SHOALHAVEN CITY COUNCIL
Environmental Planning & Assessment Act, 1979

DEVELOPMENT CONSENT NO: 18/1237 Dated: 28/8/19

These are the plans referred to in the above Development Consent

Note: Approval of the works shown on this plan is subject to compliance with the conditions of the Development Consent.

Construction Control

Willinga Park Development Application

Traffic Impact Assessment

September 2018

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1. Introduction

1.1 Overview

GHD Pty Ltd (GHD) has been engaged by Construction Control Australia Pty Ltd ("the client") to prepare this Traffic Impact Assessment ("TIA") to support a DA for the hosting of events open to the public at Willinga Park (located on Forster Drive in Bawley Point, NSW) which could potentially attract up to 5,000 people and which would be carried out in accordance with a Plan of Management ("the proposal.

The site is located within the Shoalhaven City Local Government Area (LGA). The proposal requires development consent under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The consent authority for the proposal is Shoalhaven City Council (Council).

The site is an 'Equine Centre of Excellence", comprising facilities for the breeding and training of Australian stock horses, including a stable complex, covered arena for dressage events, polocrosse and camp drafting arenas, stockyards, paddocks and parking areas.

Further details regarding the proposal are provided in Section 3 of this report.

1.2 Purpose of this report

This TIA has been prepared to accompany a Plan of Management for the Equine Centre at Willinga Park which will supersede in part the consent DA15/1659. The TIA report is structured as follows:

- Section 2 – Existing conditions
- Section 3 – The proposed development
- Section 4 – Traffic impact assessment
- Section 5 – Parking provision
- Section 6 – Summary and Conclusions

1.3 Scope and limitations

This report: has been prepared by GHD for Construction Control and *may only be used and relied on by Construction Control for the purpose agreed between GHD and the Construction Control as set out in section 1.2 of this report.*

GHD otherwise disclaims responsibility to any person other than Construction Control arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 1.4 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Construction Control and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with

such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.4 Assumptions

This report and assessment for the proposed Willinga Park Equestrian Facility are based upon the following assumptions:

- Masterplan of the proposed development was provided by the client
- The traffic conditions of the surrounding network are based on information supplied by traffic surveys as outlined in 2.3.1
- Traffic generation estimates for future events at Willinga Park are based on four different examples of traffic arrival and departure patterns for events hosted by a similar facility at Australian Equine and Livestock Event Centre (AELEC). These were provided by the client. No checks have been made for the accuracy of this data.
- Traffic distribution assumptions in relation to arrivals and departure profiles and routes through the network are outlined in Section 4.3 for the proposed development.
- The analysis is a desktop study and no site visits have been undertaken
- Parking estimates have been based on peak arrivals and departures of example events (as provided by the client).
- Analysis has been undertaken based on 2017 traffic volumes.

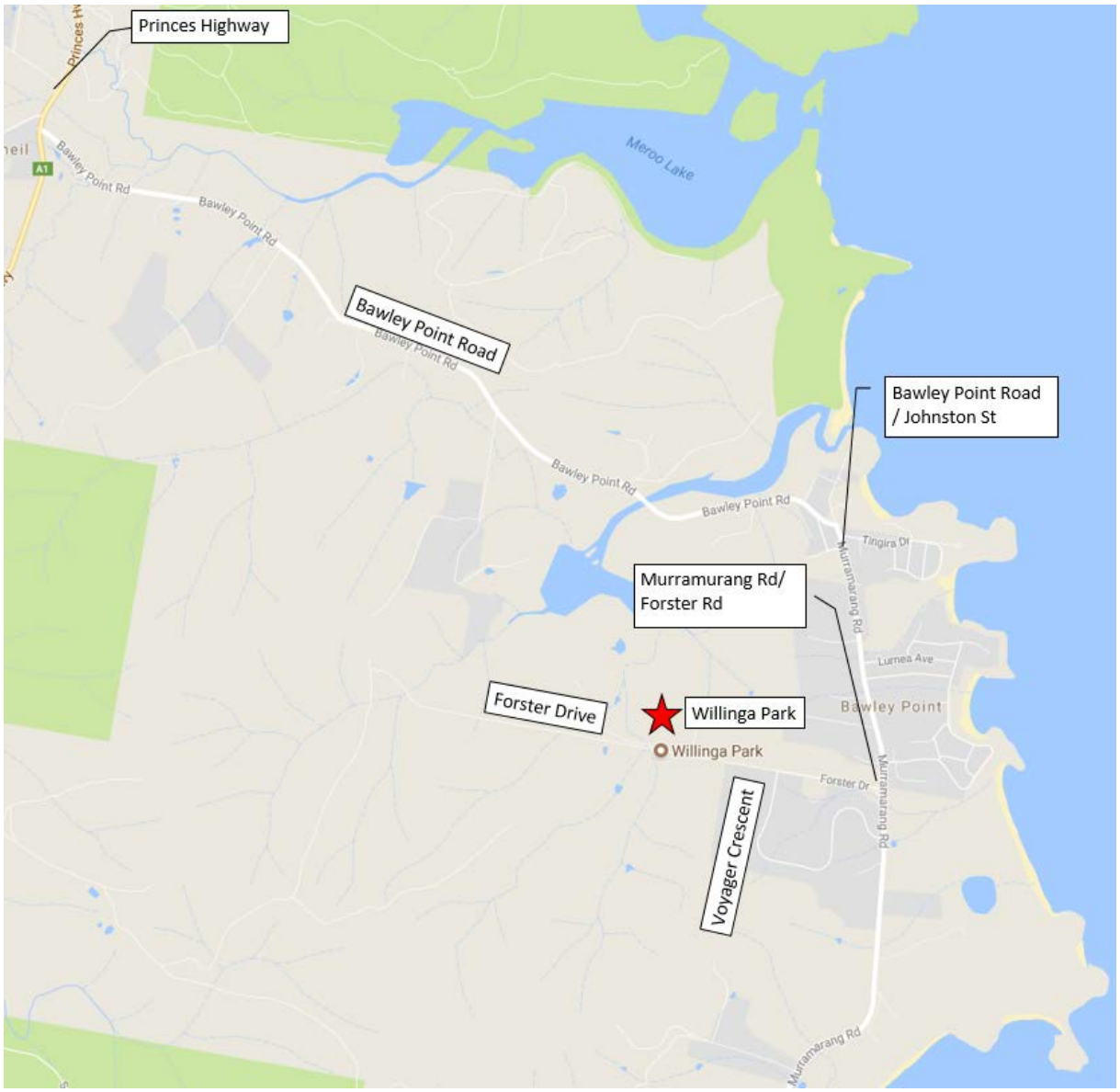
2. Existing Road and Network Conditions

2.1 Site Location

The site (which is known as Willinga Park) is located at 134 Forster Drive , approximately 1.3 kilometres west of Murramarang Road as shown in Figure 2 1. The site is being established as an “Equestrian Centre of Excellence” and will comprise of facilities for the breeding and training of horses, including a stable complex, veterinary breeding facilities, covered arena for dressage events, polocrosse and camp drafting arenas, stockyards, paddocks and car parking areas.

The primary access to the site is via Forster Drive, which links to Murramarang Road to the east of the site. The primary access route to the site is from Princes Highway - Bawley Point Road which links with Murramarang Road in Bawley Point.

Figure 2-1 Site Location



2.2 Existing road network characteristics

2.2.1 Road Hierarchy

Roads within NSW are categorised in following two ways:

- By Classification (ownership)
- By the function that they perform.

Road Classification

Roads are classified (as defined by the *Roads Act 1993*) based on their importance to the movement of people and goods within NSW (as a primary means of communication).

The classification of a road allows Roads and Maritime Services (Roads and Maritime) to exercise authority of all or part of the road. Classified roads include Main Roads, State Highways, Tourist Roads, Secondary Roads, Tollways, Freeways and Transitways.

For management purposes, Roads and Maritime has three administrative classes of roads. These are:

- **State Roads –** Major arterial links through NSW and within major urban areas. They are the principle traffic carrying roads and fully controlled by Roads and Maritime with maintenance fully funded by Roads and Maritime. State Roads include all Tollways, Freeways and Transitways; and all or part of a Main Road, Tourist Road or State Highway.
- **Regional Roads** – Roads of secondary importance between State Roads and Local Roads which, with State Roads provide the main connections to and between smaller towns and perform a sub arterial function in major urban areas. Regional roads are the responsibility of councils for maintenance funding, though Roads and Maritime funds some maintenance based on traffic and infrastructure. Traffic management on Regional Roads is controlled under the delegations to local government from Roads and Maritime. Regional Roads may or all part of all or part of a Main Road, Secondary Road, Tourist Road or State Highway; or other roads as determined by Roads and Maritime.
- **Local Roads** – The remainder of the council controlled roads. Local Roads are the responsibility of councils for maintenance funding. Roads and Maritime may fund some maintenance and improvements based on specific programs (e.g. urban bus routes, road safety programs). Traffic management on Local Roads is controlled under the delegations to local government from Roads and Maritime.

Functional Hierarchy

Functional road classification involves the relative balance of the mobility and access functions. Roads and Maritime define four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility, to high accessibility and low mobility. These road classes are:

- **Arterial Roads** – generally controlled by Roads and Maritime, typically no limit in flow and designed to carry vehicles long distance between regional centres.
- **Sub-Arterial Roads** – can be managed by either Roads and Maritime or local council. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a sub region, or provide connectivity from arterial road routes (regional links).
- **Collector Roads** – provide connectivity between local roads and the-arterial road network and typically carry between 2,000 and 10,000 vehicles per day.

- **Local Roads** – provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

2.2.2 Forster Drive

Forster Drive is the main access road to the proposed development. It functions as a local road and has the following road characteristics:

- Two lane two way road with approximately 7 metres wide carriageway
- 60 km/h signposted speed limit
- Unsealed road shoulders
- No road line marking
- Typically carries under 500 vehicles per day on an average weekday

Figure 2-2 Forster Drive Facing east at Murramarang Road

Source: Google Street view

2.2.3 Murramarang Road

Functions as a local road providing vehicle access to towns of Bawley Point and Kioloa. It is a road link that intersects with Bawley Point Road in Bawley Point. Murramarang Road has the following road characteristics:

- Approximately seven kilometres in length
- 50 km/h sign posted speed limit
- Two lane two way road with carriageway of approximately six metres wide
- Unsealed road shoulders
- Un-divided road line marking
- Typically carries approximately 1900 vehicles per day on an average weekday

Figure 2-3 Murramarang Road facing north at Forster Drive

Source: Google Street view

2.2.4 Bawley Point Road

Bawley Point Road is a local road that connects the town of Bawley Point with the Princes Highway. Bawley Point Road has the following road characteristics:

- Approximately six kilometres in length
- 100 km/h sign posted speed limit which reduces to 50 km/h some 400 meters from Murramarang Road
- Two lane two way road with carriageway of approximately seven metres wide
- Unsealed road shoulders
- Un-divided double line road line marking
- Typically carries approximately 1900 vehicles per day on an average weekday

2.2.5 Princes Highway

Princes Highway is a state road that connects Sydney in New South Wales (NSW) to Port Augusta in South Australia (SA) which follows the south eastern coastline of Australia. It is a road generally used for a rural purposes and for scenic or leisure travelling. As such, the arterial road typically carries lower traffic in comparison to other major highways linking cities in Australia. The Princes Highway has the following road characteristics:

- Approximately 1,940 kilometres in length passing through NSW, Victoria and SA.
- 100 km/h sign posted speed limit
- Two lane two way road with carriageway of approximately seven metres wide
- Sealed road shoulders
- Un-divided double line road line marking
- Typically carries 2,800 vehicles per day on an average weekday

Figure 2-4 Princes Highway facing north at Bawley Point Road

Source: Google Street view

2.3 Existing Road Network Performance

2.3.1 Existing traffic data

GHD engaged Matrix to undertake a number of traffic count surveys to determine the existing operation of the road network during normal weekday conditions (blue dots in Figure 2-5). Classified automatic tube counts were provided by TCS for Surveys at several locations as shown in Figure 2-5 (black cross).

Figure 2-5 Traffic count surveys

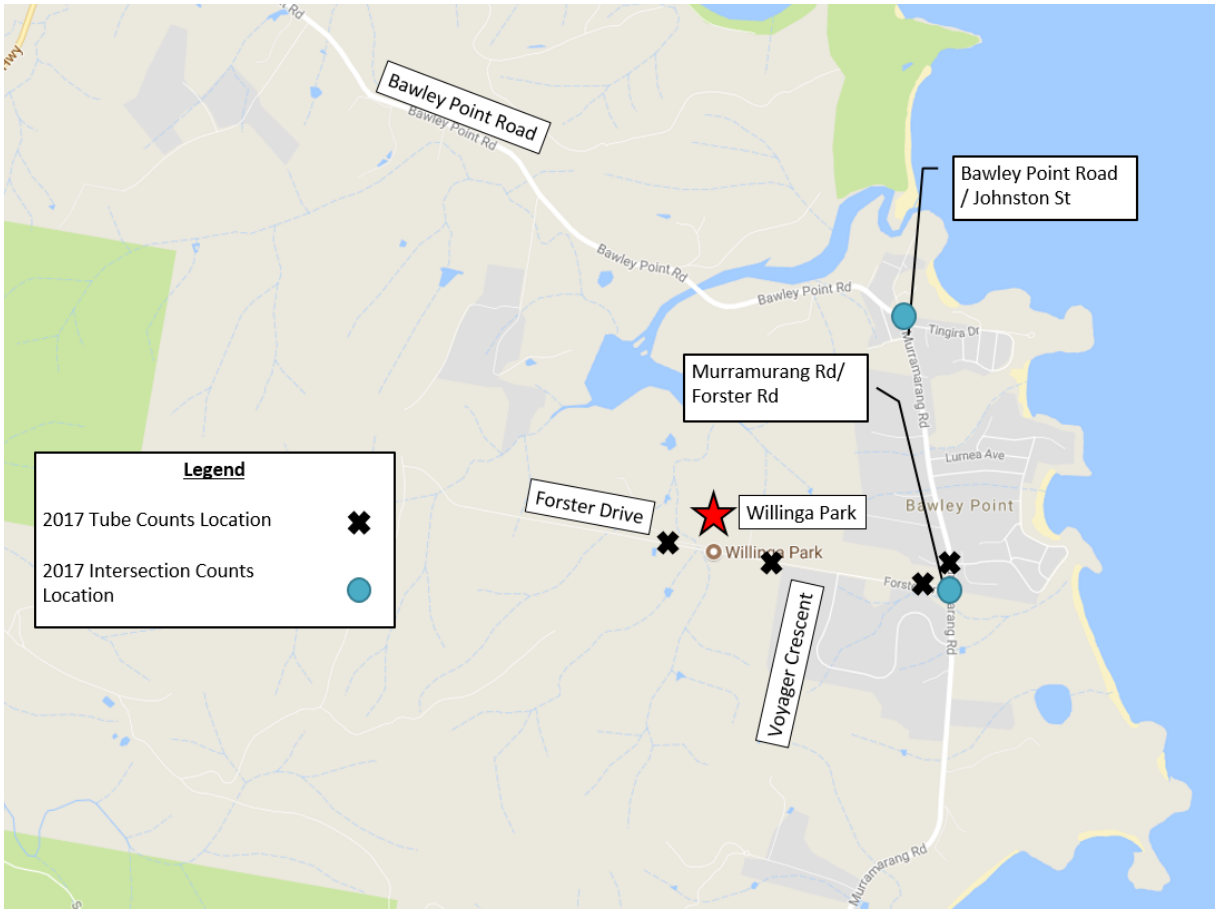


Table 2-1 below summarises the type of data collected and outlines the location and time periods for which the data was collected. A copy of the traffic counts undertaken are in Appendix A.

Table 2-1 Summary of data collected

Location	Data Type	Date	Time
Princes Highway / Bawley Point Road	Classified Intersection Counts	Saturday, 18th March 2017*	7:00 am – 11:00 am 4:00 pm – 7:00 pm
Bawley Point Road / Murramarang Road/ Johnston Street	Classified Intersection Counts	Saturday, 9th September 2017, Tuesday 12th September 2017	7:00 am – 11:00 am 4:00 pm – 7:00 pm
Murramarang Road / Forster Road	Classified Intersection Counts	Saturday, 9th September 2017, Tuesday 12th September 2017	7:00 am – 11:00 am 4:00 pm – 7:00 pm
Forster Drive west of Voyager Crescent	Automatic tube count	Friday 17th March 2017 to Monday 27th March 2017*	11 days
Forster Drive west of Murramarang Road	Automatic tube count	Friday 17th March 2017 to Monday 27th March 2017*	11 days
Murramarang Road just north of Forster Drive	Automatic tube count	Friday 17th March 2017 to Monday 27th March 2017*	11 days
Forster Drive east of Willinga Park Entrance	Automatic tube count	Friday 7th July 2017 to Sunday 16th July 2017*	10 days
Forster Road west of Voyager Crescent	Automatic tube count	Friday 7th July 2017 to Sunday 16th July 2017*	10 days
Forster Road west Murramarang Road	Automatic tube count	Friday 7th July 2017 to Sunday 16th July 2017*	10 days
Murramarang Road north of Foster Drive	Automatic tube count	Friday 7th July 2017 to Sunday 16th July 2017*	10 days
Bawley Point Road east of Princes Highway	Automatic tube count	Friday 7th July 2017 to Sunday 16th July 2017*	10 days
Princes Highway north of Bawley Point Road	Automatic tube count	Friday 7th July 2017 to Sunday 16th July 2017*	10 days

*Captures the event weekend 17th – 19th March

2.3.2 Mid–Block Capacity Analysis

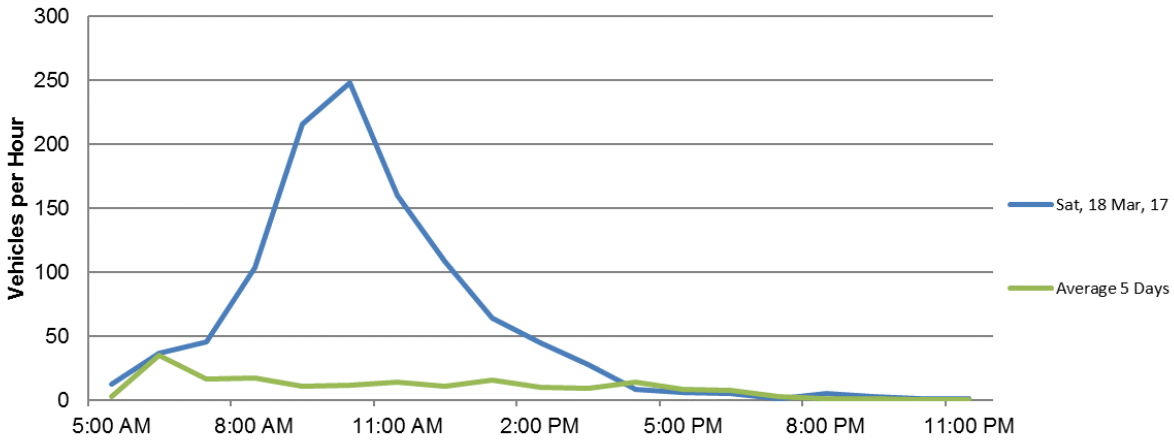
According to Austroads guide to Traffic Management, Part 3: Traffic Studies and Analysis, Section 4.1.1, the operational capacity of a single rural road with uninterrupted flow is approximately 1800 vehicles per hour.

For the purposes of this study, a one way mid-block capacity of 1800 vehicles per hour is utilised to assess the mid-block performance of a rural road.

Forster Drive

Figure 2-6 shows daily traffic volumes on Forster Drive west of Voyager Crescent in the westbound direction for average non-event day traffic (represented by the green line) and the the Saturday Open Day Event 18th March 2017 (represented by the blue line). The Open Day Event was an atypical event (i.e.an event not associated with the type of National or International equestrian competitions that this DA seeks to cater for). All activities for the Open Day Event occurred on a single day, and were not spread out over multiple days, which is a typical characteristic of equestrian events

Figure 2-6 Daily traffic volume at Forster Drive east of Voyager Crescent (Westbound)



As shown in Figure 2-6, for the westbound direction on Forster Drive east of Voyager Crescent, traffic volumes for Open Day Event peak in the morning period between 10:00 am – 11:00 am with peak volumes up to 250 vehicles per hour.

Similarly, for the average non-event traffic volumes, an observable morning peak of 35 vehicles per hour is seen between 6:00 am – 7:00 am.

Figure 2-7 shows daily traffic volumes on Forster Drive west of Voyager Crescent in the eastbound direction for the Saturday Open Day Event 18th March 2017 and the average non-event days traffic profile.

Figure 2-7 Daily Traffic Volume at Forster Drive east of Voyager Crescent (eastbound)

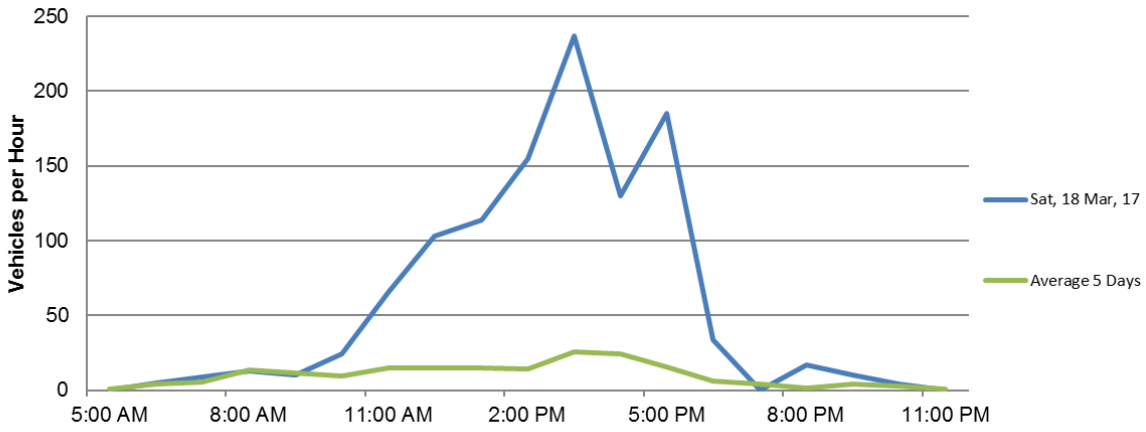


Figure 2-7 shows that the traffic volume peak period is significantly higher during the Saturday Open Day Event in comparison to the average non-event day's traffic volumes. The Open Day Event peak period is seen to be between 2:00 pm – 5:00 pm in the afternoon with a maximum of 240 vehicles per hour.

Average non-event days traffic volumes have an observable morning peak of approximately 15 vehicles per hour between 8:00 am – 9:00 am and 25 vehicles per hour in the afternoon peak between 3:00 pm – 4:00 pm.

Table 2-2 below provides a comparison between the existing peak hour traffic on Forester Road and the available capacity.

Table 2-2 Capacity analysis for Forster Road

Direction (peak period)	Capacity	Non event day peak hour traffic	Open Day Event Peak hour traffic
Westbound (AM)	1800 veh/hr/lane	35	250
Eastbound (PM)	1800 veh/hr/lane	25	240

Table 2-2 clearly shows Forester Road has adequate spare capacity to cater for the additional traffic generated by an Open Day Event.

Murramarang Road

Figure 2-8 shows the daily traffic volume profile at Murramarang Road north of Foster Drive in the southbound direction for the Saturday 18th March 2017 Open Day Event and for an average non-event day count.

Figure 2-8 Daily traffic volume profile at Murramarang Road north of Forster Drive (Southbound)

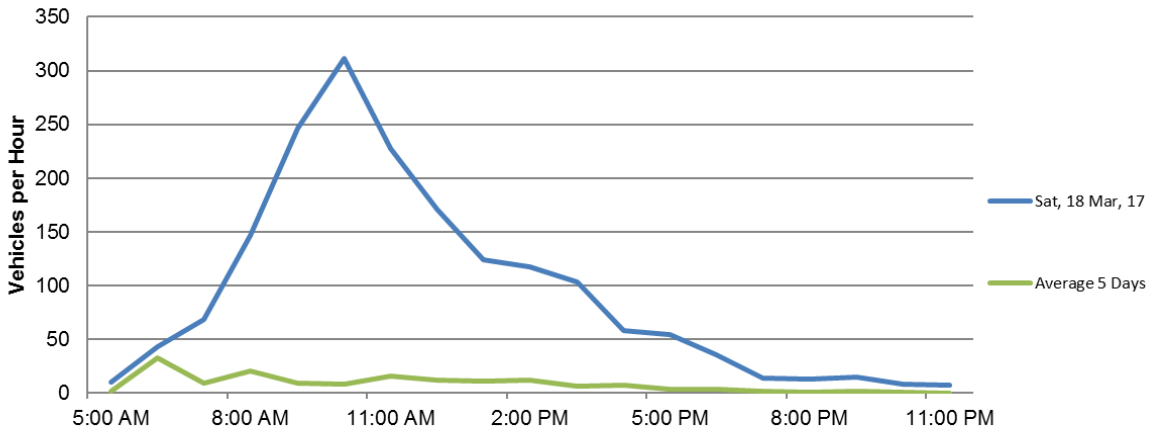
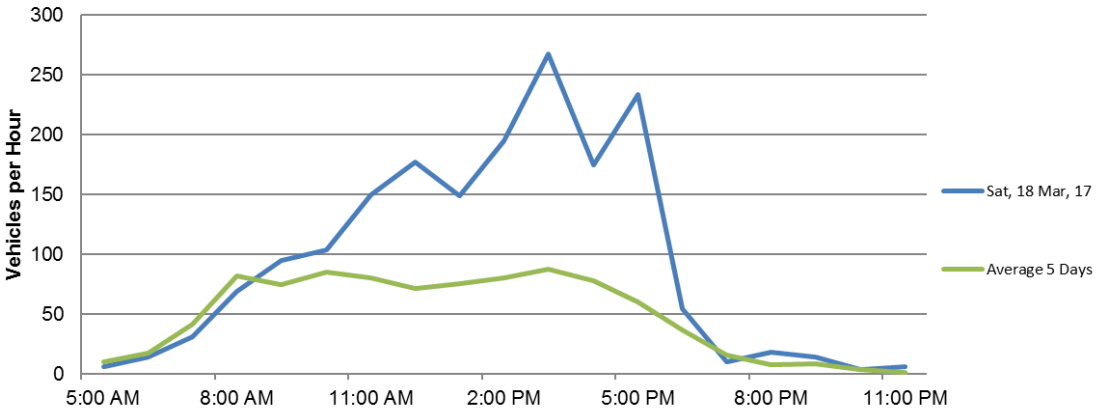


Figure 2-8 shows that for the Open Day Event in the southbound direction, the peak morning period occurs between 10:00 am – 11:00 am, which coincides with the morning peak period along Forster drive in the westbound direction. Similar to Forster Drive, the average non event day traffic peak period for the southbound direction on Murramarang Road occurs in the morning between 6:00 am – 7:00 am.

Figure 2-9 shows the daily traffic profile at Murramarang Road north of Forster Drive in the northbound direction.

Figure 2-9 Daily traffic volume profile at Murramarang Road north of Forster Drive (Northbound)



The peak period for the Open Day Event occurs in the afternoon between 3:00 pm – 5:00 pm with a maximum of 255 vehicles per hour. Traffic volumes for the average non event day travelling northbound on Murramarang Road are typically higher than volumes travelling south throughout

the day. A morning peak of approximately 80 vehicles per hour was observed at 8:00 am – 9:00 am, and approximately 90 vehicles per hour in the afternoon peak between 3:00 pm - 4:00 pm.

Table 2-6 below provides a comparison between the existing peak hour traffic on Murramarang Road and the available capacity.

Table 2-3 Capacity analysis for Murramarang Road

Direction (peak period)	Capacity	Non event day peak hour traffic	Open Day Event Peak hour traffic
Southbound (AM)	1800 veh/hr/lane	35	300
Northbound (PM)	1800 veh/hr/lane	90	255

Table 2-6 shows Murramarang Road has adequate spare capacity to cater for the additional traffic generated by an Open Day event.

Bawley Point Road

At Bawleys Point Road on the Open Day Event, data was only collected for four hours in the morning (6:00 am- 10:00 am) and four hours in the evening (4:00 pm -7:00 pm). Figure 2-10 shows a comparison of the Open Day Event traffic to average weekday traffic collected in July 2017. Two peaks are observed during the day, one at 12:00 pm – 1:00 pm of approximately 90 vehicles per hour and a larger peak at 3:00 pm – 4:00 pm of approximately 100 vehicles per hour.

Figure 2-10 Daily traffic volume profile at Bawley Point Road east of Princes Highway (eastbound)

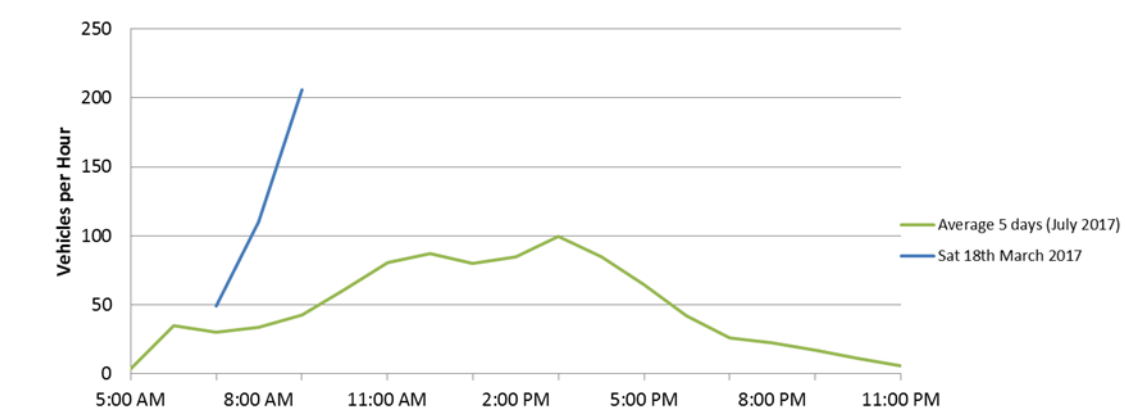


Figure 2-11 shows westbound daily traffic volume profile at Bawley Point Road. Similar to the eastbound direction, the peak traffic volume is approximately 105 vehicles per hour in the morning peak (10:00 am – 11:00 am). The afternoon peak is approximately 80 vehicles per hour (3:00 pm – 4:00 pm).

Figure 2-11 Daily traffic volume profile at Bawley Point Road east of Princes Highway (westbound)

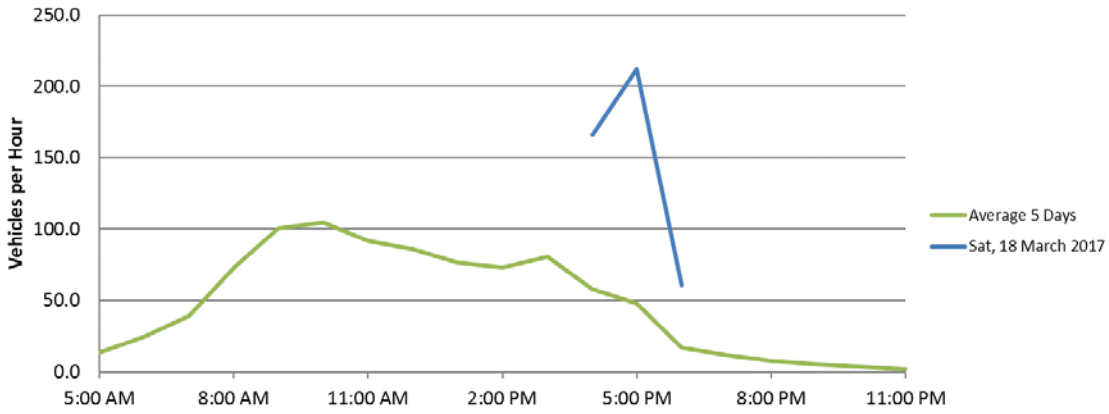


Table 2-4 below provides a comparison between the existing peak hour traffic on Bawley Point Road and the available road capacity.

Table 2-4 Capacity analysis for Bawley Point Road

Direction (peak period)	Capacity	Non event day peak hour traffic	Event Day Peak hour traffic
Eastbound (AM)	1800 veh/hr/lane	90	210*
Westbound (PM)	1800 veh/hr/lane	80	210*

**Note: Given an automatic tube count was not taken on the day of the event at Princes Highway near Bawley Point Road, peak event traffic may not be captured*

Table 2-7 shows Bawley Point Road has adequate spare capacity to cater for the additional traffic generated by the Open Day Event.

Princes Highway

Figure 2-12 shows that only AM and PM peak traffic volumes coinciding with Open Day Event traffic were collected for Princes Highway northbound traffic. The peak period is seen to be between 11:00 am to 12:00 pm with a maximum of 290 vehicles per hour. However, this is for the average non-event days traffic profile. The graph shows that Open Day Event traffic is higher during the AM (7:00 am to 10 am) compared to average traffic. Another peak is observed during the day of 260 vehicles per hour at 3:00 pm to 4:00 pm, which coincides with average non event days counts.

Figure 2-12 Daily traffic volume profile at Princes Highway north of Bawley Point Road (northbound)

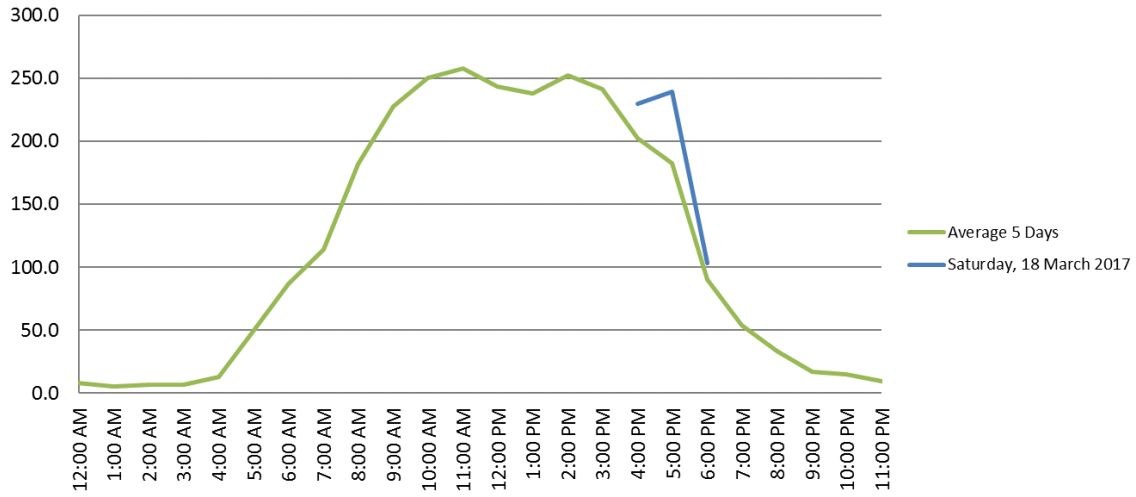


Figure 2-13 shows that only AM and PM peak traffic volumes that coincide with Open Day Event traffic were collected for Princes Highway southbound traffic. Open Day Event traffic appears to be the same or lower than the average non-event days count. The peak period is seen to be between 3:00 pm and 4:00 pm in the afternoon with a maximum of approximately 260 vehicles per hour.

Figure 2-13 Daily traffic volume profile at Princes Highway north of Bawley Point Road (southbound)

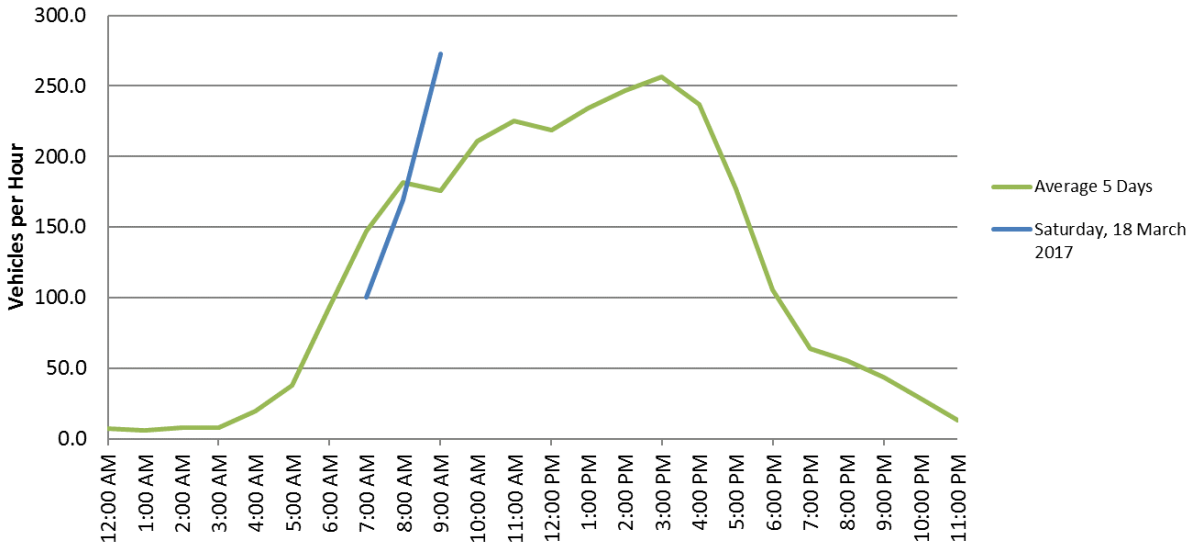


Table 2-5 below provides a comparison between the existing peak hour traffic on Princes Highway and the available road capacity.

Table 2-5 Capacity analysis for Princes Highway

Direction (peak period)	Capacity	Non event day peak hour traffic	Open Day Event Peak hour traffic
Northbound (PM)	900 veh/hr/lane	182	239

Southbound (AM)	900 veh/hr/lane	175	273

Table 2-5 shows Princes Highway has spare capacity to cater for the additional traffic generated by an Open Day Event.

2.3.3 Heavy and light vehicle ratio

Based on the traffic survey data, the average heavy vehicle percentage for Open Day Event traffic only for each road within the study area the day before the Open Day Event Friday 17th March 2017 (Day -1) and on the Open Day Event Saturday 19th March 2017 is outlined in Table 2-6.

Heavy vehicle ratios are significantly higher the day before the Open Day Event, in comparison to the Open Day Event day. This may suggest attendees participating or setting up the Open Day Event require heavy vehicles to access the site the day before. These heavy vehicle ratios were used to determine vehicle types of traffic generated by future events.

Table 2-6 Open Day Event heavy vehicle ratio

Location	Percent Daily HV*	
	Day before event (Day -1)	Event day (Day 1)
Princes Highway	-	2
Bawley Point Road	-	1
Murramarang Road	7	0.5
Forster Drive	20	5

Notes:
(*) HV = heavy vehicles/buses

The average heavy vehicle percentage for an average weekday is shown in Table 2-7.

Table 2-7 Average weekday heavy vehicle ratio

Location	PercentHV**	
	AM	PM
Princes Highway	12	8
Bawley Point Road	13	5
Murramarang Road	8	5
Forster Drive	15	9

Notes:
(*) HV = heavy vehicles/buses

2.4 Existing intersection performance

The performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. SIDRA intersection modelling software was used to assess the proposed peak hour operating performance of intersections on the surrounding road network.

The criteria for evaluating the operational performance of intersections is provided by the Guide to Traffic Generating Developments (Roads and Maritime Services, 2002) and reproduced in Table 2-8. The criteria for evaluating the operational performance of intersections is based on a qualitative measure (i.e. Level of Service), which is applied to each band of average vehicle delay.

Table 2-8 Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (seconds/veh)	Traffic Signals, Roundabouts	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control modes	At capacity, requires other control mode
F	> 70	Over Capacity Unstable operation	Over Capacity Unstable operation

Source: Guide to Traffic Generating Developments (Roads and Maritime Services 2002)

The base 2017 traffic models were developed using the AM and PM peak hour surveyed data results. Existing traffic flows at key intersections analysed using SIDRA 7 to obtain the current operation of the key intersections. A summary of the results is outlined in and detailed in Appendix B.

Table 2-9 Existing weekday intersection operations (2017)

Intersection	AM Peak				PM Peak			
	Ave. Delay (s)	LoS	Control Type	Degree of Saturation	Ave. Delay (s)	LoS	Control Type	Degree of Saturation
Princes Highway / Bawley Point Road	11	A	Stop sign	0.1	11	A	Stop sign	0.08
Bawley Point Road / Johnston Street / Murramarang Road	8	A	Stop sign	0.06	7	A	Stop sign	0.06
Murramarang Road / Forster Drive	5	A	Stop sign	0.04	8	A	Stop sign	0.04

Table 2-10 Existing Saturday intersection operations (2017)

Intersection	AM Peak				PM Peak			
	Ave. Delay (s)	LoS	Control Type	Degree of Saturation	Ave. Delay (s)	LoS	Control Type	Degree of Saturation
Princes Highway / Bawley Point Road	11	A	Stop sign	0.1	11	A	Stop sign	0.07
Bawley Point Road / Johnston Street / Murramarang Road	8	A	Stop sign	0.06	7	A	Stop sign	0.03
Murramarang Road / Forster Drive	8	A	Stop sign	0.05	8	A	Stop sign	0.03

Notes:

- *The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.*
- *The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.*
- *The degree of saturation is defined as the ratio of the arrival flow (demand) to the capacity of each approach.*
- *Average delay is given in seconds per vehicle.*

Above results indicate that each of the analysed intersections currently have an acceptable Level of Service (i.e. better than Level of Service E) with spare capacity in both the weekday evening and weekend peak periods. Detailed SIDRA results of these intersections are provided in Appendix A.

2.5 Crashes

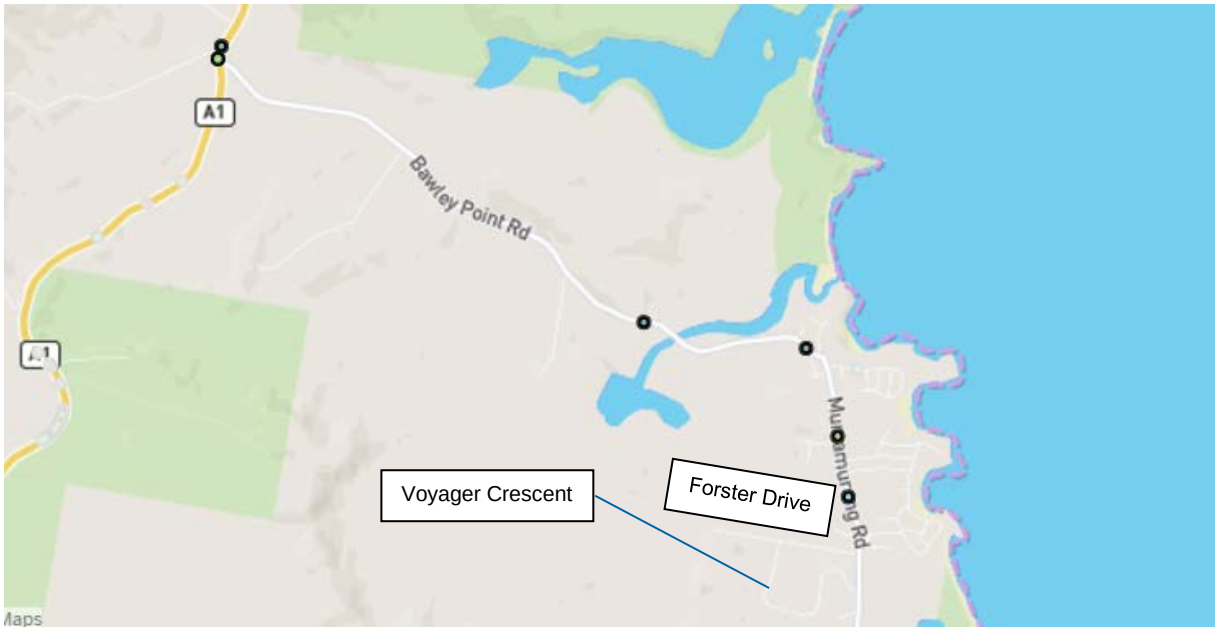
Crash history was collected for the study area for a 5 year period between 2012 and 2016 (inclusive). Figure 2-14 shows that a total of seven crashes were recorded. In summary, the following crash trends were observed:

- Two crashes occurred on Murramarang Road
- Two crashes occurred on Bawley Point Road
- Three crashes occurred at the intersection of Bawley Point Road and Princes Highway
- Of these crashes, 57 percent resulted in injury to the occupants

Summarising the crash types, the majority of the crashes were caused by vehicles leaving the carriageway and hitting an object. The remaining crashes were:

- One crash was caused by hitting an animal
- One crash was a rear end
- One crash was on road 'out of control'.

Figure 2-14 Crashes location map



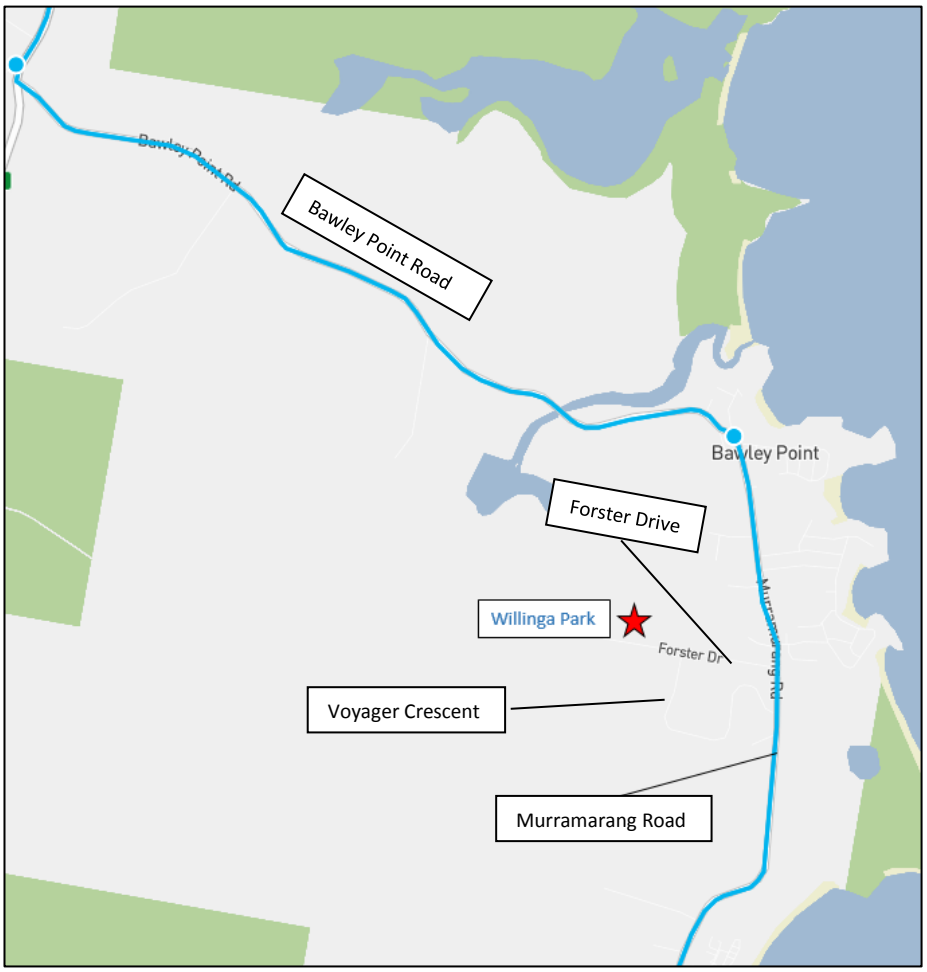
Source: Transport for NSW Centre for Road Safety

2.6 Public Transport

Given the remote location of Willinga Park, access to public transport is limited. Bus route 741 is the closest route that stops to the proposed site, which stops in Bawley Point at the corner of Murramarang Road /Bawley Point Road intersection as shown in Figure 2-15. Bus route 741 operates between Milton and Kiola via the Princes Highway, with two services in the morning peak period (8:00 am – 10:00 am) and two services in the afternoon peak period (4:00 pm–6:00 pm).

No train services are available to the area.

Figure 2-15 Bus route 741

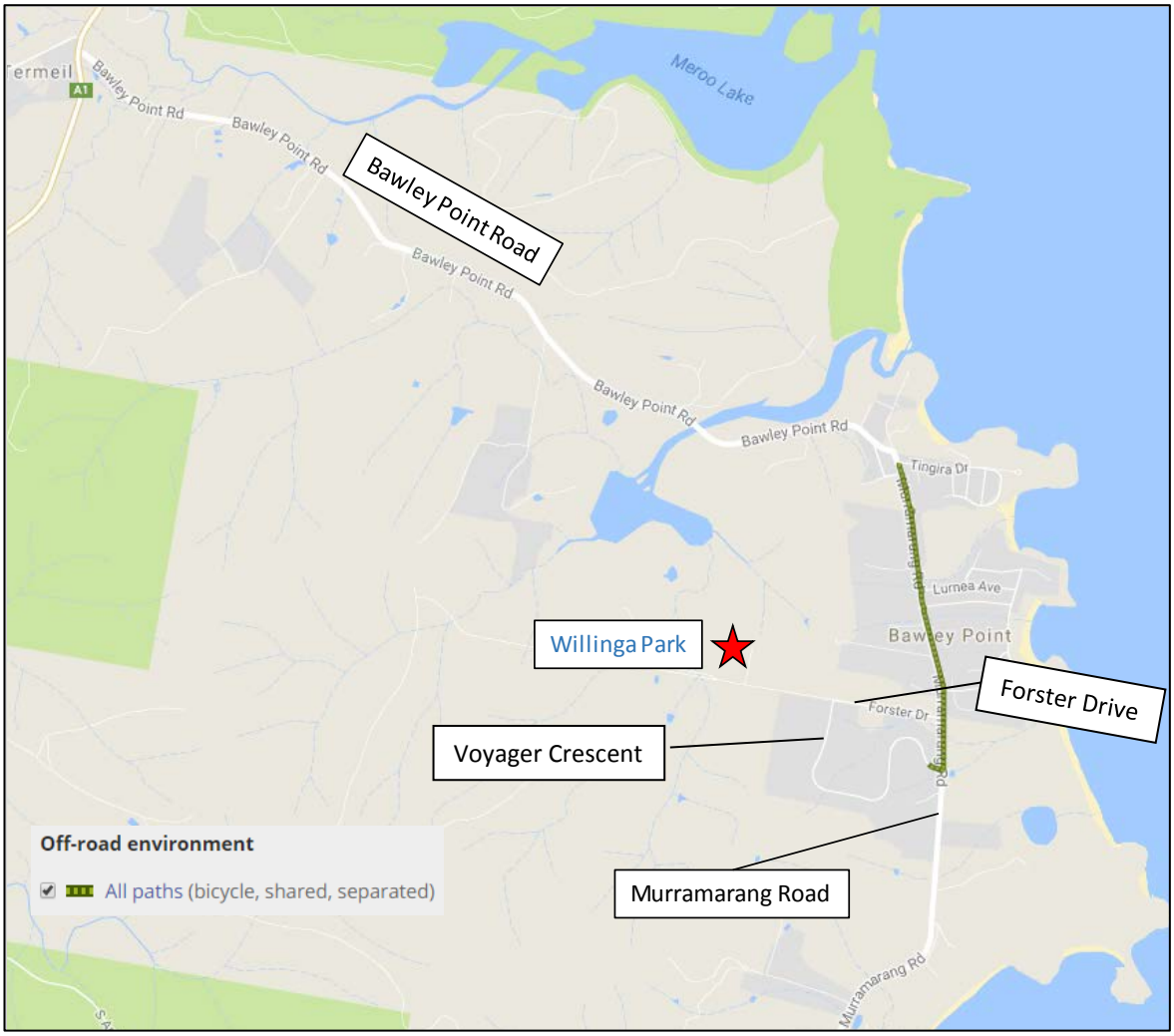


Source: Transport for NSW

2.7 Bicycle riding

Bicycle routes are limited in the area, however there is a cycle path that exists on the east side of Murramarang Road between Bawley Point Road and Voyager Crescent as shown in Figure 2-16.

Figure 2-16 Cycling routes



Source: Roads and Maritime Cycle Finder 2017

2.8 Walking

There are generally no formal walking paths on the access road to the site of Forster Road. The closest walking paths in close proximity to the site are available on the east side of Murramarang Road.

3. Description of the Proposal

3.1 Need for the proposal

The landowner is establishing an “Equine Centre of Excellence” at Willinga Park comprising facilities for the breeding and training of horses and other livestock. The proposal will allow for the yarding and day-to-day management of horses and other livestock, including feeding and grooming. The proposal would provide improved arrangements for horse/ livestock management/security during agricultural and equine events, and also seeks to provide ablutions /amenities and stockyard management facilities to support the events and primitive camping previously approved at the site. The masterplan of the proposed site is shown in Figure 3-1.

3.2 The Proposal

The DA to which this TIA relates seeks consent for the hosting of events at Willinga Park which are open to the public and which could potentially attract up to 5,000 people.

In summary:

- there is likely to be one equestrian event open to the public per month;
- of the 12 equestrian event occasions each year, four are likely to potentially attract up to 5,000 people;
- these events would be ticketed to cap numbers and would be programmed not to coincide with the peak January holiday period; and
- other non-equestrian events, likely to amount to six per year in total, such as events associated with the gardens, architecture and sculptures at Willinga Park will also be conducted.

The likely events can be categorised as follows:-

A Event

- International event
- World Cup/Championship
- Comprising possibly of any of the equine events
- Possibly comprising a masterclass
- There would be 3,000-5,000 people in attendance
- In the order of four times a year

B Event

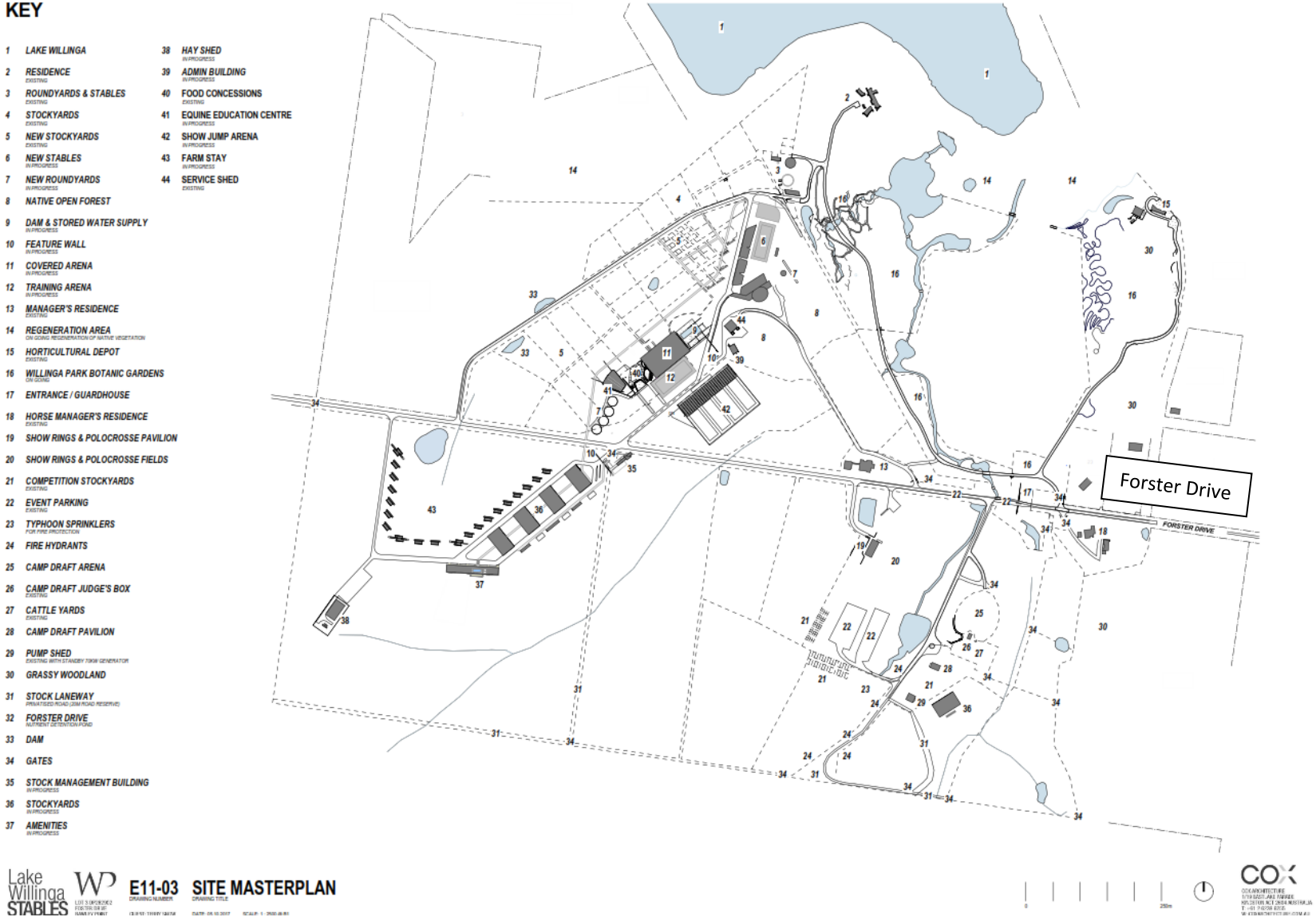
- International or National Event
- There would be 1,000-2,000 people in attendance
- In the order of eight events per year

Non-Equine Events

- In the order of six events per year
- Events relating to architecture, gardens, sculptures and tours

All events which are open to the public and ticketed will be conducted in accordance with the Event Plan of Management submitted with the DA. Events will be carried out between 7:00 am and 10:00 pm.

Figure 3-1 Willinga Park Site Masterplan



4. Traffic Impact Assessment

This section outlines the proposed development and summarises the traffic and parking impact analysis of the proposed development.

4.1 Vehicle movements and operations

Most equestrian events will be conducted over three (3) to four (4) days (generally Thursday to Sunday) and may involve the arrival of some competitors the day prior to the event and the departure of some competitors on the day after the event. Thus the nature of most events is that they will occur over more than one day (normally three or four) with a variety of competitive formats (e.g. multi-discipline event, dressage, eventing, youth event, show jumping event etc.). Unlike many other sporting events such as a major rugby match, competitors and spectators will be likely to arrive and depart in a dispersed manner as the individual events, staged progressively, start and finish and competitors are eliminated from competition. Thus, unlike many sporting events, there is no single start and finish time likely to result in a distinct pattern of vehicular arrival and departure movements. In addition, competitors and spectators will come from across the state and inter-state, which will lead to variable arrival and departure patterns.

Therefore, the progressive arrival and departure of competitors and spectators will tend to avoid concentrated peaks on Forster Drive. Nevertheless, the peak hour flows associated with events will be likely to occur between 11:00 am and 3:00 pm of the day before the events, whereas departures are more likely to be evenly spread over the last day.

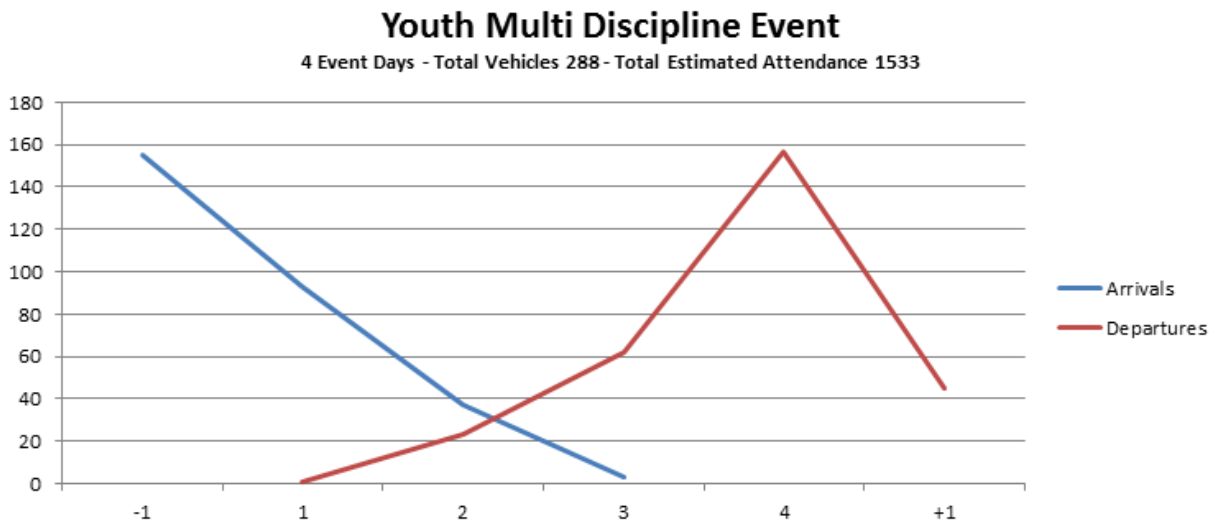
In this regard, whilst the dispersed pattern of departures on the last day of an event is likely to result in no more than 10 percent of total departures per peak hour we have conservatively assumed 15 percent for the period 1:00 pm to 5:00 pm.

Estimates of vehicle movements throughout the local road network have been based on information that has been provided by the client on daily traffic count profiles for a variety of multiple day Equine Events held at The Australian Equine and Livestock Events Centre (AELEC) (email attached as Appendix C).

4.2 Traffic Generation

The traffic data provided at multiple day Equine events at AELEC are based on peak daily vehicle arrivals and departures (which was provided by the Client). Traffic data were summarised by event days, with the total number of vehicles and attendees recorded for each event. An example of a traffic profile for a “Youth Multi Discipline Event” is shown in Figure 4-1. This event shows the peak number of vehicles arriving and departing before the event (Day -1) during the event (Days 1 to 4) and after the event (Day +1) as shown on the horizontal axis.

Figure 4-1 Example daily peak traffic profile for Youth Multi Discipline Event



Source: Construction Control

Data at four different kinds of events was provided that varied in durations and by the number of attendees. For these four events, the total vehicles generated by a maximum of 5,000 attendees was estimated using a scaling factor. Daily peak traffic volumes for each event were then multiplied by this factor to obtain the likely number of vehicles generated by 5,000 attendees for each type of event. Each type of event and the corresponding factors are shown in Table 4-1.

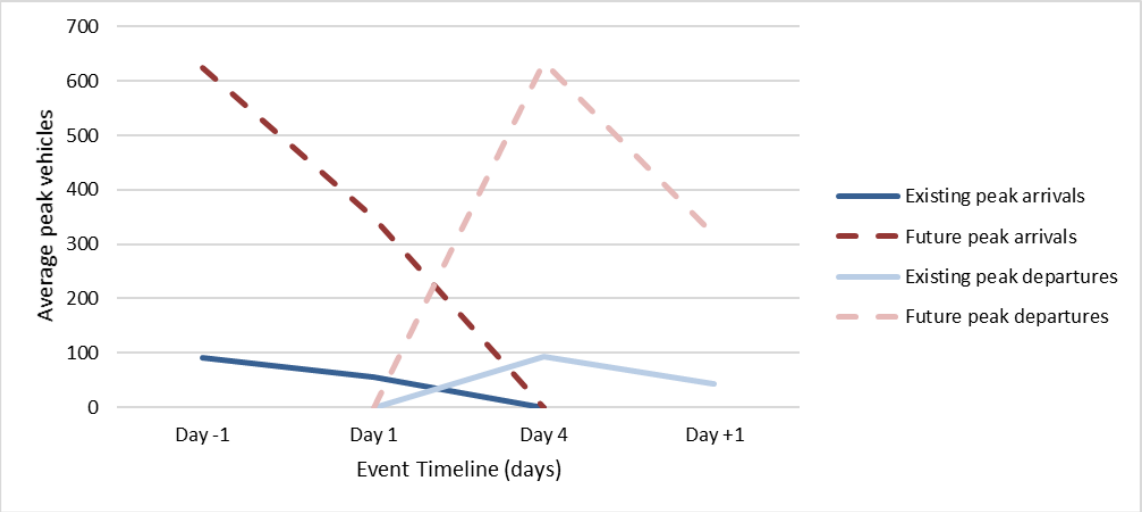
Table 4-1 Existing and estimated total vehicles generated by future events

Event Type	Existing Event		Estimated daily vehicles for 5000 attendees	Factor (to convert to 5000 attendees)
	Daily Total Vehicles	Total Attendees		
Youth Multi – discipline Event	288	1,533	939	3
Multi-Discipline Event	224	928	1,207	5
Miniature Horses Event	163	407	2,002	12
Jumping Event	131	390	1,679	13
Average	**202**		**1,457**	

For this assessment, a simple average of all type of events was taken to estimate the number of vehicles generated for a typical event. Thus, it was estimated, that on average a typical event in the future with a maximum of 5,000 attendees is likely to generate approximately 1,460 vehicles.

A summary of the estimated existing and future daily arrivals and departures based up on these volumes of vehicles are shown in Figure 4-2.

Figure 4-2 Average existing and future peak daily arrivals and departures



Based on the arrival and departure patterns obtained from the event held at AELEC (provided by the client) it was estimated that approximately 625 vehicles will arrive one day before the event and about 635 vehicles will depart on the last day of the event. These are referred to as the peak day arrivals and departures in Figure 4-2 as this is when the maximum activity relating to the event occurs.

Peak hour vehicular arrivals and departures

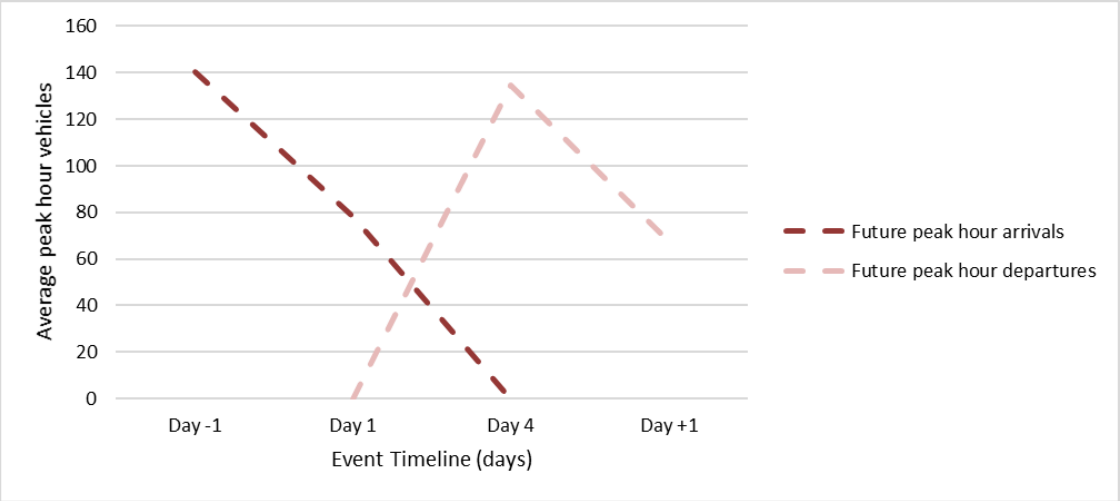
The peak daily estimated vehicle data was then converted to a peak hourly volume. This estimate was based on the arrival profiles of an AELEC event as supplied by Construction Control Pty Ltd, which suggests that 25 percent of arrivals occurred between 6:00 am to 11:00 am, 30 percent between 11:00 am to 3:00 pm and 45 percent between 5:00 pm and 6:00 am. The progressive arrival and departure of competitors and spectators will avoid concentrated peaks on Forster Drive. Based on these assumptions, 7.5 percent of total vehicles would likely arrive each hour between 11:00 am – 3:00 pm. To provide a robust assessment, the assessment assumed that the peak hour vehicular arrival was 10 percent of total daily arrivals (increased from 7.5 percent).

Similarly, due to the dispersed pattern of departures on the last day of an event, the peak hour vehicular departure is likely to be no more than 10 percent of total daily vehicular departure (i.e. 28 vehicles). However, it has been conservatively assumed to be 15 percent of total daily vehicular departure, as provided by Construction Control Pty Ltd. The one hour peak period for departures is likely to occur for the period 1:00 pm and 5:00 pm.

The estimate of the peak hour traffic based on these assumptions were approximately 20 vehicle arrivals and 42 vehicle departures.

It is assumed that the peak hour arrival factor of 10 percent and peak hour departure factor of 15 percent are applicable on days before, during and after the event. A graphical representation of peak hour arrivals and departures for a 5,000 attendee future event is shown in Figure 4-3.

Figure 4-3 Estimated future peak hour arrivals and departures



4.3 Traffic distribution

Distributions of traffic for a future event was estimated based on traffic counts taken on the event day held on Saturday 18th March, which was an Open Day for a spectator orientated event typical for Willinga Park. The traffic distributions for the peak arrivals and departures are shown in Figure 4-4 and Figure 4-5 respectively.

Figure 4-4 Peak hour arrival distribution

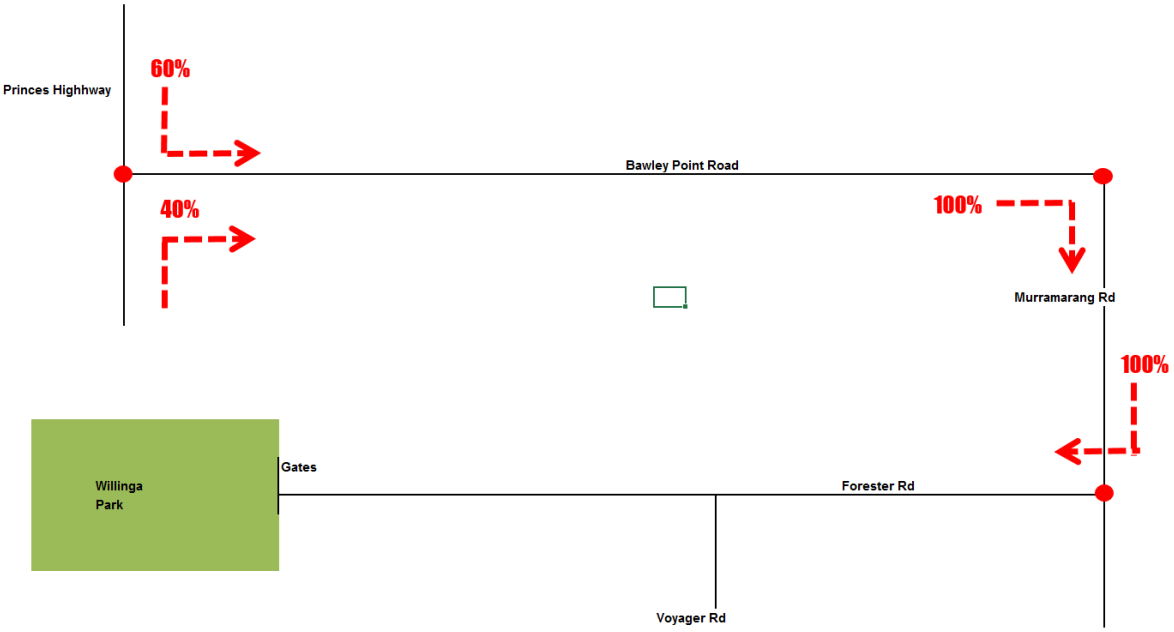
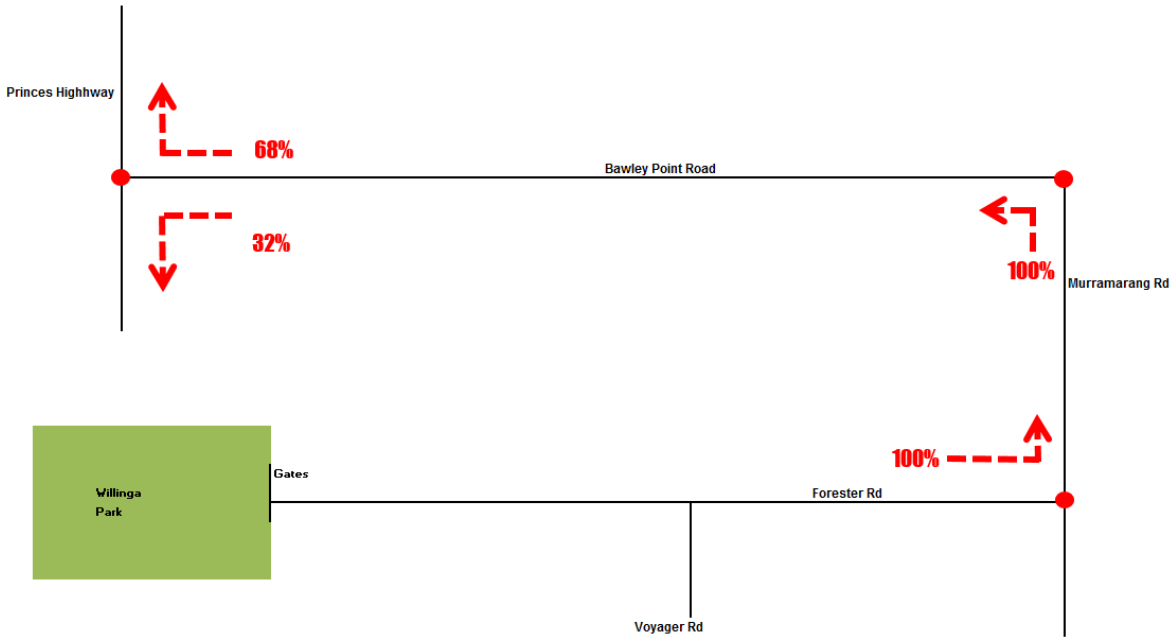


Figure 4-5 Peak hour departure distribution



4.4 Traffic generation scenarios

The following traffic volume distribution scenarios have been assumed in order to assess the impact that future events have on the local road network: The scenarios aim to take into account multiple day events, with assumptions made on when attendees are likely to arrive and depart the event. See Appendix D for traffic distribution volumes of each scenario.

- ***Day -1*** Vehicles that arrive on a typical weekday(one day before the event) during the AM peak and PM peak hour
- ***Day 1*** Vehicles that arrive on a typical weekend day (event day) during the AM peak and PM peak hour
- ***Day 4*** Vehicles depart on a typical weekend (end of the event) day AM and PM peak hour
- ***Day +1*** Vehicles depart on a typical weekday (one day after the event finishes) AM peak and PM peak hour

4.5 Future Intersection Performance

The performance of the road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. SIDRA intersection modelling software was used to assess the proposed peak hour operating performance of intersections on the surrounding road network. The criteria for evaluating the operational performance of intersections is provided by the Guide to Traffic Generating Developments (Roads and Maritime Services, 2002) and reproduced in Table 2-8. The criteria for evaluating the operational performance of intersections is based on a qualitative measure (i.e. Level of Service), which is applied to each band of average vehicle delay.

SIDRA intersection results for Princes Highway/ Bawley Point Road, Bawley Point Road/ Murramarang Road and Forster Drive / Murramarang Road for traffic volume scenarios Day -1,

Day 1, Day 4 and Day +1 (based on an event with 5,000 attendees) are shown in Table 4-2. For detailed SIDRA results see Appendix A.

Table 4-2 Future event SIDRA performance results

Intersection	Event Timeline (Days)	AM Peak			PM Peak		
		Average Delay (s)	LoS	Degree of Saturation	Average Delay (s)	LoS	Degree of Saturation
Site 1: Princes Highway / Bawley Point Road	Day -1	12	A	0.10	12	A	0.08
	Day 4	12	A	0.14	11	A	0.10
Site 2: Bawley Point Road / Murramarang Road	Day -1	8	A	0.08	7	A	0.10
	Day 4	8	A	0.11	7	A	0.08
Site 3: Murramarang Road / Forster Drive	Day -1	9	A	0.08	9	A	0.04
	Day 4	8	A	0.10	8	A	0.06

SIDRA results Summary

The SIDRA results show that f each of the intersections assessed perform at a good LoS with adequate spare capacity before the event, during the event and after the event. The event traffic has negligible impacts on the performance of any of the intersections assessed.

4.6 On Site Access and Parking

Access

Access to the site is provided from Forster Drive, which connects primarily rural residential properties with Murramarang Road to the east of the site. Murramarang Road provides access to the local Bawley Point road network and to the Princes Highway at Termeil via Bawley Point. A local road, Voyager Crescent, also runs between Forster Drive and Murramarang Road providing access for smaller residential lots and to a local retail centre.

Forster Drive provides a sealed carriageway west from Murramarang Road to the site. This sealed carriageway is in excess of 6 m wide. The upgrade and repair of the intersection and the sealing of the road from Voyager Crescent has been paid for by the landowner in accordance with Council's previous conditions of consent.

Parking Requirements

Parking for all vehicles are to be provided at a number of locations around the site. The location of designated parking areas are shown in Figure 3-1. Car parking concept layouts are shown in Appendix E. The total number of informal parking areas provided at the site has been estimated based on the concept plans provided by Calibre. An estimate of each parking location is shown in Table 4-3.

Table 4-3 Parking capacity estimate

Location	Estimated parking capacity
Overflow Parking site 1	1,432
Overflow Parking site 2	881
Total	**2,313**

Table 4-3 summarises that 2,313 parking spaces in total are provided for general parking. A car occupancy estimate (based on data provided by the client) for events held at Willinga Park was given to be 2.94 passengers per vehicle. From this car occupancy rate, a parking requirement estimate of approximately 1,700 car parks would be required for large events that peak at 5,000 attendees.

Based on this high-level assessment of parking capacity, the designated areas for parking as shown in Table 4-3 is likely to provide sufficient numbers of spaces for light vehicles. This would include parking spaces for a range of vehicle types such as cars, cars with trailers, heavy rigid vehicles and semi-trailers.

Approximately 100 heavy vehicle parking spaces are provided at the stockyards location of the site (see site, 36 in Figure 4-6). Further detailed assessment will be required when the type of events are more formalised as designing for such high attendance events may lead to over estimation of car parks and the frequency of these events with 5,000 attendees will be minimum. At this strategic level, it is difficult to assess the car occupancy rates and a detailed split of vehicles.

The informal parking spaces as shown in Figure 4-6 will be provided on grass paddocks. It is not proposed to provide formally marked spaces in these parking areas with parking attendants directing vehicles during events.

A minibus service is proposed to operate between the proposed car parking areas and key event locations around the park to transport attendees via the internal road network. A bus route and stop plan for the internal road layout is shown in Appendix E.

Parking layout

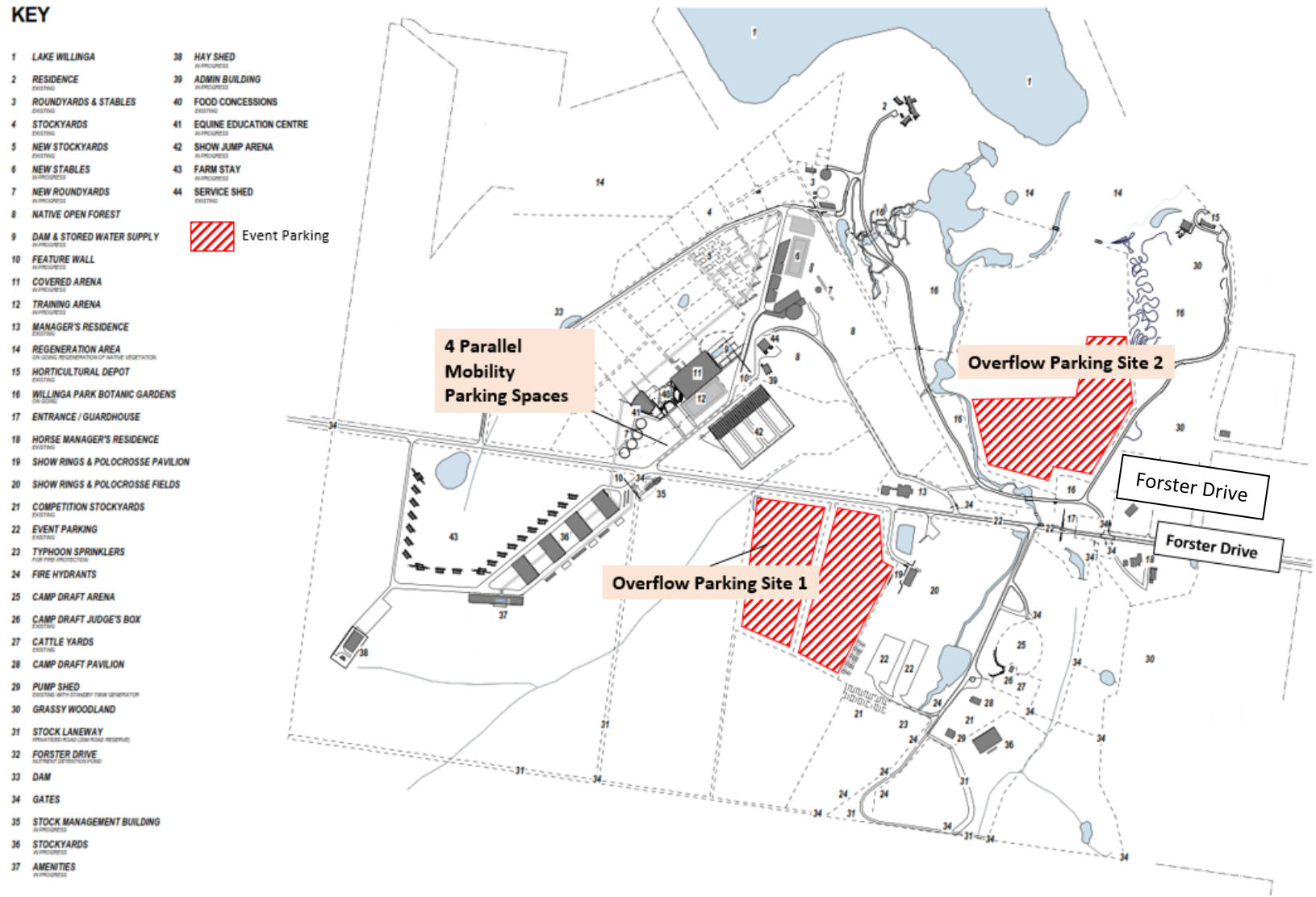
In line with *AS2890.1 – Off Street Car Parking,* the parking area should be designed to accommodate the specific design vehicles. For light vehicles, the parking space dimensions and associated aisle widths for a Class 2 (generally medium-term parking) facility classification as presented in AS2890.1 include:

- Spaces: 2.5 m x 5.4 m; and
- Aisle Width: 5.8 m

Within the layout, provision should be made for accessible car spaces. Section 2.2 of AS2890.6 requires parking space dimensions of a minimum of 2.4 m x 5.4 m with an access aisle width of 5.8 m and a shared area of 2.4 m x 5.4 m between spaces.

Additionally, allowance should be made to accommodate larger design vehicles for these events such as car-trailers and trucks. It has been proposed to allocate larger vehicles at the stock yards.

Figure 4-6 Event park locations



Mobility parking space requirement

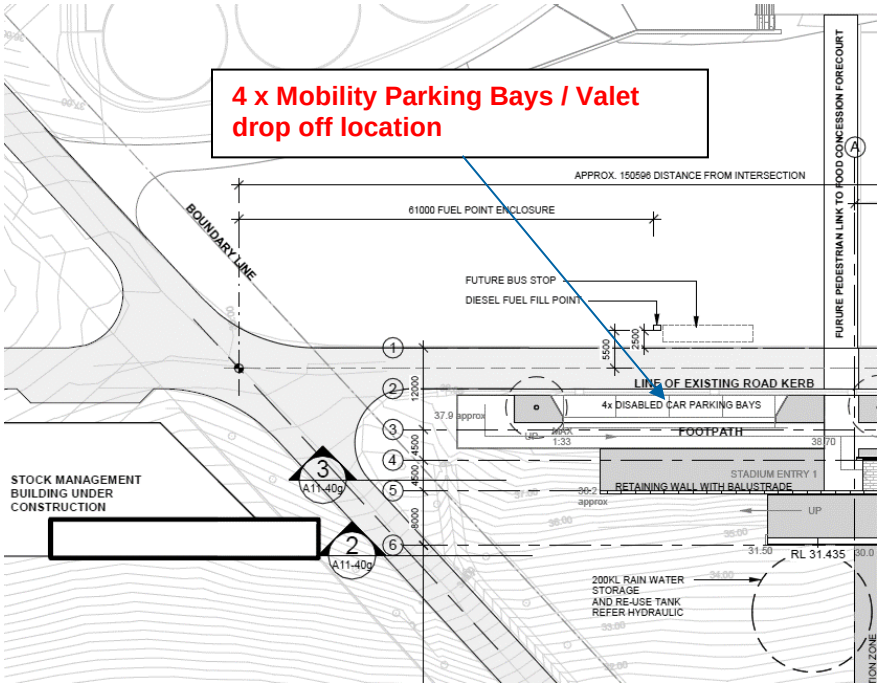
The provision of parking for the mobility impaired shall be provided in accordance with Shoalhaven City Council Development Control Plan (DCP). The DCP states that:

"Where access for the disabled is expected, a minimum of one (1) space for the disabled is required and thereafter one additional space per 100 spaces or part thereof."

The proposed car parking plan has proposed four permanent mobility parking spaces which must comply with the Disability Discrimination Act (DDA) and AS2890.6. DDA spaces must be located as close as possible to the seating area of the events (to minimise travel distances for the mobility impaired). A car parking plan showing location and number of permanent mobility parking spaces is shown in Figure 4-7.

The number of permanent DDA parking spaces proposed would not be sufficient for larger events however. It has been estimated that a minimum of 23 DDA parks should be provided. Given that larger events will occur infrequently, providing permanent DDA compliant parking spaces for the total parking demand for such events would be impractical. It has been proposed to provide a mobility impaired valet parking service at Willinga Park, specifically intended for large events. The drop off location for mobility impaired permit holders is proposed at the entrance road to the Show Jumping Arena. This drop off facility would allow drivers to stop and drop off their cars, which would then be relocated to designated parking areas by valet employees. The advantages of operating a valet service is that permanent DDA compliant parking spaces for a large number of vehicles would not be required while still catering for the needs of mobility impaired permit holders that attend large events.

Figure 4-7 Location for DDA car parking



Source: Construction Control

5. Summary and conclusion

5.1 Overview

GHD has been engaged by Construction Control Pty Ltd to undertake a traffic impact assessment to support a Plan of Management for future events held at the Willinga Park Equestrian Facility. The key objectives of this study were to:

- Identify the existing situation within proximity of the site with respect to traffic, parking, public and active transport.
- Identify the impacts of that larger scale future events will have on the surrounding road network.
- Identify the parking capacity of the existing facility and estimate the likely capacity required for future events.

5.2 Key findings

The following key findings were identified as part of the traffic, transport and parking assessment:

5.2.1 Existing performance

- The site has limited access to public transport by bus, and has no nearby train stations.
- The access to the site is provided via the east side of Forster Drive. Access to the Princes Highway is via Murramarang Road and Bawley Point Road.
- Pedestrian infrastructure in proximity to the site is limited with grassed verges or gravel on Forster Drive. A shared path does exist on Murramarang however this is a significant distance from the proposed site.
- Mid-block capacity analysis indicated that there is spare capacity available on the current road network to absorb additional traffic.
- Existing intersections within proximity of the site that were assessed using SIDRA software performed at an acceptable level of service.
- Of the seven crashes in the study area, the majority of the crashes were caused by vehicles leaving the carriageway and hitting an object.

5.2.2 Future Performance

- The proposed site for a future event of maximum 5,000 attendees has been estimated to generate approximately 1460 vehicles in total over the event period.
- The estimated peak arrival activity is expected to consist of approximately 625 vehicles arriving one day before the event. Peak departure activity is expected to consist of approximately 635 vehicles departing on the last day of the event.
- Peak hour arrival is likely to be between 10:00 am – 11:00 am with approximately 141 vehicles and peak hour departure 135 vehicles between 3:00 pm – 4:00 pm.
- The peak hour generation from these events is not likely to cause adverse impacts to the performance of the existing road network, and no traffic mitigation works are suggested at this stage.

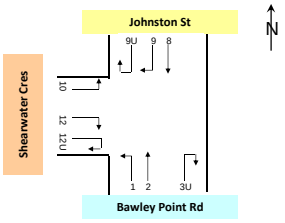
- The maximum number of parking spaces to be provided as part of the future development is likely to be approximately 1,700 bays for a vehicle occupancy of 2.94. Further detailed assessment should be carried out when the type of event are finalised.
- A DDA valet parking service shall be provided for mobility parking permit holders ‘on demand’. Drivers with a mobility impaired parking permit can drop their vehicles at the valet drop off facility, which prevents the need for permanent DDA compliant parks at the site.

Appendices

Appendix A – Traffic count data

Job No.	: N3544
Client	: GHD
Suburb	: Willinga
Location	: 1. Bawley Point Rd / Johnston St
Day/Date	: Sat, 9th September 2017
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

Classifications	**Class 1**	**Class 2**
	Lights	Heavies



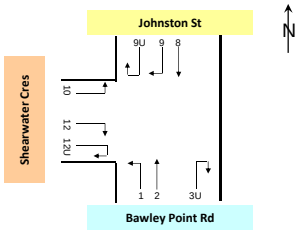
MATRIX Traffic and Transport Data

Approach	**Bawley Point Rd**								
Direction	**Direction 1 (Left Turn)**			**Direction 2 (Through)**			**Direction 3U (U Turn)**		
Time Period	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**
7:00 to 7:15	8	0	**8**	0	0	**0**	0	0	**0**
7:15 to 7:30	7	0	**7**	0	0	**0**	0	0	**0**
7:30 to 7:45	8	1	**9**	0	0	**0**	0	0	**0**
7:45 to 8:00	13	0	**13**	0	0	**0**	0	0	**0**
8:00 to 8:15	6	0	**6**	0	0	**0**	0	0	**0**
8:15 to 8:30	20	4	**24**	3	0	**3**	0	0	**0**
8:30 to 8:45	15	1	**16**	0	0	**0**	0	0	**0**
8:45 to 9:00	19	0	**19**	0	0	**0**	0	0	**0**
9:00 to 9:15	20	0	**20**	2	0	**2**	0	0	**0**
9:15 to 9:30	20	1	**21**	3	0	**3**	0	0	**0**
9:30 to 9:45	27	2	**29**	3	0	**3**	0	0	**0**
9:45 to 10:00	21	0	**21**	3	0	**3**	0	0	**0**
10:00 to 10:15	26	1	**27**	0	0	**0**	0	0	**0**
10:15 to 10:30	17	1	**18**	3	0	**3**	0	0	**0**
10:30 to 10:45	16	1	**17**	2	0	**2**	0	0	**0**
10:45 to 11:00	11	0	**11**	5	0	**5**	0	0	**0**
AM Totals	**254**	**12**	**266**	**24**	**0**	**24**	**0**	**0**	**0**
16:00 to 16:15	7	0	**7**	1	0	**1**	0	0	**0**
16:15 to 16:30	7	0	**7**	4	0	**4**	0	0	**0**
16:30 to 16:45	12	0	**12**	0	0	**0**	0	0	**0**
16:45 to 17:00	15	0	**15**	2	0	**2**	1	0	**1**
17:00 to 17:15	9	0	**9**	1	0	**1**	0	0	**0**
17:15 to 17:30	16	0	**16**	1	0	**1**	0	0	**0**
17:30 to 17:45	11	0	**11**	1	0	**1**	0	0	**0**
17:45 to 18:00	4	0	**4**	4	0	**4**	1	0	**1**
18:00 to 18:15	7	0	**7**	1	0	**1**	0	0	**0**
18:15 to 18:30	6	0	**6**	0	0	**0**	1	0	**1**
18:30 to 18:45	8	0	**8**	0	0	**0**	2	0	**2**
18:45 to 19:00	2	0	**2**	1	0	**1**	0	0	**0**
PM Totals	**104**	**0**	**104**	**16**	**0**	**16**	**5**	**0**	**5**

Approach	**Johnston St**									**Shearwater Cres**					
Direction	**Direction 8 (Through)**			**Direction 9 (Right Turn)**			**Direction 9U (U Turn)**			**Direction 10 (Left Turn)**			**Direction 12 (Right Turn)**			**Direction 12U (U Turn)**		
Time Period	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**
7:00 to 7:15	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	13	0	**13**	0	0	**0**
7:15 to 7:30	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	3	0	**3**	0	0	**0**
7:30 to 7:45	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	11	1	**12**	0	0	**0**
7:45 to 8:00	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	6	2	**8**	0	0	**0**
8:00 to 8:15	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	6	2	**8**	0	0	**0**
8:15 to 8:30	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	8	1	**9**	0	0	**0**
8:30 to 8:45	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**	5	0	**5**	0	0	**0**
8:45 to 9:00	0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**	16	1	**17**	0	0	**0**
9:00 to 9:15	2	0	**2**	2	0	**2**	0	0	**0**	0	0	**0**	14	1	**15**	0	0	**0**
9:15 to 9:30	2	0	**2**	1	0	**1**	0	0	**0**	0	0	**0**	16	0	**16**	0	0	**0**
9:30 to 9:45	2	0	**2**	2	0	**2**	0	0	**0**	2	0	**2**	10	0	**10**	0	0	**0**
9:45 to 10:00	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**	15	0	**15**	0	0	**0**
10:00 to 10:15	1	0	**1**	1	0	**1**	0	0	**0**	1	0	**1**	16	1	**17**	0	0	**0**
10:15 to 10:30	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**	16	1	**17**	0	0	**0**
10:30 to 10:45	1	0	**1**	1	0	**1**	0	0	**0**	2	0	**2**	18	0	**18**	0	0	**0**
10:45 to 11:00	1	0	**1**	2	0	**2**	0	0	**0**	1	0	**1**	20	0	**20**	0	0	**0**
AM Totals	**11**	**0**	**11**	**12**	**0**	**12**	**0**	**0**	**0**	**7**	**0**	**7**	**193**	**10**	**203**	**0**	**0**	**0**
16:00 to 16:15	1	0	**1**	0	0	**0**	0	0	**0**	1	0	**1**	18	0	**18**	0	0	**0**
16:15 to 16:30	1	0	**1**	1	0	**1**	0	0	**0**	1	0	**1**	12	0	**12**	0	0	**0**
16:30 to 16:45	1	0	**1**	1	0	**1**	0	0	**0**	1	0	**1**	14	0	**14**	0	0	**0**
16:45 to 17:00	2	0	**2**	1	0	**1**	0	0	**0**	3	0	**3**	12	0	**12**	0	0	**0**
17:00 to 17:15	1	0	**1**	1	0	**1**	0	0	**0**	1	0	**1**	14	1	**15**	0	0	**0**
17:15 to 17:30	2	0	**2**	1	0	**1**	0	0	**0**	1	0	**1**	11	0	**11**	0	0	**0**
17:30 to 17:45	2	0	**2**	0	0	**0**	0	0	**0**	1	0	**1**	7	0	**7**	0	0	**0**
17:45 to 18:00	2	0	**2**	1	0	**1**	0	0	**0**	0	0	**0**	7	0	**7**	0	0	**0**
18:00 to 18:15	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**	7	0	**7**	0	0	**0**
18:15 to 18:30	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**	9	0	**9**	0	0	**0**
18:30 to 18:45	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	12	0	**12**	0	0	**0**
18:45 to 19:00	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**	6	0	**6**	0	0	**0**
PM Totals	**12**	**0**	**12**	**9**	**0**	**9**	**0**	**0**	**0**	**9**	**0**	**9**	**129**	**1**	**130**	**0**	**0**	**0**

Job No.	: N3544
Client	: GHD
Suburb	: Willinga
Location	: 1. Bawley Point Rd / Johnston St
Day/Date	: Tue, 12th September 2017
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

Classifications	**Class 1**	**Class 2**
	Lights	Heavies

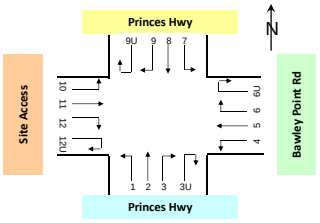


Approach	**Bawley Point Rd**								
Direction	**Direction 1 (Left Turn)**			**Direction 2 (Through)**				**Direction 3U (U Turn)**	
Time Period	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**		**Lights**	**Heavies**	**Total**
7:00 to 7:15	6	0	**6**	0	0	**0**		0	0	**0**
7:15 to 7:30	17	1	**18**	0	0	**0**		0	0	**0**
7:30 to 7:45	19	1	**20**	0	0	**0**		0	0	**0**
7:45 to 8:00	16	4	**20**	0	0	**0**		0	0	**0**
8:00 to 8:15	24	1	**25**	0	0	**0**		0	0	**0**
8:15 to 8:30	30	2	**32**	1	0	**1**		0	0	**0**
8:30 to 8:45	22	3	**25**	0	0	**0**		0	0	**0**
8:45 to 9:00	17	2	**19**	1	1	**2**		0	0	**0**
9:00 to 9:15	15	4	**19**	0	0	**0**		0	0	**0**
9:15 to 9:30	14	4	**18**	0	0	**0**		0	0	**0**
9:30 to 9:45	16	0	**16**	0	0	**0**		0	0	**0**
9:45 to 10:00	18	3	**21**	0	0	**0**		0	0	**0**
10:00 to 10:15	17	3	**20**	2	0	**2**		0	0	**0**
10:15 to 10:30	16	1	**17**	1	0	**1**		0	0	**0**
10:30 to 10:45	15	1	**16**	1	0	**1**		0	0	**0**
10:45 to 11:00	18	1	**19**	0	0	**0**		0	0	**0**
AM Totals	**280**	**31**	**311**	**6**	**1**	**7**		**0**	**0**	**0**
16:00 to 16:15	13	2	**15**	1	0	**1**		0	0	**0**
16:15 to 16:30	20	1	**21**	1	0	**1**		0	0	**0**
16:30 to 16:45	19	2	**21**	1	0	**1**		0	0	**0**
16:45 to 17:00	14	0	**14**	4	0	**4**		0	0	**0**
17:00 to 17:15	9	0	**9**	2	0	**2**		0	0	**0**
17:15 to 17:30	18	0	**18**	1	0	**1**		0	0	**0**
17:30 to 17:45	10	0	**10**	1	0	**1**		0	0	**0**
17:45 to 18:00	6	0	**6**	0	0	**0**		0	0	**0**
18:00 to 18:15	6	0	**6**	0	0	**0**		0	0	**0**
18:15 to 18:30	4	0	**4**	0	0	**0**		0	0	**0**
18:30 to 18:45	4	0	**4**	0	0	**0**		0	0	**0**
18:45 to 19:00	4	0	**4**	0	0	**0**		0	0	**0**
PM Totals	**127**	**5**	**132**	**11**	**0**	**11**		**0**	**0**	**0**

Approach	**Johnston St**									**Shearwater Cres**								
Direction	**Direction 8 (Through)**			**Direction 9 (Right Turn)**			**Direction 9U (U Turn)**			**Direction 10 (Left Turn)**				**Direction 12 (Right Turn)**			**Direction 12U (U Turn)**		
Time Period	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**		**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**
7:00 to 7:15	1	0	**1**	0	0	**0**	0	0	**0**	0	1	**1**		10	5	**15**	0	0	**0**
7:15 to 7:30	0	0	**0**	0	1	**1**	0	0	**0**	1	0	**1**		10	0	**10**	0	0	**0**
7:30 to 7:45	0	0	**0**	1	0	**1**	0	0	**0**	0	1	**1**		15	4	**19**	0	0	**0**
7:45 to 8:00	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		13	2	**15**	0	0	**0**
8:00 to 8:15	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		7	5	**12**	0	0	**0**
8:15 to 8:30	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		8	2	**10**	0	0	**0**
8:30 to 8:45	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		9	4	**13**	0	0	**0**
8:45 to 9:00	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		14	2	**16**	2	0	**2**
9:00 to 9:15	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**		9	0	**9**	0	0	**0**
9:15 to 9:30	2	0	**2**	2	0	**2**	0	0	**0**	0	0	**0**		15	3	**18**	0	0	**0**
9:30 to 9:45	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		13	1	**14**	0	0	**0**
9:45 to 10:00	0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**		12	0	**12**	0	0	**0**
10:00 to 10:15	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**		11	2	**13**	0	0	**0**
10:15 to 10:30	0	0	**0**	1	0	**1**	0	0	**0**	3	0	**3**		11	2	**13**	0	0	**0**
10:30 to 10:45	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**		12	1	**13**	0	0	**0**
10:45 to 11:00	2	0	**2**	0	0	**0**	0	0	**0**	0	0	**0**		11	2	**13**	0	0	**0**
AM Totals	**8**	**0**	**8**	**6**	**1**	**7**	**0**	**0**	**0**	**5**	**2**	**7**		**180**	**35**	**215**	**2**	**0**	**2**
16:00 to 16:15	2	0	**2**	0	0	**0**	0	0	**0**	0	0	**0**		26	2	**28**	0	0	**0**
16:15 to 16:30	1	0	**1**	2	0	**2**	0	0	**0**	0	0	**0**		20	0	**20**	0	0	**0**
16:30 to 16:45	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**		26	0	**26**	0	0	**0**
16:45 to 17:00	1	0	**1**	3	0	**3**	0	0	**0**	1	0	**1**		20	0	**20**	0	0	**0**
17:00 to 17:15	3	0	**3**	1	0	**1**	0	0	**0**	1	0	**1**		15	0	**15**	0	0	**0**
17:15 to 17:30	3	0	**3**	1	0	**1**	0	0	**0**	0	0	**0**		18	0	**18**	0	0	**0**
17:30 to 17:45	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		19	0	**19**	0	0	**0**
17:45 to 18:00	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		13	0	**13**	0	0	**0**
18:00 to 18:15	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		11	0	**11**	0	0	**0**
18:15 to 18:30	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		11	1	**12**	0	0	**0**
18:30 to 18:45	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		11	0	**11**	0	0	**0**
18:45 to 19:00	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**		10	0	**10**	0	0	**0**
PM Totals	**11**	**0**	**11**	**7**	**0**	**7**	**0**	**0**	**0**	**2**	**0**	**2**		**200**	**3**	**203**	**0**	**0**	**0**

Job No.	: N3544
Client	: GHD
Suburb	: Willinga
Location	: 2. Princes Hwy / Bawley Point Rd
Day/Date	: Sat, 9th September 2017
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

Classifications	**Class 1**	**Class 2**
	Lights	Heavies

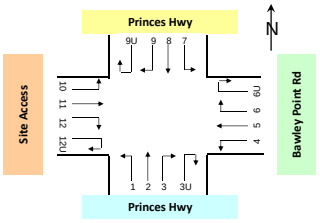


Approach	Princes Hwy												Bawley Point Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	0	0	**0**	13	1	**14**	0	0	**0**	0	0	**0**	1	0	**1**	2	0	**2**	4	0	**4**	0	0	**0**
7:15 to 7:30	0	0	**0**	16	1	**17**	1	0	**1**	0	0	**0**	2	0	**2**	0	0	**0**	6	0	**6**	0	0	**0**
7:30 to 7:45	2	1	**3**	17	0	**17**	0	0	**0**	0	0	**0**	1	0	**1**	2	0	**2**	5	1	**6**	0	0	**0**
7:45 to 8:00	1	0	**1**	17	0	**17**	3	0	**3**	0	0	**0**	1	0	**1**	1	0	**1**	7	0	**7**	0	0	**0**
8:00 to 8:15	3	0	**3**	15	1	**16**	0	0	**0**	0	0	**0**	2	0	**2**	0	0	**0**	8	1	**9**	0	0	**0**
8:15 to 8:30	1	0	**1**	24	0	**24**	2	0	**2**	0	0	**0**	2	0	**2**	1	0	**1**	8	2	**10**	0	0	**0**
8:30 to 8:45	2	0	**2**	24	0	**24**	2	0	**2**	0	0	**0**	1	1	**2**	7	0	**7**	12	2	**14**	0	0	**0**
8:45 to 9:00	1	0	**1**	49	1	**50**	7	0	**7**	0	0	**0**	5	0	**5**	1	0	**1**	12	0	**12**	0	0	**0**
9:00 to 9:15	2	0	**2**	25	2	**27**	2	0	**2**	0	0	**0**	7	0	**7**	7	0	**7**	12	0	**12**	0	0	**0**
9:15 to 9:30	0	0	**0**	28	0	**28**	5	0	**5**	0	0	**0**	5	0	**5**	2	0	**2**	16	0	**16**	0	0	**0**
9:30 to 9:45	0	0	**0**	31	1	**32**	3	0	**3**	0	0	**0**	6	1	**7**	5	0	**5**	14	2	**16**	0	0	**0**
9:45 to 10:00	4	0	**4**	37	2	**39**	2	0	**2**	0	0	**0**	5	0	**5**	3	0	**3**	15	0	**15**	0	0	**0**
10:00 to 10:15	1	0	**1**	32	1	**33**	7	1	**8**	0	0	**0**	3	0	**3**	4	0	**4**	21	1	**22**	0	0	**0**
10:15 to 10:30	4	0	**4**	51	2	**53**	3	0	**3**	0	0	**0**	8	0	**8**	4	0	**4**	11	1	**12**	0	0	**0**
10:30 to 10:45	1	0	**1**	40	1	**41**	5	0	**5**	0	0	**0**	6	1	**7**	4	0	**4**	12	0	**12**	0	0	**0**
10:45 to 11:00	2	1	**3**	38	1	**39**	6	0	**6**	0	0	**0**	3	0	**3**	3	0	**3**	10	0	**10**	0	0	**0**
AM Totals	**24**	**2**	**26**	**457**	**14**	**471**	**48**	**1**	**49**	**0**	**0**	**0**	**58**	**3**	**61**	**46**	**0**	**46**	**173**	**10**	**183**	**0**	**0**	**0**
16:00 to 16:15	1	0	**1**	37	1	**38**	1	0	**1**	0	0	**0**	4	0	**4**	2	0	**2**	15	1	**16**	0	0	**0**
16:15 to 16:30	3	0	**3**	23	0	**23**	4	0	**4**	0	0	**0**	0	0	**0**	2	0	**2**	7	0	**7**	0	0	**0**
16:30 to 16:45	0	0	**0**	22	0	**22**	3	0	**3**	0	0	**0**	3	0	**3**	3	0	**3**	2	0	**2**	0	0	**0**
16:45 to 17:00	0	0	**0**	32	0	**32**	5	0	**5**	0	0	**0**	3	0	**3**	0	0	**0**	11	0	**11**	0	0	**0**
17:00 to 17:15	1	0	**1**	10	1	**11**	3	1	**4**	0	0	**0**	2	0	**2**	3	0	**3**	6	0	**6**	0	0	**0**
17:15 to 17:30	1	0	**1**	14	0	**14**	1	0	**1**	0	0	**0**	2	0	**2**	2	0	**2**	7	0	**7**	0	0	**0**
17:30 to 17:45	0	0	**0**	22	1	**23**	1	0	**1**	0	0	**0**	2	0	**2**	0	0	**0**	9	0	**9**	0	0	**0**
17:45 to 18:00	0	0	**0**	13	0	**13**	2	0	**2**	0	0	**0**	6	0	**6**	2	0	**2**	8	0	**8**	0	0	**0**
18:00 to 18:15	1	0	**1**	14	0	**14**	0	0	**0**	0	0	**0**	1	0	**1**	1	0	**1**	4	0	**4**	0	0	**0**
18:15 to 18:30	0	0	**0**	11	1	**12**	2	0	**2**	0	0	**0**	0	0	**0**	1	0	**1**	3	0	**3**	2	0	**2**
18:30 to 18:45	0	0	**0**	14	1	**15**	0	0	**0**	0	0	**0**	0	1	**1**	4	0	**4**	2	0	**2**	0	0	**0**
18:45 to 19:00	0	0	**0**	11	0	**11**	2	0	**2**	0	0	**0**	1	0	**1**	1	0	**1**	5	0	**5**	0	0	**0**
PM Totals	**7**	**0**	**7**	**223**	**5**	**228**	**24**	**1**	**25**	**0**	**0**	**0**	**24**	**1**	**25**	**21**	**0**	**21**	**79**	**1**	**80**	**2**	**0**	**2**

Approach	Princes Hwy												Site Access											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	9	0	**9**	9	1	**10**	1	0	**1**	0	0	**0**	0	0	**0**	2	0	**2**	2	0	**2**	0	0	**0**
7:15 to 7:30	1	0	**1**	21	3	**24**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
7:30 to 7:45	8	4	**12**	11	1	**12**	1	0	**1**	0	0	**0**	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**
7:45 to 8:00	2	1	**3**	18	1	**19**	0	0	**0**	0	0	**0**	1	0	**1**	1	0	**1**	2	0	**2**	0	0	**0**
8:00 to 8:15	6	1	**7**	25	1	**26**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**
8:15 to 8:30	2	1	**3**	23	0	**23**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**
8:30 to 8:45	2	0	**2**	30	3	**33**	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
8:45 to 9:00	10	1	**11**	41	1	**42**	1	0	**1**	0	0	**0**	1	0	**1**	2	0	**2**	0	0	**0**	0	0	**0**
9:00 to 9:15	8	2	**10**	30	2	**32**	0	0	**0**	0	0	**0**	2	0	**2**	1	0	**1**	3	0	**3**	0	0	**0**
9:15 to 9:30	10	0	**10**	35	3	**38**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	2	0	**2**	0	0	**0**
9:30 to 9:45	12	0	**12**	34	2	**36**	0	0	**0**	0	0	**0**	2	0	**2**	1	0	**1**	0	0	**0**	0	0	**0**
9:45 to 10:00	10	0	**10**	34	1	**35**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	2	0	**2**	0	0	**0**
10:00 to 10:15	10	0	**10**	42	0	**42**	2	0	**2**	0	0	**0**	3	0	**3**	1	0	**1**	2	0	**2**	0	0	**0**
10:15 to 10:30	14	1	**15**	52	0	**52**	1	0	**1**	0	0	**0**	2	0	**2**	0	0	**0**	3	0	**3**	0	0	**0**
10:30 to 10:45	15	0	**15**	52	0	**52**	1	0	**1**	1	0	**1**	3	0	**3**	0	0	**0**	0	0	**0**	0	0	**0**
10:45 to 11:00	15	0	**15**	38	1	**39**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**
AM Totals	**134**	**11**	**145**	**495**	**20**	**515**	**8**	**0**	**8**	**1**	**0**	**1**	**18**	**0**	**18**	**9**	**0**	**9**	**17**	**0**	**17**	**1**	**0**	**1**
16:00 to 16:15	13	0	**13**	37	0	**37**	0	0	**0**	0	0	**0**	1	0	**1**	3	0	**3**	3	0	**3**	0	0	**0**
16:15 to 16:30	8	0	**8**	38	0	**38**	0	0	**0**	0	0	**0**	1	0	**1**	2	0	**2**	0	0	**0**	0	0	**0**
16:30 to 16:45	7	0	**7**	27	0	**27**	1	0	**1**	0	0	**0**	0	0	**0**	2	0	**2**	0	0	**0**	0	0	**0**
16:45 to 17:00	8	0	**8**	34	1	**35**	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
17:00 to 17:15	11	0	**11**	26	0	**26**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**
17:15 to 17:30	7	0	**7**	23	0	**23**	0	0	**0**	0	0	**0**	0	0	**0**	2	0	**2**	0	0	**0**	0	0	**0**
17:30 to 17:45	5	0	**5**	23	0	**23**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
17:45 to 18:00	5	0	**5**	15	0	**15**	0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**
18:00 to 18:15	5	0	**5**	14	1	**15**	0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	1	0	**1**
18:15 to 18:30	7	0	**7**	20	0	**20**	1	0	**1**	0	0	**0**	2	0	**2**	0	0	**0**	0	0	**0**	0	0	**0**
18:30 to 18:45	12	0	**12**	12	0	**12**	0	0	**0**	0	0	**0**	0	0	**0**	3	0	**3**	1	0	**1**	0	0	**0**
18:45 to 19:00	4	0	**4**	8	0	**8**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
PM Totals	**92**	**0**	**92**	**277**	**2**	**279**	**3**	**0**	**3**	**0**	**0**	**0**	**5**	**0**	**5**	**14**	**0**	**14**	**4**	**0**	**4**	**1**	**0**	**1**

Job No.	: N3544
Client	: GHD
Suburb	: Willinga
Location	: 2. Princes Hwy / Bawley Point Rd
Day/Date	: Tue, 12th September 2017
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

Classifications	**Class 1**	**Class 2**
	Lights	Heavies



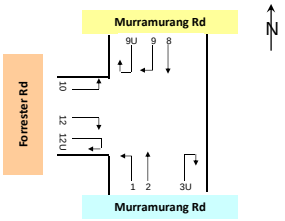
MATRIX Traffic and Transport Data

Approach	**Princes Hwy**												**Bawley Point Rd**											
Direction	**Direction 1 (Left Turn)**			**Direction 2 (Through)**			**Direction 3 (Right Turn)**			**Direction 3U (U Turn)**			**Direction 4 (Left Turn)**			**Direction 5 (Through)**			**Direction 6 (Right Turn)**			**Direction 6U (U Turn)**		
Time Period	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**
7:00 to 7:15	1	0	1	12	3	15	1	2	3	0	0	0	1	0	1	0	0	0	5	0	5	0	0	0
7:15 to 7:30	0	0	0	21	2	23	0	0	0	0	0	0	2	0	2	2	1	3	9	0	9	0	0	0
7:30 to 7:45	1	1	2	19	4	23	0	0	0	0	0	0	6	0	6	0	0	0	12	1	13	0	0	0
7:45 to 8:00	1	0	1	26	4	30	3	1	4	0	0	0	6	0	6	2	0	2	13	1	14	0	0	0
8:00 to 8:15	4	0	4	30	2	32	1	2	3	0	0	0	6	0	6	3	0	3	8	4	12	0	0	0
8:15 to 8:30	1	0	1	23	8	31	2	1	3	0	0	0	3	0	3	2	0	2	26	1	27	0	0	0
8:30 to 8:45	1	1	2	28	2	30	4	4	8	0	0	0	3	1	4	2	0	2	32	2	34	0	0	0
8:45 to 9:00	3	0	3	17	3	20	1	0	1	0	0	0	2	1	3	1	0	1	19	3	22	0	0	0
9:00 to 9:15	1	0	1	33	5	38	4	0	4	0	0	0	3	0	3	3	0	3	10	0	10	0	0	0
9:15 to 9:30	1	0	1	21	4	25	1	1	2	0	0	0	5	2	7	0	0	0	13	2	15	0	0	0
9:30 to 9:45	3	0	3	21	4	25	3	0	3	0	0	0	4	2	6	1	0	1	13	2	15	0	0	0
9:45 to 10:00	3	0	3	31	2	33	0	0	0	0	0	0	3	1	4	2	0	2	8	0	8	0	0	0
10:00 to 10:15	0	0	0	26	5	31	0	0	0	0	0	0	3	0	3	6	0	6	12	4	16	0	0	0
10:15 to 10:30	2	0	2	33	2	35	5	0	5	0	0	0	8	0	8	2	0	2	15	2	17	0	0	0
10:30 to 10:45	1	0	1	30	6	36	2	1	3	0	0	0	4	0	4	1	0	1	8	1	9	0	0	0
10:45 to 11:00	0	1	1	19	2	21	6	0	6	0	0	0	5	0	5	2	1	3	5	1	6	0	0	0
AM Totals	**23**	**3**	**26**	**390**	**58**	**448**	**33**	**12**	**45**	**0**	**0**	**0**	**64**	**7**	**71**	**29**	**2**	**31**	**208**	**24**	**232**	**0**	**0**	**0**
16:00 to 16:15	0	0	0	25	2	27	7	0	7	0	0	0	3	0	3	2	0	2	12	1	13	0	0	0
16:15 to 16:30	2	0	2	39	3	42	2	0	2	0	0	0	2	0	2	2	0	2	12	2	14	0	0	0
16:30 to 16:45	1	0	1	31	1	32	4	0	4	0	0	0	2	0	2	3	0	3	18	2	20	0	0	0
16:45 to 17:00	0	0	0	34	3	37	5	0	5	0	0	0	7	0	7	2	0	2	7	2	9	0	0	0
17:00 to 17:15	2	0	2	31	1	32	2	0	2	0	0	0	5	0	5	3	0	3	8	0	8	0	0	0
17:15 to 17:30	3	0	3	30	3	33	3	0	3	0	0	0	0	0	0	2	0	2	8	1	9	0	0	0
17:30 to 17:45	1	0	1	29	1	30	4	0	4	1	0	1	2	0	2	2	0	2	16	0	16	0	0	0
17:45 to 18:00	3	1	4	18	4	22	4	0	4	0	0	0	1	0	1	2	0	2	5	0	5	0	0	0
18:00 to 18:15	0	0	0	22	1	23	3	0	3	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0
18:15 to 18:30	1	0	1	5	0	5	0	0	0	0	0	0	1	0	1	0	0	0	2	0	2	0	0	0
18:30 to 18:45	0	0	0	14	1	15	2	0	2	0	0	0	1	0	1	1	0	1	1	0	1	0	0	0
18:45 to 19:00	1	0	1	6	6	12	2	0	2	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0
PM Totals	**14**	**1**	**15**	**284**	**26**	**310**	**38**	**0**	**38**	**1**	**0**	**1**	**24**	**0**	**24**	**19**	**0**	**19**	**99**	**8**	**107**	**0**	**0**	**0**

Approach	**Princes Hwy**												**Site Access**											
Direction	**Direction 7 (Left Turn)**			**Direction 8 (Through)**			**Direction 9 (Right Turn)**			**Direction 9U (U Turn)**			**Direction 10 (Left Turn)**			**Direction 11 (Through)**			**Direction 12 (Right Turn)**			**Direction 12U (U Turn)**		
Time Period	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**
7:00 to 7:15	8	5	13	22	3	25	2	0	2	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0
7:15 to 7:30	9	0	9	30	5	35	0	0	0	0	0	0	0	0	0	1	0	1	2	0	2	0	0	0
7:30 to 7:45	5	5	10	33	7	40	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
7:45 to 8:00	6	2	8	40	4	44	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
8:00 to 8:15	7	2	9	45	2	47	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0
8:15 to 8:30	7	0	7	35	3	38	0	0	0	0	0	0	1	0	1	1	0	1	1	0	1	0	0	0
8:30 to 8:45	5	1	6	33	4	37	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0
8:45 to 9:00	12	1	13	36	2	38	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
9:00 to 9:15	5	0	5	26	3	29	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
9:15 to 9:30	12	1	13	25	3	28	1	0	1	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0
9:30 to 9:45	9	3	12	22	5	27	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 to 10:00	7	0	7	27	4	31	0	0	0	0	0	0	1	0	1	2	0	2	0	0	0	0	0	0
10:00 to 10:15	10	2	12	26	4	30	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
10:15 to 10:30	8	2	10	35	2	37	0	0	0	0	0	0	3	0	3	1	0	1	0	0	0	0	0	0
10:30 to 10:45	9	0	9	26	1	27	0	0	0	0	0	0	1	0	1	0	0	0	2	0	2	0	0	0
10:45 to 11:00	11	2	13	29	6	35	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
AM Totals	**130**	**26**	**156**	**490**	**58**	**548**	**4**	**0**	**4**	**0**	**0**	**0**	**10**	**1**	**11**	**8**	**0**	**8**	**10**	**1**	**11**	**0**	**0**	**0**
16:00 to 16:15	23	2	25	41	5	46	0	0	0	0	0	0	0	0	0	1	0	1	2	1	3	0	0	0
16:15 to 16:30	17	0	17	34	4	38	1	0	1	0	0	0	0	0	0	3	0	3	1	0	1	0	0	0
16:30 to 16:45	18	0	18	22	4	26	0	0	0	0	0	0	1	0	1	1	0	1	1	0	1	0	0	0
16:45 to 17:00	17	1	18	22	4	26	0	0	0	0	0	0	0	0	0	1	0	1	2	0	2	0	0	0
17:00 to 17:15	17	0	17	20	2	22	1	0	1	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0
17:15 to 17:30	14	0	14	20	3	23	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
17:30 to 17:45	22	0	22	26	2	28	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0
17:45 to 18:00	8	0	8	10	2	12	1	0	1	0	0	0	1	0	1	2	0	2	0	0	0	0	0	0
18:00 to 18:15	12	0	12	18	2	20	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0
18:15 to 18:30	7	1	8	14	2	16	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0
18:30 to 18:45	13	0	13	11	1	12	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0
18:45 to 19:00	6	0	6	12	3	15	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
PM Totals	**174**	**4**	**178**	**250**	**34**	**284**	**3**	**0**	**3**	**0**	**0**	**0**	**6**	**0**	**6**	**13**	**0**	**13**	**10**	**1**	**11**	**0**	**0**	**0**

Job No.	: N3544
Client	: GHD
Suburb	: Willinga
Location	: 3. Murramurang Rd / Forrester Rd
Day/Date	: Sat, 9th September 2017
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

Classifications	**Class 1**	**Class 2**
	Lights	Heavies

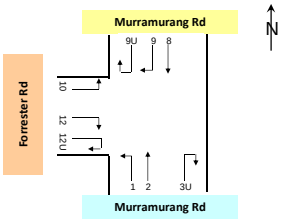


Approach	**Murramurang Rd**									
Direction	**Direction 1 (Left Turn)**			**Direction 2 (Through)**						**Direction 3U (U Turn)**		
Time Period	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**				**Lights**	**Heavies**	**Total**
7:00 to 7:15	0	0	**0**	5	0	**5**				0	0	**0**
7:15 to 7:30	0	0	**0**	5	0	**5**				0	0	**0**
7:30 to 7:45	2	0	**2**	5	0	**5**				0	0	**0**
7:45 to 8:00	0	0	**0**	7	0	**7**				0	0	**0**
8:00 to 8:15	0	0	**0**	7	0	**7**				0	0	**0**
8:15 to 8:30	1	0	**1**	22	0	**22**				0	0	**0**
8:30 to 8:45	2	0	**2**	15	0	**15**				0	0	**0**
8:45 to 9:00	1	0	**1**	23	0	**23**				0	0	**0**
9:00 to 9:15	0	0	**0**	16	1	**17**				0	0	**0**
9:15 to 9:30	0	0	**0**	25	0	**25**				0	0	**0**
9:30 to 9:45	1	0	**1**	18	0	**18**				0	0	**0**
9:45 to 10:00	0	0	**0**	22	0	**22**				0	0	**0**
10:00 to 10:15	3	0	**3**	13	1	**14**				0	0	**0**
10:15 to 10:30	4	0	**4**	16	0	**16**				0	0	**0**
10:30 to 10:45	7	0	**7**	21	0	**21**				0	0	**0**
10:45 to 11:00	0	0	**0**	25	0	**25**				0	0	**0**
AM Totals	**21**	**0**	**21**	**245**	**2**	**247**				**0**	**0**	**0**
16:00 to 16:15	0	0	**0**	10	0	**10**				0	0	**0**
16:15 to 16:30	0	0	**0**	11	0	**11**				0	0	**0**
16:30 to 16:45	1	0	**1**	13	0	**13**				0	0	**0**
16:45 to 17:00	1	0	**1**	13	0	**13**				0	0	**0**
17:00 to 17:15	0	0	**0**	15	0	**15**				0	0	**0**
17:15 to 17:30	0	0	**0**	14	0	**14**				0	0	**0**
17:30 to 17:45	1	0	**1**	6	0	**6**				0	0	**0**
17:45 to 18:00	0	0	**0**	7	0	**7**				0	0	**0**
18:00 to 18:15	1	0	**1**	3	0	**3**				0	0	**0**
18:15 to 18:30	0	0	**0**	5	0	**5**				0	0	**0**
18:30 to 18:45	0	0	**0**	9	0	**9**				0	0	**0**
18:45 to 19:00	0	0	**0**	1	0	**1**				0	0	**0**
PM Totals	**4**	**0**	**4**	**107**	**0**	**107**				**0**	**0**	**0**

Approach	**Murramurang Rd**									**Forrester Rd**								
Direction				**Direction 8 (Through)**			**Direction 9 (Right Turn)**			**Direction 9U (U Turn)**			**Direction 10 (Left Turn)**			**Direction 12 (Right Turn)**			**Direction 12U (U Turn)**		
Time Period				**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**
7:00 to 7:15				2	0	**2**	1	0	**1**	0	0	**0**	3	0	**3**	1	0	**1**	0	0	**0**
7:15 to 7:30				5	0	**5**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**
7:30 to 7:45				8	0	**8**	0	0	**0**	0	0	**0**	1	0	**1**	2	0	**2**	0	0	**0**
7:45 to 8:00				10	2	**12**	1	1	**2**	0	0	**0**	3	0	**3**	0	0	**0**	0	0	**0**
8:00 to 8:15				14	0	**14**	1	1	**2**	0	0	**0**	1	1	**2**	2	0	**2**	0	0	**0**
8:15 to 8:30				7	2	**9**	5	0	**5**	0	0	**0**	3	3	**6**	1	0	**1**	0	0	**0**
8:30 to 8:45				14	0	**14**	2	0	**2**	0	0	**0**	3	0	**3**	0	0	**0**	0	0	**0**
8:45 to 9:00				17	0	**17**	0	0	**0**	0	0	**0**	2	0	**2**	1	0	**1**	0	0	**0**
9:00 to 9:15				17	0	**17**	1	0	**1**	0	0	**0**	6	0	**6**	1	0	**1**	0	0	**0**
9:15 to 9:30				13	0	**13**	0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**
9:30 to 9:45				20	0	**20**	1	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**
9:45 to 10:00				21	0	**21**	2	0	**2**	0	0	**0**	7	0	**7**	9	0	**9**	0	0	**0**
10:00 to 10:15				19	0	**19**	1	0	**1**	0	0	**0**	4	0	**4**	2	0	**2**	0	0	**0**
10:15 to 10:30				24	1	**25**	2	0	**2**	0	0	**0**	2	0	**2**	1	0	**1**	0	0	**0**
10:30 to 10:45				26	0	**26**	0	0	**0**	0	0	**0**	2	0	**2**	1	0	**1**	0	0	**0**
10:45 to 11:00				19	0	**19**	2	0	**2**	0	0	**0**	1	0	**1**	1	0	**1**	0	0	**0**
AM Totals				**236**	**5**	**241**	**19**	**2**	**21**	**0**	**0**	**0**	**40**	**4**	**44**	**23**	**0**	**23**	**0**	**0**	**0**
16:00 to 16:15				19	0	**19**	3	0	**3**	0	0	**0**	3	0	**3**	0	0	**0**	0	0	**0**
16:15 to 16:30				11	0	**11**	2	0	**2**	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**
16:30 to 16:45				11	0	**11**	1	0	**1**	0	0	**0**	4	0	**4**	0	0	**0**	0	0	**0**
16:45 to 17:00				15	0	**15**	1	0	**1**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**
17:00 to 17:15				20	0	**20**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
17:15 to 17:30				8	0	**8**	2	0	**2**	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**
17:30 to 17:45				3	0	**3**	0	0	**0**	0	0	**0**	2	0	**2**	1	0	**1**	0	0	**0**
17:45 to 18:00				8	0	**8**	2	0	**2**	0	0	**0**	1	0	**1**	1	0	**1**	0	0	**0**
18:00 to 18:15				7	0	**7**	2	0	**2**	0	0	**0**	4	0	**4**	0	0	**0**	0	0	**0**
18:15 to 18:30				5	0	**5**	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
18:30 to 18:45				5	0	**5**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
18:45 to 19:00				4	0	**4**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
PM Totals				**116**	**0**	**116**	**14**	**0**	**14**	**0**	**0**	**0**	**16**	**0**	**16**	**3**	**0**	**3**	**0**	**0**	**0**

Job No.	: N3544
Client	: GHD
Suburb	: Willinga
Location	: 3. Murramurang Rd / Forrester Rd
Day/Date	: Tue, 12th September 2017
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

	Class 1	Class 2
Classifications	Lights	Heavies



Approach	Murramurang Rd								
Direction	Direction 1 (Left Turn)			Direction 2 (Through)				Direction 3U (U Turn)	
Time Period	Lights	Heavies	Total	Lights	Heavies	Total		Lights	Heavies	Total
7:00 to 7:15	1	0	**1**	3	0	**3**		0	0	**0**
7:15 to 7:30	0	0	**0**	9	0	**9**		0	0	**0**
7:30 to 7:45	0	0	**0**	9	0	**9**		0	0	**0**
7:45 to 8:00	2	1	**3**	11	1	**12**		0	0	**0**
8:00 to 8:15	5	1	**6**	11	2	**13**		0	0	**0**
8:15 to 8:30	1	0	**1**	13	0	**13**		0	0	**0**
8:30 to 8:45	0	0	**0**	15	2	**17**		0	0	**0**
8:45 to 9:00	1	0	**1**	9	1	**10**		0	0	**0**
9:00 to 9:15	0	0	**0**	16	0	**16**		0	0	**0**
9:15 to 9:30	2	0	**2**	11	1	**12**		0	0	**0**
9:30 to 9:45	1	0	**1**	15	0	**15**		0	0	**0**
9:45 to 10:00	2	0	**2**	14	2	**16**		0	0	**0**
10:00 to 10:15	0	0	**0**	16	0	**16**		0	0	**0**
10:15 to 10:30	1	0	**1**	11	0	**11**		0	0	**0**
10:30 to 10:45	0	0	**0**	15	0	**15**		0	0	**0**
10:45 to 11:00	0	0	**0**	22	0	**22**		0	0	**0**
AM Totals	**16**	**2**	**18**	**200**	**9**	**209**		**0**	**0**	**0**
16:00 to 16:15	1	0	**1**	13	1	**14**		0	0	**0**
16:15 to 16:30	2	0	**2**	17	0	**17**		0	0	**0**
16:30 to 16:45	0	0	**0**	19	2	**21**		0	0	**0**
16:45 to 17:00	0	0	**0**	12	0	**12**		0	0	**0**
17:00 to 17:15	1	0	**1**	13	0	**13**		0	0	**0**
17:15 to 17:30	0	0	**0**	12	0	**12**		0	0	**0**
17:30 to 17:45	0	0	**0**	14	0	**14**		0	0	**0**
17:45 to 18:00	0	0	**0**	3	0	**3**		0	0	**0**
18:00 to 18:15	1	0	**1**	7	0	**7**		0	0	**0**
18:15 to 18:30	0	0	**0**	2	0	**2**		0	0	**0**
18:30 to 18:45	1	0	**1**	5	0	**5**		0	0	**0**
18:45 to 19:00	0	0	**0**	3	0	**3**		0	0	**0**
PM Totals	**6**	**0**	**6**	**120**	**3**	**123**		**0**	**0**	**0**

Approach	Murramurang Rd									Forrester Rd								
Direction		Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)				Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total		Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15		2	2	**4**	6	2	**8**	0	0	**0**	1	0	**1**		0	0	**0**	0	0	**0**
7:15 to 7:30		10	0	**10**	5	2	**7**	0	0	**0**	3	1	**4**		0	0	**0**	0	0	**0**
7:30 to 7:45		5	0	**5**	1	0	**1**	0	0	**0**	3	2	**5**		1	0	**1**	0	0	**0**
7:45 to 8:00		11	2	**13**	9	1	**10**	0	0	**0**	3	1	**4**		0	0	**0**	0	0	**0**
8:00 to 8:15		5	0	**5**	4	2	**6**	0	0	**0**	3	0	**3**		1	0	**1**	0	0	**0**
8:15 to 8:30		9	0	**9**	3	2	**5**	0	0	**0**	1	0	**1**		1	0	**1**	0	0	**0**
8:30 to 8:45		9	0	**9**	1	1	**2**	0	0	**0**	3	0	**3**		0	0	**0**	0	0	**0**
8:45 to 9:00		18	1	**19**	1	2	**3**	1	0	**1**	2	1	**3**		0	0	**0**	0	0	**0**
9:00 to 9:15		7	0	**7**	3	0	**3**	0	0	**0**	1	0	**1**		4	0	**4**	0	0	**0**
9:15 to 9:30		5	1	**6**	2	0	**2**	0	0	**0**	2	2	**4**		3	0	**3**	0	0	**0**
9:30 to 9:45		17	2	**19**	3	1	**4**	0	0	**0**	2	1	**3**		1	0	**1**	0	0	**0**
9:45 to 10:00		20	1	**21**	3	0	**3**	0	0	**0**	3	0	**3**		0	0	**0**	0	0	**0**
10:00 to 10:15		16	0	**16**	0	1	**1**	0	0	**0**	3	1	**4**		0	0	**0**	0	0	**0**
10:15 to 10:30		11	0	**11**	2	1	**3**	0	0	**0**	5	0	**5**		2	0	**2**	0	0	**0**
10:30 to 10:45		6	1	**7**	1	1	**2**	0	0	**0**	2	2	**4**		2	0	**2**	0	0	**0**
10:45 to 11:00		12	1	**13**	2	0	**2**	0	0	**0**	1	0	**1**		0	0	**0**	0	0	**0**
AM Totals		**163**	**11**	**174**	**46**	**16**	**62**	**1**	**0**	**1**	**38**	**11**	**49**		**15**	**0**	**15**	**0**	**0**	**0**
16:00 to 16:15		20	1	**21**	1	0	**1**	0	0	**0**	5	1	**6**		1	0	**1**	0	0	**0**
16:15 to 16:30		18	0	**18**	5	2	**7**	0	0	**0**	6	0	**6**		0	0	**0**	0	0	**0**
16:30 to 16:45		13	0	**13**	3	0	**3**	0	0	**0**	8	1	**9**		3	0	**3**	0	0	**0**
16:45 to 17:00		10	0	**10**	2	0	**2**	0	0	**0**	2	0	**2**		1	0	**1**	0	0	**0**
17:00 to 17:15		18	0	**18**	1	0	**1**	0	0	**0**	7	0	**7**		3	0	**3**	0	0	**0**
17:15 to 17:30		15	0	**15**	2	0	**2**	0	0	**0**	4	0	**4**		0	0	**0**	0	0	**0**
17:30 to 17:45		10	0	**10**	0	0	**0**	0	0	**0**	4	0	**4**		0	0	**0**	0	0	**0**
17:45 to 18:00		9	0	**9**	2	0	**2**	0	0	**0**	3	0	**3**		1	0	**1**	0	0	**0**
18:00 to 18:15		9	0	**9**	0	0	**0**	0	0	**0**	4	0	**4**		0	0	**0**	0	0	**0**
18:15 to 18:30		2	0	**2**	2	0	**2**	0	0	**0**	2	0	**2**		0	0	**0**	0	0	**0**
18:30 to 18:45		5	1	**6**	3	0	**3**	0	0	**0**	1	0	**1**		0	0	**0**	0	0	**0**
18:45 to 19:00		5	0	**5**	2	0	**2**	0	0	**0**	1	0	**1**		0	0	**0**	0	0	**0**
PM Totals		**134**	**2**	**136**	**23**	**2**	**25**	**0**	**0**	**0**	**47**	**2**	**49**		**9**	**0**	**9**	**0**	**0**	**0**

Traffic Counts Bawley Point, March 2017

Bawley Point Rd / Princes Hwy

Date: Saturday, 18 March 2017

	Vehicle movements ALONG Princes Hwy				TOTAL	Vehicle movements FROM Princes Hwy INTO Bawley Point Rd				TOTAL	Vehicle movements FROM Bawlwy Point Rd INTO Princes Hwy				TOTAL	
TIME	From North to South		From South to North		Total	From North to East		From South to East		Total	From East to North		From East to South		Total	
TIME	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Total	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Total	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Total	
0700 - 0715	7	3	11	0	21	9	0	2	1	12	3	0	1	0	4	
0715 - 0730	17	0	9	2	28	6	4	1	1	12	5	2	1	0	8	
0730 - 0745	18	2	18	0	38	9	0	3	0	12	8	0	0	0	8	
0745 - 0800	14	2	11	0	27	8	1	4	0	13	3	0	1	0	4	49
0800 - 0815	14	1	16	2	33	10	0	3	0	13	2	0	3	0	5	
0815 - 0830	13	3	20	1	37	19	0	4	0	23	7	0	1	1	9	
0830 - 0845	22	1	26	0	49	22	0	8	0	30	9	0	1	0	10	
0845 - 0900	34	2	23	2	61	27	1	16	0	44	12	0	7	0	19	110
0900 - 0915	27	1	25	0	53	22	0	13	0	35	15	0	5	0	20	
0915 - 0930	37	4	28	1	70	37	1	22	0	60	14	1	28	0	43	
0930 - 0945	37	0	40	1	78	31	0	22	0	53	9	0	7	0	16	
0945 - 1000	34	0	44	1	79	42	0	16	0	58	10	0	6	0	16	206
Morning TOTAL	274	19	271	10	574	242	7	114	2	365	97	3	61	1	162	
1600 - 1615	29	0	31	0	60	13	0	3	0	16	41	0	12	0	53	
1615 - 1630	26	0	32	0	58	14	0	4	0	18	31	1	14	0	46	
1630 - 1645	42	0	18	0	60	10	0	2	0	12	29	0	12	1	42	
1645 - 1700	24	1	31	0	56	14	0	1	0	15	16	0	8	1	25	166
1700 - 1715	21	1	19	1	42	15	0	4	0	19	24	0	6	0	30	
1715 - 1730	28	0	31	0	59	6	0	4	0	10	39	0	20	0	59	
1730 - 1745	19	1	19	0	39	12	0	2	0	14	55	1	25	0	81	
1745 - 1800	20	0	19	0	39	6	0	2	0	8	31	0	10	1	42	212
1800 - 1815	17	3	8	1	29	5	0	1	0	6	14	3	3	0	20	
1815 - 1830	16	0	18	2	36	8	0	5	0	13	13	0	3	0	16	
1830 - 1845	11	1	13	1	26	7	0	5	0	12	6	0	6	0	12	
1845 - 1900	12	1	14	0	27	6	0	1	0	7	10	0	3	0	13	61
Afternoon TOTAL	265	8	253	5	531	116	0	34	0	150	309	5	122	3	439	
Grand Total	539	27	524	15	1105	358	7	148	2	515	406	8	183	4	601	

Murramarang Rd, N Forster Dr, Bawleys Point
77.002
Northbound BA

Time	Mon, 13 Mar, 17	Tue, 14 Mar, 17	Wed, 15 Mar, 17	Thu, 16 Mar, 17	Fri, 17 Mar, 17	Sat, 18 Mar, 17	Sun, 19 Mar, 17	Average 5 Days	Average 7 days
12:00 AM					1	2	3	**1.0**	**2.0**
1:00 AM					1	0	1	**1.0**	**0.7**
2:00 AM					1	0	1	**1.0**	**0.7**
3:00 AM					1	1	0	**1.0**	**0.7**
4:00 AM					4	3	3	**4.0**	**3.3**
5:00 AM					7	6	2	**7.0**	**5.0**
6:00 AM					19	14	6	**19.0**	**13.0**
7:00 AM					33	31	29	**33.0**	**31.0**
8:00 AM					87	69	60	**87.0**	**72.0**
9:00 AM					63	95	96	**63.0**	**84.7**
10:00 AM					**105**	104	**148**	**105.0**	**119.0**
11:00 AM					93	**150**	109	**93.0**	**117.3**
12:00 PM					61	177	**109**	**61.0**	**115.7**
1:00 PM					90	149	97	**90.0**	**112.0**
2:00 PM					82	195	83	**82.0**	**120.0**
3:00 PM					83	**268**	82	**83.0**	**144.3**
4:00 PM					**90**	175	61	**90.0**	**108.7**
5:00 PM					67	234	41	**67.0**	**114.0**
6:00 PM					50	55	36	**50.0**	**47.0**
7:00 PM					26	10	12	**26.0**	**16.0**
8:00 PM					10	18	4	**10.0**	**10.7**
9:00 PM					21	14	4	**21.0**	**13.0**
10:00 PM					36	4	6	**36.0**	**15.3**
11:00 PM					5	6	0	**5.0**	**3.7**
Grand Total					**1,036**	**1,780**	**993**	**1,036.0**	**1,269.7**

Murramarang Rd, N Forster Dr, Bawleys Point
77.002
Northbound BA

Time	Mon, 20 Mar, 17	Tue, 21 Mar, 17	Wed, 22 Mar, 17	Thu, 23 Mar, 17	Fri, 24 Mar, 17	Sat, 25 Mar, 17	Sun, 26 Mar, 17	Average 5 Days	Average 7 days
12:00 AM	2	0	0	0	0	2	0	**0.4**	**0.6**
1:00 AM	1	0	0	1	0	1	0	**0.4**	**0.4**
2:00 AM	0	0	0	0	1	1	0	**0.2**	**0.3**
3:00 AM	1	1	1	1	0	0	0	**0.8**	**0.6**
4:00 AM	5	4	3	3	6	3	3	**4.2**	**3.9**
5:00 AM	11	6	11	13	9	3	2	**10.0**	**7.9**
6:00 AM	16	16	16	22	19	12	11	**17.8**	**16.0**
7:00 AM	45	35	30	45	53	47	24	**41.6**	**39.9**
8:00 AM	**95**	**80**	71	81	84	68	45	**82.2**	**74.9**
9:00 AM	76	64	59	82	91	88	84	**74.4**	**77.7**
10:00 AM	75	79	82	**85**	**104**	93	**109**	**85.0**	**89.6**
11:00 AM	89	69	**89**	70	84	**101**	98	**80.2**	**85.7**
12:00 PM	60	65	63	82	87	**89**	**134**	**71.4**	**82.9**
1:00 PM	61	69	75	**84**	89	87	125	**75.6**	**84.3**
2:00 PM	75	69	82	80	**96**	73	91	**80.4**	**80.9**
3:00 PM	**104**	**78**	82	80	93	70	100	**87.4**	**86.7**
4:00 PM	70	71	**105**	74	70	49	76	**78.0**	**73.6**
5:00 PM	66	53	56	64	63	68	54	**60.4**	**60.6**
6:00 PM	53	24	36	21	49	50	29	**36.6**	**37.4**
7:00 PM	17	15	12	16	18	30	29	**15.6**	**19.6**
8:00 PM	6	4	12	7	11	9	12	**8.0**	**8.7**
9:00 PM	5	7	11	10	10	10	4	**8.6**	**8.1**
10:00 PM	1	2	3	4	7	0	1	**3.4**	**2.6**
11:00 PM	0	0	0	2	3	3	0	**1.0**	**1.1**
Grand Total	**934**	**811**	**899**	**927**	**1,047**	**957**	**1,031**	**923.6**	**943.7**

Murramarang Rd, N Forster Dr, Bawleys Point
77.002
Southbound AB

Time	Mon, 13 Mar, 17	Tue, 14 Mar, 17	Wed, 15 Mar, 17	Thu, 16 Mar, 17	Fri, 17 Mar, 17	Sat, 18 Mar, 17	Sun, 19 Mar, 17	Average 1 Day	Average 7 days
12:00 AM					1	5	4	**1.0**	**3.3**
1:00 AM					3	2	1	**3.0**	**2.0**
2:00 AM					0	1	0	**0.0**	**0.3**
3:00 AM					1	1	1	**1.0**	**1.0**
4:00 AM					2	3	3	**2.0**	**2.7**
5:00 AM					8	10	2	**8.0**	**6.7**
6:00 AM					51	43	5	**51.0**	**33.0**
7:00 AM					75	68	36	**75.0**	**59.7**
8:00 AM					68	147	40	**68.0**	**85.0**
9:00 AM					67	246	60	**67.0**	**124.3**
10:00 AM					**95**	**311**	**87**	**95.0**	**164.3**
11:00 AM					82	228	84	**82.0**	**131.3**
12:00 PM					67	**171**	**95**	**67.0**	**111.0**
1:00 PM					95	124	73	**95.0**	**97.3**
2:00 PM					89	117	68	**89.0**	**91.3**
3:00 PM					**111**	103	58	**111.0**	**90.7**
4:00 PM					110	58	67	**110.0**	**78.3**
5:00 PM					110	54	48	**110.0**	**70.7**
6:00 PM					87	35	26	**87.0**	**49.3**
7:00 PM					48	14	18	**48.0**	**26.7**
8:00 PM					30	13	5	**30.0**	**16.0**
9:00 PM					21	15	5	**21.0**	**13.7**
10:00 PM					19	8	6	**19.0**	**11.0**
11:00 PM					12	7	2	**12.0**	**7.0**
Grand Total					**1,252**	**1,784**	**794**	**1,252.0**	**1,276.7**

Murramarang Rd, N Forster Dr, Bawleys Point
77.002
Southbound AB

Time	Mon, 20 Mar, 17	Tue, 21 Mar, 17	Wed, 22 Mar, 17	Thu, 23 Mar, 17	Fri, 24 Mar, 17	Sat, 25 Mar, 17	Sun, 26 Mar, 17	Average 5 Days	Average 7 days
12:00 AM	2	0	0	0	1	4	4	**0.6**	**1.6**
1:00 AM	0	0	2	0	0	1	0	**0.4**	**0.4**
2:00 AM	0	1	1	2	2	1	1	**1.2**	**1.1**
3:00 AM	2	3	0	0	0	0	0	**1.0**	**0.7**
4:00 AM	2	2	5	2	2	3	3	**2.6**	**2.7**
5:00 AM	7	7	6	8	9	8	2	**7.4**	**6.7**
6:00 AM	46	48	44	42	37	13	16	**43.4**	**35.1**
7:00 AM	52	59	44	47	62	51	35	**52.8**	**50.0**
8:00 AM	70	**71**	70	79	72	67	47	**72.4**	**68.0**
9:00 AM	71	55	51	65	72	73	73	**62.8**	**65.7**
10:00 AM	**82**	63	72	**84**	76	**100**	77	**75.4**	**79.1**
11:00 AM	68	56	**76**	66	**85**	93	**94**	**70.2**	**76.9**
12:00 PM	89	51	68	74	88	**115**	**114**	**74.0**	**85.6**
1:00 PM	69	67	**83**	67	85	88	75	**74.2**	**76.3**
2:00 PM	61	**76**	66	71	**108**	82	74	**76.4**	**76.9**
3:00 PM	65	68	75	73	106	71	79	**77.4**	**76.7**
4:00 PM	**93**	61	78	**90**	89	72	73	**82.2**	**79.4**
5:00 PM	64	54	58	63	79	65	38	**63.6**	**60.1**
6:00 PM	37	38	30	35	66	47	20	**41.2**	**39.0**
7:00 PM	19	12	22	19	46	29	17	**23.6**	**23.4**
8:00 PM	12	9	16	17	32	11	10	**17.2**	**15.3**
9:00 PM	6	7	10	5	23	12	8	**10.2**	**10.1**
10:00 PM	1	5	8	7	22	7	5	**8.6**	**7.9**
11:00 PM	2	0	3	5	12	1	2	**4.4**	**3.6**
Grand Total	**920**	**813**	**888**	**921**	**1,174**	**1,014**	**867**	**943.2**	**942.4**

Forester Dr, W Voyager Cres, Bawleys Point
77.002
Eastbound AB

Time	Fri, 17 Mar, 17	Sat, 18 Mar, 17	Sun, 19 Mar, 17	Mon, 20 Mar, 17	############	Wed, 22 Mar, 17	Thu, 23 Mar, 17	Average 5 Days	Average 7 days
12:00 AM	1	0	1	0	0	0	0	**0.2**	**0.3**
1:00 AM	0	0	1	0	0	0	0	**0.0**	**0.1**
2:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
3:00 AM	0	1	0	0	0	0	0	**0.0**	**0.1**
4:00 AM	0	0	0	1	0	0	0	**0.2**	**0.1**
5:00 AM	1	0	0	0	0	2	1	**0.8**	**0.6**
6:00 AM	3	5	1	6	4	3	4	**4.0**	**3.7**
7:00 AM	3	9	8	5	6	5	9	**5.6**	**6.4**
8:00 AM	9	13	12	15	17	16	**12**	**13.8**	**13.4**
9:00 AM	15	10	8	10	10	12	10	**11.4**	**10.7**
10:00 AM	18	24	13	7	11	6	7	**9.8**	**12.3**
11:00 AM	**19**	**65**	**21**	**15**	**17**	**16**	8	**15.0**	**23.0**
12:00 PM	20	103	33	10	14	14	17	**15.0**	**30.1**
1:00 PM	17	114	24	14	12	14	18	**15.0**	**30.4**
2:00 PM	17	155	**33**	16	18	15	6	**14.4**	**37.1**
3:00 PM	22	**237**	26	**30**	22	29	**25**	**25.6**	**55.9**
4:00 PM	**31**	130	21	13	**23**	**36**	17	**24.0**	**38.7**
5:00 PM	21	185	2	17	11	8	20	**15.4**	**37.7**
6:00 PM	14	34	2	5	5	2	4	**6.0**	**9.4**
7:00 PM	12	0	1	2	2	3	0	**3.8**	**2.9**
8:00 PM	6	17	0	0	0	2	0	**1.6**	**3.6**
9:00 PM	20	10	2	0	0	0	0	**4.0**	**4.6**
10:00 PM	15	4	1	0	0	0	0	**3.0**	**2.9**
11:00 PM	2	0	0	0	0	0	0	**0.4**	**0.3**
Grand Total	**266**	**1,116**	**210**	**166**	**172**	**183**	**158**	**189.0**	**324.4**

Forester Dr, W Voyager Cres, Bawleys Point
77.002
Westbound BA

Time	Fri, 17 Mar, 17	Sat, 18 Mar, 17	Sun, 19 Mar, 17	Mon, 20 Mar, 17	Tue, 21 Mar, 17	Wed, 22 Mar, 17	Thu, 23 Mar, 17	Average 5 Days	Average 7 days
12:00 AM	1	0	0	0	0	0	0	**0.2**	**0.1**
1:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
2:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
3:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
4:00 AM	0	0	0	0	1	1	0	**0.4**	**0.3**
5:00 AM	4	13	0	2	3	3	4	**3.2**	**4.1**
6:00 AM	**37**	37	1	**34**	**36**	**33**	**35**	**35.0**	**30.4**
7:00 AM	36	46	11	12	14	10	13	**17.0**	**20.3**
8:00 AM	13	104	8	18	17	22	18	**17.6**	**28.6**
9:00 AM	19	216	20	8	12	10	8	**11.4**	**41.9**
10:00 AM	18	**248**	**32**	8	12	10	10	**11.6**	**48.3**
11:00 AM	19	160	30	14	13	15	11	**14.4**	**37.4**
12:00 PM	18	**109**	**25**	13	9	8	8	**11.2**	**27.1**
1:00 PM	12	64	16	**15**	**17**	**16**	**20**	**16.0**	**22.9**
2:00 PM	17	45	15	6	8	13	6	**10.0**	**15.7**
3:00 PM	17	28	7	5	9	11	4	**9.2**	**11.6**
4:00 PM	**32**	9	10	10	10	10	9	**14.2**	**12.9**
5:00 PM	15	6	2	3	7	8	8	**8.2**	**7.0**
6:00 PM	21	5	1	6	3	2	6	**7.6**	**6.3**
7:00 PM	8	1	2	4	0	2	0	**2.8**	**2.4**
8:00 PM	6	5	0	0	0	1	0	**1.4**	**1.7**
9:00 PM	5	3	1	0	1	2	0	**1.6**	**1.7**
10:00 PM	2	1	2	0	0	0	0	**0.4**	**0.7**
11:00 PM	1	1	0	1	0	0	1	**0.6**	**0.6**
Grand Total	**301**	**1,101**	**183**	**159**	**172**	**177**	**161**	**194.0**	**322.0**

Automatic Tube Counts Bawley Point July 2017

PRINCES HWY N BAWLEY PT RD
77.007
Northbound

Time	Fri, 7 Jul, 17	Sat, 8 Jul, 17	Sun, 9 Jul, 17	Mon, 10 Jul, 17	Tue, 11 Jul, 17	Wed, 12 Jul, 17	Thu, 13 Jul, 17	Average 5 Days	Average 7 days
12:00 AM	7	7	10	11	9	8	5	**8.0**	**8.1**
1:00 AM	5	4	5	4	3	5	10	**5.4**	**5.1**
2:00 AM	8	8	4	10	7	4	4	**6.6**	**6.4**
3:00 AM	11	1	4	7	3	8	5	**6.8**	**5.6**
4:00 AM	12	10	5	16	15	13	8	**12.8**	**11.3**
5:00 AM	50	21	11	60	46	50	40	**49.2**	**39.7**
6:00 AM	86	51	42	92	94	85	77	**86.8**	**75.3**
7:00 AM	118	79	46	108	109	118	118	**114.2**	**99.4**
8:00 AM	194	124	113	166	169	189	191	**181.8**	**163.7**
9:00 AM	247	240	229	223	212	245	211	**227.6**	**229.6**
10:00 AM	288	281	314	260	220	245	237	**250.0**	**263.6**
11:00 AM	279	290	326	282	213	266	250	**258.0**	**272.3**
12:00 PM	261	241	332	254	204	258	241	**243.6**	**255.9**
1:00 PM	268	262	273	249	210	242	220	**237.8**	**246.3**
2:00 PM	270	255	322	237	231	282	241	**252.2**	**262.6**
3:00 PM	299	251	337	223	263	214	208	**241.4**	**256.4**
4:00 PM	237	204	218	173	192	198	210	**202.0**	**204.6**
5:00 PM	196	133	167	171	182	166	199	**182.8**	**173.4**
6:00 PM	138	56	80	60	80	89	84	**90.2**	**83.9**
7:00 PM	85	39	34	49	49	36	50	**53.8**	**48.9**
8:00 PM	55	28	27	33	28	29	22	**33.4**	**31.7**
9:00 PM	29	23	21	11	9	13	25	**17.4**	**18.7**
10:00 PM	25	24	13	11	9	18	11	**14.8**	**15.9**
11:00 PM	10	8	10	9	12	9	7	**9.4**	**9.3**
Grand Total	**3,178**	**2,640**	**2,943**	**2,719**	**2,569**	**2,790**	**2,674**	**2,786.0**	**2,787.6**

PRINCES HWY N BAWLEY PT RD
77.007
Southbound

Time	Fri, 7 Jul, 17	Sat, 8 Jul, 17	Sun, 9 Jul, 17	Mon, 10 Jul, 17	Tue, 11 Jul, 17	Wed, 12 Jul, 17	Thu, 13 Jul, 17	Average 5 Days	Average 7 days
12:00 AM	13	9	16	6	8	7	9	**7.5**	**9.7**
1:00 AM	8	12	11	5	3	6	7	**5.8**	**7.4**
2:00 AM	9	9	3	8	7	10	4	**7.6**	**7.1**
3:00 AM	11	8	7	8	6	6	8	**7.8**	**7.7**
4:00 AM	18	9	9	22	18	14	25	**19.4**	**16.4**
5:00 AM	42	23	9	41	36	40	30	**37.8**	**31.6**
6:00 AM	91	39	26	114	96	93	75	**93.8**	**76.3**
7:00 AM	124	76	51	148	155	151	159	**147.4**	**123.4**
8:00 AM	182	126	71	189	176	191	169	**181.4**	**157.7**
9:00 AM	187	200	140	175	171	166	179	**175.6**	**174.0**
10:00 AM	216	229	247	225	217	215	180	**210.6**	**218.4**
11:00 AM	264	266	246	220	215	211	215	**225.0**	**233.9**
12:00 PM	236	246	254	244	203	213	197	**218.6**	**227.6**
1:00 PM	264	237	278	241	214	236	217	**234.4**	**241.0**
2:00 PM	286	279	296	245	218	250	235	**246.8**	**258.4**
3:00 PM	309	311	299	252	220	263	240	**256.8**	**270.6**
4:00 PM	280	227	226	235	219	235	215	**236.8**	**233.9**
5:00 PM	225	129	157	163	157	168	171	**176.8**	**167.1**
6:00 PM	163	76	104	78	85	97	103	**105.2**	**100.9**
7:00 PM	104	65	61	37	64	47	67	**63.8**	**63.6**
8:00 PM	93	42	46	50	43	34	56	**55.2**	**52.0**
9:00 PM	90	32	23	26	22	28	52	**43.6**	**39.0**
10:00 PM	57	30	23	15	19	23	29	**28.6**	**28.0**
11:00 PM	22	20	14	14	9	11	8	**12.8**	**14.0**
Grand Total	**3,294**	**2,700**	**2,617**	**2,761**	**2,581**	**2,715**	**2,650**	**2,788.0**	**2,759.7**

BAWLEY PT RD E PRINCES HWY
77.008
Eastbound

Time	Fri, 7 Jul, 17	Sat, 8 Jul, 17	Sun, 9 Jul, 17	Mon, 10 Jul, 17	Tue, 11 Jul, 17	Wed, 12 Jul, 17	Thu, 13 Jul, 17	Average 5 Days	Average 7 days
12:00 AM	0	4	3	0	1	0	2	**1.8**	**1.4**
1:00 AM	0	5	0	1	0	2	0	**1.2**	**1.1**
2:00 AM	5	0	0	0	1	3	1	**1.2**	**1.4**
3:00 AM	1	2	2	2	1	0	1	**1.6**	**1.3**
4:00 AM	2	2	3	2	3	1	2	**2.2**	**2.1**
5:00 AM	4	4	1	2	3	8	5	**3.2**	**3.9**
6:00 AM	53	12	7	54	53	46	47	**34.6**	**38.9**
7:00 AM	43	19	13	35	37	51	40	**30.0**	**34.0**
8:00 AM	56	21	11	49	47	39	31	**33.6**	**36.3**
9:00 AM	50	49	25	41	50	52	47	**42.4**	**44.9**
10:00 AM	65	78	57	63	63	52	43	**61.2**	**60.1**
11:00 AM	90	98	74	75	66	70	67	**80.8**	**77.1**
12:00 PM	92	120	68	88	67	90	66	**86.8**	**84.4**
1:00 PM	74	95	82	72	75	75	76	**79.8**	**78.4**
2:00 PM	93	97	77	86	67	97	70	**84.6**	**83.9**
3:00 PM	138	103	80	78	97	80	98	**99.4**	**96.3**
4:00 PM	103	83	52	95	85	103	89	**84.4**	**87.1**
5:00 PM	93	43	36	72	78	86	79	**64.6**	**69.6**
6:00 PM	70	28	36	31	38	42	45	**42.0**	**41.4**
7:00 PM	44	25	17	14	24	15	28	**25.6**	**23.9**
8:00 PM	30	23	10	24	19	19	24	**22.2**	**21.3**
9:00 PM	41	8	9	9	8	9	18	**17.0**	**14.6**
10:00 PM	21	11	6	5	8	4	12	**11.0**	**9.6**
11:00 PM	13	6	2	3	1	4	4	**5.6**	**4.7**
Grand Total	**1,181**	**936**	**671**	**901**	**892**	**948**	**895**	**970.4**	**917.7**

BAWLEY PT RD E PRINCES HWY
77.008
Westbound

Time	Fri, 7 Jul, 17	Sat, 8 Jul, 17	Sun, 9 Jul, 17	Mon, 10 Jul, 17	Tue, 11 Jul, 17	Wed, 12 Jul, 17	Thu, 13 Jul, 17	Average 5 Days	Average 7 days
12:00 AM	0	0	1	0	0	1	0	**0.2**	**0.3**
1:00 AM	0	0	0	0	0	1	1	**0.2**	**0.3**
2:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
3:00 AM	1	0	1	3	1	1	2	**1.4**	**1.3**
4:00 AM	2	2	4	8	6	4	4	**4.0**	**4.3**
5:00 AM	21	8	2	17	14	17	19	**13.4**	**14.0**
6:00 AM	25	16	12	38	35	38	31	**24.4**	**27.9**
7:00 AM	44	27	17	54	46	61	55	**39.4**	**43.4**
8:00 AM	93	50	42	92	80	98	87	**72.8**	**77.4**
9:00 AM	107	84	108	103	88	98	102	**100.8**	**98.6**
10:00 AM	115	113	106	102	105	99	88	**104.8**	**104.0**
11:00 AM	85	97	107	96	87	81	75	**92.0**	**89.7**
12:00 PM	95	83	103	77	87	81	73	**86.2**	**85.6**
1:00 PM	79	81	82	70	72	81	70	**76.4**	**76.4**
2:00 PM	79	64	72	78	62	58	73	**73.2**	**69.4**
3:00 PM	83	85	99	61	70	75	76	**80.8**	**78.4**
4:00 PM	63	57	54	52	74	63	64	**58.0**	**61.0**
5:00 PM	40	52	37	50	42	48	61	**48.0**	**47.1**
6:00 PM	19	24	15	10	22	20	17	**17.0**	**18.1**
7:00 PM	19	13	7	13	14	12	7	**11.8**	**12.1**
8:00 PM	8	9	9	6	5	10	6	**7.6**	**7.6**
9:00 PM	5	7	0	5	2	3	9	**5.2**	**4.4**
10:00 PM	2	5	5	2	2	7	4	**3.6**	**3.9**
11:00 PM	4	1	0	2	3	0	2	**1.8**	**1.7**
Grand Total	**989**	**878**	**883**	**939**	**917**	**957**	**926**	**933.4**	**927.0**

MURRAMARANG RD N FORSTERS DR
77.012
Northbound

Time	Fri, 7 Jul, 17	Sat, 8 Jul, 17	Sun, 9 Jul, 17	Mon, 10 Jul, 17	Tue, 11 Jul, 17	Wed, 12 Jul, 17	Thu, 13 Jul, 17	Average 5 Days	Average 7 days
12:00 AM	0	0	1	1	0	1	0	**0.4**	**0.4**
1:00 AM	0	0	0	0	0	1	1	**0.2**	**0.3**
2:00 AM	0	0	1	0	0	0	0	**0.2**	**0.1**
3:00 AM	1	0	1	5	1	1	1	**1.6**	**1.4**
4:00 AM	3	0	2	6	6	4	3	**2.8**	**3.4**
5:00 AM	10	6	4	8	8	10	8	**7.2**	**7.7**
6:00 AM	12	8	8	19	22	19	20	**13.4**	**15.4**
7:00 AM	40	30	17	35	28	38	34	**31.2**	**31.7**
8:00 AM	65	59	56	61	70	74	58	**59.8**	**63.3**
9:00 AM	92	93	106	84	79	80	87	**92.4**	**88.7**
10:00 AM	93	109	115	81	92	85	84	**96.4**	**94.1**
11:00 AM	91	116	116	85	92	73	91	**99.8**	**94.9**
12:00 PM	115	110	109	97	96	96	82	**102.6**	**100.7**
1:00 PM	90	82	94	68	80	81	87	**84.2**	**83.1**
2:00 PM	83	93	89	97	79	68	82	**88.8**	**84.4**
3:00 PM	105	102	97	93	94	89	96	**98.6**	**96.6**
4:00 PM	80	70	59	66	93	83	91	**73.2**	**77.4**
5:00 PM	68	57	48	63	52	52	75	**62.2**	**59.3**
6:00 PM	27	32	20	15	29	29	25	**23.8**	**25.3**
7:00 PM	24	18	6	15	12	11	10	**14.6**	**13.7**
8:00 PM	10	11	3	6	4	6	7	**7.4**	**6.7**
9:00 PM	1	1	1	15	2	2	6	**4.8**	**4.0**
10:00 PM	5	4	5	2	2	5	3	**3.8**	**3.7**
11:00 PM	3	0	1	1	4	0	1	**1.2**	**1.4**
Grand Total	**1,018**	**1,001**	**959**	**923**	**945**	**908**	**952**	**964.8**	**958.0**

MURRAMARANG RD N FORSTERS DR
77.012
Southbound

Time	Fri, 7 Jul, 17	Sat, 8 Jul, 17	Sun, 9 Jul, 17	Mon, 10 Jul, 17	Tue, 11 Jul, 17	Wed, 12 Jul, 17	Thu, 13 Jul, 17	Average 5 Days	Average 7 days
12:00 AM	0	3	3	0	1	0	1	**1.4**	**1.1**
1:00 AM	0	4	0	1	0	2	1	**1.2**	**1.1**
2:00 AM	2	0	0	0	1	3	0	**0.4**	**0.9**
3:00 AM	2	2	2	3	1	0	1	**2.0**	**1.6**
4:00 AM	2	4	2	2	2	1	1	**2.2**	**2.0**
5:00 AM	3	3	3	5	9	9	6	**4.0**	**5.4**
6:00 AM	59	18	7	53	56	52	53	**38.0**	**42.6**
7:00 AM	47	33	26	40	46	53	51	**39.4**	**42.3**
8:00 AM	76	52	42	51	68	48	40	**52.2**	**53.9**
9:00 AM	63	80	64	59	73	65	88	**70.8**	**70.3**
10:00 AM	82	104	95	73	83	73	84	**87.6**	**84.9**
11:00 AM	106	97	81	79	70	71	79	**88.4**	**83.3**
12:00 PM	86	132	92	107	98	90	76	**98.6**	**97.3**
1:00 PM	83	111	80	71	79	85	103	**89.6**	**87.4**
2:00 PM	103	102	74	91	67	83	77	**89.4**	**85.3**
3:00 PM	123	95	84	73	98	88	97	**94.4**	**94.0**
4:00 PM	104	86	61	82	83	91	91	**84.8**	**85.4**
5:00 PM	83	48	46	58	68	76	61	**59.2**	**62.9**
6:00 PM	50	25	27	20	21	28	32	**30.8**	**29.0**
7:00 PM	27	20	6	21	18	9	15	**17.8**	**16.6**
8:00 PM	19	15	5	11	11	9	19	**13.8**	**12.7**
9:00 PM	19	4	2	9	7	3	11	**9.0**	**7.9**
10:00 PM	15	4	3	3	1	6	4	**5.8**	**5.1**
11:00 PM	8	3	2	0	0	5	0	**2.6**	**2.6**
Grand Total	**1,162**	**1,045**	**807**	**912**	**961**	**950**	**991**	**1,021.8**	**975.4**

FORSTER DR W MURRAMARANG RD
77.011
Eastbound

Time	Fri, 7 Jul, 17	Sat, 8 Jul, 17	Sun, 9 Jul, 17	Mon, 10 Jul, 17	Tue, 11 Jul, 17	Wed, 12 Jul, 17	Thu, 13 Jul, 17	Average 5 Days	Average 7 days
12:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
1:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
2:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
3:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
4:00 AM	1	0	1	2	1	1	1	**1.0**	**1.0**
5:00 AM	2	2	1	0	2	2	3	**1.6**	**1.7**
6:00 AM	4	2	1	11	6	6	5	**4.6**	**5.0**
7:00 AM	18	6	3	9	12	9	10	**9.2**	**9.6**
8:00 AM	15	9	7	14	14	11	12	**11.4**	**11.7**
9:00 AM	21	9	10	9	19	11	14	**12.6**	**13.3**
10:00 AM	10	12	6	14	15	11	9	**10.2**	**11.0**
11:00 AM	16	15	11	15	18	15	16	**14.6**	**15.1**
12:00 PM	25	13	10	23	14	9	19	**18.0**	**16.1**
1:00 PM	17	8	5	6	20	15	24	**12.0**	**13.6**
2:00 PM	26	5	5	11	14	15	13	**12.0**	**12.7**
3:00 PM	32	8	11	29	26	28	26	**21.2**	**22.9**
4:00 PM	14	5	7	23	31	30	35	**16.8**	**20.7**
5:00 PM	6	4	6	28	17	26	35	**15.8**	**17.4**
6:00 PM	2	1	2	3	10	3	1	**1.8**	**3.1**
7:00 PM	1	2	3	2	7	2	1	**1.8**	**2.6**
8:00 PM	0	0	1	0	1	2	0	**0.2**	**0.6**
9:00 PM	0	1	1	2	0	1	3	**1.4**	**1.1**
10:00 PM	1	1	0	0	1	0	0	**0.4**	**0.4**
11:00 PM	0	0	0	0	3	0	0	**0.0**	**0.4**
Grand Total	**211**	**103**	**91**	**201**	**231**	**197**	**227**	**193.8**	**180.1**

FORSTER DR W MURRAMARANG RD
77.011
Westbound

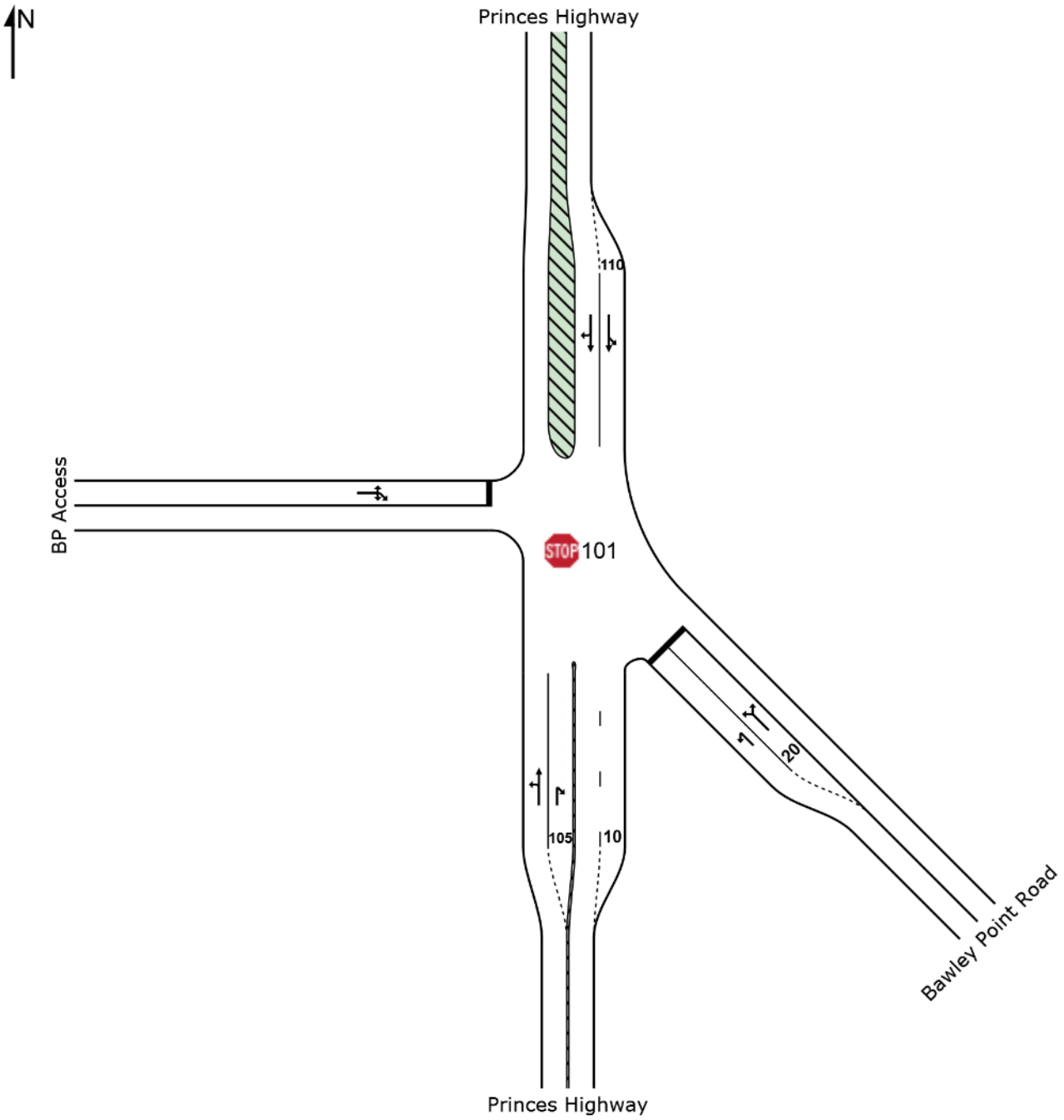
Time	Fri, 7 Jul, 17	Sat, 8 Jul, 17	Sun, 9 Jul, 17	Mon, 10 Jul, 17	Tue, 11 Jul, 17	Wed, 12 Jul, 17	Thu, 13 Jul, 17	Average 5 Days	Average 7 days
12:00 AM	0	1	1	0	0	0	0	**0.4**	**0.3**
1:00 AM	0	1	0	1	0	0	0	**0.4**	**0.3**
2:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
3:00 AM	0	0	0	0	0	0	0	**0.0**	**0.0**
4:00 AM	0	1	0	0	0	0	0	**0.2**	**0.1**
5:00 AM	1	1	1	1	3	4	2	**1.2**	**1.9**
6:00 AM	46	9	2	53	51	48	47	**31.4**	**36.6**
7:00 AM	18	7	1	15	21	21	23	**12.8**	**15.1**
8:00 AM	22	4	2	14	15	8	6	**9.6**	**10.1**
9:00 AM	11	4	5	11	15	17	15	**9.2**	**11.1**
10:00 AM	12	5	9	7	17	6	12	**9.0**	**9.7**
11:00 AM	15	12	2	12	9	10	13	**10.8**	**10.4**
12:00 PM	15	12	8	13	13	11	11	**11.8**	**11.9**
1:00 PM	14	8	5	18	20	10	26	**14.2**	**14.4**
2:00 PM	10	5	8	10	10	17	13	**9.2**	**10.4**
3:00 PM	9	4	7	6	10	8	16	**8.4**	**8.6**
4:00 PM	6	8	3	13	11	9	9	**7.8**	**8.4**
5:00 PM	10	2	7	7	10	5	6	**6.4**	**6.7**
6:00 PM	8	5	5	5	10	8	8	**6.2**	**7.0**
7:00 PM	4	3	1	3	6	0	2	**2.6**	**2.7**
8:00 PM	4	0	1	3	3	1	4	**2.4**	**2.3**
9:00 PM	1	0	0	1	1	1	2	**0.8**	**0.9**
10:00 PM	1	0	1	0	1	1	0	**0.4**	**0.6**
11:00 PM	0	2	0	0	0	1	0	**0.4**	**0.4**
Grand Total	**207**	**94**	**69**	**193**	**226**	**186**	**215**	**185.6**	**170.0**

Appendix B – SIDRA Results

SITE LAYOUT

Site: 101 [2017_AM_Existing Weekday_Princes Hwy/ Bawley Point Road]

New Site
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101 [2017_AM_Existing Weekday_Princes Hwy/ Bawley Point Road]

New Site
Stop (Two-Way)

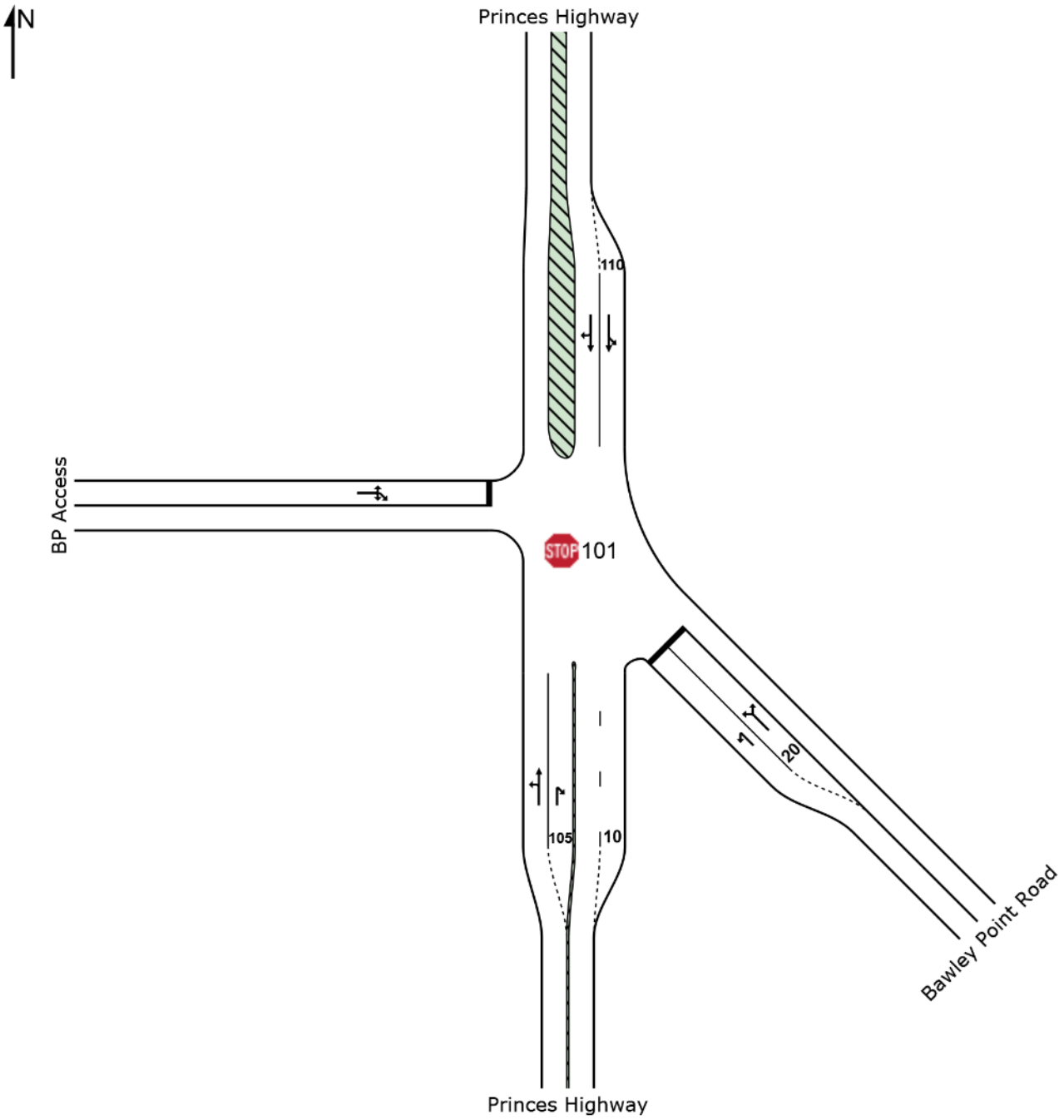
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Highway											
1	L2	8	12.5	0.073	8.2	LOS A	0.0	0.0	0.00	0.04	81.4
2	T1	123	13.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.04	98.7
3b	R3	18	44.4	0.011	10.4	LOS A	0.1	0.6	0.34	0.60	58.5
Approach		149	16.8	0.073	1.7	NA	0.1	0.6	0.04	0.11	90.1
SouthEast: Bawley Point Road											
21b	L3	19	5.3	0.011	10.9	LOS A	0.0	0.4	0.01	0.99	69.3
21a	L1	9	0.0	0.098	11.7	LOS A	0.3	2.0	0.31	1.03	50.2
23a	R1	87	9.2	0.098	10.8	LOS A	0.3	2.0	0.31	1.03	68.6
Approach		115	7.8	0.098	10.9	LOS A	0.3	2.0	0.26	1.02	66.8
North: Princes Highway											
7a	L1	30	16.7	0.018	7.5	LOS A	0.0	0.0	0.00	0.66	69.2
8	T1	166	7.8	0.089	7.2	LOS A	0.0	0.0	0.00	0.66	72.3
9	R2	1	0.0	0.089	7.4	LOS A	0.0	0.0	0.00	0.66	75.3
Approach		197	9.1	0.089	7.3	NA	0.0	0.0	0.00	0.66	71.9
West: BP Access											
10	L2	4	25.0	0.006	8.0	LOS A	0.0	0.2	0.23	0.94	44.5
12a	R1	2	0.0	0.006	8.0	LOS A	0.0	0.2	0.23	0.94	48.3
12	R2	2	0.0	0.006	7.3	LOS A	0.0	0.2	0.23	0.94	48.1
Approach		8	12.5	0.006	7.8	LOS A	0.0	0.2	0.23	0.94	46.3
All Vehicles		469	11.3	0.098	6.4	NA	0.3	2.0	0.08	0.58	74.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

SITE LAYOUT

Site: 101 [2017_PM_Existing Weekday_Princes Hwy/ Bawley Point Road]

New Site
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101 [2017_PM_Existing Weekday_Princes Hwy/ Bawley Point Road]

New Site
Stop (Two-Way)

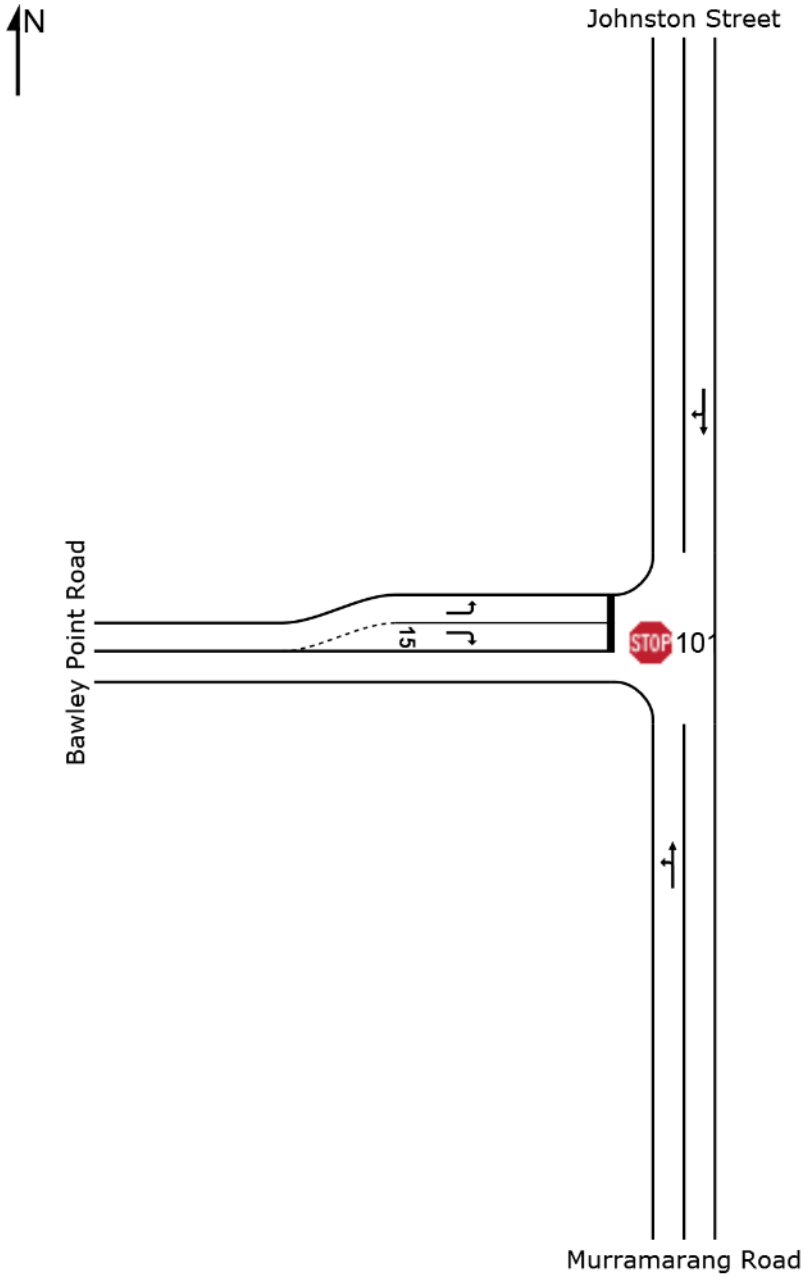
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Highway											
1	L2	3	0.0	0.075	7.8	LOS A	0.0	0.0	0.00	0.01	88.2
2	T1	138	6.5	0.075	0.0	LOS A	0.0	0.0	0.00	0.01	99.5
3b	R3	18	0.0	0.009	9.0	LOS A	0.0	0.3	0.32	0.60	72.5
Approach		159	5.7	0.075	1.2	NA	0.0	0.3	0.04	0.08	95.2
SouthEast: Bawley Point Road											
21b	L3	14	0.0	0.008	10.6	LOS A	0.0	0.0	0.00	1.00	71.7
21a	L1	9	0.0	0.068	11.6	LOS A	0.2	1.4	0.31	1.03	50.2
23a	R1	56	12.5	0.068	11.0	LOS A	0.2	1.4	0.31	1.03	67.5
Approach		79	8.9	0.068	11.0	LOS A	0.2	1.4	0.25	1.02	65.6
North: Princes Highway											
7a	L1	78	3.8	0.042	7.2	LOS A	0.0	0.0	0.00	0.66	73.7
8	T1	136	12.5	0.075	7.4	LOS A	0.0	0.0	0.00	0.66	70.7
9	R2	1	0.0	0.075	7.4	LOS A	0.0	0.0	0.00	0.66	75.3
Approach		215	9.3	0.075	7.3	NA	0.0	0.0	0.00	0.66	71.8
West: BP Access											
10	L2	1	0.0	0.012	7.1	LOS A	0.0	0.2	0.27	0.96	48.1
12a	R1	6	0.0	0.012	8.0	LOS A	0.0	0.2	0.27	0.96	48.2
12	R2	7	14.3	0.012	7.9	LOS A	0.0	0.2	0.27	0.96	45.8
Approach		14	7.1	0.012	7.9	LOS A	0.0	0.2	0.27	0.96	47.0
All Vehicles		467	7.9	0.075	5.9	NA	0.2	1.4	0.06	0.53	75.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

SITE LAYOUT

Site: 101 [2017_AM_Existing Weekday_Murramarang Road / Bawley Point Road]

Murramarang Road / Bawley Point Road
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101 [2017_AM_Existing Weekday_Murramarang Road / Bawley Point Road]

Murramarang Road / Bawley Point Road
Stop (Two-Way)

Movement Performance - Vehicles

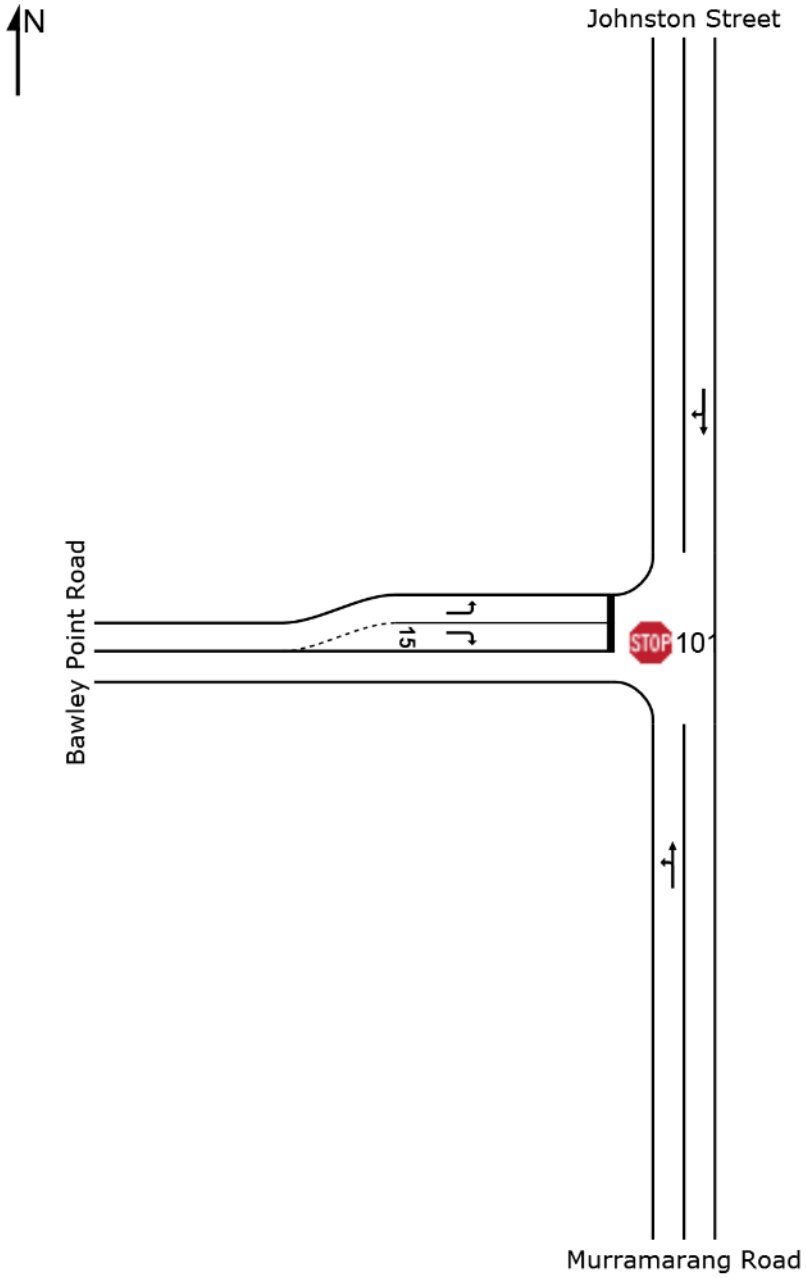
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Road											
1	L2	102	9.8	0.059	4.7	LOS A	0.0	0.0	0.00	0.52	46.5
2	T1	1	0.0	0.059	0.0	LOS A	0.0	0.0	0.00	0.52	47.1
Approach		103	9.7	0.059	4.6	NA	0.0	0.0	0.00	0.52	46.5
North: Johnston Street											
8	T1	1	0.0	0.001	0.2	LOS A	0.0	0.0	0.18	0.25	48.0
9	R2	1	0.0	0.001	4.8	LOS A	0.0	0.0	0.18	0.25	47.3
Approach		2	0.0	0.001	2.5	NA	0.0	0.0	0.18	0.25	47.7
West: Bawley Point Road											
10	L2	1	0.0	0.001	7.4	LOS A	0.0	0.0	0.01	0.99	45.0
12	R2	50	26.0	0.034	8.0	LOS A	0.1	0.7	0.09	0.99	44.4
Approach		51	25.5	0.034	8.0	LOS A	0.1	0.7	0.09	0.99	44.4
All Vehicles		156	14.7	0.059	5.7	NA	0.1	0.7	0.03	0.67	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

SITE LAYOUT

Site: 101 [2017_PM_Existing Weekday_Murramarang Road / Bawley Point Road]

Murramarang Road / Bawley Point Road
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101 [2017_PM_Existing Weekday_Murramarang Road / Bawley Point Road]

Murramarang Road / Bawley Point Road
Stop (Two-Way)

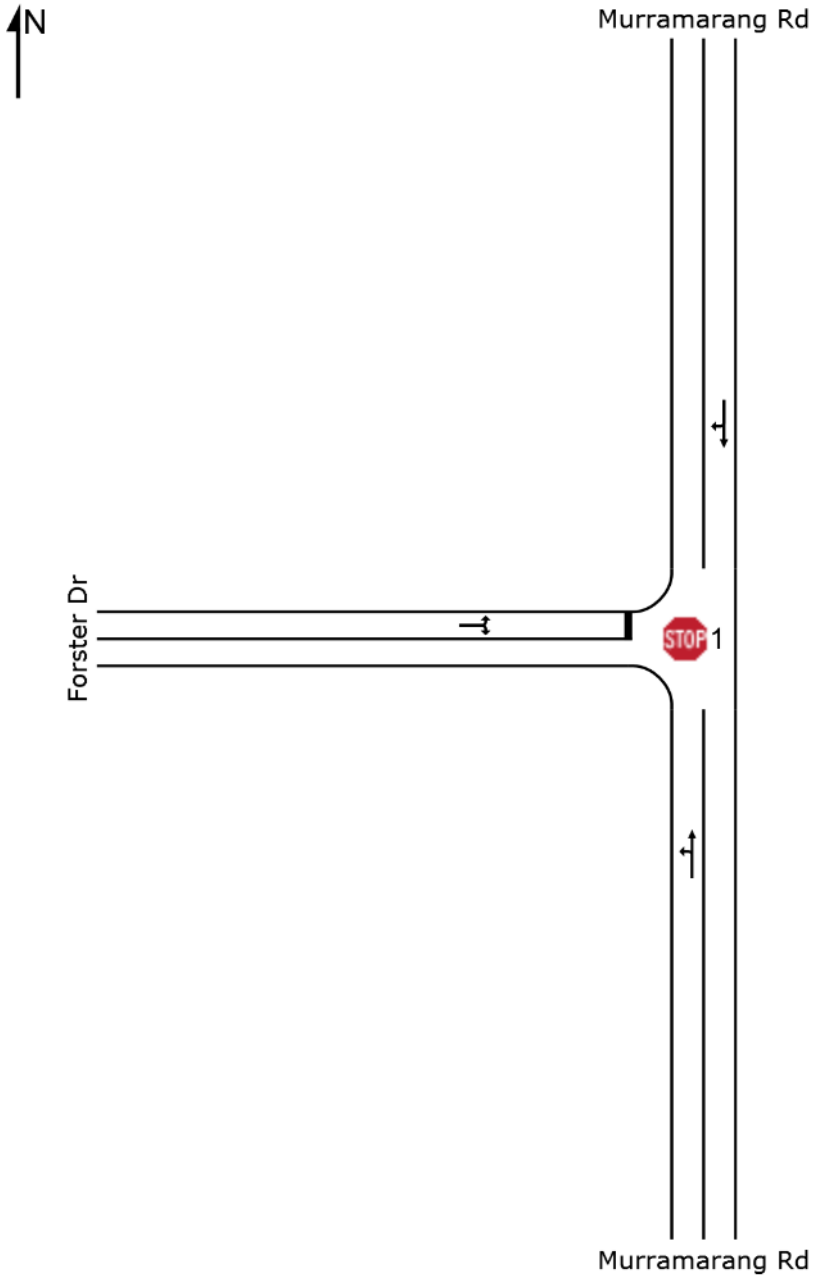
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Road											
1	L2	71	7.0	0.044	4.6	LOS A	0.0	0.0	0.00	0.48	46.8
2	T1	7	0.0	0.044	0.0	LOS A	0.0	0.0	0.00	0.48	47.3
Approach		78	6.4	0.044	4.2	NA	0.0	0.0	0.00	0.48	46.8
North: Johnston Street											
8	T1	5	0.0	0.005	0.1	LOS A	0.0	0.1	0.15	0.25	48.1
9	R2	5	0.0	0.005	4.7	LOS A	0.0	0.1	0.15	0.25	47.4
Approach		10	0.0	0.005	2.4	NA	0.0	0.1	0.15	0.25	47.7
West: Bawley Point Road											
10	L2	1	0.0	0.001	7.4	LOS A	0.0	0.0	0.03	0.97	45.0
12	R2	94	2.1	0.057	7.1	LOS A	0.1	1.1	0.08	0.95	44.8
Approach		95	2.1	0.057	7.1	LOS A	0.1	1.1	0.08	0.95	44.8
All Vehicles		183	3.8	0.057	5.6	NA	0.1	1.1	0.05	0.71	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

SITE LAYOUT

Site: 1 [2017_AM_Existing Weekday_Forster Dr/Murramarang RD]

Forster Dr/Murramarang Rd
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 1 [2017_AM_Existing Weekday_Forster Dr/Murramarang RD]

Forster Dr/Murramarang Rd
Stop (Two-Way)

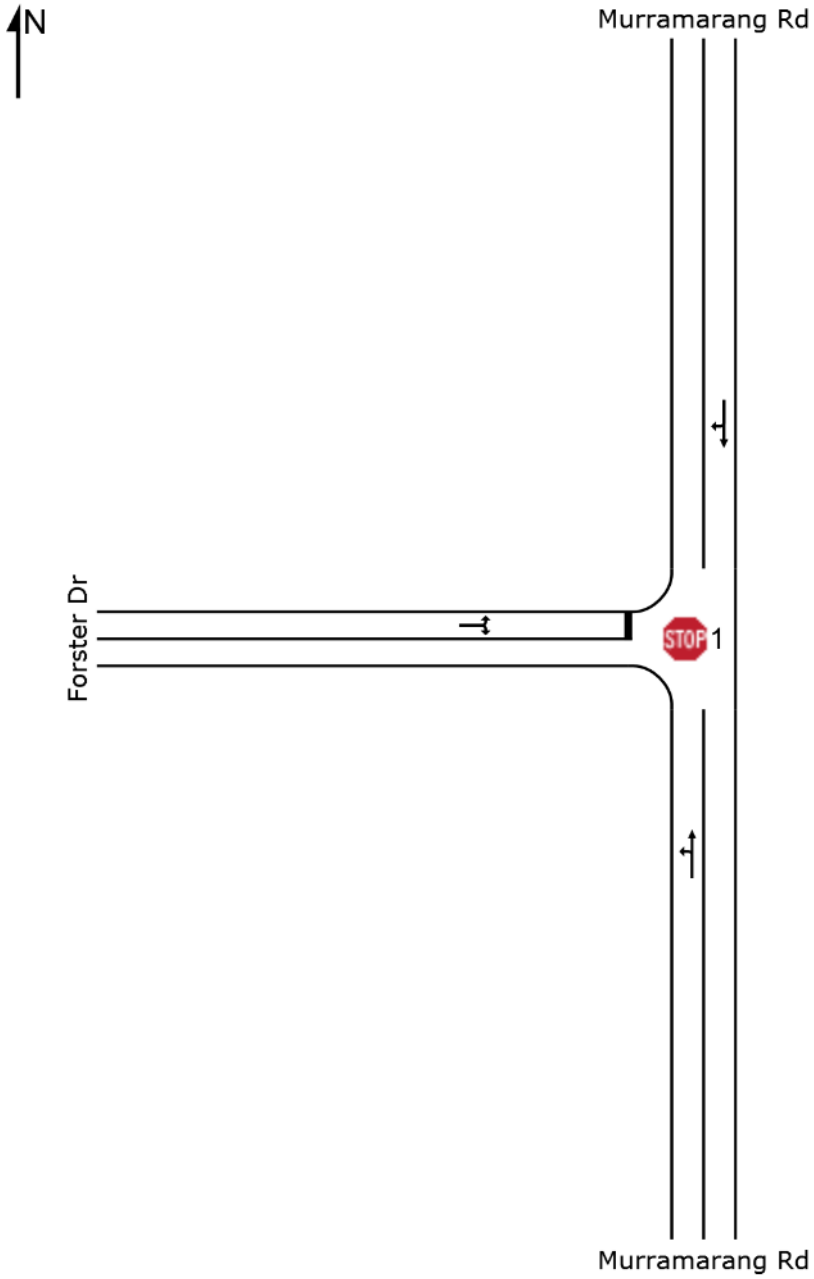
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Rd											
1	L2	4	0.0	0.033	4.6	LOS A	0.0	0.0	0.00	0.04	49.3
2	T1	58	3.4	0.033	0.0	LOS A	0.0	0.0	0.00	0.04	49.8
Approach		62	3.2	0.033	0.3	NA	0.0	0.0	0.00	0.04	49.8
North: Murramarang Rd											
8	T1	67	4.5	0.042	0.0	LOS A	0.1	0.5	0.05	0.08	49.5
9	R2	11	27.3	0.042	5.0	LOS A	0.1	0.5	0.05	0.08	50.8
Approach		78	7.7	0.042	0.7	NA	0.1	0.5	0.05	0.08	49.7
West: Forster Dr											
10	L2	15	13.3	0.011	8.8	LOS A	0.0	0.4	0.14	0.92	48.2
12	R2	3	0.0	0.011	7.6	LOS A	0.0	0.4	0.14	0.92	47.9
Approach		18	11.1	0.011	8.6	LOS A	0.0	0.4	0.14	0.92	48.1
All Vehicles		158	6.3	0.042	1.5	NA	0.1	0.5	0.04	0.16	49.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

SITE LAYOUT

Site: 1 [2017_PM_Existing Weekday_Forster Dr/Murramarang RD]

Forster Dr/Murramarang Rd
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 1 [2017_PM_Existing Weekday_Forster Dr/Murramarang RD]

Forster Dr/Murramarang Rd
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Rd											
1	L2	3	0.0	0.035	4.6	LOS A	0.0	0.0	0.00	0.02	49.4
2	T1	64	4.7	0.035	0.0	LOS A	0.0	0.0	0.00	0.02	49.8
Approach		67	4.5	0.035	0.2	NA	0.0	0.0	0.00	0.02	49.8
North: Murramarang Rd											
8	T1	62	1.6	0.039	0.0	LOS A	0.1	0.5	0.07	0.10	49.3
9	R2	13	15.4	0.039	4.9	LOS A	0.1	0.5	0.07	0.10	51.2
Approach		75	4.0	0.039	0.9	NA	0.1	0.5	0.07	0.10	49.6
West: Forster Dr											
10	L2	23	8.7	0.017	8.6	LOS A	0.1	0.5	0.15	0.91	48.2
12	R2	5	0.0	0.017	7.6	LOS A	0.1	0.5	0.15	0.91	47.9
Approach		28	7.1	0.017	8.4	LOS A	0.1	0.5	0.15	0.91	48.2
All Vehicles		170	4.7	0.039	1.9	NA	0.1	0.5	0.05	0.20	49.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

MOVEMENT SUMMARY

Site: 101 [2017_AM_Existing Saturday_Princes Hwy/ Bawley Point Road]

New Site
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Highway											
1	L2	10	0.0	0.093	7.8	LOS A	0.0	0.0	0.00	0.04	87.6
2	T1	166	3.6	0.093	0.0	LOS A	0.0	0.0	0.00	0.04	98.7
3b	R3	18	5.6	0.009	9.2	LOS A	0.0	0.4	0.34	0.60	69.8
Approach		194	3.6	0.093	1.3	NA	0.0	0.4	0.03	0.09	94.4
SouthEast: Bawley Point Road											
21b	L3	23	4.3	0.013	10.9	LOS A	0.0	0.0	0.00	1.00	69.6
21a	L1	15	0.0	0.077	11.6	LOS A	0.2	1.6	0.34	1.01	50.2
23a	R1	61	3.3	0.077	10.5	LOS A	0.2	1.6	0.34	1.01	70.4
Approach		99	3.0	0.077	10.8	LOS A	0.2	1.6	0.26	1.01	66.2
North: Princes Highway											
7a	L1	50	2.0	0.027	7.1	LOS A	0.0	0.0	0.00	0.65	74.5
8	T1	185	0.5	0.096	7.1	LOS A	0.0	0.0	0.00	0.65	75.1
9	R2	4	0.0	0.096	7.4	LOS A	0.0	0.0	0.00	0.65	75.3
Approach		239	0.8	0.096	7.1	NA	0.0	0.0	0.00	0.65	75.0
West: BP Access											
10	L2	9	0.0	0.012	7.2	LOS A	0.0	0.3	0.25	0.88	48.5
12a	R1	1	0.0	0.012	8.1	LOS A	0.0	0.3	0.25	0.88	48.9
12	R2	5	0.0	0.012	7.5	LOS A	0.0	0.3	0.25	0.88	48.4
Approach		15	0.0	0.012	7.3	LOS A	0.0	0.3	0.25	0.88	48.5
All Vehicles		547	2.2	0.096	5.7	NA	0.2	1.6	0.07	0.52	77.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

MOVEMENT SUMMARY

Site: 101 [2017_PM_Existing Saturday_Princes Hwy/ Bawley Point Road]

New Site
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Highway											
1	L2	4	0.0	0.061	7.8	LOS A	0.0	0.0	0.00	0.02	88.0
2	T1	115	0.9	0.061	0.0	LOS A	0.0	0.0	0.00	0.02	99.2
3b	R3	13	0.0	0.006	8.9	LOS A	0.0	0.2	0.28	0.60	72.8
Approach		132	0.8	0.061	1.1	NA	0.0	0.2	0.03	0.08	95.4
SouthEast: Bawley Point Road											
21b	L3	10	0.0	0.006	10.6	LOS A	0.0	0.0	0.00	1.00	71.7
21a	L1	7	0.0	0.041	11.2	LOS A	0.1	0.8	0.27	1.00	50.3
23a	R1	36	2.8	0.041	10.1	LOS A	0.1	0.8	0.27	1.00	70.9
Approach		53	1.9	0.041	10.3	LOS A	0.1	0.8	0.22	1.00	67.4
North: Princes Highway											
7a	L1	36	0.0	0.019	7.1	LOS A	0.0	0.0	0.00	0.65	76.0
8	T1	137	0.7	0.071	7.1	LOS A	0.0	0.0	0.00	0.65	75.0
9	R2	2	0.0	0.071	7.4	LOS A	0.0	0.0	0.00	0.65	75.3
Approach		175	0.6	0.071	7.1	NA	0.0	0.0	0.00	0.65	75.2
West: BP Access											
10	L2	2	0.0	0.009	7.0	LOS A	0.0	0.2	0.22	0.97	48.5
12a	R1	7	0.0	0.009	7.8	LOS A	0.0	0.2	0.22	0.97	48.8
12	R2	3	0.0	0.009	7.2	LOS A	0.0	0.2	0.22	0.97	48.4
Approach		12	0.0	0.009	7.5	LOS A	0.0	0.2	0.22	0.97	48.6
All Vehicles		372	0.8	0.071	5.4	NA	0.1	0.8	0.05	0.51	78.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

MOVEMENT SUMMARY

Site: 101 [2017_AM_Existing Saturday_Murramarang Road / Bawley Point Road]

Murramarang Road / Bawley Point Road
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Road											
1	L2	98	4.1	0.059	4.6	LOS A	0.0	0.0	0.00	0.49	46.8
2	T1	9	0.0	0.059	0.0	LOS A	0.0	0.0	0.00	0.49	47.3
Approach		107	3.7	0.059	4.2	NA	0.0	0.0	0.00	0.49	46.8
North: Johnston Street											
8	T1	6	0.0	0.005	0.1	LOS A	0.0	0.2	0.17	0.23	48.2
9	R2	5	0.0	0.005	4.8	LOS A	0.0	0.2	0.17	0.23	47.5
Approach		11	0.0	0.005	2.3	NA	0.0	0.2	0.17	0.23	47.8
West: Bawley Point Road											
10	L2	3	0.0	0.002	7.5	LOS A	0.0	0.0	0.04	0.97	45.0
12	R2	58	1.7	0.035	7.1	LOS A	0.1	0.6	0.10	0.94	44.8
Approach		61	1.6	0.035	7.1	LOS A	0.1	0.6	0.09	0.94	44.8
All Vehicles		179	2.8	0.059	5.1	NA	0.1	0.6	0.04	0.62	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

MOVEMENT SUMMARY

Site: 101 [2017_PM_Existing Saturday_Murramarang Road / Bawley Point Road]

Murramarang Road / Bawley Point Road
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Road											
1	L2	52	0.0	0.030	4.6	LOS A	0.0	0.0	0.00	0.49	46.8
2	T1	4	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.49	47.3
Approach		56	0.0	0.030	4.2	NA	0.0	0.0	0.00	0.49	46.9
North: Johnston Street											
8	T1	6	0.0	0.005	0.1	LOS A	0.0	0.1	0.11	0.21	48.5
9	R2	4	0.0	0.005	4.7	LOS A	0.0	0.1	0.11	0.21	47.8
Approach		10	0.0	0.005	1.9	NA	0.0	0.1	0.11	0.21	48.2
West: Bawley Point Road											
10	L2	6	0.0	0.003	7.4	LOS A	0.0	0.1	0.02	0.98	45.0
12	R2	52	1.9	0.031	7.1	LOS A	0.1	0.6	0.07	0.95	44.8
Approach		58	1.7	0.031	7.1	LOS A	0.1	0.6	0.06	0.96	44.8
All Vehicles		124	0.8	0.031	5.4	NA	0.1	0.6	0.04	0.69	46.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

MOVEMENT SUMMARY

Site: 1 [2017_AM_Existing Saturday_Forster Dr/Murramarang RD]

Forster Dr/Murramarang Rd
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Rd											
1	L2	14	0.0	0.045	4.6	LOS A	0.0	0.0	0.00	0.09	49.0
2	T1	73	1.4	0.045	0.0	LOS A	0.0	0.0	0.00	0.09	49.5
Approach		87	1.1	0.045	0.7	NA	0.0	0.0	0.00	0.09	49.4
North: Murramarang Rd											
8	T1	91	1.1	0.049	0.0	LOS A	0.0	0.2	0.02	0.03	49.8
9	R2	5	0.0	0.049	4.8	LOS A	0.0	0.2	0.02	0.03	52.3
Approach		96	1.0	0.049	0.3	NA	0.0	0.2	0.02	0.03	49.9
West: Forster Dr											
10	L2	15	0.0	0.017	8.2	LOS A	0.1	0.4	0.15	0.90	48.5
12	R2	13	0.0	0.017	7.6	LOS A	0.1	0.4	0.15	0.90	48.0
Approach		28	0.0	0.017	8.0	LOS A	0.1	0.4	0.15	0.90	48.2
All Vehicles		211	0.9	0.049	1.5	NA	0.1	0.4	0.03	0.17	49.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

MOVEMENT SUMMARY

Site: 1 [2017_PM_Existing Saturday_Forster Dr/Murramarang RD]

Forster Dr/Murramarang Rd
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Rd											
1	L2	2	0.0	0.025	4.6	LOS A	0.0	0.0	0.00	0.02	49.4
2	T1	47	0.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.02	49.9
Approach		49	0.0	0.025	0.2	NA	0.0	0.0	0.00	0.02	49.8
North: Murramarang Rd											
8	T1	56	0.0	0.032	0.0	LOS A	0.0	0.3	0.03	0.06	49.6
9	R2	7	0.0	0.032	4.7	LOS A	0.0	0.3	0.03	0.06	52.1
Approach		63	0.0	0.032	0.5	NA	0.0	0.3	0.03	0.06	49.8
West: Forster Dr											
10	L2	8	0.0	0.005	8.1	LOS A	0.0	0.2	0.12	0.91	48.4
12	R2	1	0.0	0.005	7.5	LOS A	0.0	0.2	0.12	0.91	47.8
Approach		9	0.0	0.005	8.1	LOS A	0.0	0.2	0.12	0.91	48.3
All Vehicles		121	0.0	0.032	1.0	NA	0.0	0.3	0.03	0.11	49.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.

MOVEMENT SUMMARY

Site: 101 [2017_AM_Day -1 Event_Princes Hwy/ Bawley Point Road]

New Site
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Highway											
1	L2	8	12.5	0.073	8.2	LOS A	0.0	0.0	0.00	0.04	81.4
2	T1	123	13.0	0.073	0.0	LOS A	0.0	0.0	0.00	0.04	98.7
3b	R3	43	32.6	0.026	10.2	LOS A	0.1	1.2	0.37	0.61	61.4
Approach		174	17.8	0.073	2.9	NA	0.1	1.2	0.09	0.18	85.0
SouthEast: Bawley Point Road											
21b	L3	19	5.3	0.011	10.9	LOS A	0.0	0.0	0.00	1.00	69.3
21a	L1	9	0.0	0.101	12.1	LOS A	0.3	2.1	0.33	1.03	50.1
23a	R1	87	9.2	0.101	11.0	LOS A	0.3	2.1	0.33	1.03	68.4
Approach		115	7.8	0.101	11.1	LOS A	0.3	2.1	0.28	1.03	66.7
North: Princes Highway											
7a	L1	68	20.6	0.041	7.6	LOS A	0.0	0.0	0.00	0.66	67.9
8	T1	166	7.8	0.090	7.2	LOS A	0.0	0.0	0.00	0.66	72.3
9	R2	1	0.0	0.090	7.4	LOS A	0.0	0.0	0.00	0.66	75.3
Approach		235	11.5	0.090	7.4	NA	0.0	0.0	0.00	0.66	71.0
West: BP Access											
10	L2	4	25.0	0.006	8.0	LOS A	0.0	0.2	0.23	0.94	44.4
12a	R1	2	0.0	0.006	8.1	LOS A	0.0	0.2	0.23	0.94	48.2
12	R2	2	0.0	0.006	7.4	LOS A	0.0	0.2	0.23	0.94	48.0
Approach		8	12.5	0.006	7.9	LOS A	0.0	0.2	0.23	0.94	46.2
All Vehicles		532	12.8	0.101	6.7	NA	0.3	2.1	0.09	0.59	73.3

MOVEMENT SUMMARY

Site: 101 [2017_AM_Day -1 Event_Murramarang Road / Bawley Point Road]

Murramarang Road / Bawley Point Road
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Road											
1	L2	102	9.8	0.059	4.7	LOS A	0.0	0.0	0.00	0.52	46.5
2	T1	1	0.0	0.059	0.0	LOS A	0.0	0.0	0.00	0.52	47.1
Approach		103	9.7	0.059	4.6	NA	0.0	0.0	0.00	0.52	46.5
North: Johnston Street											
8	T1	1	0.0	0.001	0.2	LOS A	0.0	0.0	0.18	0.25	48.0
9	R2	1	0.0	0.001	4.8	LOS A	0.0	0.0	0.18	0.25	47.3
Approach		2	0.0	0.001	2.5	NA	0.0	0.0	0.18	0.25	47.7
West: Bawley Point Road											
10	L2	1	0.0	0.001	7.4	LOS A	0.0	0.0	0.01	0.99	45.0
12	R2	113	24.8	0.076	7.9	LOS A	0.2	1.7	0.09	0.99	44.5
Approach		114	24.6	0.076	7.9	LOS A	0.2	1.7	0.09	0.99	44.5
All Vehicles		219	17.4	0.076	6.3	NA	0.2	1.7	0.05	0.76	45.4

MOVEMENT SUMMARY

Site: 1 [2017_AM_Day -1 Event_Forster Dr/Murramarang RD]

Forster Dr/Murramarang Rd
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Rd											
1	L2	4	0.0	0.033	4.6	LOS A	0.0	0.0	0.00	0.04	49.3
2	T1	58	3.4	0.033	0.0	LOS A	0.0	0.0	0.00	0.04	49.8
Approach		62	3.2	0.033	0.3	NA	0.0	0.0	0.00	0.04	49.8
North: Murramarang Rd											
8	T1	67	4.5	0.076	0.1	LOS A	0.4	2.8	0.16	0.28	48.2
9	R2	74	24.3	0.076	5.0	LOS A	0.4	2.8	0.16	0.28	49.5
Approach		141	14.9	0.076	2.7	NA	0.4	2.8	0.16	0.28	48.9
West: Forster Dr											
10	L2	15	13.3	0.011	8.8	LOS A	0.0	0.4	0.14	0.92	48.2
12	R2	3	0.0	0.011	7.7	LOS A	0.0	0.4	0.14	0.92	47.9
Approach		18	11.1	0.011	8.6	LOS A	0.0	0.4	0.14	0.92	48.1
All Vehicles		221	11.3	0.076	2.5	NA	0.4	2.8	0.11	0.26	49.1

MOVEMENT SUMMARY

Site: 101 [2017_PM_Day -1 Event_Princes Hwy/ Bawley Point Road]

New Site
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Highway											
1	L2	3	0.0	0.075	7.8	LOS A	0.0	0.0	0.00	0.01	88.2
2	T1	138	6.5	0.075	0.0	LOS A	0.0	0.0	0.00	0.01	99.5
3b	R3	43	14.0	0.024	9.6	LOS A	0.1	1.0	0.37	0.61	66.9
Approach		184	8.2	0.075	2.4	NA	0.1	1.0	0.09	0.15	89.1
SouthEast: Bawley Point Road											
21b	L3	14	0.0	0.008	10.6	LOS A	0.0	0.0	0.00	1.00	71.7
21a	L1	9	0.0	0.070	11.9	LOS A	0.2	1.5	0.33	1.03	50.1
23a	R1	56	12.5	0.070	11.2	LOS A	0.2	1.5	0.33	1.03	67.4
Approach		79	8.9	0.070	11.2	LOS A	0.2	1.5	0.27	1.02	65.5
North: Princes Highway											
7a	L1	116	10.3	0.065	7.4	LOS A	0.0	0.0	0.00	0.66	71.3
8	T1	136	12.5	0.075	7.4	LOS A	0.0	0.0	0.00	0.66	70.7
9	R2	1	0.0	0.075	7.4	LOS A	0.0	0.0	0.00	0.66	75.3
Approach		253	11.5	0.075	7.4	NA	0.0	0.0	0.00	0.66	71.0
West: BP Access											
10	L2	1	0.0	0.013	7.1	LOS A	0.0	0.3	0.28	0.96	48.0
12a	R1	6	0.0	0.013	8.1	LOS A	0.0	0.3	0.28	0.96	48.2
12	R2	7	14.3	0.013	7.9	LOS A	0.0	0.3	0.28	0.96	45.8
Approach		14	7.1	0.013	8.0	LOS A	0.0	0.3	0.28	0.96	46.9
All Vehicles		530	9.8	0.075	6.2	NA	0.2	1.5	0.08	0.55	74.3

MOVEMENT SUMMARY

Site: 101 [2017_PM_Day -1 Event_Murramarang Road / Bawley Point Road]

Murramarang Road / Bawley Point Road
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Road											
1	L2	71	7.0	0.044	4.6	LOS A	0.0	0.0	0.00	0.48	46.8
2	T1	7	0.0	0.044	0.0	LOS A	0.0	0.0	0.00	0.48	47.3
Approach		78	6.4	0.044	4.2	NA	0.0	0.0	0.00	0.48	46.8
North: Johnston Street											
8	T1	5	0.0	0.005	0.1	LOS A	0.0	0.1	0.15	0.25	48.1
9	R2	5	0.0	0.005	4.7	LOS A	0.0	0.1	0.15	0.25	47.4
Approach		10	0.0	0.005	2.4	NA	0.0	0.1	0.15	0.25	47.7
West: Bawley Point Road											
10	L2	1	0.0	0.001	7.4	LOS A	0.0	0.0	0.03	0.97	45.0
12	R2	157	10.8	0.099	7.4	LOS A	0.3	2.1	0.09	0.96	44.7
Approach		158	10.8	0.099	7.4	LOS A	0.3	2.1	0.09	0.96	44.7
All Vehicles		246	8.9	0.099	6.2	NA	0.3	2.1	0.06	0.78	45.5

MOVEMENT SUMMARY

Site: 1 [2017_PM_Day -1 Event_Forster Dr/Murramarang RD]

Forster Dr/Murramarang Rd
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Rd											
1	L2	3	0.0	0.035	4.6	LOS A	0.0	0.0	0.00	0.02	49.4
2	T1	64	4.7	0.035	0.0	LOS A	0.0	0.0	0.00	0.02	49.8
Approach		67	4.5	0.035	0.2	NA	0.0	0.0	0.00	0.02	49.8
North: Murramarang Rd											
8	T1	62	1.6	0.039	0.0	LOS A	0.1	0.5	0.07	0.10	49.3
9	R2	13	15.4	0.039	4.9	LOS A	0.1	0.5	0.07	0.10	51.2
Approach		75	4.0	0.039	0.9	NA	0.1	0.5	0.07	0.10	49.6
West: Forster Dr											
10	L2	23	8.7	0.017	8.6	LOS A	0.1	0.5	0.15	0.91	48.2
12	R2	5	0.0	0.017	7.6	LOS A	0.1	0.5	0.15	0.91	47.9
Approach		28	7.1	0.017	8.4	LOS A	0.1	0.5	0.15	0.91	48.2
All Vehicles		170	4.7	0.039	1.9	NA	0.1	0.5	0.05	0.20	49.5

MOVEMENT SUMMARY

Site: 101 [2017_AM_Day 4 Event_Murramarang Road / Bawley Point Road]

Murramarang Road / Bawley Point Road
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Road											
1	L2	193	4.1	0.112	4.6	LOS A	0.0	0.0	0.00	0.50	46.7
2	T1	9	0.0	0.112	0.0	LOS A	0.0	0.0	0.00	0.50	47.2
Approach		202	4.0	0.112	4.4	NA	0.0	0.0	0.00	0.50	46.7
North: Johnston Street											
8	T1	6	0.0	0.006	0.3	LOS A	0.0	0.2	0.25	0.23	48.0
9	R2	5	0.0	0.006	5.0	LOS A	0.0	0.2	0.25	0.23	47.3
Approach		11	0.0	0.006	2.4	NA	0.0	0.2	0.25	0.23	47.6
West: Bawley Point Road											
10	L2	3	0.0	0.002	7.5	LOS A	0.0	0.0	0.04	0.97	45.0
12	R2	58	1.7	0.036	7.2	LOS A	0.1	0.7	0.13	0.93	44.8
Approach		61	1.6	0.036	7.2	LOS A	0.1	0.7	0.13	0.93	44.8
All Vehicles		274	3.3	0.112	4.9	NA	0.1	0.7	0.04	0.59	46.3

MOVEMENT SUMMARY

Site: 1 [2017_AM_Day 4 Event_Forster Dr/Murramarang RD]

Forster Dr/Murramarang Rd
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Rd											
1	L2	14	0.0	0.045	4.6	LOS A	0.0	0.0	0.00	0.09	49.0
2	T1	73	1.4	0.045	0.0	LOS A	0.0	0.0	0.00	0.09	49.5
Approach		87	1.1	0.045	0.7	NA	0.0	0.0	0.00	0.09	49.4
North: Murramarang Rd											
8	T1	91	1.1	0.049	0.0	LOS A	0.0	0.2	0.02	0.03	49.8
9	R2	5	0.0	0.049	4.8	LOS A	0.0	0.2	0.02	0.03	52.3
Approach		96	1.0	0.049	0.3	NA	0.0	0.2	0.02	0.03	49.9
West: Forster Dr											
10	L2	110	3.6	0.075	8.4	LOS A	0.3	2.4	0.17	0.90	48.3
12	R2	13	0.0	0.075	7.7	LOS A	0.3	2.4	0.17	0.90	47.8
Approach		123	3.3	0.075	8.3	LOS A	0.3	2.4	0.17	0.90	48.2
All Vehicles		306	2.0	0.075	3.6	NA	0.3	2.4	0.08	0.40	49.1

MOVEMENT SUMMARY

Site: 101 [2017_PM_Day 4 Event_Princes Hwy/ Bawley Point Road]

New Site
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Highway											
1	L2	4	0.0	0.061	7.8	LOS A	0.0	0.0	0.00	0.02	88.0
2	T1	115	0.9	0.061	0.0	LOS A	0.0	0.0	0.00	0.02	99.2
3b	R3	13	0.0	0.006	8.9	LOS A	0.0	0.2	0.28	0.60	72.8
Approach		132	0.8	0.061	1.1	NA	0.0	0.2	0.03	0.08	95.4
SouthEast: Bawley Point Road											
21b	L3	40	2.5	0.023	10.8	LOS A	0.0	0.0	0.00	1.00	70.2
21a	L1	7	0.0	0.097	11.3	LOS A	0.3	1.9	0.27	1.01	50.4
23a	R1	98	1.0	0.097	10.0	LOS A	0.3	1.9	0.27	1.01	71.6
Approach		145	1.4	0.097	10.3	LOS A	0.3	1.9	0.19	1.01	69.8
North: Princes Highway											
7a	L1	36	0.0	0.019	7.1	LOS A	0.0	0.0	0.00	0.65	76.0
8	T1	137	0.7	0.071	7.1	LOS A	0.0	0.0	0.00	0.65	75.0
9	R2	2	0.0	0.071	7.4	LOS A	0.0	0.0	0.00	0.65	75.3
Approach		175	0.6	0.071	7.1	NA	0.0	0.0	0.00	0.65	75.2
West: BP Access											
10	L2	2	0.0	0.009	7.0	LOS A	0.0	0.2	0.23	0.97	48.4
12a	R1	7	0.0	0.009	7.9	LOS A	0.0	0.2	0.23	0.97	48.8
12	R2	3	0.0	0.009	7.2	LOS A	0.0	0.2	0.23	0.97	48.3
Approach		12	0.0	0.009	7.6	LOS A	0.0	0.2	0.23	0.97	48.6
All Vehicles		464	0.9	0.097	6.4	NA	0.3	1.9	0.07	0.61	76.9

MOVEMENT SUMMARY

Site: 101 [2017_PM_Day 4 Event_Murramarang Road / Bawley Point Road]

Murramarang Road / Bawley Point Road
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Road											
1	L2	147	2.7	0.083	4.6	LOS A	0.0	0.0	0.00	0.51	46.7
2	T1	4	0.0	0.083	0.0	LOS A	0.0	0.0	0.00	0.51	47.1
Approach		151	2.6	0.083	4.5	NA	0.0	0.0	0.00	0.51	46.7
North: Johnston Street											
8	T1	6	0.0	0.005	0.2	LOS A	0.0	0.1	0.19	0.20	48.3
9	R2	4	0.0	0.005	4.9	LOS A	0.0	0.1	0.19	0.20	47.6
Approach		10	0.0	0.005	2.1	NA	0.0	0.1	0.19	0.20	48.0
West: Bawley Point Road											
10	L2	6	0.0	0.003	7.4	LOS A	0.0	0.1	0.02	0.98	45.0
12	R2	52	1.9	0.032	7.1	LOS A	0.1	0.6	0.11	0.93	44.8
Approach		58	1.7	0.032	7.2	LOS A	0.1	0.6	0.10	0.94	44.8
All Vehicles		219	2.3	0.083	5.1	NA	0.1	0.6	0.04	0.61	46.2

MOVEMENT SUMMARY

Site: 1 [2017_PM_Day 4 Event_Forster Dr/Murramarang Rd]

Forster Dr/Murramarang Rd
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Murramarang Rd											
1	L2	2	0.0	0.025	4.6	LOS A	0.0	0.0	0.00	0.02	49.4
2	T1	47	0.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.02	49.9
Approach		49	0.0	0.025	0.2	NA	0.0	0.0	0.00	0.02	49.8
North: Murramarang Rd											
8	T1	56	0.0	0.032	0.0	LOS A	0.0	0.3	0.03	0.06	49.6
9	R2	7	0.0	0.032	4.7	LOS A	0.0	0.3	0.03	0.06	52.1
Approach		63	0.0	0.032	0.5	NA	0.0	0.3	0.03	0.06	49.8
West: Forster Dr											
10	L2	103	3.9	0.061	8.3	LOS A	0.3	2.1	0.13	0.91	48.3
12	R2	1	0.0	0.061	7.6	LOS A	0.3	2.1	0.13	0.91	47.8
Approach		104	3.8	0.061	8.3	LOS A	0.3	2.1	0.13	0.91	48.3
All Vehicles		216	1.9	0.061	4.2	NA	0.3	2.1	0.07	0.46	49.1

Appendix C – AELEC traffic data

Shane Quinn

From: Nick Barnier <nbarnier@ccontrol.com.au>
Sent: Thursday, 17 August 2017 2:41 PM
To: Graham McCabe
Cc: Ross Cleaver
Subject: FW: Traffic Flow Information

Graham,

Please see below from AELEC in Tamworth which is a large equestrian centre holding similar events. However the events they hold are typically for a longer duration.
We may be able to use this to draw upon for our proposal.

Regards,

Nick Barnier
Project Manager

Construction Control
Willinga Park | 132 Forster Drive, Bawley Point 2539
PO Box 750 Canberra ACT 2601
Mobile 0405 692 239
www.ccontrol.com.au

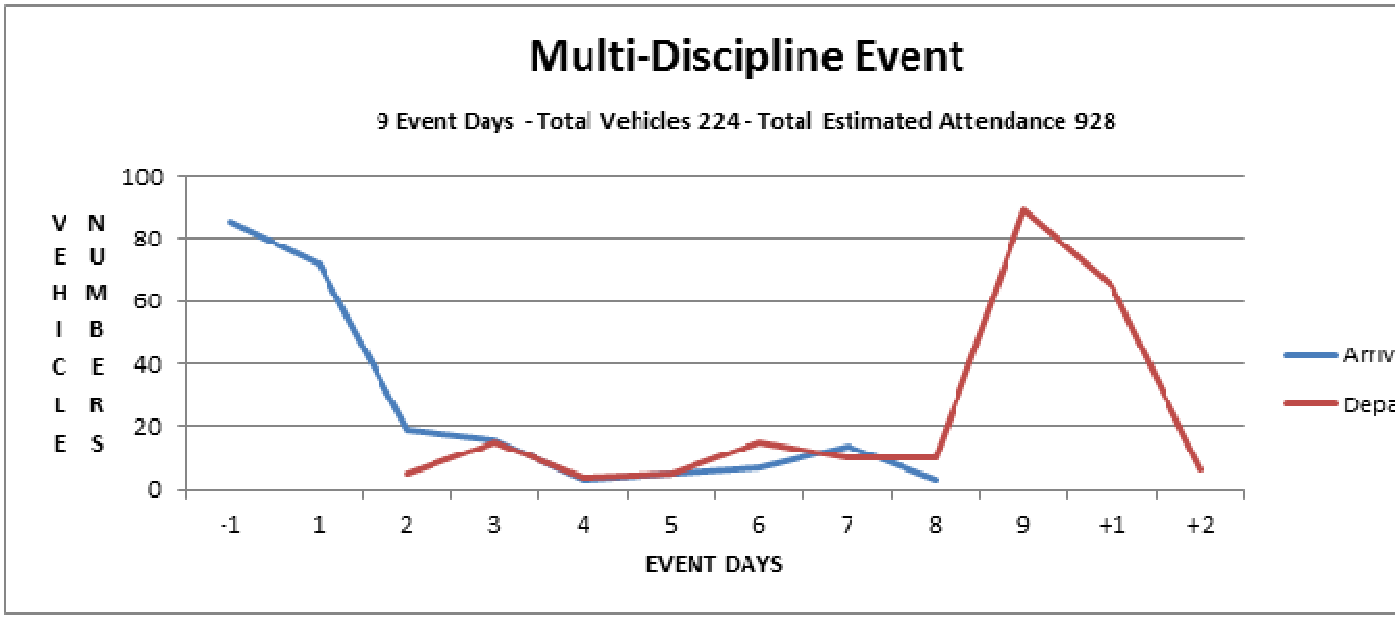
From: Rowland, Mike [mailto:m.rowland@tamworth.nsw.gov.au]
Sent: Wednesday, August 16, 2017 10:56 PM
To: 'tsnow@willinga.com.au' <tsnow@willinga.com.au>
Cc: Nick Barnier <nbarnier@ccontrol.com.au>
Subject: Traffic Flow Information

Hello Terry,

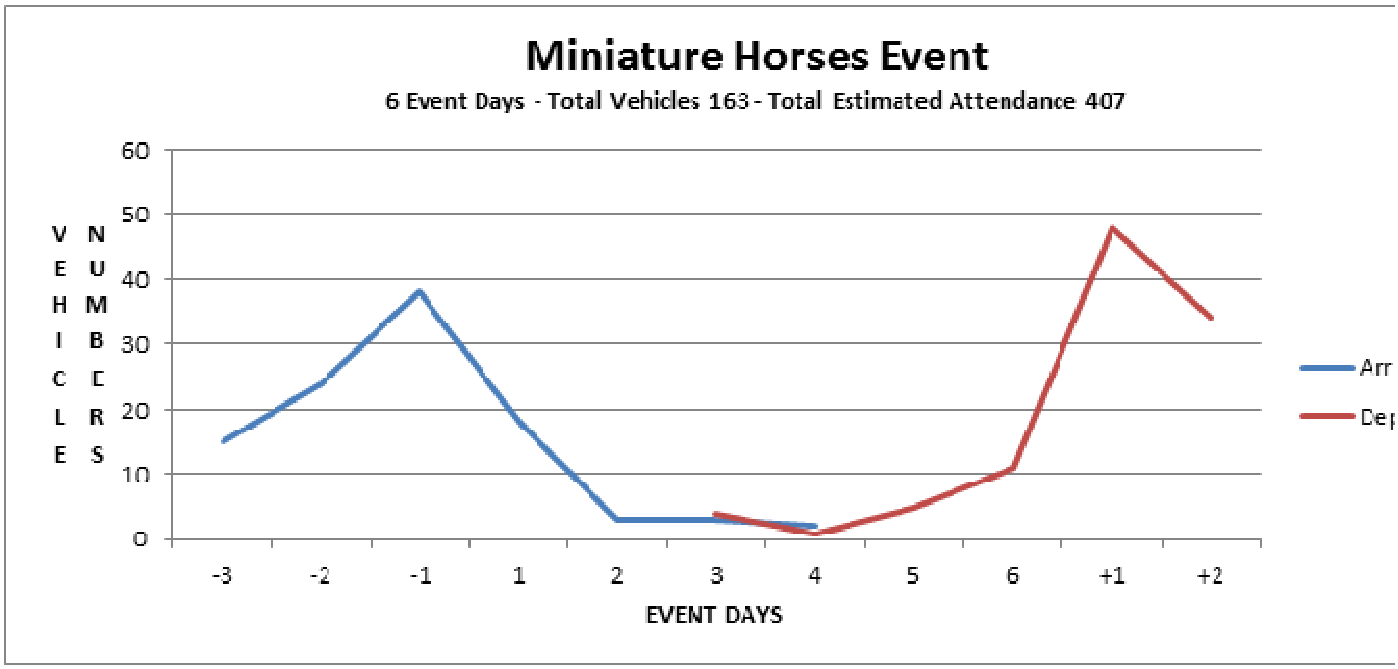
My apologies for the day delay in the promised date to get this information to you. We've provided 4 different examples for your stats. These numbers are based upon booked sites arrival and departure rather than actual gatehouse arrival and departure stats to provide a more accurate picture for you. Whilst this may not capture all competitor traffic, it does provide a suitable snapshot of the traffic movement. The graphs are summarised in Event Days, -1 = a bump in non event day and +1 = a

bump out non event day. Total attendance relates to the total people numbers accommodated in the competitor camping areas and total vehicles is rather obvious!

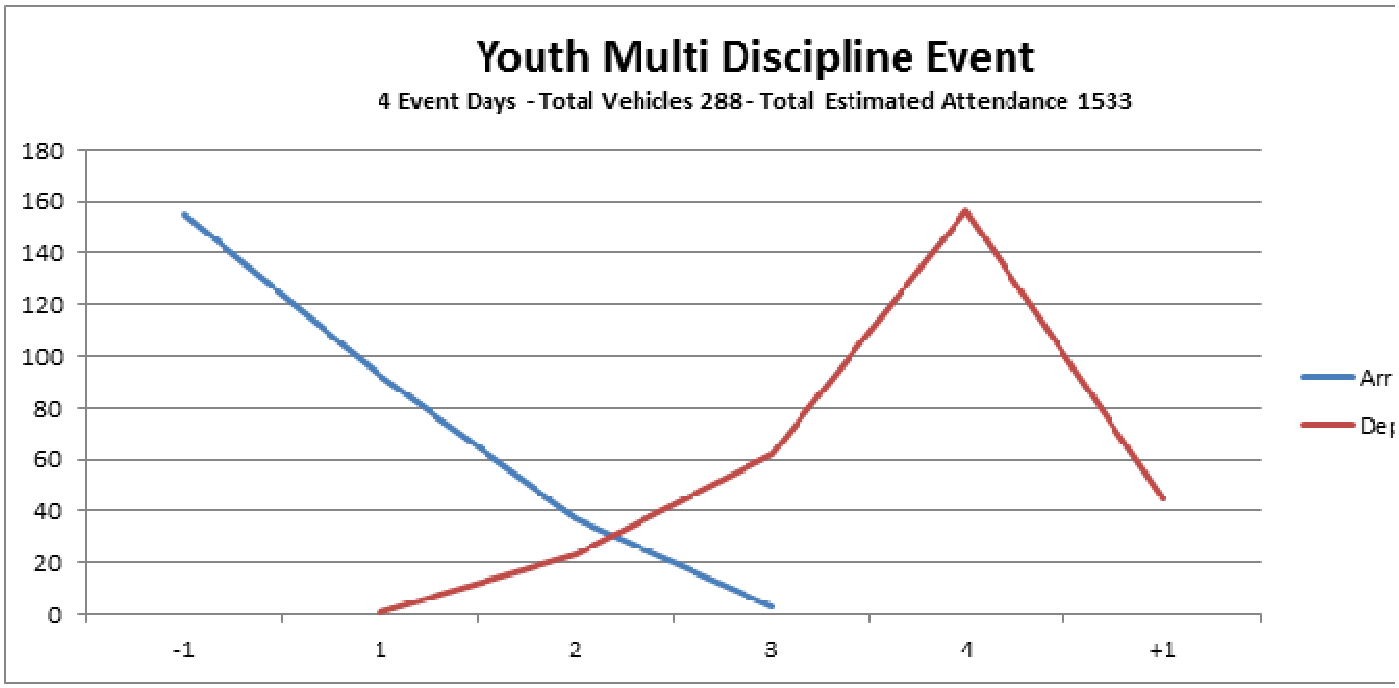
The graph below relates to a multi discipline event held over 9 days with a very restricted bump in period due to our tight time schedule, an additional bump in day which has been available for this event in the past would have seen day 1 arrivals spread over 2 days. In this instance arrivals occurred at an estimate of the following rate: 6am to 11am 25%, 11am to 3pm 30%, little movement between 3 and 5pm, then 5pm to 6am 45% (whilst we have nothing definitive the feel is that the large majority of this group appeared by 10pm).



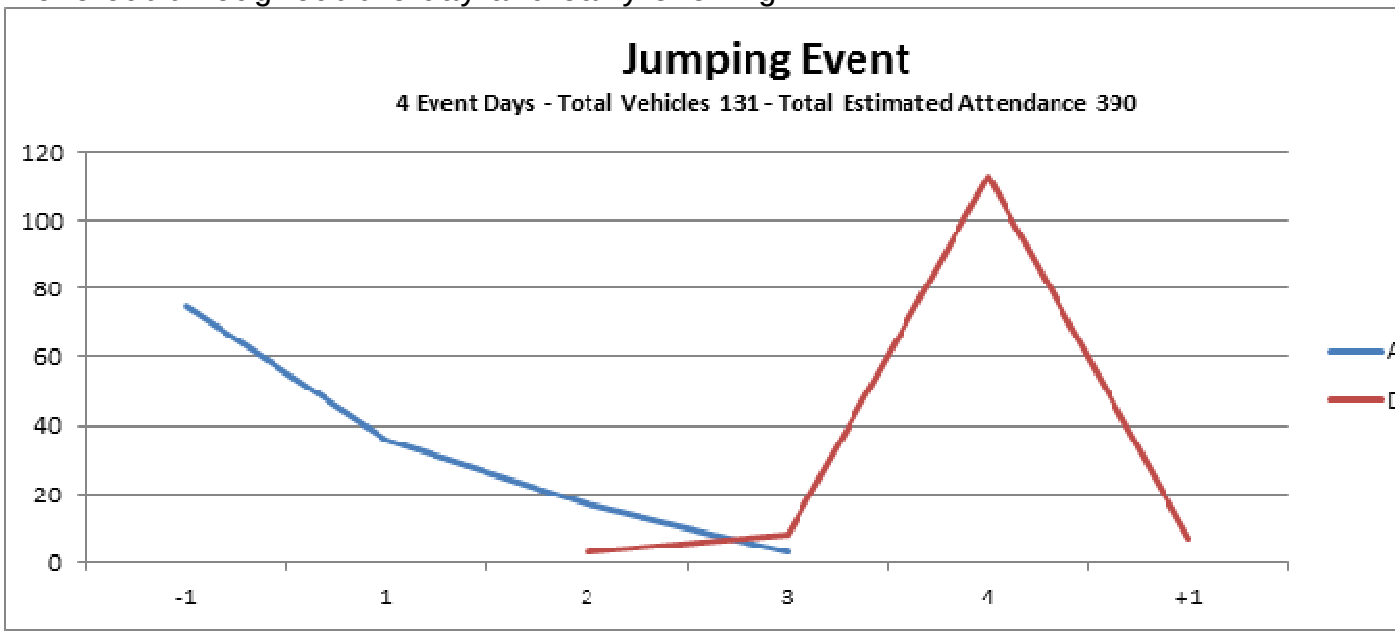
The next graph provides a summary of an event that provided participants with 3 bump in days and whilst this indicates the different arrival trend through additional days, the participant demographic is also very different to the first event.



The following graph is a summary of a youth event, which has higher attendance numbers per vehicle arrival and whilst we had to restrict their bump in period, experience suggests it is unlikely to affect the bump in experience for this group. Arrivals and departures alike tend to occur in a steady stream across much of the day, with this event being in Spring there is little restriction to travel times with horses.



This last graph provides a summary of a jumping event which is very typical of these events regardless of size or event day numbers. Whilst there is an initial arrival peak, arrivals generally occur over a number of days and on the last day of competition there is an exodus. This exodus however does not occur at the same time with traffic movements consistent throughout the day as individuals finish classes, pack up and move out throughout the day and early evening.



Trust this information will assist your immediate needs.

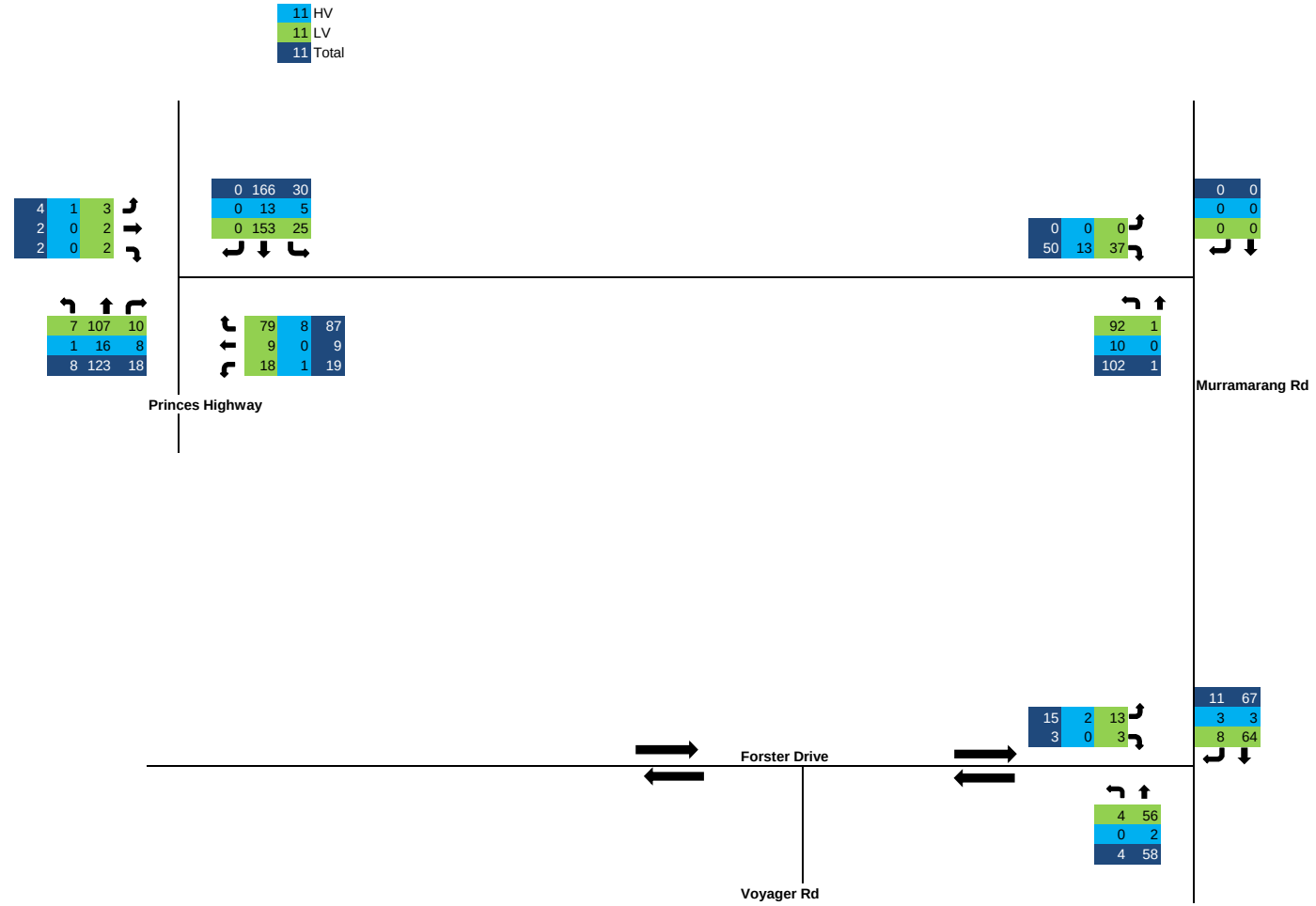
Kind Regards

Mike

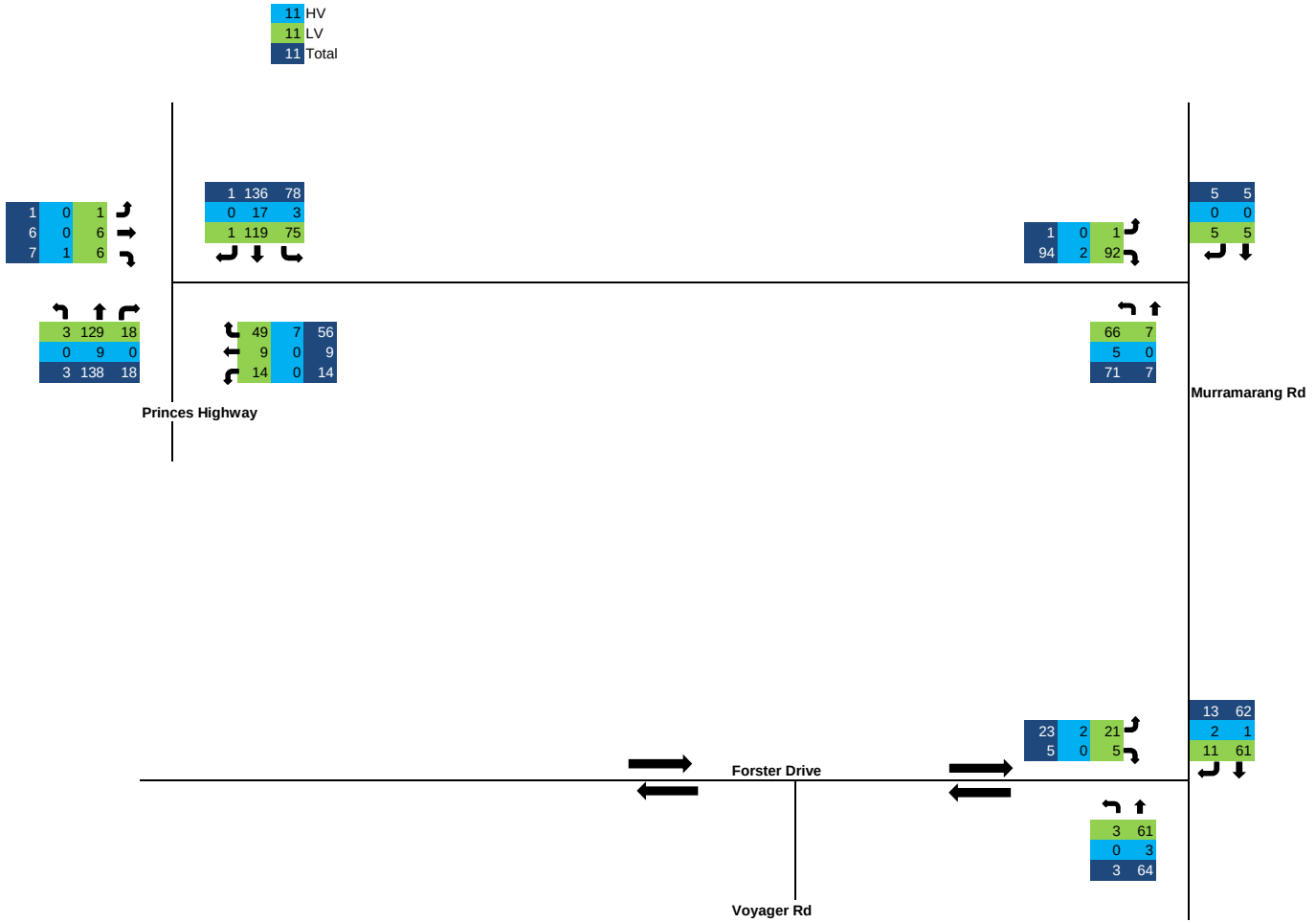
Mike Rowland
Manager
Australian Equine and Livestock Events Centre
Phone: +61 2 6767 5658
Mobile: 0429 671 220
www.aelec.com.au

Appendix D – Traffic volume distribution scenarios

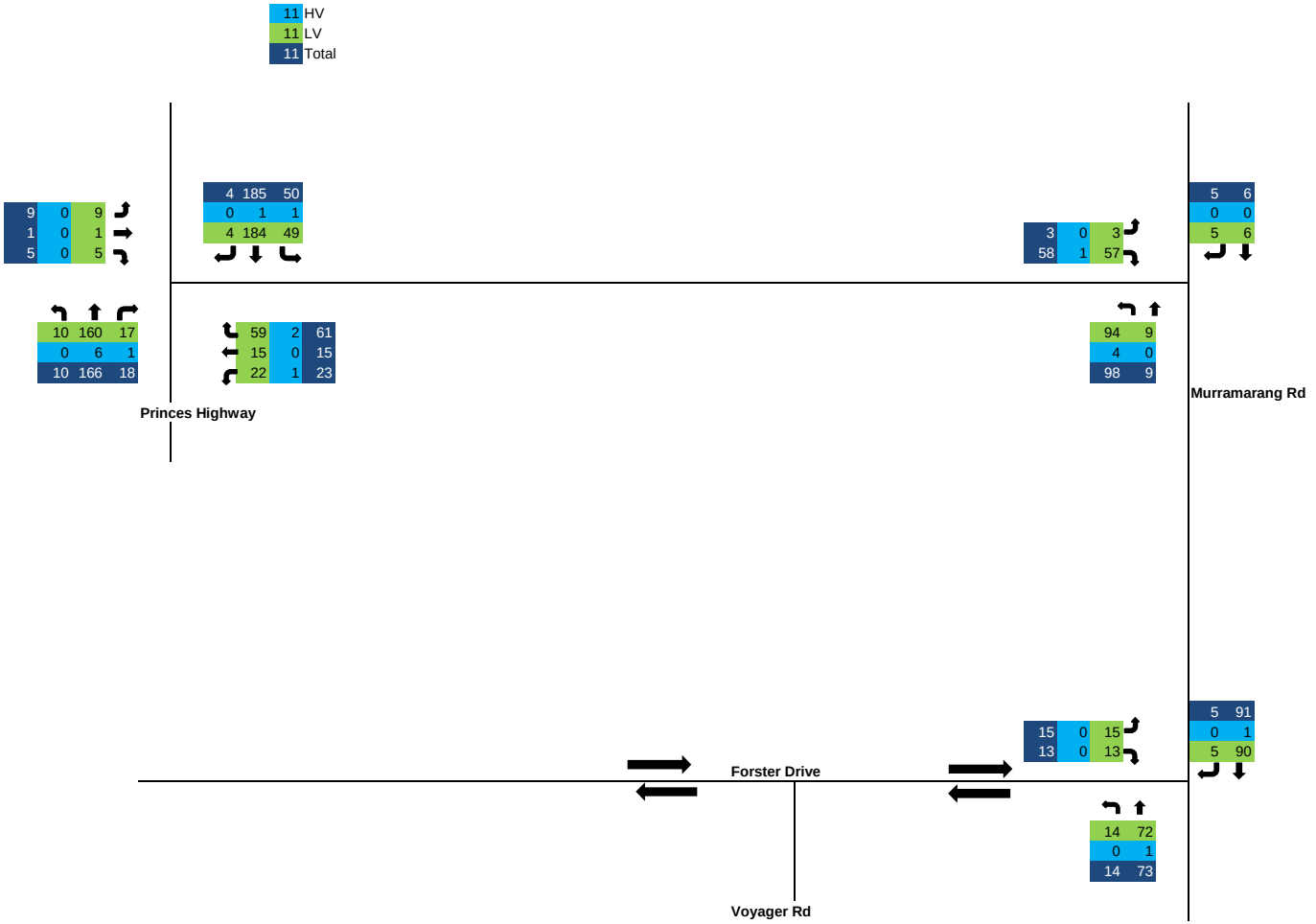
Base Weekday AM



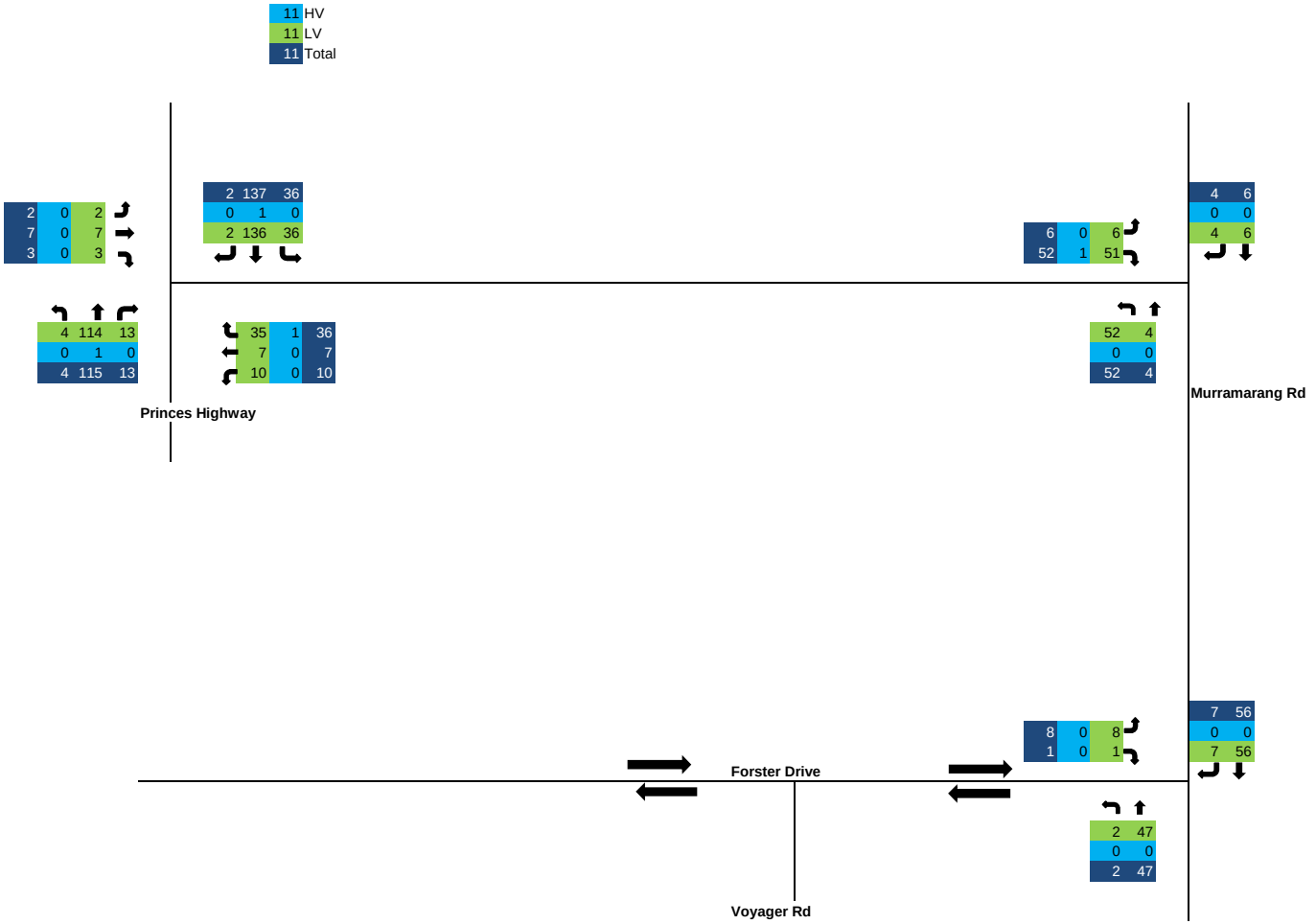
Base Weekday PM



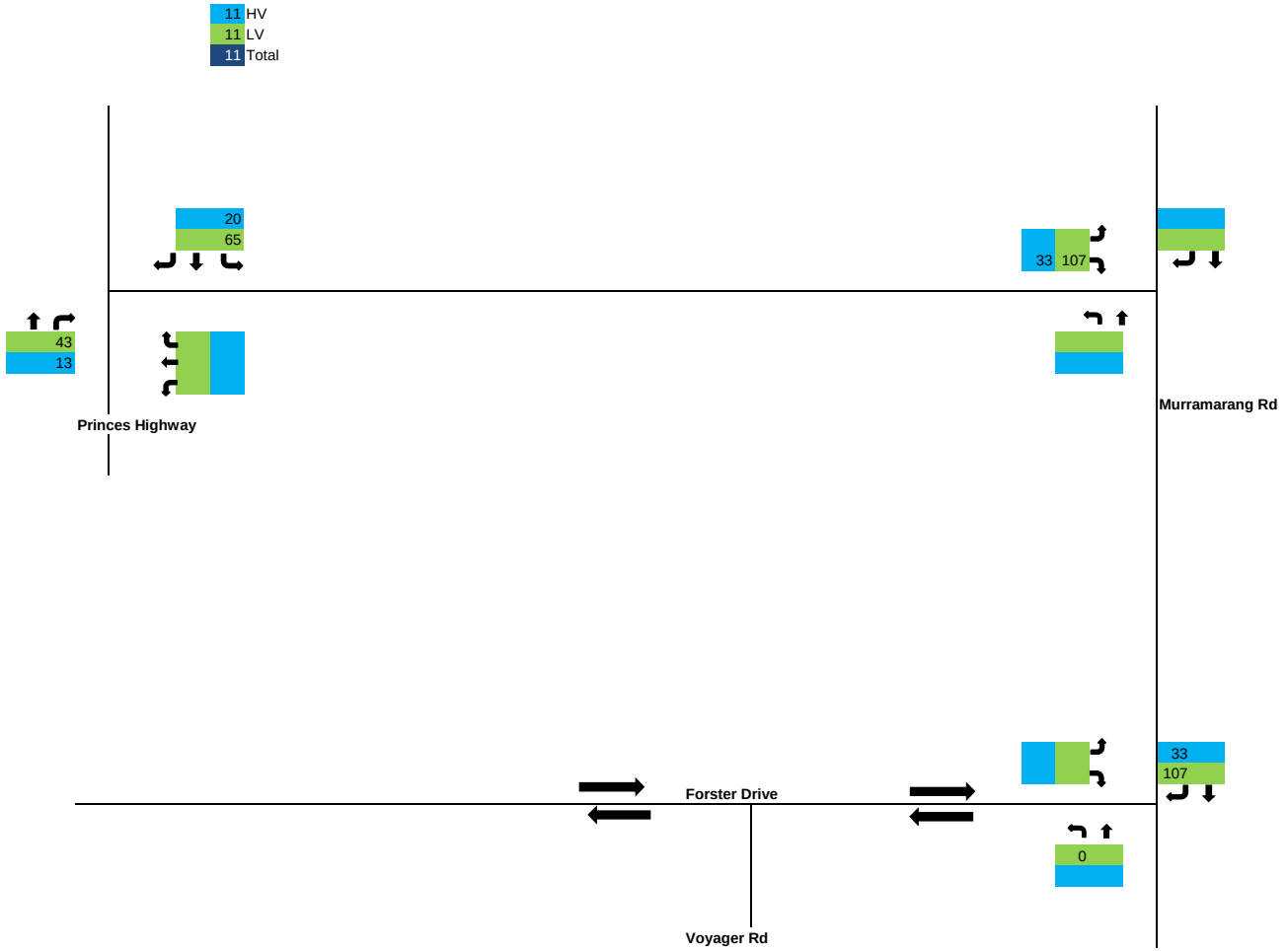
Base Saturday AM



Base Saturday PM

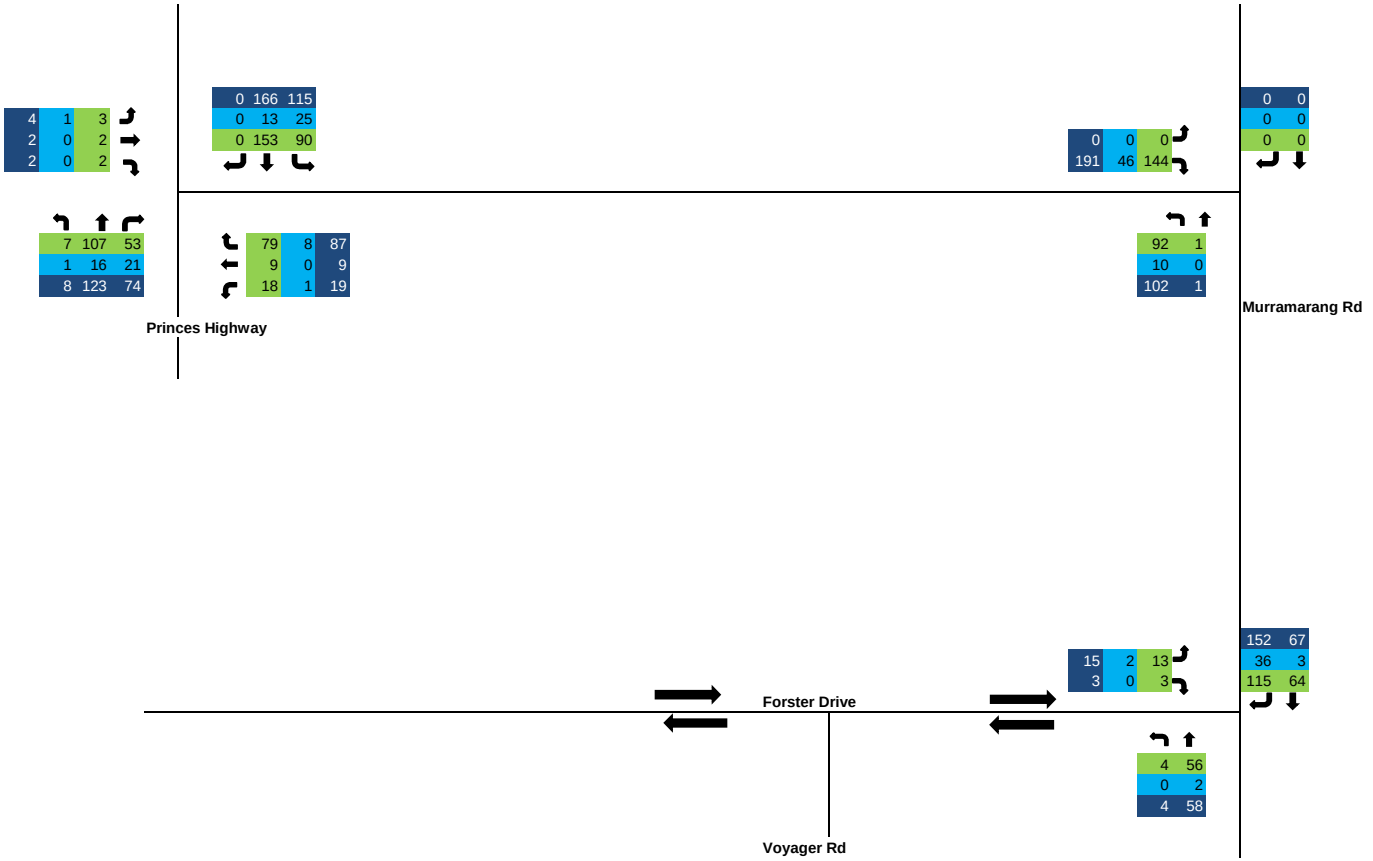


Day -1 Arrival Trip Gen

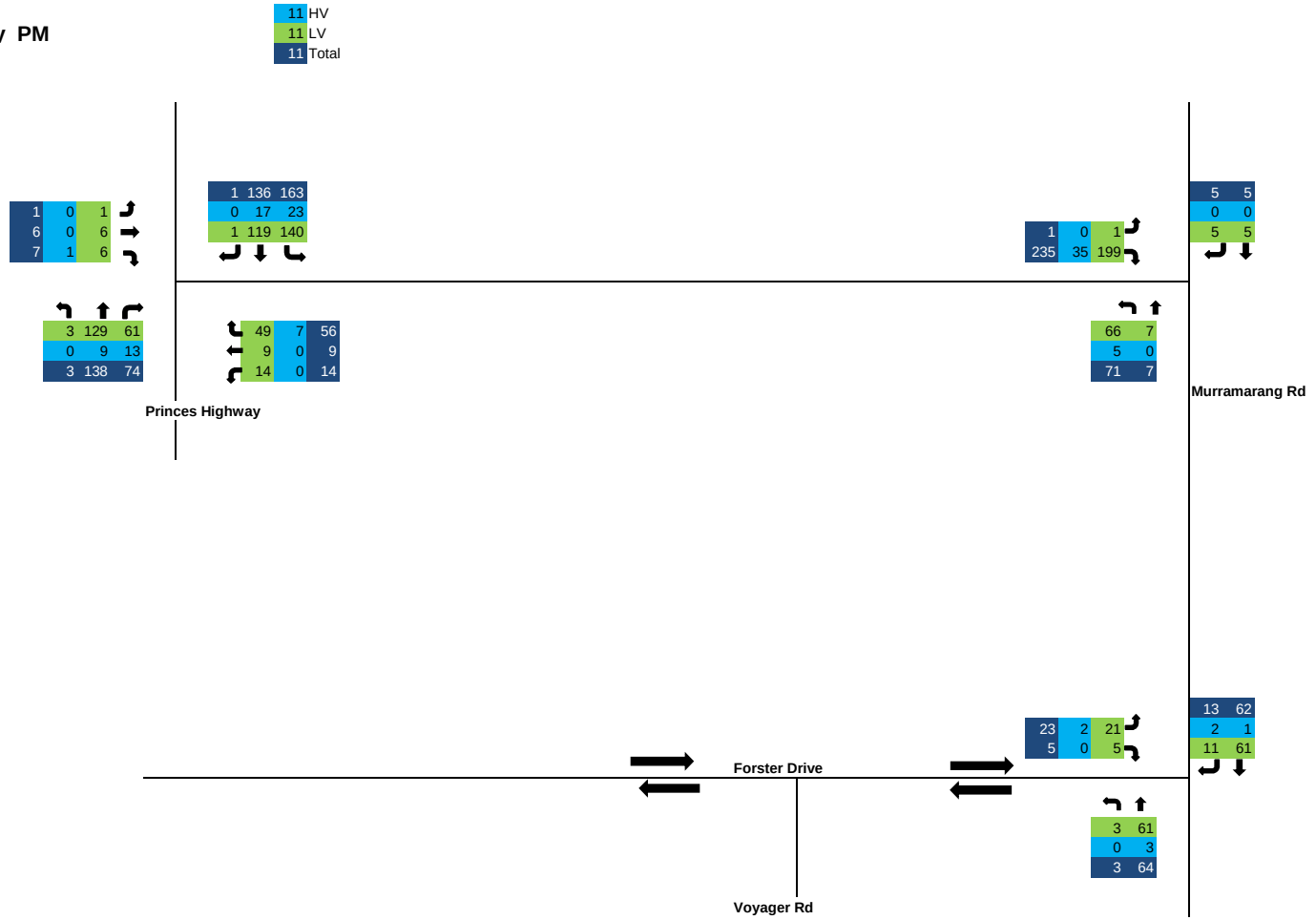


Day -1 DEV Weekday AM

11 HV
11 LV
11 Total

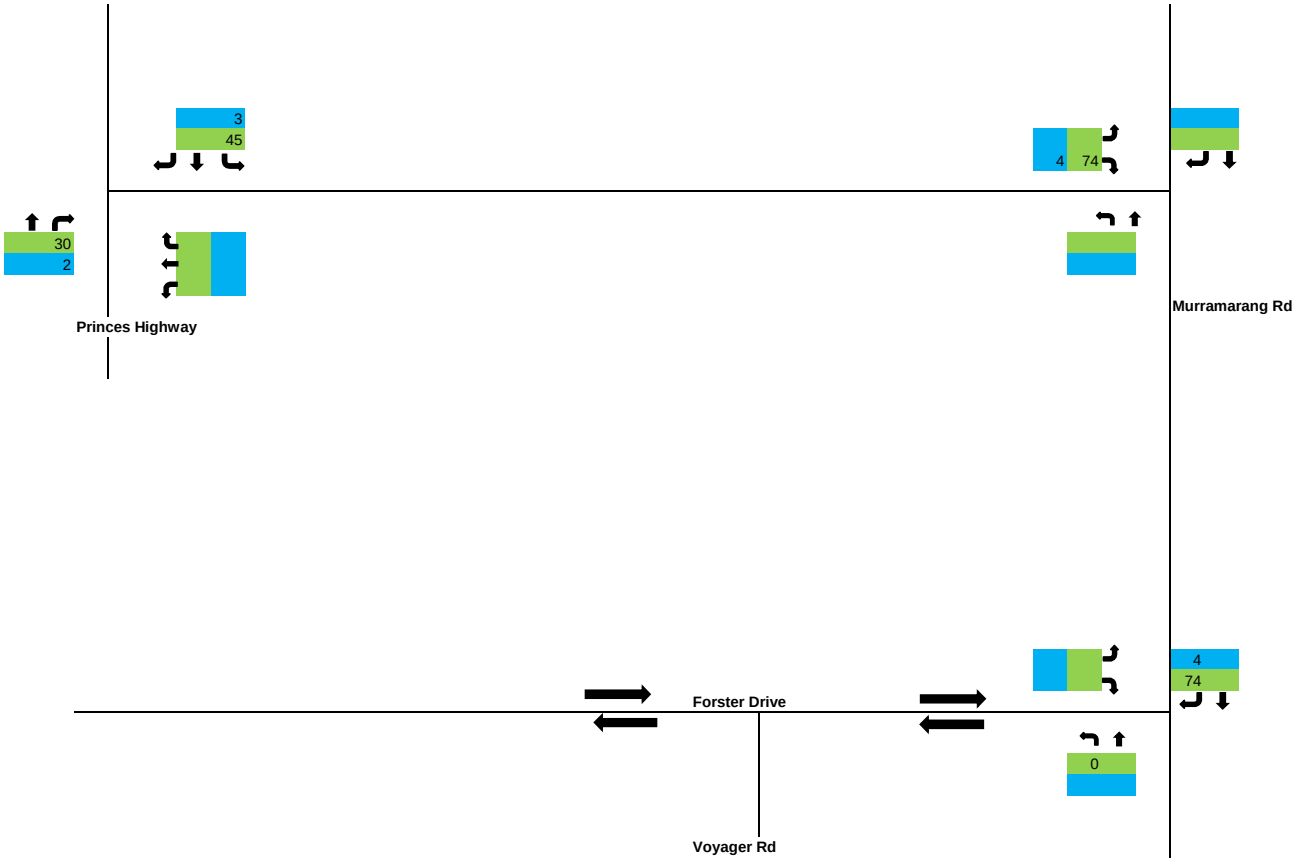


Day -1 DEV Weekday PM

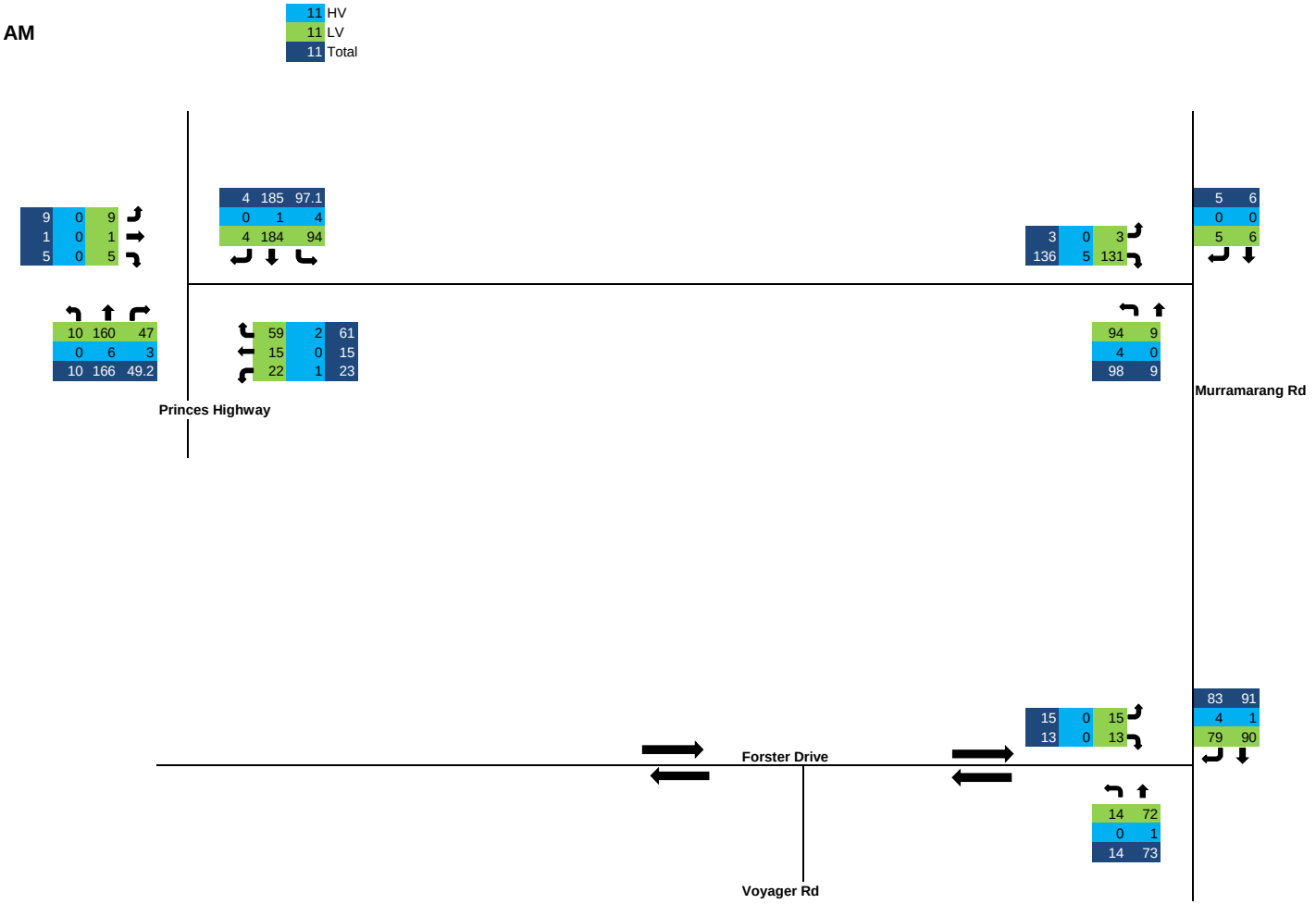


Day 1 Event Arrival Trip Gen

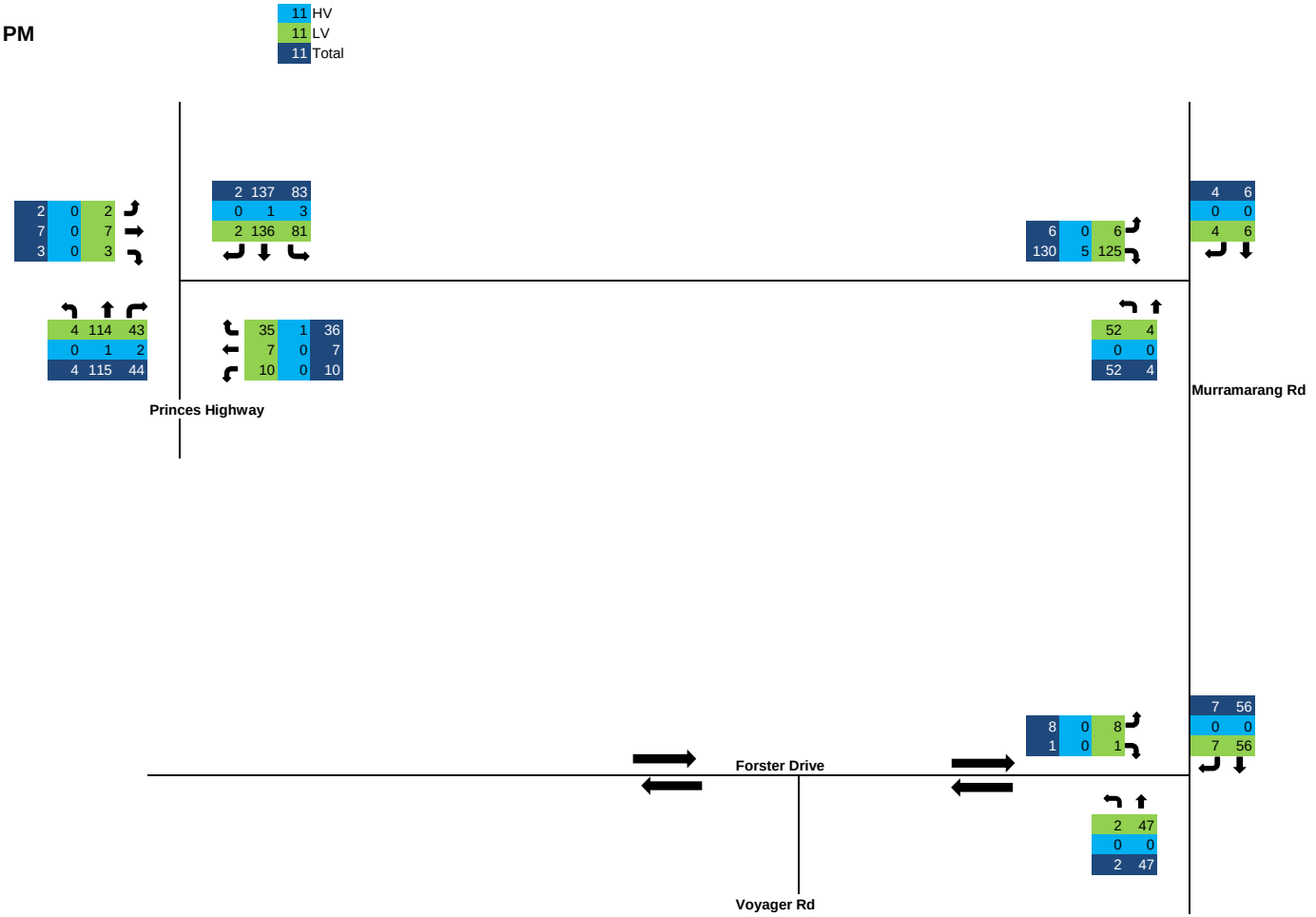
11 HV
11 LV
11 Total



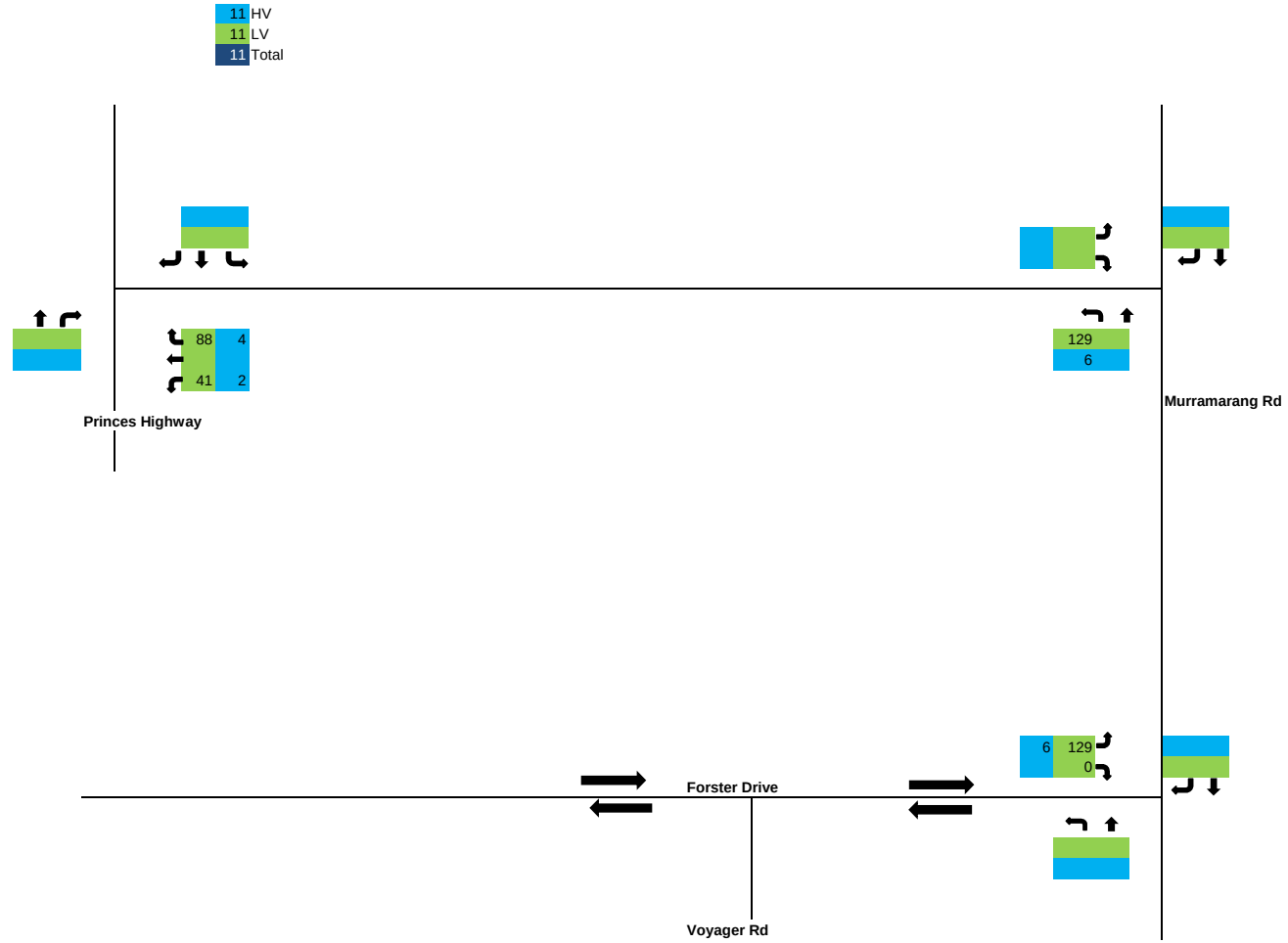
Day 1 Event Arrival AM



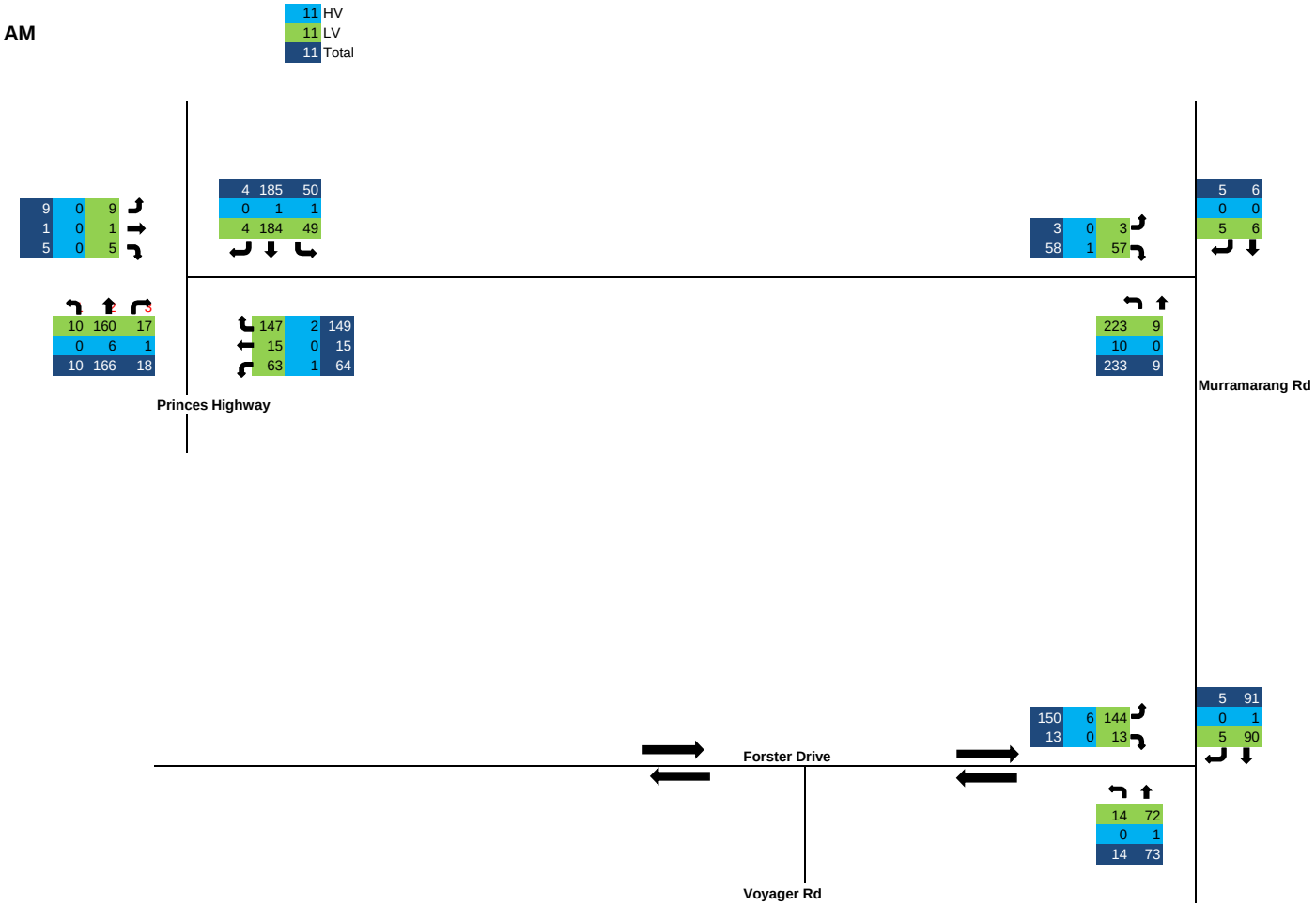
Day 1 Event Arrival PM



Day 4 Departure Trip Gen

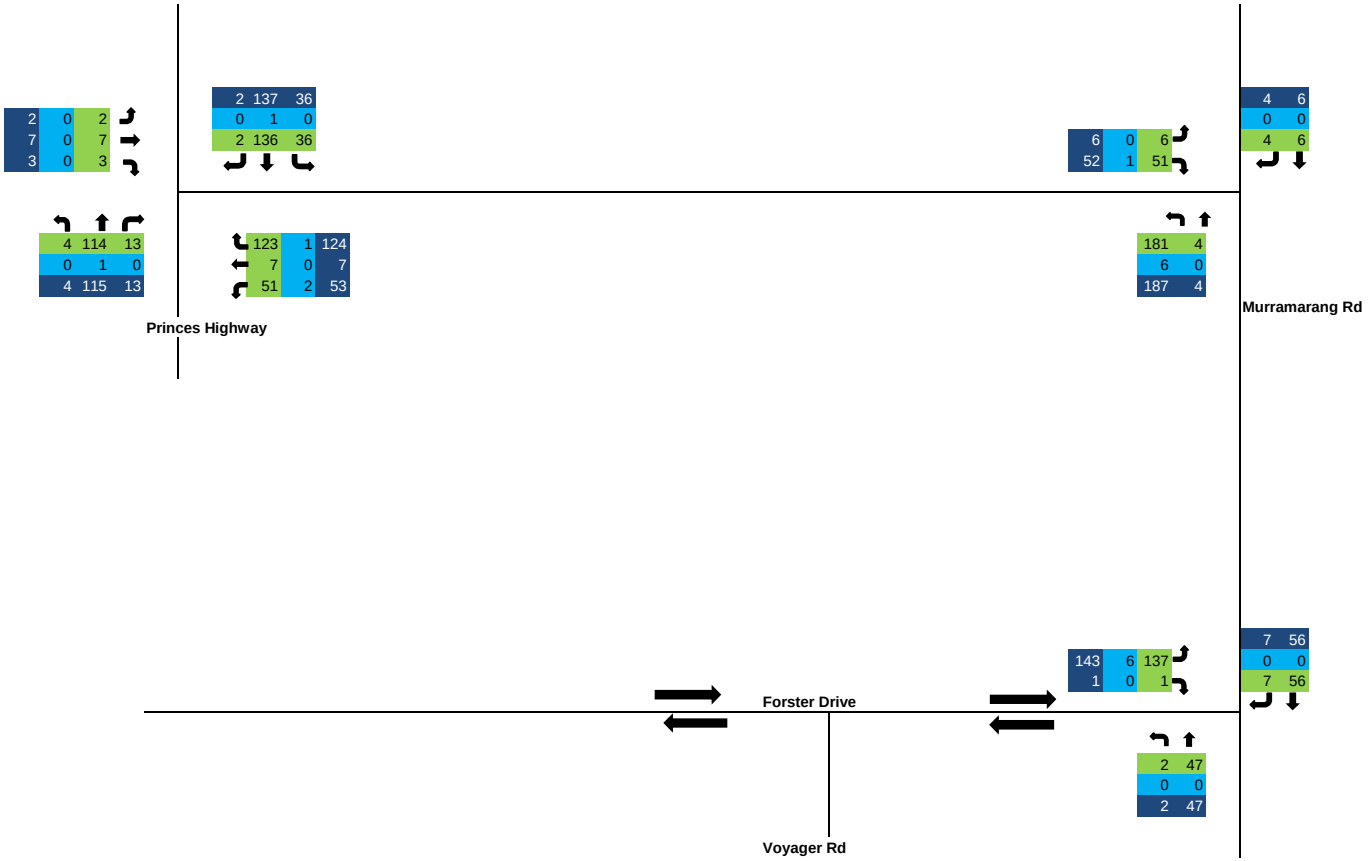


Day 4 Event Depart AM

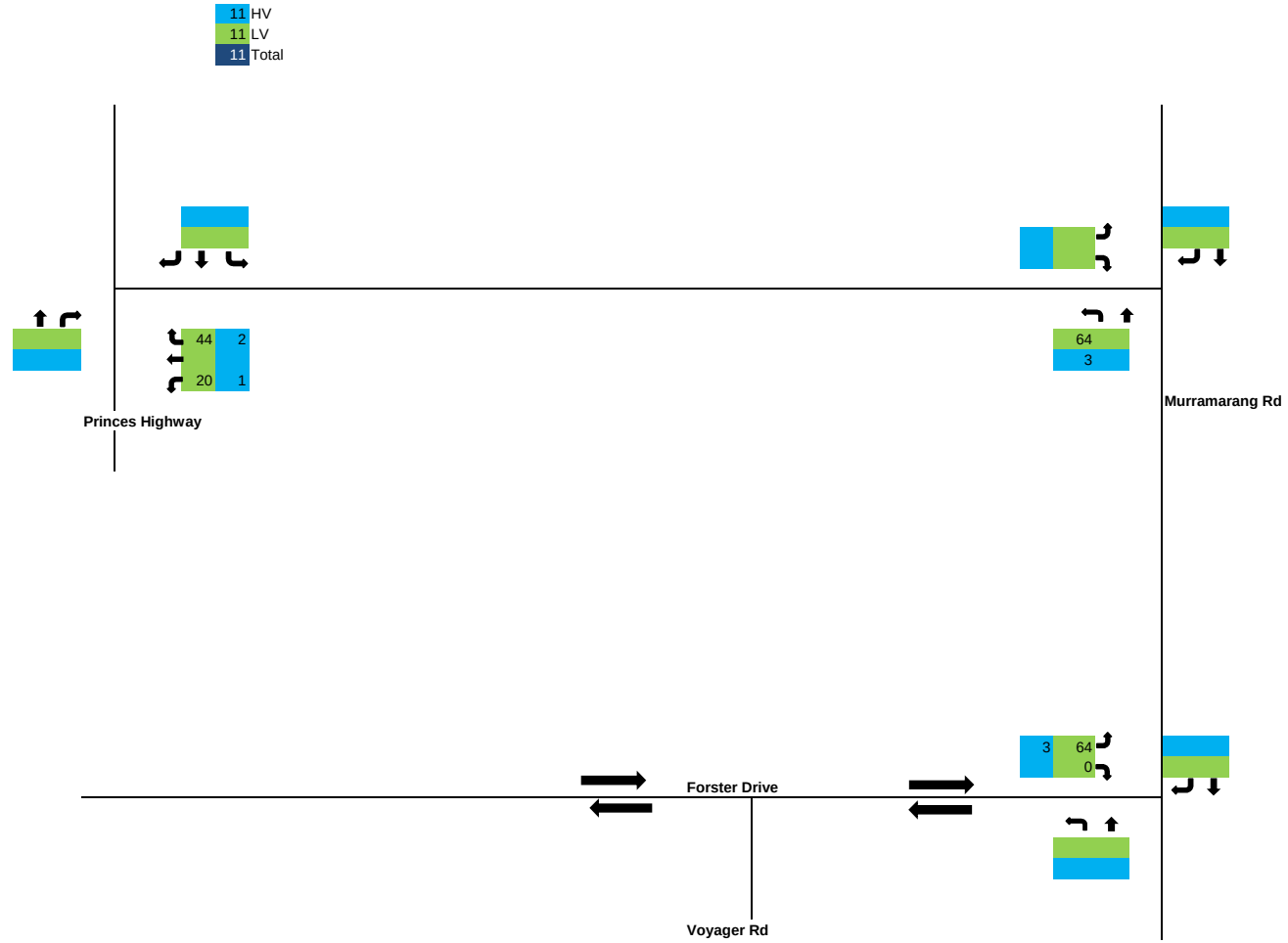


Day 4 Event Depart PM

11 HV
11 LV
11 Total

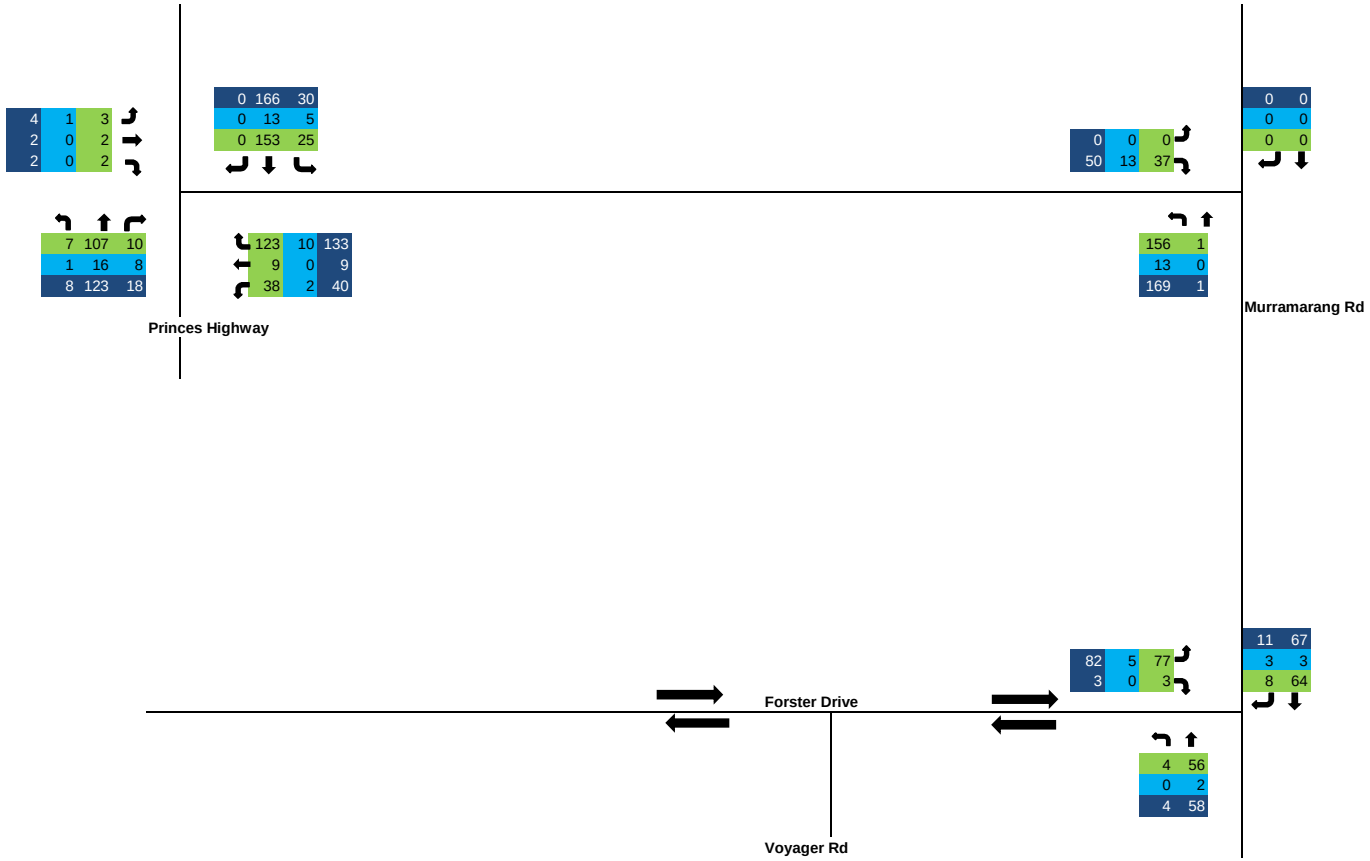


Day +1 Departure Trip Gen

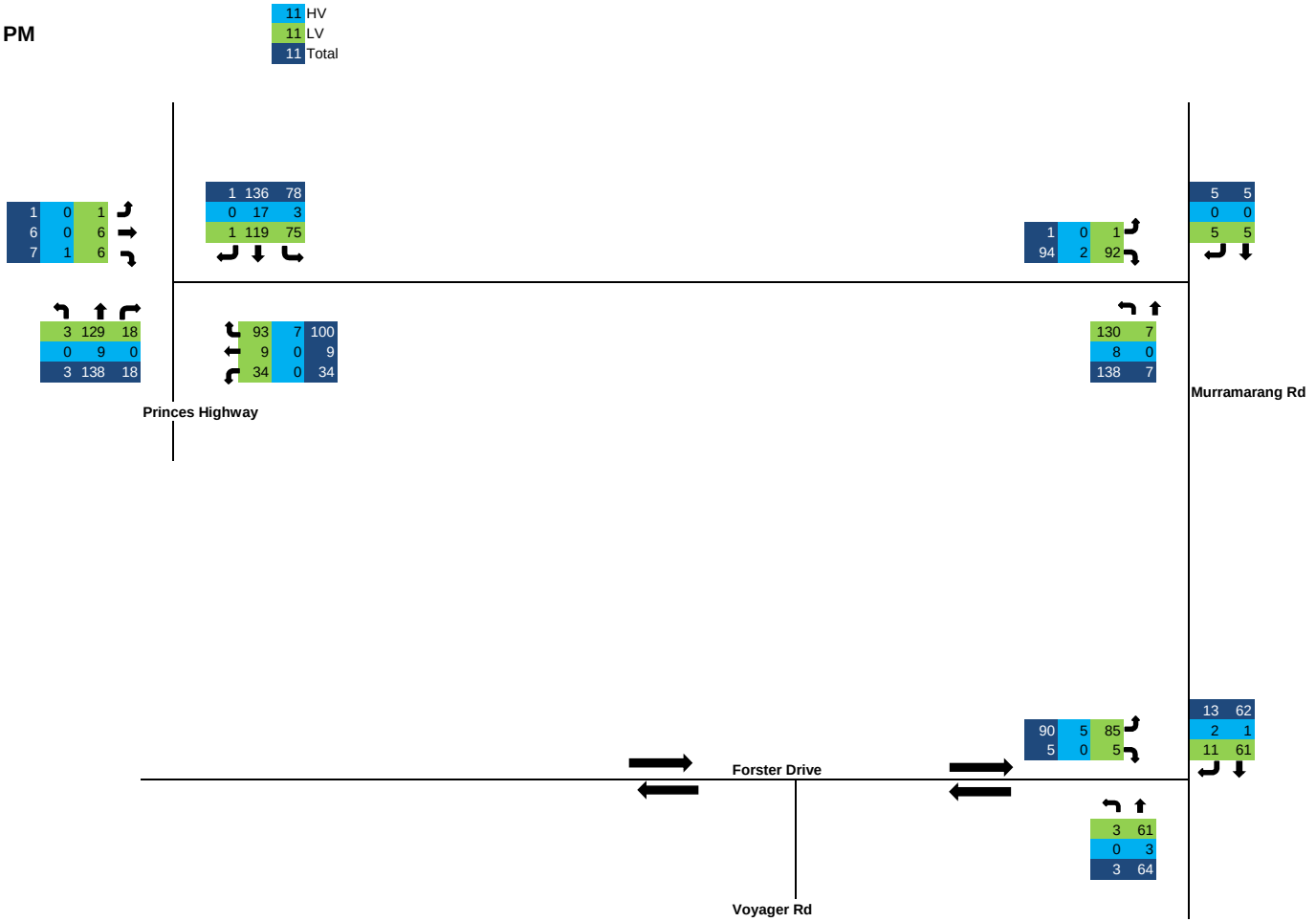


Day +1 Event Depart AM

11 HV
11 LV
11 Total



Day +1 Event Depart PM



Appendix E – Car parking concept plans

PROPOSED DDA
PARKING SPACES
TOTAL 48

PROPOSED OVERFLOW
PARKING SPACES TOTAL 881

PROPOSED OVERFLOW
PARKING SPACES TOTAL
1,432

EXISTING PARKING FOR BUSES

PROPOSED BUS PICK UP/DROP OFF

CAR PARK 5.4m x 2.4m

BUS ROUTE

SK#160+
WILLINGA PARK
EVENTS PARKING PLAN
For Discussion Purposes Only
17-000290

GHD

Level 15
133 Castlereagh Street
T: 61 2 9239 7100 F: 61 2 9239 7199 E: sydmail@ghd.com

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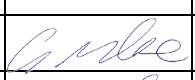
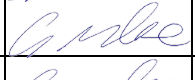
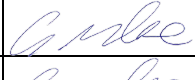
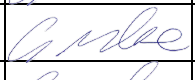
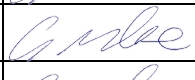
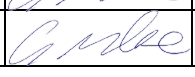
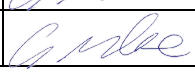
Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	Shane Quinn Mansee Sachdeva	Graham McCabe		Graham McCabe		6/10/2017
1	Shane Quinn	Graham McCabe		Graham McCabe		26/10/2017
2	Shane Quinn	Graham McCabe		Graham McCabe		8/12/2017
3	Shane Quinn	Graham McCabe		Graham McCabe		8/06/18
4	Shane Quinn	Graham McCabe		Graham McCabe		19/09/18

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