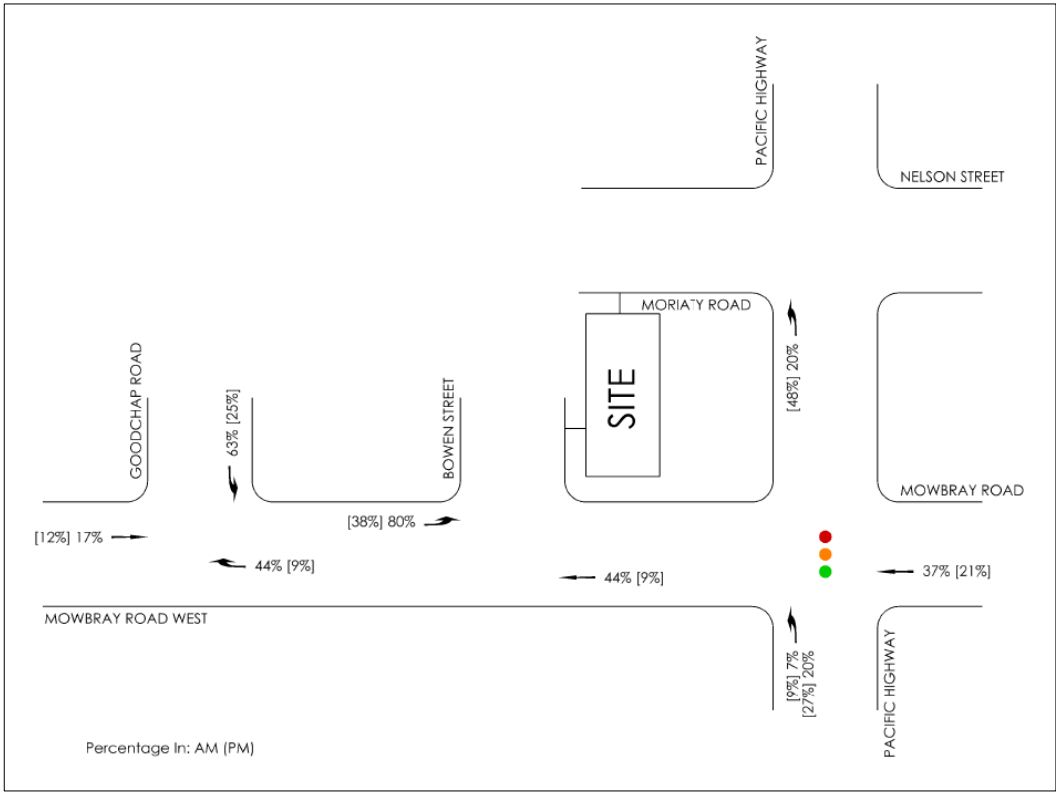


Figure 5.4: Option 2 traffic departure distribution

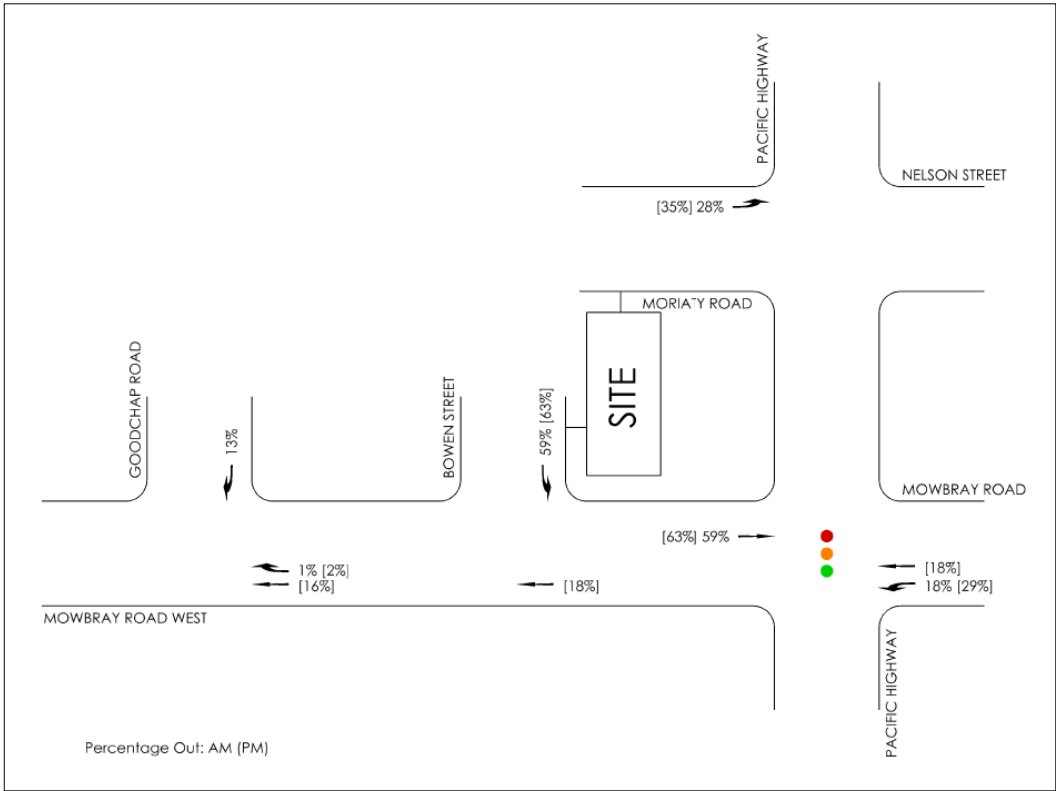


Figure 5.5: Option 3 traffic arrival distribution

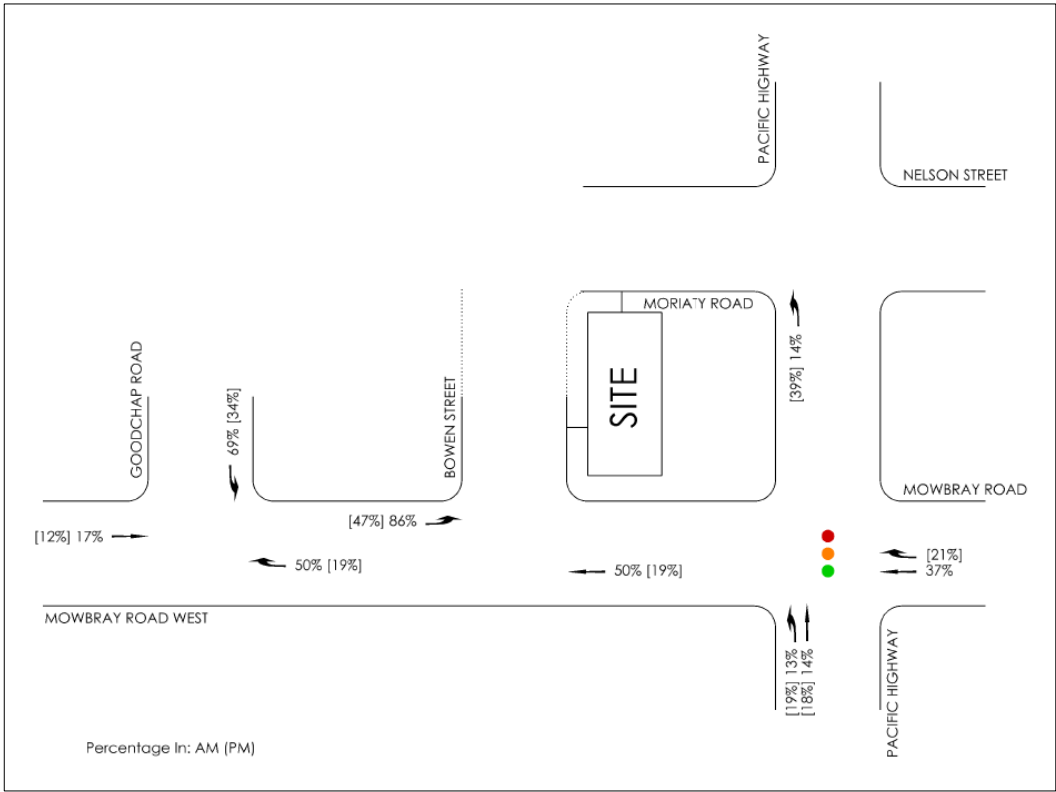
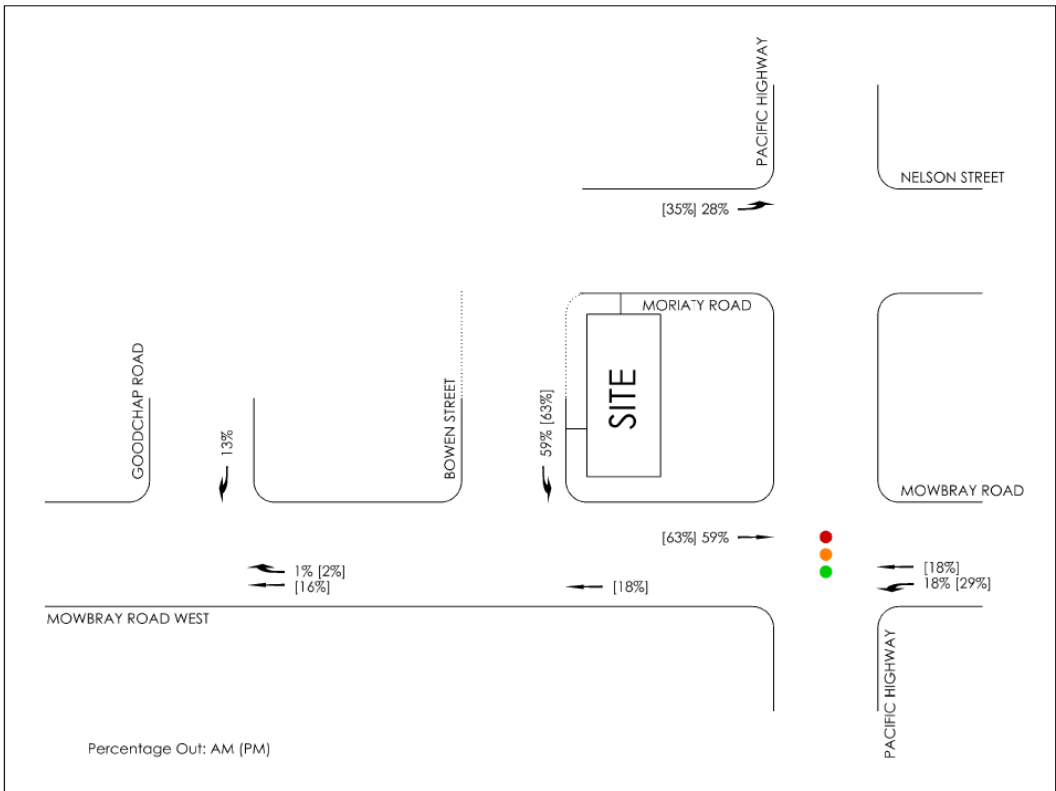


Figure 5.6: Option 3 traffic departure distribution



In addition, the following directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) of 20 per cent in and 80 per cent out has been assumed for the residential component during a weekday morning peak hour, with the reverse directional split in the evening peak hour.

Based on the above, Figure 5.7, Figure 5.8 and Figure 5.9 show the estimated turning movements in the vicinity of the subject property following full site development for Options 1, 2 and 3, respectively.

Figure 5.7: Option 1 future weekday AM and PM peak hour traffic volumes (vehicles per hour)

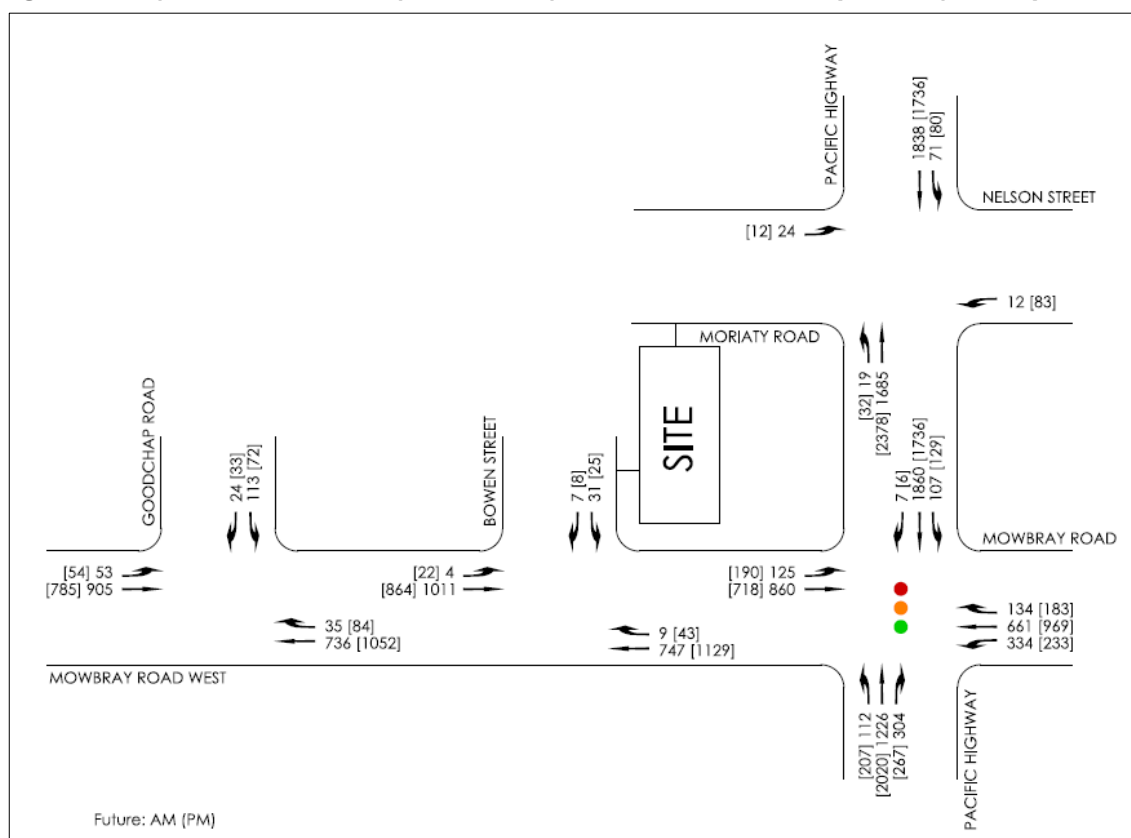


Figure 5.8: Option 2 future weekday AM and PM peak hour traffic volumes (vehicles per hour)

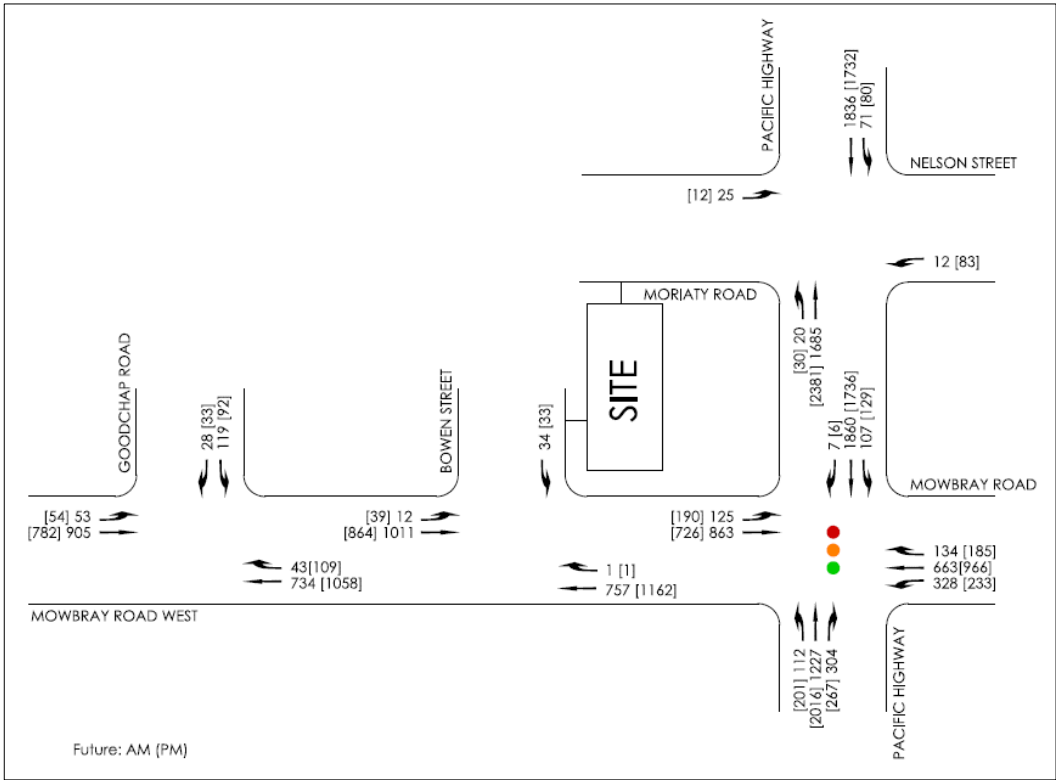
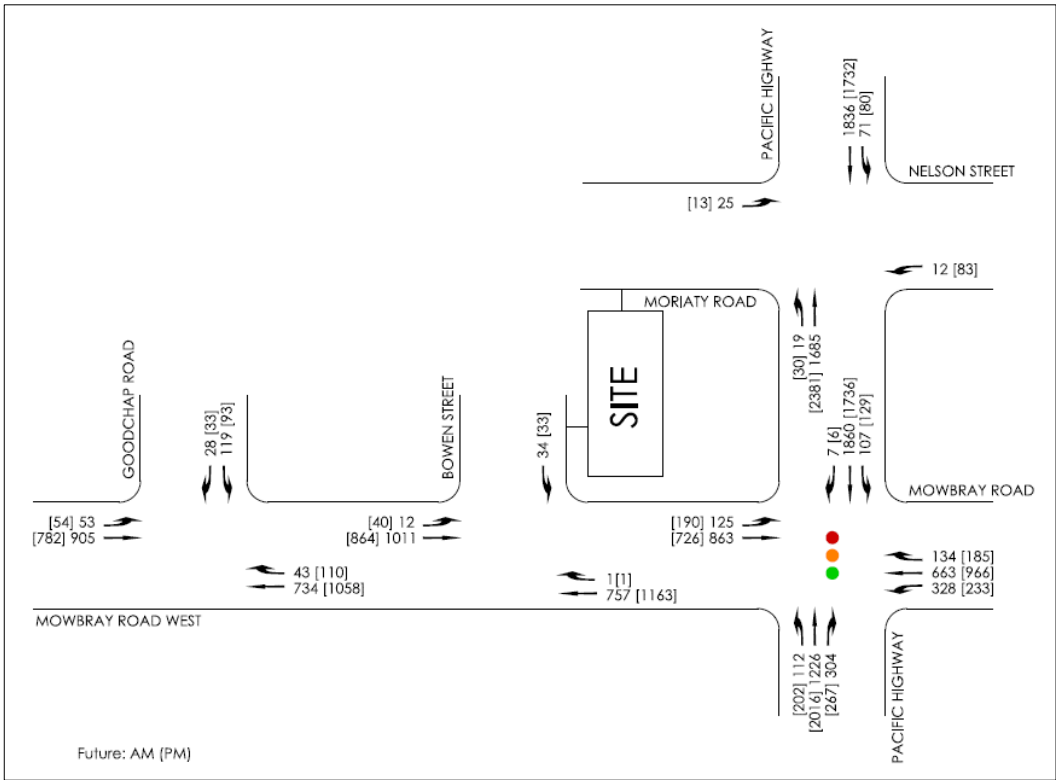


Figure 5.9: Option 3 future weekday AM and PM peak hour traffic volumes (vehicles per hour)



5.5 Traffic Impact

5.5.1 Weekday Peak Periods

The key intersections have been reanalysed using SIDRA Intersection to determine what impact the additional traffic would be expected to have on their operating conditions. Table 5.3, Table 5.4 and Table 5.5 present a summary of the expected future operation of the key intersections for Options 1, 2 and 3, respectively, with full results included in Appendix B.

Table 5.3: Option 1 future intersection operating conditions

Intersection	Peak	Degree of saturation	Average delay (sec/veh)	95th percentile queue (m)	Level of service
Pacific Highway/ Mowbray Road	AM	1	72	313	F
	PM	0.94	58	413	E
Mowbray Road West/ Bowen Street ^[1]	AM	0.02	13	1	A
	PM	0.05	25	1	B
Mowbray Road West/ Goodchap Road ^[1]	AM	0.40	18	7	B
	PM	0.36	32	9	C
Pacific Highway/ Moriarty Road ^[1]	AM	0.04	9	1	A
	PM	0.02	11	1	A

Option 1 = Do Nothing

[1] Worst movement reported for unsignalised intersection.

Table 5.4: Option 2 future intersection operating conditions

Intersection	Peak	Degree of saturation	Average delay (sec/veh)	95th percentile queue (m)	Level of service
Pacific Highway/ Mowbray Road	AM	1	72	313	F
	PM	0.94	57	411	E
Mowbray Road West/ Bowen Street ^[1]	AM	0.06	12	1	A
	PM	0.03	7	1	A
Mowbray Road West/ Goodchap Road ^[1]	AM	0.44	19	8	B
	PM	0.41	35	11	C
Pacific Highway/ Moriarty Road ^[1]	AM	0.04	9	1	A
	PM	0.02	11	1	A

Option 2 = Left-in and left-out only at Bowen Street and Mowbray Road West

[1] Worst movement reported for unsignalised intersection.

Table 5.5: Option 3 future intersection operating conditions

Intersection	Peak	Degree of saturation	Average delay (sec/veh)	95th percentile queue (m)	Level of service
Pacific Highway/ Mowbray Road	AM	1	72	313	F
	PM	0.94	57	411	E
Mowbray Road West/ Bowen Street ^[1]	AM	0.06	12	1	A
	PM	0.03	7	1	A
Mowbray Road West/ Goodchap Road ^[1]	AM	0.44	19	8	B
	PM	0.41	35	11	C
Pacific Highway/ Moriarty Road ^[1]	AM	0.04	9	1	A
	PM	0.02	11	1	A

Option 3 = Left-in and left-out only at Bowen Street and Mowbray Road West, left turns permitted from Moriarty Road to Bowen Street

[1] Worst movement reported for unsignalised intersection.

A summary of intersection performance prior to and following full site development assuming planning approvals under three future options, are presented in Table 5.6.

Table 5.6: Existing and future intersection operating conditions

Intersection	Peak	Existing		Option 1		Option 2		Option 3	
		Average delay (sec/veh)	Level of service	Average delay (sec/veh)	Level of service	Average delay (sec/veh)	Level of service	Average Delay (sec/veh)	Level of service
Pacific Highway/ Mowbray Road	AM	69	E	72	F	72	F	72	F
	PM	57	E	58	E	57	E	57	E
Mowbray Road West/ Bowen Street	AM	12	A	13	A	12	A	12	A
	PM	24	B	25	B	7	A	7	A
Mowbray Road West/ Goodchap Road	AM	18	B	18	B	19	B	19	B
	PM	32	C	32	C	35	C	35	C
Pacific Highway/ Moriarty Road	AM	9	A	9	A	9	A	9	A
	PM	11	A	11	A	11	A	11	A

Overall, the intersections would generally continue to operate at the same levels of service with only minor increases to average delays and 95th percentile queues predicted when compared with existing conditions.

It is noted that average delay at the Pacific Highway/ Mowbray Road intersection (currently close to capacity) is expected to increase by up to three seconds in the AM peak, crossing the 70 second threshold between Level of Service E and F, despite only adding a small amount of traffic to the intersection. However, a minor manual adjustment to green time allocation of one second indicates overall average delay for the intersection would reduce delay at the intersection to 70 seconds and a Level of Service E overall, similar to existing conditions. Such an adjustment would automatically be made by the dynamic traffic control software (SCATS).

Based on the above assessments, the preferred Option 3 will maintain existing level of service for the intersections of Pacific Highway/ Mowbray Road and Pacific Highway/ Moriarty Road while improving the levels of safety and service at the intersection of Mowbray Road West/ Bowen

Street, with a minimal traffic impact on the intersection of Mowbray Road West/ Goodchap Road.

5.5.2 Proposed Bowen Street Shared Zone

Transport for New South Wales (TfNSW) has a speed zone policy and guidelines relating to shared zones, published in 2012. The guidelines state that shared zones must meet specific site conditions and are assessed against the following site criteria:

- The current speed limit is ≤ 50 km/h (prior to implementation of the shared zone)
- The current traffic flow is ≤ 100 vehicles per hour and $\leq 1,000$ vehicles per day (prior to implementation of the shared zone)
- The speed limit on approaching roads to be ≤ 50 km/h
- The shared zone must be less than 400 metres in length
- The shared zone must not be on a bus route or a heavy vehicle route
- The minimum trafficable width must be 2.8 metres
- Any delineation, kerb and gutter shall be removed to enhance the sense of equality between pedestrians and vehicles, unless excepted by Roads and Maritime
- There must be no designated pedestrian facilities located within a shared zone.

An assessment of the post development peak hour and daily traffic volumes is presented in Table 5.7.

Table 5.7: Shared zone capacity assessment – Bowen Street

Period	Shared zone threshold	Post development traffic volume	Adequacy of road link
AM Peak Hour	Maximum 100 vph	18 vph	✓
PM Peak Hour	maximum 100 vph	30 vph	✓
Daily	maximum 1,000 vpd	300 vpd [1]	✓

[1] Assuming a peak-to-daily ratio of 10% for local roads.

Table 5.7 indicates that the post development traffic volumes on Bowen Street during the morning and evening peak hours as well as the daily traffic volumes will be in accordance with the thresholds set out in the TfNSW documentation.

5.5.3 Summary

The additional development traffic volumes through each of the surrounding intersections is approximately one vehicle movement every minute through the adjacent key intersections during the weekday morning and evening peak hours.

In addition, on the proposed Bowen Street shared zone, the traffic volume increases are not expected to exceed TfNSW shared zone limits, and accordingly could not be expected to compromise the safety of pedestrians or cyclists.

Moreover, the use of Bowen Street and Moriarty Road by vehicles accessing residential uses which about them is entirely appropriate and consistent with their functional role in the road network.

Against existing traffic volumes in the vicinity of the site, the additional traffic generated by the proposed development could not be expected to compromise the safety and function of the surrounding road network.

5.6 Construction Traffic Impact

A construction traffic management plan would be prepared prior to works commencing on-site.

Construction vehicle access to and from the site would be via Bowen Street and Moriarty Road and restricted to specific work hours to limit the impact on existing uses, especially other residential properties in the vicinity.

Further details for construction vehicle activity would be developed in consultation with Council, once the likely development staging is known and/ or a contractor is appointed.

6. Summary and Conclusions

6.1 Summary

- i The proposal generates a DCP 2016 parking requirement for developments outside railway precincts/ major public transport corridors of 269 car parking spaces.
- ii Vehicular access to and from the basement car parking and loading area would be provided via two two-way driveways linking with Moriarty Road and Bowen Street.
- iii A shared parking basement is proposed for both buildings to allow better accessibility for residents, tenants and visitors to enter and exit via Moriarty Road and Bowen Street.
- iv To reduce potential conflicts between turning traffic at the intersection of Mowbray Road West and Bowen Street, it is proposed to implement a left-in/ left-out restriction.
- v This will be complemented by the opening and conversion of the northern section of Bowen Street to shared zone for vehicle access to allow left-in only for westbound traffic on Moriarty Road.
- vi The proposed development would require one loading bay for the residential use in accordance with the minimum requirements of the DCP 2016.
- vii The proposed car park access and on-site loading facility, as well as the shared zone design for Bowen Street, would be further addressed at the DA stage.
- viii The proposed development is required to provide at least 19 bicycle lockers and 16 bicycle rails to be in accordance with the minimum requirements of the DCP 2016.
- ix The development is expected to generate up to 54 vehicle movements during the weekday morning and evening peak periods.
- x Taking into account the traffic generated by the existing uses on the site, the proposed development is anticipated to generate an additional 42 vehicle movements in a weekday morning and evening peak hours.
- xi There is adequate capacity in the surrounding road network to cater for the traffic generated by the proposed development.

6.2 Conclusions

This assessment of the traffic and parking implications of the Planning Proposal at 1A-29 Bowen Street and 6-18 Moriarty Road, Chatswood has found that the increase in traffic generated by the site during peak hours can be satisfactorily accommodated on the road network, without compromising the safety and efficiency of the network, subject to changes to the intersection of Bowen Street and Moriarty Road, and Bowen Street and Mowbray Road West. The site would be able to accommodate the parking requirements of the Planning Proposal on-site, and measures (such as implementation of a Green Travel Plan) are recommended to reduce reliance on car travel associated with the Planning Proposal and its surrounds.

Appendix A

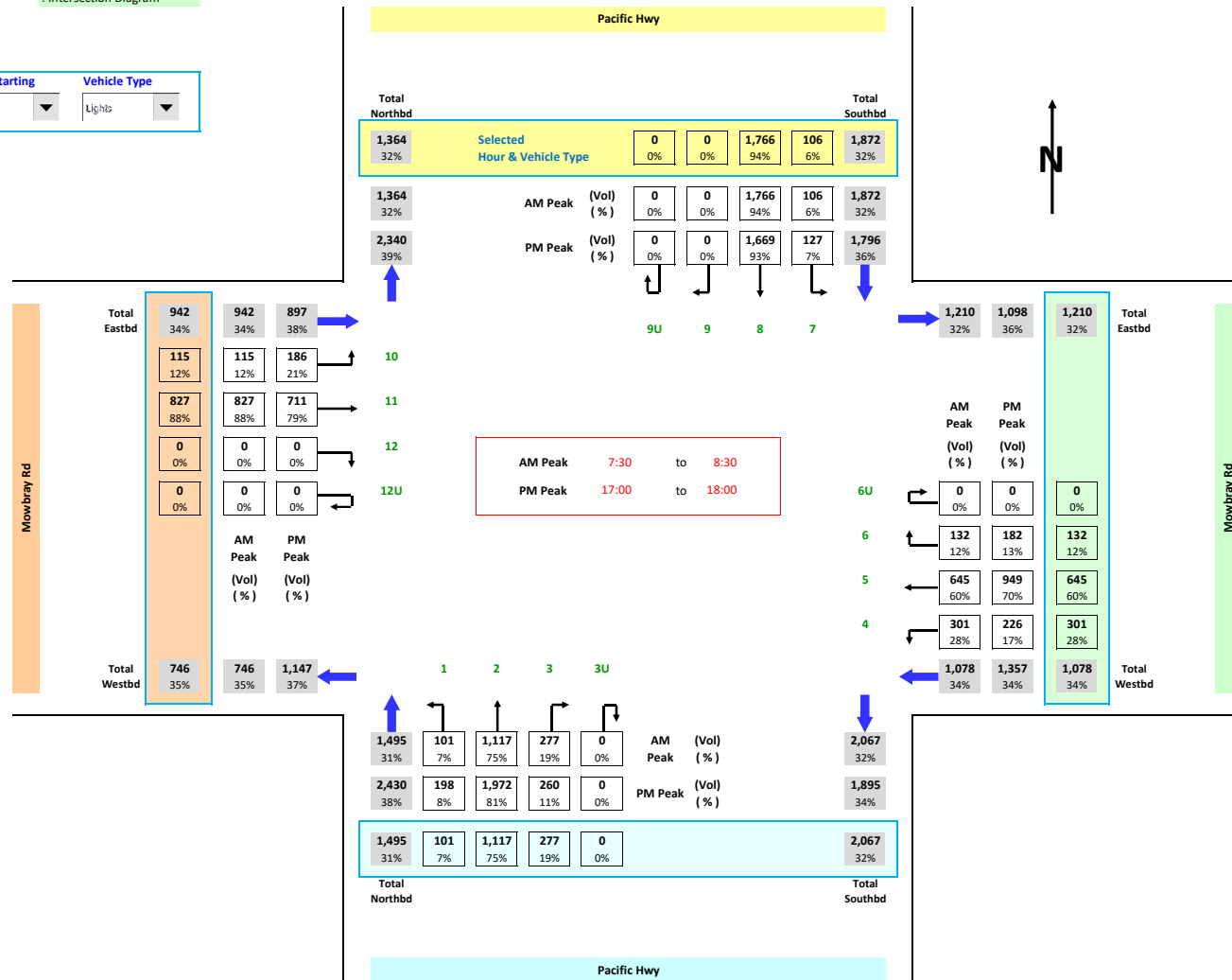
Survey Results

Job No. : N3236
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 Suburb : Mowbray Road
 Location : 1. Pacific Hwy / Mowbray Rd

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting: 7:30
 Vehicle Type: Light

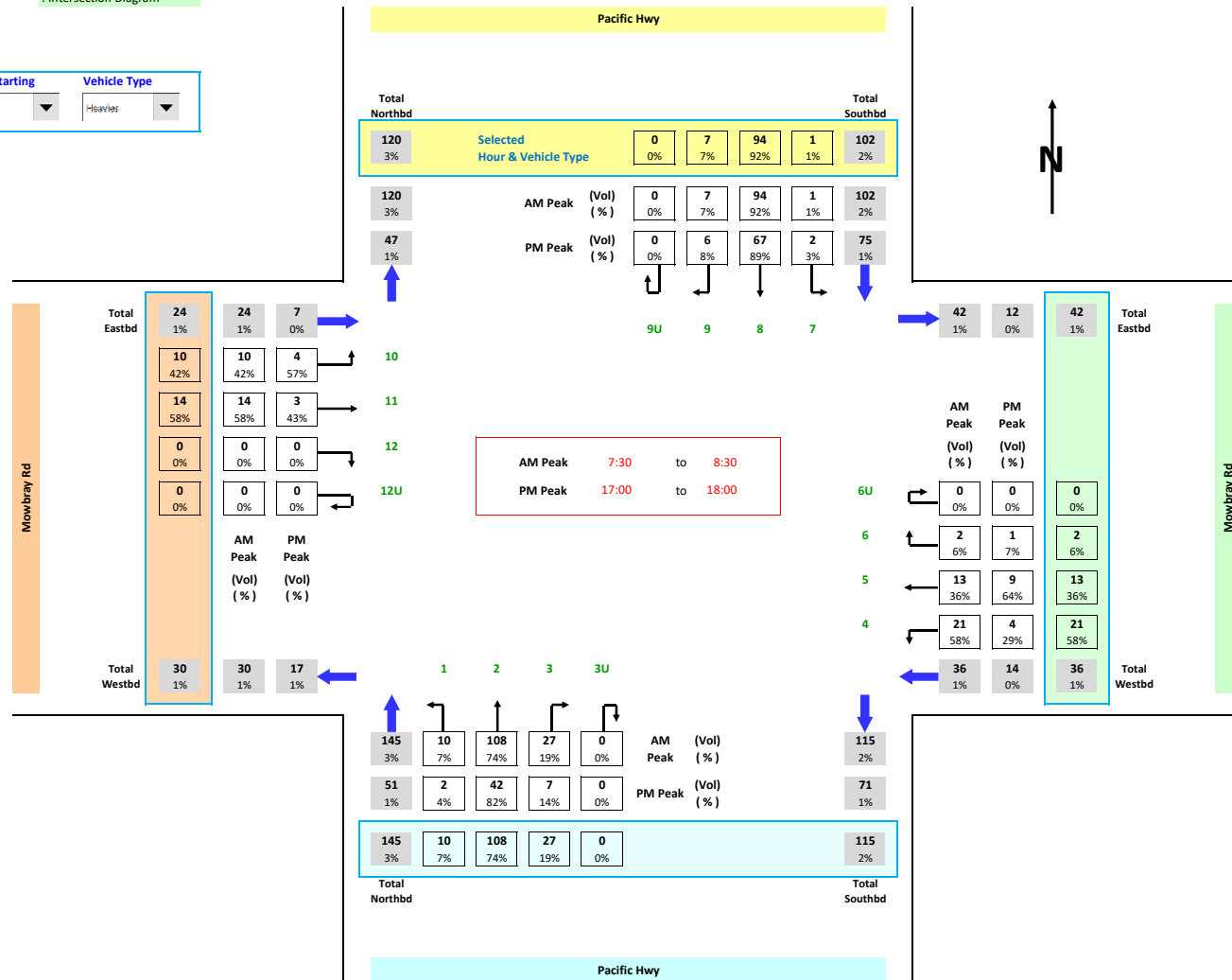


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 Suburb : Mowbray Road
 Location : 1. Pacific Hwy / Mowbray Rd

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting Vehicle Type

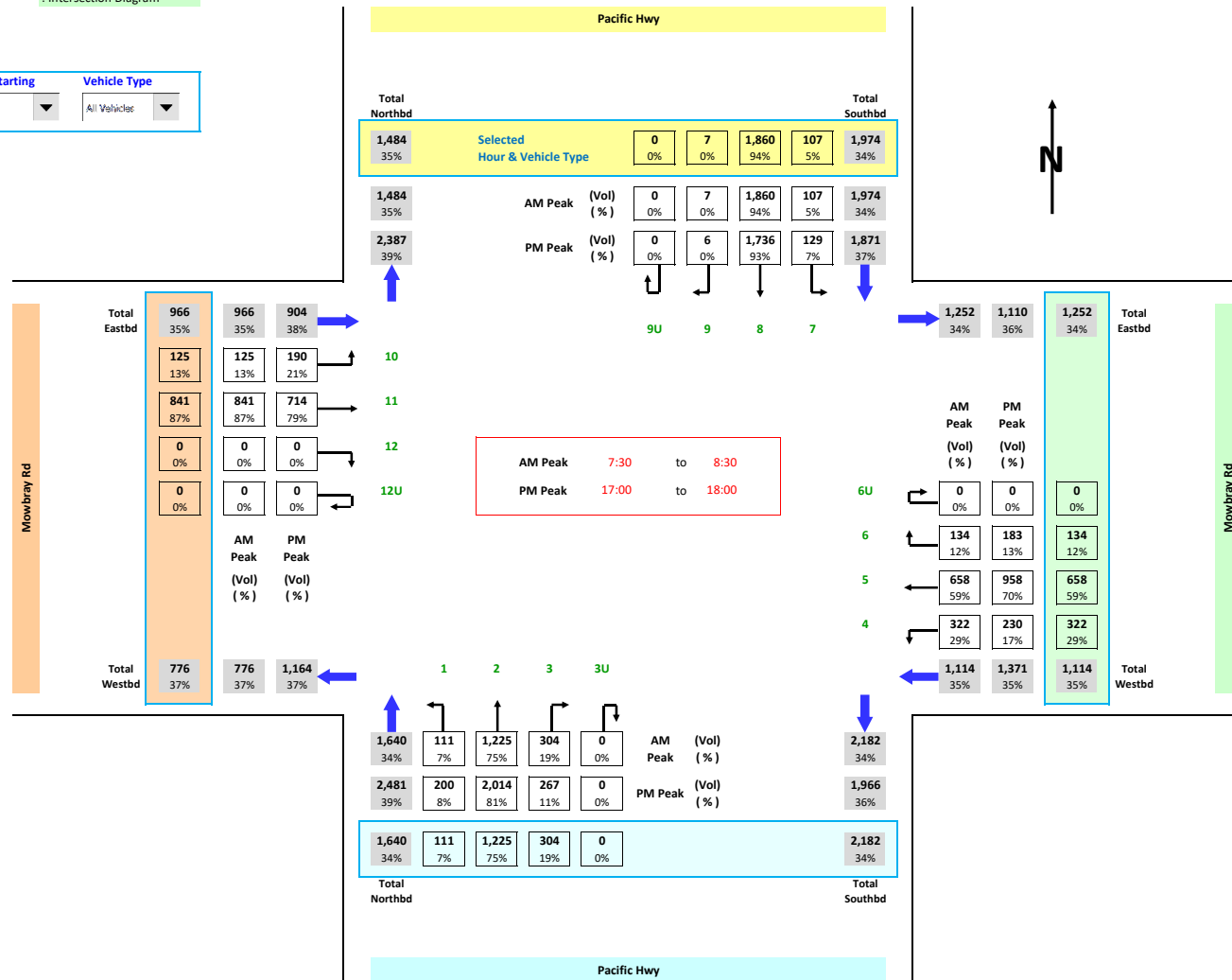


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 Suburb : Mowbray Road
 Location : 1. Pacific Hwy / Mowbray Rd

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



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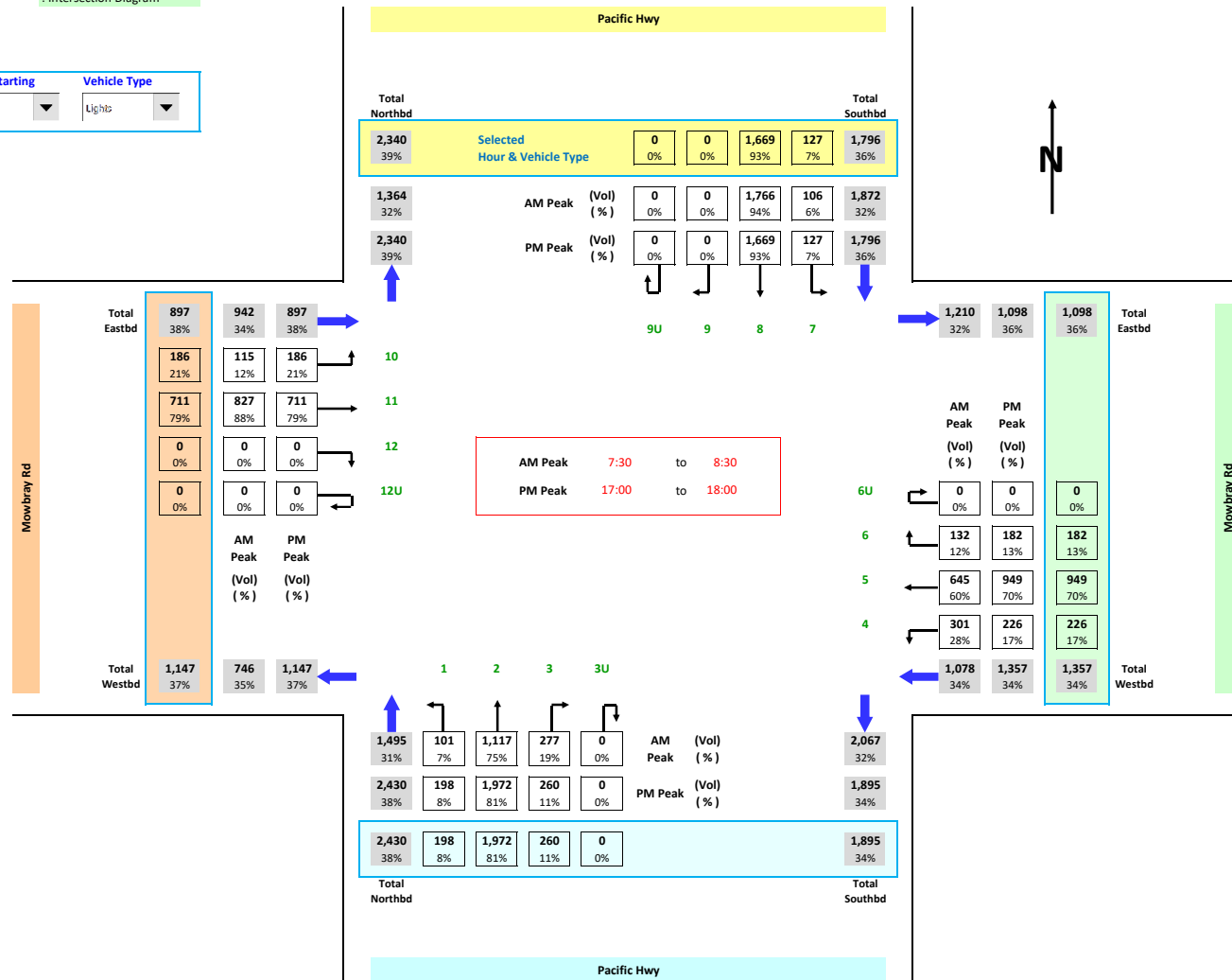


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Suburb : Mowbray Road
Location : 1. Pacific Hwy / Mowbray Rd

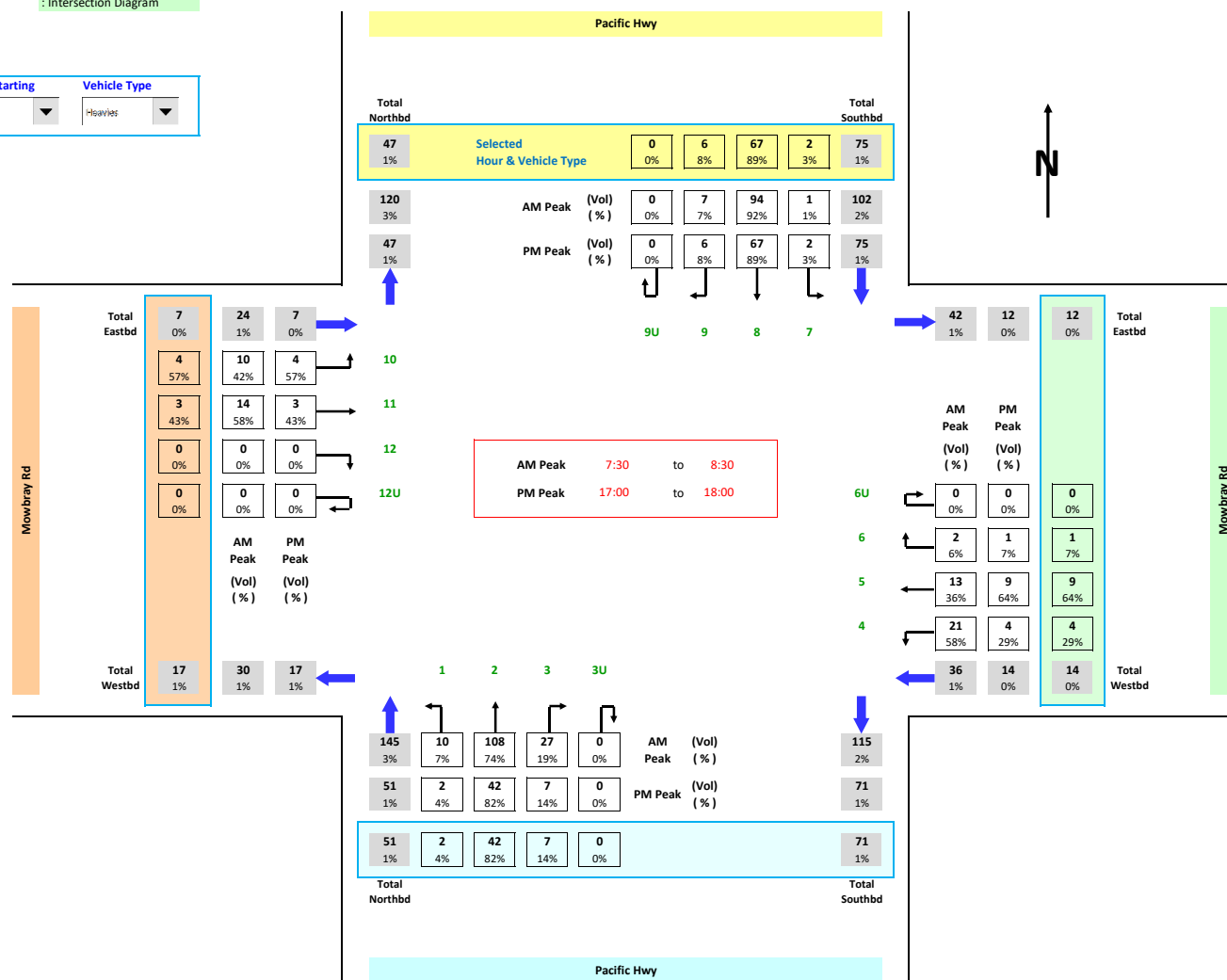
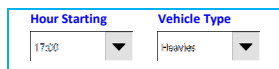
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Weather : Fine
Description : Classified Intersection Count
Intersection Diagram



Hour Starting: 17:00
Vehicle Type: Light



Day/Date : Tues, 16th May 2017
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

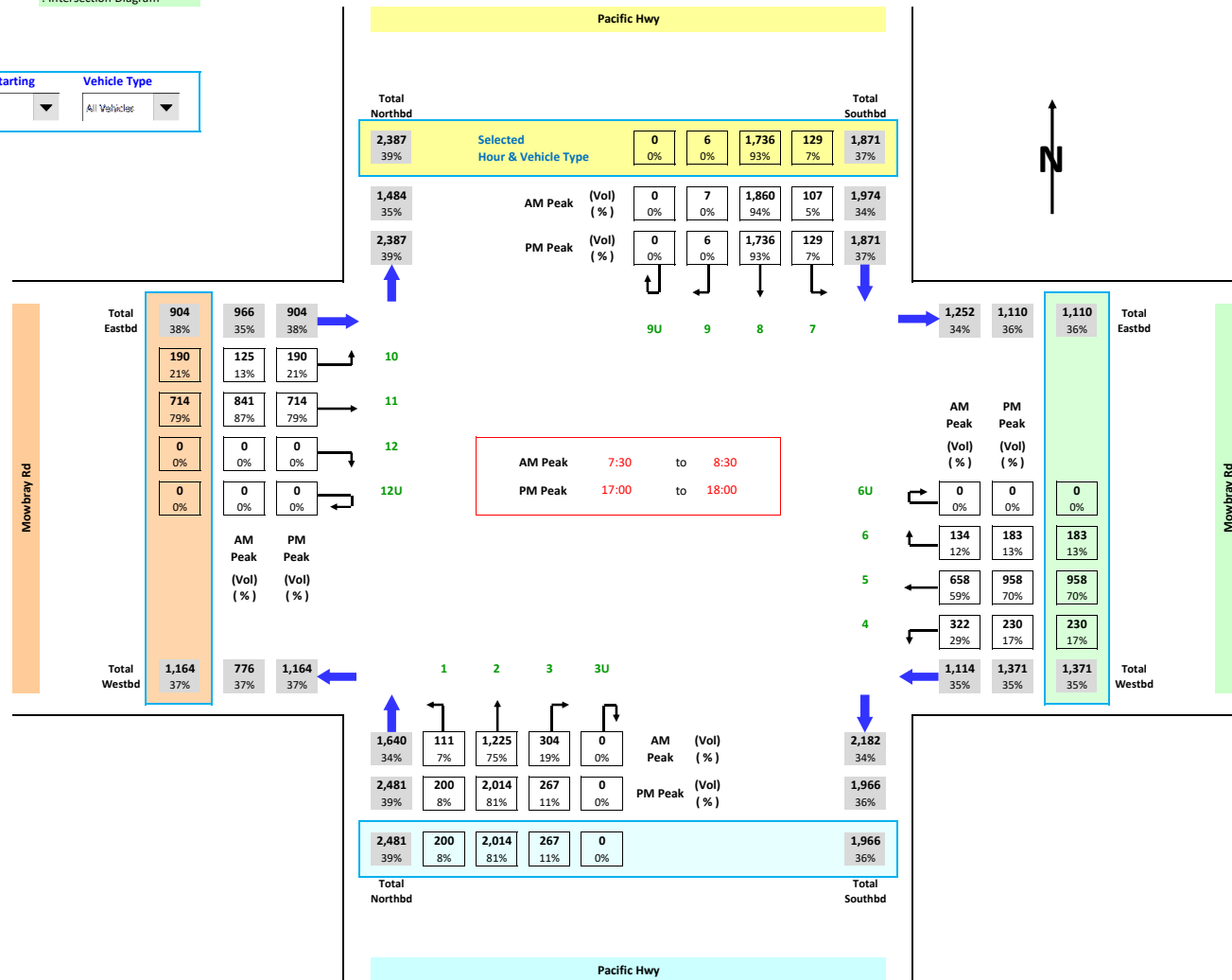


Job No. : N3236
Client : GTA
Suburb : Mowbray Road
Location : 1. Pacific Hwy / Mowbray Rd

Day/Date : Tues, 16th May 2017
Weather : Fine
Description : Classified Intersection Count
Intersection Diagram



Hour Starting: 17:00
Vehicle Type: All Vehicles

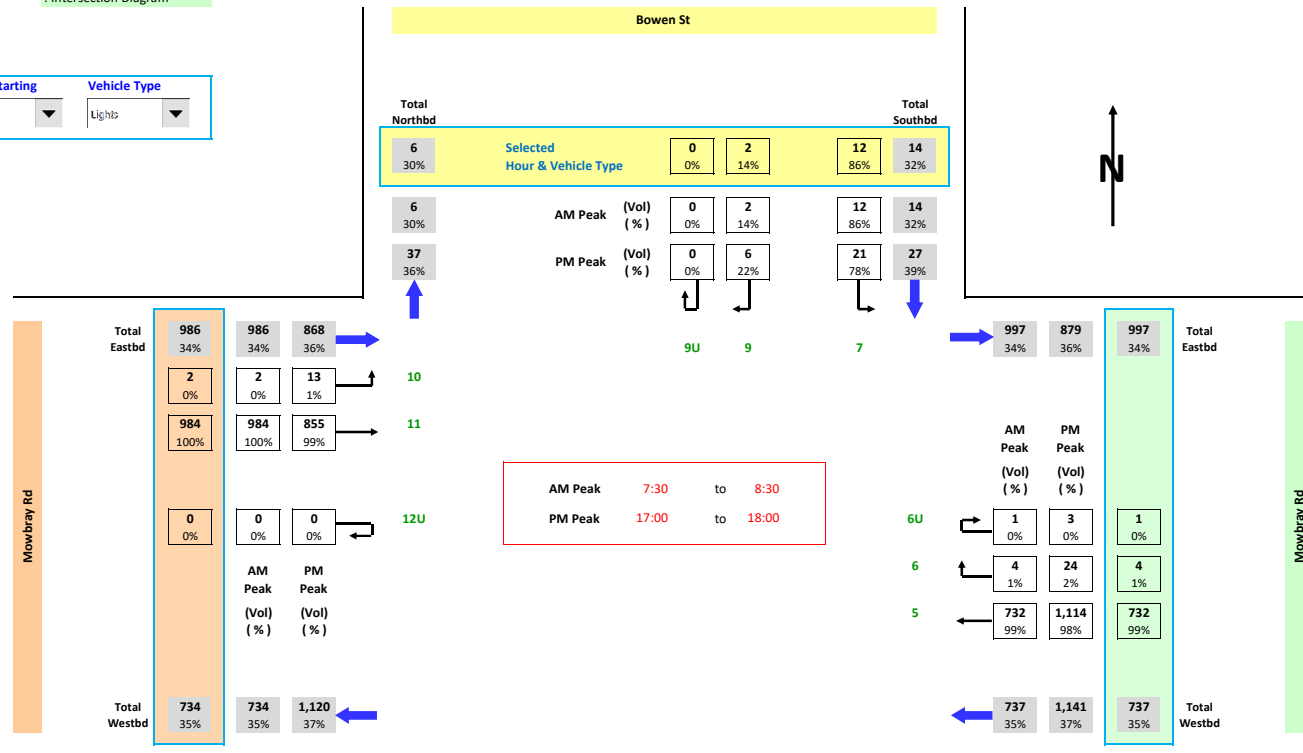


Job No. : N3236
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 Suburb : Mowbray Road
 Location : 2. Bowen St / Mowbray Rd

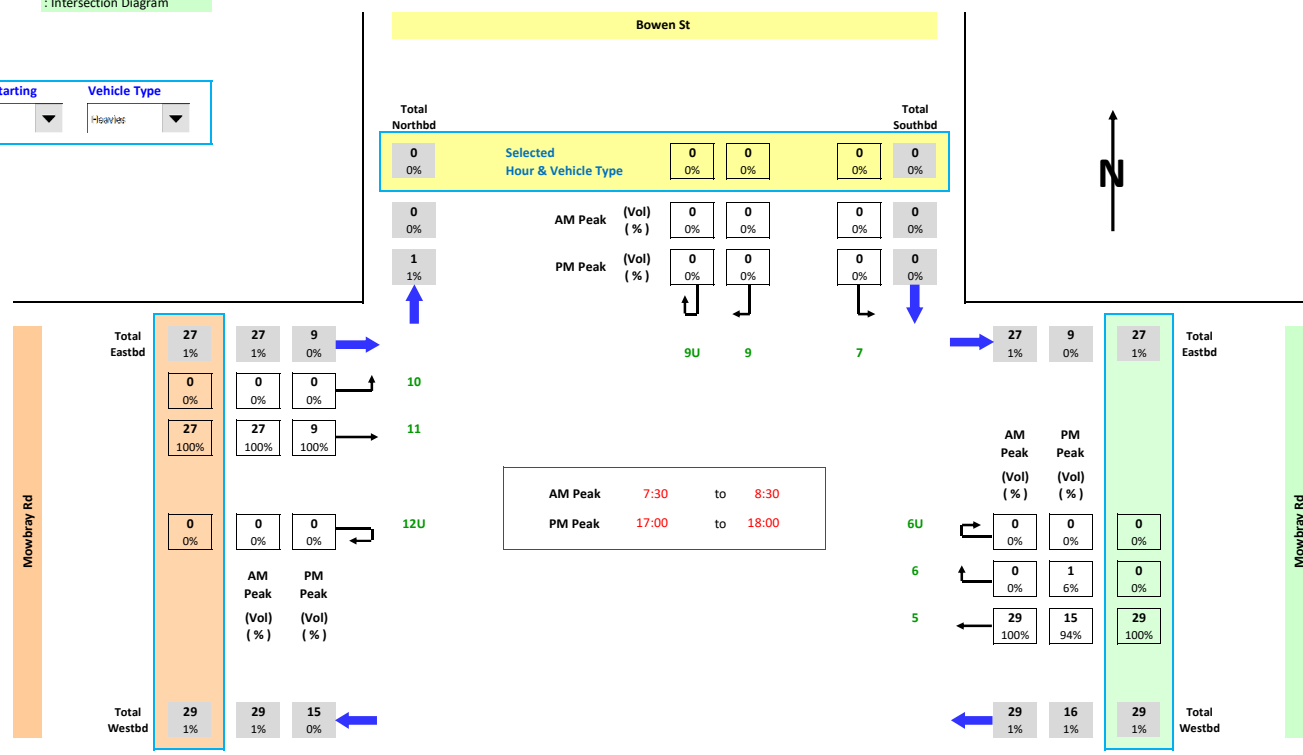
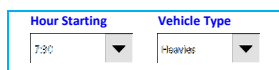
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 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting: 7:30
 Vehicle Type: Light



Day/Date : Tues, 16th May 2017
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

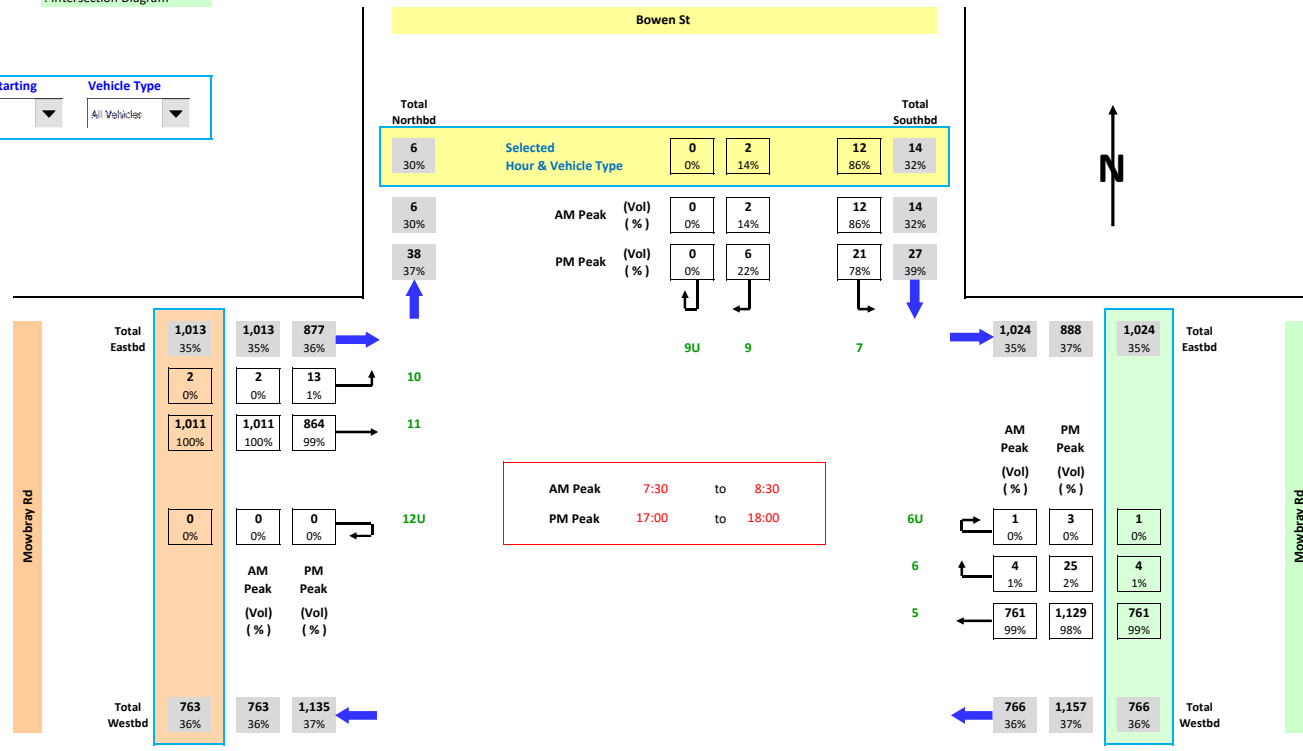


Job No. : N3236
 Client : GTA
 Suburb : Mowbray Road
 Location : 2. Bowen St / Mowbray Rd

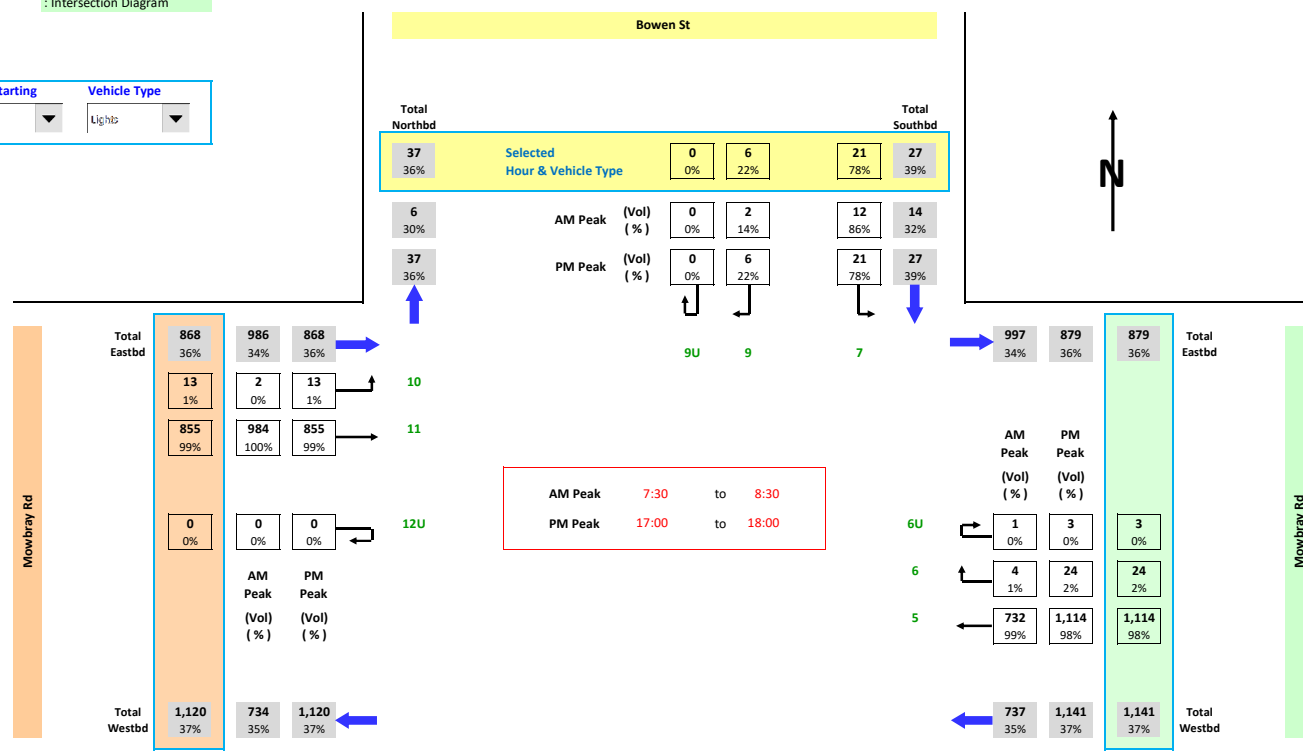
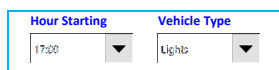
Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



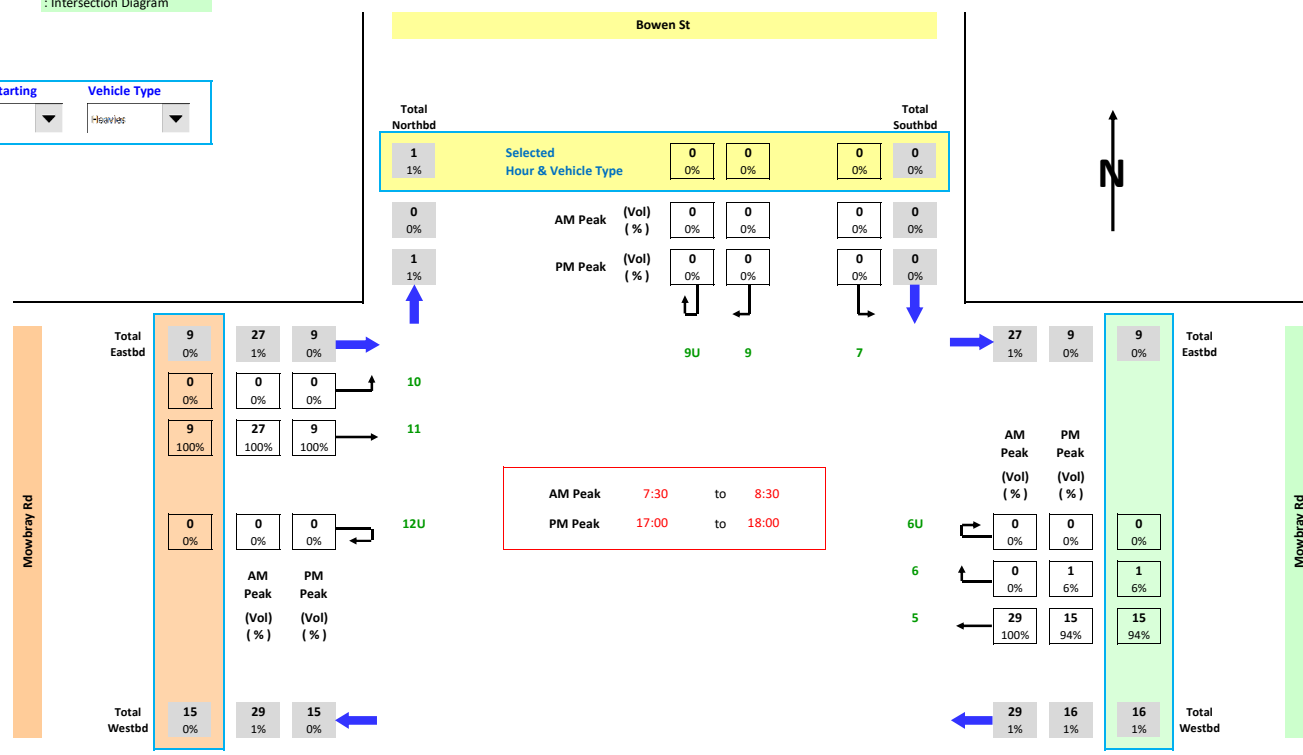
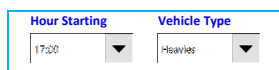
Hour Starting 7:30 Vehicle Type All Vehicles



Day/Date : Tues, 16th May 2017
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



Day/Date : Tues, 16th May 2017
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

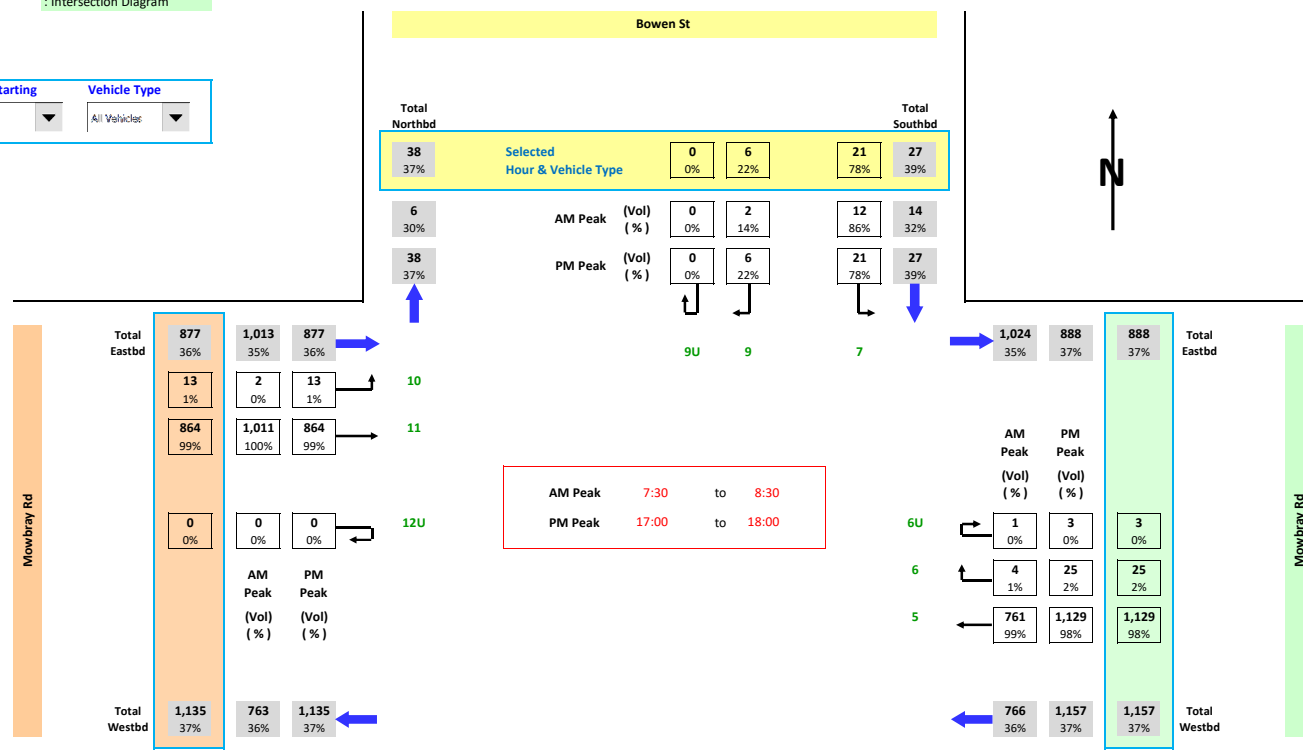


Job No. : N3236
 Client : GTA
 Suburb : Mowbray Road
 Location : 2. Bowen St / Mowbray Rd

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting: 17:00
 Vehicle Type: All Vehicles

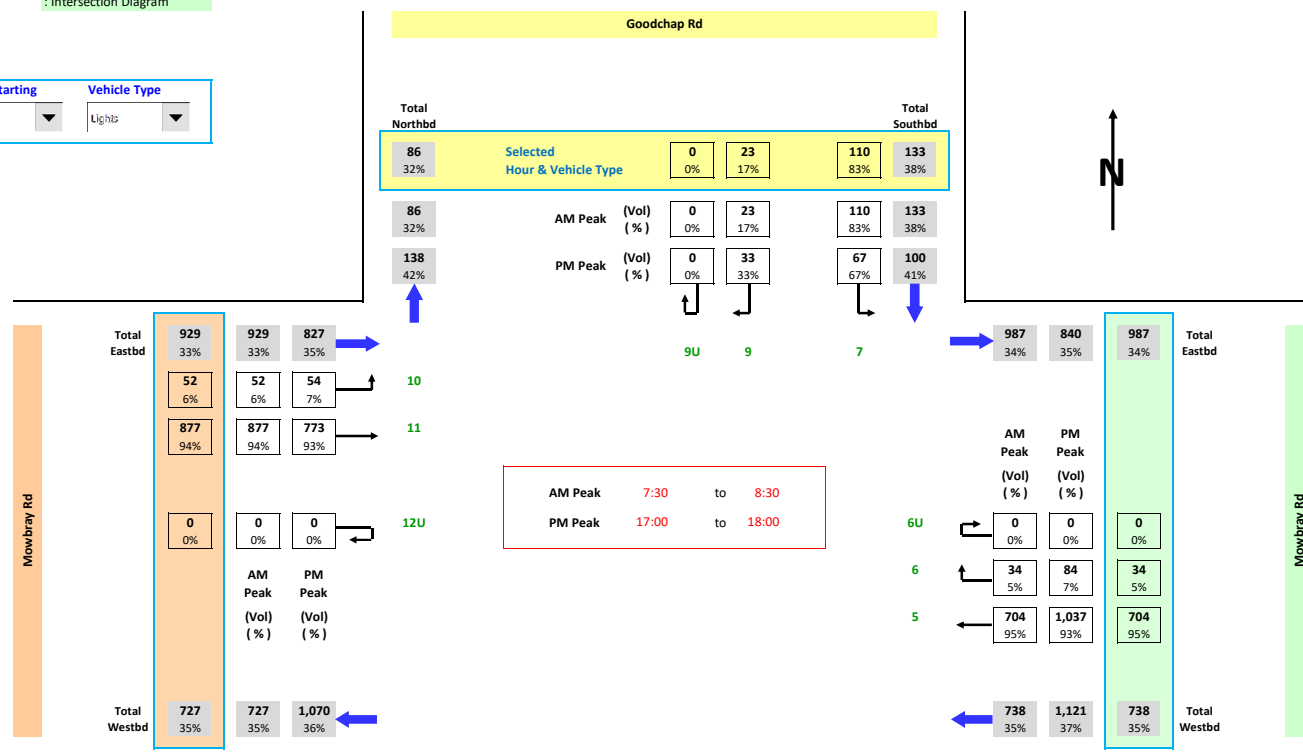


Job No. : N3236
 Client : GTA
 Suburb : Mowbray Road
 Location : 3. Goodchap Rd / Mowbray Rd

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting: 7:30
 Vehicle Type: Light

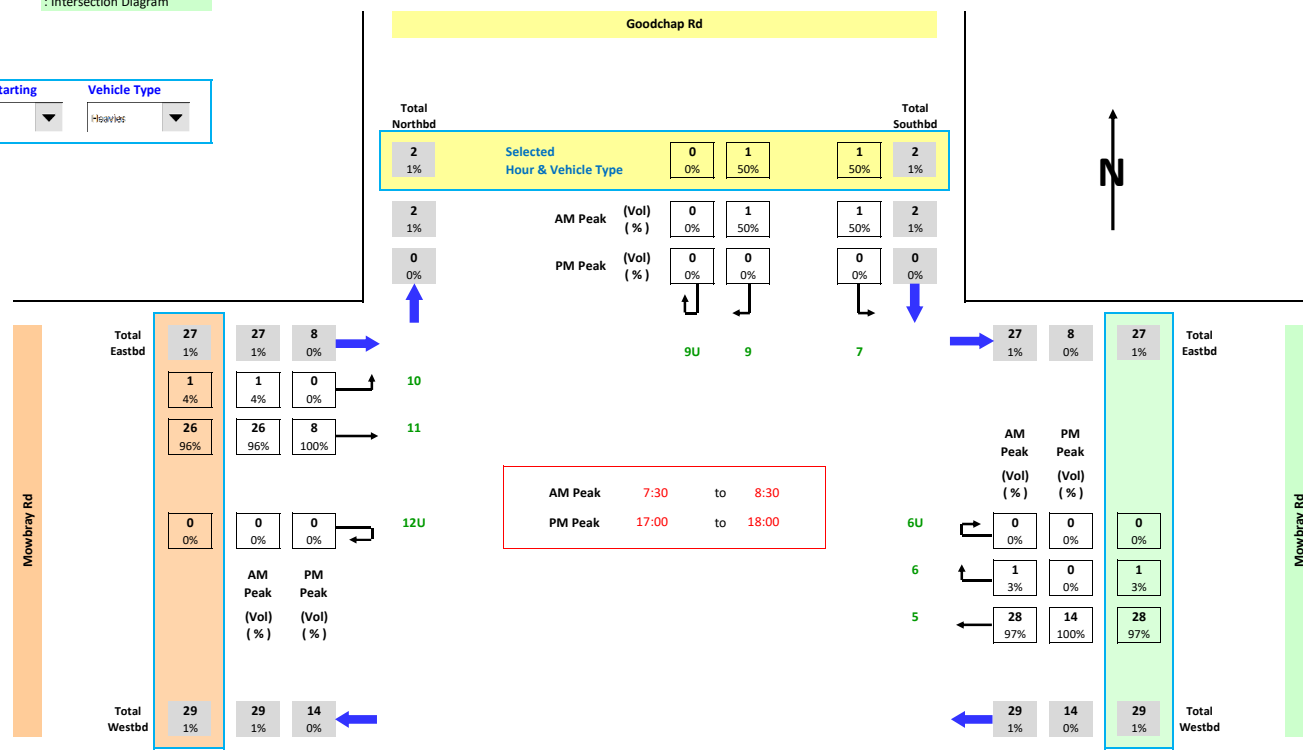


Job No. : N3236
Client : GTA
Suburb : Mowbray Road
Location : 3. Goodchap Rd / Mowbray Rd

Day/Date : Tues, 16th May 2017
Weather : Fine
Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting : 7:30
Vehicle Type : Heavies

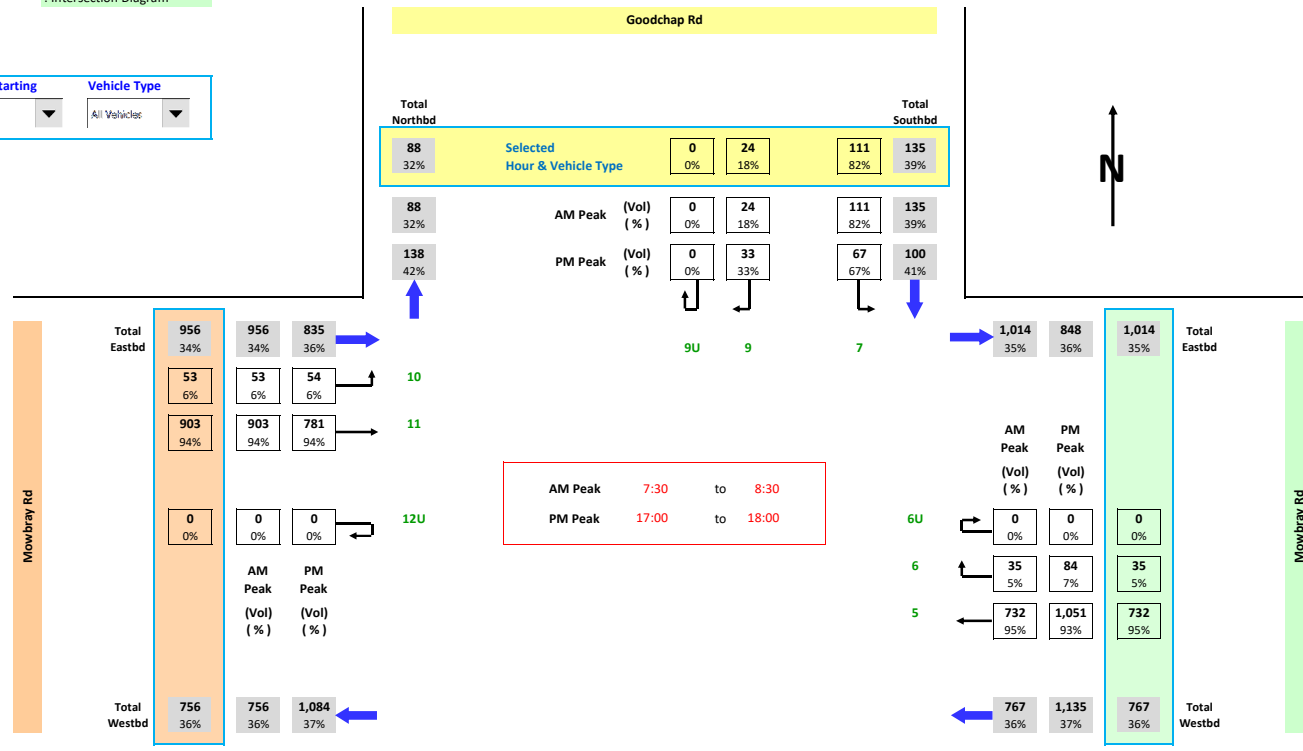


Job No. : N3236
 Client : GTA
 Suburb : Mowbray Road
 Location : 3. Goodchap Rd / Mowbray Rd

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting: 7:30
 Vehicle Type: All Vehicles

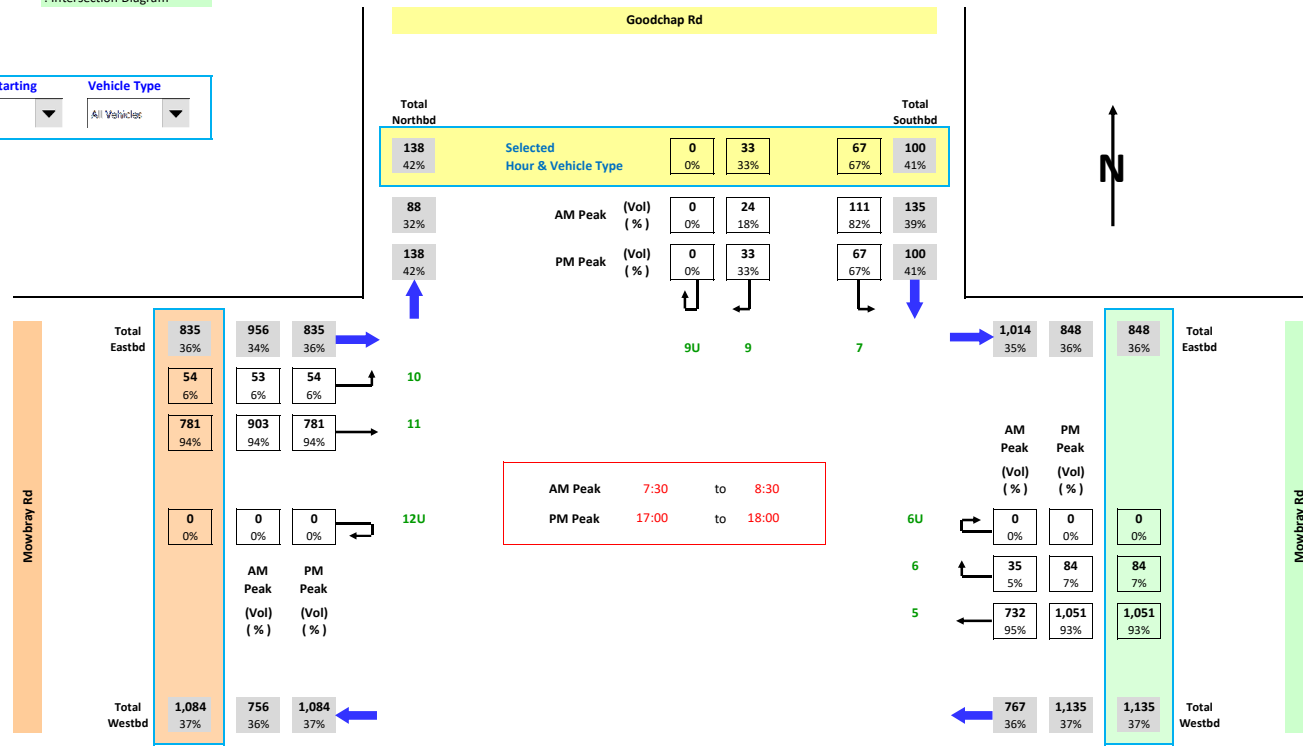


Job No. : N3236
 Client : GTA
 Suburb : Mowbray Road
 Location : 3. Goodchap Rd / Mowbray Rd

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



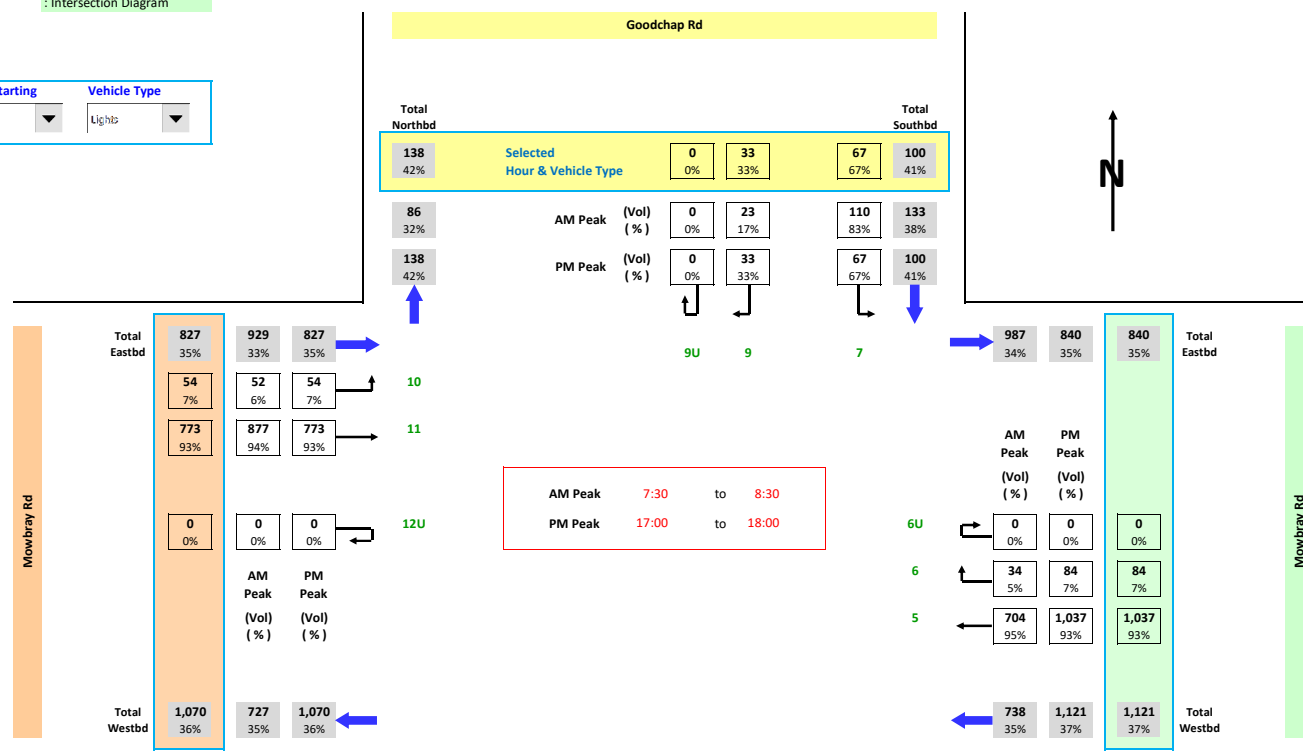
Hour Starting: 17:00
 Vehicle Type: All Vehicles



Day/Date : Tues, 16th May 2017
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



Hour Starting: 17:00
Vehicle Type: Light

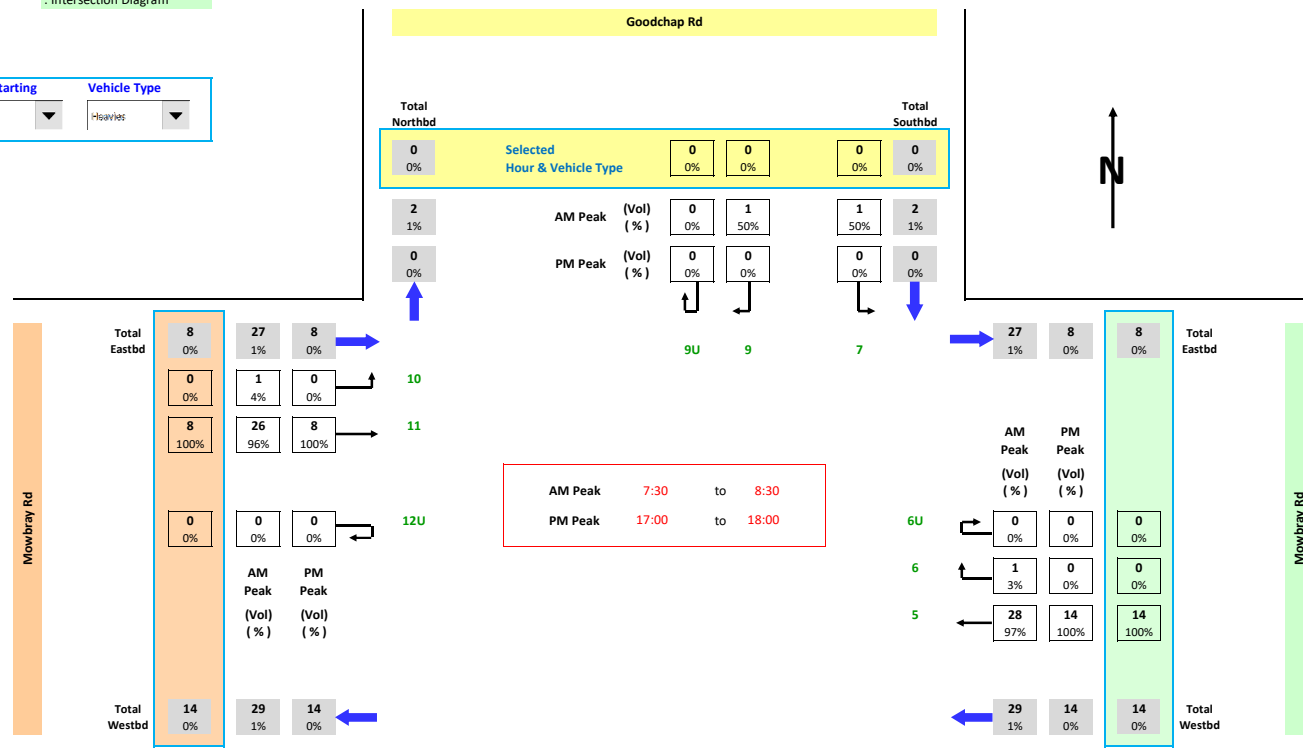


Job No. : N3236
Client : GTA
Suburb : Mowbray Road
Location : 3. Goodchap Rd / Mowbray Rd

Day/Date : Tues, 16th May 2017
Weather : Fine
Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting : 17:00
Vehicle Type : Heavy/Vet

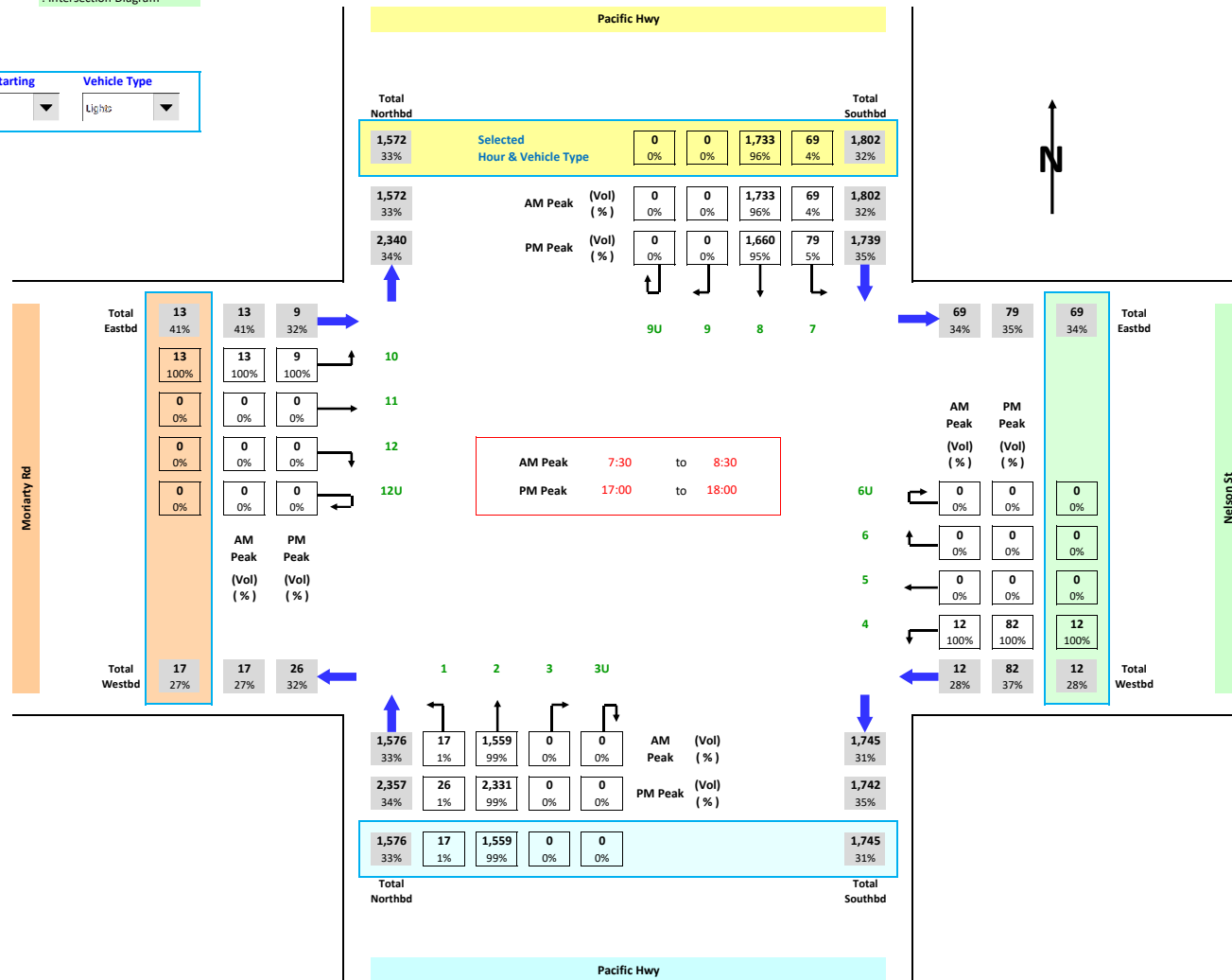


Job No. : N3236
 Client : GTA
 Suburb : Mowbray Road
 Location : 4. Pacific Hwy / Moriarty Rd / Nelson St

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting: 7:30
 Vehicle Type: Light

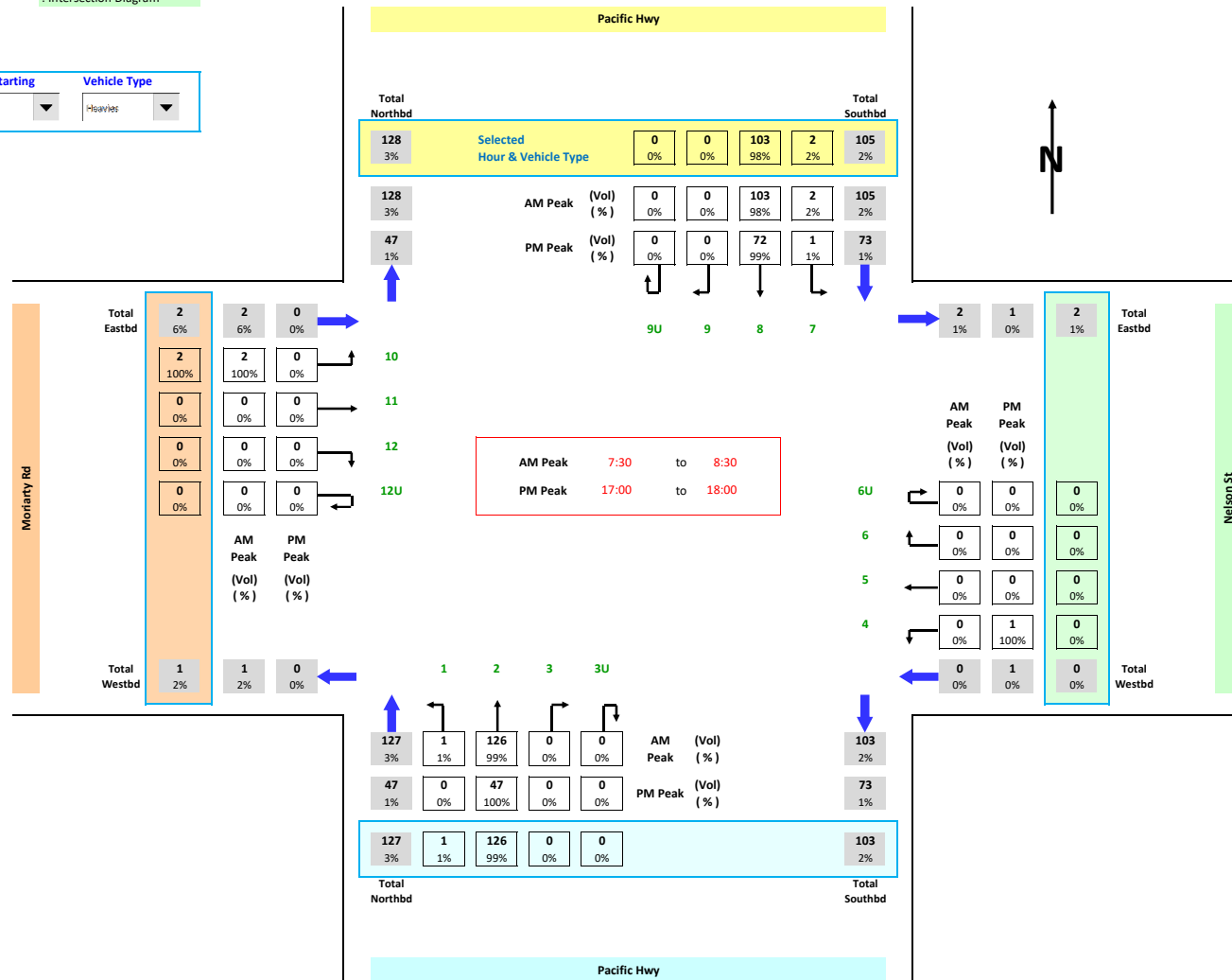


Job No. : N3236
Client : GTA
Suburb : Mowbray Road
Location : 4. Pacific Hwy / Moriarty Rd / Nelson St

Day/Date : Tues, 16th May 2017
Weather : Fine
Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting : 7:30
Vehicle Type : Heavyies

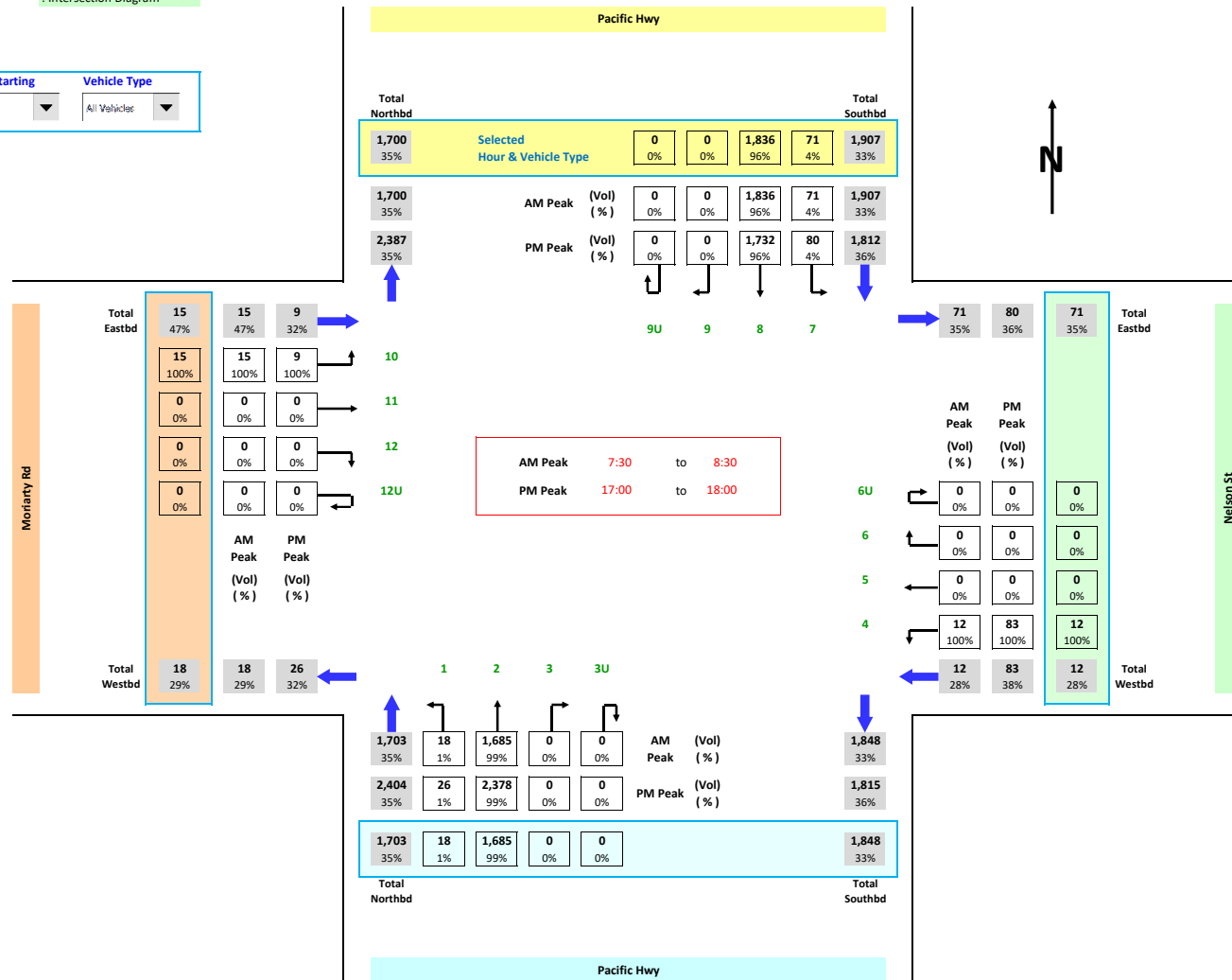


Job No. : N3236
 Client : GTA
 Suburb : Mowbray Road
 Location : 4. Pacific Hwy / Moriarty Rd / Nelson St

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting: 7:30
 Vehicle Type: All Vehicles

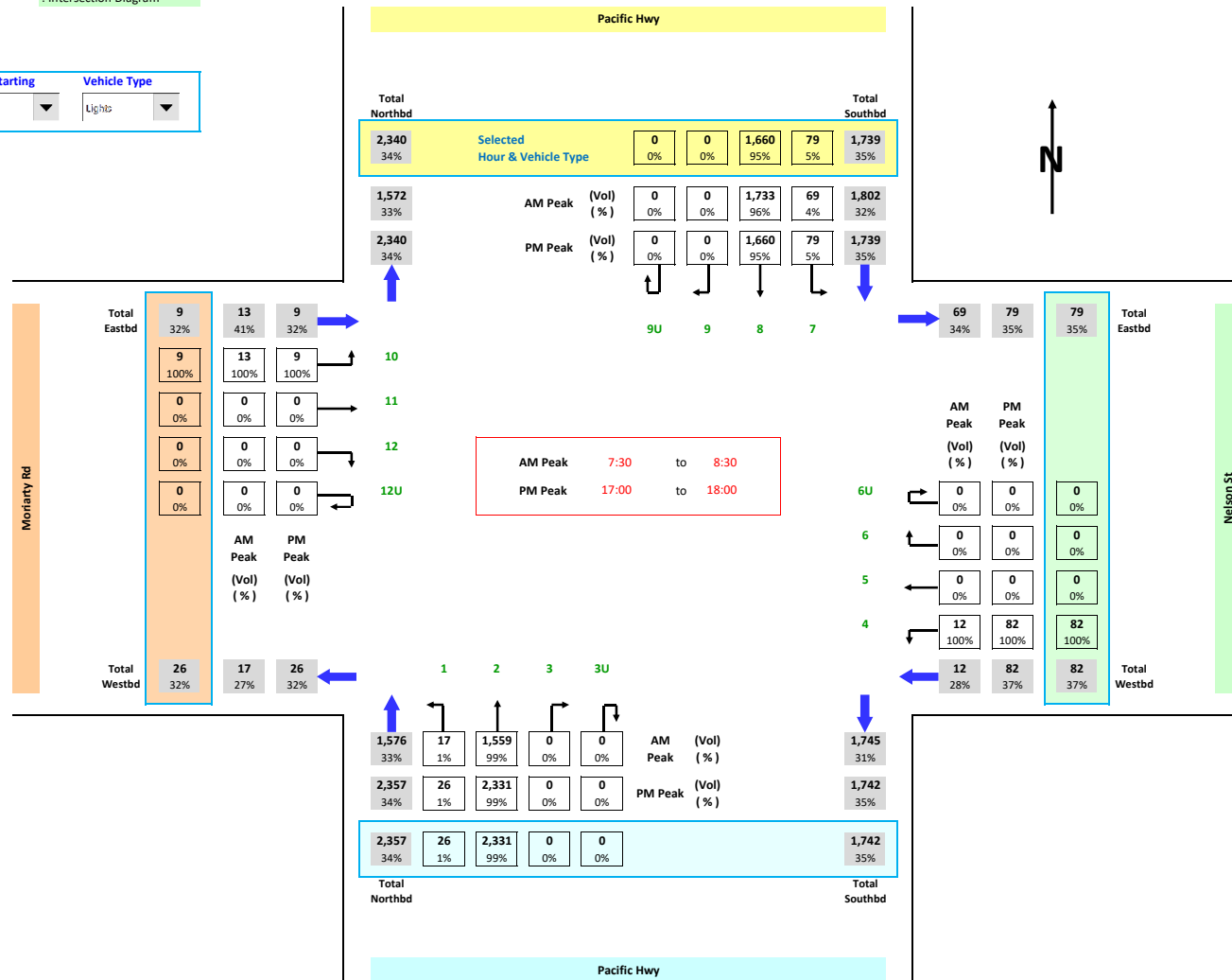


Job No. : N3236
 Client : GTA
 Suburb : Mowbray Road
 Location : 4. Pacific Hwy / Moriarty Rd / Nelson St

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting: 17:00
 Vehicle Type: Light

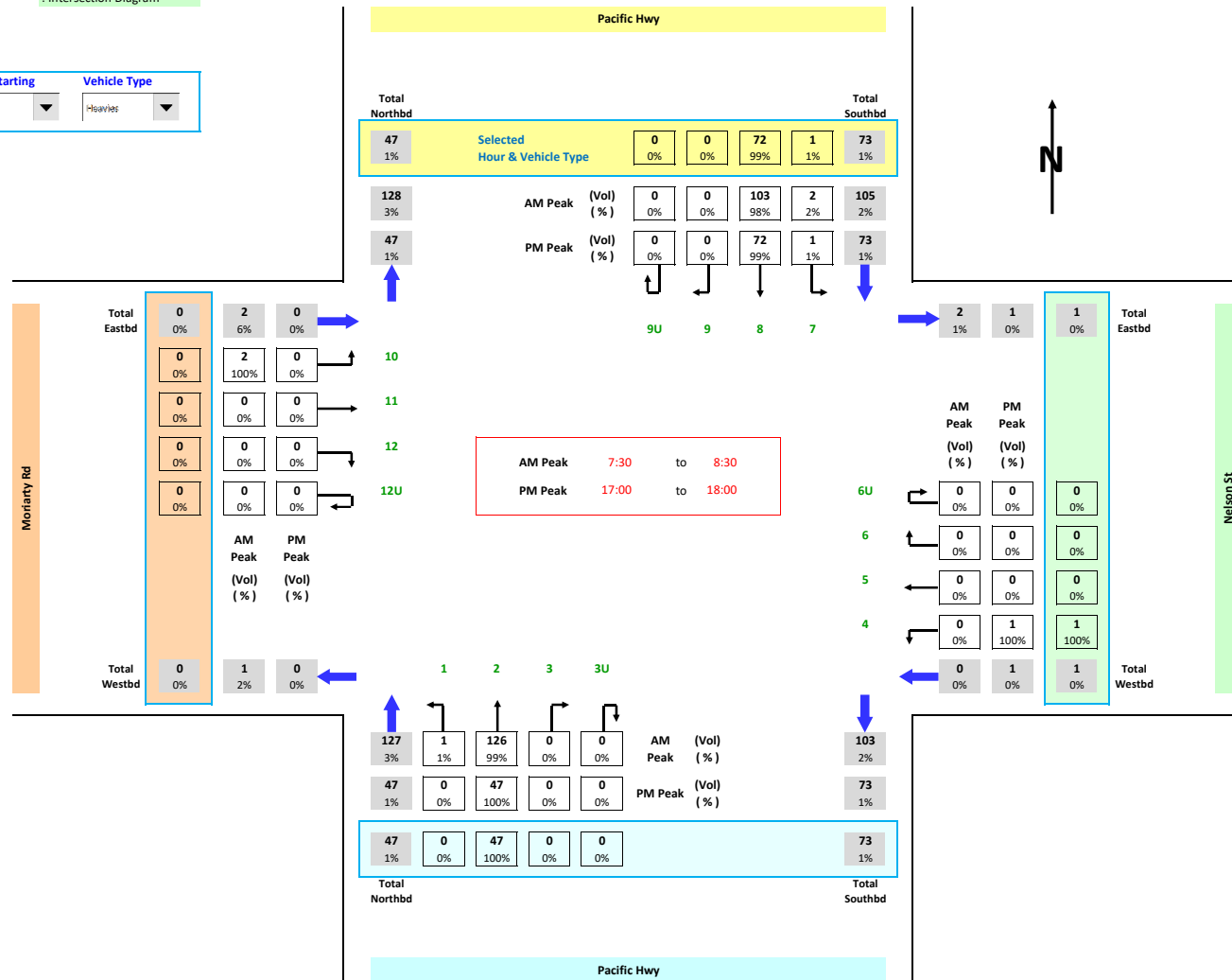


Job No. : N3236
Client : GTA
Suburb : Mowbray Road
Location : 4. Pacific Hwy / Moriarty Rd / Nelson St

Day/Date : Tues, 16th May 2017
Weather : Fine
Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting : 17:00
Vehicle Type : Heavyies

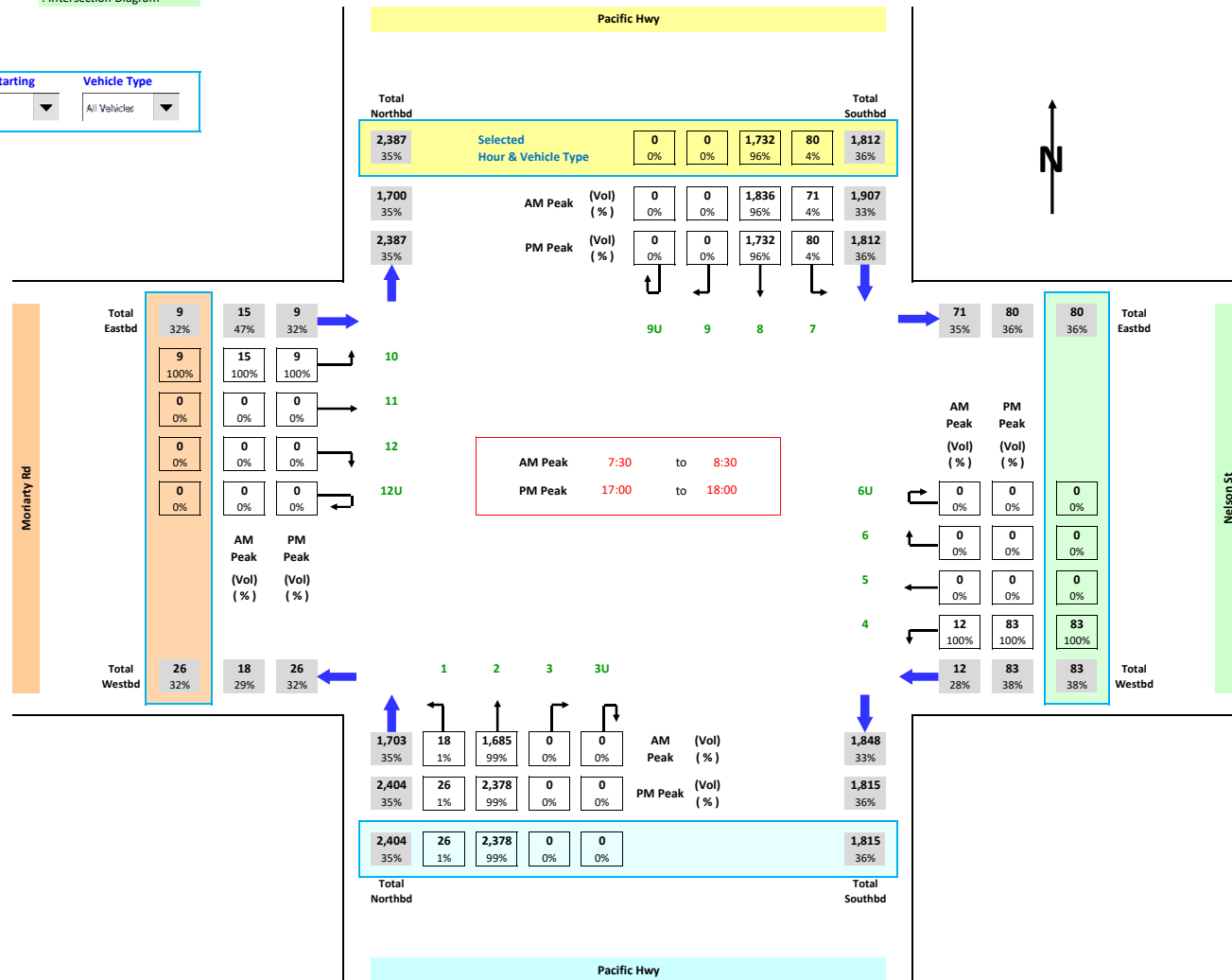


Job No. : N3236
 Client : GTA
 Suburb : Mowbray Road
 Location : 4. Pacific Hwy / Moriarty Rd / Nelson St

Day/Date : Tues, 16th May 2017
 Weather : Fine
 Description : Classified Intersection Count
 : Intersection Diagram



Hour Starting: 17:00
 Vehicle Type: All Vehicles



Appendix B

SIDRA Intersection Results

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Bowen Street AM]

Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	786	2.0	786	2.0	0.358	0.0	LOS A	0.0	0.3	0.00	0.00	49.8
6	R2	5	20.0	5	20.0	0.358	4.7	LOS A	0.0	0.3	0.00	0.00	47.3
Approach		792	2.1	792	2.1	0.358	0.0	NA	0.0	0.3	0.00	0.00	49.8
North: Bowen Street													
7	L2	13	0.0	13	0.0	0.029	10.9	LOS A	0.1	0.6	0.67	0.82	27.2
9	R2	2	0.0	2	0.0	0.006	12.3	LOS A	0.0	0.1	0.62	0.67	25.8
Approach		15	0.0	15	0.0	0.029	11.1	LOS A	0.1	0.6	0.67	0.80	27.0
West: Mowbray Road West													
10	L2	2	0.0	2	0.0	0.457	4.6	LOS A	0.0	0.0	0.00	0.00	48.1
11	T1	1064	2.7	1064	2.7	0.457	0.0	LOS A	19.8	142.0	0.00	0.00	49.7
Approach		1066	2.7	1066	2.7	0.457	0.0	NA	19.8	142.0	0.00	0.00	49.7
All Vehicles		1873	2.4	1873	2.4	0.457	0.1	NA	19.8	142.0	0.01	0.01	49.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.5 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Bowen Street PM]

Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	1188	1.3	1188	1.3	0.548	0.0	LOS A	0.3	2.0	0.00	0.01	49.2
6	R2	26	4.0	26	4.0	0.548	4.7	LOS A	0.3	2.0	0.00	0.01	48.0
Approach		1215	1.4	1215	1.4	0.548	0.1	NA	0.3	2.0	0.00	0.01	49.1
North: Bowen Street													
7	L2	22	0.0	22	0.0	0.027	5.5	LOS A	0.1	0.5	0.32	0.55	34.5
9	R2	6	0.0	6	0.0	0.035	23.5	LOS B	0.1	0.8	0.81	0.91	17.9
Approach		28	0.0	28	0.0	0.035	9.5	LOS A	0.1	0.8	0.43	0.63	28.6
West: Mowbray Road West													
10	L2	14	0.0	14	0.0	0.177	4.6	LOS A	0.0	0.0	0.00	0.03	47.6
11	T1	909	1.0	909	1.0	0.177	0.0	LOS A	13.6	96.4	0.00	0.01	49.5
Approach		923	1.0	923	1.0	0.177	0.1	NA	13.6	96.4	0.00	0.01	49.4
All Vehicles		2166	1.2	2166	1.2	0.548	0.2	NA	13.6	96.4	0.01	0.02	48.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Goodchap Road AM]

Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	771	3.8	771	3.8	0.372	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6	R2	37	2.9	37	2.9	0.022	5.6	LOS A	0.1	0.6	0.11	0.56	49.2
Approach		807	3.8	807	3.8	0.372	0.3	NA	0.1	0.6	0.01	0.03	59.1
North: Goodchap Road													
7	L2	117	0.9	117	0.9	0.396	9.3	LOS A	1.0	7.2	0.55	0.85	45.0
9	R2	25	4.2	25	4.2	0.396	17.9	LOS B	1.0	7.2	0.55	0.85	48.3
Approach		142	1.5	142	1.5	0.396	10.8	LOS A	1.0	7.2	0.55	0.85	45.9
West: Mowbray Road West													
10	L2	56	1.9	56	1.9	0.894	6.8	LOS A	3.5	25.4	0.00	0.06	54.0
11	T1	951	2.9	951	2.9	0.894	1.6	LOS A	4.5	32.1	0.00	0.03	55.2
Approach		1006	2.8	1006	2.8	0.894	1.9	NA	4.5	32.1	0.00	0.03	55.0
All Vehicles		1956	3.1	1956	3.1	0.894	1.9	NA	4.5	32.1	0.04	0.09	55.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.5 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Goodchap Road PM]

Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	1106	1.3	1106	1.3	0.526	0.0	LOS A	0.0	0.0	0.00	0.00	59.8
6	R2	88	0.0	88	0.0	0.052	5.6	LOS A	0.2	1.4	0.12	0.56	49.3
Approach		1195	1.2	1195	1.2	0.526	0.4	NA	0.2	1.4	0.01	0.04	58.6
North: Goodchap Road													
7	L2	71	0.0	71	0.0	0.376	9.9	LOS A	1.2	8.6	0.65	0.88	39.1
9	R2	35	0.0	35	0.0	0.376	32.2	LOS C	1.2	8.6	0.65	0.88	44.1
Approach		105	0.0	105	0.0	0.376	17.3	LOS B	1.2	8.6	0.65	0.88	41.2
West: Mowbray Road West													
10	L2	57	0.0	57	0.0	0.237	5.6	LOS A	32.2	227.4	0.00	0.08	57.3
11	T1	822	1.0	822	1.0	0.237	0.0	LOS A	32.2	227.4	0.00	0.04	59.0
Approach		879	1.0	879	1.0	0.237	0.4	NA	32.2	227.6	0.00	0.04	58.8
All Vehicles		2179	1.1	2179	1.1	0.526	1.2	NA	32.2	227.6	0.04	0.08	56.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Pacific Highway/ Moriarty Road/ Nelson Street AM]

Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Pacific Highway													
1	L2	19	5.6	19	5.6	0.329	5.6	LOS A	0.0	0.0	0.00	0.02	54.1
2	T1	1774	7.5	1774	7.5	0.329	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		1793	7.5	1793	7.5	0.329	0.1	NA	0.0	0.0	0.00	0.01	59.8
East: Nelson Street													
4	L2	13	0.0	13	0.0	0.038	8.8	LOS A	0.1	0.4	0.52	0.73	39.1
Approach		13	0.0	13	0.0	0.038	8.8	LOS A	0.1	0.4	0.52	0.73	39.1
North: Pacific Highway													
7	L2	75	2.8	75	2.8	0.356	5.6	LOS A	26.3	192.2	0.00	0.07	56.4
8	T1	1933	5.6	1933	5.6	0.356	0.0	LOS A	26.7	195.9	0.00	0.02	59.5
Approach		2007	5.5	2007	5.5	0.356	0.3	NA	26.7	195.9	0.00	0.02	59.3
West: Moriarty Road													
10	L2	16	13.3	16	13.3	0.024	9.3	LOS A	0.1	0.7	0.53	0.69	46.3
Approach		16	13.3	16	13.3	0.024	9.3	LOS A	0.1	0.7	0.53	0.69	46.3
All Vehicles		3828	6.4	3828	6.4	0.356	0.2	NA	26.7	195.9	0.00	0.02	59.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.5 %

Number of Iterations: 10 (maximum specified: 10)

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Organisation: GTA CONSULTANTS | Processed: Wednesday, 22 May 2019 1:45:12 PM

Project: P:\N12500-12599\N125951 - 1A - 17 Bowen Street, Chatswood\Modelling\190522\190522 Existing.sip7

MOVEMENT SUMMARY

Site: 101 [Pacific Highway/ Moriarty Road/ Nelson Street PM]

Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Pacific Highway													
1	L2	27	0.0	27	0.0	0.448	5.6	LOS A	0.0	0.0	0.00	0.02	55.3
2	T1	2503	2.0	2503	2.0	0.448	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		2531	2.0	2531	2.0	0.448	0.1	NA	0.0	0.0	0.00	0.01	59.7
East: Nelson Street													
4	L2	87	1.2	87	1.2	0.246	8.9	LOS A	0.4	3.2	0.52	0.80	39.0
Approach		87	1.2	87	1.2	0.246	8.9	LOS A	0.4	3.2	0.52	0.80	39.0
North: Pacific Highway													
7	L2	84	1.3	84	1.3	0.335	5.6	LOS A	8.1	58.4	0.00	0.08	56.5
8	T1	1823	4.2	1823	4.2	0.335	0.0	LOS A	9.6	69.9	0.00	0.02	59.4
Approach		1907	4.0	1907	4.0	0.335	0.3	NA	9.6	69.9	0.00	0.03	59.2
West: Moriarty Road													
10	L2	9	0.0	9	0.0	0.017	10.7	LOS A	0.1	0.5	0.60	0.71	45.5
Approach		9	0.0	9	0.0	0.017	10.7	LOS A	0.1	0.5	0.60	0.71	45.5
All Vehicles		4535	2.8	4535	2.8	0.448	0.4	NA	9.6	69.9	0.01	0.03	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/Mowbray Road AM]

 Network: N101 [AM Network]

Existing AM

7:30am-8:30am

Signals - Fixed Time Isolated Cycle Time = 150 seconds (User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV %	Arrival Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h		veh/h		v/c	sec		veh	m		per veh	km/h
South: Pacific Highway													
1	L2	117	9.0	117	9.0	0.480	28.3	LOS B	20.7	156.2	0.67	0.65	33.8
2	T1	1289	8.8	1289	8.8	0.480	22.2	LOS B	20.8	156.6	0.66	0.61	34.7
3	R2	320	8.9	320	8.9	0.941	100.9	LOS F	14.0	105.8	1.00	1.01	19.1
Approach		1726	8.8	1726	8.8	0.941	37.2	LOS C	20.8	156.6	0.73	0.69	28.5
East: Mowbray Road													
4	L2	339	6.5	339	6.5	0.823	52.3	LOS D	37.1	270.1	0.97	0.90	27.9
5	T1	693	2.0	693	2.0	0.823	47.3	LOS D	37.1	270.1	0.93	0.87	16.3
6	R2	141	1.5	141	1.5	0.990	118.0	LOS F	13.5	95.5	1.00	1.11	8.1
Approach		1173	3.2	1173	3.2	0.990	57.3	LOS E	37.1	270.1	0.95	0.91	18.7
North: Pacific Highway													
7	L2	113	0.9	113	0.9	0.980	92.8	LOS F	43.1	313.3	1.00	1.16	14.9
8	T1	1958	5.1	1958	5.1	0.980	88.5	LOS F	43.1	313.3	1.00	1.17	19.4
9	R2	7	100.0	7	100.0	0.980	97.1	LOS F	42.5	313.3	1.00	1.19	7.3
Approach		2078	5.2	2078	5.2	0.980	88.8	LOS F	43.1	313.3	1.00	1.17	19.2
West: Mowbray Road West													
10	L2	132	8.0	132	8.0	0.364	59.0	LOS E	8.2	61.6	0.90	0.79	5.2
11	T1	885	1.7	885	1.7	0.982	100.6	LOS F	18.4	130.6	1.00	1.21	11.3
Approach		1017	2.5	1017	2.5	0.982	95.2	LOS F	18.4	130.6	0.99	1.16	10.8
All Vehicles		5994	5.4	5994	5.4	0.990	68.8	LOS E	43.1	313.3	0.91	0.98	19.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.5 %

Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Queue Distance	Prop. Queued	Effective Stop Rate	
		ped/h	sec		Pedestrian	m		per ped	
P1	South Full Crossing	53	43.4	LOS E	0.2	0.2	0.76	0.76	
P2	East Full Crossing	53	35.4	LOS D	0.2	0.2	0.69	0.69	
P3	North Full Crossing	53	54.7	LOS E	0.2	0.2	0.86	0.86	
P4	West Full Crossing	53	20.8	LOS C	0.1	0.1	0.53	0.53	
All Pedestrians		211	38.6	LOS D			0.71	0.71	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/Mowbray Road PM]

 Network: N102 [PM Network]

Existing PM

5:00am-6:00am

Signals - Fixed Time Isolated Cycle Time = 150 seconds (User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV %	Arrival Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Pacific Highway													
1	L2	211	1.0	211	1.0	0.826	37.6	LOS C	48.6	345.6	0.91	0.85	28.8
2	T1	2120	2.1	2120	2.1	0.826	30.9	LOS C	49.1	349.6	0.88	0.82	29.9
3	R2	281	2.6	281	2.6	0.913	95.3	LOS F	11.8	84.7	1.00	0.98	19.8
Approach		2612	2.1	2612	2.1	0.913	38.4	LOS C	49.1	349.6	0.90	0.84	27.6
East: Mowbray Road													
4	L2	242	1.7	242	1.7	0.945	76.6	LOS F	58.6	414.8	1.00	1.07	23.0
5	T1	1008	0.9	1008	0.9	0.945	71.7	LOS F	58.6	414.8	0.97	1.06	12.2
6	R2	193	0.5	193	0.5	0.690	45.6	LOS D	10.0	70.6	1.00	0.82	16.6
Approach		1443	1.0	1443	1.0	0.945	69.0	LOS E	58.6	414.8	0.98	1.03	15.0
North: Pacific Highway													
7	L2	136	1.6	136	1.6	0.912	66.1	LOS E	43.5	313.3	1.00	1.01	19.0
8	T1	1827	3.9	1827	3.9	0.912	60.7	LOS E	43.5	313.3	1.00	1.02	24.6
9	R2	6	100.0	6	100.0	0.912	67.3	LOS E	43.0	313.3	1.00	1.03	10.2
Approach		1969	4.0	1969	4.0	0.912	61.1	LOS E	43.5	313.3	1.00	1.02	24.2
West: Mowbray Road West													
10	L2	200	2.1	200	2.1	0.608	65.4	LOS E	13.6	96.6	0.97	0.82	4.8
11	T1	752	0.4	752	0.4	0.930	82.6	LOS F	18.6	130.6	1.00	1.10	13.1
Approach		952	0.8	952	0.8	0.930	79.0	LOS F	18.6	130.6	0.99	1.04	11.9
All Vehicles		6976	2.2	6976	2.2	0.945	56.7	LOS E	58.6	414.8	0.96	0.96	21.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %

Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	41.2	LOS E	0.2	0.2	0.74	0.74	
P2	East Full Crossing	53	36.1	LOS D	0.2	0.2	0.69	0.69	
P3	North Full Crossing	53	58.2	LOS E	0.2	0.2	0.88	0.88	
P4	West Full Crossing	53	22.5	LOS C	0.1	0.1	0.55	0.55	
All Pedestrians		211	39.5	LOS D			0.72	0.72	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Bowen Street AM]

Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	786	2.0	786	2.0	0.360	0.0	LOS A	0.1	0.5	0.00	0.01	49.6
6	R2	9	11.1	9	11.1	0.360	4.6	LOS A	0.1	0.5	0.00	0.01	47.7
Approach		796	2.1	796	2.1	0.360	0.1	NA	0.1	0.5	0.00	0.01	49.5
North: Bowen Street													
7	L2	33	0.0	33	0.0	0.074	11.1	LOS A	0.2	1.7	0.68	0.85	26.9
9	R2	7	0.0	7	0.0	0.021	12.6	LOS A	0.1	0.5	0.63	0.74	25.5
Approach		40	0.0	40	0.0	0.074	11.4	LOS A	0.2	1.7	0.67	0.83	26.7
West: Mowbray Road West													
10	L2	4	0.0	4	0.0	0.458	4.6	LOS A	0.0	0.0	0.00	0.00	48.1
11	T1	1064	2.7	1064	2.7	0.458	0.0	LOS A	19.8	142.0	0.00	0.00	49.6
Approach		1068	2.7	1068	2.7	0.458	0.1	NA	19.8	142.0	0.00	0.00	49.6
All Vehicles		1904	2.4	1904	2.4	0.458	0.3	NA	19.8	142.0	0.01	0.02	48.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.5 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Bowen Street PM]

Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	1188	1.3	1188	1.3	0.557	0.0	LOS A	0.5	3.5	0.01	0.02	48.6
6	R2	45	2.3	45	2.3	0.557	4.7	LOS A	0.5	3.5	0.01	0.02	47.8
Approach		1234	1.4	1234	1.4	0.557	0.2	NA	0.5	3.5	0.01	0.02	48.5
North: Bowen Street													
7	L2	26	0.0	26	0.0	0.031	5.5	LOS A	0.1	0.6	0.32	0.55	34.5
9	R2	8	0.0	8	0.0	0.048	24.5	LOS B	0.2	1.1	0.82	0.91	17.5
Approach		35	0.0	35	0.0	0.048	10.1	LOS A	0.2	1.1	0.44	0.64	27.8
West: Mowbray Road West													
10	L2	23	0.0	23	0.0	0.177	4.6	LOS A	0.0	0.0	0.00	0.05	47.2
11	T1	909	1.0	909	1.0	0.177	0.0	LOS A	11.2	79.0	0.00	0.01	49.2
Approach		933	1.0	933	1.0	0.177	0.1	NA	11.2	79.0	0.00	0.01	49.1
All Vehicles		2201	1.2	2201	1.2	0.557	0.3	NA	11.2	79.0	0.01	0.03	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Goodchap Road AM]

Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	775	3.8	775	3.8	0.374	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6	R2	37	2.9	37	2.9	0.022	5.6	LOS A	0.1	0.6	0.11	0.56	49.2
Approach		812	3.8	812	3.8	0.374	0.3	NA	0.1	0.6	0.01	0.03	59.1
North: Goodchap Road													
7	L2	119	0.9	119	0.9	0.402	9.3	LOS A	1.0	7.3	0.55	0.85	45.0
9	R2	25	4.2	25	4.2	0.402	18.1	LOS B	1.0	7.3	0.55	0.85	48.3
Approach		144	1.5	144	1.5	0.402	10.9	LOS A	1.0	7.3	0.55	0.85	45.8
West: Mowbray Road West													
10	L2	56	1.9	56	1.9	0.895	6.8	LOS A	3.9	27.7	0.00	0.06	53.9
11	T1	953	2.9	953	2.9	0.895	1.6	LOS A	4.9	35.1	0.00	0.03	55.1
Approach		1008	2.8	1008	2.8	0.895	1.9	NA	4.9	35.1	0.00	0.03	55.0
All Vehicles		1964	3.1	1964	3.1	0.895	1.9	NA	4.9	35.1	0.04	0.09	55.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.5 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Goodchap Road PM]

Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	1107	1.3	1107	1.3	0.526	0.0	LOS A	0.0	0.0	0.00	0.00	59.8
6	R2	88	0.0	88	0.0	0.052	5.6	LOS A	0.2	1.4	0.12	0.56	49.3
Approach		1196	1.2	1196	1.2	0.526	0.4	NA	0.2	1.4	0.01	0.04	58.6
North: Goodchap Road													
7	L2	76	0.0	76	0.0	0.358	9.5	LOS A	1.2	8.7	0.64	0.87	39.7
9	R2	35	0.0	35	0.0	0.358	31.9	LOS C	1.2	8.7	0.64	0.87	44.6
Approach		111	0.0	111	0.0	0.358	16.6	LOS B	1.2	8.7	0.64	0.87	41.7
West: Mowbray Road West													
10	L2	57	0.0	57	0.0	0.239	5.6	LOS A	29.8	210.0	0.00	0.08	57.3
11	T1	826	1.0	826	1.0	0.239	0.0	LOS A	29.8	210.0	0.00	0.04	59.0
Approach		883	1.0	883	1.0	0.239	0.4	NA	29.8	210.2	0.00	0.04	58.8
All Vehicles		2189	1.1	2189	1.1	0.526	1.2	NA	29.8	210.2	0.04	0.08	56.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Pacific Highway/ Moriarty Road/ Nelson Street AM]

Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Pacific Highway													
1	L2	20	5.3	20	5.3	0.329	5.6	LOS A	0.0	0.0	0.00	0.02	54.1
2	T1	1774	7.5	1774	7.5	0.329	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		1794	7.5	1794	7.5	0.329	0.1	NA	0.0	0.0	0.00	0.01	59.8
East: Nelson Street													
4	L2	13	0.0	13	0.0	0.038	8.8	LOS A	0.1	0.4	0.52	0.73	39.1
Approach		13	0.0	13	0.0	0.038	8.8	LOS A	0.1	0.4	0.52	0.73	39.1
North: Pacific Highway													
7	L2	75	2.8	75	2.8	0.356	5.6	LOS A	29.8	217.8	0.00	0.07	56.4
8	T1	1935	5.6	1935	5.6	0.356	0.0	LOS A	30.2	221.9	0.00	0.02	59.5
Approach		2009	5.5	2009	5.5	0.356	0.3	NA	30.2	221.9	0.00	0.02	59.3
West: Moriarty Road													
10	L2	25	8.3	25	8.3	0.037	9.1	LOS A	0.1	1.0	0.53	0.70	46.7
Approach		25	8.3	25	8.3	0.037	9.1	LOS A	0.1	1.0	0.53	0.70	46.7
All Vehicles		3841	6.4	3841	6.4	0.356	0.3	NA	30.2	221.9	0.01	0.02	59.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.5 %

Number of Iterations: 10 (maximum specified: 10)

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Organisation: GTA CONSULTANTS | Processed: Wednesday, 22 May 2019 11:47:22 AM

Project: P:\N12500-12599\N125951 - 1A - 17 Bowen Street, Chatswood\Modelling\190522\190522 Future Do Nothing.sip7

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/ Moriarty Road/ Nelson Street PM]

 Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Pacific Highway													
1	L2	35	0.0	35	0.0	0.450	5.6	LOS A	0.0	0.0	0.00	0.02	55.2
2	T1	2503	2.0	2503	2.0	0.450	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		2538	1.9	2538	1.9	0.450	0.1	NA	0.0	0.0	0.00	0.01	59.7
East: Nelson Street													
4	L2	87	1.2	87	1.2	0.247	8.9	LOS A	0.4	3.2	0.53	0.80	39.0
Approach		87	1.2	87	1.2	0.247	8.9	LOS A	0.4	3.2	0.53	0.80	39.0
North: Pacific Highway													
7	L2	84	1.3	84	1.3	0.336	5.6	LOS A	9.7	70.4	0.00	0.08	56.5
8	T1	1827	4.1	1827	4.1	0.336	0.0	LOS A	11.6	83.9	0.00	0.02	59.4
Approach		1912	4.0	1912	4.0	0.336	0.3	NA	11.6	83.9	0.00	0.03	59.2
West: Moriarty Road													
10	L2	13	0.0	13	0.0	0.023	10.7	LOS A	0.1	0.6	0.60	0.72	45.6
Approach		13	0.0	13	0.0	0.023	10.7	LOS A	0.1	0.6	0.60	0.72	45.6
All Vehicles		4549	2.8	4549	2.8	0.450	0.4	NA	11.6	83.9	0.01	0.03	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %

Number of Iterations: 10 (maximum specified: 10)

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Organisation: GTA CONSULTANTS | Processed: Wednesday, 22 May 2019 1:31:36 PM

Project: P:\N12500-12599\N125951 - 1A - 17 Bowen Street, Chatswood\Modelling\190522\190522 Future Do Nothing.sip7

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/Mowbray Road AM]

 Network: N101 [AM Network]

Existing AM

7:30am-8:30am

Signals - Fixed Time Isolated Cycle Time = 150 seconds (User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV %	Arrival Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h		veh/h		v/c	sec		veh	m		per veh	km/h
South: Pacific Highway													
1	L2	118	8.9	118	8.9	0.487	28.9	LOS C	21.1	158.8	0.68	0.65	33.4
2	T1	1291	8.8	1291	8.8	0.487	22.9	LOS B	21.2	159.2	0.67	0.62	34.3
3	R2	320	8.9	320	8.9	0.941	100.9	LOS F	14.0	105.8	1.00	1.01	19.1
Approach		1728	8.8	1728	8.8	0.941	37.7	LOS C	21.2	159.2	0.73	0.69	28.3
East: Mowbray Road													
4	L2	352	6.3	352	6.3	0.820	51.8	LOS D	37.4	272.1	0.97	0.90	28.1
5	T1	696	2.0	696	2.0	0.820	46.4	LOS D	37.4	272.1	0.93	0.86	16.5
6	R2	141	1.5	141	1.5	0.990	118.0	LOS F	13.5	95.5	1.00	1.11	8.1
Approach		1188	3.2	1188	3.2	0.990	56.5	LOS D	37.4	272.1	0.95	0.90	19.0
North: Pacific Highway													
7	L2	113	0.9	113	0.9	0.997	103.0	LOS F	43.1	313.3	1.00	1.20	13.8
8	T1	1958	5.1	1958	5.1	0.997	98.7	LOS F	43.1	313.3	1.00	1.22	18.0
9	R2	7	100.0	7	100.0	0.997	107.3	LOS F	42.5	313.3	1.00	1.24	6.6
Approach		2078	5.2	2078	5.2	0.997	99.0	LOS F	43.1	313.3	1.00	1.22	17.8
West: Mowbray Road West													
10	L2	132	8.0	132	8.0	0.353	58.0	LOS E	8.2	61.1	0.89	0.78	5.3
11	T1	905	1.6	905	1.6	0.976	97.5	LOS F	18.4	130.6	1.00	1.20	11.5
Approach		1037	2.4	1037	2.4	0.976	92.5	LOS F	18.4	130.6	0.99	1.14	11.1
All Vehicles		6032	5.4	6032	5.4	0.997	71.9	LOS F	43.1	313.3	0.91	0.99	18.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.5 %

Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	42.7	LOS E	0.2	0.2	0.75	0.75
P2	East Full Crossing	53	36.1	LOS D	0.2	0.2	0.69	0.69
P3	North Full Crossing	53	53.9	LOS E	0.2	0.2	0.85	0.85
P4	West Full Crossing	53	21.4	LOS C	0.1	0.1	0.53	0.53
All Pedestrians		211	38.5	LOS D			0.71	0.71

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/Mowbray Road PM]

 Network: N102 [PM Network]

Existing PM

5:00am-6:00am

Signals - Fixed Time Isolated Cycle Time = 150 seconds (User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV	Arrival Total	Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Pacific Highway													
1	L2	218	1.0	218	1.0	0.841	39.0	LOS C	50.1	355.7	0.93	0.87	28.2
2	T1	2126	2.1	2126	2.1	0.841	32.6	LOS C	50.4	359.3	0.90	0.84	29.1
3	R2	281	2.6	281	2.6	0.913	95.3	LOS F	11.8	84.7	1.00	0.98	19.8
Approach		2625	2.0	2625	2.0	0.913	39.9	LOS C	50.4	359.3	0.91	0.86	27.0
East: Mowbray Road													
4	L2	245	1.7	245	1.7	0.940	74.0	LOS F	58.4	413.2	1.00	1.06	23.5
5	T1	1020	0.9	1020	0.9	0.940	69.0	LOS E	58.4	413.2	0.97	1.05	12.5
6	R2	193	0.5	193	0.5	0.663	44.4	LOS D	9.8	69.1	0.99	0.81	17.0
Approach		1458	1.0	1458	1.0	0.940	66.6	LOS E	58.4	413.2	0.98	1.02	15.4
North: Pacific Highway													
7	L2	136	1.6	136	1.6	0.926	70.8	LOS F	43.5	313.3	1.00	1.04	18.1
8	T1	1827	3.9	1827	3.9	0.926	65.5	LOS E	43.5	313.3	1.00	1.05	23.6
9	R2	6	100.0	6	100.0	0.926	72.0	LOS F	43.0	313.3	1.00	1.06	9.6
Approach		1969	4.0	1969	4.0	0.926	65.9	LOS E	43.5	313.3	1.00	1.05	23.2
West: Mowbray Road West													
10	L2	200	2.1	200	2.1	0.608	65.4	LOS E	13.6	96.6	0.97	0.82	4.8
11	T1	756	0.4	756	0.4	0.935	84.1	LOS F	18.6	130.6	1.00	1.11	12.9
Approach		956	0.8	956	0.8	0.935	80.2	LOS F	18.6	130.6	0.99	1.05	11.7
All Vehicles		7008	2.2	7008	2.2	0.940	58.2	LOS E	58.4	413.2	0.96	0.97	20.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %

Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Back of Queue Distance	Prop. Queued	Effective Stop Rate	
		ped/h	sec		ped	m		per ped	
P1	South Full Crossing	53	40.4	LOS E	0.2	0.2	0.73	0.73	
P2	East Full Crossing	53	36.8	LOS D	0.2	0.2	0.70	0.70	
P3	North Full Crossing	53	58.2	LOS E	0.2	0.2	0.88	0.88	
P4	West Full Crossing	53	23.0	LOS C	0.1	0.1	0.55	0.55	
All Pedestrians		211	39.6	LOS D			0.72	0.72	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Bowen Street AM]

Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Mowbray Road West													
5	T1	797	2.0	797	2.0	0.360	0.0	LOS A	0.0	0.0	0.00	0.00	49.9
Approach		797	2.0	797	2.0	0.360	0.0	NA	0.0	0.0	0.00	0.00	49.9
North: Bowen Street													
7	L2	36	0.0	36	0.0	0.058	11.7	LOS A	0.2	1.3	0.70	0.86	26.3
Approach		36	0.0	36	0.0	0.058	11.7	LOS A	0.2	1.3	0.70	0.86	26.3
West: Mowbray Road West													
10	L2	13	0.0	13	0.0	0.462	4.6	LOS A	0.0	0.0	0.00	0.01	47.9
11	T1	1064	2.7	1064	2.7	0.462	0.0	LOS A	19.8	142.0	0.00	0.01	49.4
Approach		1077	2.6	1077	2.6	0.462	0.1	NA	19.8	142.0	0.00	0.01	49.3
All Vehicles		1909	2.3	1909	2.3	0.462	0.3	NA	19.8	142.0	0.01	0.02	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.4 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Bowen Street PM]

Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	1223	1.3	1223	1.3	0.550	0.0	LOS A	0.0	0.0	0.00	0.00	49.9
Approach		1223	1.3	1223	1.3	0.550	0.0	NA	0.0	0.0	0.00	0.00	49.9
North: Bowen Street													
7	L2	35	0.0	35	0.0	0.032	6.5	LOS A	0.1	0.6	0.38	0.60	32.9
Approach		35	0.0	35	0.0	0.032	6.5	LOS A	0.1	0.6	0.38	0.60	32.9
West: Mowbray Road West													
10	L2	41	0.0	41	0.0	0.180	4.6	LOS A	0.0	0.0	0.00	0.08	46.6
11	T1	909	1.0	909	1.0	0.180	0.0	LOS A	12.0	84.4	0.00	0.02	48.8
Approach		951	1.0	951	1.0	0.180	0.2	NA	12.0	84.4	0.00	0.02	48.5
All Vehicles		2208	1.1	2208	1.1	0.550	0.2	NA	12.0	84.4	0.01	0.02	48.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

 Site: 101 [Mowbray Road West/Goodchap Road AM]

 Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	773	3.8	773	3.8	0.373	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6	R2	45	2.3	45	2.3	0.027	5.6	LOS A	0.1	0.7	0.11	0.56	49.2
Approach		818	3.7	818	3.7	0.373	0.3	NA	0.1	0.7	0.01	0.03	58.9
North: Goodchap Road													
7	L2	125	0.8	125	0.8	0.435	9.7	LOS A	1.2	8.4	0.56	0.88	44.4
9	R2	29	3.6	29	3.6	0.435	18.5	LOS B	1.2	8.4	0.56	0.88	47.9
Approach		155	1.4	155	1.4	0.435	11.4	LOS A	1.2	8.4	0.56	0.88	45.4
West: Mowbray Road West													
10	L2	56	1.9	56	1.9	0.895	6.8	LOS A	2.4	17.5	0.00	0.06	53.9
11	T1	953	2.9	953	2.9	0.895	1.6	LOS A	5.4	38.8	0.00	0.03	55.1
Approach		1008	2.8	1008	2.8	0.895	1.9	NA	5.4	38.8	0.00	0.03	55.0
All Vehicles		1981	3.1	1981	3.1	0.895	2.0	NA	5.4	38.8	0.05	0.10	55.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.4 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Goodchap Road PM]

Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	1114	1.3	1114	1.3	0.529	0.0	LOS A	0.0	0.0	0.00	0.00	59.8
6	R2	115	0.0	115	0.0	0.067	5.6	LOS A	0.3	1.8	0.12	0.56	49.3
Approach		1228	1.2	1228	1.2	0.529	0.5	NA	0.3	1.8	0.01	0.05	58.3
North: Goodchap Road													
7	L2	97	0.0	97	0.0	0.412	10.3	LOS A	1.5	10.6	0.64	0.89	39.6
9	R2	35	0.0	35	0.0	0.412	34.6	LOS C	1.5	10.6	0.64	0.89	44.5
Approach		132	0.0	132	0.0	0.412	16.7	LOS B	1.5	10.6	0.64	0.89	41.3
West: Mowbray Road West													
10	L2	57	0.0	57	0.0	0.238	5.6	LOS A	30.2	213.3	0.00	0.08	57.3
11	T1	823	1.0	823	1.0	0.238	0.0	LOS A	30.5	215.7	0.00	0.04	59.0
Approach		880	1.0	880	1.0	0.238	0.4	NA	30.5	215.7	0.00	0.04	58.8
All Vehicles		2240	1.0	2240	1.0	0.529	1.4	NA	30.5	215.7	0.04	0.10	56.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/ Moriarty Road/ Nelson Street AM]

 Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Pacific Highway													
1	L2	21	5.0	21	5.0	0.329	5.6	LOS A	0.0	0.0	0.00	0.02	54.2
2	T1	1774	7.5	1774	7.5	0.329	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		1795	7.4	1795	7.4	0.329	0.1	NA	0.0	0.0	0.00	0.01	59.8
East: Nelson Street													
4	L2	13	0.0	13	0.0	0.038	8.8	LOS A	0.1	0.4	0.52	0.73	39.1
Approach		13	0.0	13	0.0	0.038	8.8	LOS A	0.1	0.4	0.52	0.73	39.1
North: Pacific Highway													
7	L2	75	2.8	75	2.8	0.356	5.6	LOS A	29.8	217.9	0.00	0.07	56.4
8	T1	1933	5.6	1933	5.6	0.356	0.0	LOS A	30.3	222.0	0.00	0.02	59.5
Approach		2007	5.5	2007	5.5	0.356	0.3	NA	30.3	222.0	0.00	0.02	59.3
West: Moriarty Road													
10	L2	26	8.0	26	8.0	0.039	9.1	LOS A	0.1	1.1	0.53	0.70	46.7
Approach		26	8.0	26	8.0	0.039	9.1	LOS A	0.1	1.1	0.53	0.70	46.7
All Vehicles		3841	6.4	3841	6.4	0.356	0.3	NA	30.3	222.0	0.01	0.02	59.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.4 %

Number of Iterations: 10 (maximum specified: 10)

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Organisation: GTA CONSULTANTS | Processed: Wednesday, 22 May 2019 1:13:22 PM

Project: P:\N12500-12599\N125951 - 1A - 17 Bowen Street, Chatswood\Modelling\190522\190522 Future LILO (without opening).sip7

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/ Moriarty Road/ Nelson Street PM]

 Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Pacific Highway													
1	L2	32	0.0	32	0.0	0.450	5.6	LOS A	0.0	0.0	0.00	0.02	55.2
2	T1	2506	2.0	2506	2.0	0.450	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		2538	1.9	2538	1.9	0.450	0.1	NA	0.0	0.0	0.00	0.01	59.7
East: Nelson Street													
4	L2	87	1.2	87	1.2	0.246	8.9	LOS A	0.4	3.2	0.52	0.80	39.0
Approach		87	1.2	87	1.2	0.246	8.9	LOS A	0.4	3.2	0.52	0.80	39.0
North: Pacific Highway													
7	L2	84	1.3	84	1.3	0.335	5.6	LOS A	9.7	70.3	0.00	0.08	56.5
8	T1	1823	4.2	1823	4.2	0.335	0.0	LOS A	11.6	83.9	0.00	0.02	59.4
Approach		1907	4.0	1907	4.0	0.335	0.3	NA	11.6	83.9	0.00	0.03	59.2
West: Moriarty Road													
10	L2	13	0.0	13	0.0	0.023	10.7	LOS A	0.1	0.6	0.60	0.73	45.5
Approach		13	0.0	13	0.0	0.023	10.7	LOS A	0.1	0.6	0.60	0.73	45.5
All Vehicles		4545	2.8	4545	2.8	0.450	0.4	NA	11.6	83.9	0.01	0.03	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %

Number of Iterations: 10 (maximum specified: 10)

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Organisation: GTA CONSULTANTS | Processed: Wednesday, 22 May 2019 1:12:23 PM

Project: P:\N12500-12599\N125951 - 1A - 17 Bowen Street, Chatswood\Modelling\190522\190522 Future LILO (without opening).sip7

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/Mowbray Road AM]

 Network: N101 [AM Network]

Existing AM

7:30am-8:30am

Signals - Fixed Time Isolated Cycle Time = 150 seconds (User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV	Arrival Total	Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Pacific Highway													
1	L2	118	8.9	118	8.9	0.487	28.9	LOS C	21.1	158.9	0.68	0.65	33.4
2	T1	1292	8.8	1292	8.8	0.487	22.9	LOS B	21.2	159.4	0.67	0.62	34.3
3	R2	320	8.9	320	8.9	0.941	100.9	LOS F	14.0	105.8	1.00	1.01	19.1
Approach		1729	8.8	1729	8.8	0.941	37.7	LOS C	21.2	159.4	0.74	0.69	28.3
East: Mowbray Road													
4	L2	345	6.4	345	6.4	0.817	51.5	LOS D	37.1	270.0	0.97	0.90	28.2
5	T1	698	2.0	698	2.0	0.817	46.1	LOS D	37.1	270.0	0.93	0.86	16.6
6	R2	141	1.5	141	1.5	0.990	118.0	LOS F	13.5	95.5	1.00	1.11	8.1
Approach		1184	3.2	1184	3.2	0.990	56.3	LOS D	37.1	270.0	0.95	0.90	19.0
North: Pacific Highway													
7	L2	113	0.9	113	0.9	0.997	103.1	LOS F	43.1	313.3	1.00	1.20	13.8
8	T1	1958	5.1	1958	5.1	0.997	98.8	LOS F	43.1	313.3	1.00	1.22	18.0
9	R2	7	100.0	7	100.0	0.997	107.3	LOS F	42.5	313.3	1.00	1.24	6.6
Approach		2078	5.2	2078	5.2	0.997	99.0	LOS F	43.1	313.3	1.00	1.22	17.8
West: Mowbray Road West													
10	L2	132	8.0	132	8.0	0.353	58.0	LOS E	8.2	61.1	0.89	0.78	5.3
11	T1	908	1.6	908	1.6	0.980	99.2	LOS F	18.4	130.6	1.00	1.20	11.4
Approach		1040	2.4	1040	2.4	0.980	94.0	LOS F	18.4	130.6	0.99	1.15	11.0
All Vehicles		6032	5.4	6032	5.4	0.997	72.2	LOS F	43.1	313.3	0.91	0.99	18.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.4 %

Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Back of Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	42.7	LOS E	0.2	0.2	0.75	0.75
P2	East Full Crossing	53	36.1	LOS D	0.2	0.2	0.69	0.69
P3	North Full Crossing	53	53.9	LOS E	0.2	0.2	0.85	0.85
P4	West Full Crossing	53	21.4	LOS C	0.1	0.1	0.53	0.53
All Pedestrians		211	38.5	LOS D			0.71	0.71

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/Mowbray Road PM]

 Network: N102 [PM Network]

Existing PM

5:00am-6:00am

Signals - Fixed Time Isolated Cycle Time = 150 seconds (User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV %	Arrival Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h		veh/h		v/c	sec		veh	m		per veh	km/h
South: Pacific Highway													
1	L2	212	1.0	212	1.0	0.837	38.6	LOS C	49.4	351.3	0.93	0.87	28.4
2	T1	2122	2.1	2122	2.1	0.837	32.2	LOS C	49.9	355.4	0.90	0.83	29.2
3	R2	281	2.6	281	2.6	0.913	95.3	LOS F	11.8	84.7	1.00	0.98	19.8
Approach		2615	2.1	2615	2.1	0.913	39.5	LOS C	49.9	355.4	0.91	0.85	27.1
East: Mowbray Road													
4	L2	245	1.7	245	1.7	0.939	73.4	LOS F	58.1	410.9	1.00	1.05	23.6
5	T1	1017	0.9	1017	0.9	0.939	68.5	LOS E	58.1	410.9	0.97	1.05	12.6
6	R2	195	0.5	195	0.5	0.713	45.8	LOS D	10.2	71.5	1.00	0.84	16.6
Approach		1457	1.0	1457	1.0	0.939	66.3	LOS E	58.1	410.9	0.98	1.02	15.4
North: Pacific Highway													
7	L2	136	1.6	136	1.6	0.926	70.8	LOS F	43.5	313.3	1.00	1.04	18.1
8	T1	1827	3.9	1827	3.9	0.926	65.5	LOS E	43.5	313.3	1.00	1.05	23.6
9	R2	6	100.0	6	100.0	0.926	72.0	LOS F	43.0	313.3	1.00	1.06	9.6
Approach		1969	4.0	1969	4.0	0.926	65.9	LOS E	43.5	313.3	1.00	1.05	23.2
West: Mowbray Road West													
10	L2	200	2.1	200	2.1	0.567	63.3	LOS E	13.3	94.8	0.96	0.82	4.9
11	T1	764	0.4	764	0.4	0.890	72.4	LOS F	18.6	130.6	1.00	1.02	14.4
Approach		964	0.8	964	0.8	0.890	70.5	LOS F	18.6	130.6	0.99	0.98	12.9
All Vehicles		7005	2.2	7005	2.2	0.939	56.8	LOS E	58.1	410.9	0.96	0.96	21.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %

Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	40.4	LOS E	0.2	0.2	0.73	0.73
P2	East Full Crossing	53	36.8	LOS D	0.2	0.2	0.70	0.70
P3	North Full Crossing	53	56.5	LOS E	0.2	0.2	0.87	0.87
P4	West Full Crossing	53	23.0	LOS C	0.1	0.1	0.55	0.55
All Pedestrians		211	39.2	LOS D			0.71	0.71

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Bowen Street AM]

Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		per veh	km/h
East: Mowbray Road West													
5	T1	797	2.0	797	2.0	0.360	0.0	LOS A	0.0	0.0	0.00	0.00	49.9
Approach		797	2.0	797	2.0	0.360	0.0	NA	0.0	0.0	0.00	0.00	49.9
North: Bowen Street													
7	L2	36	0.0	36	0.0	0.058	11.7	LOS A	0.2	1.3	0.70	0.86	26.3
Approach		36	0.0	36	0.0	0.058	11.7	LOS A	0.2	1.3	0.70	0.86	26.3
West: Mowbray Road West													
10	L2	13	0.0	13	0.0	0.462	4.6	LOS A	0.0	0.0	0.00	0.01	47.9
11	T1	1064	2.7	1064	2.7	0.462	0.0	LOS A	19.8	142.0	0.00	0.01	49.4
Approach		1077	2.6	1077	2.6	0.462	0.1	NA	19.8	142.0	0.00	0.01	49.3
All Vehicles		1909	2.3	1909	2.3	0.462	0.3	NA	19.8	142.0	0.01	0.02	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.4 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Bowen Street PM]

Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	1224	1.3	1224	1.3	0.550	0.0	LOS A	0.0	0.0	0.00	0.00	49.9
Approach		1224	1.3	1224	1.3	0.550	0.0	NA	0.0	0.0	0.00	0.00	49.9
North: Bowen Street													
7	L2	35	0.0	35	0.0	0.032	6.5	LOS A	0.1	0.6	0.38	0.60	32.9
Approach		35	0.0	35	0.0	0.032	6.5	LOS A	0.1	0.6	0.38	0.60	32.9
West: Mowbray Road West													
10	L2	42	0.0	42	0.0	0.180	4.6	LOS A	0.0	0.0	0.00	0.08	46.5
11	T1	909	1.0	909	1.0	0.180	0.0	LOS A	12.0	84.4	0.00	0.02	48.8
Approach		952	1.0	952	1.0	0.180	0.2	NA	12.0	84.4	0.00	0.02	48.5
All Vehicles		2211	1.1	2211	1.1	0.550	0.2	NA	12.0	84.4	0.01	0.02	48.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Goodchap Road AM]

Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	773	3.8	773	3.8	0.373	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6	R2	45	2.3	45	2.3	0.027	5.6	LOS A	0.1	0.7	0.11	0.56	49.2
Approach		818	3.7	818	3.7	0.373	0.3	NA	0.1	0.7	0.01	0.03	58.9
North: Goodchap Road													
7	L2	125	0.8	125	0.8	0.435	9.7	LOS A	1.2	8.4	0.56	0.88	44.4
9	R2	29	3.6	29	3.6	0.435	18.5	LOS B	1.2	8.4	0.56	0.88	47.9
Approach		155	1.4	155	1.4	0.435	11.4	LOS A	1.2	8.4	0.56	0.88	45.4
West: Mowbray Road West													
10	L2	56	1.9	56	1.9	0.895	6.8	LOS A	2.4	17.5	0.00	0.06	53.9
11	T1	953	2.9	953	2.9	0.895	1.6	LOS A	5.4	38.8	0.00	0.03	55.1
Approach		1008	2.8	1008	2.8	0.895	1.9	NA	5.4	38.8	0.00	0.03	55.0
All Vehicles		1981	3.1	1981	3.1	0.895	2.0	NA	5.4	38.8	0.05	0.10	55.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.4 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Mowbray Road West/Goodchap Road PM]

Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Mowbray Road West													
5	T1	1114	1.3	1114	1.3	0.529	0.0	LOS A	0.0	0.0	0.00	0.00	59.8
6	R2	116	0.0	116	0.0	0.068	5.6	LOS A	0.3	1.9	0.12	0.56	49.3
Approach		1229	1.2	1229	1.2	0.529	0.5	NA	0.3	1.9	0.01	0.05	58.2
North: Goodchap Road													
7	L2	98	0.0	98	0.0	0.414	10.3	LOS A	1.5	10.7	0.64	0.90	39.6
9	R2	35	0.0	35	0.0	0.414	34.7	LOS C	1.5	10.7	0.64	0.90	44.5
Approach		133	0.0	133	0.0	0.414	16.7	LOS B	1.5	10.7	0.64	0.90	41.3
West: Mowbray Road West													
10	L2	57	0.0	57	0.0	0.238	5.6	LOS A	30.2	213.4	0.00	0.08	57.3
11	T1	823	1.0	823	1.0	0.238	0.0	LOS A	30.5	215.7	0.00	0.04	59.0
Approach		880	1.0	880	1.0	0.238	0.4	NA	30.5	215.7	0.00	0.04	58.8
All Vehicles		2242	1.0	2242	1.0	0.529	1.4	NA	30.5	215.7	0.04	0.10	56.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %
 Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 101 [Pacific Highway/ Moriarty Road/ Nelson Street AM]

Network: N101 [AM Network]

Existing AM
7:30am-8:30am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Pacific Highway													
1	L2	20	5.3	20	5.3	0.329	5.6	LOS A	0.0	0.0	0.00	0.02	54.1
2	T1	1774	7.5	1774	7.5	0.329	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		1794	7.5	1794	7.5	0.329	0.1	NA	0.0	0.0	0.00	0.01	59.8
East: Nelson Street													
4	L2	13	0.0	13	0.0	0.038	8.8	LOS A	0.1	0.4	0.52	0.73	39.1
Approach		13	0.0	13	0.0	0.038	8.8	LOS A	0.1	0.4	0.52	0.73	39.1
North: Pacific Highway													
7	L2	75	2.8	75	2.8	0.356	5.6	LOS A	29.8	217.8	0.00	0.07	56.4
8	T1	1933	5.6	1933	5.6	0.356	0.0	LOS A	30.2	221.9	0.00	0.02	59.5
Approach		2007	5.5	2007	5.5	0.356	0.3	NA	30.2	221.9	0.00	0.02	59.3
West: Moriarty Road													
10	L2	26	8.0	26	8.0	0.039	9.1	LOS A	0.1	1.1	0.53	0.70	46.7
Approach		26	8.0	26	8.0	0.039	9.1	LOS A	0.1	1.1	0.53	0.70	46.7
All Vehicles		3840	6.4	3840	6.4	0.356	0.3	NA	30.2	221.9	0.01	0.02	59.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.4 %

Number of Iterations: 10 (maximum specified: 10)

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Organisation: GTA CONSULTANTS | Processed: Wednesday, 22 May 2019 12:12:23 PM

Project: P:\N12500-12599\N125951 - 1A - 17 Bowen Street, Chatswood\Modelling\190522\190522 Future LILO (with opening).sip7

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/ Moriarty Road/ Nelson Street PM]

 Network: N102 [PM Network]

Existing PM
5:00am-6:00am
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Flows Total	Flows HV %	Arrival Flows Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
		veh/h	%	veh/h	%	v/c	sec		veh	m			
South: Pacific Highway													
1	L2	32	0.0	32	0.0	0.450	5.6	LOS A	0.0	0.0	0.00	0.02	55.2
2	T1	2506	2.0	2506	2.0	0.450	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		2538	1.9	2538	1.9	0.450	0.1	NA	0.0	0.0	0.00	0.01	59.7
East: Nelson Street													
4	L2	87	1.2	87	1.2	0.246	8.9	LOS A	0.4	3.2	0.52	0.80	39.0
Approach		87	1.2	87	1.2	0.246	8.9	LOS A	0.4	3.2	0.52	0.80	39.0
North: Pacific Highway													
7	L2	84	1.3	84	1.3	0.335	5.6	LOS A	9.7	70.3	0.00	0.08	56.5
8	T1	1823	4.2	1823	4.2	0.335	0.0	LOS A	11.6	83.9	0.00	0.02	59.4
Approach		1907	4.0	1907	4.0	0.335	0.3	NA	11.6	83.9	0.00	0.03	59.2
West: Moriarty Road													
10	L2	13	0.0	13	0.0	0.023	10.7	LOS A	0.1	0.6	0.60	0.73	45.5
Approach		13	0.0	13	0.0	0.023	10.7	LOS A	0.1	0.6	0.60	0.73	45.5
All Vehicles		4545	2.8	4545	2.8	0.450	0.4	NA	11.6	83.9	0.01	0.03	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %

Number of Iterations: 10 (maximum specified: 10)

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Organisation: GTA CONSULTANTS | Processed: Wednesday, 22 May 2019 1:28:05 PM

Project: P:\N12500-12599\N125951 - 1A - 17 Bowen Street, Chatswood\Modelling\190522\190522 Future LILO (with opening).sip7

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/Mowbray Road AM]

 Network: N101 [AM Network]

Existing AM

7:30am-8:30am

Signals - Fixed Time Isolated Cycle Time = 150 seconds (User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV %	Arrival Total	Flows HV %	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h		veh/h		v/c	sec		veh	m		per veh	km/h
South: Pacific Highway													
1	L2	118	8.9	118	8.9	0.487	28.9	LOS C	21.1	158.8	0.68	0.65	33.4
2	T1	1291	8.8	1291	8.8	0.487	22.9	LOS B	21.2	159.2	0.67	0.62	34.3
3	R2	320	8.9	320	8.9	0.941	100.9	LOS F	14.0	105.8	1.00	1.01	19.1
Approach		1728	8.8	1728	8.8	0.941	37.7	LOS C	21.2	159.2	0.73	0.69	28.3
East: Mowbray Road													
4	L2	345	6.4	345	6.4	0.817	51.5	LOS D	37.1	270.0	0.97	0.90	28.2
5	T1	698	2.0	698	2.0	0.817	46.1	LOS D	37.1	270.0	0.93	0.86	16.6
6	R2	141	1.5	141	1.5	0.990	118.0	LOS F	13.5	95.5	1.00	1.11	8.1
Approach		1184	3.2	1184	3.2	0.990	56.3	LOS D	37.1	270.0	0.95	0.90	19.0
North: Pacific Highway													
7	L2	113	0.9	113	0.9	0.997	103.0	LOS F	43.1	313.3	1.00	1.20	13.8
8	T1	1958	5.1	1958	5.1	0.997	98.7	LOS F	43.1	313.3	1.00	1.22	18.0
9	R2	7	100.0	7	100.0	0.997	107.3	LOS F	42.5	313.3	1.00	1.24	6.6
Approach		2078	5.2	2078	5.2	0.997	99.0	LOS F	43.1	313.3	1.00	1.22	17.8
West: Mowbray Road West													
10	L2	132	8.0	132	8.0	0.353	58.0	LOS E	8.2	61.1	0.89	0.78	5.3
11	T1	908	1.6	908	1.6	0.980	99.2	LOS F	18.4	130.6	1.00	1.20	11.4
Approach		1040	2.4	1040	2.4	0.980	94.0	LOS F	18.4	130.6	0.99	1.15	11.0
All Vehicles		6031	5.4	6031	5.4	0.997	72.2	LOS F	43.1	313.3	0.91	0.99	18.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 4.4 %

Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	42.7	LOS E	0.2	0.2	0.75	0.75
P2	East Full Crossing	53	36.1	LOS D	0.2	0.2	0.69	0.69
P3	North Full Crossing	53	53.9	LOS E	0.2	0.2	0.85	0.85
P4	West Full Crossing	53	21.4	LOS C	0.1	0.1	0.53	0.53
All Pedestrians		211	38.5	LOS D			0.71	0.71

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

 Site: 101 [Pacific Highway/Mowbray Road PM]

 Network: N102 [PM Network]

Existing PM

5:00am-6:00am

Signals - Fixed Time Isolated Cycle Time = 150 seconds (User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	OD Mov	Demand Total	Flows HV %	Arrival Total	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Pacific Highway													
1	L2	213	1.0	213	1.0	0.838	38.6	LOS C	49.5	351.8	0.93	0.87	28.4
2	T1	2122	2.1	2122	2.1	0.838	32.3	LOS C	49.9	355.7	0.90	0.83	29.2
3	R2	281	2.6	281	2.6	0.913	95.3	LOS F	11.8	84.7	1.00	0.98	19.8
Approach		2616	2.1	2616	2.1	0.913	39.6	LOS C	49.9	355.7	0.91	0.85	27.1
East: Mowbray Road													
4	L2	245	1.7	245	1.7	0.939	73.4	LOS F	58.1	410.9	1.00	1.05	23.6
5	T1	1017	0.9	1017	0.9	0.939	68.5	LOS E	58.1	410.9	0.97	1.05	12.6
6	R2	195	0.5	195	0.5	0.713	45.8	LOS D	10.2	71.5	1.00	0.84	16.6
Approach		1457	1.0	1457	1.0	0.939	66.3	LOS E	58.1	410.9	0.98	1.02	15.4
North: Pacific Highway													
7	L2	136	1.6	136	1.6	0.926	70.8	LOS F	43.5	313.3	1.00	1.04	18.1
8	T1	1827	3.9	1827	3.9	0.926	65.5	LOS E	43.5	313.3	1.00	1.05	23.6
9	R2	6	100.0	6	100.0	0.926	72.0	LOS F	43.0	313.3	1.00	1.06	9.6
Approach		1969	4.0	1969	4.0	0.926	65.9	LOS E	43.5	313.3	1.00	1.05	23.2
West: Mowbray Road West													
10	L2	200	2.1	200	2.1	0.567	63.3	LOS E	13.3	94.8	0.96	0.82	4.9
11	T1	764	0.4	764	0.4	0.890	72.4	LOS F	18.6	130.6	1.00	1.02	14.4
Approach		964	0.8	964	0.8	0.890	70.5	LOS F	18.6	130.6	0.99	0.98	12.9
All Vehicles		7006	2.2	7006	2.2	0.939	56.8	LOS E	58.1	410.9	0.96	0.96	21.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 3.8 %

Number of Iterations: 10 (maximum specified: 10)

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	South Full Crossing	53	40.4	LOS E	0.2	0.2	0.73	0.73	
P2	East Full Crossing	53	36.8	LOS D	0.2	0.2	0.70	0.70	
P3	North Full Crossing	53	56.5	LOS E	0.2	0.2	0.87	0.87	
P4	West Full Crossing	53	23.0	LOS C	0.1	0.1	0.55	0.55	
All Pedestrians		211	39.2	LOS D			0.71	0.71	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

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