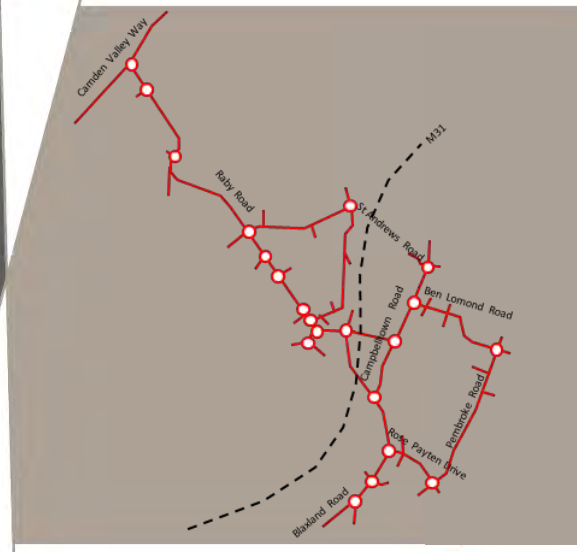
Raby Precinct

Traffic and Transport Study

80016097



Prepared for
Campbelltown City Council

14 December 2016 | Revision B

Cardno
Shaping the Future

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A	1/12/2016	Draft Report	Aaron Tran Koosha Dehghan	Ivo Pais
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Executive Summary

Background

The Raby Precinct will experience signifcant growth over the next few years. While some of this growth will occur via development within the precinct, a significant proportion will be attributable to external areas, especially the various South West Growth Centres, located just north-west of the study area and anticipated to accommodate some 300,000 residents. The anticipated growth in the Raby Precinct and surrounding precincts will result in a substantial increase in traffic volumes along Raby Road.

Campbelltown City Council engaged Cardno to undertake a traffic and transport assessment of the Raby Precinct considering future traffic volumes and upgrades to the transport network that are already proposed or need to be planned.

Purpose

This study assesses the traffic and transport network in the Raby Precinct and outlines the options analysis and implementation strategy to address existing deficiencies in the network and minimise the impacts of anticipated future growth in the Raby Precinct.

Methodology

Existing (2016) deficiencies in the traffic and transport network were identified by site inspections, traffic surveys including video footage and stakeholder feedback from a workshop held at Council on 18/08/2016. Cardno proposed and analysed upgrades to address existing deficiencies using microsimulation traffic models. A microsimulation traffic model is used to assess a congested road network, due to its ability to simulate dynamic queuing conditions visually in 2D and 3D, and models individual vehicle behaviour and interaction with the network and other road users. The traffic models assisted in predicting future network deficiencies and assessing respective mitigation measures in the short term (2021), medium term (2026) and long term (2036) scenarios. Upgrades were considered and analysed iteratively with cost and property boundary considerations. In particular, the life of roundabouts was extended as much as possible. If a proposed upgrade is deemed unacceptable, the upgrade proposed in the following years could be moved forward.

Key findings

Evaluation of the existing (2016) and future year Raby Precinct network, identified critical deficiencies in the network and proposed upgrades to be implemented at:

> **10** locations in the short term (within the next five years)

> **5** locations in the medium term (between 2021 and 2026)

> **8** locations in the long term (between 2026 and 2036)

Conclusion

Cardno assesed the traffic and transport network of the Raby Precinct and presented an options analysis and implementation strategy to assist Council in addressing existing deficiencies in the network, and minimising the impacts of anticipated future growth in the Raby Precinct for the short, medium and long term scenarios.

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1 Introduction

1.1 Background

Campbelltown City Council is investigating and planning infrastructure upgrades of Raby Road from Camden Valley Way to Campbelltown Road, Campbelltown Road from Blaxland Road to St Andrews Road, Ben Lomond Road, Pembroke Road and Rose Payten Drive located within the Camden and Campbelltown local government areas. Parts of the Camden and Campbelltown local government areas are undergoing major urban development as part of the South West Priority Growth Area by NSW Department Planning & Environment.

Cardno was commissioned by Campbelltown City Council to prepare robust traffic models and propose infrastructure upgrades to assist in managing congestion and traffic demand for the short (2021), medium (2026) and long term (2036) future year horizons. The approach for this study is illustrated in **Figure 1-1**.

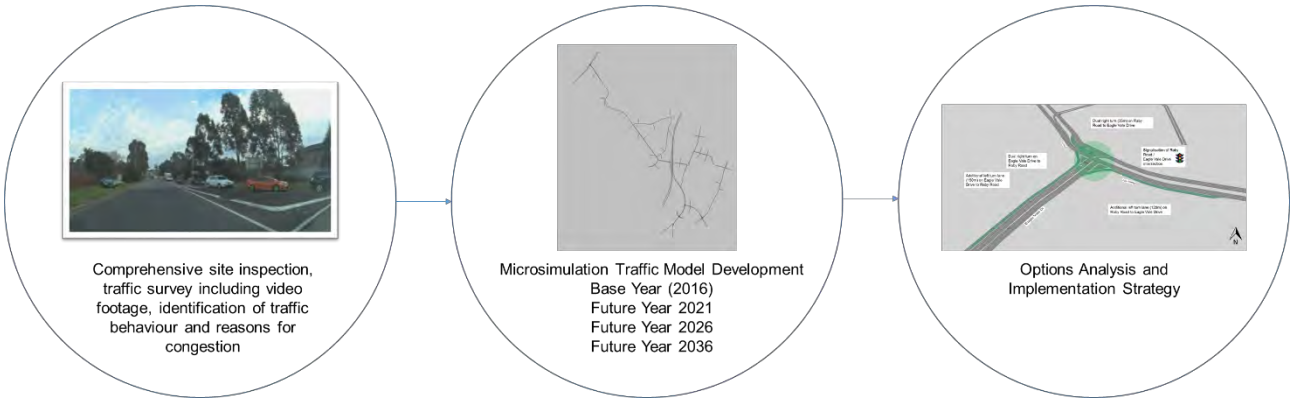


Figure 1-1 Study Approach

1.2 Key Objectives

Figure 1-2 summarises the key stages considered and respective objectives.

Figure 1-2 Study Objectives

More specifically, the key study objectives can be summarised as follows:

> Assess the performance of the existing traffic and transport network within the study area

> Develop robust traffic models to assist in the assessment of the existing and future traffic and transport network

> Propose and document infrastructure upgrades and subsequent road network operational performance improvements for the short (2021), medium (2026) and long term (2036) future year horizons

> Evaluate and summarise the findings to devise an Options Analysis and Implementation Strategy to assist Council address existing deficiencies in the network and minimise the impacts of anticipated future growth in the Raby Precinct.

1.3 Structure of Report

The report is structured as follows:

> **Section 2** investigates existing traffic and transport conditions

> **Section 3** details base traffic model development

> **Section 4** summarises the calibration and validation of the traffic models

> **Section 5** details the future year model development for the short, medium and long term future year horizons

> **Section 6** assesses the short term (2021) modelling scenario

> **Section 7** assesses the medium term (2026) modelling scenario

> **Section 8** assesses the long term (2036) modelling scenario

> **Section 9** highlights the major outcomes and recommendations of this traffic modelling study.

2 Existing Traffic and Transport Conditions

2.1 Existing Road Network

The study area is located in south-western Sydney and includes:

> Full length of Raby Road from Camden Valley Way to Campbelltown Road
> Campbelltown Road from Blaxland Road to St Andrews Road
> Area bound by Ben Lomond Road, Pembroke Road, Rose Payten Drive and Campbelltown Road.

The land use in the north-western region of the study area is primarily residential. The land use in the south-eastern region of the study area is primarily mixed commercial and industrial. The study area is presented in **Figure 2-1**.

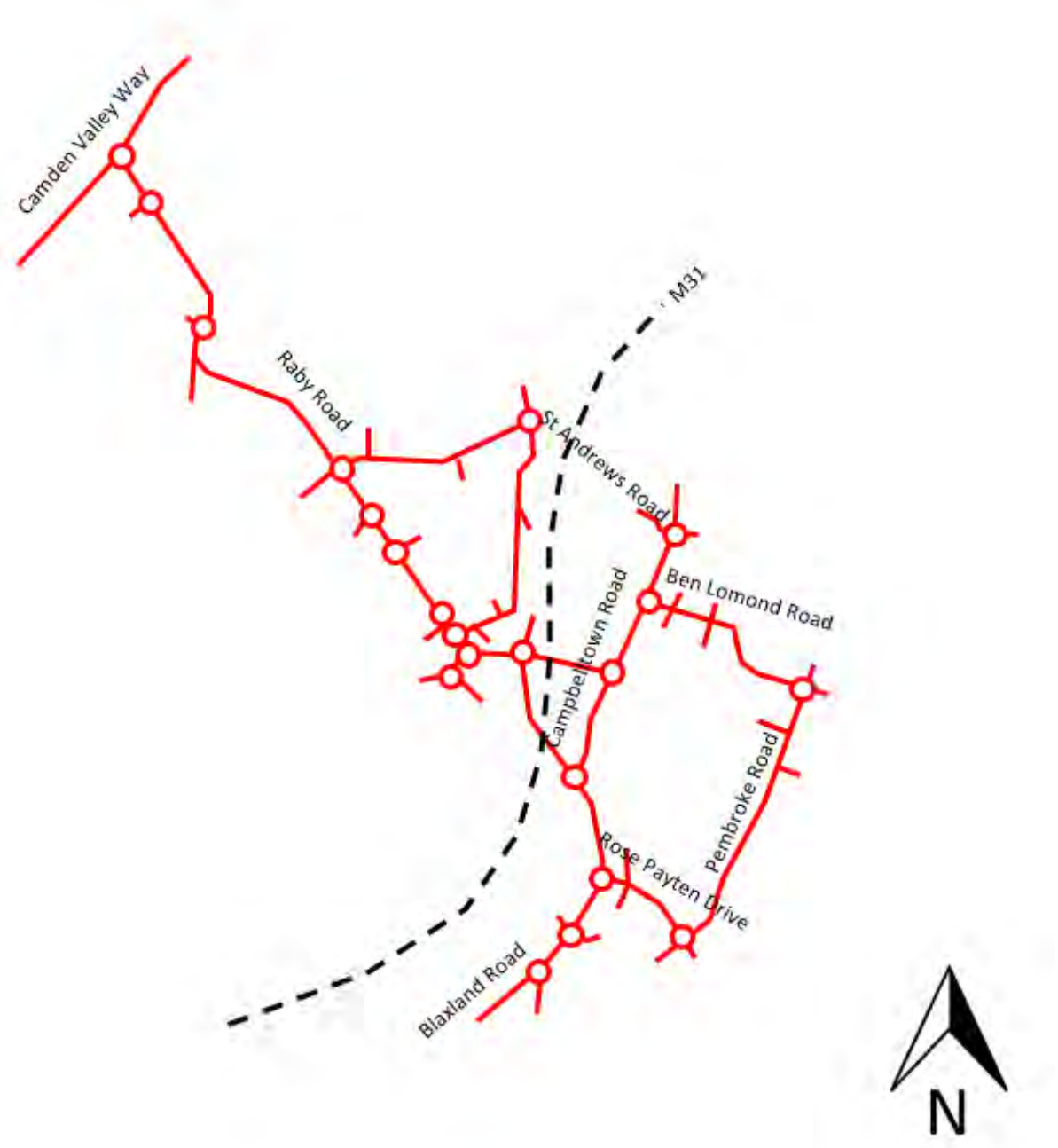


Figure 2-1 Study Area

2.2 Key Intersections

The key intersections included in the study area are as follows:

2.2.1 Raby Road / Camden Valley Way

- Signalised three-arm intersection located in the northern region of the study area
- Two-lane two-way on Camden Valley Way and Raby Road
- Dual right turn to Raby Road
- Short left turn slip lane to Raby Road
- Dual left and dual right turn to Camden Valley Way
- Camden Valley Way is a major arterial road linking the Hume Highway, M7 and M5 interchange at Prestons, near Liverpool, Camden, Narellan and Harrington Park in Sydney's south west
- Will experience significant growth in traffic volumes due to the South West Priority Growth Areas.

2.2.2 Raby Road / Assembly Hall of Jehovah's Witnesses

- Seagull intersection that provides access / egress to Jehovah's Witnesses Assembly Hall
- One-lane two-way on Raby Road
- Short left turn lane to Jehovah's Witnesses
- Dedicated left and right turn lanes to Raby Road.

2.2.3 Raby Road / Thunderbolt Drive / Epping Forest Drive

- Four-arm roundabout intersection
- One-lane two-way on Raby Road north of the intersection
- Raby Road is two-lane two-way south of the intersection
- One-lane two-way on Thunderbolt Drive and Epping Forest Drive.
- Epping Forest Drive and Thunderbolt Drive primarily services local residential traffic.

2.2.4 Thunderbolt Drive / Spitfire Drive

- Three-arm priority controlled intersection
- One-lane two-way on Thunderbolt Drive and Spitfire Drive
- Thunderbolt Drive and Spitfire Drive primarily services local residential traffic.

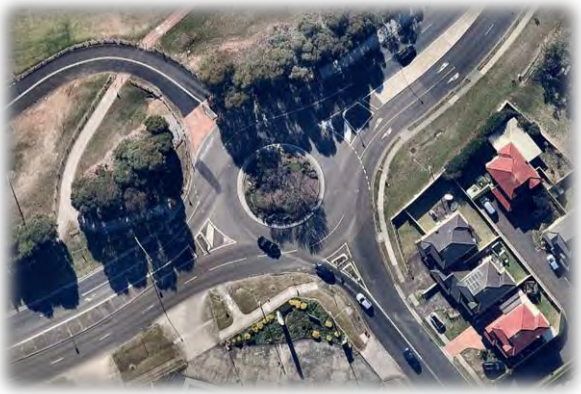
2.2.5 Raby Road / Spitfire Drive

- Seagull intersection that provides access / egress to Spitfire Drive
- Two-lane two-way on Raby Road
- Stop sign control on Spitfire Drive
- Spitfire Drive primarily services local residential traffic including Raby Shopping Centre.

2.2.6 Raby Road / Eagle Vale Drive

- Three-arm roundabout intersection
- Two-lane two-way on Eagle Vale Drive and Raby Road
- Eagle Vale Drive links with Badgally Road to the south west and primary services local residential traffic.

2.2.7 Eagle Vale Drive / Gould Road



- Four-arm roundabout intersection
- Two-lane two-way on Eagle Vale Drive
- Northern leg provides access / egress to the Eschol Park Sports Complex car park
- One-lane two-way on Gould Road
- Gould Road provides access to Eagle Vale Marketplace and residential dwellings.

2.2.8 Raby Road / Campbelltown Road Off-ramp

- Four-arm roundabout intersection
- Two-lane two-way on Raby Road becoming one-lane two-way on the bridge over M31
- Dedicated continuous slip left turn lane to M31 on-ramp
- Two-lane one-way on the Campbelltown Road Off-ramp approach
- M31 (Hume Motorway) is one of Australia's major inter-city motorways, running for 807 kilometers between Melbourne and Sydney.

2.2.9 Raby Road / Stranraer Drive / Stromeferry Crescent

- Four-arm roundabout intersection
- Two-lane two-way on Raby Road becoming one-lane two-way on the bridge over the M31
- One-lane two-way on Stranraer Drive and Stromeferry Crescent
- Stranraer Drive and Stromeferry Crescent primarily service local residential traffic.

2.2.10 Raby Road / Campbelltown Road / Swettenham Road

- Four-arm roundabout intersection
- Two-lane two-way on Raby Road and Campbelltown Road
- One-lane two-way on Swettenham Road
- Swettenham Road primarily services industrial and commercial traffic
- Campbelltown Road is a major arterial transport corridor operating in the north-south direction between Campbelltown and Liverpool.

2.2.11 Campbelltown Road / Ben Lomond Road

- Signalised three-arm intersection
- Two-lane two-way on Ben Lomond Road
- Two-lane two-way on Campbelltown Road
- Short continuous left slip lane to Ben Lomond Road
- Dedicated right turn short lane to Ben Lomond Road
- Short left slip lane to Campbelltown Road
- Dual right turn to Campbelltown Road
- Ben Lomond Road services a mix of residential, industrial and commercial traffic.

2.2.12 Campbelltown Road / St Andrews Road / Bouddi Street

- Four-arm roundabout intersection
- Two-lane two-way on Campbelltown Road and St Andrews Road
- One-lane two-way on Bouddi Street
- St Andrews Road and Bouddi Street primarily service local residential traffic.

2.2.13 Ben Lomond Road / Pembroke Road

- Four-arm roundabout intersection
- Two-lane two-way on Ben Lomond Road and Pembroke Road
- Ben Lomond Road provides access to Minto Marketplace to the east
- Ben Lomond Road and Pembroke Road service a mix of residential, industrial and commercial traffic.

2.2.14 Rose Payten Drive / Pembroke Road / Leumeah Road

- Signalised four-arm intersection located in the south eastern region of the study area
- Two-lane two-way on Rose Payten Drive, Pembroke Road and Leumeah Road
- Dedicated short right turn lane to Leumeah Road
- Dedicated short right turn lane to Pembroke Road in both travel directions
- Short left turn slip lanes on all four arms
- Rose Payten Drive, Pembroke Road and Leumeah Road service a mix of residential, industrial and commercial traffic.

2.2.15 Rose Payten Drive / Campbelltown Road

- Signalised three-arm intersection
- Two-lane two-way on Rose Payten Drive and Campbelltown Road
- Dual right turn to Rose Payten Drive
- Dual right turn to Campbelltown Road
- Short left turn slip lane to Campbelltown Road
- Short left turn slip lane to Rose Payten Drive
- Rose Payten Drive and Campbelltown Road service a mix of residential, industrial and commercial traffic.

2.2.16 Campbelltown Road / Harbord Road / Plough Inn Road

- Signalised four-arm intersection located in the southern region of the study area
- Two-lane two-way on Campbelltown Road, Harbord Road and Plough Inn Road
- Short right turn lanes on Campbelltown Road and Plough Inn Road
- Dedicated right turn lane on Harbord Road
- Short left turn slip lanes on all four arms
- Harbord Road provides access to a number of fast food restaurants and residential dwellings
- Plough Inn Road primarily services industrial and commercial traffic.

2.2.17 Campbelltown Road / Blaxland Road

- Signalised three-arm intersection
- Two-lane two-way on Campbelltown Road and Blaxland Road
- Dual right turn short lanes to Blaxland Road
- Dual right turn to Campbelltown Road
- Short left turn slip lane to Blaxland Road
- Short left turn slip lane to Campbelltown Road
- Blaxland Road primarily services a mix of commuter, industrial and commercial traffic.

2.3 Speed Environment

The existing speed limits on key roads within the study area are shown in **Table 2-1**.

Table 2-1 Study Network Speed Limits

Road Name	Existing Speed Limit (km/h)
Camden Valley Way	80
Raby Road (Thunderbolt Drive to Camden Valley Way)	80
Raby Road (Eschol Park Drive to Thunderbolt Drive)	70
Raby Road (Campbelltown Road to Eschol Park Drive)	60
Campbelltown Road (Rose Payten Drive to Raby Road)	80
Campbelltown Road (Raby Road to St Andrews Road)	60
Rose Payten Drive	60
Pembroke Road	60
Ben Lomond Road	60
Spitfire Drive	60
Thunderbolt Drive	60
Eagle Vale Drive	60

2.4 Pedestrian, Cycling and Public Transport Infrastructure

The pedestrian, cycling and public transport infrastructure within the study area were reviewed and are described in detail below. The current land uses in the Raby Precinct are shown on **Figure 2-2**.

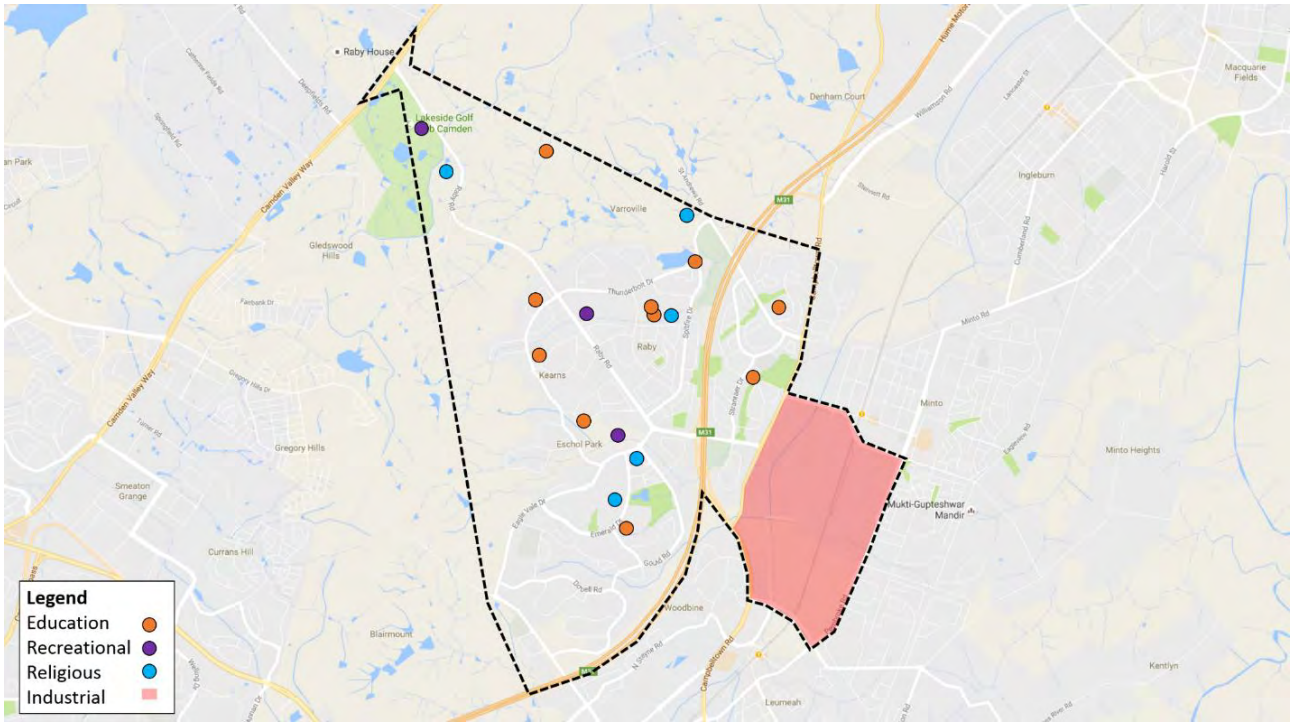


Figure 2-2 Current Land Uses in Raby Precinct

2.4.1 Pedestrians

Campbelltown City Council generally provide footpaths on one side of a road however consideration is given to construction footpaths on either side of the road where the road is:

- An arterial road or collector road with an annual average traffic volume of greater than 3,000 vehicles per day
- A bus route
- Roads with central medians or carriageway width greater than 12 metres
- Commercial precincts
- In vicinity of schools, retirement villages, sport grounds and other public facilities
- In an area of high demand (i.e. desire lines).

A review of the pedestrian network identified that the network is generally undeveloped in certain areas and lacks crossing opportunities in key areas.

Where the land on either side of Raby Road is undeveloped, the road does not provide a footpath on either side of the road; where the land is developed, footpaths are provided on either side of the road, however locations exists where there are gaps/missing connections in the footpaths, which result in a disconnected pedestrian network.

Along collector roads, footpaths are generally on one side of the road. These roads include Thunderbolt Drive, Spitfire Drive, Emerald Drive and Epping Forest Drive, all of which are bus routes. Footpaths are rarely provided on local roads, which is also the case for the industrial area located to the south of Minto Station.

Crossing of main roads, including Raby Road, are only catered for at major intersections and a small number of zebra/refuge crossing locations in the study area. With crossing opportunities scarcely provided, pedestrians may be lead to dangerous crossing of the road at uniformalised locations.

Figure 2-3 highlights where pedestrian footpaths are provided on major roads and where crossing opportunities are possible. The figure highlights the disconnections in the footpath network and the minimal

crossing opportunities available for pedestrians; this may lead to a lack of pedestrian travel within the area given the lack of connectivity and the inability for pedestrians to freely travel on a footpath from one destination to another.

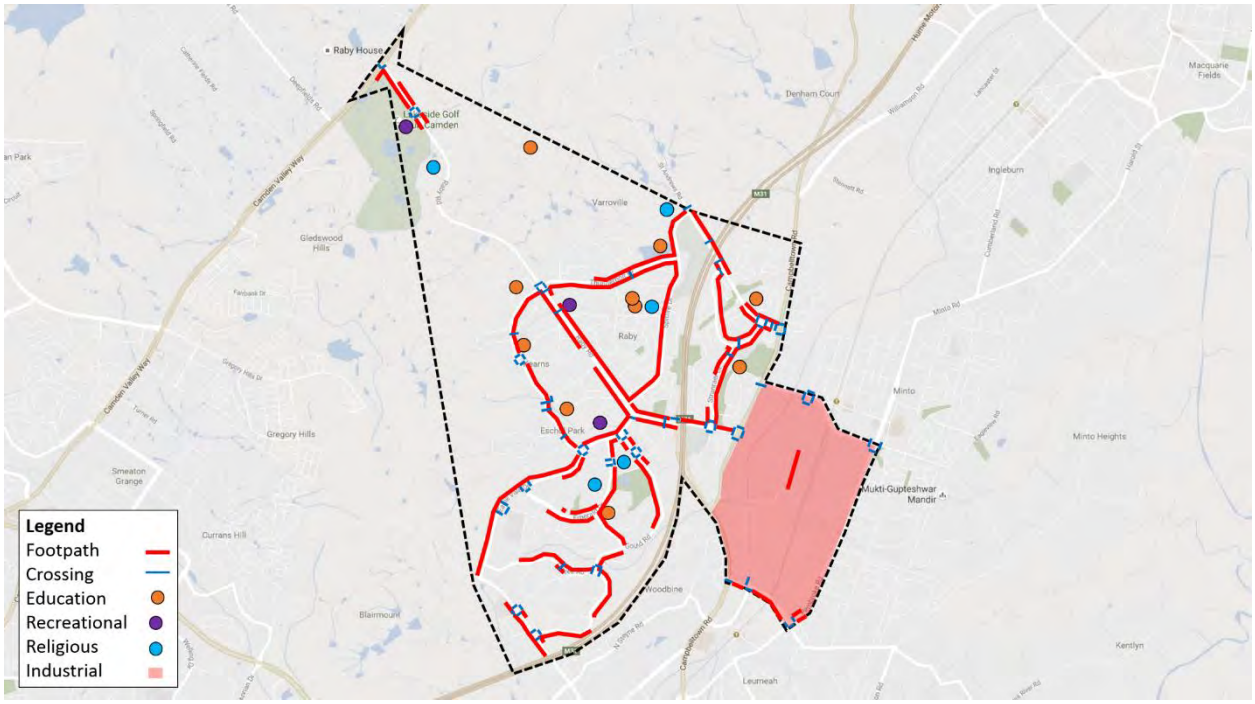
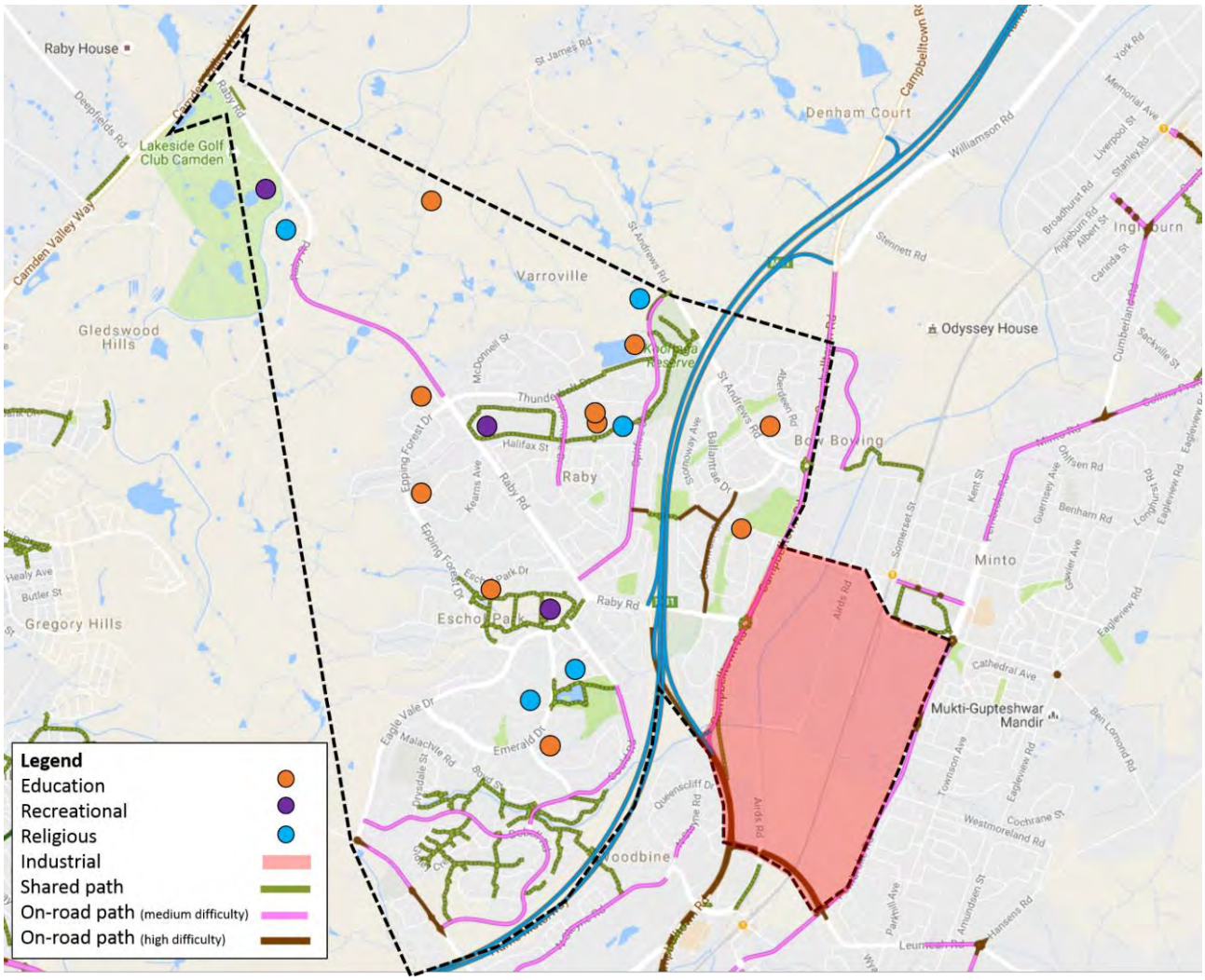


Figure 2-3 Footpath Network and Crossing Locations

2.4.2 Cyclists

Shared paths are provided at a number of ovals/playing fields, however as these shared paths circle the ovals/playing fields, the paths are commonly used for recreational use. A number of on-road road shoulder bicycle paths are provided, some of which do connect to the shared paths. However, these are mostly disconnected and do not provide a direct route to facilitate journeys between residential homes and key land uses; these on-road paths have also been classified as medium to high riding difficulty (according to RMS) and may discourage use by the average recreational cyclists.

Figure 2-4 outlines the current bicycle paths according to RMS Cycleway Finder.



Source RMS: Cycleway Finder

Figure 2-4 Current Bicycle Paths

2.4.3 Buses

Six bus routes, operated by Busabout and Interline Bus Services (IBS), are provided within the area. These routes include:

Busabout

> 877 - Campbelltown to Kearns via Eagle Vale & Eschol Park (Loop Service)
> 878 - Kearns to Campbelltown via Eschol Park (and in reverse)
> 880 - Minto to Campbelltown via Kearns & Eagle Vale (and in reverse)

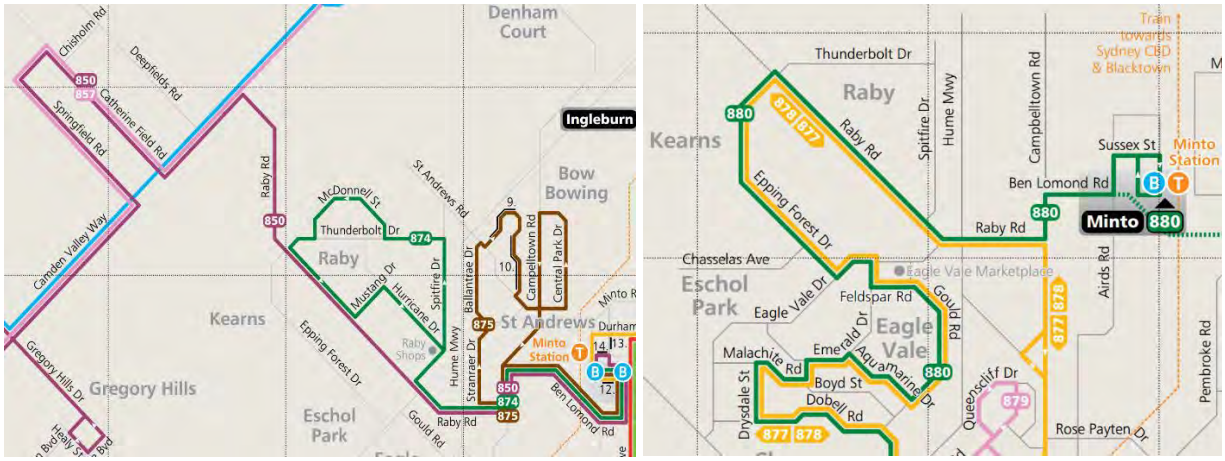
Interline Bus Services

> 850 - Narellan Town Centre to Minto (and in reverse)
> 874 - Minto to Raby (Loop Service)
> 875 - Minto to St Andrews (Loop Service)

These bus routes operate approximately every 30 minutes during the weekday peak periods and every hour during the weekends; the exceptions are to routes 877 and 878 which operate every hour during weekdays and weekends.

The bus routes are shown in **Figure 2-5**. The State Transit Authority of NSW states that as a guide bus stops should be generally located at 200 metre to 400 metre intervals. The 400 metre catchments of all the bus stops are shown in **Figure 2-6**. The figure highlights that:

> Only a small area of developed land at the south of Raby Road is not within a 400 metre bus stop catchment;
> A small section of underdeveloped land along Raby Road and the industrial precinct does not have a dedicated bus stop within 400 metres.
> A number of the bus stops have overlaying catchments which indicate that the bus stops are located too close to one another.



Source: Interline Bus Services *Source: Busabout*

Figure 2-5 Bus Routes

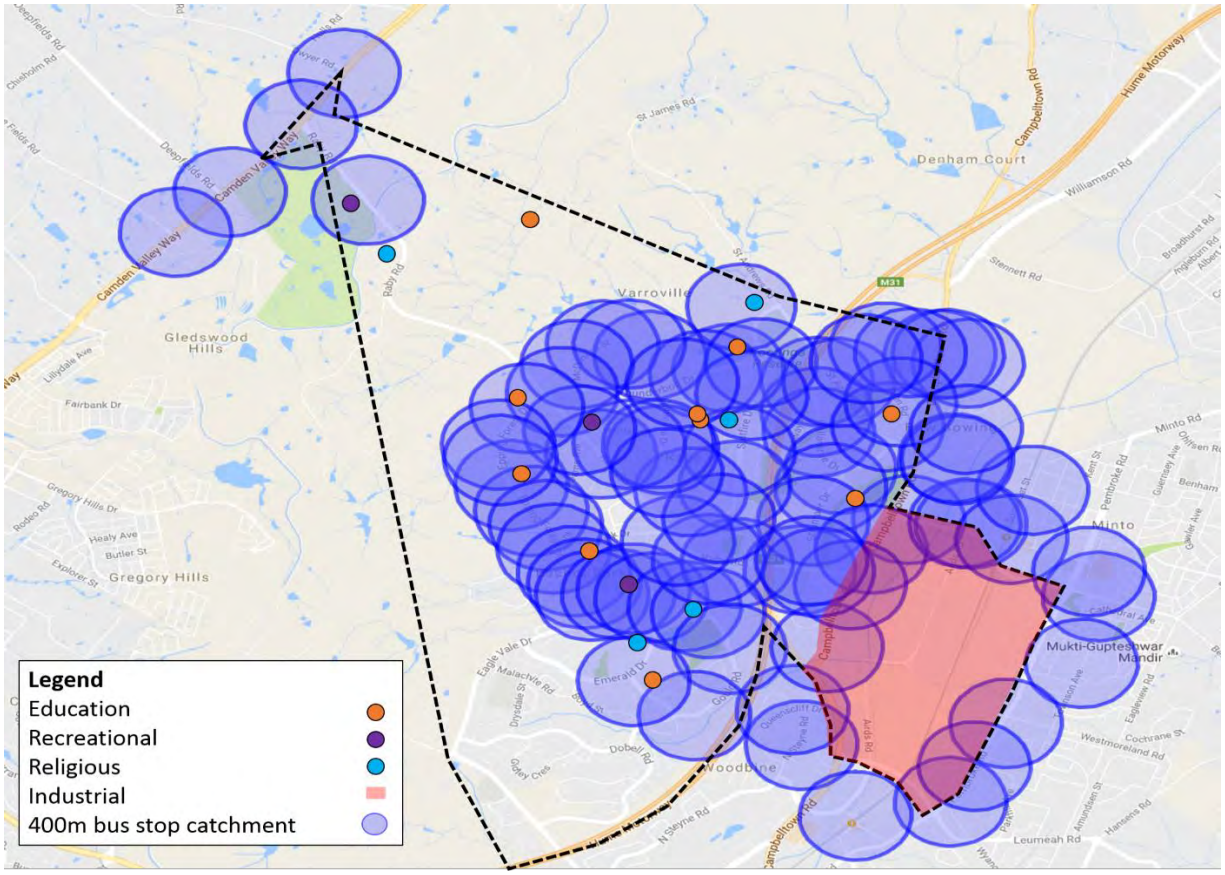


Figure 2-6 Bus Stop Catchments

2.4.4 Trains

Heavy rail generally has an 800 metre walking and 2.5 kilometre cycling catchment. Minto train station is located to the west of the review area and is approximately 800 metres west of the nearest homes in the review area; pedestrian travel time from the closest homes to the station is approximately 15-minute walk

along existing infrastructure. Leumeah train station is located to the south-east of the review area and is located approximately 1.5 kilometres from the nearest homes; pedestrian travel times from these homes to the station is approximately 30 minutes on existing infrastructure.

The 800 metre walking and 2.5 kilometre cycling catchment is shown in **Figure 2-7**.

The figure highlights that the only portion within a walking distance of a train station is the industrial area (a destination that is likely to be travelled to and from by vehicle). The south of the review area is located within the 2.5 kilometre cycling catchment however cycling connections to these station is non-existent and unlikely to be used by the average cyclist. As majority of the review area is located outside of the walking and cycling catchments, travel to and from the station are likely to be via public transport or private vehicle.

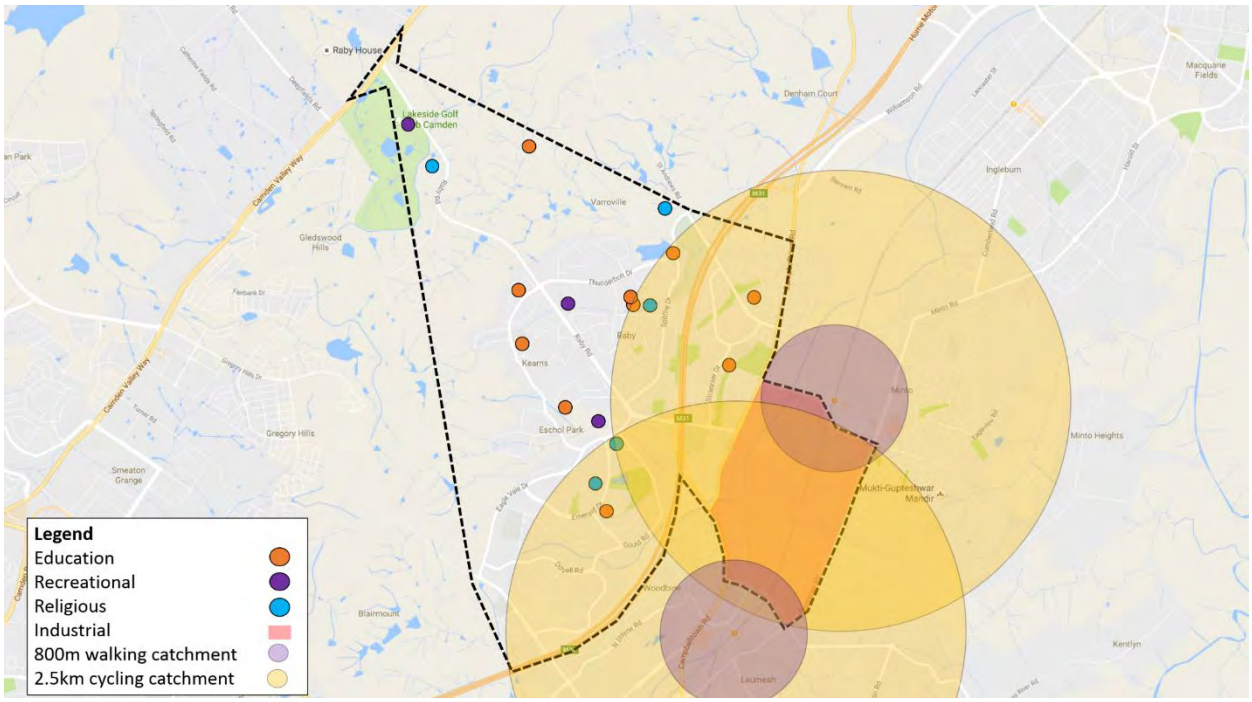


Figure 2-7 Train Station Catchment

2.5 Traffic Operation and Behaviour

Congestion hotspots within the study area were identified and captured on video. The video footage at these locations show intersections operating near or over capacity and the need for further investigation. The infrastructure upgrade requirements identified as part of this study will be geared towards addressing these capacity deficiencies (in the short term) and any others determined for the future year horizons. As part of the base model (AM and PM) validation, it is critical to ensure that the models accurately reproduce the traffic operation and behaviour at these identified hotspots. A summary of the most relevant hotspots is shown below.

2.5.1 Camden Valley Way Southbound Queue (PM)

- Traffic on Camden Valley Way in the southbound travel direction queuing beyond visual sight distance from the Camden Valley Way / Raby Road intersection during PM peak

2.5.2 Raby Road at Thunderbolt Drive Southbound Queue (AM)

- Traffic on Raby Road in the southbound travel direction queuing beyond visual sight distance from the Thunderbolt Drive / Raby Road intersection during AM peak.

2.5.3 Raby Road Right Turn to Spitfire Drive (AM)

- Right turn bay to Spitfire Drive on Raby Road at risk of overspill during AM peak
- Heavy southbound traffic on Raby Road has priority over the right turn into Spitfire Drive
- Identified sight distance issue because of the grade/slope of Raby Road. Vehicles turning right into Spitfire Drive wait for longer (than average) gaps.

2.5.4 Spitfire Drive Queue (AM)

- Traffic on Spitfire Drive queueing beyond Gannet Street during AM peak
- Heavy southbound traffic on Raby Road has priority over the right turn into Spitfire Drive
- As identified above, sight distance issue because of the grade/slope of Raby Road. Vehicles turning out of Spitfire Drive wait for longer (than average) gaps.

2.5.5 Eagle Vale Drive to Raby Road (AM & PM)

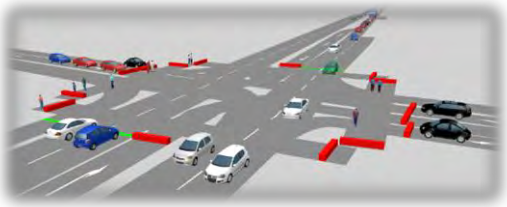
- Traffic on Eagle Vale Drive queueing back to Gould Road during AM & PM peak
- Heavy northbound Raby Road traffic has priority over Eagle Vale Drive.

2.5.6 Campbelltown Road Off-ramp (PM)

- Traffic on Campbelltown Road Off-ramp queueing back to Campbelltown Road during PM peak
- Heavy northbound Raby Road traffic has priority over the Campbelltown Road Off-ramp
- Off-ramp traffic turning left on Raby Road observed to be aggressive and take lower (than average) gaps
- Off-ramp traffic observed queuing on the road shoulder to informally extend the right turn lane and avoid blocking the left turn movement.

3 Base Traffic Model Development

3.1 Software



The traffic assessment was undertaken using VISSIM micro-simulation modelling software (v8). This software models individual vehicle behaviour and interaction with the network and other road users. A micro-simulation model is an appropriate model to assess a congested road network, due to its ability to simulate dynamic queuing conditions visually in 2D and 3D. This capability makes these types of models very useful in analysing traffic operations in urban areas and city centres, including interchanges, roundabouts, unsignalised and signalised intersections, signal coordinated corridors and area networks.

3.2 Traffic Survey Data

Micro-simulation modelling requires a significant amount of detailed traffic survey data. Traffic movement, video footage and queue length counts were undertaken on Tuesday 19 July 2016 at the key intersections identified in **Section 2** (except the Eagle Vale Drive / Gould Road, Campbelltown Road / St Andrews Road, Campbelltown Road / Harbord Road and Campbelltown Road / Blaxland Road intersections).

Traffic data collection for the Eagle Vale Drive / Gould Road, Campbelltown Road / St Andrews Road, Campbelltown Road / Harbord Road and Campbelltown Road / Blaxland Road intersections were undertaken separately on Tuesday 30 August 2016, given that this consisted of an extension to the model coverage area requested by Campbelltown City Council (after the first set of traffic data was collected). Turning movement balancing was applied to ensure that the traffic volumes at the additional intersections matched the inbound and outbound flows to the initial study area.

Furthermore, travel time surveys were also undertaken to assist in the validation of the base model development.

The peak hour for the study area was identified from the vehicle counts as:

> Weekday AM peak: 07:45am to 08:45am
> Weekday PM peak: 16:30pm to 17:30pm.

Following the stakeholder workshop held at Council on 18/08/2016, additional traffic video surveys were undertaken at identified hot spots to assist in validating the base models.

Traffic survey data is attached in **Appendix A**.

Video survey footage is available on request due to large file size.

3.3 Model Coverage

The model coverage includes all of the intersections detailed in **Section 2.2** and is presented below.

Observed Network	Model Network
	

3.4 Aerial Photography Data

Recent aerial photograph data (16 June 2016) was incorporated into the traffic modelling. This data was further supplemented with information obtained during Cardno site inspections and video survey data where stop line positions and lane markings were checked. **Figure 3-1** shows the aerial photograph data utilised in the modelling to inform the road network geometry and intersection layouts.

Figure 3-1 Aerial Photograph Data (Nearmap 16 June 2016)

3.5 Modelling Periods

Two peak hour periods were assessed in this study: Weekday AM (AM) and PM (PM). The modelled peak hour periods were determined from the traffic survey data. Separate modelling scenarios were developed for each peak period. For each peak period, a 'warm-up' period of one hour was added before the modelled peak hour period to ensure that the network was "pre-loaded" at the start of the peak. The overall modelled periods as follows:

> Weekday AM
  - Warm-up: 06:45am to 07:45am
  - Modelled period: 07:45am to 8:45am

> Weekday PM
  - Warm-up: 15:30pm to 16:30pm
  - Modelled period: 16:30pm to 17:30pm.

3.6 Traffic Profiles

The traffic demand profile represents the traffic volume of the road network in 15 minute intervals within the peak hour period. The traffic survey data for the peak hour periods was analysed to determine the traffic demand profile. In both the AM and PM peak periods, the overall traffic volumes in the study area showed minimal fluctuation, varying only by 1% per 15 minutes within the respective peak hour (**Figure 3-2** and **Figure 3-3**). Therefore, a flat traffic demand profile for each peak period was incorporated into the modelling.

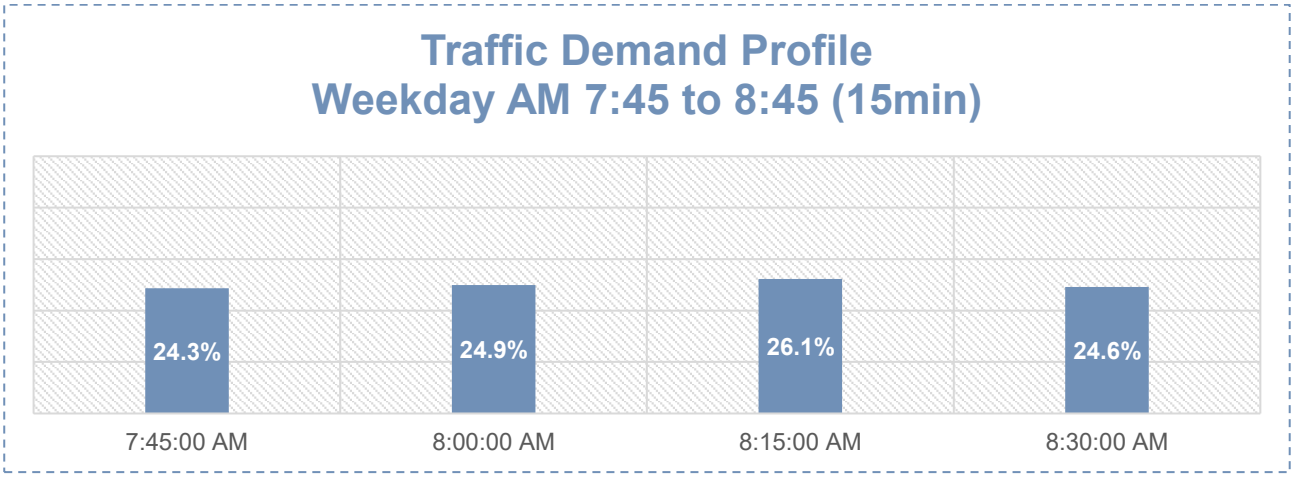


Figure 3-2 Traffic Demand Profile Weekday AM

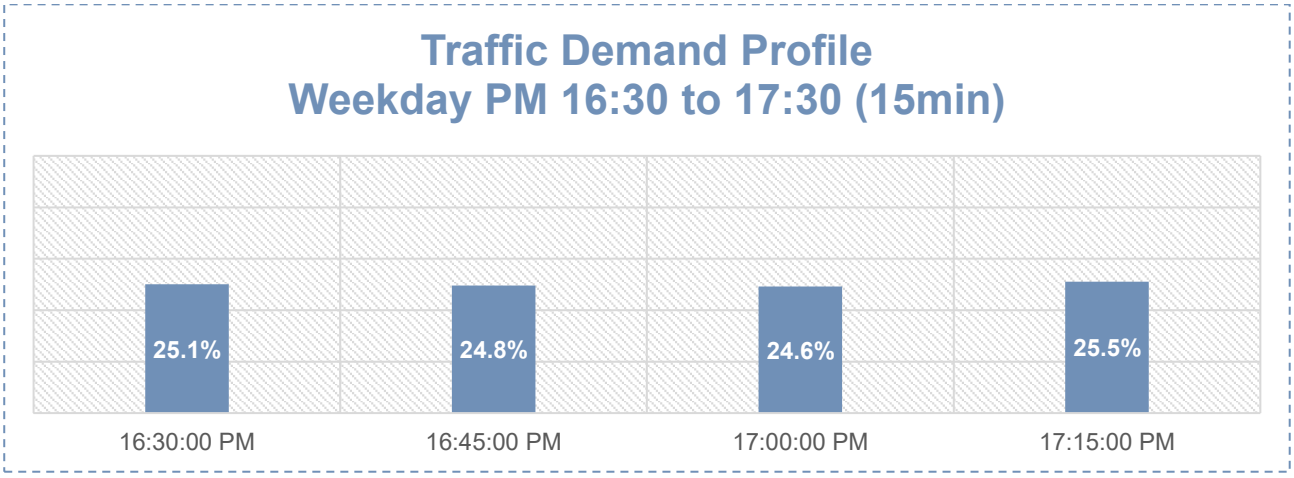


Figure 3-3 Traffic Demand Profile Weekday PM

3.7 Matrix Demand Development

The demand matrices were developed using a Furness distribution model applied to the traffic survey data to estimate the origin and destination pattern for the distribution of vehicles within the network. Consideration was given to the relative attraction and production at each location. The demand matrices went through several iterations to ensure that demands assigned represented the surveyed turning volumes at the key intersections.

3.8 Signal Control

The SCATS traffic control system used by Roads and Maritime allows for adaptive phase times at intersections to respond to fluctuating traffic conditions, public transport demands and improve the efficiency of individual intersections and/or groups of intersections. The result of this is that phase and cycle times will vary and will not be fixed for the duration of the peak period.

The overall approach adopted for the development of the Raby Precinct traffic models was to include all critical signal phases in a fixed cycle time. The signal timings were estimated by observing the video footage data of the intersection surveys during the respective peak hour. The remaining (less frequent) phases, such as demand dependant phases, were also included at critical locations with manual adjustment to phase time in order to compensate for their infrequent operation. It is noted that the Raby Road / Emerald Hills intersection was not surveyed since it was not open to traffic at the time of the project initiation (operating for construction vehicles only). However, it was noted that the intersection was formally operating with traffic signals on the day of the surveys. The signal timing and phasing was estimated from the travel time video survey footage.

Detail of the signal control programs adopted in the modelling are presented in **Appendix B**.

3.9 Assignment Method

VISSIM provides three types of traffic assignment methods: “all-or-nothing”, stochastic and dynamic. The “all-or-nothing” assignment method assumes that all drivers travelling between two zones choose the same route and that link costs do not depend on link congestion levels. The stochastic assignment method accounts for the variability in travel costs (or driver’s perception of those costs). The dynamic feedback assignment method assumes that drivers who are familiar with the network will re-route if information on the present state of traffic conditions is fed back to the drivers. This is achieved by taking real time information from the model and using the data to update the routing calculations.

As there is some route choice in the modelled area, particularly in the south eastern region of the model, a dynamic traffic assignment has been used with real time feedback and perturbation.

3.10 Seed Values

Roads and Maritime Services Traffic Modelling Guidelines (2013) stipulate that models should be run for a minimum of five seed runs to investigate the robustness of the model and assess its operation under a variety of starting conditions. There is no reason to use one seed value or group of seed values in particular. They simply represent different vehicle release conditions for the same network and O-D matrix. However, the following five seeds are recommended in the guidelines and were therefore adopted:

> Seed 560
> Seed 28
> Seed 7771
> Seed 86524
> Seed 2849.

4 Base Model Calibration and Validation

4.1 Calibration

The base AM and PM models were calibrated to ensure an accurate reflection of observed traffic conditions. The criteria used to validate the calibration were the GEH statistic and flow difference criteria from the *Roads and Maritime Services Traffic Modelling Guidelines (2013)*.

The Geoffrey E. Harves (GEH) statistic is a modified Chi-Square empirical formula invented in the 1970s to compare two sets of traffic volumes. The use of the GEH statistic as an acceptance criterion is widely recognised in the traffic forecasting and traffic / transport modelling practice areas. The formula is:

$$GEH = \sqrt{\frac{2(M-C)^2}{M+C}}$$

Where:

M is the traffic flow output from the model

C is the observed real-world traffic flow.

A GEH less than 5.0 is considered to be a good match between modelled and observed traffic volumes. According to the *UK Highways Agency Design Manual for Road and Bridges (DMRB)*, more than 85% of model links should comprise GEH of less than 5.0. GEH values between 5.0 and 10.0 may warrant further investigation and GEH values greater than 10.0 are not accepted and would require further investigation.

4.1.1 Traffic Demand

The model calibration was undertaken by comparing the modelled turn flows with observed counts and the GEH statistic. As described above, a turning count with a GEH statistic of less than 5.0, is considered to be a good match compared to the modelled turning counts. The comparison between the modelled flows and the surveyed flows for each modelled peak period are shown in **Table 4-1**.

Table 4-1 Model Calibration – Base (2016) Modelled vs. Observed Turn Counts

Traffic Demand	Weekday AM	Weekday PM
GEH less than 5	100%	99%
GEH between 5 and 10	0%	1%
GEH over 10	0%	0%
Calibration achieved?	✓	✓

The model calibration results show that an exceptional standard of model calibration has been achieved for the AM and PM peak modelled periods. In all peak periods, over 95% of all turning counts have a GEH of less than 5, which indicates a very good match between the modelled volumes and observed counts. These results are confirmed in scatter plots shown in **Figure 4-1** and **Figure 4-2** for the AM and PM peak periods respectively. They display a very high R^2 (>0.99), which shows a strong correlation for the model to reproduce observed traffic volumes across the study network.

The intersection turning movement calibration results are tabulated in **Appendix C**.

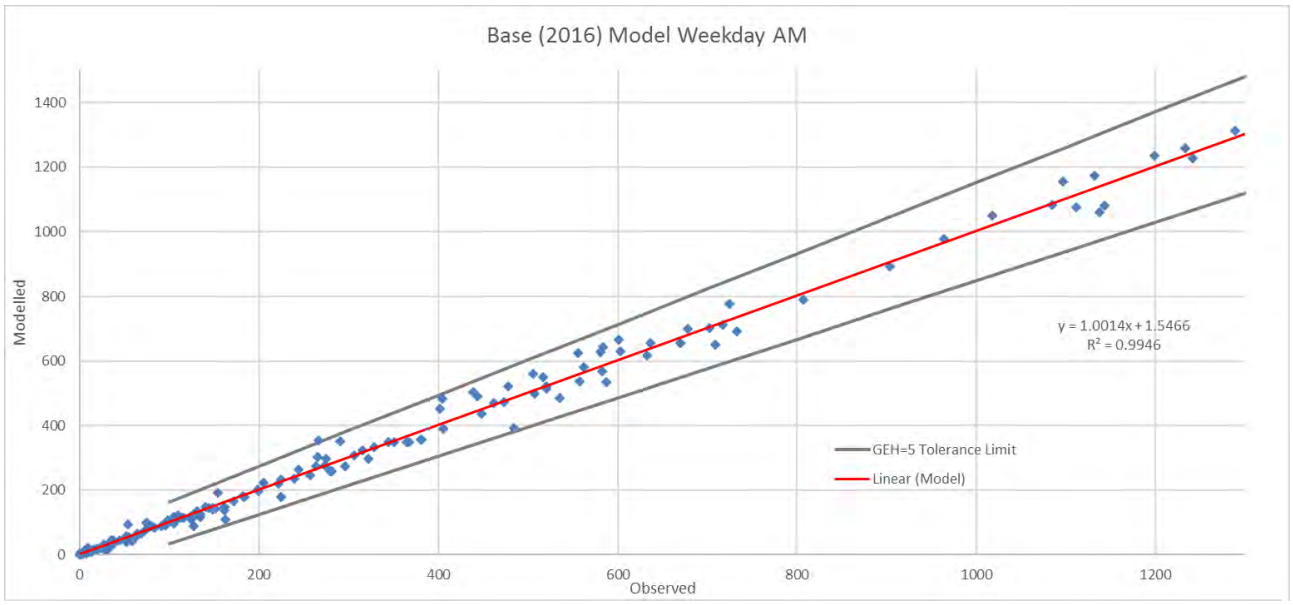


Figure 4-1 Base (2016) Weekday AM Regression Analysis

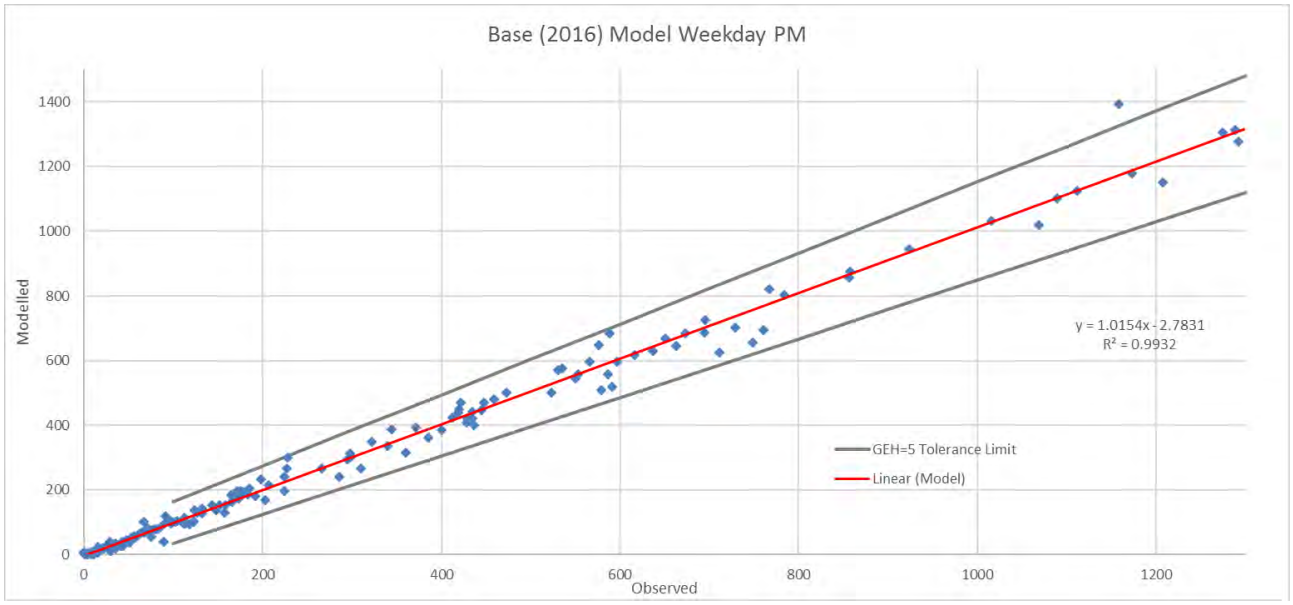


Figure 4-2 Base (2016) Weekday PM Regression Analysis

4.2 Validation

Model validation is the process of independent verification to demonstrate that a model accurately reflects observed traffic conditions. The base models were validated to travel time survey data and traffic operation and behaviour hotspots identified in **Section 2.2**.

4.2.1 Travel Time

The *Roads and Maritime Services Traffic Modelling Guidelines (2013)* set the travel time validation criteria for traffic models as the average modelled travel time to be within 15 per cent or one minute (whichever is greater) of the average observed travel time for full length of route for 95 per cent of observed travel time routes. Travel time route data was collected on Raby Road between Camden Valley Way and Eagle Vale Drive as shown below in **Figure 4-3**.

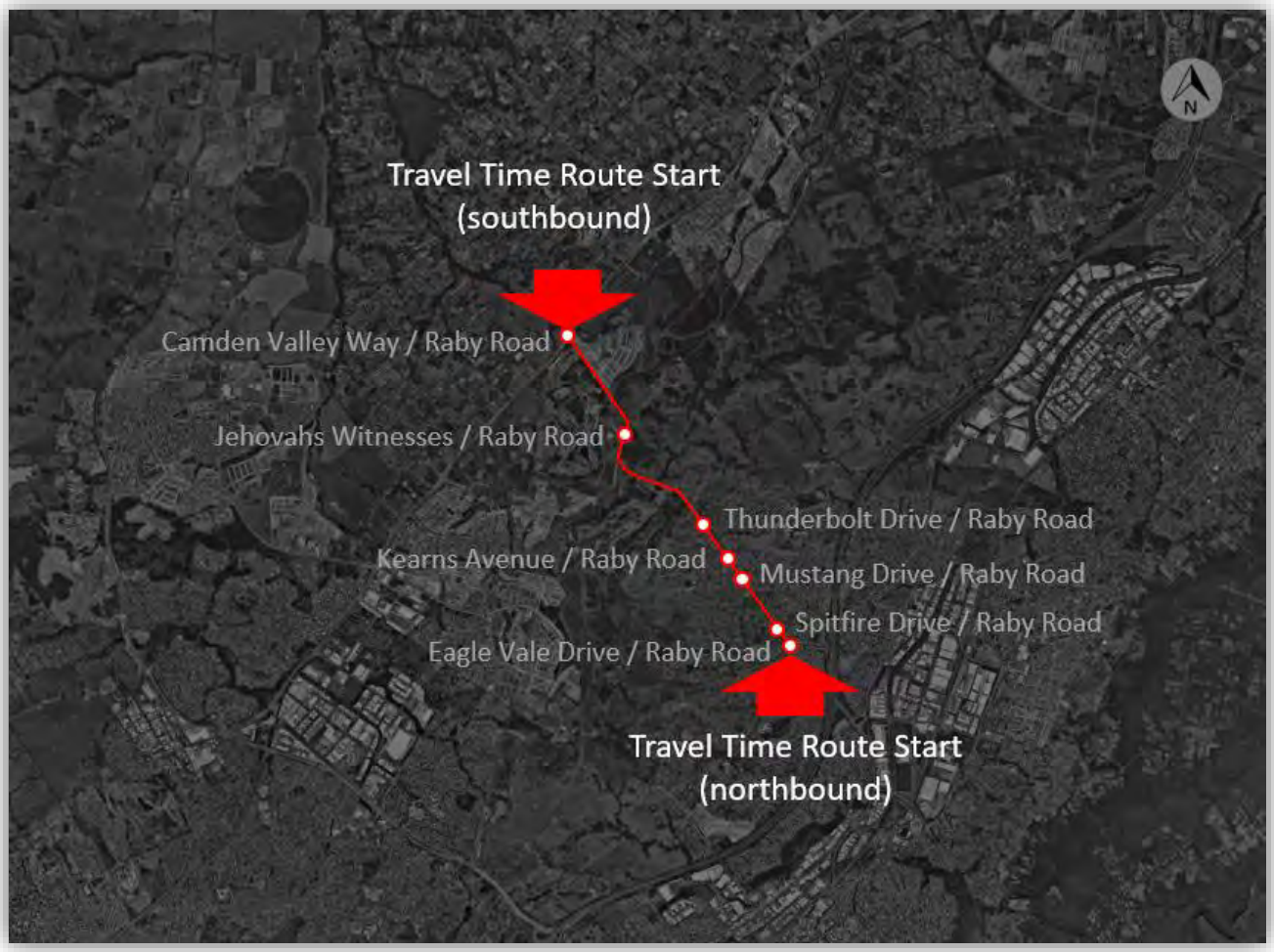


Figure 4-3 Model Validation Travel Time Survey Route

It is important to note that the sample of travel time data obtained as part of the traffic surveys consists of only a few runs during the peak hour periods and therefore should be adopted as an indication (and not an accurate representation of average travel times for the respective periods). One example of a factor that can significantly affect a travel time run is if the survey vehicle is forced to stop at a signalised intersection as opposed to having a “clear run”. Factors such as this are not significant with a robust data sample but can affect the results in cases of limited samples.

Table 4-2, Figure 4-4 and **Figure 4-5** summarise the travel time comparisons (modelled and surveyed) during the AM, and **Table 4-3**, **Figure 4-6** and **Figure 4-7** during the PM.

Table 4-2 Travel Time Validation - Base (2016) AM Model

Travel Direction	Route Way Point	Observed Average Travel Time (hh:mm:ss)	Modelled Average Travel Time (hh:mm:ss)	Difference (hh:mm:ss)	Validation
Southbound	Camden Valley Way	Start	Start	-	-
	Jehovahs Witnesses	0:01:32	0:01:28	0:00:05	
	Thunderbolt Drive	0:01:24	0:02:13	0:00:49	
	Kearns Avenue	0:00:34	0:00:24	0:00:10	
	Mustang Drive	0:00:12	0:00:12	0:00:00	
	Spitfire Drive	0:00:40	0:00:47	0:00:06	
	Eagle Vale Drive	0:00:08	0:00:15	0:00:07	
	Total Travel Time	**0:04:31**	**0:05:18**	**0:00:47**	✓
Northbound	Eagle Vale Drive	Start	Start	-	-
	Spitfire Drive	0:00:08	0:00:09	0:00:01	
	Mustang Drive	0:00:45	0:00:48	0:00:04	
	Kearns Avenue	0:00:12	0:00:12	0:00:00	
	Thunderbolt Drive	0:00:32	0:00:31	0:00:01	
	Jehovahs Witnesses	0:01:35	0:01:14	0:00:21	
	Camden Valley Way	0:01:30	0:01:25	0:00:05	
	Total Travel Time	**0:04:42**	**0:04:19**	**0:00:23**	✓

Figure 4-4 Cumulative Travel Time Validation - AM Southbound

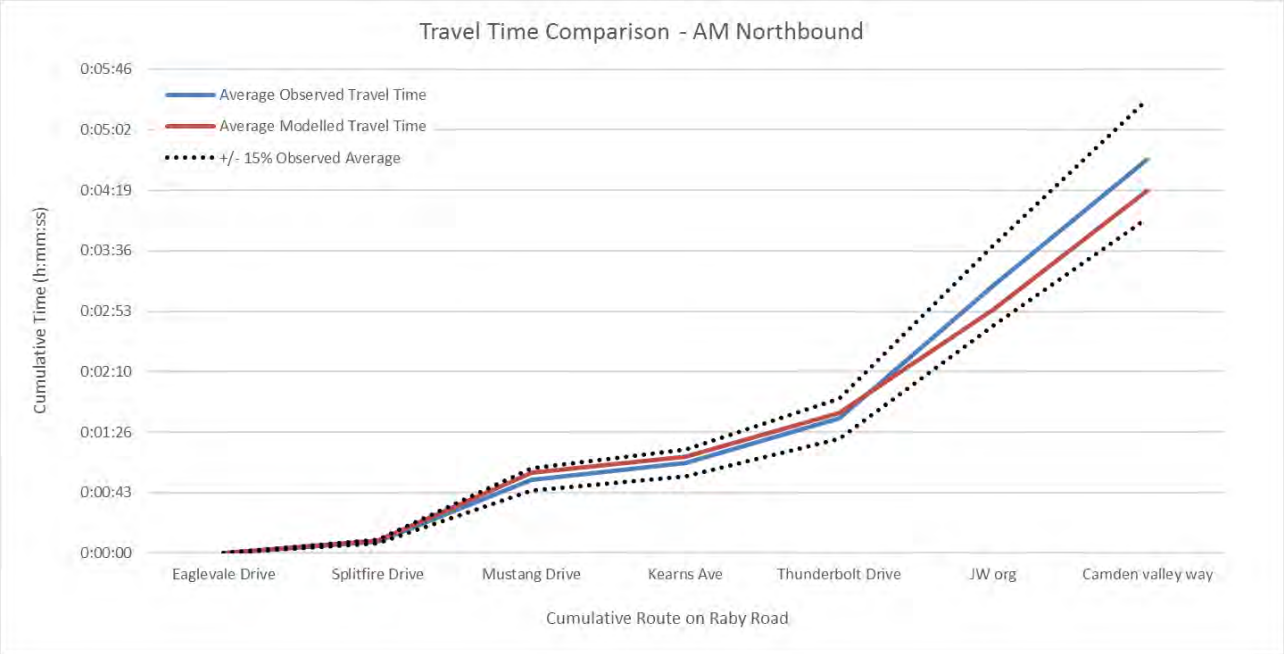


Figure 4-5 Cumulative Travel Time Validation - AM Northbound

Table 4-3 Travel Time Validation - Base (2016) PM Model

Travel Direction	Route Way Point	Observed Average Travel Time (hh:mm:ss)	Modelled Average Travel Time (hh:mm:ss)	Difference (hh:mm:ss)	Validation
Southbound	Camden Valley Way	Start	Start	-	-
	Jehovahs Witnesses	0:01:38	0:01:27	0:00:11	
	Thunderbolt Drive	0:01:30	0:01:33	0:00:03	
	Kearns Avenue	0:00:27	0:00:23	0:00:04	
	Mustang Drive	0:00:12	0:00:12	0:00:00	
	Spitfire Drive	0:00:47	0:00:46	0:00:01	
	Eagle Vale Drive	0:00:12	0:00:12	0:00:01	
	Total Travel Time	**0:04:46**	**0:04:34**	**0:00:12**	✓
Northbound	Eagle Vale Drive	Start	Start	-	-
	Spitfire Drive	0:00:09	0:00:07	0:00:02	
	Mustang Drive	0:00:51	0:00:48	0:00:02	
	Kearns Avenue	0:00:12	0:00:12	0:00:01	
	Thunderbolt Drive	0:00:34	0:00:43	0:00:10	
	Jehovahs Witnesses	0:01:37	0:01:17	0:00:20	
	Camden Valley Way	0:01:54	0:01:33	0:00:21	
	Total Travel Time	**0:05:17**	**0:04:40**	**0:00:37**	✓

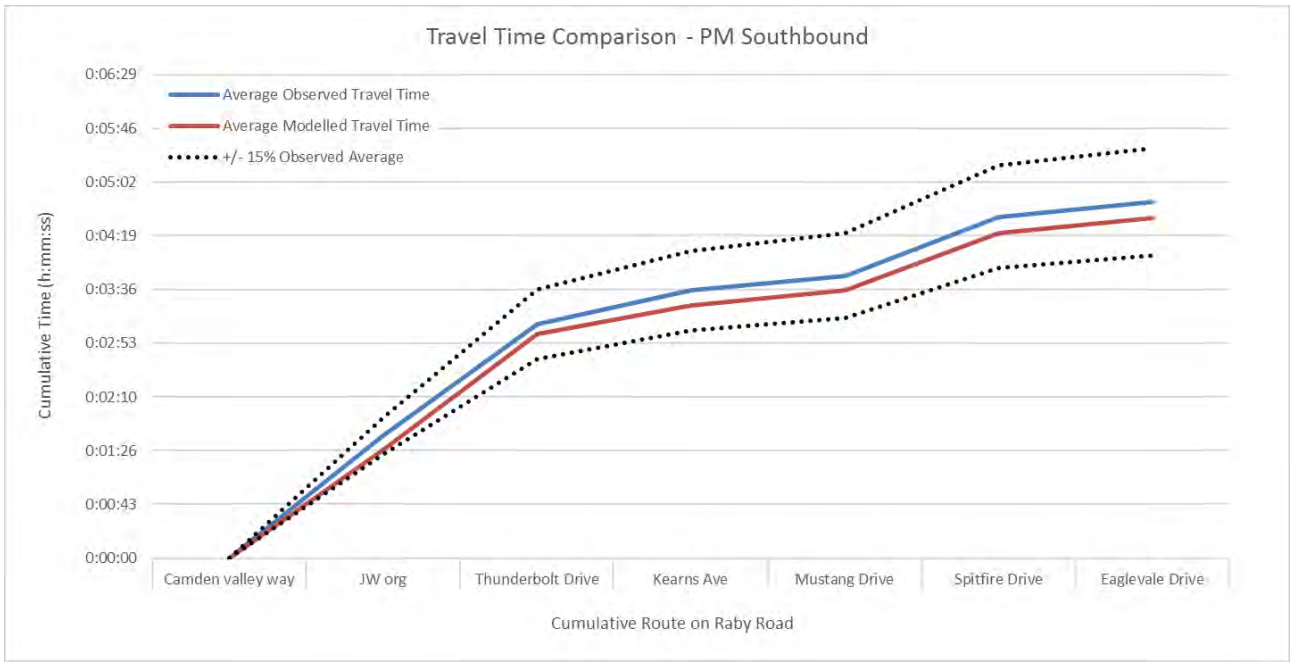


Figure 4-6 Cumulative Travel Time Validation - PM Southbound

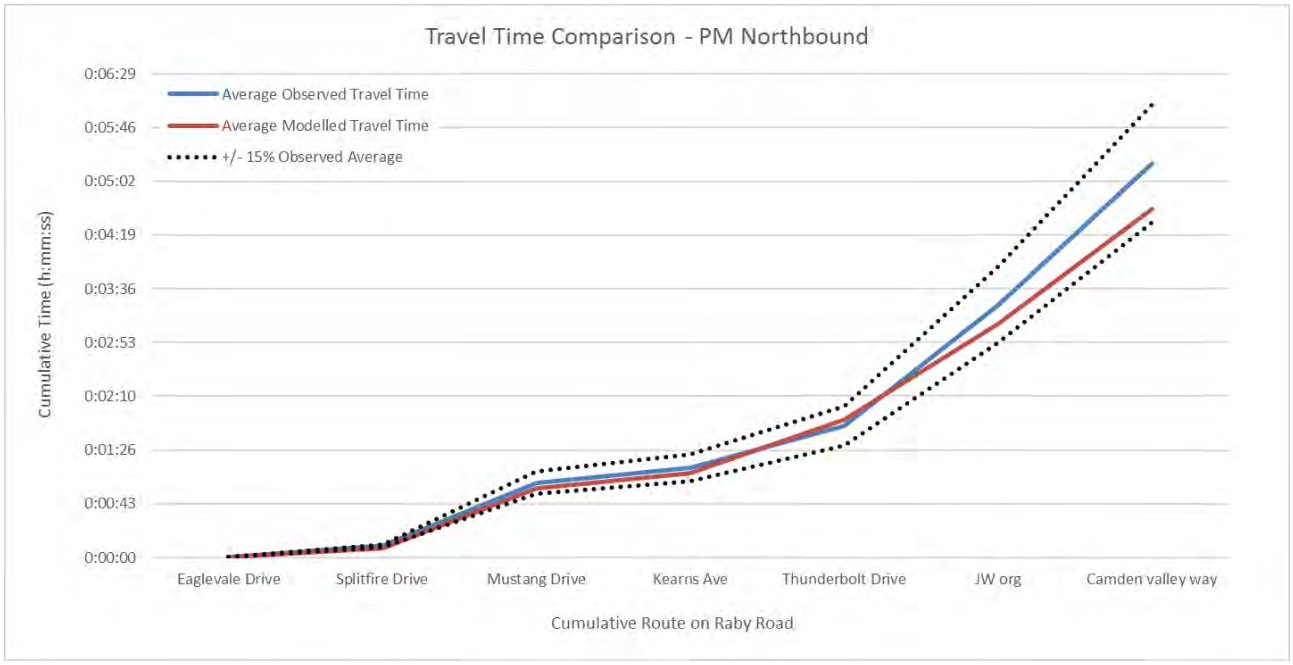


Figure 4-7 Cumulative Travel Time Validation - PM Northbound

The observed and modelled travel time between Jehovahs Witnesses and Thunderbolt Drive in the AM southbound is significantly different. The modelled travel time is 49 seconds higher than the observed travel time. This is due to having only two southbound travel times recorded during the AM peak hour and both did not capture the queueing at the identified hotspot (see **Section 2.5.2**) at Thunderbolt Drive. Evidently, video footage from the opposite (northbound) travel time routes captured this queue and is presented below for validation.

- Traffic on Raby Road in the southbound travel direction queuing beyond visual sight distance from the Thunderbolt Drive / Raby Road intersection during AM peak.

On the basis that there is an extensive queue on the southbound Raby Road approach to Thunderbolt Drive that was not captured in the southbound AM travel time route, the longer modelled travel time for this particular section of the route is considered acceptable.

As for the remainder of the travel time comparisons, they fulfil the *Roads and Maritime Services Traffic Modelling Guidelines (2013)* validation criteria since the average modelled travel time was within both 15 per cent and one minute of the average observed travel time for cumulative full length of route. Therefore, the model travel time results show that an acceptable level of validation has been achieved for the AM and PM peak modelled periods.

4.2.2 Traffic Operation and Behaviour

The hotspots for traffic operation and behaviour within the study area were identified and detailed in **Section 2.5**. Comparisons of video footage and model snapshots reproducing existing traffic operation and behaviour at identified hotspots are presented below. This validates and builds confidence in the base models.

4.2.2.1 Camden Valley Way Southbound Queue (PM)

Observed	Modelled
	

- Traffic on Camden Valley Way in the southbound travel direction queuing beyond visual sight distance from the Camden Valley Way / Raby Road intersection during PM peak

4.2.2.2 Raby Road at Thunderbolt Drive Southbound Queue (AM)

Observed	Modelled
	

- Traffic on Raby Road in the southbound travel direction queuing beyond visual sight distance from the Thunderbolt Drive / Raby Road intersection during AM peak.

4.2.2.3 Raby Road Right Turn to Spitfire Drive (AM)

Observed	Modelled
	

- Right turn bay to Spitfire Drive on Raby Road at risk of overspill during AM peak
- Heavy southbound traffic on Raby Road has priority over the right turn into Spitfire Drive
- Sight distance issue identified because of the grade/slope of Raby Road. Therefore, vehicles turning right into Spitfire Drive wait for longer (than average) gaps.

4.2.2.4 Spitfire Drive Queue (AM)

Observed	Modelled
	

- Traffic on Spitfire Drive queueing beyond Gannet Street during AM peak
- Heavy southbound traffic on Raby Road has priority over the right turn into Spitfire Drive
- As identified above, sight distance issue identified because of the grade/slope of Raby Road. Therefore, vehicles turning out of Spitfire Drive wait for longer (than average) gaps.

4.2.2.5 Eagle Vale Drive to Raby Road (AM/PM)

Observed	Modelled
	

- Traffic on Eagle Vale Drive queueing back to Gould Road during the AM and PM peak periods
- Heavy northbound Raby Road traffic has priority over Eagle Vale Drive.

4.2.2.6 Campbelltown Road Off-ramp (PM)

Observed	Modelled
	

- Traffic on Campbelltown Road Off-ramp queueing back to Campbelltown Road
- Heavy northbound Raby Road traffic has priority over the Campbelltown Road Off-ramp, with the off-ramp right turning vehicles struggling to find sufficient gaps to enter the roundabout
- Off-ramp traffic turning left to Raby Road observed to be aggressive and take lower (than average) gaps
- Off-ramp traffic observed queuing on the road shoulder to informally extend the right turn lane and avoid blocking the left turn movement.

4.3 Model Stability

The number of vehicles in the entire network across all time periods, for each of the five seed values, was assessed and the results are presented in **Figure 4-8** and **Figure 4-9**. The vehicle travel time during the AM and PM models are consistent and independent across different seed values, which confirms that one seed value for the model run can be representative of the general model run. On this basis, the peak hour models are considered robust and show that the model remains stable under varying conditions.

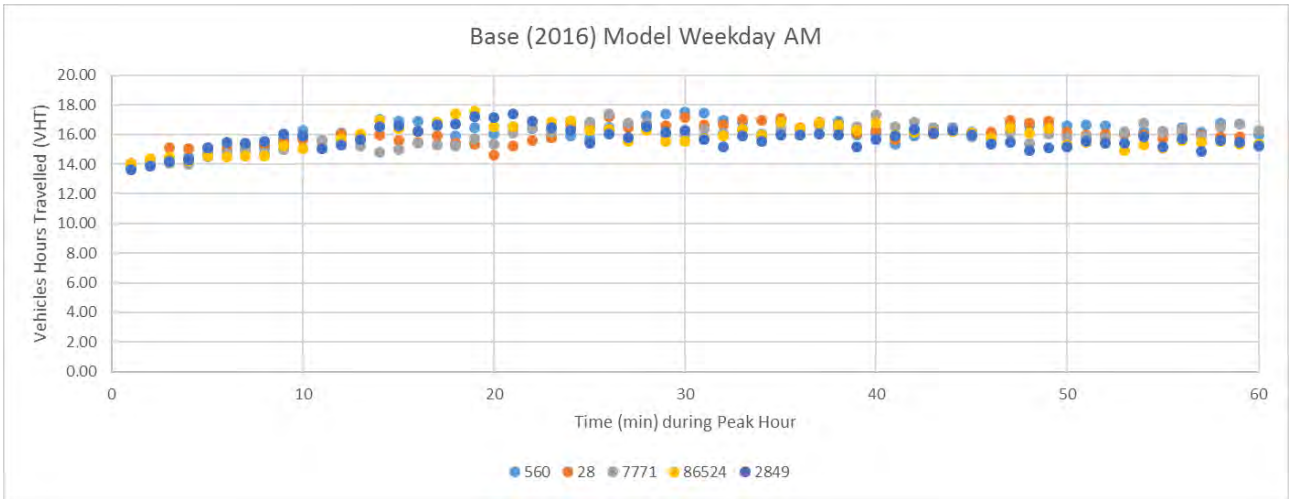


Figure 4-8 Base (2016) Model Weekday AM – Model Stability

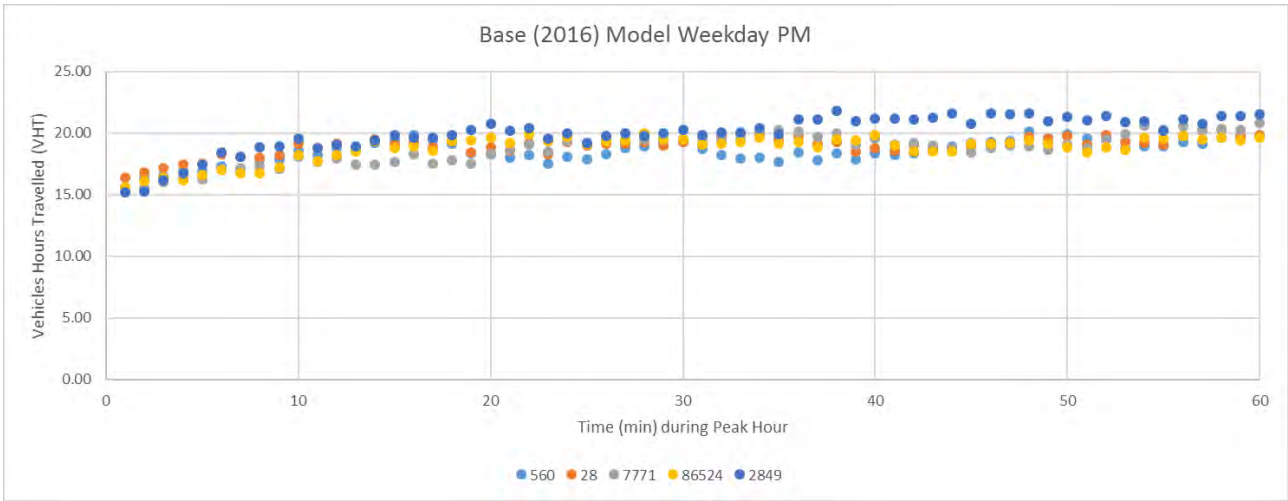


Figure 4-9 Base (2016) Model Weekday PM – Model Stability

5 Future Traffic Demand

The future traffic demands for the short, medium and long term scenario modelling were estimated using a combination of:

> Growth based on local development

> Growth from larger scale (STFM network model).

The methodology to forecast traffic demand was established in consultation with Campbelltown City Council and is summarised below:

Step 1 – STFM Data Analysis

> Collate STFM plot volumes (2hr) for years 2021, 2026, 2031 and 2036 provided by Roads and Maritime Services

> Convert STFM plot volumes (2hr) to Peak Hour (1hr) using a factor of 0.55, which is common practice with STFM conversions

> Calculate the weighted average growth percentage at 14 identified locations for years 2021 to 2026, 2026 to 2031, and 2031 to 2036.

Step 2 – Increase Traffic Demands in the Traffic Models

> Add committed developments and respective trips / access points to the traffic models. This includes assumptions on trip assignment / distribution for these development areas. Detailed information was received from Council to determine the respective trip generation for each site.

> Determine if additional demands need to be added to the traffic models to achieve a network average growth in accordance with the growth rates extracted from the STFM outputs.

The above methodology assumed the majority of the traffic growth that the study area will experience is attributable to the local developments (South West Growth Areas) and that the remaining growth refers to background growth evenly applied across the network.

5.1 Local Developments

The committed local developments in the north-western region of the study area identified to have an impact to the study area include:

> Anticipated completion prior to 2021
  - Emerald Hills 1280 lots
  - Scenic Hills 587 lots
  - No. 121 Raby Road 32 lots

> Anticipated completion between 2021 and 2026
  - Sekisui House 560 lots
  - Camden Lakeside Golf Course 380 lots

The estimated trip generation and distribution of these developments is outlined in the following sections.

5.1.1 Trip Generation

The RMS Guide To Traffic Generating Developments v2.2 (2002) and the subsequent Technical Direction TDT 2013 / 04a were used to estimate the potential traffic generation of the proposed low-density dwellings. The traffic generation rates for the proposed land use utilised are below in **Table 5-1**. As to conduct a conservative assessment, it was assumed all residential lots were low density and internal trips were not discounted.

Table 5-1 Local Development - Trip Generation

Development	Estimated Lots	Trip Generation Rate		Trips Generated	
		AM	PM	AM	PM
Emerald Hills	1280	0.95	0.99	1216	1267
Sekisui House	560			532	554
Camden Lakeside Golf Course	380			361	376
Scenic Hills	587			558	581
No. 121 Raby Road	32			30	32

5.1.2 Trip Distribution

Journey to Work analysis has been undertaken on the basis of several travel zones representing the committed developments. Data from the travel zones was collated because of small sample sizes in the area. **Figure 5-1** illustrates the location and boundaries of the following travel zones:

> TZ3687
> TZ3224
> TZ3676
> TZ3226
> TZ3225
> TZ3692
> TZ3691.

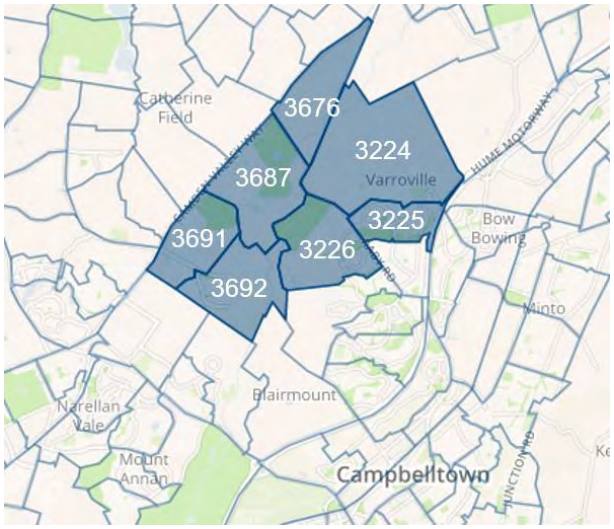


Figure 5-1 BTS Visual Travel Zones for Local Development

In **Table 5-2**, the Journey to Work data shows that the majority of residents in the area work in Campbelltown (36%). If data for places of work including 'no fixed place of work' and 'other' are ignored, the adjusted data is presented in **Table 5-3**. The key routes to/from work locations were determined using Google Map Directions.

Table 5-2 Local Development - Place of Work for Residents

Destination	No.	Percentage
Campbelltown	1013	36%
Liverpool	275	10%
Sydney Inner City	224	8%
Camden	153	5%
No fixed place of work	138	5%

Destination	No.	Percentage
Bankstown	130	5%
Fairfield	114	4%
Merrylands – Guilford	83	3%
Parramatta	73	3%
Bringelly – Green Valley	56	2%
Other	541	19%

Table 5-3 Local Development - Place of Work for Residents (Adjusted)

Destination	No.	Percentage (Adjusted)	Key Routes to/from Development
Campbelltown	1013	48%	▪ Raby Road – Campbelltown Road – Queen Street / Moore Oxley Bypass ▪ Raby Road – Campbelltown Road – Blaxland Road
Liverpool	275	13%	▪ Raby Road – M31 ▪ Camden Valley Way – M31
Sydney Inner City	224	11%	▪ Raby Road – M31 ▪ Camden Valley Way – M31
Camden	153	7%	▪ Raby Road – Camden Valley Way
Bankstown	130	6%	▪ Raby Road – M31 ▪ Camden Valley Way – M31
Fairfield	114	5%	▪ Raby Road – M31 ▪ Camden Valley Way – M31
Merrylands – Guilford	83	4%	▪ Raby Road – M31 ▪ Camden Valley Way – M31
Parramatta	73	3%	▪ Raby Road – M31 ▪ Camden Valley Way – M31
Bringelly – Green Valley	56	3%	▪ Camden Valley Way – George Road
Total	**2121**	**100%**	

The trip distribution table above was then considered by route. Routes used by multiple locations were collated. Furthermore, the following trip distribution assumptions were made:

> The Campbelltown Road route was split:
  – 50% via Queen Street / Moore Oxley Bypass
  – 25% via Blaxland Road
  – 15% via Ben Lomond Road
  – 10% via Rose Payten Drive
> The M31 route was split with 70% via the Raby Road on-ramp and 30% via Camden Valley Way.

The overall trip distribution is illustrated below in **Figure 5-2** and summarised in **Table 5-4**.

Table 5-4 Local Development - Trip Distribution

Route		Split Percentage	Total Percentage
Raby Road – Campbelltown Road	via Queen Street / Moore Oxley Bypass	50%	24%
	via Blaxland Road	25%	12%
	Via Rose Payten Drive	10%	7%
	via Ben Lomond Road	15%	5%
M31	via Raby Road	70%	29%
	via Camden Valley Way	30%	13%
Raby Road – Camden Valley Way		-	7%
Camden Valley Way – George Road		-	3%
Total			**100%**

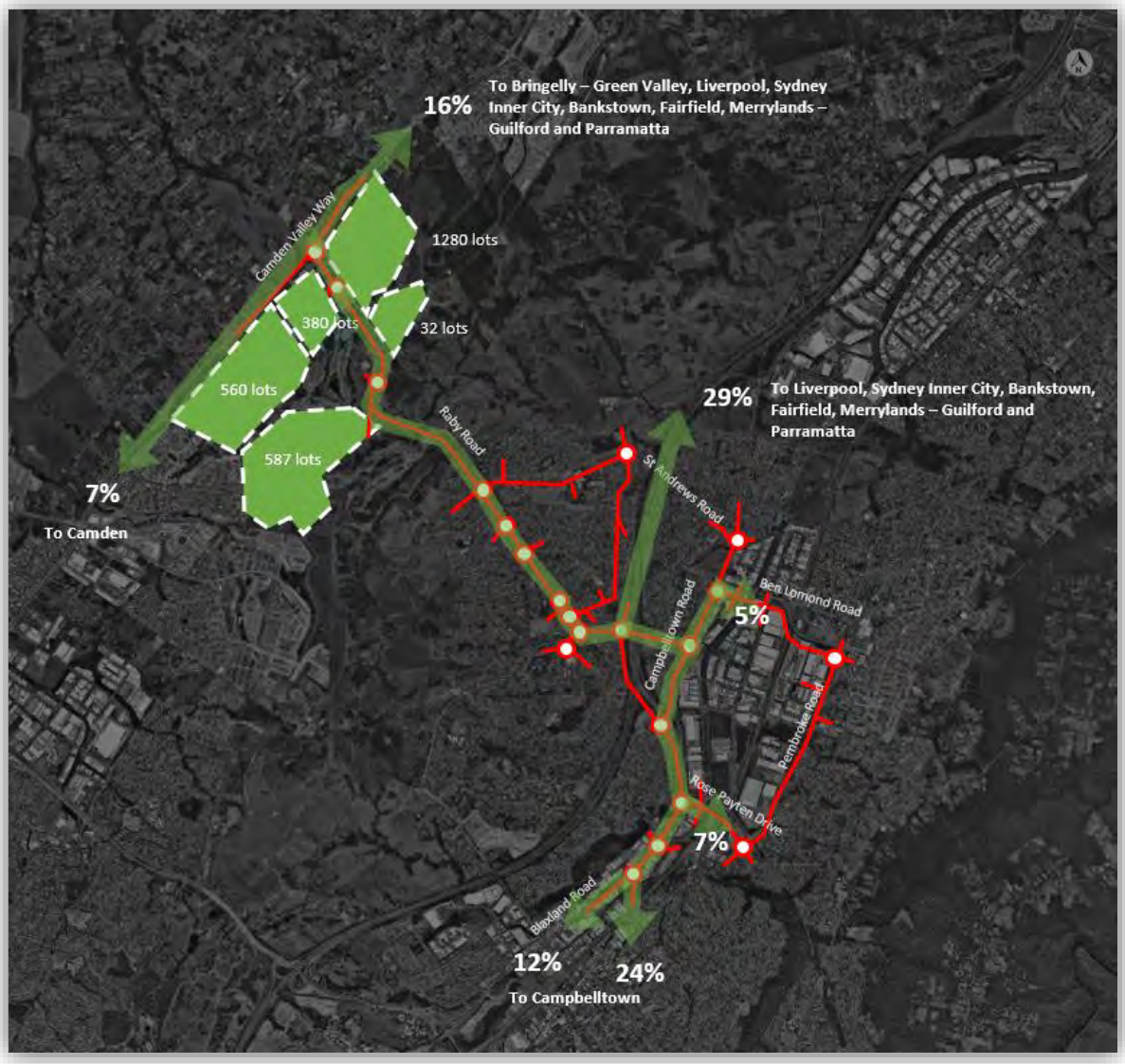


Figure 5-2 Local Development Trip Distribution

5.1.3 Summary

The local development trip generation and distribution estimation highlights that:

> The local developments considered in this study (all located in the northwest region of the study area) are anticipated to generate over 2,500 vehicle trips per hour during the AM and PM peak periods.

> The majority of these trips will travel to Campbelltown, Liverpool and Sydney Inner City resulting in a significant increase of vehicles on Camden Valley Way, Raby Road and Campbelltown Road.

5.2 STFM Network Model

Roads and Maritime provided the project team with strategic modelling data for the study area. This consists of traffic volumes outputs extracted from the "Sydney GMA Strategic Traffic Forecasting Model". Volume outputs were received for both the AM (7.00am – 9.00am) and PM (4.00pm – 6.00pm) peaks for the future year horizons of 2015, 2021, 2026, 2031 and 2036.

Fourteen (14) locations within the modelled network were selected to allow for a comparison to be made between traffic volumes for various relevant years.

Figure 5-3 identifies the selected locations.

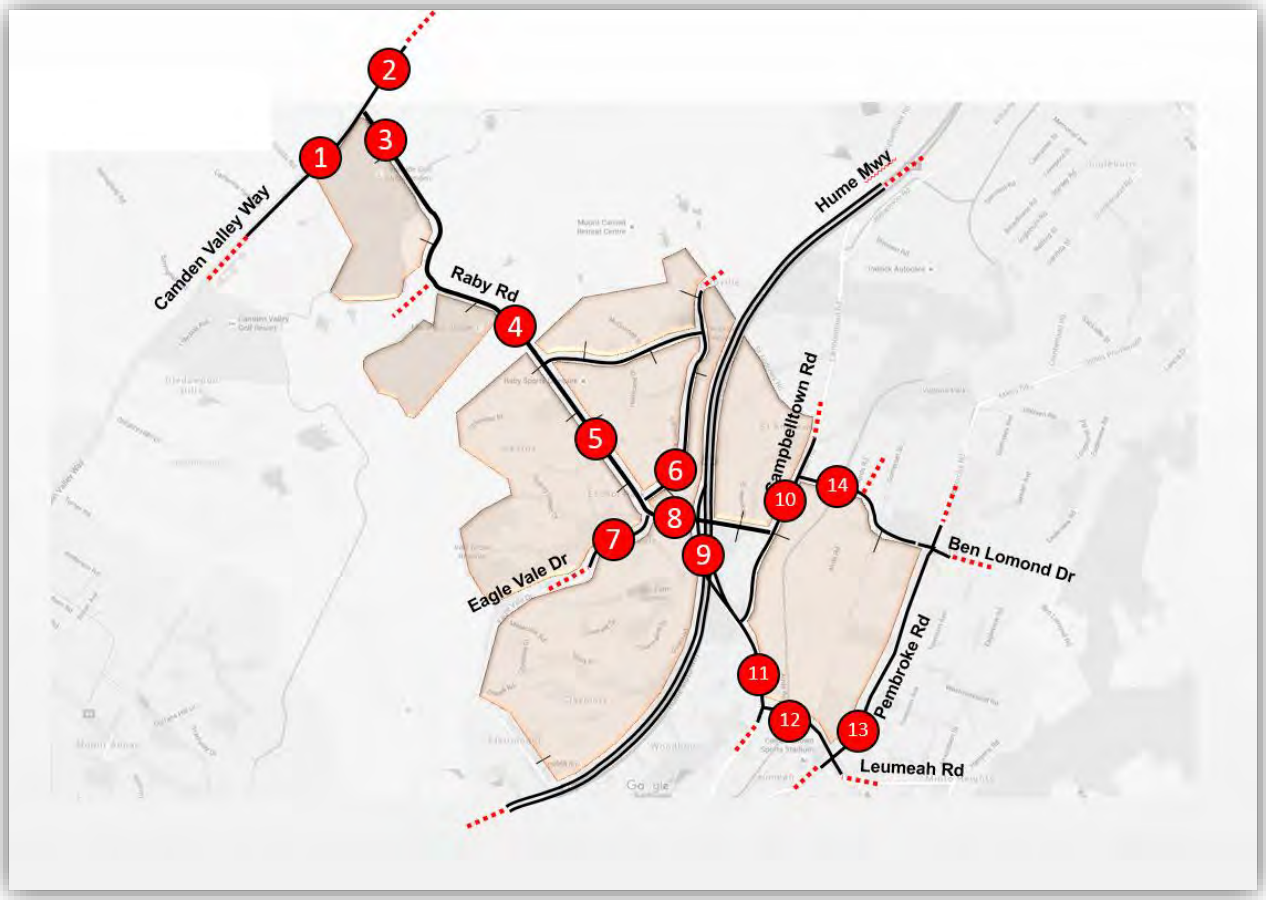


Figure 5-3 Identified Peak Hour Flow Locations

The data received is summarised in **Table 5-5** and **Table 5-6**. These tables include the traffic volumes for the AM and PM peaks respectively. Both tables include 2016 traffic volumes for each site (obtained via the traffic surveys completed in July 2016 at the start of the project) and the STFM 2h outputs multiplied by a 0.55 factor (to obtain hourly volumes) for the 2015, 2021, 2026, 2031 and 2036 year horizons.

Table 5-5 Peak Hour Flow AM with % Growth between Future Years

	Location	Travel Direction	*2016 (Survey)*	2015 (STFM)	2021 (STFM)	2026 (STFM)	2031 (STFM)	2036 (STFM)
1	Camden Valley Way (south west approach to Raby Rad)	North East	*2152*	2473	2505 (1%)	2633 (5%)	2491 (-5%)	2731 (10%)
		South West	*1252*	1347	1707 (27%)	1945 (14%)	2030 (4%)	2308 (14%)
2	Camden Valley Way (north east approach to Raby Road)	North East	*1506*	1825	2081 (14%)	2165 (4%)	1955 (-10%)	2149 (10%)
		South West	*841*	1025	1410 (38%)	1586 (12%)	1456 (-8%)	1667 (15%)
3	Raby Road (approach to Camden Valley Way	North West	*696*	742	775 (4%)	991 (28%)	1282 (29%)	1410 (10%)
		South East	*931*	1068	903 (-15%)	1100 (22%)	1227 (12%)	1365 (11%)
4	Raby Road (north west approach to Thunderbolt Drive)	North West	*968*	719	752 (5%)	966 (29%)	1254 (30%)	1379 (10%)
		South East	*522*	965	794 (-18%)	990 (25%)	1116 (13%)	1250 (12%)
5	Raby Road (north west approach to Eschol Park Drive)	North West	*1163*	309	268 (-13%)	325 (21%)	468 (44%)	503 (8%)
		South East	*634*	659	581 (-12%)	717 (23%)	830 (16%)	887 (7%)
6	Spitfire Drive (approach to Raby Road)	North East	*299*	282	306 (9%)	299 (-2%)	302 (1%)	293 (-3%)
		South West	*282*	430	428 (0%)	414 (-3%)	410 (-1%)	426 (4%)
7	Eagle Vale Drive (on approach to Raby Road)	North East	*1043*	631	769 (22%)	756 (-2%)	775 (3%)	810 (4%)
		South West	*761*	465	477 (3%)	503 (6%)	541 (8%)	611 (13%)
8	Raby Road (between Eagle Vale Drive and M31 on/off ramps)	East	*1810*	1483	1579 (6%)	1621 (3%)	1319 (-19%)	1721 (30%)
		West	*928*	769	811 (5%)	836 (3%)	833 (0%)	989 (19%)
9	M31 off ramp (to Raby Road)	North	*496*	630	632 (0%)	665 (5%)	761 (14%)	796 (5%)
10	Campbelltown Road (south approach to Ben Lomond Drive)	North	*854*	637	667 (5%)	668 (0%)	629 (-6%)	658 (5%)
		South	*616*	655	684 (5%)	635 (-7%)	695 (9%)	735 (6%)
11	Campbelltown Road (north approach to Rose Payten Drive)	North	*1715*	1844	1999 (8%)	1968 (-2%)	2120 (8%)	2063 (-3%)
		South	*1890*	2209	2415 (9%)	2416 (0%)	2626 (9%)	2616 (0%)

12	Rose Payten Drive (approach to Campbelltown Road)	East	*783*	901	981 (9%)	978 (0%)	1076 (10%)	1233 (15%)
		West	*657*	667	749 (12%)	739 (-1%)	777 (5%)	1058 (36%)
13	Pembroke Road (north approach to Leumeah Road)	North	*696*	901	976 (8%)	1038 (6%)	1099 (6%)	1227 (12%)
		South	*659*	914	1027 (12%)	1062 (3%)	1132 (7%)	1236 (9%)
14	Ben Lomond Drive (approach to Campbelltown Road)	East	*1306*	900	995 (11%)	1032 (4%)	1134 (10%)	1233 (9%)
		West	*923*	756	842 (11%)	888 (5%)	974 (10%)	1058 (9%)
Weighted Average Growth					**7.3% (1.5% per annum)**	**6.4% (1.3% per annum)**	**4.7% (0.9% per annum)**	**10.0% (2.0% per annum)**

Table 5-6 Peak Hour Flow PM with % Growth between Future Years

Site	Location	Travel Direction	*2016 (Survey)*	2015 (STFM)	2021 (STFM)	2026 (STFM)	2031 (STFM)	2036 (STFM)
1	Camden Valley Way (south west approach to Raby Rad)	North East	*1423*	1563	1790 (15%)	2094 (17%)	2032 (-3%)	2253 (11%)
		South West	*2227*	2415	2395 (-1%)	2508 (5%)	2437 (-3%)	2631 (8%)
2	Camden Valley Way (north east approach to Raby Road)	North East	*980*	1071	1403 (31%)	1603 (14%)	1484 (-7%)	1656 (12%)
		South West	*1356*	1936	2151 (11%)	2248 (5%)	1982 (-12%)	2151 (9%)
3	Raby Road (approach to Camden Valley Way	North West	*1208*	920	796 (-13%)	1000 (26%)	1205 (20%)	1327 (10%)
		South East	*767*	933	939 (1%)	1231 (31%)	1421 (15%)	1547 (9%)
4	Raby Road (north west approach to Thunderbolt Drive)	North West	*1193*	840	711 (-15%)	914 (29%)	1118 (22%)	1238 (11%)
		South East	*785*	905	911 (1%)	1202 (32%)	1389 (16%)	1514 (9%)
5	Raby Road (north west approach to Eschol Park Drive)	North West	*1188*	557	453 (-19%)	591 (31%)	696 (18%)	730 (5%)
		South East	*689*	542	445 (-18%)	576 (30%)	629 (9%)	670 (6%)
6	Spitfire Drive (approach to Raby Road)	North East	*345*	447	438 (-2%)	417 (-5%)	418 (0%)	444 (6%)
		South West	*274*	300	312 (4%)	309 (-1%)	305 (-1%)	314 (3%)
7	Eagle Vale Drive (on approach to Raby Road)	North East	*848*	532	619 (16%)	626 (1%)	666 (6%)	700 (5%)
		South West	*1028*	703	723 (3%)	710 (-2%)	731 (3%)	776 (6%)

8	Raby Road (between Eagle Vale Drive and M31 on/off ramps)	East	*1017*	982	1050 (7%)	1114 (6%)	1146 (3%)	1190 (4%)
		West	*1818*	1498	1472 (-2%)	1478 (0%)	1570 (6%)	1654 (5%)
9	M31 off ramp (to Raby Road)	North	*524*	833	818 (-2%)	881 (8%)	990 (12%)	1066 (8%)
10	Campbelltown Road (south approach to Ben Lomond Drive)	North	*525*	364	391 (7%)	403 (3%)	400 (-1%)	398 (-1%)
		South	*990*	979	1007 (3%)	1060 (5%)	1045 (1%)	1073 (3%)
11	Campbelltown Road (north approach to Rose Payten Drive)	North	*2013*	2246	2410 (7%)	2310 (-4%)	2481 (7%)	2470 (0%)
		South	*2426*	2465	2543 (3%)	2505 (1%)	2646 (6%)	2569 (-3%)
12	Rose Payten Drive (approach to Campbelltown Road)	East	*865*	771	840 (9%)	878 (5%)	823 (5%)	971 (5%)
		West	*637*	848	930 (10%)	914 (-2%)	1035 (13%)	1132 (9%)
13	Pembroke Road (north approach to Rose Payten Drive)	North	*807*	952	1043 (10%)	1090 (4%)	1130 (4%)	1223 (8%)
		South	*741*	897	965 (8%)	1026 (6%)	1058 (3%)	1219 (15%)
14	Ben Lomond Drive (approach to Campbelltown Road)	East	*1006*	768	861 (12%)	888 (3%)	957 (8%)	1022 (7%)
		West	*1459*	1040	1115 (7%)	1153 (3%)	1242 (8%)	1301 (5%)
Weighted Average Growth					**4.3% (0.9% per annum)**	**7.8% (1.6% per annum)**	**4.5% (0.9% per annum)**	**6.4% (1.3% per annum)**

The 2016 traffic volumes are greater than the 2021 estimated volumes for some of the locations selected. The most notable example is the section of Raby Road between Spitfire Drive and Thunderbolt Drive (Site 5 in Figure 5-1). For this location, the estimated 2021 volumes can be 62% to 77% lower when compared to current (2016) traffic volumes, depending on the peak period and direction. While this disparity is not as severe for other locations, the overall comparison clearly shows that it wouldn't be realistic to simply apply the future year volumes extracted from the STFM to the network. This would result in multiple key corridors including Raby Road experiencing lower volumes.

To overcome this problem, the overall weighted average growth for the network was quantified. This provides an indication of traffic growth across the network for each future year horizon based on STFM data.

Table 5-7 Weighted Average Growth STFM

Peak Hour	2021 to 2026	2026 to 2031	2031 to 2036
AM	**6.4%** **(1.3% per annum)**	**4.7%** **(0.9% per annum)**	**10.0%** **(2.0% per annum)**
PM	**7.8%** **(1.6% per annum)**	**4.5%** **(0.9% per annum)**	**6.4%** **(1.3% per annum)**

As shown in **Table 5-7**, the annual growth rates extracted from the STFM outputs range between 0.9% and 2.0%. Based on those results, the proposed overall growth rates to be applied (or reached as a minimum) to the models are as follows:

> 2016 base case -> 2021 future year **1.5% per annum**
> 2021 future year -> 2026 future year **1.5% per annum**
> 2026 future year -> 2036 future year **1.5% per annum.**

6 Short Term (2016-2021) Assessment

This section of the report outlines the iterative process to identify transport network deficiencies and respective remedial measures for the short term timeframe, as follows:

> Short Term: evaluation of network deficiencies experienced at present (in 2016) and identification of mitigation measures to be gradually implemented over the next 5 years.

> Identification of deficiencies that arise between now and 2021, and the mitigation measures required to be in place by then to address these deficiencies.

6.1 Short Term (2021) Traffic Demand

The following local developments were assumed to be completed in 2021:

> Emerald Hills Estate
> Scenic Hills
> No. 121 Raby Road.

Based on the local development trip generation and distribution estimated in **Section 5**, light vehicle trips were added and distributed to the future year 2021 demand matrix as follows:

> Emerald Hills Estate
  – 608 trips in the AM and 634 trips in the PM
> Scenic Hills
  – 558 trips in the AM and 581 trips in the PM
> No. 121 Raby Road
  – 30 trips in the AM and 32 trips in the PM.

The resulting future year 2021 light vehicle (LV) demand matrix equated to a growth of 2.1% (AM) and 1.9% (PM). This is more than the proposed overall STFM growth rate of 1.5% per annum, therefore no additional network wide trips were added to the future year 2026 LV demand matrix.

Table 6-1 presents the total number of trips in the resulting future year 2021 LV demand matrix in comparison to the 2016 LV demand matrix.

Table 6-1 Future Year 2021 Demand Matrix (LV)

Modelling Year	Total Trips in Light Vehicles Demand Matrix	
	AM	PM
2016	14,788	17,155
2021	16,364	19,242
Growth (per annum)	**2.1%**	**1.9%**

Heavy vehicle (HV) demand in the industrial area bound by Rose Payten Drive, Pembroke Road, Ben Lomond Road and Campbelltown Road were increased based on Council advice that the industrial area is 85 to 90 percent developed. The 2021 future year demand has assumed full development of the industrial area (remaining 10 to 15%). The addition of these HV trips equated to a growth of 2.4% (AM) and 3.3% (PM) per annum for the network.

Table 6-2 presents the total number of trips in the resulting future year 2021 HV demand matrix in comparison to the 2016 HV demand matrix.

Table 6-2 Future Year 2021 Demand Matrix (HV)

Modelling Year	Total Trips in Heavy Vehicles Demand Matrix	
	AM	PM
2016	933	765
2021	1,047	890
Growth (per annum)	**2.4%**	**3.3%**

6.2 Transport Network Deficiencies and Upgrades

The following sections identify the existing (2016) and the short term (2016-2021) network deficiencies and respective mitigation measures proposed. Upgrades were considered and analysed iteratively with cost and property boundary considerations. In particular, the life of roundabouts and priority controlled intersections was extended as much as possible to avoid overprovision of infrastructure and unnecessary expenditure (such as provision of traffic signals).

A total of 10 locations are proposed to be upgraded in the short term (in the next five years) as illustrated in **Figure 6-1**.

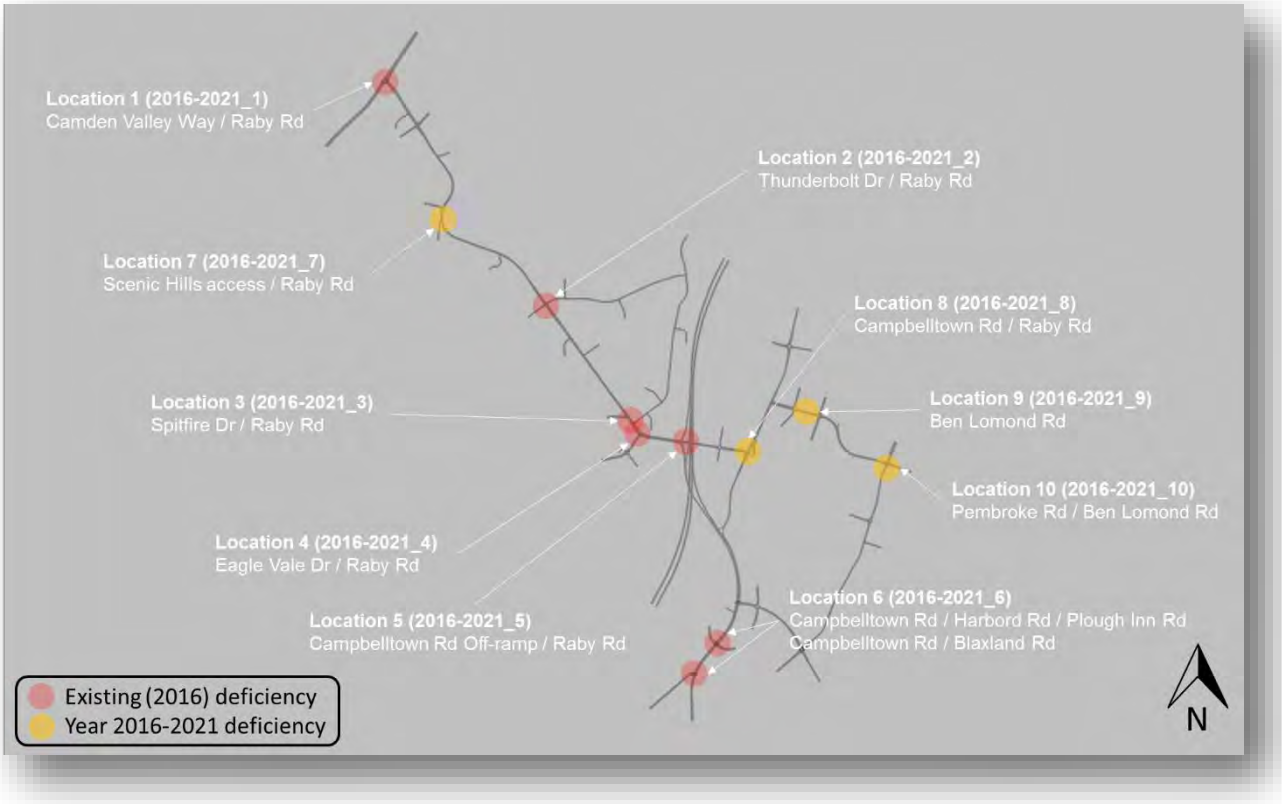


Figure 6-1 Map of Short Term Upgrade Locations

6.2.1 Location 1 (2016-2021_1) Camden Valley Way / Raby Road Intersection

Figure 6-2 identifies the extensive queuing on the Camden Valley Way approach in the south-westbound travel direction especially during the existing PM peak period.

Figure 6-2 Year 2016 Location 1 Deficiency (2016-2021_1_D)

Roads and Maritime Services are currently planning an upgrade of Camden Valley Way (to a six lane configuration). While the exact implementation timeframe is not known, based on the delay and queueing identified in the existing conditions, it was assumed that the upgrades would be implemented by 2021. The upgrade consists of one additional lane in each direction, as illustrated in **Figure 6-3** below. This intersection is located at the boundary of the study area and it would not have a significant impact to the rest of the network, if the intersection is not upgraded by 2021.

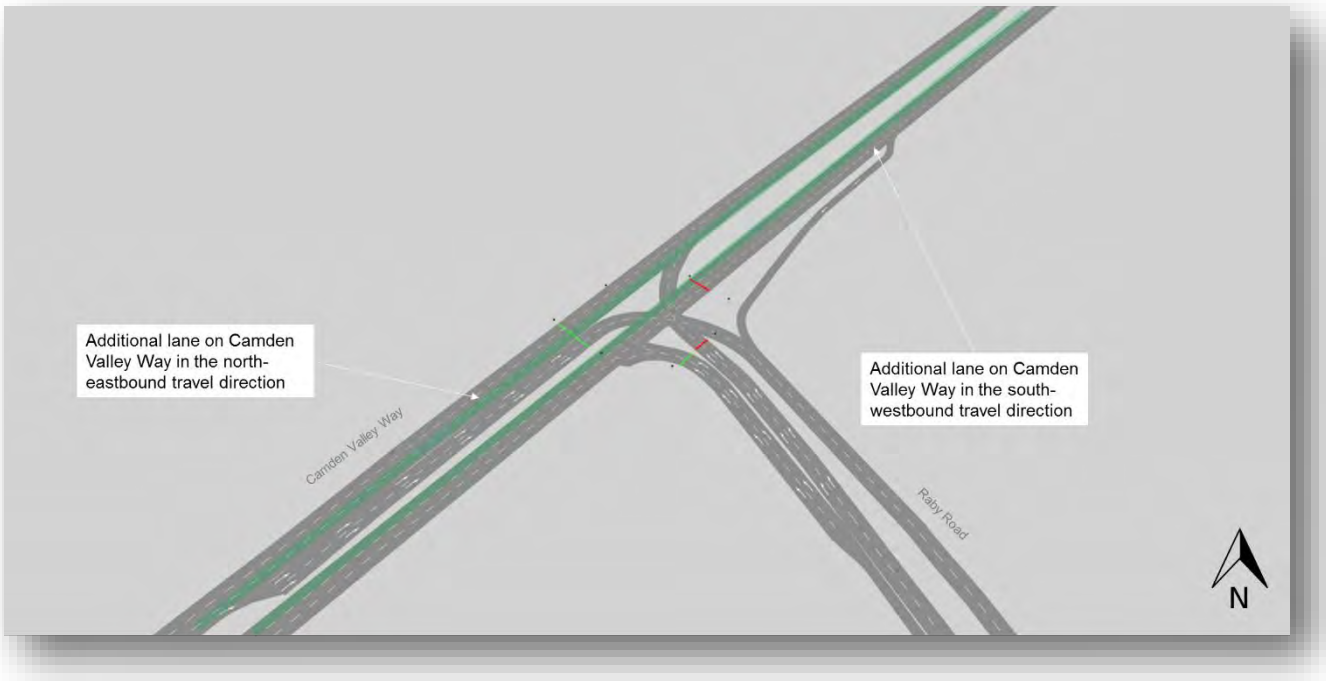


Figure 6-3 Year 2016 Location 1 Upgrades (2016-2021_1_U)

6.2.2 Location 2 (2016-2021_2) Thunderbolt Drive / Raby Road Intersection

Figure 6-4 identifies the extensive queuing on the Raby Road approach in the southbound travel direction during the existing AM peak period.

Figure 6-4 Year 2016 Location 2 Deficiency (2016-2021_2_D)

Figure 6-5 illustrates the proposed upgrades to mitigate the transport network deficiencies identified. The additional short approach lane (250m) on Raby Road in the southbound travel direction mitigates the existing deficiency that occurs during the AM peak period. The additional lane on Raby Road in the northbound travel direction mitigates the Raby Road northbound deficiency that arises by 2021 during the PM peak period.

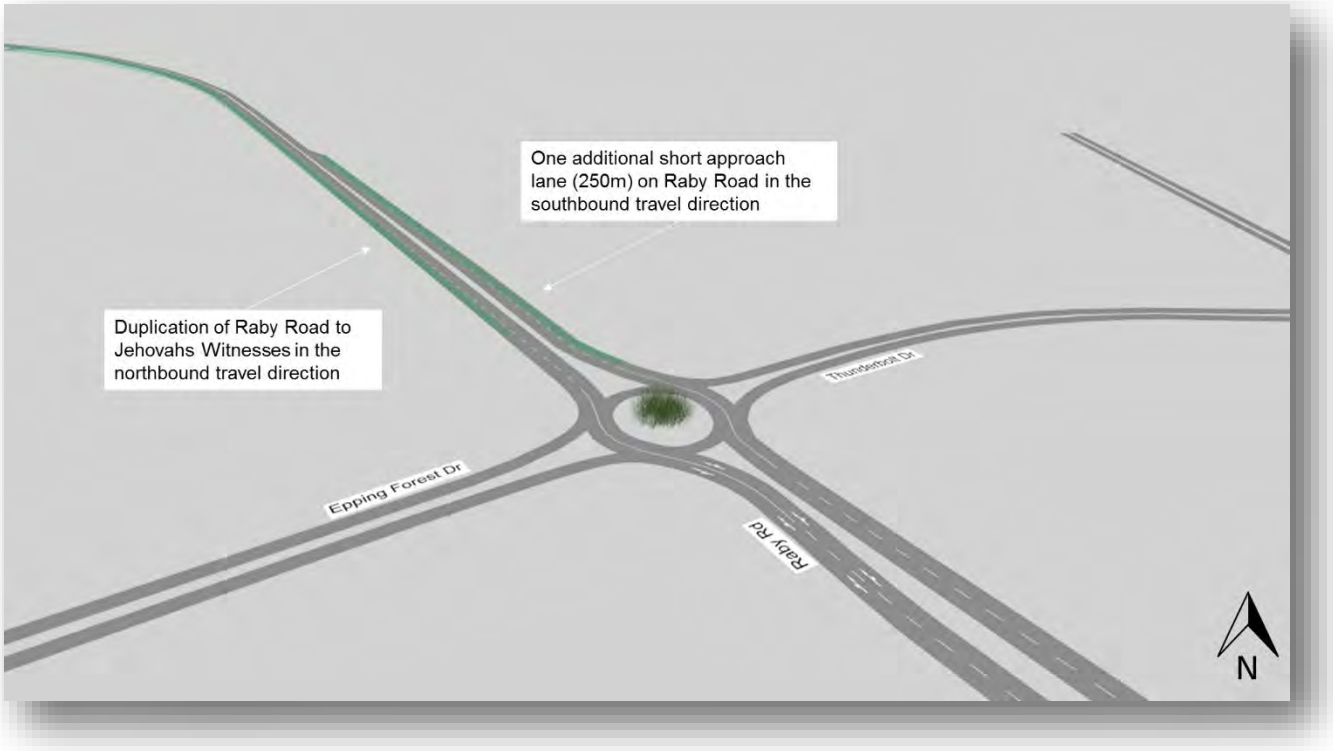


Figure 6-5 Year 2016 Location 2 Upgrades (2016-2021_2_U)

6.2.3 Location 3 (2016-2021_3) Spitfire Drive / Raby Road Intersection

Figure 6-6 identifies the extensive queuing on the Raby Road right turn in the northbound travel direction and the left turn on the Spitfire Drive approach to Raby Road during the existing AM peak period.

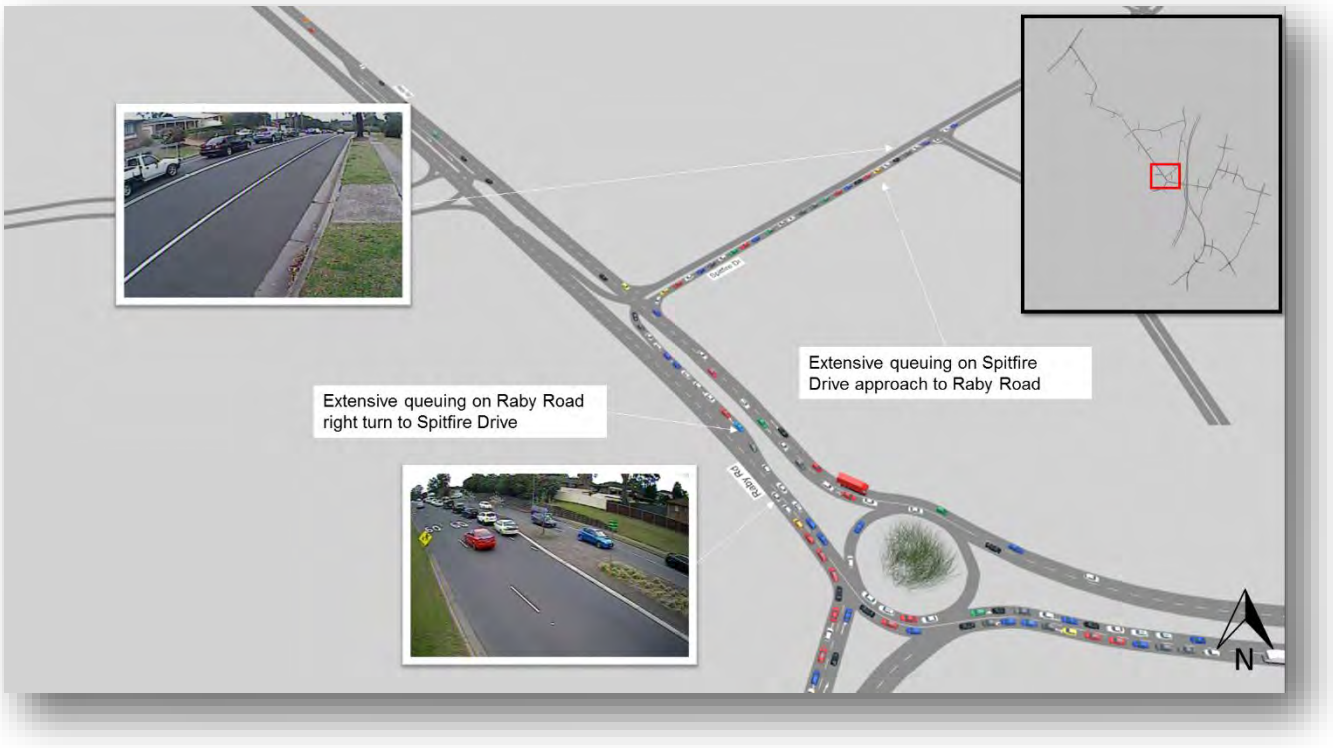


Figure 6-6 Year 2016 Location 3 Deficiency (2016-2021_3_D)

The signalisation of Raby Road / Spitfire Road intersection is proposed. Due to heavy southbound traffic flow on Appin Road and the sight line issue (previously identified in the existing conditions assessment), the minor movement in/out of Spitfire Drive has difficulty moving safely and efficiently. By 2021, if no treatment is considered, the right turn into Spitfire Drive is of major concern due to the overspill blocking northbound through movement on Raby Road.

No treatments other than signals were considered to be effective at this particular intersection. Signals which offer maximum control at intersections, allows a right of way for the minor movement in/out of Spitfire Drive. It is expected that these signals would be coordinated with the signalisation upgrade of Raby Road / Eagle Vale Drive. Furthermore, signalisation improves pedestrian accessibility and allows provision for a protected pedestrian crossing across Raby Road.

Figure 6-7 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

Figure 6-7 Year 2016 Location 3 Upgrades (2016-2021_3_U)

6.2.4 Location 4 (2016-2021_4) Eagle Vale Drive / Raby Road Intersection

Figure 6-8 identifies the extensive queuing on the Eagle Vale Drive approach to Raby Road that occurs in both the existing AM and PM peak periods.

Figure 6-8 Year 2016 Location 4 Deficiency (2016-2021_4_D)

The signalisation of Raby Road / Eagle Vale Drive intersection is proposed. Aside from improving traffic performance at the Raby Road / Eagle Vale Drive intersection, signalisation also improves the performance of Eagle Vale / Gould Road roundabout to the south-west, by creating sufficient gaps in traffic for the Gould Road approach. It is noted that due to the heavy right turn volumes (onto Eagle Vale Drive) and short length available for the right turn pocket, a dual lane right turn is proposed to optimise stacking capacity. A left turn slip lane is also proposed for the left turn out of Raby Road.

Alternate treatments were considered such as modifying the Eagle Vale Drive approach to a dual right turn, however this was not sufficient to ensure satisfactory performance due to the heavy northbound volumes on Raby Road by 2021. Furthermore, signalisation of the intersection improves pedestrian accessibility by creating protected pedestrian crossings across Eagle Vale Drive, benefiting access to the Eschol Park Sports Complex and recreational park.

Figure 6-9 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

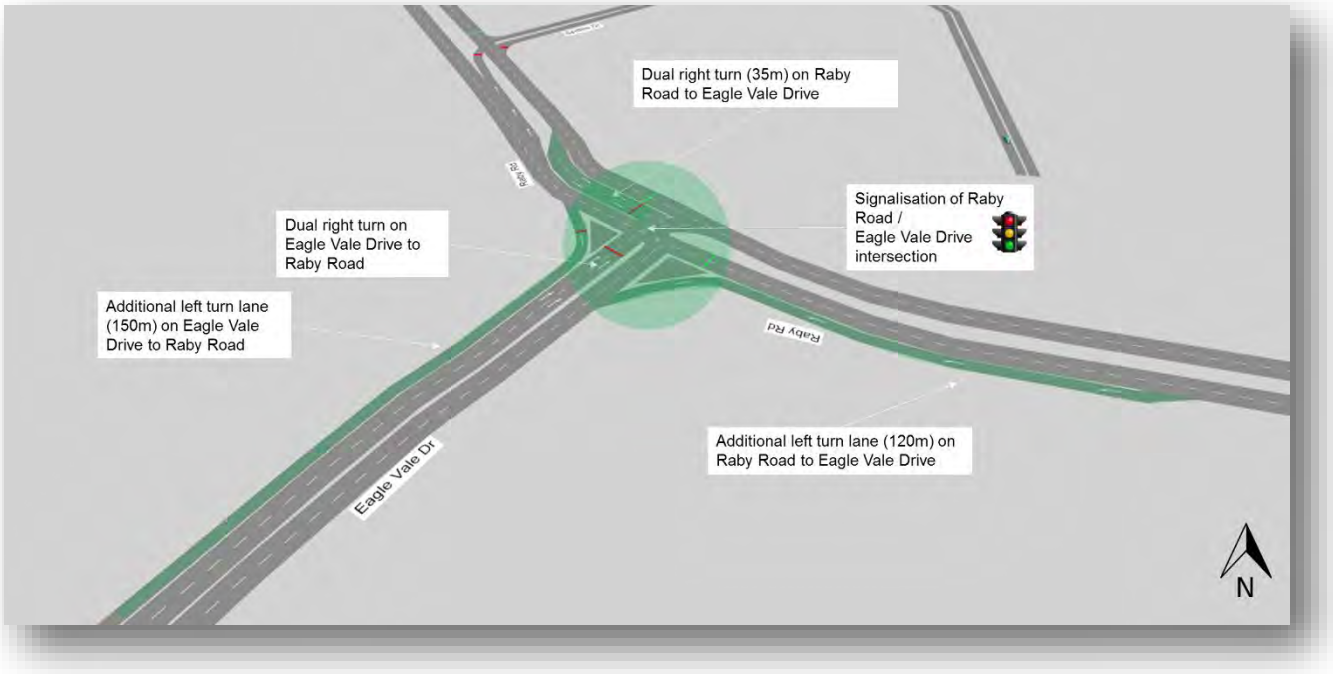


Figure 6-9 Year 2016 Location 4 Upgrades (2016-2021_4_U)

6.2.5 Location 5 (2016-2021_5) Campbelltown Road Off-ramp / Raby Road Intersection

Figure 6-10 identifies the extensive queuing on the Campbelltown Road Off-ramp approach to Raby Road during the PM peak period.

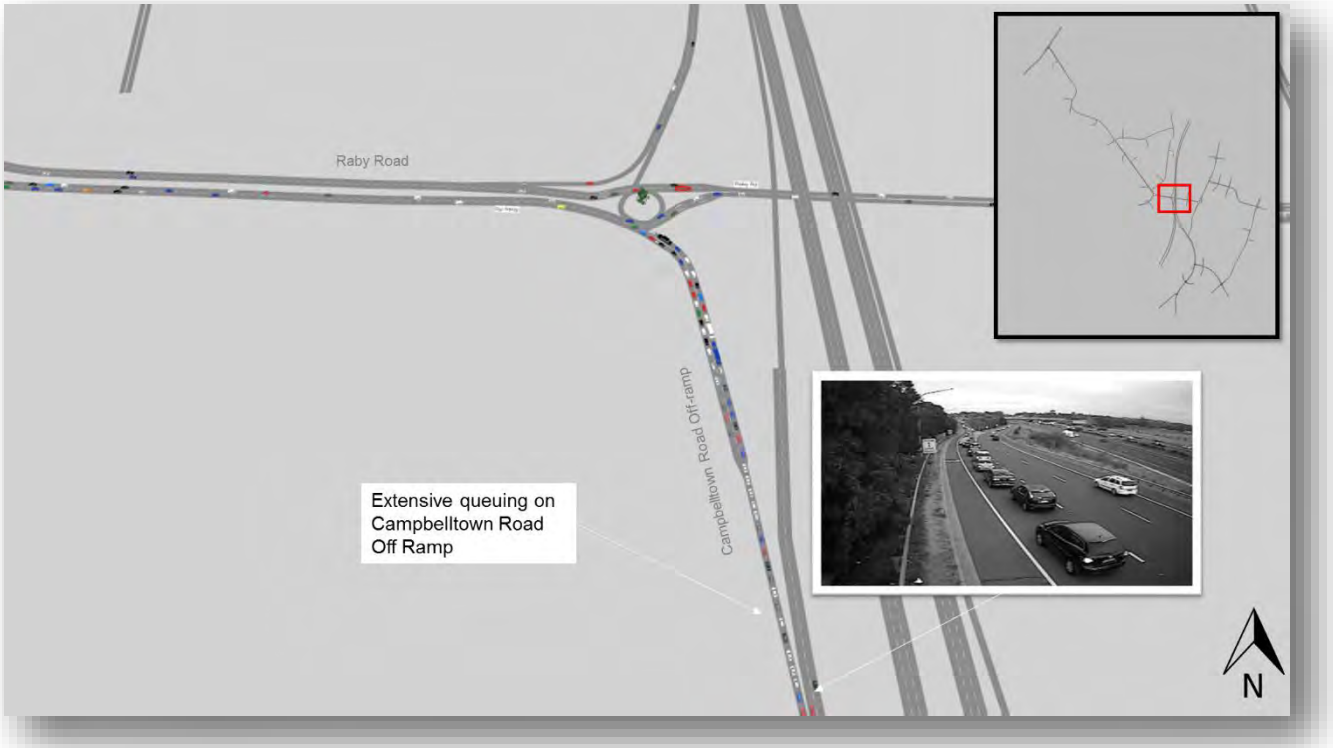


Figure 6-10 Year 2016 Location 5 Deficiency (2016-2021_5_D)

The upgrade of the Campbelltown Road off-ramp / Raby Road intersection to traffic signals is proposed. An upgrade of the overpass (duplication) was also proposed. The overpass duplication is required to address the AM and PM peak network operation by increasing the capacity for westbound traffic approaching the proposed traffic signals (increased stacking capacity).

Aside from improving traffic performance at the Campbelltown Road off-ramp / Raby Road intersection, signalisation also improves the performance of Raby Road / Stromeferry Crescent / Stranraer Drive roundabout to the east, by creating sufficient gaps in traffic on Raby Road.

Figure 6-11 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

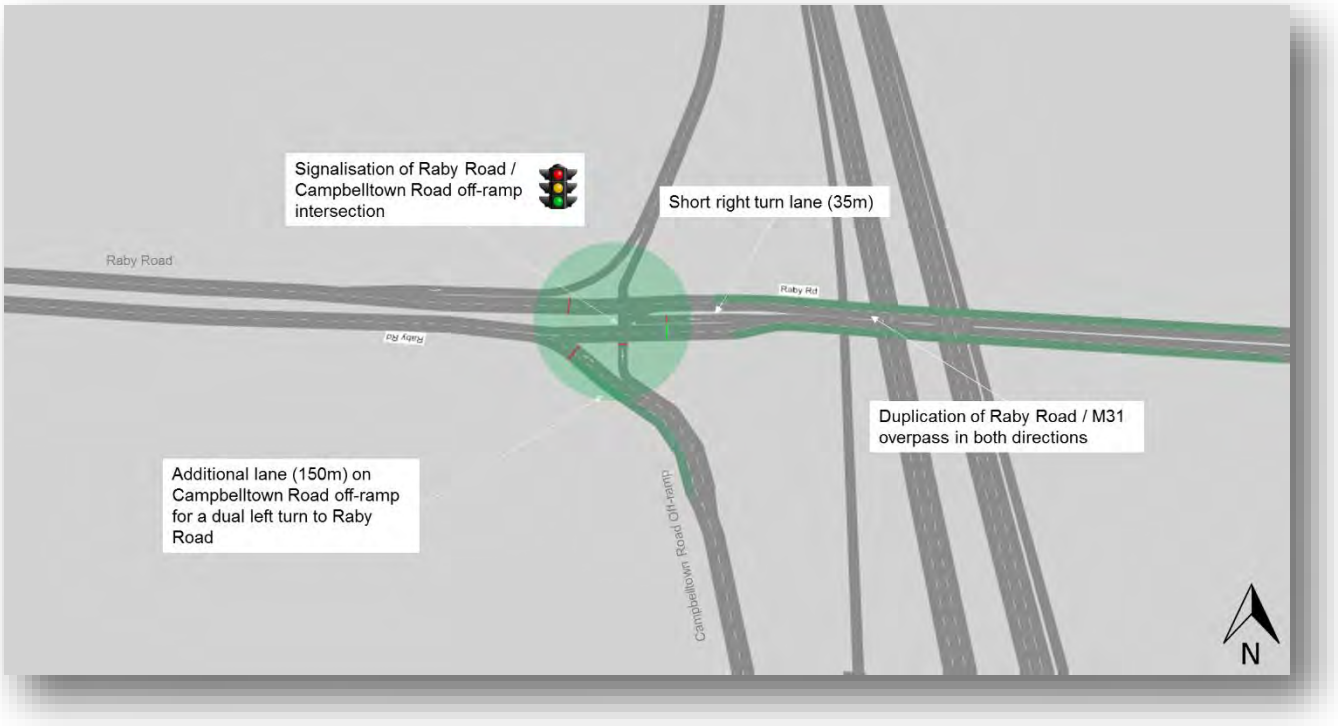


Figure 6-11 Year 2016 Location 5 Upgrades (2016-2021_5_U)

Alternate treatments were considered, including banning the right turn from Campbelltown Road off-ramp since this is the main cause of delay at this intersection. An alternate route was proposed via a signalised intersection on Campbelltown Road as illustrated in **Figure 6-12**. However, this treatment was not investigated further due to poor feedback from stakeholders.

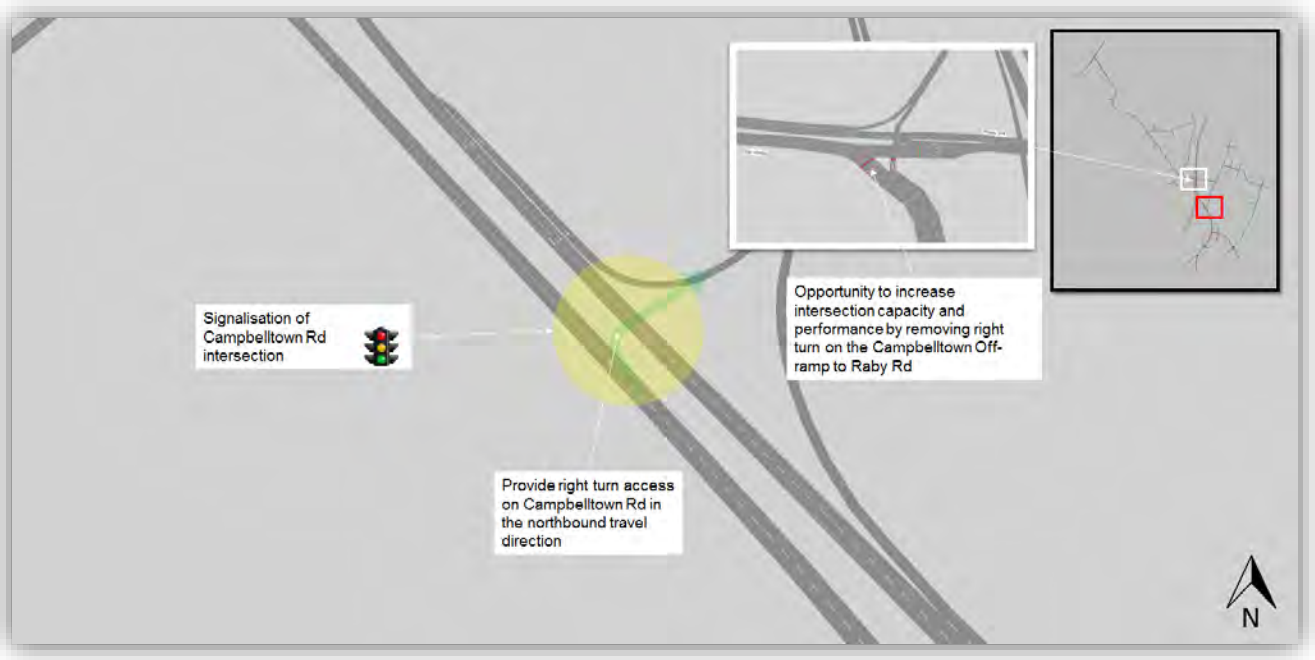


Figure 6-12 Year 2016 Location 5 – Alternate Route Consideration

6.2.6 Location 6 (2016-2021_6) Campbelltown Road / Harbord Road / Plough Inn Road and Campbelltown Road / Blaxland Road Intersections

Figure 6-13 identifies the extensive queuing on Campbelltown Road at the Harbord Road / Plough Inn Road and Blaxland Road intersections especially during the PM peak period.

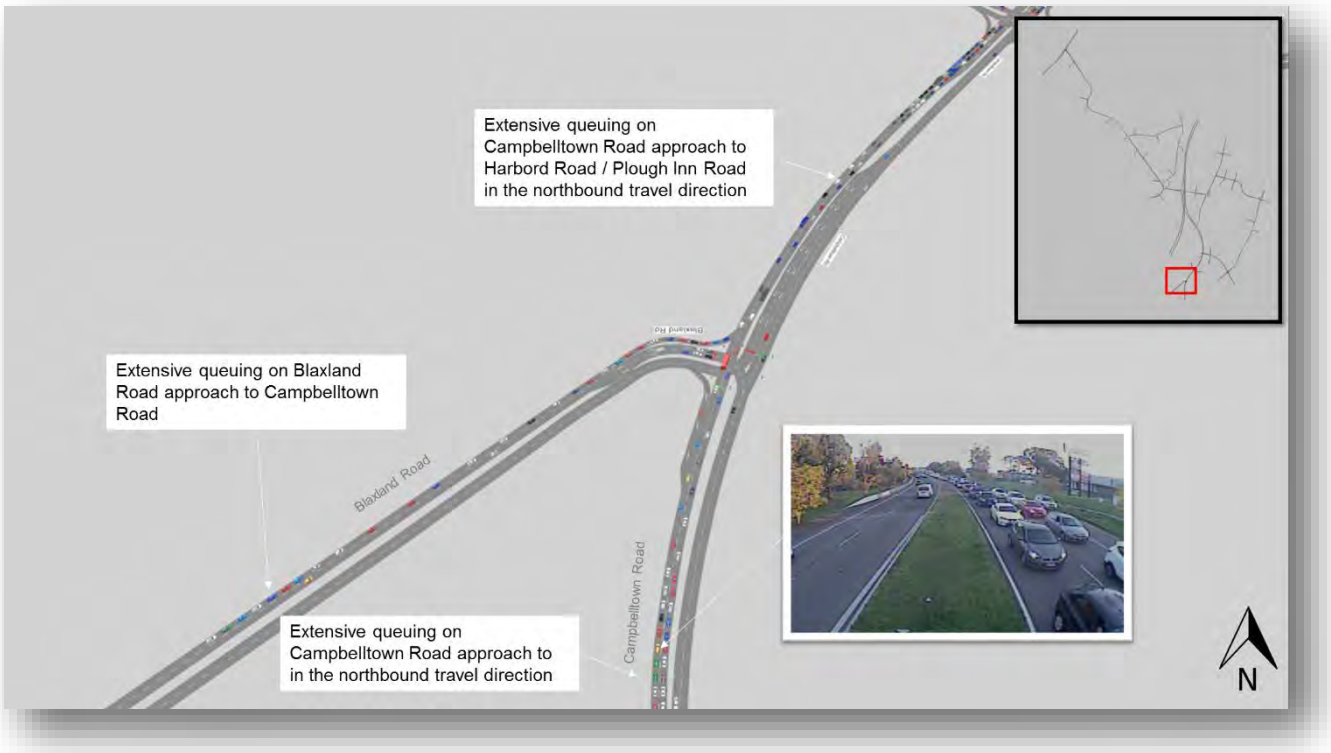


Figure 6-13 Year 2016 Location 6 Deficiency (2016-2021_6_D)

Figure 6-14 illustrates the proposed upgrades to mitigate the transport network deficiencies identified. This includes a continuous left turn from Blaxland Road to Campbelltown Road and upgrading Campbelltown Road to three lanes in the northbound travel direction.

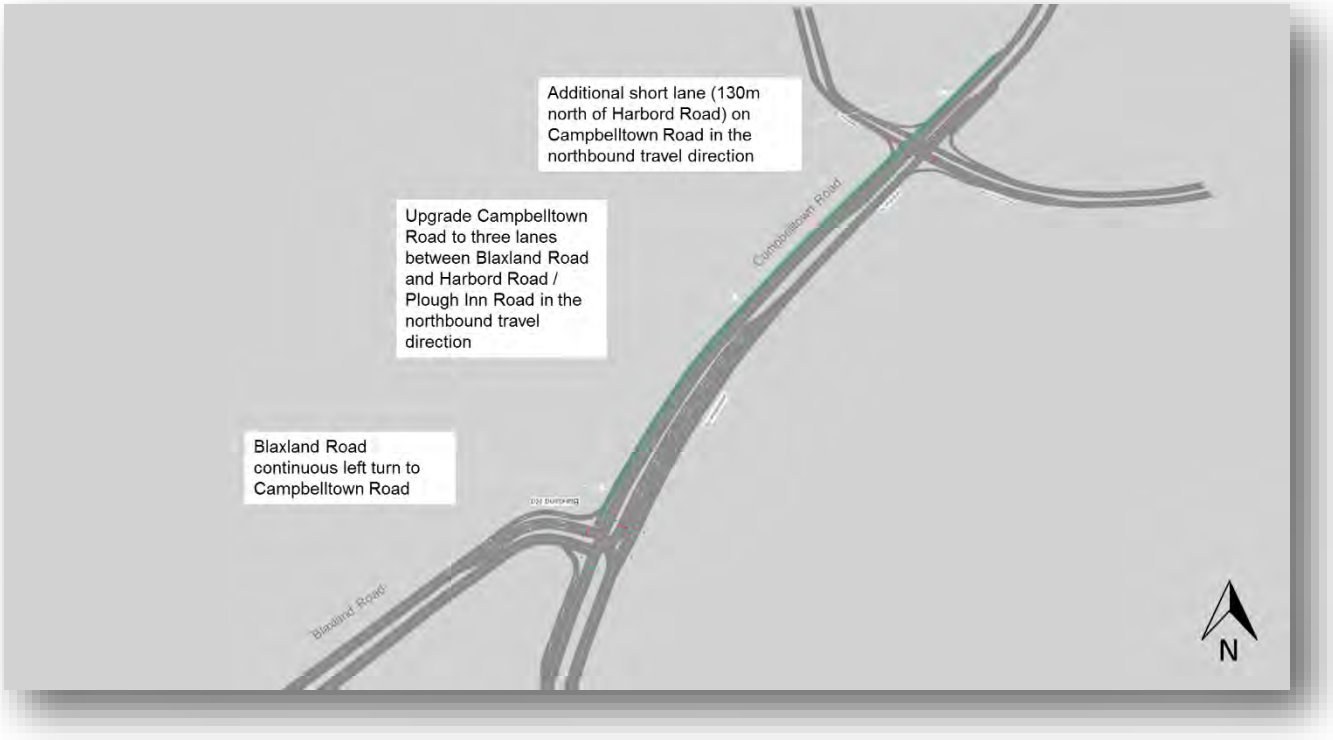


Figure 6-14 Year 2016 Location 6 Upgrades (2016-2021_6_U)

6.2.7 Location 7 (2016-2021_7) Scenic Hills access / Raby Road

The Scenic Hills access / Raby Road intersection is currently non-operational and is proposed to service the Scenic Hills development. Cardno assumed that the Scenic Hills development will be completed by 2021 and the intersection to be priority (give-way/stop) control.

Figure 6-15 identifies the extensive queuing on Scenic Hills access approach with the assumed intersection layout, during the AM peak period if no upgrades are implemented by 2021.

Figure 6-15 Year 2016-2021 Location 7 Deficiency (2016-2021_7_D)

The signalisation of the Scenic Hills access / Raby Road intersection was assumed to be in place by 2021 and includes the duplication of Raby Road to two lanes in the northbound travel direction.

Figure 6-16 illustrates the proposed upgrades to mitigate the transport network deficiencies identified. Cardno are aware of plans to relocate the intersection further south from a turn radius perspective. However, this will not have a significant impact to intersection / network performance.

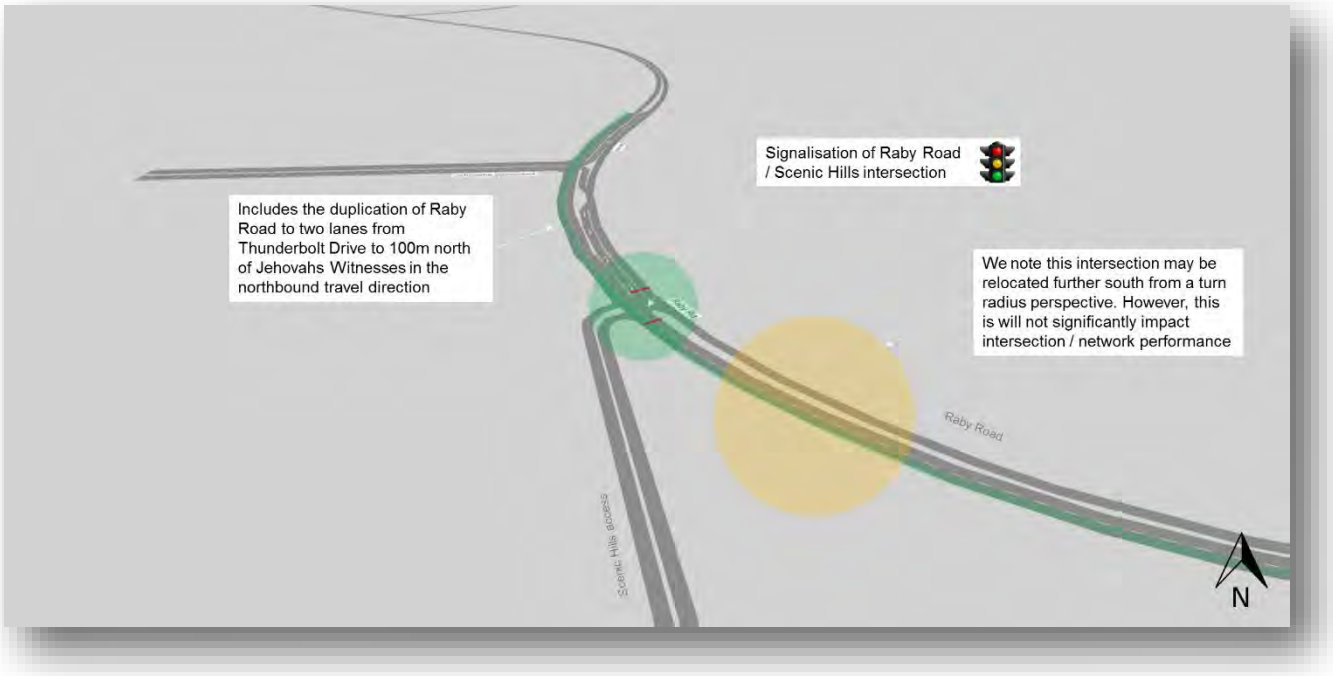


Figure 6-16 Year 2016-2021 Location 7 Upgrades (2016-2021_7_U)

6.2.8 Location 8 (2016-2021_8) Campbelltown Road / Raby Road Intersection

Although there were no critical issues identified in the existing conditions, the anticipated traffic growth (in the next five years) on Campbelltown Road and Raby Road resulted in extensive queuing on the Campbelltown Road approach in the southbound travel direction and the Swettenham Road approach as shown in **Figure 6-17**.

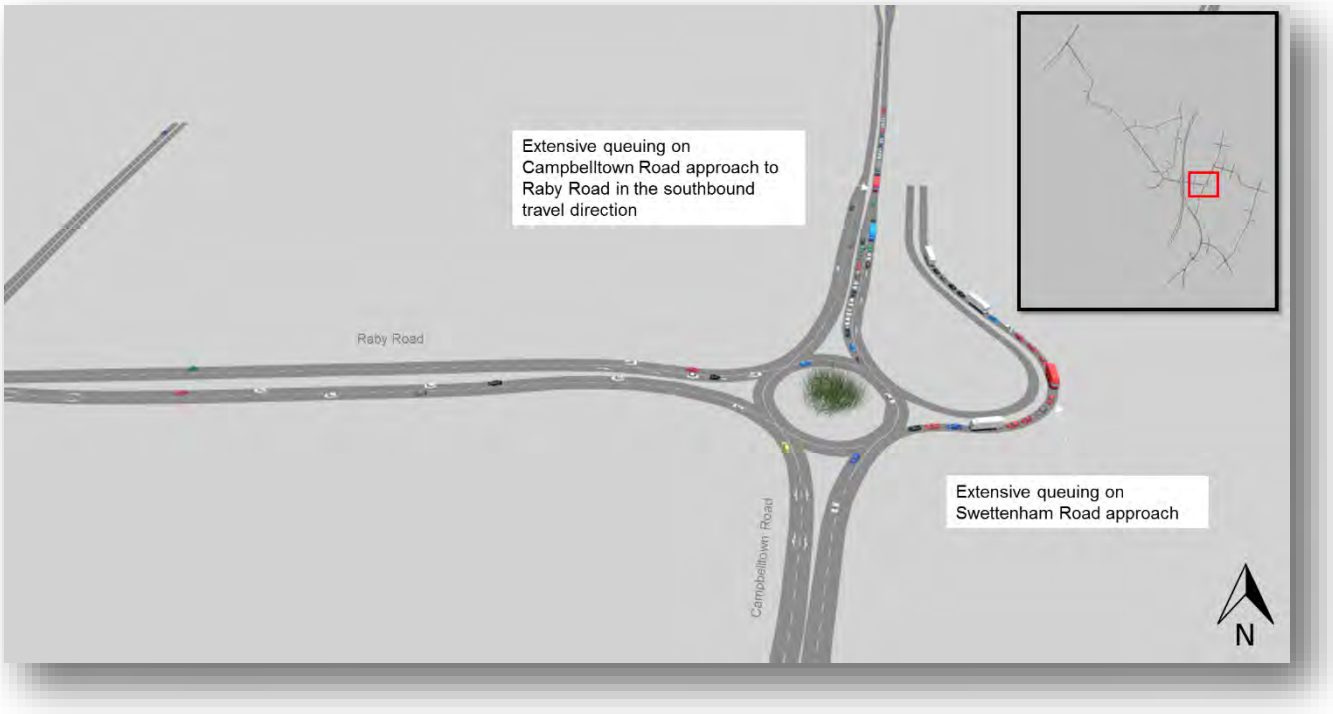


Figure 6-17 Year 2016 Location 8 Deficiency (2016-2021_8_D)

As the right turn on the Campbelltown Road approach in the southbound travel direction is a heavy movement, Cardno have proposed a relatively cost effective upgrade to improve intersection performance to acceptable levels by 2021. As with all upgrades proposed in this study, road safety implications will be need to considered.

Figure 6-18 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

Figure 6-18 Year 2016-2021 Location 8 Upgrades (2016-2021_8_U)

6.2.9 Location 9 (2016-2021_9) Ben Lomond Road

Although there were no critical issues identified in the existing conditions, the anticipated traffic growth (in the next five years) on Ben Lomond Road resulted in the mid-block capacity deficiency at the Bow Bowing Creek bridge in the eastbound travel direction as identified in **Figure 6-19**.

Figure 6-19 Year 2016-2021 Location 9 Deficiency (2016-2021_9_D)

Figure 6-20 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

Figure 6-20 Year 2016-2021 Location 9 Upgrades (2016-2021_9_U)

6.2.10 Location 10 (2016-2021_10) Pembroke Road / Ben Lomond Road Intersection

Although there were no critical issues identified in the existing conditions, the anticipated traffic growth (in the next five years) on Ben Lomond Road and Pembroke Road resulted in extensive queuing on the Pembroke Road approaches (both northbound and southbound) as shown in **Figure 6-21.**

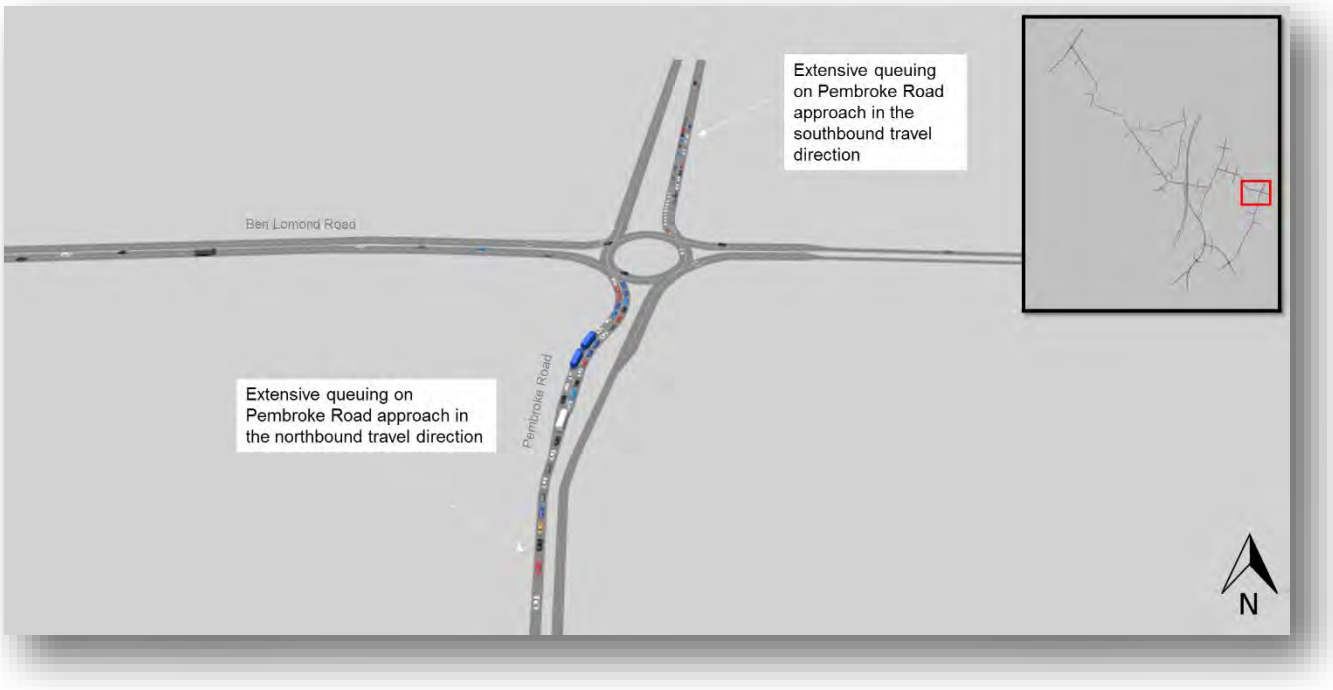


Figure 6-21 Year 2016-2021 Location 10 Deficiency (2016-2021_10_D)

The signalisation of Pembroke Road / Ben Lomond Road is proposed. Alternate treatments were considered such as modifying the Pembroke Road northern approach to a dual right turn, however this was not sufficient to ensure satisfactory performance by 2021.

Figure 6-22 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

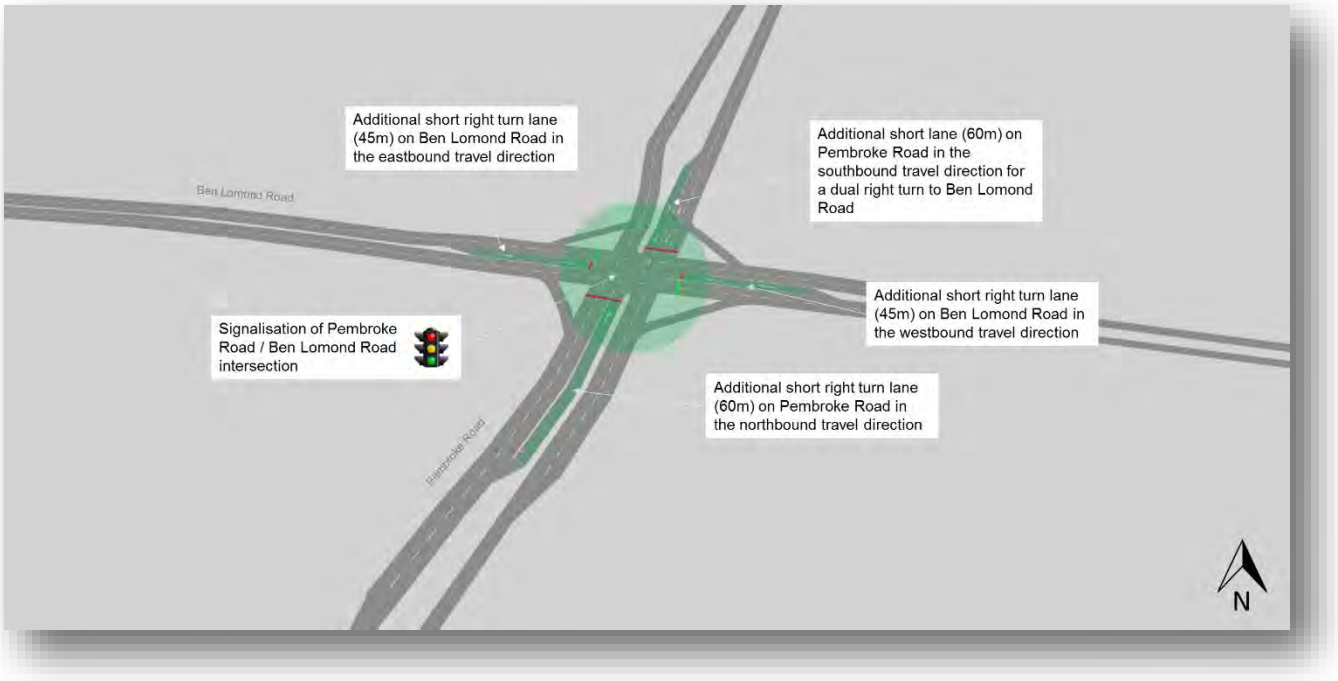


Figure 6-22 Year 2016-2021 Location 10 Upgrades (2016-2021_10_U)

6.3 Traffic Modelling Assessment

The intersection performance modelling results of the proposed upgrades locations in 2021 are presented. There is no comparative 'do nothing' scenario given the multiple intersection failures that restrict the throughput of vehicles and result in a virtual network gridlock. Notwithstanding the absence of a comparative assessment scenario of the same year, the results demonstrate satisfactory performance of the intersections and network in 2021 with the proposed upgrades in place.

6.3.1 Intersection Performance

The RMS Guide to Traffic Generating Developments identified the criteria for assessing the level of service (LOS) in terms of average vehicle delay, and is presented in **Table 6-3**.

Table 6-3 Level of Service (LOS) Criteria

LOS	Traffic Signal / Roundabout	Give Way / Stop / Priority Control	Average Vehicle Delay (s)
A	Good operation	Good operation	< 14
B	Good operation, with acceptable delays and spare capacity	Acceptable delays and spare capacity	15 to 28
C	Satisfactory	Satisfactory, but crash study required	29 to 42
D	Operating near capacity	Near capacity and crash study required	43 to 56
E	At capacity; at signals, incidents will cause excessive delays	At capacity; requires other control mode	57 to 70
F	Unsatisfactory and requires additional capacity. Roundabouts required other control mode	Unsatisfactory and requires additional capacity / control mode.	> 70

The operating performance of each subject intersection was assessed in VISSIM using the extracted data regarding average vehicle delay (AVD) for each turning movement. The AVD provides a measure of the operational performance of an intersection as indicated below, which relates AVD to LOS. The AVD's should be taken as a guide only, as longer delays could be tolerated in some locations (i.e. inner city conditions)

and on some roads (i.e. minor side street intersecting with a major arterial route). For traffic signals, the weighted average delay over all movements should be utilised. For roundabouts and priority control intersections (sign control) the critical movement for assessing LOS should be the movement with the highest average delay.

Figure 6-23 and **Figure 6-24** illustrates the intersection performance results of the proposed upgrade locations in 2021 AM and PM respectively. The results demonstrate satisfactory performance of all the upgraded intersections in 2021.

The intersection performance results by movement are tabulated in **Appendix D**.

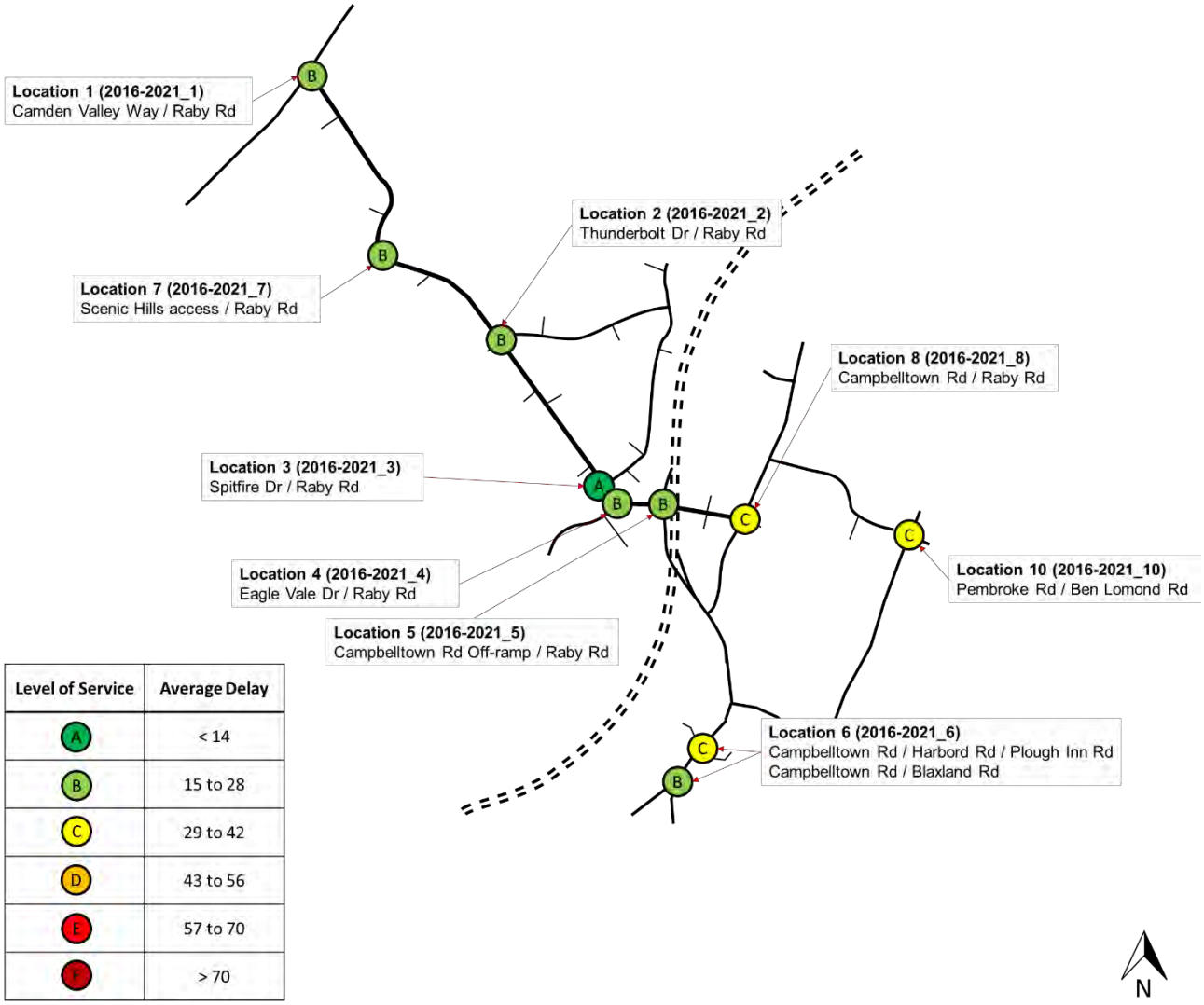


Figure 6-23 2021 AM Intersection Performance of Proposed Upgrades

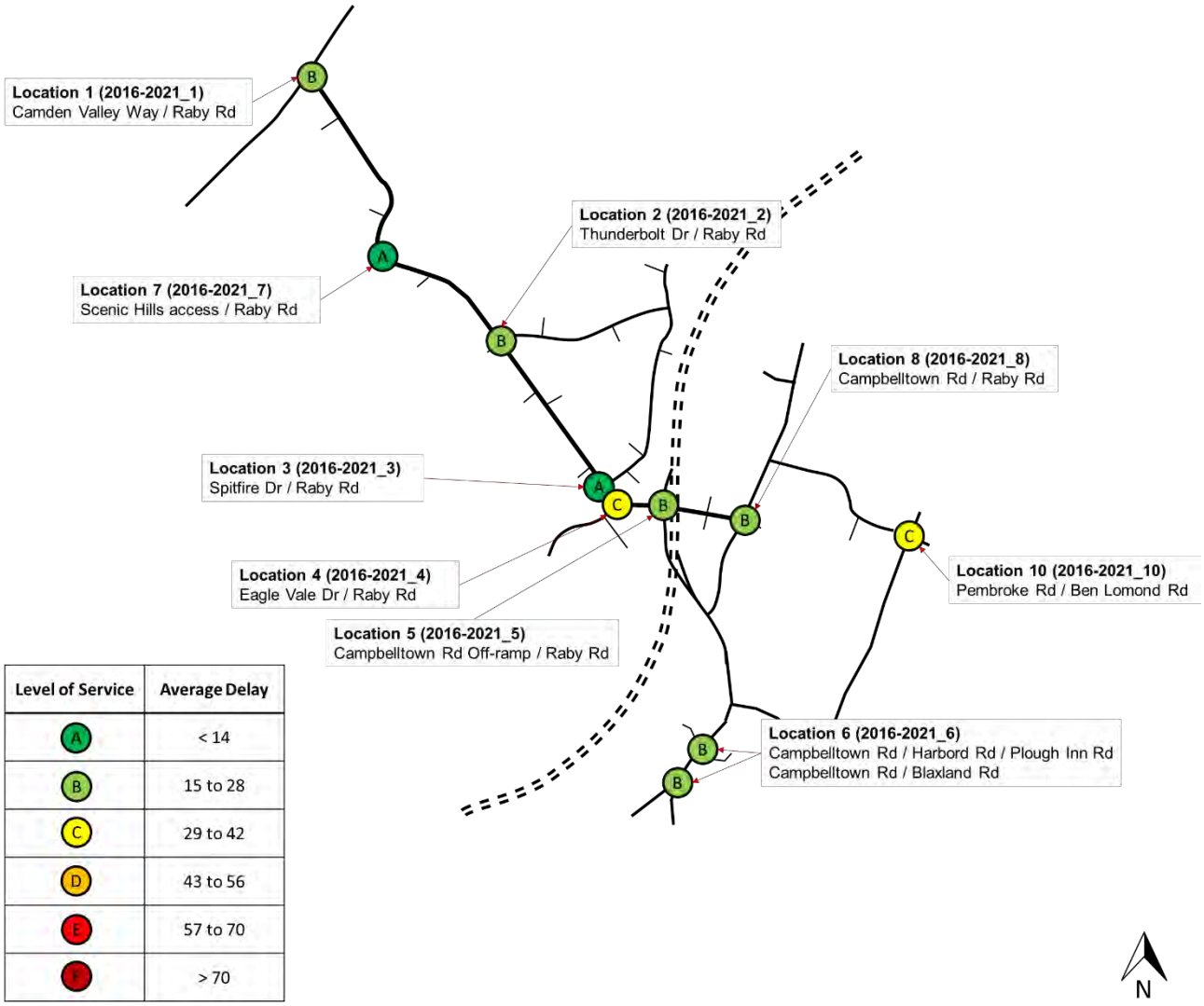


Figure 6-24 2021 PM Intersection Performance of Proposed Upgrades

6.4 Summary

The short term assessment identified existing and future (2016-2021) deficiencies and proposed respective mitigation measures to provide satisfactory performance in the short term (2021).

Table 6-4 presents a summary of the outcomes of the short term assessment.

Table 6-4 Short Term Assessment Outcomes

ID	Location (Intersection)	Proposed Upgrades
2016-2021_1	Camden Valley Way / Raby Road	▪ Upgrade Camden Valley Way to three lanes each way
2016-2021_2	Thunderbolt Drive / Raby Road	▪ Additional approach lane (250m) on Raby Road in the southbound travel direction ▪ Duplication of Raby Road from Thunderbolt Drive to Jehovahs Witnesses in the northbound travel direction
2016-2021_3	Spitfire Drive / Raby Road	▪ Signalisation and assumed to be coordinated with the Eagle Vale Drive intersection
2016-2021_4	Eagle Vale Drive / Raby Road	▪ Signalisation and assumed to be coordinated with the Spitfire Drive intersection ▪ Raby Road dual right turn (35m) to Eagle Vale Drive ▪ Eagle Vale Drive dual right turn to Raby Road ▪ Raby Road left turn lane (120m) to Eagle Vale Drive ▪ Additional left turn lane (150m) on Eagle Vale Drive to Raby Road
2016-2021_5	Campbelltown Road Off-ramp / Raby Road	▪ Signalisation ▪ Duplication of Raby Road / M31 overpass in both directions ▪ Additional lane (150m) on the off-ramp for a dual left turn
2016-2021_6	Campbelltown Road / Harbord Road / Plough Inn Road Campbelltown Road / Blaxland Road	▪ Upgrade Campbelltown Road to three lanes between Blaxland Road and Harbord Road / Plough Inn Road in the northbound travel direction ▪ Additional lane (130m north of Harbord Road) on Campbelltown Road in the northbound travel direction ▪ Continuous left turn on Blaxland Road
2016-2021_7	Scenic Hills access / Raby Road	▪ Signalisation ▪ Duplication of Raby Road from Thunderbolt Drive to Jehovahs Witnesses in the northbound travel direction
2016-2021_8	Campbelltown Road / Raby Road	▪ Modify pavement marking to allow dual right turn on Campbelltown Road approach in the southbound travel direction
2016-2021_9	Ben Lomond Road	▪ Duplicate Ben Lomond Road to two lanes between Airds Road and Cary Grove in the eastbound travel direction with the addition of a bridge over Bow Bowing canal
2016-2021_10	Pembroke Road / Ben Lomond Road	▪ Signalisation ▪ Additional lane (60m) on Pembroke Road in the southbound travel direction for a dual right turn to Ben Lomond Road ▪ Additional right turn lane (60m) on Pembroke Road in the northbound travel direction ▪ Additional right turn lane (45m) on Ben Lomond Road in the westbound and eastbound travel direction

7 Medium Term (2021-2026) Assessment

This section of the report outlines the iterative process to identify transport network deficiencies and respective remedial measures for the medium term timeframe, as follows:

> Identification of deficiencies that arise between 2021 and 2026, and the mitigation measures required to be in place by then to address these deficiencies.

7.1 Medium Term (2026) Traffic Demand

The following local developments have been assumed to be completed in 2021:

> Sekisui House
> Camden Lakeside Golf Course.

Based on the local development trip generation and distribution estimated in **Section 5**, trips were added and distributed to the future year 2026 demand matrix as follows:

> Sekisui House
  – 532 trips in the AM and 554 trips in the PM
> Camden Lakeside Golf Course
  – 361 trips in the AM and 376 trips in the PM.

Table 7-1 presents the total number of LV trips in the resulting future year 2026 demand matrix that was then compared to the 2021 demand matrix. The addition of local development trips equated to a growth of 1.3% (AM) and 1.2% (PM) per annum for the study network between 2021 and 2026. This is less than the proposed overall STFM growth rate of 1.5% per annum, therefore additional trips (across the whole network) were added to the 2026 LV demand matrix to achieve a global growth rate of 1.5% per annum.

Table 7-1 Future Year 2026 Demand Matrix (LV)

Modelling Year	Total Trips in Light Vehicles Demand Matrix	
	AM	PM
2016	16,364	19,242
2021	17,603	20,718
Growth (per annum)	**1.5%**	**1.5%**

Table 7-2 presents the total number of HV trips in the resulting future year 2026 demand matrix that was then compared to the 2021 HV demand matrix. Heavy vehicle demand across the whole network was increased by the same network wide growth factor used for light vehicles. This was 0.2% (AM) and 0.3% (PM) per annum. However, many HV origin destination (OD) pairs in the network had volumes less than 100, so an increase of 0.2% or 0.3% per annum resulted in no additional trips added. Therefore, a minimum of 1 trip was added to each HV OD pair in the network and the resulting 2026 HV demand matrix equated to a growth of 2.6% (AM) and 3.5% (PM) per annum between 2026 and 2021.

Table 7-2 Future Year 2026 Demand Matrix (HV)

Modelling Year	Total Trips in Heavy Vehicles Demand Matrix	
	AM	PM
2016	1,047	890
2021	1,185	1,045
Growth (per annum)	**2.4%**	**3.3%**

7.2 Transport Network Deficiencies and Upgrades

The following sections identify the medium term (2021-2026) network deficiencies and respective mitigation measures proposed. Upgrades were considered and analysed iteratively with cost and property boundary considerations. In particular, the life of roundabouts and priority controlled intersections was extended as much as possible to avoid overprovision of infrastructure and unnecessary expenditure (such as provision of traffic signals).

A total of 5 locations are proposed to be upgraded in the medium term (2021-2026) as shown in **Figure 7-1**.

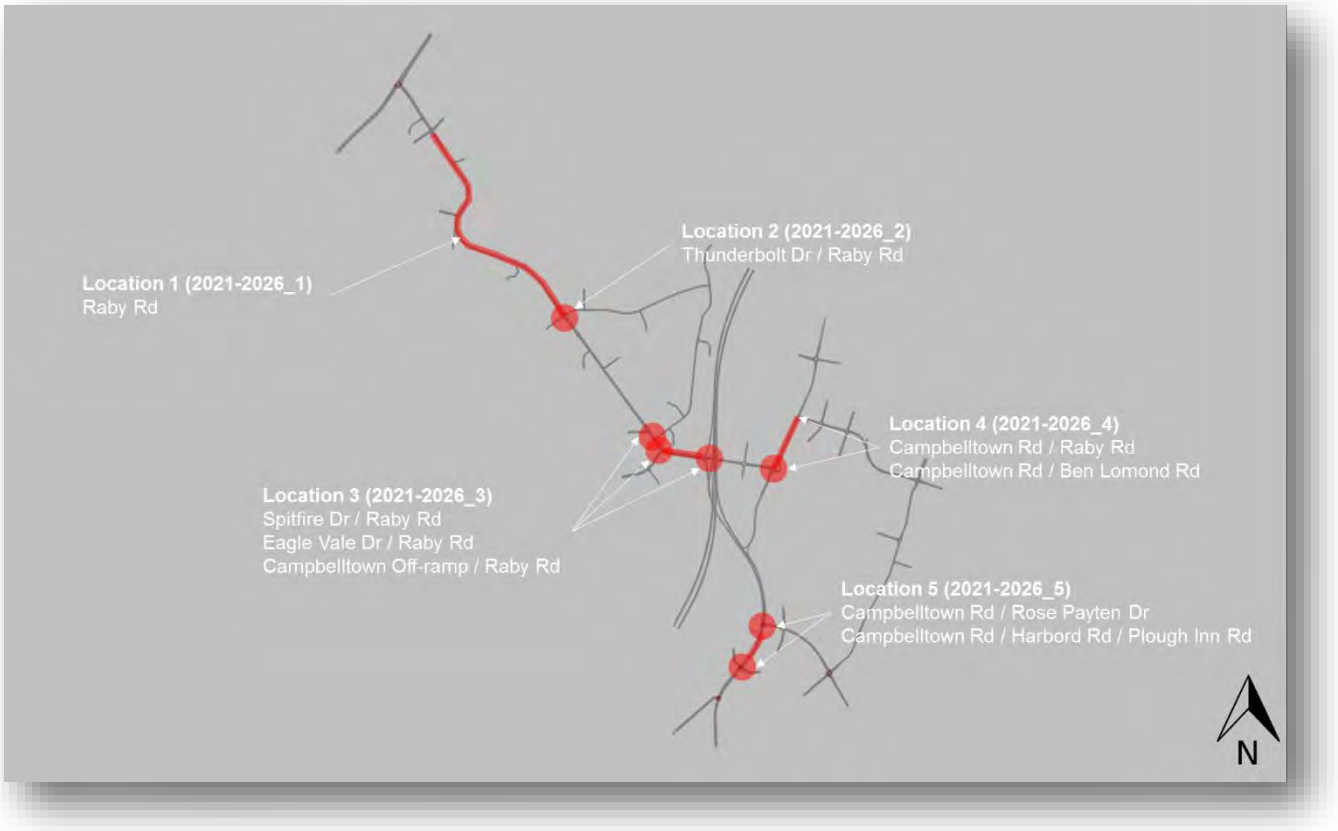


Figure 7-1 Map of Medium Term Upgrade Locations

7.2.2 Location 1 (2021-2026_1) Raby Road

Figure 7-2 identifies the extensive queuing on Raby Road in the southbound travel direction during the AM peak period.

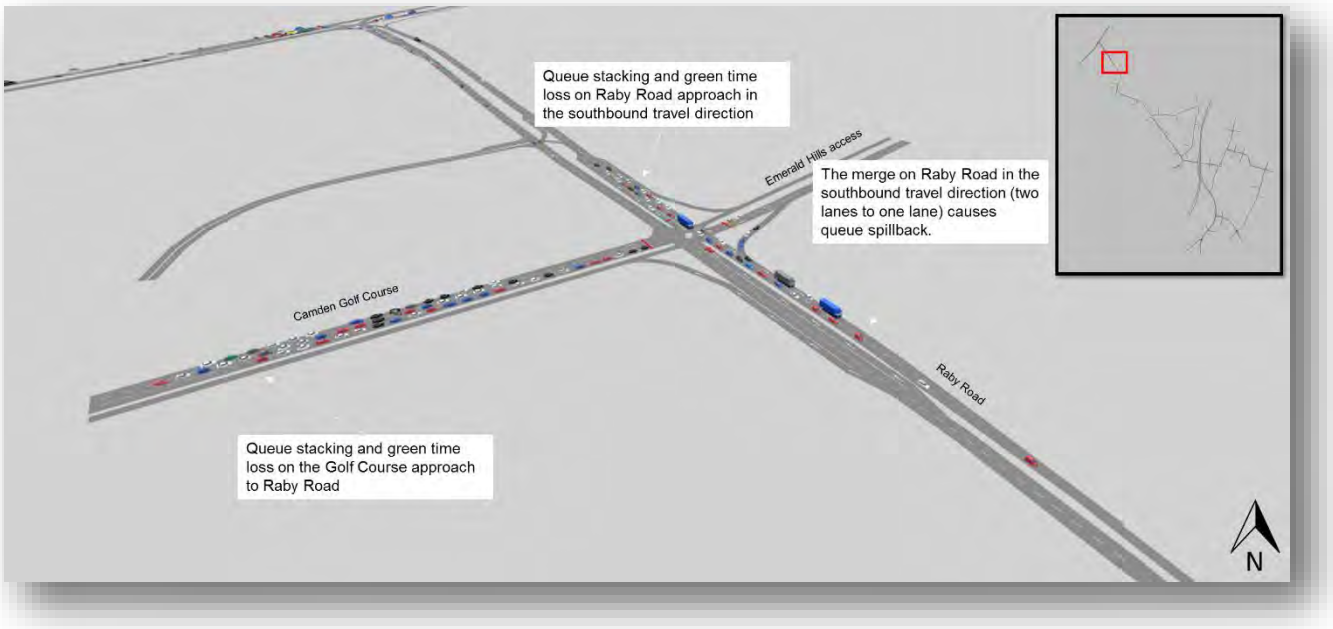


Figure 7-2 Year 2021-2026 Location 1 Deficiency (2021-2026_1_D1)

Figure 7-3 identifies the extensive queuing on Raby Road in the northbound travel direction during the PM peak period.

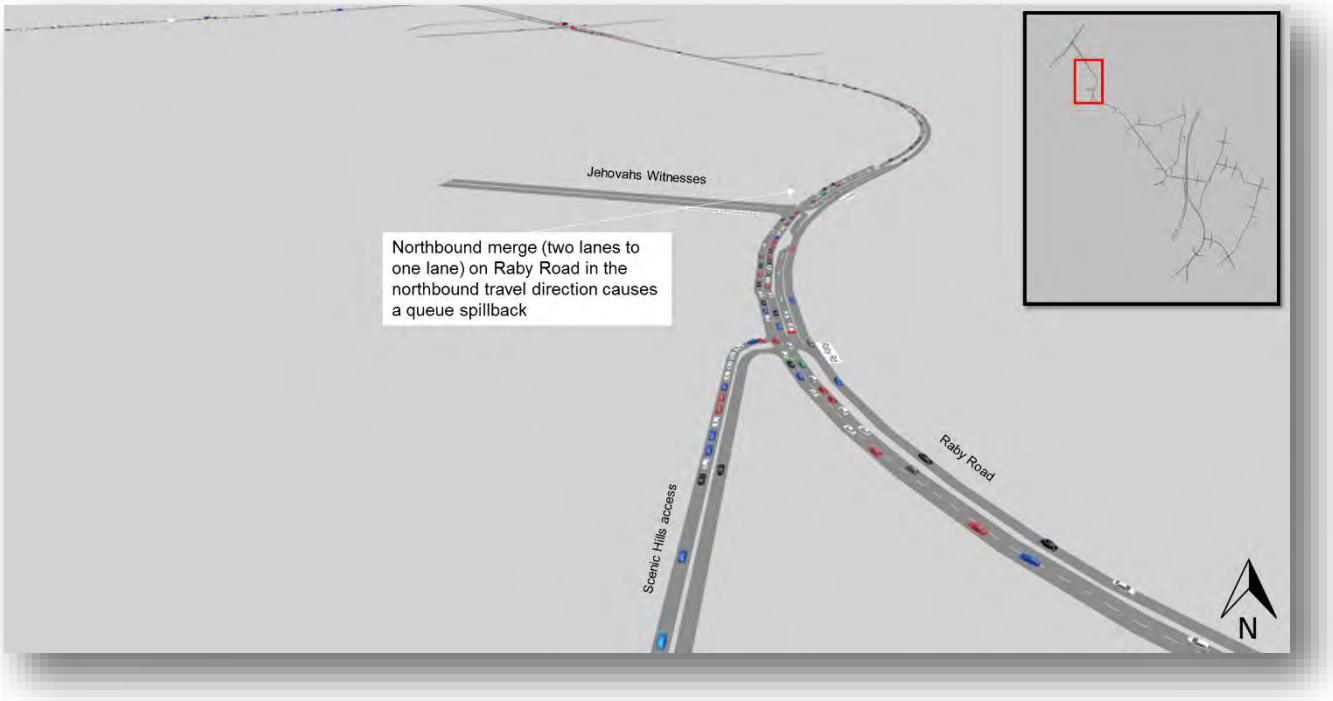


Figure 7-3 Year 2021-2026 Location 1 Deficiency (2021-2026_1_D2)

Figure 7-4 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

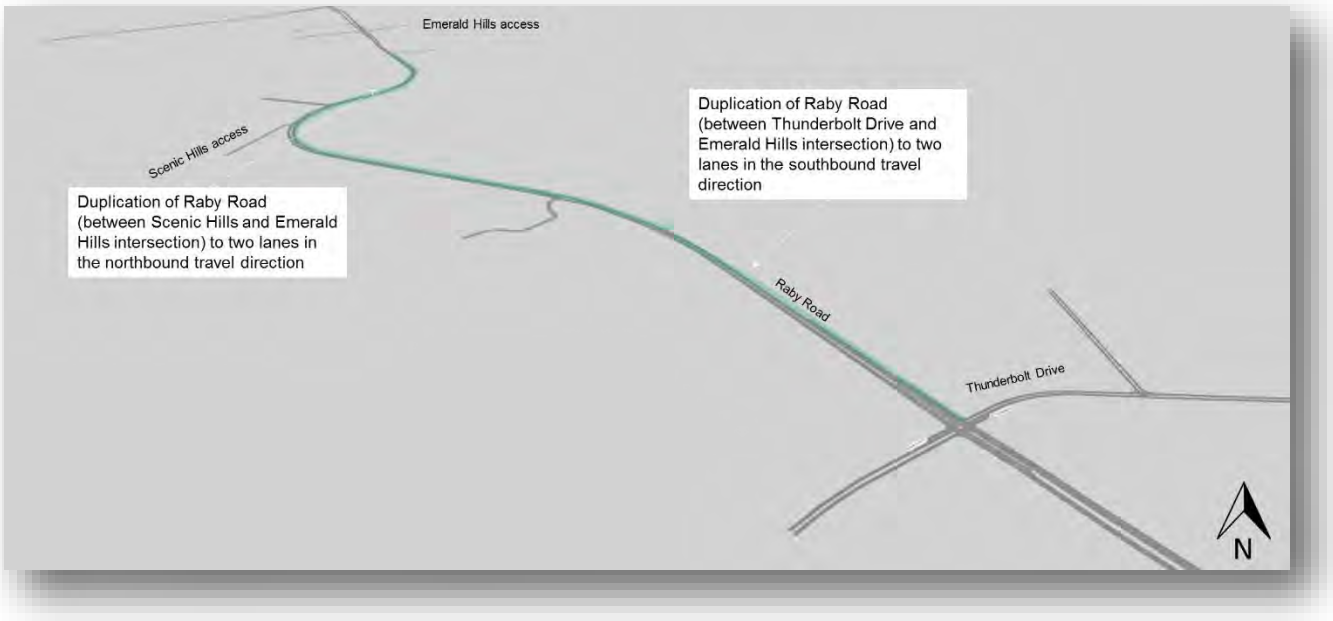


Figure 7-4 Year 2021-2026 Location 1 Upgrades (2021-2026_1_U)

7.2.3 Location 2 (2021-2026_2) Thunderbolt Drive / Raby Road Intersection

Figure 7-5 identifies the extensive queuing on the Thunderbolt Drove approach in the westbound travel direction during the AM peak period.

Figure 7-5 Year 2021-2026 Location 2 Deficiency (2021-2026_2_D1)

Figure 7-6 identifies the extensive queuing on the Raby Road approach in the northbound travel direction during the PM peak period.

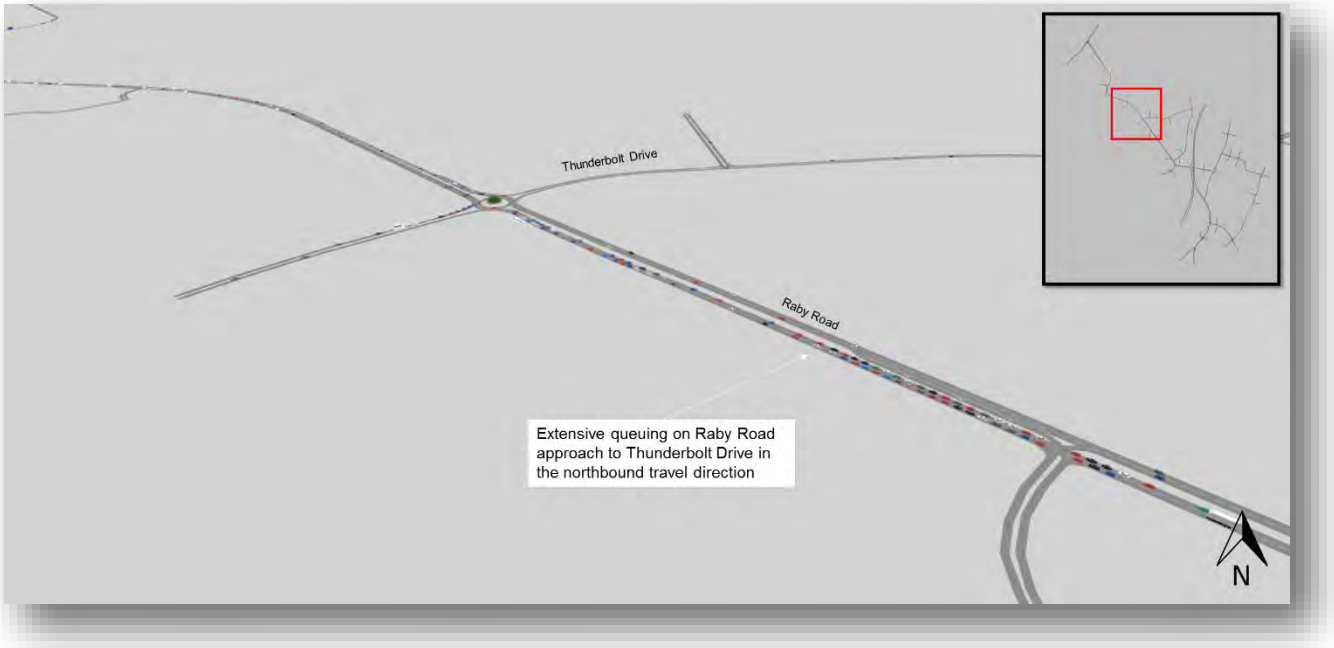


Figure 7-6 Year 2021-2026 Location 2 Deficiency (2021-2026_2_D2)

The proposed short term upgrades on Raby Road at this intersection, extended the life of the roundabout until 2021. However, with the substantial increase in volumes on Raby Road by 2026, the signalisation of the Thunderbolt Drive / Raby Road intersection is proposed. The proposed intersection layout is illustrated **Figure 7-7**.

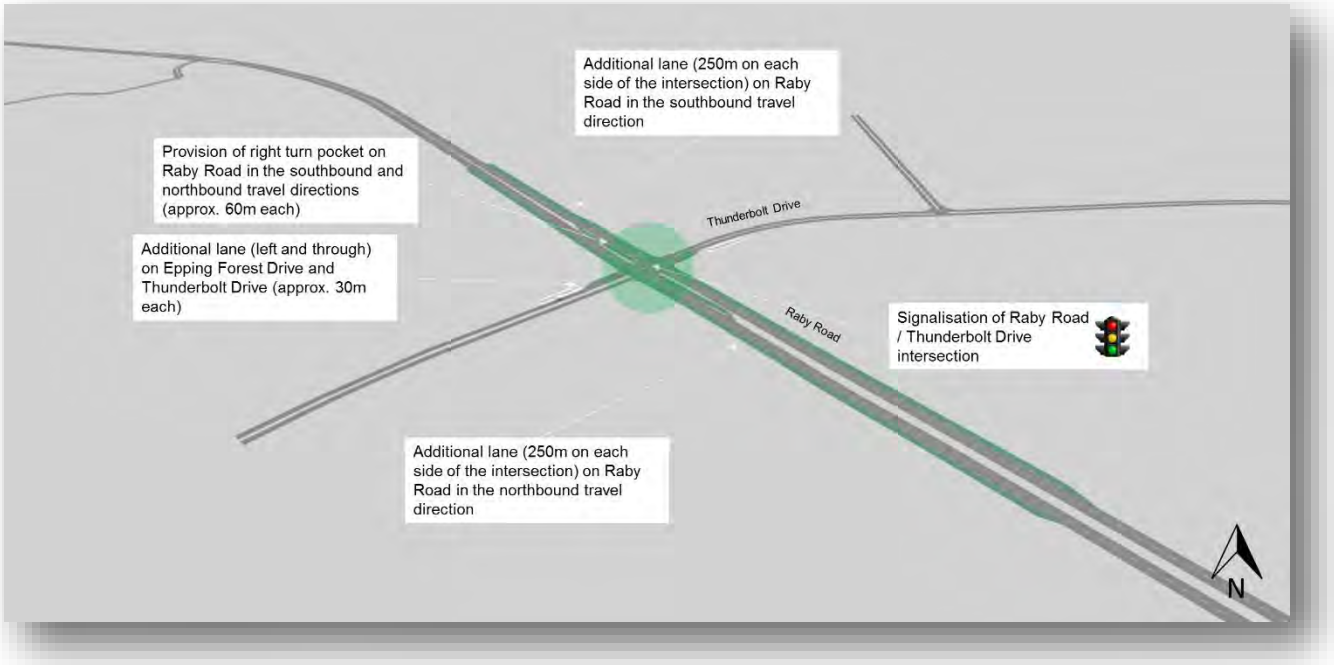


Figure 7-7 Year 2021-2026 Location 2 Upgrades (2021-2026_2_U)

7.2.4 Location 3 (2021-2026_3) Spitfire Drive / Raby Road, Eagle Vale Drive / Raby Road and Campbelltown Off-ramp / Raby Road Intersections

Figure 7-8 identifies the extensive queuing on Raby Road in the southbound travel direction during the AM peak period.

Figure 7-8 Year 2021-2026 Location 3 Deficiency (2021-2026_3_D1)

Figure 7-9 identifies the extensive queuing on Raby Road in the westbound/northbound travel direction during the PM peak period.

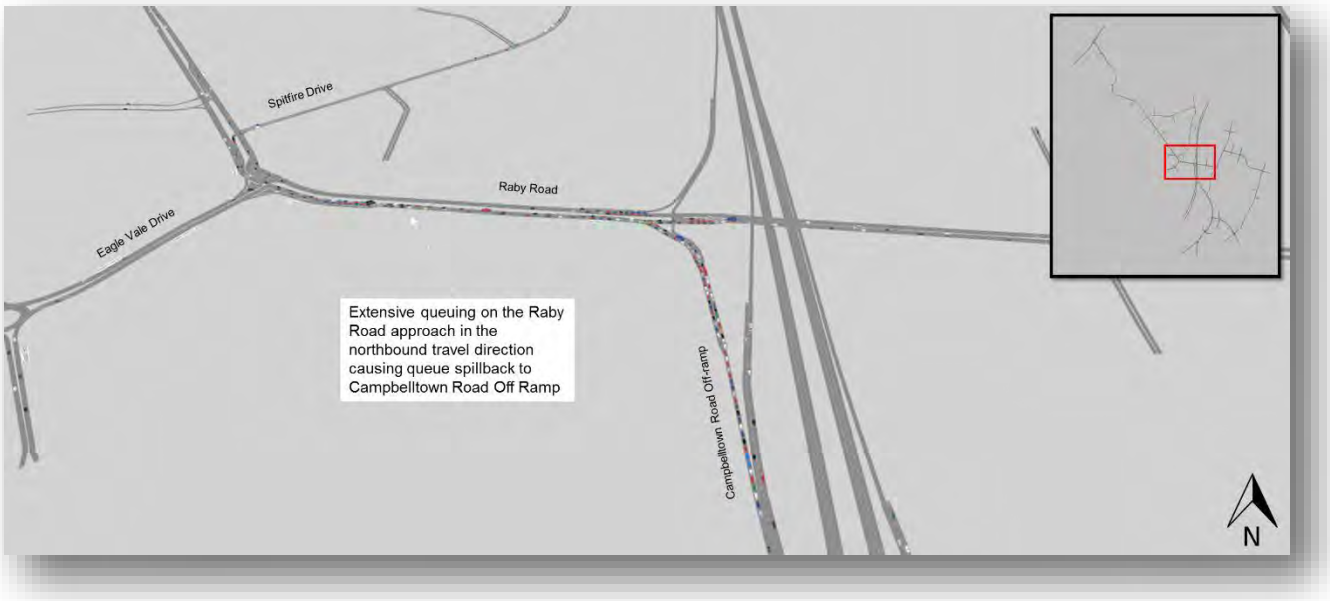


Figure 7-9 Year 2021-2026 Location 3 Deficiency (2021-2026_3_D2)

Figure 7-10 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

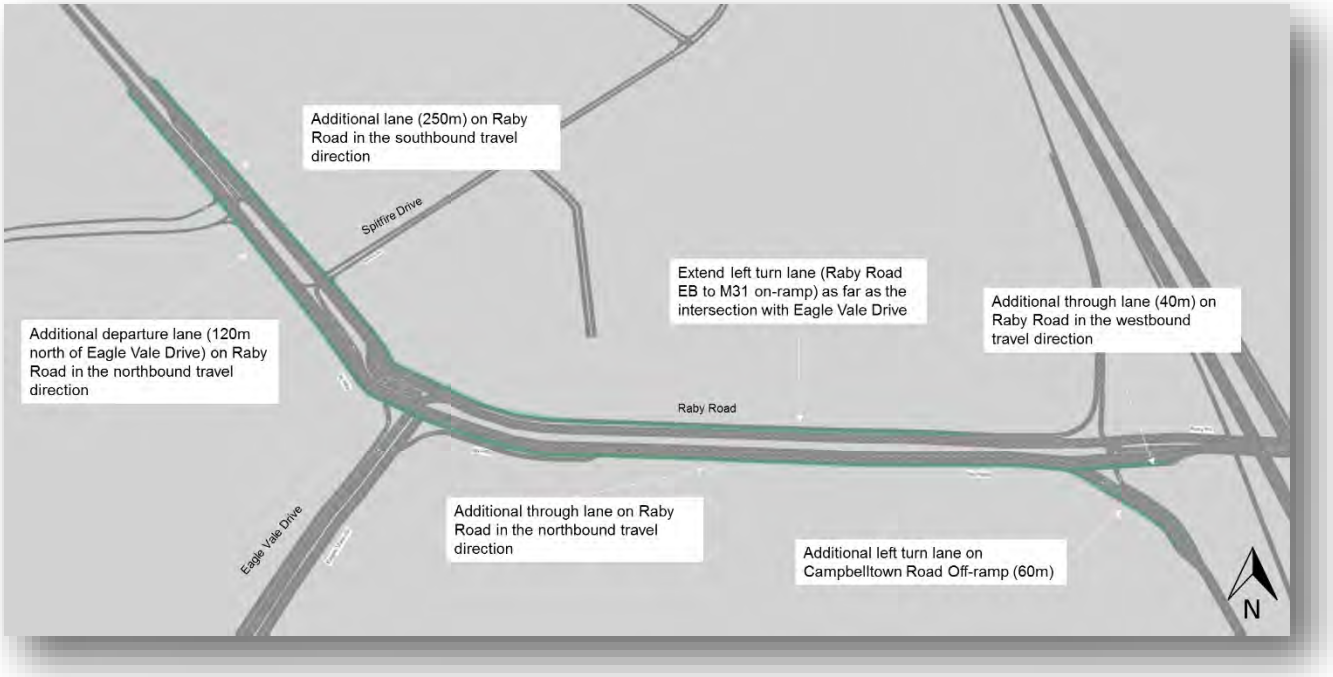


Figure 7-10 Year 2016 Location 3 Upgrades (2016-2021_3_U)

7.2.5 Location 4 (2021-2026_4) Campbelltown Road / Raby Road and Ben Lomond Road / Campbelltown Road Intersections

Figure 7-11 identifies the extensive queuing on the Raby Road approach to Campbelltown Road during the AM peak period.

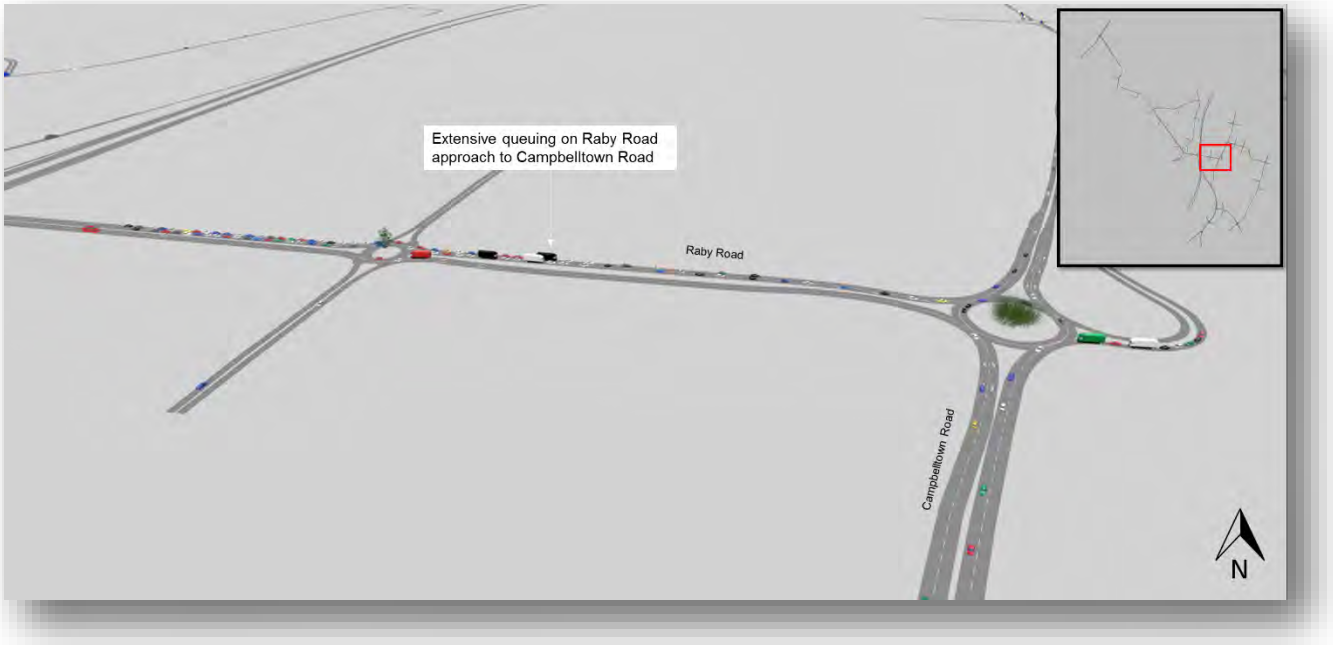


Figure 7-11 Year 2021-2026 Location 4 Deficiency (2021-2026_4_D1)

Figure 7-11 identifies the extensive queuing on the Campbelltown Road approach to Raby Road in the northbound travel direction during the PM peak period.

Figure 7-12 Year 2021-2026 Location 4 Deficiency (2021-2026_4_D2)

Figure 7-13 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

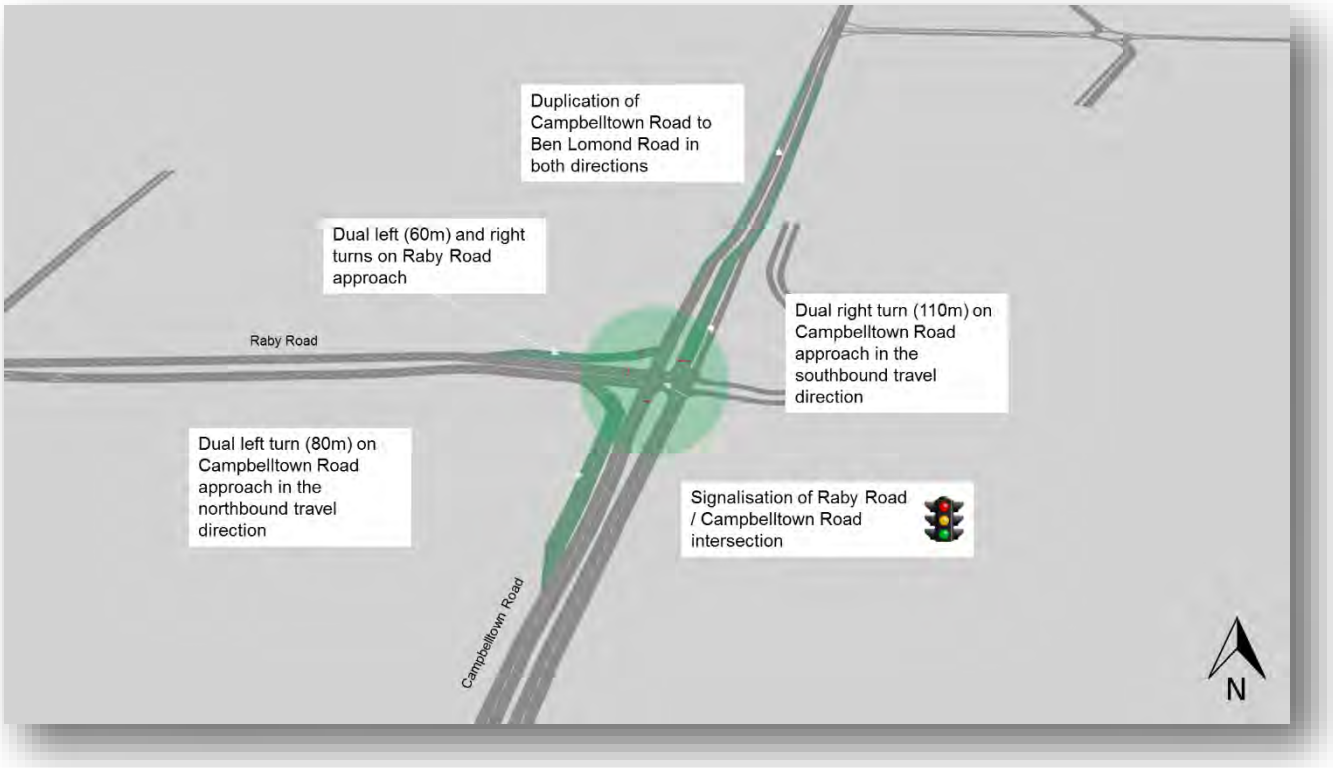


Figure 7-13 Year 2021-2026 Location 4 Upgrades (2021-2026_4_U)

7.2.6 Location 5 (2021-2026_5) Campbelltown Road / Rose Payten Drive and Campbelltown Road / Harbord Road / Plough Inn Road Intersections

Figure 7-14 identifies the extensive queuing on the Campbelltown Road in the southbound travel direction during the AM peak period.

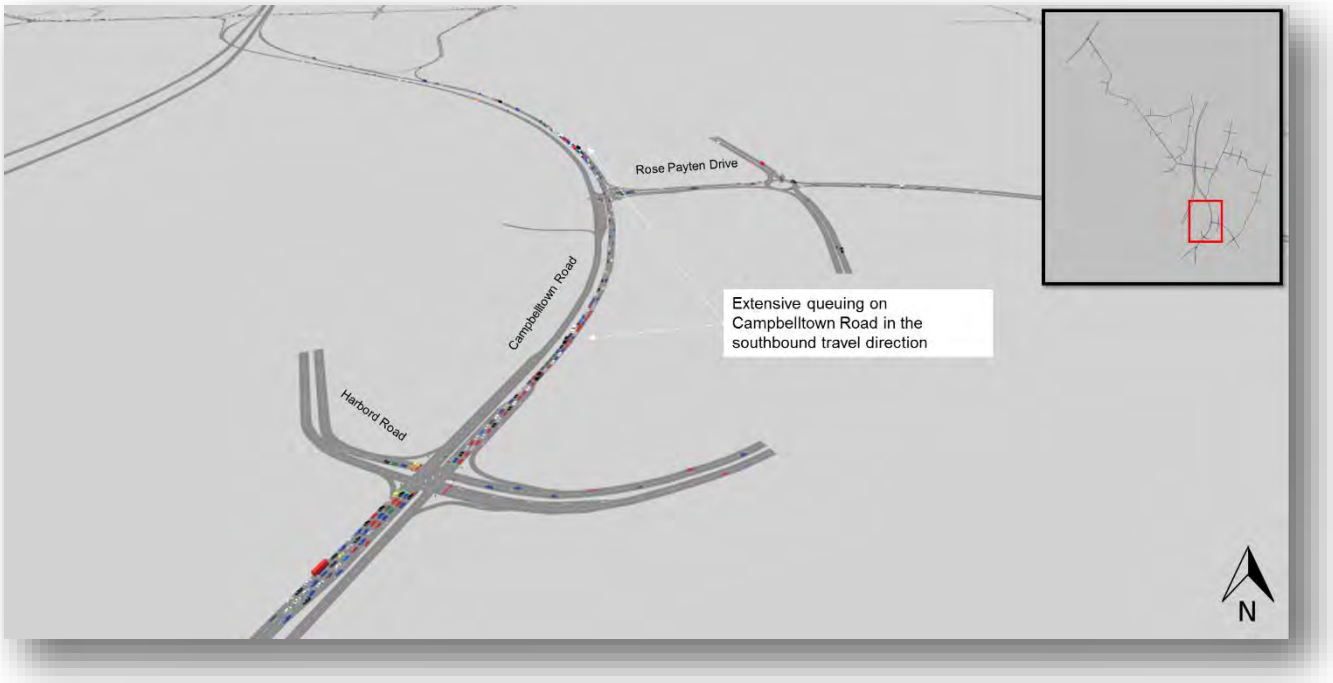


Figure 7-14 Year 2021-2026 Location 5 Deficiency (2021-2026_5_D)

Figure 7-15 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

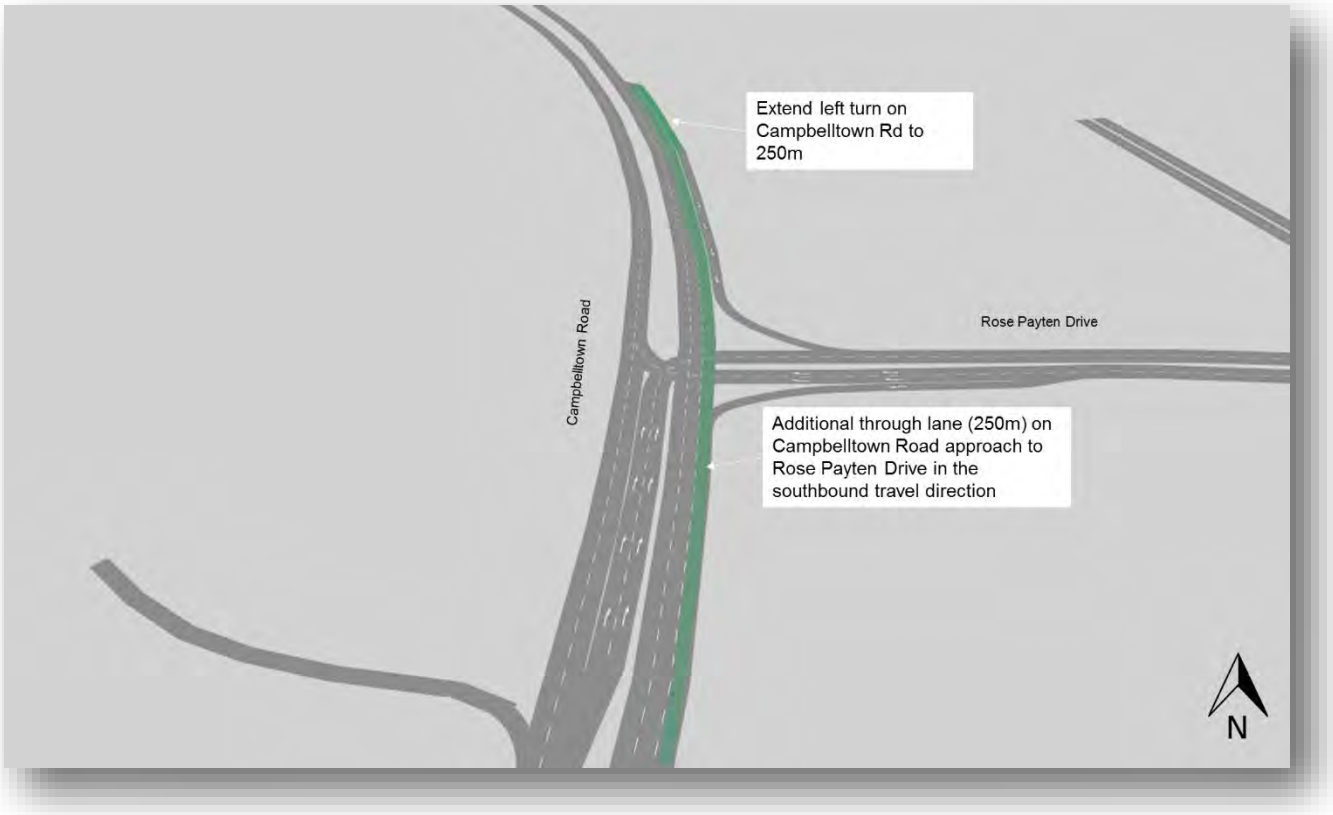


Figure 7-15 Year 2021-2026 Location 5 Upgrades (2021-2026_5_U1)

Figure 7-16 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

Figure 7-16 Year 2021-2026 Location 5 Upgrades (2021-2026_5_U2)

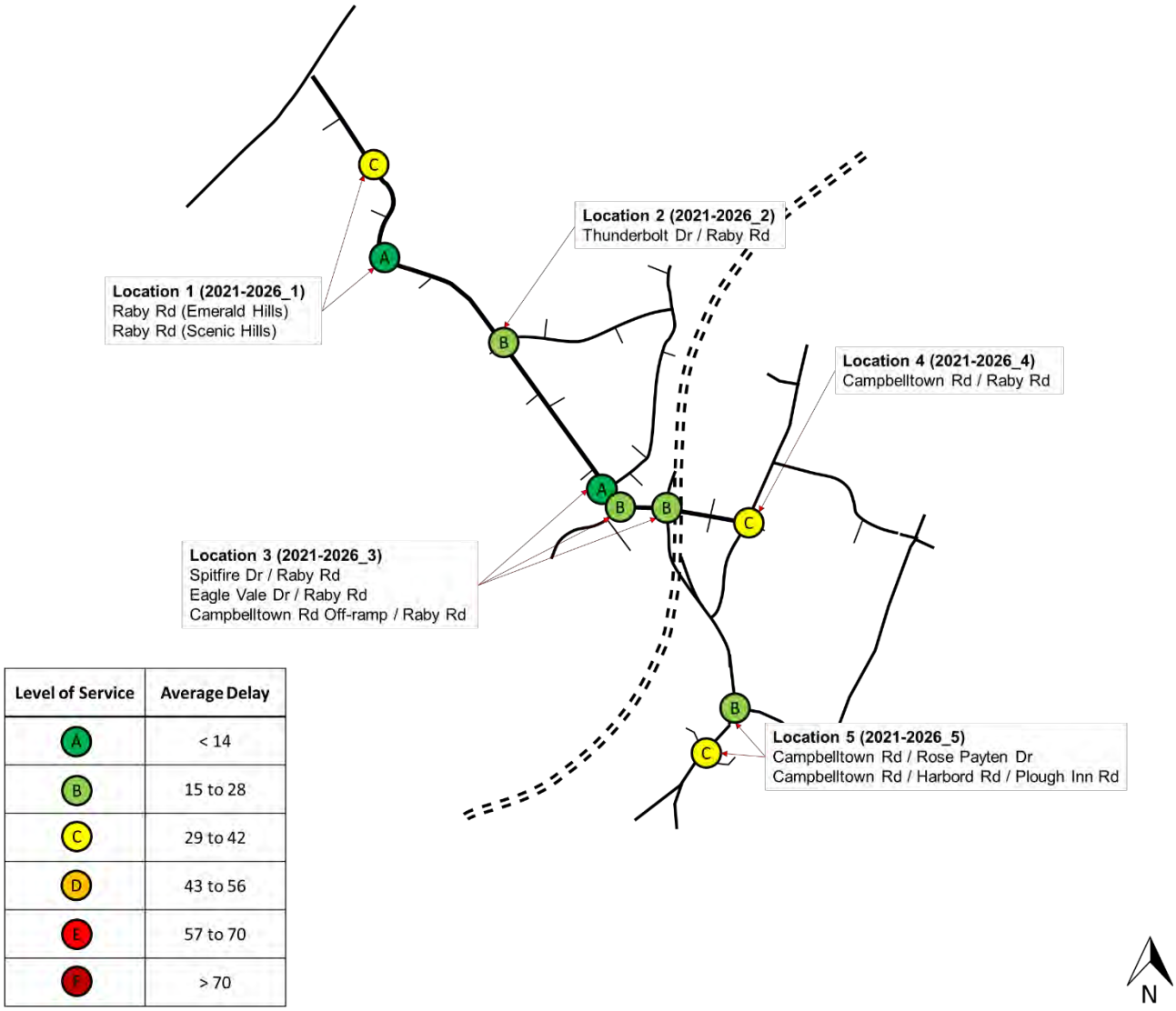
7.3 Traffic Modelling Assessment

The intersection performance modelling results of the proposed upgrades locations in 2026 are presented. Similar to the short term assessment, there is no comparative 'do nothing' scenario given the multiple intersection failures that restrict the throughput of vehicles and result in a virtual network gridlock. Notwithstanding the absence of a comparative assessment scenario of the same year, the results demonstrate satisfactory performance of the upgraded intersections in 2026.

7.3.1 Intersection Performance

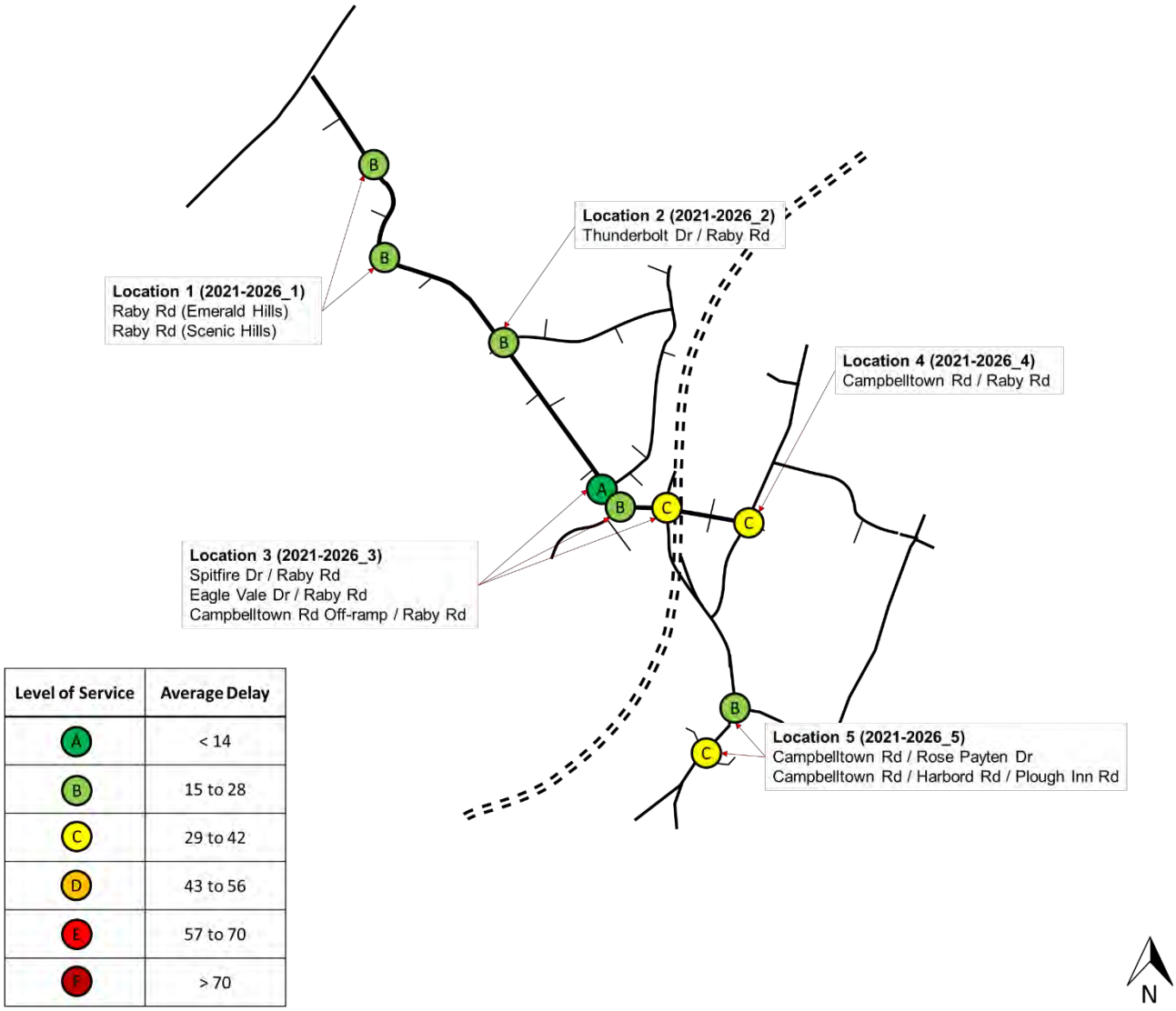
Figure 7-17 and **Figure 7-18** illustrate the intersection performance results of the proposed upgrade locations in 2026 AM and PM respectively. The results demonstrate satisfactory performance of all the upgraded intersections in 2026.

The intersection performance results by movement are tabulated in **Appendix D**.



Level of Service	Average Delay
A	< 14
B	15 to 28
C	29 to 42
D	43 to 56
E	57 to 70
F	> 70

Figure 7-17 2026 AM Intersection Performance of Proposed Upgrades



Level of Service	Average Delay
A	< 14
B	15 to 28
C	29 to 42
D	43 to 56
E	57 to 70
F	> 70

Figure 7-18 2026 PM Intersection Performance of Proposed Upgrades

7.4 Summary

The medium term assessment identified future (2021-2026) deficiencies and proposed respective mitigation measures to provide satisfactory performance in the medium term (2026).

Table 7-3 presents a summary of the outcomes from the medium term assessment.

Table 7-3 Medium Term Assessment Outcomes

ID	Location (Intersection)	Proposed Upgrades
2021-2026_1	Raby Road	▪ Duplication of Raby Road to two lanes (between Thunderbolt Drive and Emerald Hills access) in the northbound and southbound travel direction
2021-2026_2	Thunderbolt Drive / Raby Road	▪ Signalisation ▪ Additional lane (250m on each side of the intersection) on Raby Road in the southbound and northbound travel directions ▪ Right turn lanes (60m) on Raby Road in the northbound and southbound travel direction ▪ Additional (left and through) lane (30m) on Epping Forest Drive and Thunderbolt Drive
2021-2026_3	Spitfire Drive / Raby Road Eagle Vale Drive / Raby Road Campbelltown Road Off-ramp / Raby Road	▪ Upgrade Raby Road to three lanes between Spitfire Drive and Campbelltown Road Off-ramp in the southbound travel direction ▪ Additional lane (250m) to Spitfire Drive on Raby Road in the southbound travel direction ▪ Additional departure lane (120m) from Eagle Vale Drive to Spitfire Drive on Raby Road in the northbound travel direction ▪ Additional left turn lane (60m) on Campbelltown Road Off-ramp ▪ Additional through lane (40m) on Raby Road in the westbound travel direction at the Campbelltown Road Off-ramp intersection
2021-2026_4	Campbelltown Road / Raby Road Ben Lomond Road / Campbelltown Road	▪ Signalisation ▪ Dual left and right turns on Raby Road approach to Campbelltown Road ▪ Dual left turns on Campbelltown Road approaches ▪ Dual right turn on Campbelltown Road approach in the southbound travel direction ▪ Duplication of Campbelltown Road in the northbound and southbound travel directions between Raby Road and Ben Lomond Road
2021-2026_5	Campbelltown Road / Rose Payten Drive Campbelltown Road / Harbord Road	▪ Upgrade Campbelltown Road to three lanes between Rose Payten Drive and Harbord Road in the southbound travel direction ▪ Additional lane (250m) to Rose Payten Drive on Campbelltown Road approach in the southbound travel direction ▪ Additional departure lane (250m) from Harbord Road on Campbelltown Road in the southbound travel direction

8 Long Term (2026-2036) Assessment

This section of the report outlines the iterative process to identify transport network deficiencies and respective remedial measures for the long term timeframe, as follows:

> Identification of deficiencies that arise between 2026 and 2036, and the mitigation measures required to be in place by then to address these deficiencies.

8.1 Long Term (2036) Traffic Demand

The future traffic demand for 2036 was generated by increasing trips across the whole network at the previously agreed growth rate of 1.5% per annum (between 2026 and 2036).

Table 8-1 presents the total number of LV trips in the resulting future year 2036 LV demand matrix that was then compared to the 2026 LV demand matrix.

Table 8-1 Future Year 2036 Demand Matrix (LV)

Modelling Year	Total Trips in LV Demand Matrix	
	AM	PM
2026	17,603	20,718
2036	20,244	23,826
Growth (per annum)	**1.5%**	**1.5%**

Table 8-2 presents the total number of HV trips in the resulting future year 2036 demand matrix that was then compared to the 2026 HV demand matrix. Heavy vehicle demand across the whole network was increased by the same network wide growth factor used for light vehicles (1.5% per annum).

Table 8-2 Future Year 2036 Demand Matrix (HV)

Modelling Year	Total Trips in HV Demand Matrix	
	AM	PM
2026	1,185	1,045
2036	1,363	1,202
Growth (per annum)	**1.5%**	**1.5%**

8.2 Transport Network Deficiencies and Upgrades

The following sections identify the long term (2026-2036) network deficiencies and respective mitigation measures proposed. Upgrades were considered and analysed iteratively with cost and property boundary considerations. In particular, the life of roundabouts and priority controlled intersections was extended as much as possible to avoid overprovision of infrastructure and unnecessary expenditure (such as provision of traffic signals).

A total of 8 locations are proposed to be upgraded in the long term as shown in **Figure 8-1**.

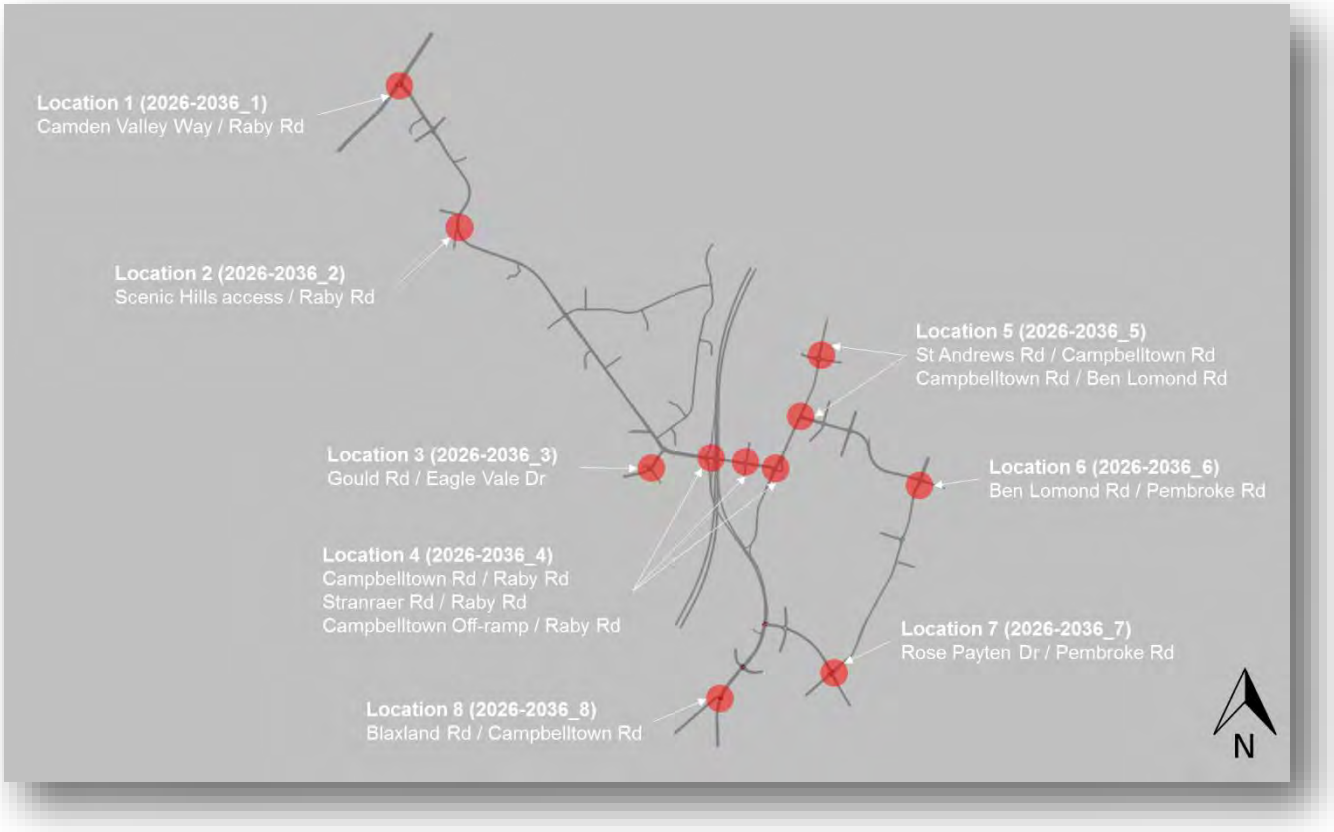


Figure 8-1 Map of Long Term Upgrade Locations

8.2.2 Location 1 (2026-2036_1) Camden Valley Way / Raby Road Intersection

Figure 8-2 identifies the extensive queuing on the Raby Road approach especially during the PM peak period.

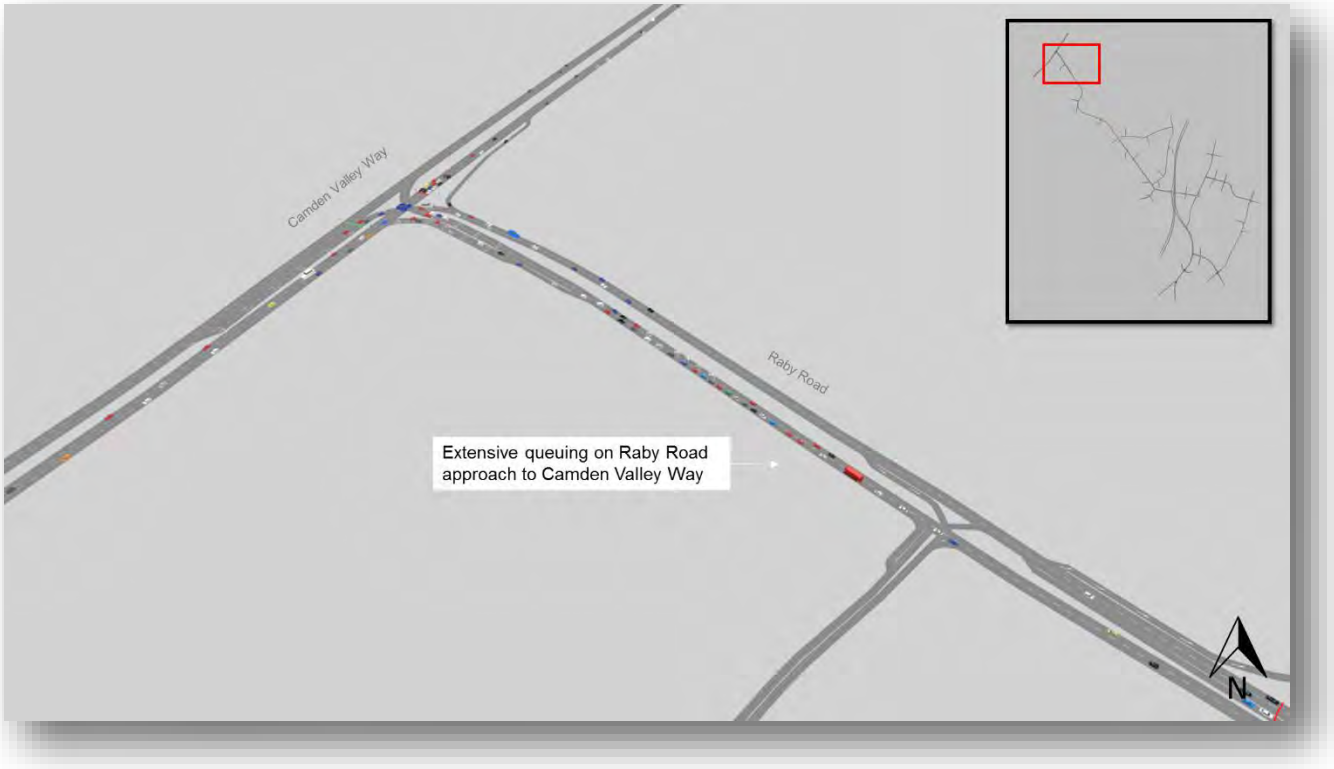


Figure 8-2 Year 2026-2036 Location 1 Deficiency (2026-2036_1_D)

As the left turn on the Raby Road approach is a heavy movement, Cardno have proposed a relatively cost effective upgrade to improve intersection performance to acceptable levels by 2036.

Figure 8-3 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

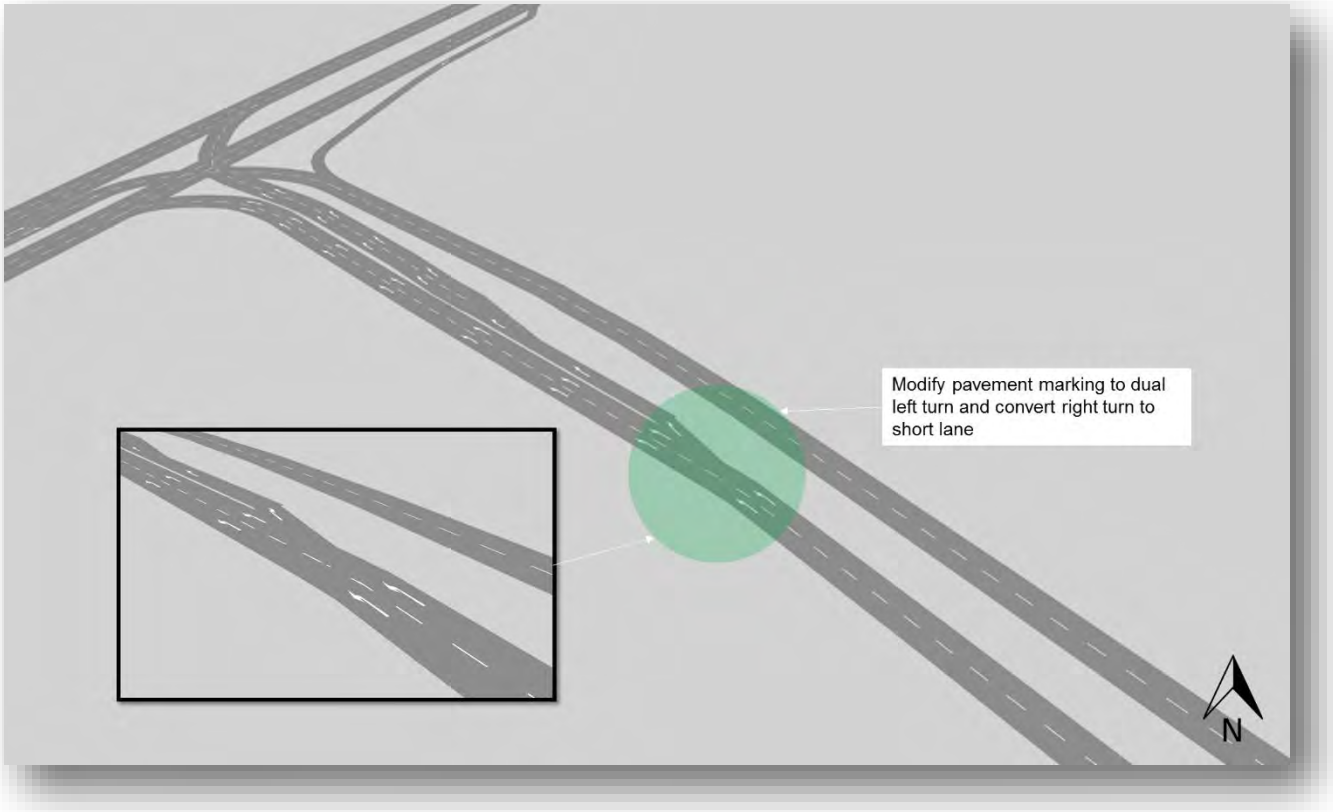


Figure 8-3 Year 2026-2036 Location 1 Upgrades (2026-2036_1_U)

8.2.3 Location 2 (2026-2036_2) Scenic Hills access / Raby Road Intersection

Figure 8-4 identifies the extensive queuing on the Raby Road approach to Scenic Hills access in the northbound travel direction during the PM peak period.

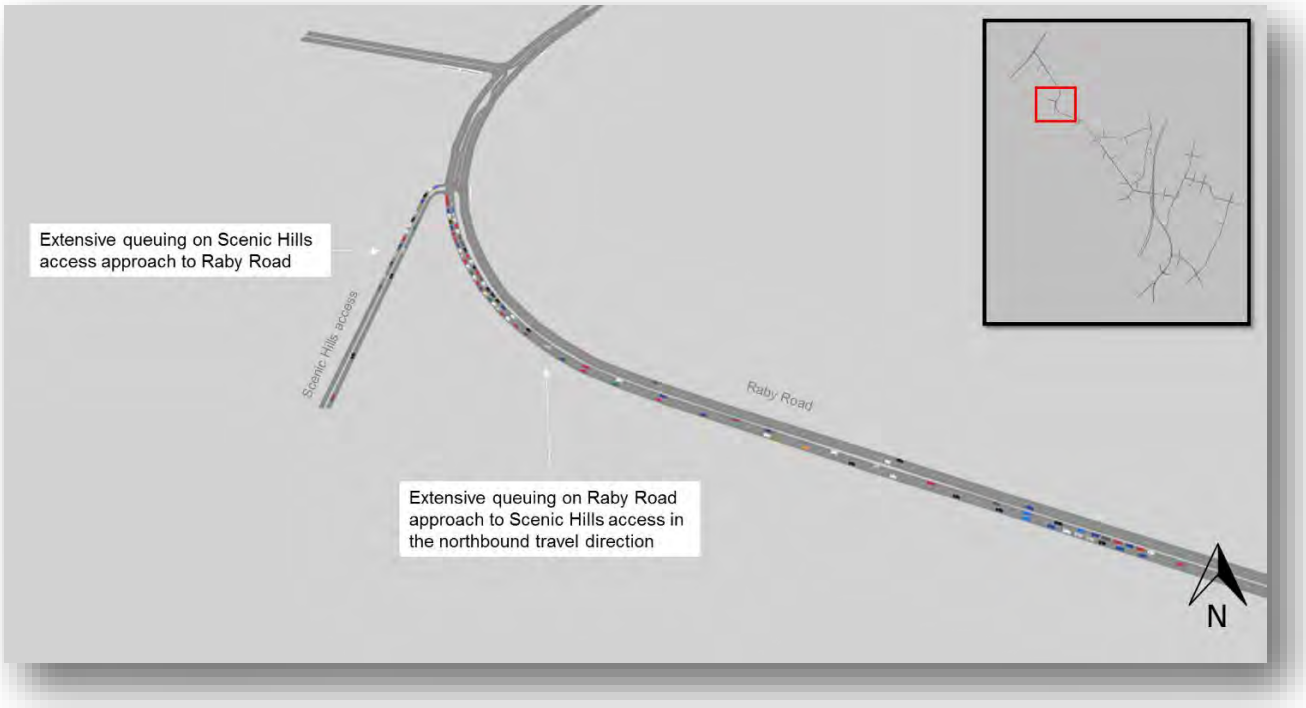


Figure 8-4 Year 2026-2036 Location 2 Deficiency (2026-2036_2_D)

Figure 8-5 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

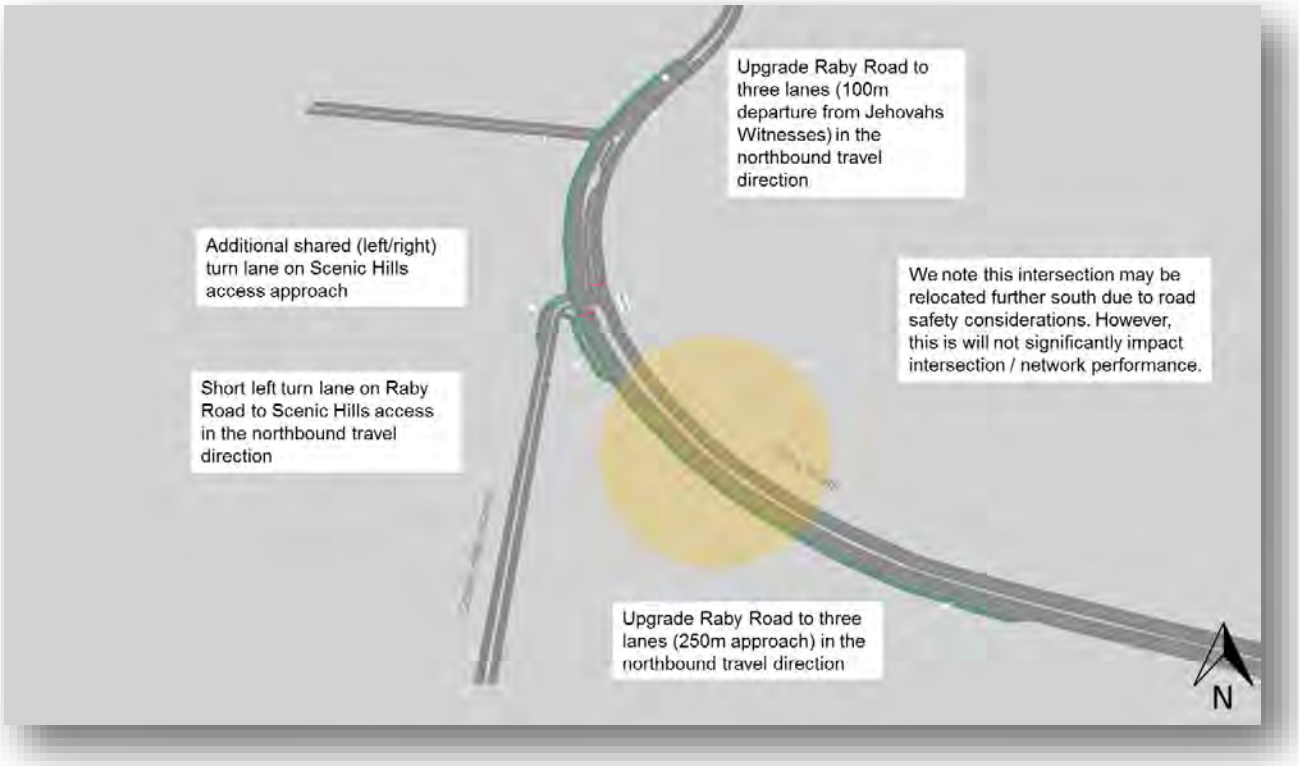


Figure 8-5 Year 2026-2036 Location 2 Upgrades (2026-2036_2_U)

8.2.4 Location 3 (2026-2036_3) Gould Road / Eagle Vale Drive Intersection

Figure 8-6 identifies the extensive queuing on the Gould Road approach to Eagle Vale Drive during the AM / PM peak period.

Figure 8-6 Year 2026-2036 Location 3 Deficiency (2026-2036_3_D)

Figure 8-7 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

Figure 8-7 Year 2026-2036 Location 3 Upgrades (2026-2036_3_U)

8.2.5 Location 4 (2026-2036_4) Campbelltown Road / Raby Road, Stranraer Road / Raby Road and Campbelltown Road Off-ramp / Raby Road Intersections

Figure 8-8 identifies the extensive queuing on Raby Road from the Campbelltown Road Off-ramp to the Campbelltown Road approach to Raby Road during the PM peak period.

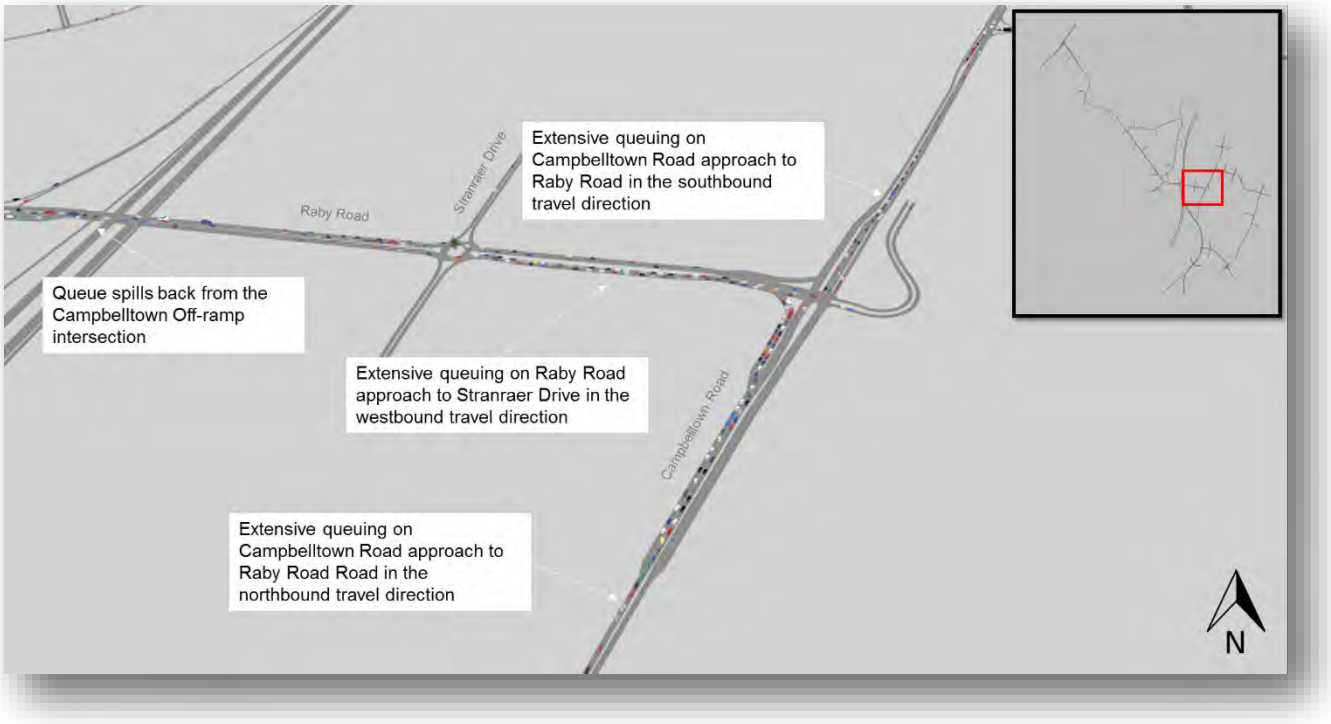


Figure 8-8 Year 2026-2036 Location 4 Deficiency (2026-2036_4_D)

Figure 8-9, **Figure 8-10** and **Figure 8-11** illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

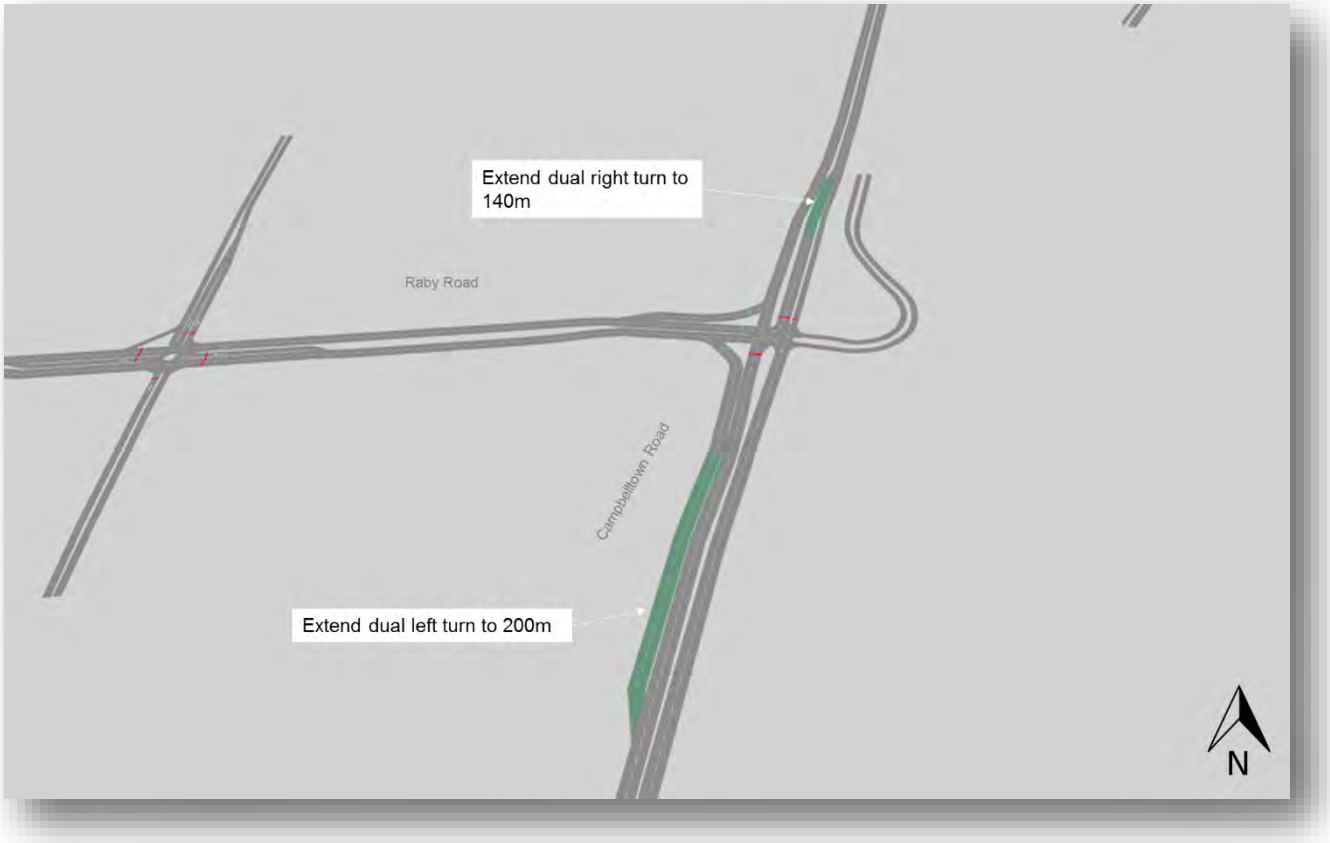


Figure 8-9 Year 2026-2036 Location 4 Upgrades (2026-2036_4_U1)

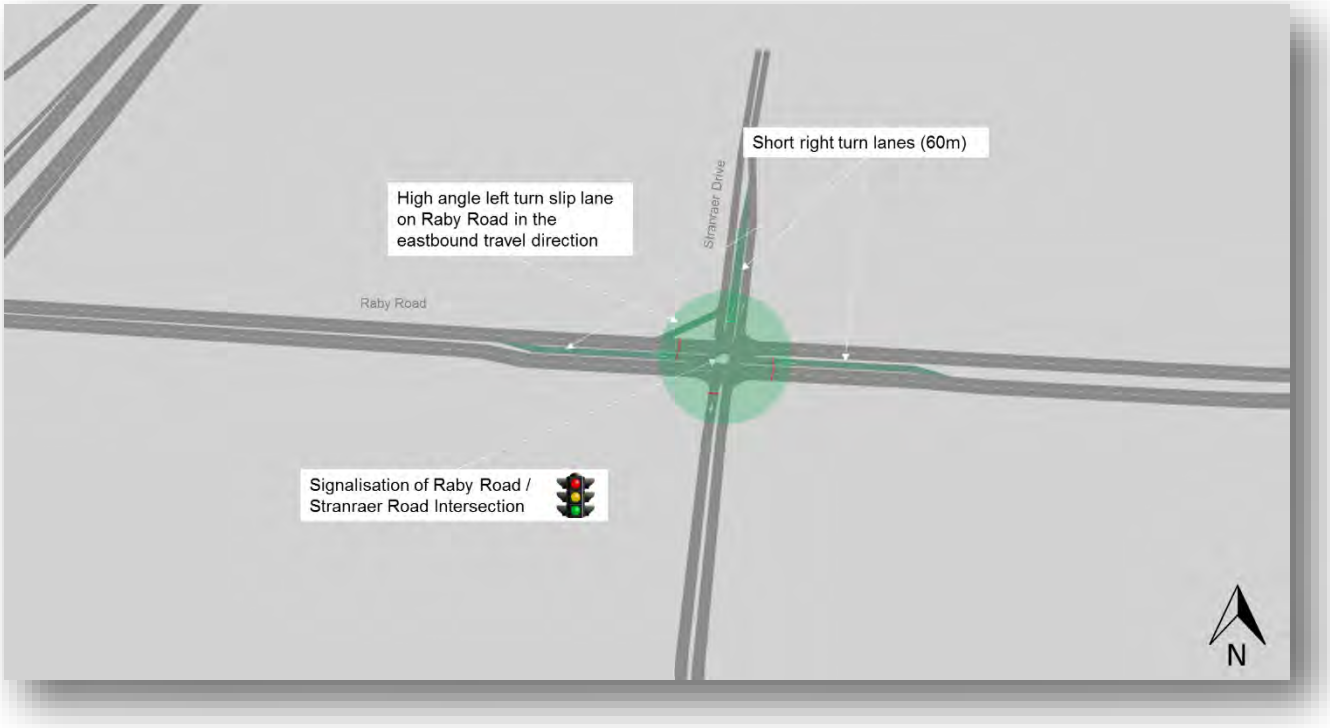


Figure 8-10 Year 2026-2036 Location 4 Upgrades (2026-2036_4_U2)

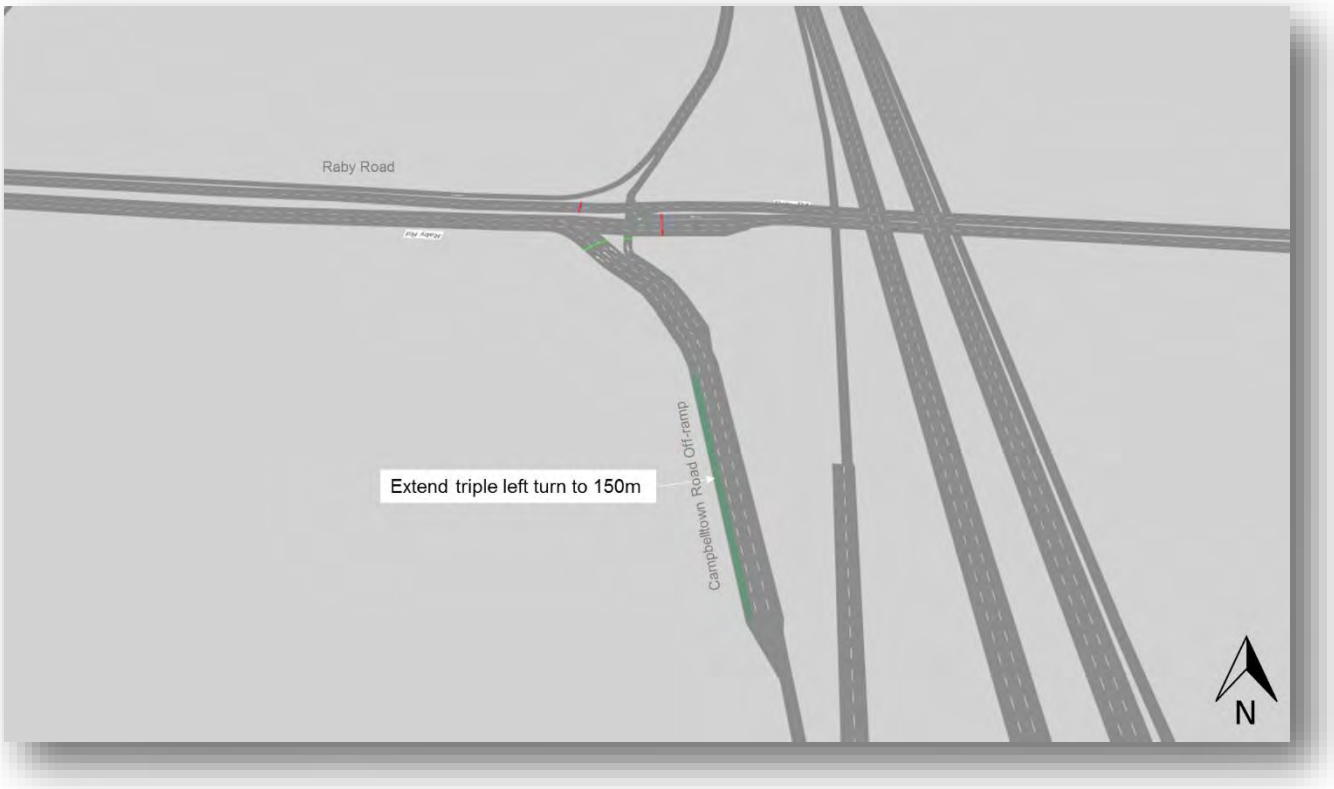


Figure 8-11 Year 2026-2036 Location 4 Upgrades (2026-2036_4_U3)

8.2.6 Location 5 (2026-2036_5) St Andrews Road / Campbelltown Road Intersection

Figure 8-12 identifies the extensive queuing on the Campbelltown Road approaches to St Andrews Road (northbound and southbound) during the PM peak period.

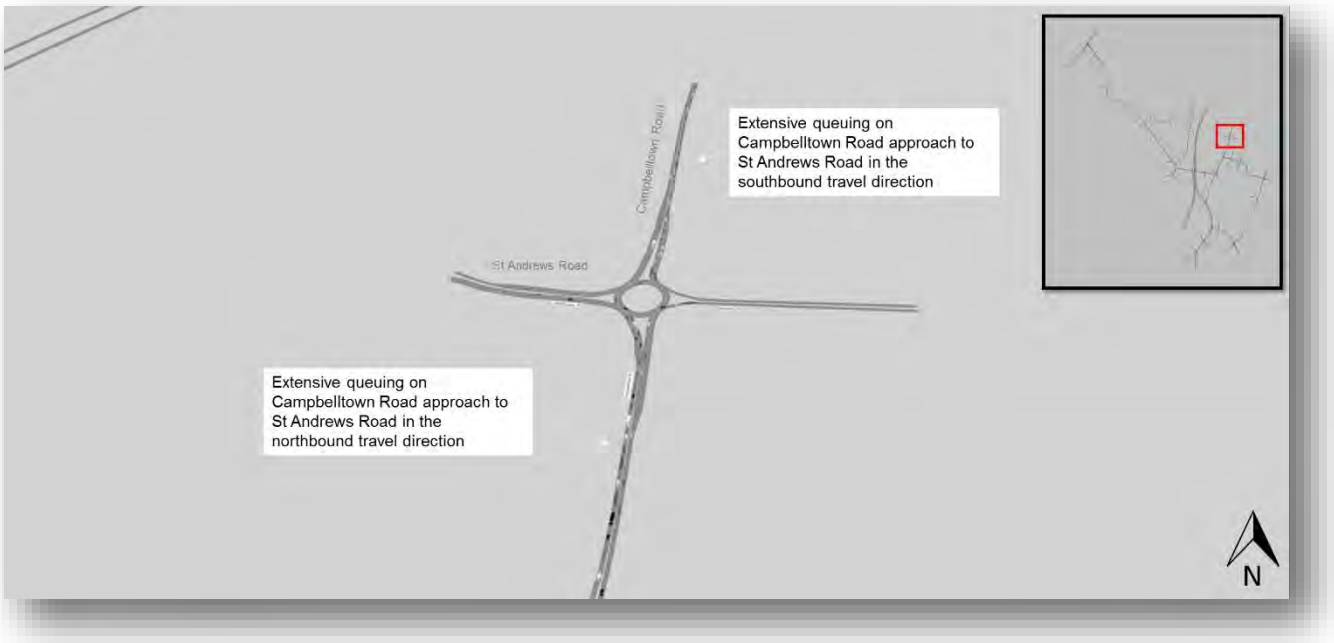


Figure 8-12 Year 2026-2036 Location 5 Deficiency (2026-2036_5_D)

Figure 8-13 and **Figure 8-14** illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

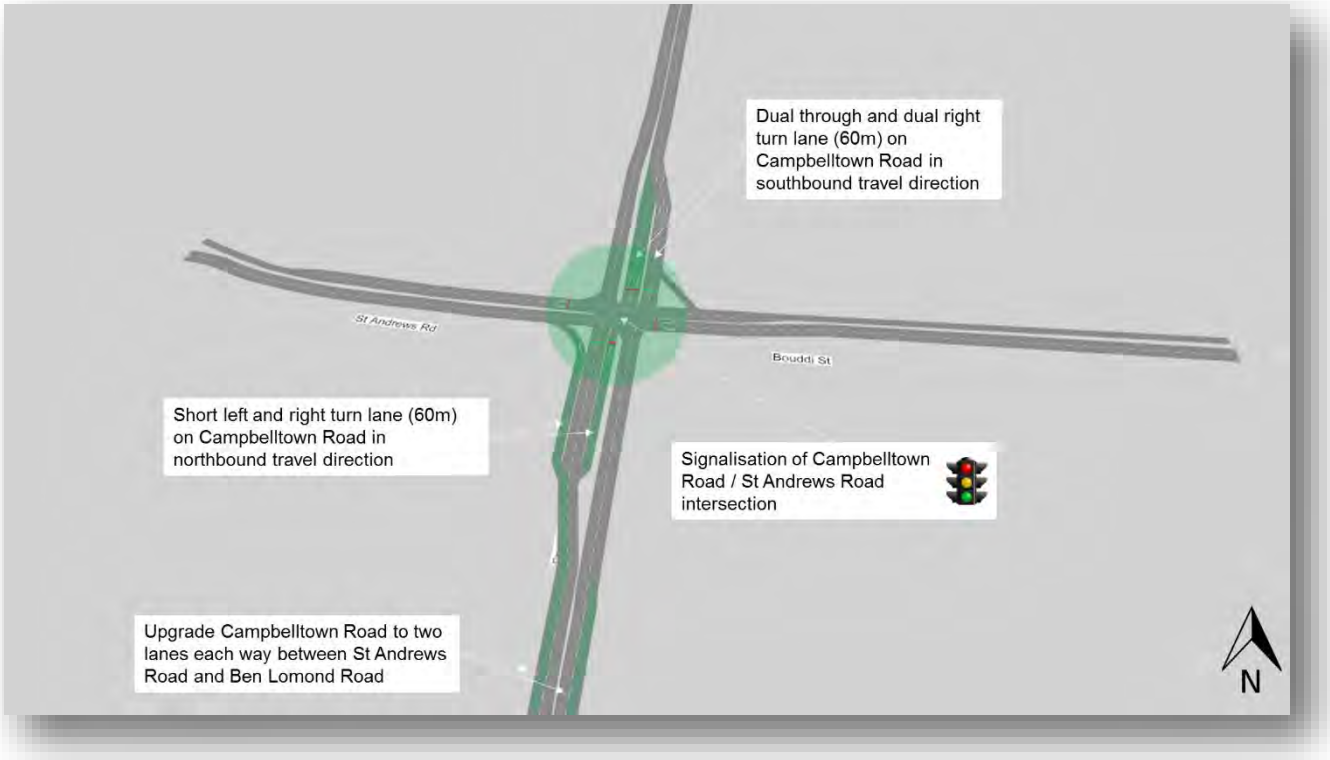


Figure 8-13 Year 2026-2036 Location 5 Upgrades (2026-2036_5_U1)

Figure 8-14 Year 2026-2036 Location 5 Upgrades (2026-2036_5_U2)

8.2.7 Location 6 (2026-2036_6) Ben Lomond Road / Pembroke Road Intersections

Figure 8-15 identifies the extensive queuing on Pembroke Road approach to Ben Lomond Road in the southbound travel direction during the PM peak period.

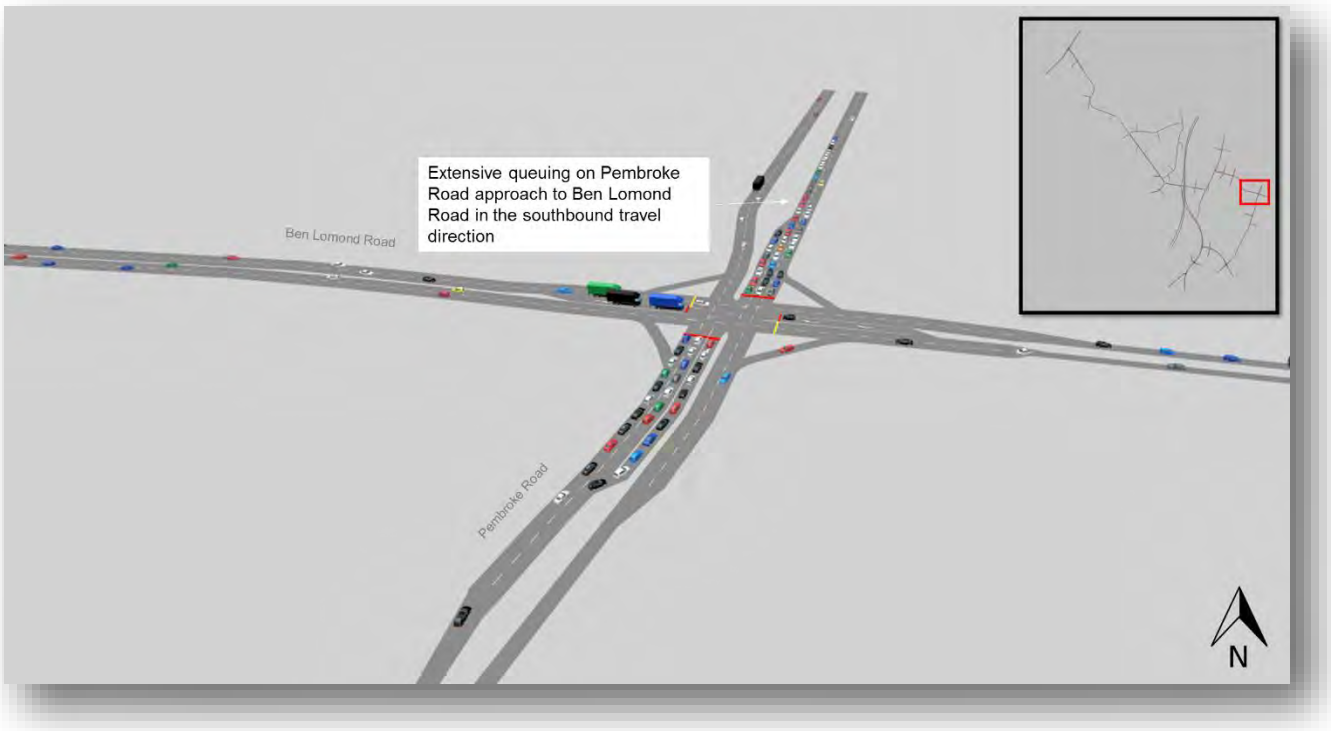


Figure 8-15 Year 2026-2036 Location 6 Deficiency (2026-2036_6_D)

Figure 8-16 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

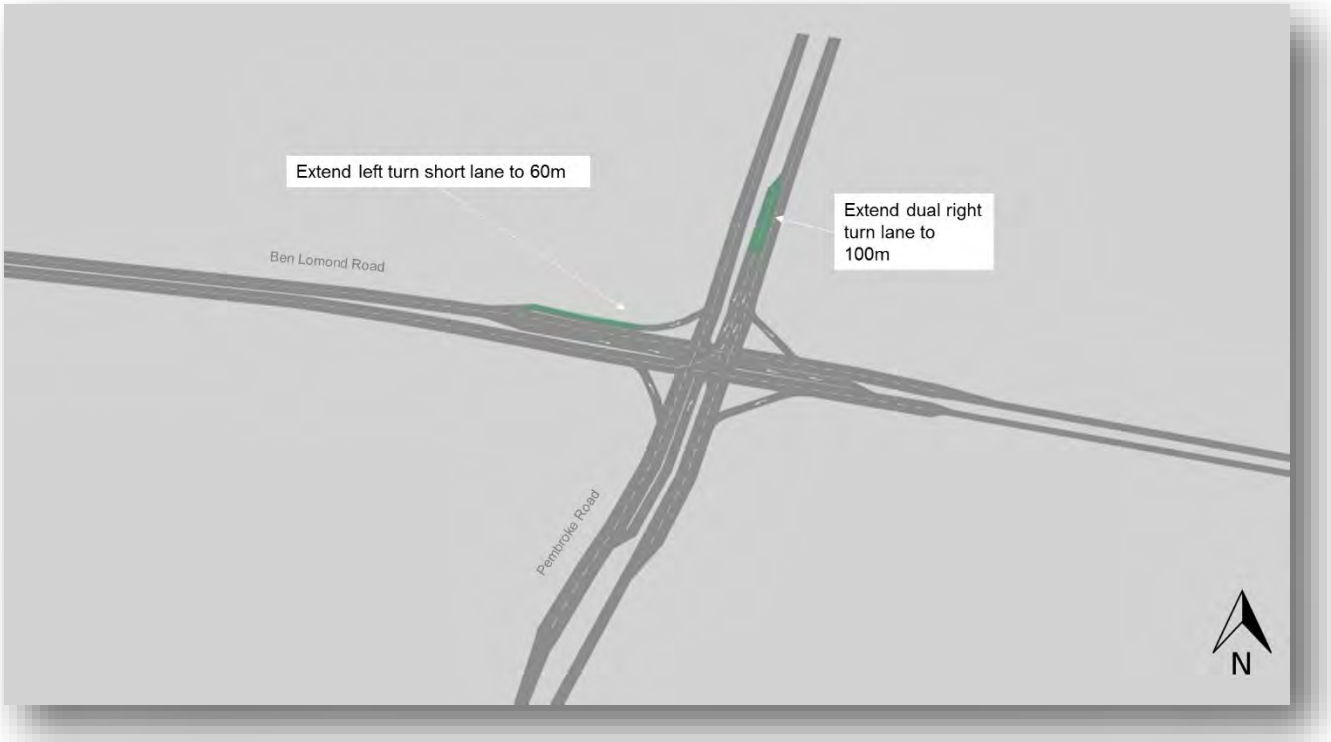


Figure 8-16 Year 2016 Location 6 Upgrades (2016-2021_6_U)

8.2.8 Location 7 (2026-2036_7) Rose Payten Drive / Pembroke Road Intersection

Figure 8-17 identifies the extensive queuing on the Rose Payten Drive approach to Pembroke Road during the AM and PM peak periods.

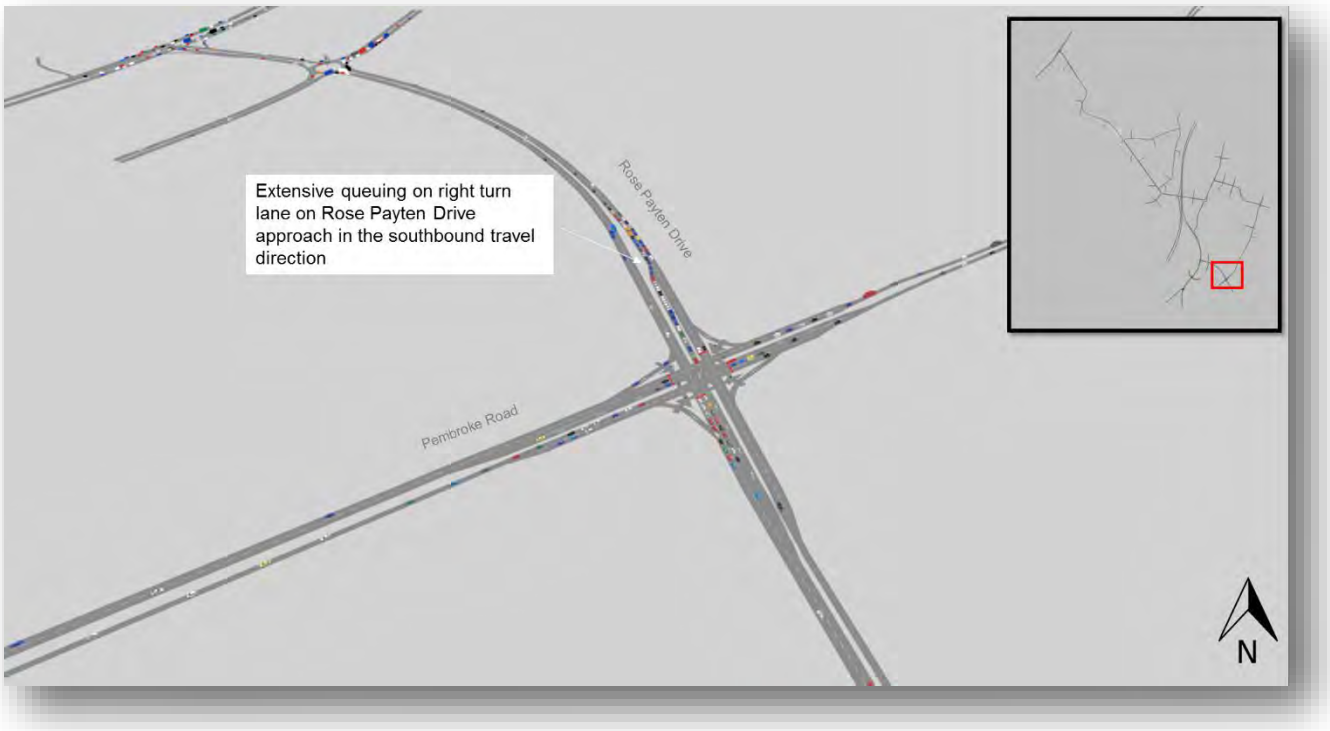


Figure 8-17 Year 2026-2036 Location 7 Deficiency (2026-2036_7_D)

Figure 6-16 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

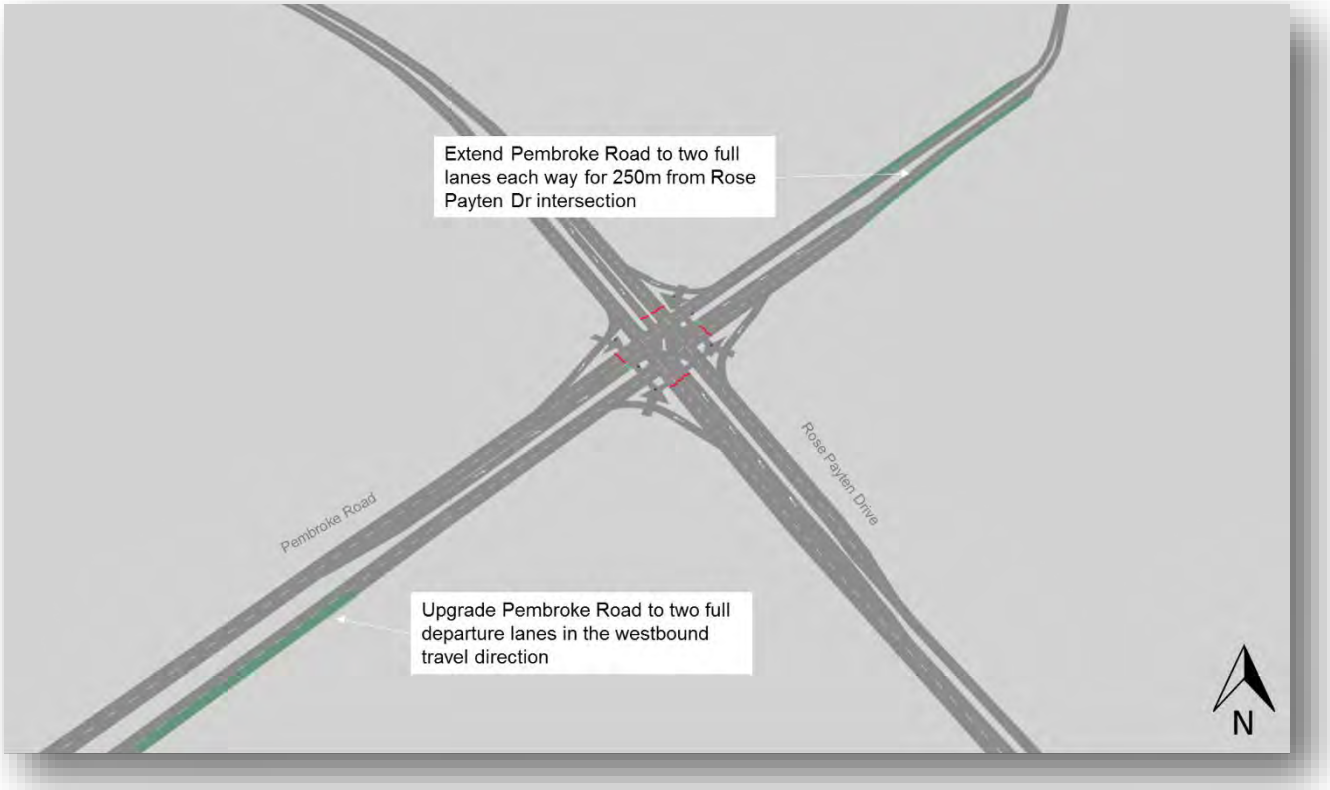


Figure 8-18 Year 2026-2036 Location 7 Upgrades (2026-2036_7_U)

8.2.9 Location 8 (2026-2036_8) Blaxland Road / Campbelltown Road Intersection

Figure 8-19 identifies the extensive queuing on the Campbelltown Road approach to Blaxland Road in the northbound travel direction during the PM peak period.

Figure 8-19 Year 2026-2036 Location 8 Deficiency (2026-2036_8_D)

Figure 8-20 illustrates the proposed upgrades to mitigate the transport network deficiencies identified.

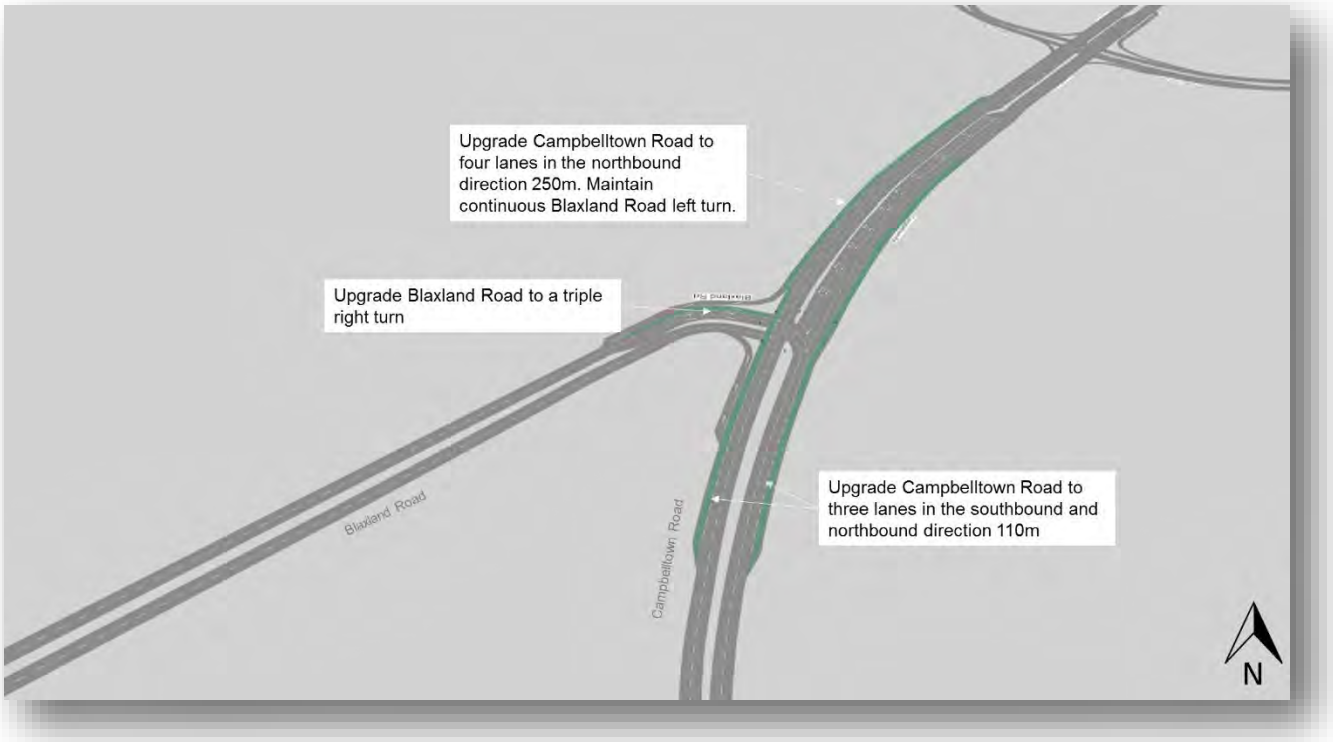


Figure 8-20 Year 2026-2036 Location 8 Upgrades (2026-2036_8_U)

8.3 Traffic Modelling Assessment

The intersection performance modelling results of the 8 proposed upgrades locations in 2036 are presented. Again, there is no comparative 'do nothing' scenario given the virtual network gridlock conditions under a "no upgrade" scenario. Notwithstanding the absence of a comparative assessment scenario of the same year, the results demonstrate performance of the intersections in 2036.

8.3.1 Intersection Performance

Figure 8-21 and **Figure 8-22** illustrates the intersection performance results of the 8 proposed upgrade locations in 2036 AM and PM respectively. The results demonstrate satisfactory performance of all the upgraded intersections in 2036.

The intersection performance results by movement are tabulated in **Appendix D**.

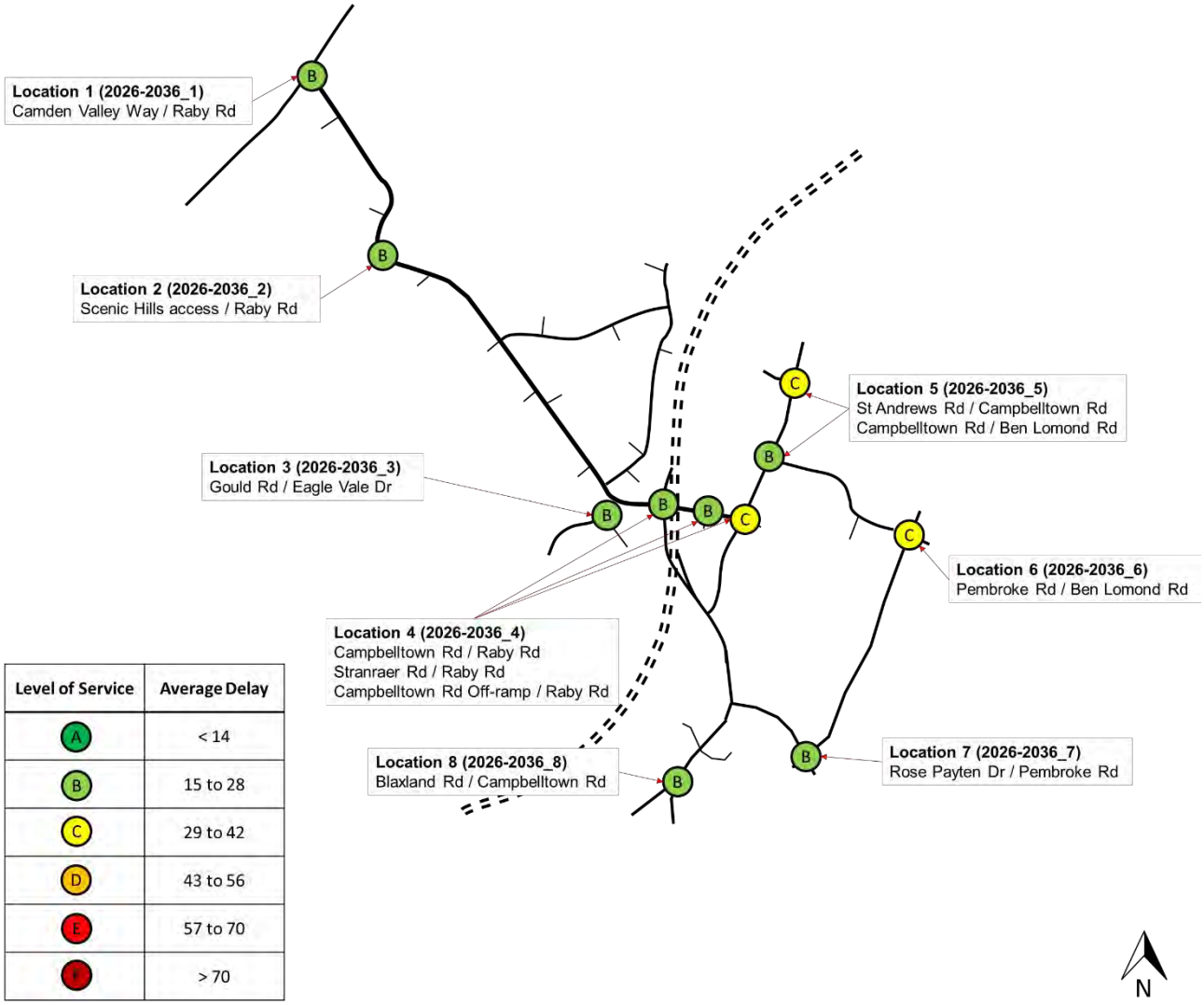


Figure 8-21 2036 AM Intersection Performance of Proposed Upgrades

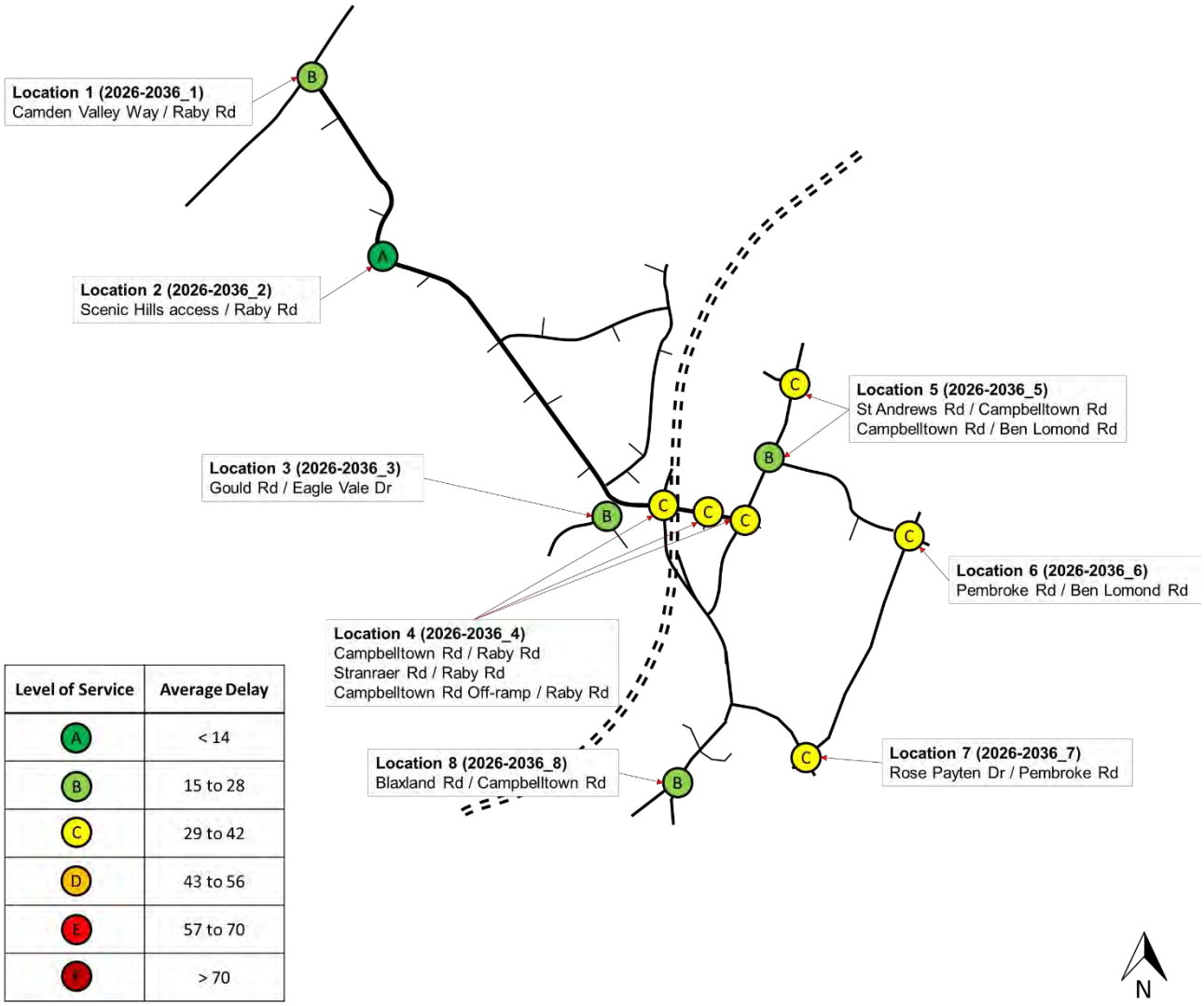


Figure 8-22 2036 PM Intersection Performance of Proposed Upgrades

8.4 Safety Considerations

Assuming all proposed upgrades in this study are in place by 2036, the network operates satisfactorily from a performance perspective. However, removal of a number of right turns from minor roads should be considered a safety perspective (especially by 2036 as some sections of the major road (Raby Road) becomes three-lane each-way).

> Eschol Park Road right turn to Raby Road (**Figure 8-23**)
> Mustang Drive right turn to Raby Road (**Figure 8-24**)
> Kearns Avenue right turn to Raby Road (**Figure 8-24**)
> Macarthur Grange right turn to Raby Road (**Figure 8-25**)
> Jehovahs Witnesses right turn to Raby Road (**Figure 8-26**).

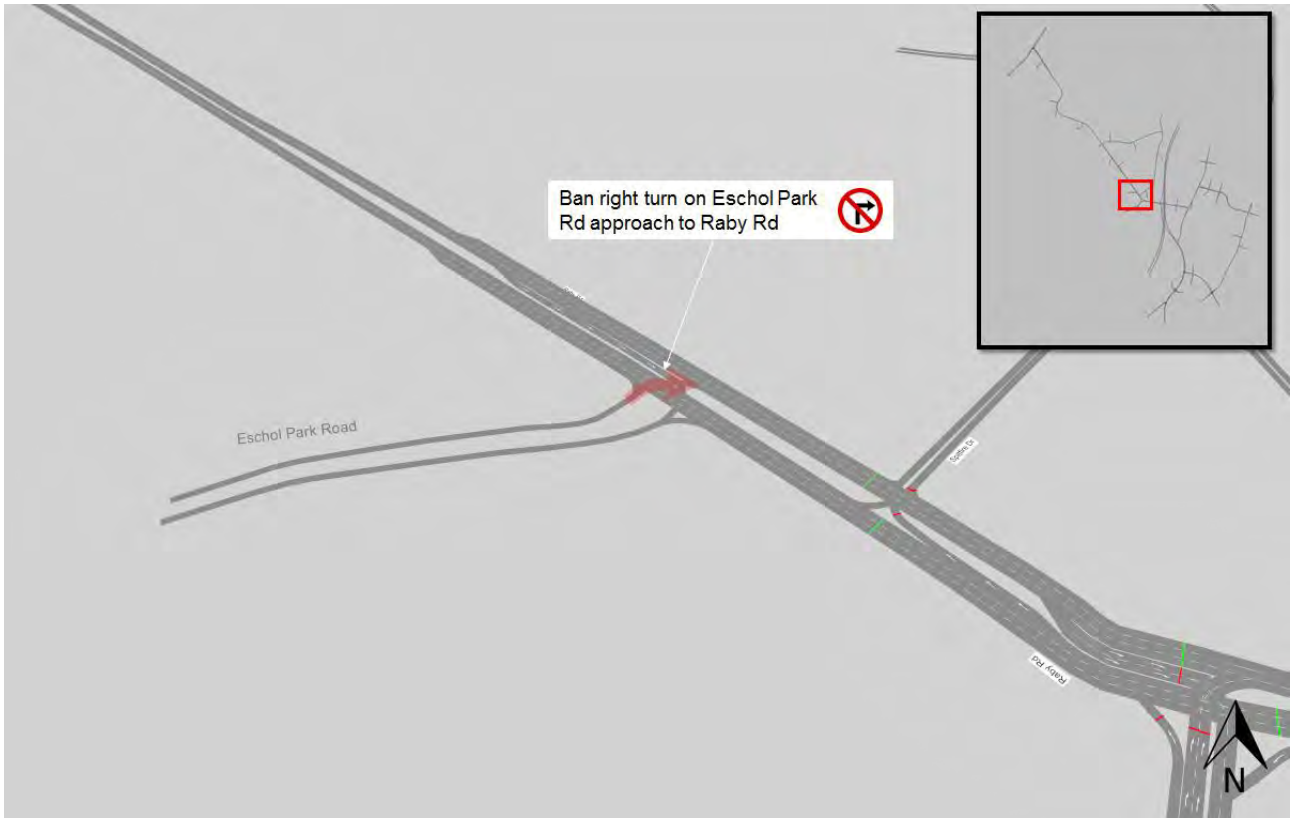


Figure 8-23 Eschol Park Road Right Turn Ban

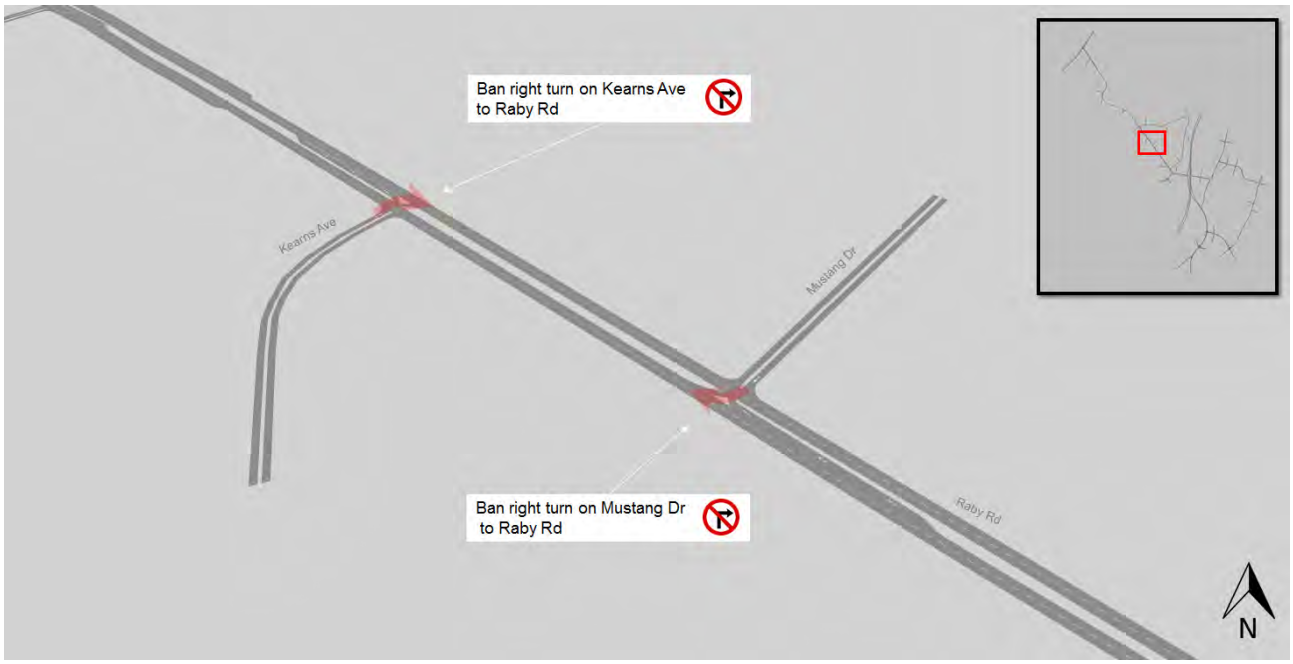


Figure 8-24 Mustang Drive and Kearns Avenue Right Turn Ban

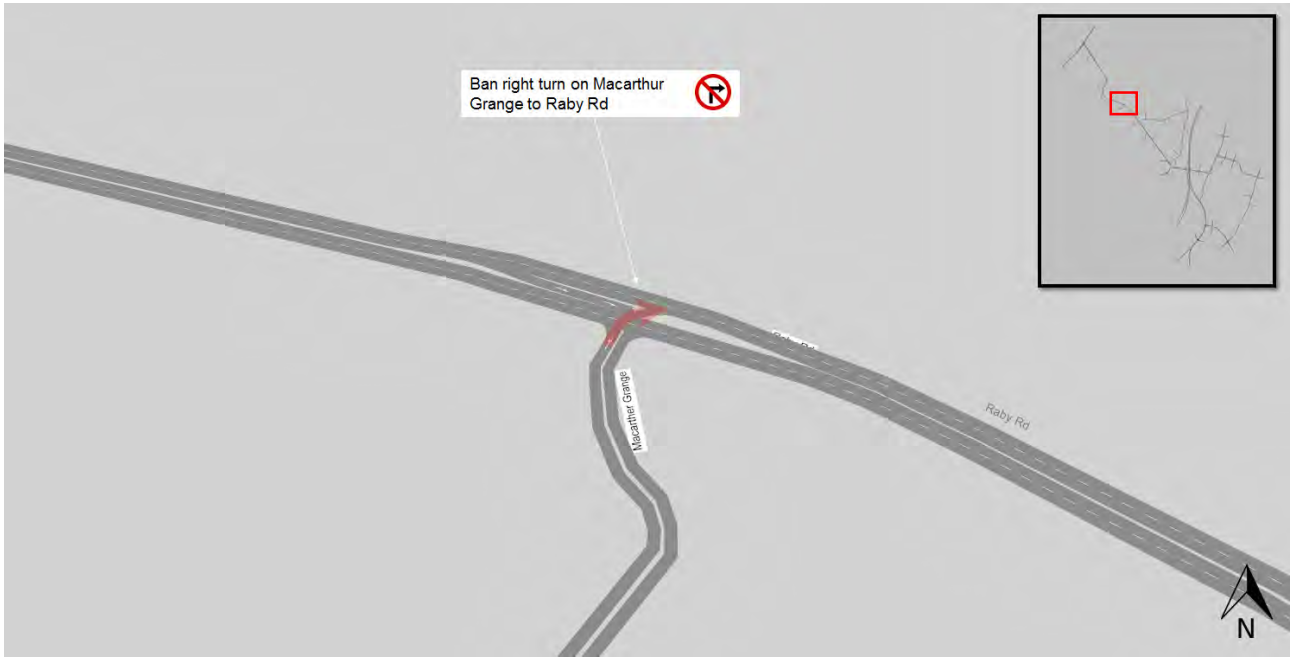


Figure 8-25 Macarthur Grange Right Turn Ban

Figure 8-26 Jehovahs Witnesses Right Turn Ban

8.5 Summary

The long term assessment identified future (2026-2036) deficiencies and proposed respective mitigation measures to provide satisfactory performance in the long term (2036).

Table 8-3 presents a summary of the outcomes from the long term assessment.

Table 8-3 Long Term Assessment Outcomes

ID	Location (Intersection)	Proposed Upgrades
2026-2036_1	Camden Valley Way / Raby Road	▪ Modify pavement marking to dual left turn so that the two full lanes on Raby Road turn left and convert right turn to short lane
2026-2036_2	Scenic Hills access / Raby Road	▪ Upgrade Raby Road to three lanes (250m on approach) in the northbound travel direction ▪ Additional short shared left and right turn lane on Scenic Hills access ▪ Upgrade Raby Road to three lanes (100m departure from Jehovahs Witnesses) in the northbound travel direction
2026-2036_3	Gould Road / Eagle Vale Drive	▪ Duplicate Gould Road approach to Eagle Vale Drive with a dual right turn ▪ Modify pavement marking to service dual lane roundabout movements
2026-2036_4	Campbelltown Road / Raby Road Stranraer Road / Raby Road Campbelltown Road Off-ramp / Raby Road	▪ Extend dual left turn to 120m on Campbelltown Road in the northbound travel direction ▪ Extend dual right turn to 140m on Campbelltown Road in the southbound travel direction ▪ Signalisation of Raby Road / Stranraer Road intersection ▪ Extend triple left turn to 150m on Campbelltown Road Off-ramp
2026-2036_5	St Andrews Road / Campbelltown Road	▪ Signalisation ▪ Dual through and dual right turn lanes (60m) on Campbelltown Road in the southbound travel direction ▪ Left and right turn lanes (60m) on Campbelltown Road in the northbound travel direction

		▪ Upgrade Campbelltown Road to two lanes each way between St Andrews Road and Ben Lomond Road
2026-2036_6	Ben Lomond Road / Pembroke Road	▪ Extend left turn lane to 60m on Ben Lomond Road in the eastbound travel direction ▪ Extend dual right turn lanes to 100m on Pembroke Road in the southbound travel direction
2026-2036_7	Rose Payten Drive / Pembroke Road	▪ Upgrade Pembroke Road to two full departure lanes in the westbound travel direction ▪ Extend Pembroke Road to two full lanes each way for 250m on the eastern side of the intersection
2026-2036_8	Blaxland Road / Campbelltown Road	▪ Upgrade Blaxland Road to a triple right turn to Campbelltown Road ▪ Maintain Blaxland Road continuous left turn ▪ Upgrade Campbelltown Road to four departure lanes in the northbound travel direction (250m) ▪ Upgrade Campbelltown Road to three approach lanes in the northbound travel direction (110m) ▪ Upgrade Campbelltown Road to three departure lanes in the southbound travel direction (110m)

Furthermore, Cardno highlighted a number of right turns from minor roads that should be banned from a safety perspective (especially by 2036 as some sections of the major road (Raby Road) becomes three-lane each-way).

> Eschol Park Road right turn to Raby Road
> Mustang Drive right turn to Raby Road
> Kearns Avenue right turn to Raby Road
> Macarthur Grange right turn to Raby Road
> Jehovahs Witnesses right turn to Raby Road.

9 Summary and Recommendations

Cardno was commissioned by Campbelltown City Council to prepare robust traffic models and propose infrastructure upgrades to assist in managing congestion and traffic demand for the short (2016-2021), medium (2021-2026) and long term (2026-2036) future year horizons. Cardno performed an existing traffic and transport conditions investigation which informed the base model development. The base models were developed using VISSIM (v8), and were calibrated and validated to the performance requirements of the Roads and Maritime Services Traffic Modelling Guidelines. Importantly, the base models were able to replicate existing (2016) network deficiencies identified in the network.

Short, medium and long term infrastructure upgrades to the network were proposed. The traffic modelling results were analysed and interpreted to determine and document the impacts to the transport network. The completed study approach is illustrated below in **Figure 9-1**.

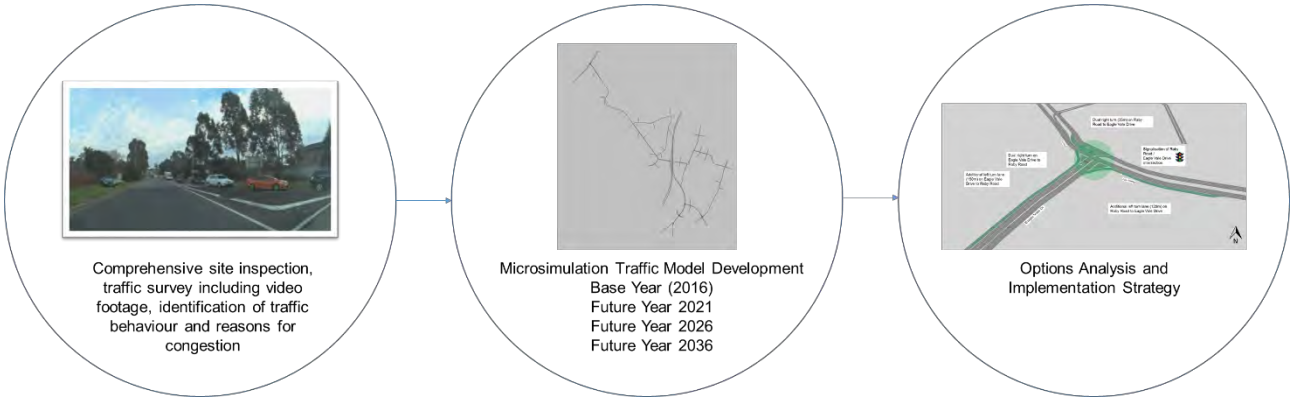


Figure 9-1 Completed Study Approach

9.1 Base Model Development, Calibration and Validation

The Base (2016) Weekday AM and PM peak period models went through a detailed interrogation process to build confidence in the modelling. Initial traffic survey video footage did not capture key hot spots in the study area. Therefore, additional traffic survey video footage was collected to identify and determine the cause of congestion.

The models conform to Roads and Maritime Services Traffic Modelling Guidelines for microsimulation traffic modelling. The modelling results show that the models have:

> Over 95% of the turning counts had a GEH of less than 5 and none more than 10
> High regression value with R^2>0.99
> Travel time results within 15% and one minute of average observed travel time
> Stable performance amongst five seed run
> Importantly, the models are able to replicate existing network deficiencies at identified hotspots in the study area.

It was concluded that the two peak base models appropriately reflect existing year conditions and provide a suitable basis for the development of short, medium and long term infrastructure upgrades and subsequent performance assessment for the respective future year horizons.

9.2 Future Year Model Development

The methodology adopted to forecast future year growth in the study area was as follows:

> Add local development and respective trips / access points to the models
> Determine if additional demands need to be added to the traffic models to achieve a network average growth in accordance with the weighted average growth rates extracted from the STFM outputs (1.5% per annum).

Local developments included:

> Emerald Hills (1,280 lots)
> Scenic Hills (560 lots)
> No. 121 Raby Road (32 lots)
> Sekisui House (587 lots)
> Camden Lakeside Golf Course (380 lots).

The trip distribution of local developments was estimated using Journey to Work data and is illustrated below in **Figure 9-2**.

Figure 9-2 Summary of Local Development

9.3 Options Analysis and Implementation Strategy

Infrastructure upgrades and subsequent road network operational performance improvements for the short (2016-2021), medium (2021-2026) and long term (2026-2036) future year horizons were documented and proposed.

Upgrades were considered and analysed iteratively with cost and property boundary considerations. In particular, the life of roundabouts and priority controlled intersections was extended as much as possible to avoid overprovision of infrastructure and unnecessary expenditure (such as provision of traffic signals). As with all upgrades proposed in this study, road safety implications will be need to considered.

Figure 9-3, **Figure 9-4** and **Figure 9-5** illustrates the locations where deficiencies were addressed for the short, medium and long term scenarios respectively.

Cardno also highlighted a number of right turns from minor roads that should be banned from a safety perspective (especially by 2036 as some sections of the major road (Raby Road) becomes three-lane each-way).

> Eschol Park Road right turn to Raby Road
> Mustang Drive right turn to Raby Road
> Kearns Avenue right turn to Raby Road
> Macarthur Grange right turn to Raby Road
> Jehovahs Witnesses right turn to Raby Road.

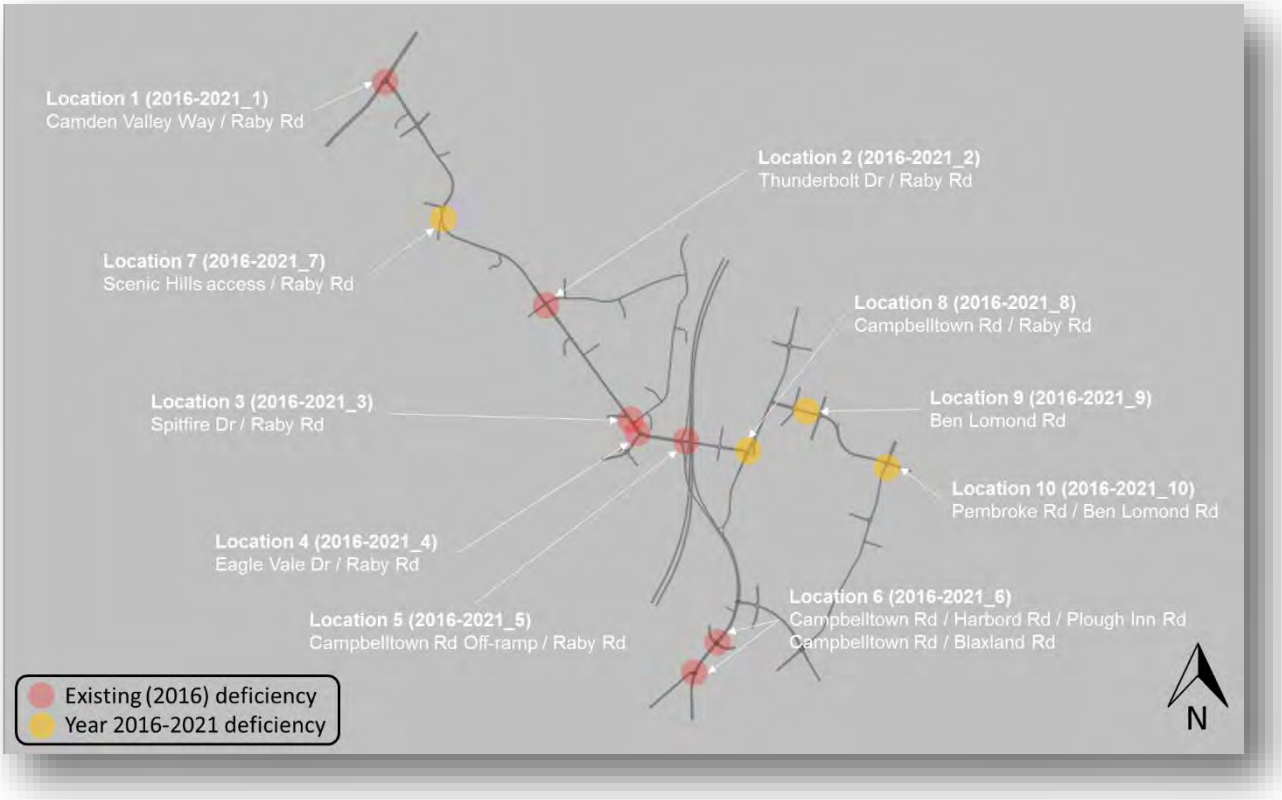


Figure 9-3 Summary of Short Term Assessment

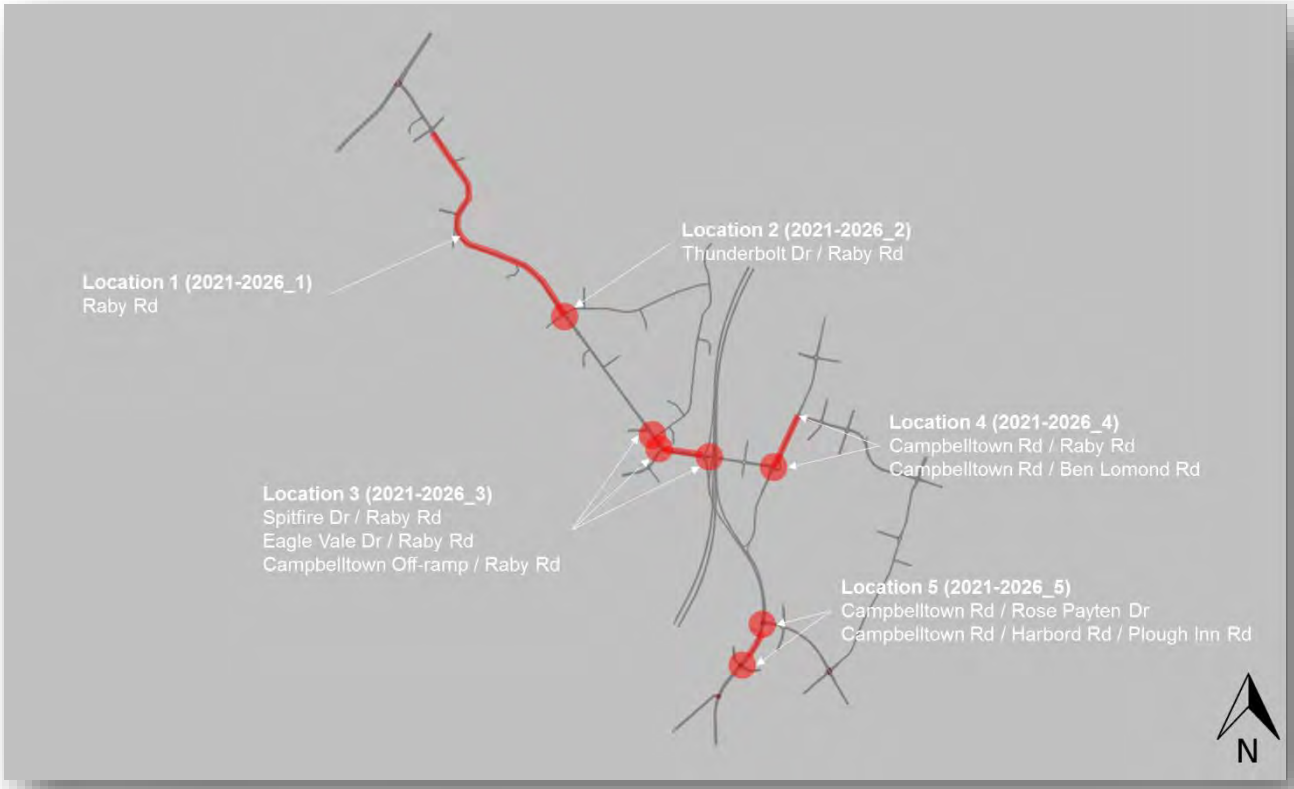


Figure 9-4 Summary of Medium Term Assessment

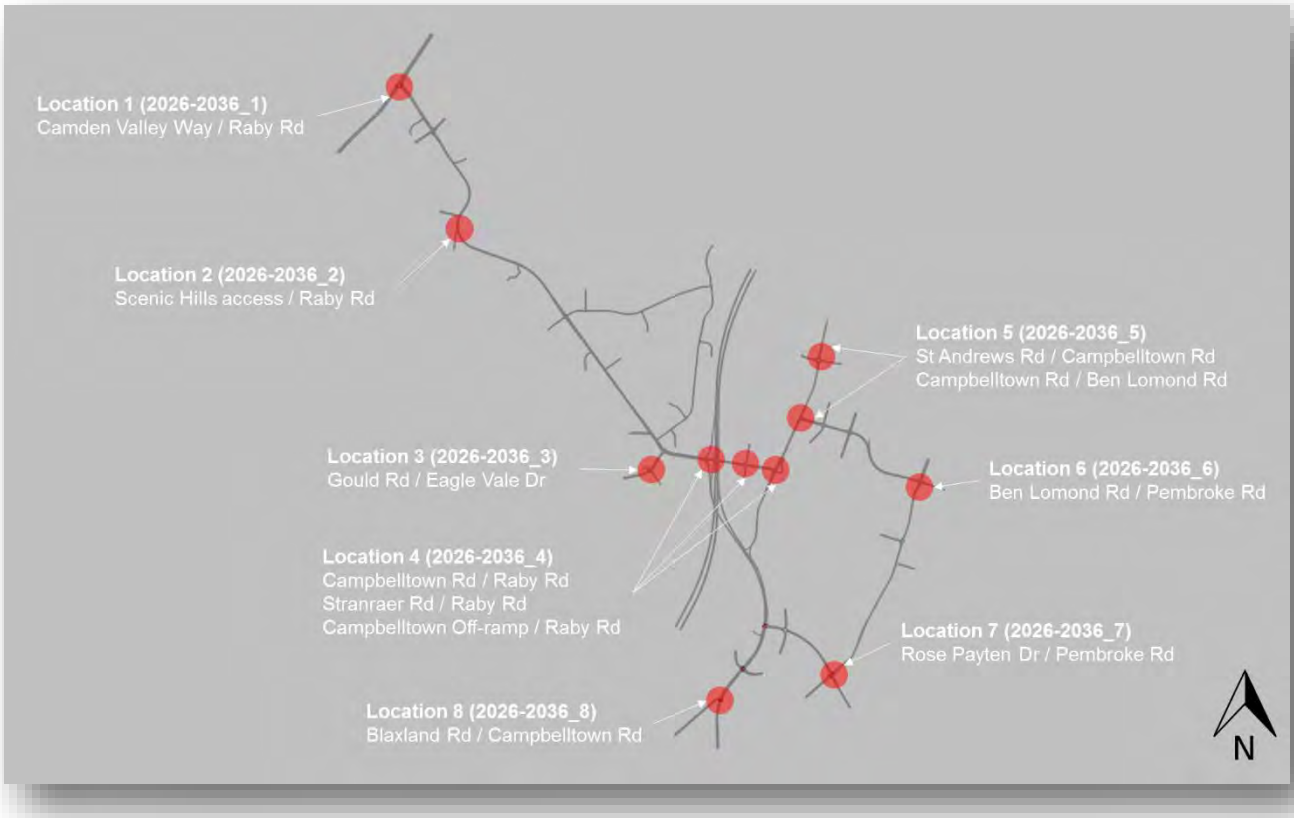


Figure 9-5 Summary of Long Term Assessment

The options analysis of the short, medium and long term scenario assessments was consolidated into an Implementation Strategy as presented below. Based on stakeholder feedback from a workshop on the 11 November 2016 and consideration from a constructability point of view, some proposed upgrades were moved forward.

Table 9-1 Implementation Strategy

ID	Location (Intersection)	2016-2021	2021-2026	2026-2036
Short Term				
2016-2021_1	Camden Valley Way / Raby Road	✓		
2016-2021_2	Thunderbolt Drive / Raby Road	✓		
2016-2021_3	Spitfire Drive / Raby Road	✓		
2016-2021_4	Eagle Vale Drive / Raby Road	✓		
2016-2021_5	Campbelltown Road Off-ramp / Raby Road	✓		
2016-2021_6	Campbelltown Road / Harbord Road Campbelltown Road / Blaxland Road	✓ ✓		
2016-2021_7	Scenic Hills access / Raby Road	✓		
2016-2021_8	Campbelltown Road / Raby Road	✓		
2016-2021_9	Ben Lomond Road	✓		
2016-2021_10	Pembroke Road / Ben Lomond Road	✓		
Medium Term				
2021-2026_1	Raby Road		✓	
2021-2026_2	Thunderbolt Drive / Raby Road		✓	
2021-2026_3	Spitfire Drive / Raby Road Eagle Vale Drive / Raby Road Campbelltown Road Off-ramp / Raby Road		✓ ✓ ✓	
2021-2026_4	Campbelltown Road / Raby Road Ben Lomond Road / Campbelltown Road		✓ ✓	
2021-2026_5	Campbelltown Road / Rose Payten Drive Campbelltown Road / Harbord Road		✓	
Long Term				
2026-2036_1	Camden Valley Way / Raby Road			✓
2026-2036_2	Scenic Hills access / Raby Road	✓		✓
2026-2036_3	Gould Road / Eagle Vale Drive		✓	✓
2026-2036_4	Campbelltown Road / Raby Road Stranraer Road / Raby Road Campbelltown Road Off-ramp / Raby Road		✓	✓ ✓ ✓
2026-2036_5	St Andrews Road / Campbelltown Road			✓
2026-2036_6	Pembroke Road / Ben Lomond Road	✓		✓
2026-2036_7	Rose Payten Drive / Pembroke Road	✓		✓
2026-2036_8	Campbelltown Road / Blaxland Road			✓

✓ - *Upgrades proposed to be moved forward*

9.4 Pedestrian and Cycling Infrastructure

The recommendations from the existing pedestrian, cycling and public transport infrastructure assessment are:

Pedestrians

- Provide pedestrian footpaths on key roads, including along bus routes. The pedestrian network is to be updated as per Council's DCP.
- The upgrade of the footpath network is highly recommended to key land uses within the study area.
- Increase crossing opportunities. This includes investigating additional crossing opportunities at signalized intersections and additional mid-block crossing opportunities to mitigate dangerous crossings at informal desire lines. Additionally, safe crossing along Raby Road and appropriate distances are recommended.
- It is noted that no pedestrian crossings are currently provided on Raby Road between Thunderbolt Drive and Spitfire Drive (1.6kms). Even with all the road upgrades recommended in the implementation strategy (see Section 9.3), this will not be addressed. As such, it is recommended for this to be investigated to improve pedestrian safety.
- Provide pedestrian connections from the area to the train station.

Bicycles

- Upgrade bicycle network with the introduction of dedicated off-road cycle paths. This is in particular important for Raby Road where high traffic speeds may discourage on-road cycle paths.
- Provide bicycle paths to connect shared paths that circulates the recreational ovals. This will increase recreational cycling and will provided health, social and community benefits.
- Provide bicycle connections from the area to the train station.
- As land is fairly undeveloped, opportunity exists to suggest shared path as part of new developments. This will allow the bicycle network within the area to slowly grow.

The upgrades proposed in the Implementation Strategy improve intersection network performance to acceptable levels but also assists with the above pedestrian accessibility recommendations, as a number of proposed upgrades introduce signalised intersections on Raby Road. Signalised intersections provide opportunity for protected pedestrian crossings across Raby Road at the following locations:

- Thunderbolt Drive
- Spitfire Drive
- Eagle Vale Drive
- Campbelltown Road Off-ramp
- Stranraer Drive
- Campbelltown Road.

This will increase safe crossing opportunities along Raby Road (especially when Raby Road is widened to two or three lanes each-way) improving access to key destinations such as Eschol Park Sports Complex, Raby Sports Complex and Clark Reserve for pedestrians and cyclists.

It is also important to ensure that good connectivity with the recently constructed shared pathway along Eagle Vale Drive is achieved, in order to optimise pedestrian and cycling conditions in this area.

Traffic and Transport Study

APPENDIX A

TRAFFIC SURVEY DATA

Location	-	**Duration**	0600 - 1000
	CAMDEN VALLEY WAY		1430 - 1830
	RABY ROAD		-
	CAMDEN VALLEY WAY	**Day/Date**	Tuesday, 19 July 2016
Suburb	Gledswood Hills	**Weather**	Fine

All Vehicles	NORTH										EAST											
Time Per 15 Mins	-										*CAMDEN VALLEY WAY*										TOTAL	
	L			T			R				L			T			R					
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00			**0**			**0**			**0**	**0**	22	2	**24**	166	38	**204**			**0**	**228**	951	73	**1024**
8:00 - 8:15			**0**			**0**			**0**	**0**	25	1	**26**	100	22	**122**			**0**	**148**	857	59	**916**
8:15 - 8:30			**0**			**0**			**0**	**0**	22	9	**31**	89	21	**110**			**0**	**141**	743	79	**822**
8:30 - 8:45			**0**			**0**			**0**	**0**	39	4	**43**	237	44	**281**			**0**	**324**	837	90	**927**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**373**	**48**	**421**	**2630**	**488**	**3118**	**0**	**0**	**0**	**3539**	**12132**	**1180**	**13312**
16:30 - 16:45			**0**			**0**			**0**	**0**	57	4	**61**	343	21	**364**			**0**	**425**	1035	56	**1091**
16:45 - 17:00			**0**			**0**			**0**	**0**	55	2	**57**	250	12	**262**			**0**	**319**	894	41	**935**
17:00 - 17:15			**0**			**0**			**0**	**0**	25	0	**25**	251	11	**262**			**0**	**287**	888	38	**926**
17:15 - 17:30			**0**			**0**			**0**	**0**	54	1	**55**	256	14	**270**			**0**	**325**	983	36	**1019**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**775**	**38**	**813**	**5012**	**328**	**5340**	**0**	**0**	**0**	**6153**	**#REF!**	**#REF!**	**#REF!**

All Vehicles	SOUTH										WEST											
Time Per 15 Mins	*RABY ROAD*										*CAMDEN VALLEY WAY*										TOTAL	
	L			T			R				L			T			R					
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	122	7	**129**			**0**	43	2	**45**	**174**			**0**	393	16	**409**	205	8	**213**	**622**	951	73	**1024**
8:00 - 8:15	129	7	**136**			**0**	51	1	**52**	**188**			**0**	347	19	**366**	205	9	**214**	**580**	857	59	**916**
8:15 - 8:30	155	5	**160**			**0**	44	0	**44**	**204**			**0**	246	31	**277**	187	13	**200**	**477**	743	79	**822**
8:30 - 8:45	103	7	**110**			**0**	18	2	**20**	**130**			**0**	269	24	**293**	171	9	**180**	**473**	837	90	**927**
Period End	**1592**	**108**	**1700**	**0**	**0**	**0**	**618**	**29**	**647**	**2347**	**0**	**0**	**0**	**4761**	**379**	**5140**	**2158**	**128**	**2286**	**7426**	**12132**	**1180**	**13312**
16:30 - 16:45	290	13	**303**			**0**	25	1	**26**	**329**			**0**	195	10	**205**	125	7	**132**	**337**	1035	56	**1091**
16:45 - 17:00	246	8	**254**			**0**	36	1	**37**	**291**			**0**	193	15	**208**	114	3	**117**	**325**	894	41	**935**
17:00 - 17:15	239	9	**248**			**0**	32	2	**34**	**282**			**0**	210	12	**222**	131	4	**135**	**357**	888	38	**926**
17:15 - 17:30	260	4	**264**			**0**	25	1	**26**	**290**			**0**	210	12	**222**	178	4	**182**	**404**	983	36	**1019**
Period End	**3197**	**110**	**3307**	**0**	**0**	**0**	**415**	**36**	**451**	**3758**	**0**	**0**	**0**	**2881**	**204**	**3085**	**1881**	**83**	**1964**	**5049**	**13701**	**783**	**14484**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH -										EAST *CAMDEN VALLEY WAY*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	0	0	**0**	0	0	**0**	**0**	108	16	**124**	592	125	**717**	0	0	**0**	**841**	3388	301	**3689**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1269**	**172**	**1441**	**8788**	**1678**	**10466**	**0**	**0**	**0**	**11907**	**41398**	**3968**	**45366**
16:30 - 17:30	0	0	**0**	0	0	**0**	0	0	**0**	**0**	191	7	**198**	1100	58	**1158**	0	0	**0**	**1356**	3800	171	**3971**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2497**	**125**	**2622**	**16335**	**1087**	**17422**	**0**	**0**	**0**	**20044**	**#REF!**	**#REF!**	**#REF!**

All Vehicles Time Per Hour	SOUTH *RABY ROAD*										WEST *CAMDEN VALLEY WAY*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	509	26	**535**	0	0	**0**	156	5	**161**	**696**	0	0	**0**	1255	90	**1345**	768	39	**807**	**2152**	3388	301	**3689**
Period End	**5453**	**360**	**5813**	**0**	**0**	**0**	**2032**	**91**	**2123**	**7936**	**0**	**0**	**0**	**16148**	**1236**	**17384**	**7708**	**431**	**8139**	**25523**	**41398**	**3968**	**46555**
16:30 - 17:30	1035	34	**1069**	0	0	**0**	118	5	**123**	**1192**	0	0	**0**	808	49	**857**	548	18	**566**	**1423**	3800	171	**3971**
Period End	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**

Traffic Information Specialist

Location	**RABY ROAD**	**Duration**	**0600 - 1000**
	-		**1430 - 1830**
	RABY ROAD		**-**
	JW ORG	**Day/Date**	**Tuesday, 19 July 2016**
Suburb	**KEARNS**	**Weather**	**FINE**

All Vehicles Time Per 15 Mins	NORTH *RABY ROAD*										EAST -														TOTAL		
	L			T			R				L			T			R			U							
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00			**0**	225	10	**235**	0	0	**0**	**235**			**0**			**0**			**0**			0	**0**	394	21	**415**
8:00 - 8:15			**0**	233	9	**242**	0	0	**0**	**242**			**0**			**0**			**0**			0	**0**	402	21	**423**
8:15 - 8:30			**0**	196	14	**210**	0	0	**0**	**210**			**0**			**0**			**0**			0	**0**	406	24	**430**
8:30 - 8:45			**0**	205	12	**217**	0	0	**0**	**217**			**0**			**0**			**0**			0	**0**	327	20	**347**
Period End	**0**	**0**	**0**	**2449**	**159**	**2608**	**1**	**0**	**1**	**2609**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4681**	**301**	**4982**
16:30 - 16:45			**0**	179	14	**193**	0	0	**0**	**193**			**0**			**0**			**0**			0	**0**	497	27	**524**
16:45 - 17:00			**0**	169	9	**178**	0	0	**0**	**178**			**0**			**0**			**0**			0	**0**	456	17	**473**
17:00 - 17:15			**0**	188	9	**197**	0	0	**0**	**197**			**0**			**0**			**0**			0	**0**	466	17	**483**
17:15 - 17:30			**0**	193	6	**199**	0	0	**0**	**199**			**0**			**0**			**0**			0	**0**	488	8	**496**
Period End	**0**	**0**	**0**	**2795**	**141**	**2936**	**0**	**0**	**0**	**2936**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6687**	**256**	**6943**

All Vehicles Time Per 15 Mins	SOUTH *RABY ROAD*										WEST *JW ORG*														TOTAL		
	L			T			R				L			T			R			U							
	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	0	0	**0**	169	11	**180**			**0**	**180**	0	0	**0**			**0**	0	0	**0**			**0**	**0**	394	21	**415**
8:00 - 8:15	0	1	**1**	169	10	**179**			**0**	**180**	0	0	**0**			**0**	0	1	**1**			**0**	**1**	402	21	**423**
8:15 - 8:30	0	0	**0**	210	10	**220**			**0**	**220**	0	0	**0**			**0**	0	0	**0**			**0**	**0**	406	24	**430**
8:30 - 8:45	0	0	**0**	122	8	**130**			**0**	**130**	0	0	**0**			**0**	0	0	**0**			**0**	**0**	327	20	**347**
Period End	**2**	**3**	**5**	**2224**	**136**	**2360**	**0**	**0**	**0**	**2365**	**0**	**1**	**1**	**0**	**0**	**0**	**5**	**2**	**7**	**0**	**0**	**0**	**8**	**4681**	**301**	**4982**
16:30 - 16:45	0	0	**0**	318	13	**331**			**0**	**331**	0	0	**0**			**0**	0	0	**0**			**0**	**0**	497	27	**524**
16:45 - 17:00	0	0	**0**	287	8	**295**			**0**	**295**	0	0	**0**			**0**	0	0	**0**			**0**	**0**	456	17	**473**
17:00 - 17:15	0	0	**0**	278	8	**286**			**0**	**286**	0	0	**0**			**0**	0	0	**0**			**0**	**0**	466	17	**483**
17:15 - 17:30	0	0	**0**	293	2	**295**			**0**	**295**	1	0	**1**			**0**	1	0	**1**			**0**	**2**	488	8	**496**
Period End	**0**	**0**	**0**	**3889**	**115**	**4004**	**0**	**0**	**0**	**4004**	**2**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**3**	**6687**	**256**	**6943**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *RABY ROAD*										EAST -															
	L			T			R				L			T			R			U				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	859	45	**904**	0	0	**0**	**904**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	1529	86	**1615**
Period End	**0**	**0**	**0**	**8706**	**538**	**9244**	**1**	**0**	**1**	**9245**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	16285	999	**17284**
16:30 - 17:30	0	0	**0**	729	38	**767**	0	0	**0**	**767**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	1907	69	**1976**
Period End	**0**	**0**	**0**	**9212**	**465**	**9677**	**0**	**0**	**0**	**9677**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	22487	863	**23350**

All Vehicles Time Per Hour	SOUTH *RABY ROAD*										WEST *JW ORG*															
	L			T			R				L			T			R			U				TOTAL		
	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	1	**1**	670	39	**709**	0	0	**0**	**710**	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**	1529	86	**1615**
Period End	**8**	**9**	**17**	**7561**	**443**	**8004**	**0**	**0**	**0**	**8021**	**0**	**4**	**4**	**0**	**0**	**0**	**9**	**5**	**14**	**0**	**0**	**0**	**18**	16285	999	**17284**
16:30 - 17:30	0	0	**0**	1176	31	**1207**	0	0	**0**	**1207**	1	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**	1907	69	**1976**
Period End	**0**	**0**	**0**	**13265**	**398**	**13663**	**0**	**0**	**0**	**13663**	**6**	**0**	**6**	**0**	**0**	**0**	**4**	**0**	**4**	**0**	**0**	**0**	**10**	22487	863	**23350**

Traffic Information Specialist

Location	**RABY ROAD**	**Duration**	**0600 - 1000**
	THUNDERBOLT DRIVE		**1430 - 1830**
	RABY ROAD		-
	EPPING FOREST DRIVE	**Day/Date**	**Tuesday, 19 July 2016**
Suburb	**KEARNS**	**Weather**	**FINE**

All Vehicles	**NORTH**										**EAST**											
Time Per 15 Mins	***RABY ROAD***										***THUNDERBOLT DRIVE***											
	L			**T**			**R**				**L**			**T**			**R**				**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	28	1	**29**	175	7	**182**	20	0	**20**	**233**	44	3	**47**	10	1	**11**	37	0	**37**	506	23	**529**
8:00 - 8:15	33	0	**33**	180	8	**188**	15	1	**16**	**237**	40	5	**45**	21	0	**21**	47	0	**47**	527	26	**553**
8:15 - 8:30	38	0	**38**	149	10	**159**	9	0	**9**	**207**	58	3	**61**	35	1	**36**	45	0	**45**	569	23	**592**
8:30 - 8:45	34	0	**34**	163	10	**173**	6	1	**7**	**215**	49	3	**52**	27	0	**27**	32	0	**32**	466	27	**493**
Period End	**290**	**26**	**316**	**2029**	**126**	**2155**	**130**	**7**	**137**	**2612**	**449**	**28**	**477**	**210**	**6**	**216**	**489**	**13**	**502**	**5942**	**367**	**6309**
16:30 - 16:45	24	0	**24**	130	12	**142**	26	2	**28**	**196**	26	1	**27**	22	0	**22**	39	0	**39**	589	33	**622**
16:45 - 17:00	24	0	**24**	121	9	**130**	30	0	**30**	**184**	24	1	**25**	31	0	**31**	37	1	**38**	565	22	**587**
17:00 - 17:15	39	0	**39**	125	9	**134**	29	0	**29**	**203**	16	2	**18**	19	0	**19**	29	1	**30**	567	22	**589**
17:15 - 17:30	30	1	**31**	127	2	**129**	42	3	**45**	**205**	19	0	**19**	38	0	**38**	38	1	**39**	617	8	**625**
Period End	**445**	**15**	**460**	**1975**	**108**	**2083**	**415**	**18**	**433**	**2979**	**361**	**21**	**382**	**398**	**8**	**406**	**526**	**10**	**536**	**7121**	**253**	**8774**

All Vehicles	**SOUTH**										**WEST**											
Time Per 15 Mins	***RABY ROAD***										***EPPING FOREST DRIVE***											
	L			**T**			**R**				**L**			**T**			**R**				**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	4	1	**5**	104	6	**110**	22	1	**23**	**141**	24	1	**25**	9	0	**9**	24	2	**26**	506	23	**529**
8:00 - 8:15	4	1	**5**	86	7	**93**	22	2	**24**	**122**	23	1	**24**	33	1	**34**	23	0	**23**	527	26	**553**
8:15 - 8:30	3	1	**4**	106	8	**114**	38	0	**38**	**157**	35	0	**35**	40	0	**40**	11	0	**11**	569	23	**592**
8:30 - 8:45	4	2	**6**	77	8	**85**	15	0	**15**	**106**	21	0	**21**	25	1	**26**	13	1	**14**	466	27	**493**
Period End	**54**	**13**	**67**	**1390**	**106**	**1496**	**179**	**6**	**185**	**1752**	**299**	**17**	**316**	**189**	**4**	**193**	**224**	**13**	**237**	**5942**	**367**	**6309**
16:30 - 16:45	9	1	**10**	234	13	**247**	18	0	**18**	**275**	40	0	**40**	11	0	**11**	9	3	**12**	589	33	**622**
16:45 - 17:00	14	2	**16**	201	6	**207**	21	1	**22**	**245**	37	1	**38**	18	0	**18**	7	1	**8**	565	22	**587**
17:00 - 17:15	9	1	**10**	225	7	**232**	19	0	**19**	**261**	23	0	**23**	24	0	**24**	9	2	**11**	567	22	**589**
17:15 - 17:30	15	0	**15**	236	1	**237**	15	0	**15**	**268**	23	0	**23**	21	0	**21**	12	0	**12**	617	8	**625**
Period End	**191**	**16**	**207**	**3004**	**94**	**3098**	**333**	**3**	**336**	**3643**	**374**	**9**	**383**	**290**	**2**	**292**	**132**	**21**	**153**	**7121**	**253**	**8774**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *RABY ROAD*										EAST *THUNDERBOLT DRIVE*											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	TOTAL
7:45 - 8:45	133	1	**134**	667	35	**702**	50	2	**52**	**892**	191	14	**205**	93	2	**95**	161	0	**161**	2068	99	**2167**
Period End	**1055**	**89**	**1144**	**7199**	**417**	**7616**	**452**	**25**	**477**	**9253**	**1576**	**105**	**1681**	**761**	**22**	**783**	**1674**	**36**	**1710**	**20742**	**1236**	**21978**
16:30 - 17:30	117	1	**118**	503	32	**535**	127	5	**132**	**788**	85	4	**89**	110	0	**110**	143	3	**146**	2338	85	**2423**
Period End	**1437**	**44**	**1481**	**6523**	**358**	**6881**	**1395**	**63**	**1458**	**9832**	**1163**	**69**	**1232**	**1308**	**18**	**1326**	**1783**	**38**	**1821**	**28139**	**1089**	**29228**

All Vehicles Time Per Hour	SOUTH *RABY ROAD*										WEST *EPPING FOREST DRIVE*											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	TOTAL
7:45 - 8:45	15	5	**20**	373	29	**402**	97	3	**100**	**526**	103	2	**105**	107	2	**109**	71	3	**74**	2068	99	**2167**
Period End	**178**	**46**	**224**	**4649**	**357**	**5006**	**646**	**18**	**664**	**5910**	**1051**	**58**	**1109**	**710**	**14**	**724**	**760**	**43**	**803**	**20742**	**1236**	**22235**
16:30 - 17:30	47	4	**51**	896	27	**923**	73	1	**74**	**1049**	123	1	**124**	74	0	**74**	37	6	**43**	2338	85	**2423**
Period End	**596**	**53**	**649**	**10297**	**330**	**10627**	**1022**	**10**	**1032**	**12316**	**1259**	**22**	**1281**	**915**	**2**	**917**	**429**	**74**	**503**	**28139**	**1089**	**29228**

Traffic Information Specialist

Location	**SPITFIRE DRIVE**		**Duration**	**0600 - 1000**	
	-			**1430 - 1830**	
	SPITFIRE DRIVE			**-**	
	THUNDERBOLT DRIVE		**Day/Date**	**Tuesday, 19 July 2016**	
Suburb	**KEARNS**		**Weather**	**FINE**	

All Vehicles	**NORTH**										**EAST**												
Time Per 15 Mins	***SPITFIRE DRIVE***										**-**												
	L			**T**			**R**				**L**			**T**			**R**				**TOTAL**		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00			**0**	25	1	**26**	23	1	**24**	**50**			**0**			**0**			**0**	**0**	153	8	**161**
8:00 - 8:15			**0**	34	1	**35**	32	7	**39**	**74**			**0**			**0**			**0**	**0**	206	12	**218**
8:15 - 8:30			**0**	56	0	**56**	32	2	**34**	**90**			**0**			**0**			**0**	**0**	295	3	**298**
8:30 - 8:45			**0**	37	0	**37**	29	1	**30**	**67**			**0**			**0**			**0**	**0**	260	8	**268**
Period End	**0**	**0**	**0**	**275**	**9**	**284**	**273**	**17**	**290**	**574**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2170**	**60**	**2230**
16:30 - 16:45			**0**	44	1	**45**	69	0	**69**	**114**			**0**			**0**			**0**	**0**	152	2	**154**
16:45 - 17:00			**0**	49	0	**49**	56	1	**57**	**106**			**0**			**0**			**0**	**0**	166	3	**169**
17:00 - 17:15			**0**	39	1	**40**	64	1	**65**	**105**			**0**			**0**			**0**	**0**	160	3	**163**
17:15 - 17:30			**0**	51	0	**51**	93	2	**95**	**146**			**0**			**0**			**0**	**0**	211	3	**214**
Period End	**0**	**0**	**0**	**738**	**11**	**749**	**934**	**19**	**953**	**1702**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2784**	**77**	**2861**

All Vehicles	**SOUTH**										**WEST**												
Time Per 15 Mins	***SPITFIRE DRIVE***										***THUNDERBOLT DRIVE***												
	L			**T**			**R**				**L**			**T**			**R**				**TOTAL**		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	4	3	**7**	42	3	**45**			**0**	**52**	55	0	**55**			**0**	4	0	**4**	**59**	153	8	**161**
8:00 - 8:15	3	1	**4**	55	1	**56**			**0**	**60**	75	2	**77**			**0**	7	0	**7**	**84**	206	12	**218**
8:15 - 8:30	1	1	**2**	88	0	**88**			**0**	**90**	102	0	**102**			**0**	16	0	**16**	**118**	295	3	**298**
8:30 - 8:45	4	2	**6**	75	1	**76**			**0**	**82**	86	2	**88**			**0**	29	2	**31**	**119**	260	8	**268**
Period End	**41**	**12**	**53**	**461**	**7**	**468**	**0**	**0**	**0**	**521**	**977**	**9**	**986**	**0**	**0**	**0**	**143**	**6**	**149**	**1135**	**2170**	**60**	**2230**
16:30 - 16:45	2	1	**3**	11	0	**11**			**0**	**14**	21	0	**21**			**0**	5	0	**5**	**26**	152	2	**154**
16:45 - 17:00	6	1	**7**	24	1	**25**			**0**	**32**	26	0	**26**			**0**	5	0	**5**	**31**	166	3	**169**
17:00 - 17:15	3	1	**4**	16	0	**16**			**0**	**20**	32	0	**32**			**0**	6	0	**6**	**38**	160	3	**163**
17:15 - 17:30	2	0	**2**	20	0	**20**			**0**	**22**	31	1	**32**			**0**	14	0	**14**	**46**	211	3	**214**
Period End	**93**	**15**	**108**	**401**	**15**	**416**	**0**	**0**	**0**	**524**	**473**	**16**	**489**	**0**	**0**	**0**	**145**	**1**	**146**	**635**	**2784**	**77**	**2861**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *SPITFIRE DRIVE*										EAST -										TOTAL		
	L			T			R				L			T			R						
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	152	2	**154**	116	11	**127**	**281**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	914	31	**945**
Period End	**0**	**0**	**0**	**990**	**20**	**1010**	**943**	**63**	**1006**	**2016**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7967**	**196**	**8163**
16:30 - 17:30	0	0	**0**	183	2	**185**	282	4	**286**	**471**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	689	11	**700**
Period End	**0**	**0**	**0**	**2432**	**36**	**2468**	**3130**	**58**	**3188**	**5656**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8852**	**238**	**9090**

All Vehicles Time Per Hour	SOUTH *SPITFIRE DRIVE*										WEST *THUNDERBOLT DRIVE*										TOTAL		
	L			T			R				L			T			R						
	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	12	7	**19**	260	5	**265**	0	0	**0**	**284**	318	4	**322**	0	0	**0**	56	2	**58**	**380**	914	31	**945**
Period End	**137**	**44**	**181**	**1711**	**23**	**1734**	**0**	**0**	**0**	**1915**	**3668**	**28**	**3696**	**0**	**0**	**0**	**518**	**18**	**536**	**4232**	**7967**	**196**	**8454**
16:30 - 17:30	13	3	**16**	71	1	**72**	0	0	**0**	**88**	110	1	**111**	0	0	**0**	30	0	**30**	**141**	689	11	**700**
Period End	**282**	**50**	**332**	**1128**	**45**	**1173**	**0**	**0**	**0**	**1505**	**1438**	**45**	**1483**	**0**	**0**	**0**	**442**	**4**	**446**	**1929**	**8852**	**238**	**9090**

Traffic Information Specialist

Location	**RABY ROAD**		**Duration**	**0600 - 1000**	
	-			**1430 - 1830**	
	RABY ROAD			**-**	
	KEARNS AVE		**Day/Date**	**Tuesday, 19 July 2016**	
Suburb	**KEARNS**		**Weather**	**FINE**	

All Vehicles Time Per 15 Mins	**NORTH** *RABY ROAD*										**EAST** -												
	L			**T**			**R**				**L**			**T**			**R**				**TOTAL**		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00			**0**	236	14	**250**	2	0	**2**	**252**			**0**			**0**			**0**	**0**	404	23	**427**
8:00 - 8:15			**0**	252	11	**263**	5	1	**6**	**269**			**0**			**0**			**0**	**0**	411	21	**432**
8:15 - 8:30			**0**	204	14	**218**	8	0	**8**	**226**			**0**			**0**			**0**	**0**	422	23	**445**
8:30 - 8:45			**0**	220	13	**233**	10	0	**10**	**243**			**0**			**0**			**0**	**0**	370	25	**395**
Period End	**0**	**0**	**0**	**2637**	**153**	**2790**	**57**	**2**	**59**	**2849**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4835**	**280**	**5115**
16:30 - 16:45			**0**	159	14	**173**	15	0	**15**	**188**			**0**			**0**			**0**	**0**	466	26	**492**
16:45 - 17:00			**0**	149	9	**158**	15	0	**15**	**173**			**0**			**0**			**0**	**0**	445	17	**462**
17:00 - 17:15			**0**	138	10	**148**	7	0	**7**	**155**			**0**			**0**			**0**	**0**	434	18	**452**
17:15 - 17:30			**0**	156	2	**158**	10	0	**10**	**168**			**0**			**0**			**0**	**0**	479	4	**483**
Period End	**0**	**0**	**0**	**2331**	**139**	**2470**	**181**	**1**	**182**	**2652**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6622**	**250**	**6872**

All Vehicles Time Per 15 Mins	**SOUTH** *RABY ROAD*										**WEST** *KEARNS AVE*												
	L			**T**			**R**				**L**			**T**			**R**				**TOTAL**		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	5	0	**5**	128	9	**137**			**0**	**142**	12	0	**12**			**0**	21	0	**21**	**33**	404	23	**427**
8:00 - 8:15	7	0	**7**	115	9	**124**			**0**	**131**	14	0	**14**			**0**	18	0	**18**	**32**	411	21	**432**
8:15 - 8:30	9	1	**10**	152	8	**160**			**0**	**170**	22	0	**22**			**0**	27	0	**27**	**49**	422	23	**445**
8:30 - 8:45	12	2	**14**	89	10	**99**			**0**	**113**	14	0	**14**			**0**	25	0	**25**	**39**	370	25	**395**
Period End	**105**	**7**	**112**	**1595**	**112**	**1707**	**0**	**0**	**0**	**1819**	**141**	**0**	**141**	**0**	**0**	**0**	**300**	**6**	**306**	**447**	**2141**	**125**	**5115**
16:30 - 16:45	22	0	**22**	254	12	**266**			**0**	**288**	8	0	**8**			**0**	8	0	**8**	**16**	466	26	**492**
16:45 - 17:00	29	1	**30**	225	7	**232**			**0**	**262**	13	0	**13**			**0**	14	0	**14**	**27**	445	17	**462**
17:00 - 17:15	19	0	**19**	251	7	**258**			**0**	**277**	4	1	**5**			**0**	15	0	**15**	**20**	434	18	**452**
17:15 - 17:30	31	0	**31**	258	2	**260**			**0**	**291**	6	0	**6**			**0**	18	0	**18**	**24**	479	4	**483**
Period End	**423**	**2**	**425**	**3364**	**103**	**3467**	**0**	**0**	**0**	**3892**	**133**	**1**	**134**	**0**	**0**	**0**	**190**	**4**	**194**	**328**	**6622**	**250**	**6872**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *RABY ROAD*										EAST -												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	912	52	**964**	25	1	**26**	**990**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	1607	92	**1699**
Period End	**0**	**0**	**0**	**9374**	**507**	**9881**	**198**	**7**	**205**	**10086**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16822**	**933**	**17755**
16:30 - 17:30	0	0	**0**	602	35	**637**	47	0	**47**	**684**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	1824	65	**1889**
Period End	**0**	**0**	**0**	**7707**	**466**	**8173**	**555**	**1**	**556**	**8729**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22079**	**846**	**22925**

All Vehicles Time Per Hour	SOUTH *RABY ROAD*										WEST *KEARNS AVE*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	33	3	**36**	484	36	**520**	0	0	**0**	**556**	62	0	**62**	0	0	**0**	91	0	**91**	**153**	1607	92	**1699**
Period End	**348**	**19**	**367**	**5366**	**377**	**5743**	**0**	**0**	**0**	**6110**	**504**	**0**	**504**	**0**	**0**	**0**	**1032**	**23**	**1055**	**1559**	**16822**	**933**	**17926**
16:30 - 17:30	101	1	**102**	988	28	**1016**	0	0	**0**	**1118**	31	1	**32**	0	0	**0**	55	0	**55**	**87**	1824	65	**1889**
Period End	**1344**	**5**	**1349**	**11430**	**357**	**11787**	**0**	**0**	**0**	**13136**	**424**	**4**	**428**	**0**	**0**	**0**	**619**	**13**	**632**	**1025**	**22079**	**846**	**22749**

Traffic Information Specialist

Location	**Raby Road**	**Duration**	**0600 - 1000**
	Mustang Drive		**1430 - 1830**
	Raby Road		-
		Day/Date	**Tuesday, 19 July 2016**
Suburb	**KEARNS**	**Weather**	**FINE**

All Vehicles Time Per 15 Mins			**NORTH** *Raby Road*										**EAST** *Mustang Drive*											
			L			**T**			**R**				**L**			**T**			**R**				**TOTAL**	
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45	-	**8:00**	6	1	**7**	252	14	**266**			**0**	**273**	40	0	**40**			**0**	4	1	**5**	**45**	442	24	**466**
8:00	-	**8:15**	4	1	**5**	263	10	**273**			**0**	**278**	42	1	**43**			**0**	4	0	**4**	**47**	455	19	**474**
8:15	-	**8:30**	3	2	**5**	220	13	**233**			**0**	**238**	39	1	**40**			**0**	4	1	**5**	**45**	463	28	**491**
8:30	-	**8:45**	3	0	**3**	234	12	**246**			**0**	**249**	24	1	**25**			**0**	5	0	**5**	**30**	395	28	**423**
Period End			**46**	**13**	**59**	**2865**	**155**	**3020**	**0**	**0**	**0**	**3079**	**309**	**7**	**316**	**0**	**0**	**0**	**51**	**4**	**55**	**371**	**5081**	**311**	**5392**
16:30	-	**16:45**	12	3	**15**	163	11	**174**			**0**	**189**	13	1	**14**			**0**	3	0	**3**	**17**	483	28	**511**
16:45	-	**17:00**	6	1	**7**	154	8	**162**			**0**	**169**	11	0	**11**			**0**	3	0	**3**	**14**	448	17	**465**
17:00	-	**17:15**	7	0	**7**	147	10	**157**			**0**	**164**	20	0	**20**			**0**	2	0	**2**	**22**	457	17	**474**
17:15	-	**17:30**	3	1	**4**	169	1	**170**			**0**	**174**	8	0	**8**			**0**	3	1	**4**	**12**	482	4	**486**
Period End			**130**	**20**	**141**	**2401**	**115**	**2516**	**0**	**0**	**0**	**2657**	**159**	**4**	**163**	**0**	**0**	**0**	**54**	**1**	**55**	**218**	**6729**	**248**	**6968**

All Vehicles Time Per 15 Mins			**SOUTH** *Raby Road*										**WEST** *0*											
			L			**T**			**R**				**L**			**T**			**R**				**TOTAL**	
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45	-	**8:00**			**0**	132	8	**140**	8	0	**8**	**148**			**0**			**0**			**0**	**0**	442	24	**466**
8:00	-	**8:15**			**0**	130	7	**137**	12	0	**12**	**149**			**0**			**0**			**0**	**0**	455	19	**474**
8:15	-	**8:30**			**0**	178	9	**187**	19	2	**21**	**208**			**0**			**0**			**0**	**0**	463	28	**491**
8:30	-	**8:45**			**0**	109	14	**123**	20	1	**21**	**144**			**0**			**0**			**0**	**0**	395	28	**423**
Period End			**0**	**0**	**0**	**1699**	**126**	**1825**	**111**	**6**	**117**	**1942**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5081**	**311**	**5392**
16:30	-	**16:45**			**0**	281	12	**293**	11	1	**12**	**305**			**0**			**0**			**0**	**0**	483	28	**511**
16:45	-	**17:00**			**0**	254	8	**262**	20	0	**20**	**282**			**0**			**0**			**0**	**0**	448	17	**465**
17:00	-	**17:15**			**0**	267	7	**274**	14	0	**14**	**288**			**0**			**0**			**0**	**0**	457	17	**474**
17:15	-	**17:30**			**0**	281	1	**282**	18	0	**18**	**300**			**0**			**0**			**0**	**0**	482	4	**486**
Period End			**0**	**0**	**0**	**3726**	**104**	**3830**	**259**	**4**	**263**	**4093**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6729**	**248**	**6968**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *Raby Road*										EAST *Mustang Drive*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	90	22	**112**	4740	265	**5005**	0	0	**0**	**5117**	512	11	**523**	0	0	**0**	91	7	**98**	**621**	6041	346	**6387**
Period End	**796**	**197**	**975**	**41395**	**2274**	**43669**	**0**	**0**	**0**	**44644**	**4315**	**97**	**4412**	**0**	**0**	**0**	**778**	**53**	**831**	**5243**	**53432**	**3049**	**56463**
16:30 - 17:30	55	7	**62**	1254	50	**1304**	0	0	**0**	**1366**	90	1	**91**	0	0	**0**	22	1	**23**	**114**	2567	88	**2655**
Period End	**1104**	**169**	**1210**	**21054**	**964**	**22018**	**0**	**0**	**0**	**23228**	**1410**	**34**	**1444**	**0**	**0**	**0**	**423**	**12**	**435**	**1879**	**37400**	**1548**	**38885**

All Vehicles Time Per Hour	SOUTH *Raby Road*										WEST *0*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	549	38	**587**	59	3	**62**	**649**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	6041	346	**6387**
Period End	**0**	**0**	**0**	**5752**	**407**	**6159**	**396**	**21**	**417**	**6576**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**53432**	**3049**	**56463**
16:30 - 17:30	0	0	**0**	1083	28	**1111**	63	1	**64**	**1175**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	2567	88	**2655**
Period End	**0**	**0**	**0**	**12572**	**354**	**12926**	**837**	**15**	**852**	**13778**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**37400**	**1548**	**38885**

Traffic Information Specialist

Location	**RABY ROAD**	**Duration**	**0600 - 1000**
			1430 - 1830
	RABY ROAD		-
	ESCHOL DRIVE	**Day/Date**	**Tuesday, 19 July 2016**
Suburb	**KEARNS**	**Weather**	**FINE**

All Vehicles Time Per 15 Mins	**NORTH** *RABY ROAD*										**EAST** *0*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00			**0**	291	13	**304**	1	0	**1**	**305**			**0**			**0**			**0**	**0**	455	24	**479**
8:00 - 8:15			**0**	295	11	**306**	6	0	**6**	**312**			**0**			**0**			**0**	**0**	471	20	**491**
8:15 - 8:30			**0**	250	9	**259**	8	0	**8**	**267**			**0**			**0**			**0**	**0**	481	20	**501**
8:30 - 8:45			**0**	256	7	**263**	12	1	**13**	**276**			**0**			**0**			**0**	**0**	429	23	**452**
Period End	**0**	**0**	**0**	**3060**	**130**	**3190**	**50**	**1**	**51**	**3241**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5371**	**273**	**5644**
16:30 - 16:45			**0**	164	12	**176**	0	1	**1**	**177**			**0**			**0**			**0**	**0**	512	23	**535**
16:45 - 17:00			**0**	160	8	**168**	6	1	**7**	**175**			**0**			**0**			**0**	**0**	477	17	**494**
17:00 - 17:15			**0**	157	9	**166**	6	0	**6**	**172**			**0**			**0**			**0**	**0**	486	18	**504**
17:15 - 17:30			**0**	161	2	**163**	2	0	**2**	**165**			**0**			**0**			**0**	**0**	509	8	**517**
Period End	**0**	**0**	**0**	**2439**	**113**	**2552**	**64**	**9**	**73**	**2625**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7013**	**255**	**7268**

All Vehicles Time Per 15 Mins	**SOUTH** *RABY ROAD*										**WEST** *ESCHOL DRIVE*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	4	2	**6**	128	9	**137**			**0**	**143**	8	0	**8**			**0**	23	0	**23**	**31**	455	24	**479**
8:00 - 8:15	14	0	**14**	125	6	**131**			**0**	**145**	2	3	**5**			**0**	29	0	**29**	**34**	471	20	**491**
8:15 - 8:30	12	0	**12**	175	7	**182**			**0**	**194**	10	4	**14**			**0**	26	0	**26**	**40**	481	20	**501**
8:30 - 8:45	19	0	**19**	119	14	**133**			**0**	**152**	4	0	**4**			**0**	19	1	**20**	**24**	429	23	**452**
Period End	**173**	**2**	**175**	**1716**	**126**	**1842**	**0**	**0**	**0**	**2017**	**65**	**10**	**75**	**0**	**0**	**0**	**307**	**4**	**311**	**386**	**5371**	**273**	**5644**
16:30 - 16:45	26	0	**26**	303	10	**313**			**0**	**339**	3	0	**3**			**0**	16	0	**16**	**19**	512	23	**535**
16:45 - 17:00	29	0	**29**	264	8	**272**			**0**	**301**	2	0	**2**			**0**	16	0	**16**	**18**	477	17	**494**
17:00 - 17:15	18	0	**18**	284	9	**293**			**0**	**311**	4	0	**4**			**0**	17	0	**17**	**21**	486	18	**504**
17:15 - 17:30	39	0	**39**	289	6	**295**			**0**	**334**	6	0	**6**			**0**	12	0	**12**	**18**	509	8	**517**
Period End	**412**	**5**	**417**	**3824**	**120**	**3944**	**0**	**0**	**0**	**4361**	**69**	**4**	**73**	**0**	**0**	**0**	**205**	**4**	**209**	**282**	**7013**	**255**	**7268**

tiS Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *RABY ROAD*										EAST *0*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	1092	40	**1132**	27	1	**28**	**1160**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	1836	87	**1923**
Period End	**0**	**0**	**0**	**10848**	**426**	**11274**	**189**	**4**	**193**	**11467**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**18726**	**897**	**19623**
16:30 - 17:30	0	0	**0**	642	31	**673**	14	2	**16**	**689**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	1984	66	**2050**
Period End	**0**	**0**	**0**	**8062**	**370**	**8432**	**202**	**33**	**235**	**8667**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**23384**	**857**	**24241**

All Vehicles Time Per Hour	SOUTH *RABY ROAD*										WEST *ESCHOL DRIVE*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	49	2	**51**	547	36	**583**	0	0	**0**	**634**	24	7	**31**	0	0	**0**	97	1	**98**	**129**	1836	87	**1923**
Period End	**597**	**8**	**605**	**5788**	**410**	**6198**	**0**	**0**	**0**	**6803**	**223**	**37**	**260**	**0**	**0**	**0**	**1081**	**12**	**1093**	**1353**	**18726**	**897**	**19623**
16:30 - 17:30	112	0	**112**	1140	33	**1173**	0	0	**0**	**1285**	15	0	**15**	0	0	**0**	61	0	**61**	**76**	1984	66	**2050**
Period End	**1320**	**17**	**1337**	**12913**	**409**	**13322**	**0**	**0**	**0**	**14659**	**219**	**14**	**233**	**0**	**0**	**0**	**668**	**14**	**682**	**915**	**23384**	**857**	**24241**

Traffic Information Specialist

Location	**Raby Road**		**Duration**	**0600 - 1000**
	Spitfire Drive			**1430 - 1830**
	Raby Road			-
			Day/Date	**Tuesday, 19 July 2016**
Suburb	**KEARNS**		**Weather**	**FINE**

All Vehicles Time Per 15 Mins			**NORTH** *Raby Road*									**EAST** *Spitfire Drive*											
			L			**T**			**R**				**L**			**T**			**R**				**TOTAL**	
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45	-	**8:00**	4	0	**4**	293	9	**302**			**0**	**306**	75	1	**76**			**0**	0	0	**0**	**76**	549	25	**574**
8:00	-	**8:15**	2	0	**2**	330	11	**341**			**0**	**343**	62	5	**67**			**0**	0	0	**0**	**67**	610	24	**634**
8:15	-	**8:30**	1	0	**1**	297	11	**308**			**0**	**309**	77	2	**79**			**0**	1	0	**1**	**80**	652	21	**673**
8:30	-	**8:45**	1	1	**2**	274	8	**282**			**0**	**284**	59	0	**59**			**0**	0	0	**0**	**59**	543	23	**566**
Period End			**45**	**3**	**48**	**3356**	**129**	**3485**	**0**	**0**	**0**	**3533**	**855**	**30**	**885**	**0**	**0**	**0**	**34**	**2**	**36**	**921**	**6746**	**312**	**7058**
16:30	-	**16:45**	10	0	**10**	178	11	**189**			**0**	**199**	63	1	**64**			**0**	1	0	**1**	**65**	656	27	**683**
16:45	-	**17:00**	8	3	**11**	160	6	**166**			**0**	**177**	77	3	**80**			**0**	1	0	**1**	**81**	600	20	**620**
17:00	-	**17:15**	8	0	**8**	158	7	**165**			**0**	**173**	55	3	**58**			**0**	3	0	**3**	**61**	618	21	**639**
17:15	-	**17:30**	6	0	**6**	173	2	**175**			**0**	**181**	63	1	**64**			**0**	3	0	**3**	**67**	654	10	**664**
Period End			**114**	**4**	**118**	**2508**	**101**	**2609**	**0**	**0**	**0**	**2727**	**924**	**31**	**955**	**0**	**0**	**0**	**32**	**1**	**33**	**988**	**9020**	**309**	**9329**

All Vehicles Time Per 15 Mins			**SOUTH** *Raby Road*									**WEST** *0*											
			L			**T**			**R**				**L**			**T**			**R**				**TOTAL**	
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45	-	**8:00**			**0**	132	11	**143**	45	4	**49**	**192**			**0**			**0**			**0**	**0**	549	25	**574**
8:00	-	**8:15**			**0**	155	6	**161**	61	2	**63**	**224**			**0**			**0**			**0**	**0**	610	24	**634**
8:15	-	**8:30**			**0**	181	7	**188**	95	1	**96**	**284**			**0**			**0**			**0**	**0**	652	21	**673**
8:30	-	**8:45**			**0**	130	11	**141**	79	3	**82**	**223**			**0**			**0**			**0**	**0**	543	23	**566**
Period End			**0**	**0**	**0**	**1858**	**120**	**1978**	**598**	**28**	**626**	**2604**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6746**	**312**	**7058**
16:30	-	**16:45**			**0**	328	12	**340**	76	3	**79**	**419**			**0**			**0**			**0**	**0**	656	27	**683**
16:45	-	**17:00**			**0**	289	7	**296**	65	1	**66**	**362**			**0**			**0**			**0**	**0**	600	20	**620**
17:00	-	**17:15**			**0**	318	7	**325**	76	4	**80**	**405**			**0**			**0**			**0**	**0**	618	21	**639**
17:15	-	**17:30**			**0**	325	6	**331**	84	1	**85**	**416**			**0**			**0**			**0**	**0**	654	10	**664**
Period End			**0**	**0**	**0**	**4209**	**123**	**4332**	**1233**	**49**	**1282**	**5614**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9020**	**309**	**9329**

All Vehicles Time Per 15 Mins	NORTH *Raby Road*										EAST *Spitfire Drive*											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	8	1	**9**	1194	39	**1233**	0	0	**0**	**1242**	273	8	**281**	0	0	**0**	1	0	**1**	**282**	2354	93	**2447**
Period End	**138**	**11**	**149**	**11883**	**414**	**12297**	**0**	**0**	**0**	12446	**2897**	**100**	**2997**	**0**	**0**	**0**	**92**	**4**	**96**	**3093**	**23424**	**1011**	**24435**
16:30 - 17:30	32	3	**35**	669	26	**695**	0	0	**0**	**730**	258	8	**266**	0	0	**0**	8	0	**8**	**274**	2528	78	**2606**
Period End	**356**	**16**	**372**	**8321**	**320**	**8641**	**0**	**0**	**0**	9013	**3047**	**105**	**3152**	**0**	**0**	**0**	**108**	**3**	**111**	**3263**	**29842**	**1022**	**30864**

All Vehicles Time Per Hour	SOUTH *Raby Road*										WEST *0*											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	598	35	**633**	280	10	**290**	**923**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	2354	93	**2447**
Period End	**0**	**0**	**0**	**6302**	**390**	**6692**	**2112**	**92**	**2204**	8896	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**23424**	**1011**	**24479**
16:30 - 17:30	0	0	**0**	1260	32	**1292**	301	9	**310**	**1602**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	2528	78	**2606**
Period End	**0**	**0**	**0**	**14145**	**419**	**14564**	**3865**	**159**	**4024**	18588	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29842**	**1022**	**30689**

Location	**RABY ROAD**	**Duration**	**0600 - 1000**
	EAGLE VALE DRIVE		**1430 - 1830**
	RABY ROAD		-
		Day/Date	**Tuesday, 19 July 2016**
Suburb	**KEARNS**	**Weather**	**FINE**

All Vehicles / **Time Per 15 Mins**	**NORTH** *0*													**EAST** *RABY ROAD*													
	L			**T**			**R**			**U**				**L**			**T**			**R**			**U**				**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00			**0**			**0**			**0**			0	**0**	86	4	**90**	135	10	**145**			**0**	0	0	0	**235**	823	32	**855**
8:00 - 8:15			**0**			**0**			**0**			0	**0**	105	1	**106**	133	3	**136**			**0**	0	0	0	**242**	865	26	**891**
8:15 - 8:30			**0**			**0**			**0**			0	**0**	97	1	**98**	150	6	**156**			**0**	0	0	0	**254**	884	21	**905**
8:30 - 8:45			**0**			**0**			**0**			0	**0**	83	3	**86**	107	12	**119**			**0**	0	0	0	**205**	784	28	**812**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1001**	**42**	**1043**	**1611**	**121**	**1732**	**0**	**0**	**0**	**0**	**0**	**0**	**2775**	**9683**	**368**	**10056**
16:30 - 16:45			**0**			**0**			**0**			0	**0**	164	3	**167**	267	13	**280**			**0**	0	0	0	**447**	872	27	**899**
16:45 - 17:00			**0**			**0**			**0**			0	**0**	185	4	**189**	252	8	**260**			**0**	0	0	0	**449**	839	21	**860**
17:00 - 17:15			**0**			**0**			**0**			0	**0**	158	4	**162**	286	5	**291**			**0**	0	0	0	**453**	842	22	**864**
17:15 - 17:30			**0**			**0**			**0**			0	**0**	205	6	**211**	251	7	**258**			**0**	0	0	0	**469**	925	17	**942**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2608**	**70**	**2678**	**3652**	**144**	**3796**	**0**	**0**	**0**	**0**	**0**	**0**	**6474**	**12957**	**373**	**13330**

All Vehicles / **Time Per 15 Mins**	**SOUTH** *EAGLE VALE DRIVE*													**WEST** *RABY ROAD*													
	L			**T**			**R**			**U**				**L**			**T**			**R**			**U**				**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	47	1	**48**			**0**	174	2	**176**	0	0	**0**	**224**			**0**	295	14	**309**	86	1	**87**	0	0	**0**	**396**	823	32	**855**
8:00 - 8:15	96	2	**98**			**0**	163	3	**166**	0	0	**0**	**264**			**0**	268	11	**279**	98	5	**103**	2	1	**3**	**385**	865	26	**891**
8:15 - 8:30	119	1	**120**			**0**	169	2	**171**	0	0	**0**	**291**			**0**	258	11	**269**	91	0	**91**	0	0	**0**	**360**	884	21	**905**
8:30 - 8:45	99	0	**99**			**0**	164	1	**165**	0	0	**0**	**264**			**0**	229	11	**240**	99	1	**100**	3	0	**3**	**343**	784	28	**812**
Period End	**848**	**14**	**862**	**0**	**0**	**0**	**2127**	**36**	**2163**	**0**	**0**	**0**	**3025**	**0**	**0**	**0**	**3212**	**136**	**3348**	**861**	**17**	**883**	**23**	**2**	**25**	**4256**	**9683**	**368**	**10056**
16:30 - 16:45	111	1	**112**			**0**	108	0	**108**	0	0	**0**	**220**			**0**	146	6	**152**	73	4	**77**	3	0	**3**	**232**	872	27	**899**
16:45 - 17:00	80	0	**80**			**0**	100	1	**101**	0	0	**0**	**181**			**0**	143	7	**150**	75	1	**76**	4	0	**4**	**230**	839	21	**860**
17:00 - 17:15	93	1	**94**			**0**	99	0	**99**	0	0	**0**	**193**			**0**	132	8	**140**	72	4	**76**	2	0	**2**	**218**	842	22	**864**
17:15 - 17:30	133	0	**133**			**0**	120	1	**121**	0	0	**0**	**254**			**0**	143	3	**146**	70	0	**70**	3	0	**3**	**219**	925	17	**942**
Period End	**1584**	**19**	**1603**	**0**	**0**	**0**	**1786**	**15**	**1801**	**0**	**0**	**0**	**3404**	**0**	**0**	**0**	**2176**	**98**	**2274**	**1106**	**26**	**1132**	**45**	**1**	**46**	**3452**	**12957**	**373**	**13330**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *0*													EAST *RABY ROAD*													
	L			T			R			U				L			T			R			U				
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	TOTAL		
																											LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	371	9	**380**	525	31	**556**	0	0	**0**	0	0	**0**	**936**	3356	107	**3463**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3438**	**140**	**3578**	**5478**	**395**	**5873**	**0**	**0**	**0**	**0**	**0**	**0**	**9451**	**33474**	**1209**	**34693**
16:30 - 17:30	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	712	17	**729**	1056	33	**1089**	0	0	**0**	0	0	**0**	**1818**	3478	87	**3565**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8690**	**226**	**8916**	**12166**	**485**	**12651**	**0**	**0**	**0**	**0**	**0**	**0**	**21567**	**42708**	**1223**	**43931**

All Vehicles Time Per Hour	SOUTH *EAGLE VALE DRIVE*													WEST *RABY ROAD*													
	L			T			R			U				L			T			R			U				
	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	TOTAL		
																											LIGHT	HEAVY	TOTAL
7:45 - 8:45	361	4	**365**	0	0	**0**	670	8	**678**	0	0	**0**	**1043**	0	0	**0**	1050	47	**1097**	374	7	**381**	5	1	**6**	**1484**	3356	107	**3463**
Period End	**2938**	**44**	**2982**	**0**	**0**	**0**	**7254**	**113**	**7367**	**0**	**0**	**0**	**10349**	**0**	**0**	**0**	**11258**	**445**	**11703**	**3032**	**67**	**3109**	**76**	**5**	**81**	**14893**	**33474**	**1209**	**34759**
16:30 - 17:30	417	2	**419**	0	0	**0**	427	2	**429**	0	0	**0**	**848**	0	0	**0**	564	24	**588**	290	9	**299**	12	0	**12**	**899**	3478	87	**3565**
Period End	**5188**	**55**	**5243**	**0**	**0**	**0**	**5641**	**47**	**5688**	**0**	**0**	**0**	**10931**	**0**	**0**	**0**	**7204**	**316**	**7520**	**3663**	**90**	**3753**	**156**	**4**	**160**	**11433**	**42708**	**1223**	**43723**

Traffic Information Specialist

Location	-	**Duration**	0600 - 1000
	RABY ROAD		1430 - 1830
	CAMPBELLTOWN ROAD		-
	RABY ROAD	**Day/Date**	Tuesday, 19 July 2016
Suburb	RABY	**Weather**	FINE

All Vehicles Time Per 15 Mins	NORTH -													EAST *RABY ROAD*													
	L			T			R			U				L			T			R			U				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00			**0**			**0**			**0**			0	**0**			**0**	138	10	**148**	44	9	**53**	0	0	0	**201**	783	42	**825**
8:00 - 8:15			**0**			**0**			**0**			0	**0**			**0**	147	5	**152**	41	9	**50**	4	0	4	**206**	749	30	**779**
8:15 - 8:30			**0**			**0**			**0**			0	**0**			**0**	150	5	**155**	52	13	**65**	5	0	5	**225**	767	37	**804**
8:30 - 8:45			**0**			**0**			**0**			0	**0**			**0**	118	11	**129**	46	8	**54**	2	0	2	**185**	682	38	**720**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1675**	**121**	**1796**	**635**	**174**	**809**	**11**	**0**	**11**	**2616**	**9093**	**651**	**9744**
16:30 - 16:45			**0**			**0**			**0**			0	**0**			**0**	299	10	**309**	48	2	**50**	2	0	2	**361**	749	23	**772**
16:45 - 17:00			**0**			**0**			**0**			0	**0**			**0**	311	6	**317**	36	4	**40**	6	0	6	**363**	774	23	**797**
17:00 - 17:15			**0**			**0**			**0**			0	**0**			**0**	301	5	**306**	33	6	**39**	5	0	5	**350**	730	24	**754**
17:15 - 17:30			**0**			**0**			**0**			0	**0**			**0**	351	5	**356**	42	2	**44**	3	0	3	**403**	812	11	**823**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4522**	**97**	**4619**	**518**	**56**	**574**	**16**	**0**	**16**	**5209**	**11117**	**321**	**11438**

All Vehicles Time Per 15 Mins	SOUTH *CAMPBELLTOWN ROAD*													WEST *RABY ROAD*													
	L			T			R			U				L			T			R			U				TOTAL	
	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	86	2	**88**	4	0	**4**	48	2	**50**	0	0	**0**	**142**	217	14	**231**	245	5	**250**			**0**	1	0	**1**	**482**	783	42	**825**
8:00 - 8:15	82	0	**82**	0	0	**0**	32	1	**33**	0	0	**0**	**115**	187	3	**190**	254	12	**266**			**0**	2	0	**2**	**458**	749	30	**779**
8:15 - 8:30	98	3	**101**	0	0	**0**	35	2	**37**	0	0	**0**	**138**	154	0	**154**	271	14	**285**			**0**	2	0	**2**	**441**	767	37	**804**
8:30 - 8:45	66	7	**73**	0	0	**0**	27	1	**28**	0	0	**0**	**101**	148	2	**150**	275	9	**284**			**0**	0	0	**0**	**434**	682	38	**720**
Period End	**936**	**42**	**978**	**4**	**0**	**4**	**530**	**16**	**546**	**0**	**0**	**0**	**1528**	**2227**	**135**	**2362**	**3052**	**163**	**3215**	**0**	**0**	**0**	**23**	**0**	**23**	**5600**	**9093**	**651**	**9744**
16:30 - 16:45	130	1	**131**	0	0	**0**	34	1	**35**	0	0	**0**	**166**	54	3	**57**	180	6	**186**			**0**	2	0	**2**	**245**	749	23	**772**
16:45 - 17:00	134	2	**136**	0	0	**0**	35	1	**36**	0	0	**0**	**172**	49	2	**51**	200	8	**208**			**0**	3	0	**3**	**262**	774	23	**797**
17:00 - 17:15	125	2	**127**	0	0	**0**	28	2	**30**	0	0	**0**	**157**	58	3	**61**	177	6	**183**			**0**	3	0	**3**	**247**	730	24	**754**
17:15 - 17:30	129	0	**129**	1	0	**1**	22	0	**22**	0	0	**0**	**152**	59	0	**59**	203	4	**207**			**0**	2	0	**2**	**268**	812	11	**823**
Period End	**1765**	**23**	**1788**	**6**	**0**	**6**	**547**	**15**	**562**	**0**	**0**	**0**	**2356**	**884**	**26**	**910**	**2816**	**104**	**2920**	**0**	**0**	**0**	**43**	**0**	**43**	**3873**	**11117**	**321**	**11438**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH -													EAST *RABY ROAD*													TOTAL		
	L			T			R			U				L			T			R			U					
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	0	0	**0**	553	31	**584**	183	39	**222**	11	0	**11**	**817**	2981	147	**3128**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5727**	**385**	**6112**	**2098**	**555**	**2653**	**44**	**0**	**44**	**8809**	31244	2127	**33371**
16:30 - 17:30	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	0	0	**0**	1262	26	**1288**	159	14	**173**	16	0	**16**	**1477**	3065	81	**3146**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15660**	**338**	**15998**	**1853**	**189**	**2042**	**64**	**0**	**64**	**18104**	38181	1112	**39293**

All Vehicles Time Per Hour	SOUTH *CAMPBELLTOWN ROAD*													WEST *RABY ROAD*													TOTAL		
	L			T			R			U				L			T			R			U					
	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	332	12	**344**	4	0	**4**	142	6	**148**	0	0	**0**	**496**	706	19	**725**	1045	40	**1085**	0	0	**0**	5	0	**5**	**1815**	2981	147	**3128**
Period End	**3162**	**152**	3314	**16**	**0**	16	**1766**	**62**	1828	**0**	**0**	**0**	5158	**7574**	**427**	8001	**10780**	**546**	11326	**0**	**0**	**0**	**77**	**0**	77	**19404**	31244	2127	**33371**
16:30 - 17:30	518	5	**523**	1	0	**1**	119	4	**123**	0	0	**0**	**647**	220	8	**228**	760	24	**784**	0	0	**0**	10	0	**10**	**1022**	3065	81	**3146**
Period End	**6024**	**81**	6105	**20**	**0**	20	**1860**	**48**	1908	**0**	**0**	**0**	8033	**2993**	**92**	3085	**9564**	**364**	9928	**0**	**0**	**0**	**143**	**0**	143	**13156**	38181	1112	**39293**

Traffic Information Specialist

Location	**STRANDER CRES**	**Duration**	**0600 - 1000**
	RABY ROAD		**1430 - 1830**
	STROMEFERRY CRES		-
	RABY ROAD	**Day/Date**	**Tuesday, 19 July 2016**
Suburb	**KEARNS**	**Weather**	**FINE**

All Vehicles / **Time Per 15 Mins**	**NORTH** *STRANDER CRES*													**EAST** *RABY ROAD*														
	L			**T**			**R**			**U**				**L**			**T**			**R**			**U**				**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	18	0	**18**	0	0	**0**	40	5	**45**	0	0	0	**63**	3	0	**3**	135	17	**152**	6	3	**9**	0	0	0	**164**	538	31	**569**
8:00 - 8:15	25	1	**26**	2	1	**3**	33	1	**34**	0	0	0	**63**	0	0	**0**	136	18	**154**	8	3	**11**	0	0	0	**165**	547	37	**584**
8:15 - 8:30	27	1	**28**	3	0	**3**	37	1	**38**	0	0	0	**69**	3	1	**4**	133	28	**161**	3	2	**5**	3	0	3	**173**	556	48	**604**
8:30 - 8:45	28	0	**28**	4	0	**4**	27	0	**27**	0	1	1	**60**	0	0	**0**	116	18	**134**	3	1	**4**	0	0	0	**138**	509	29	**538**
Period End	**378**	**9**	**387**	**28**	**2**	**30**	**447**	**22**	**469**	**1**	**1**	**2**	**888**	**14**	**3**	**17**	**1710**	**289**	**1999**	**63**	**32**	**95**	**6**	**0**	**6**	**2117**	**6679**	**480**	**7159**
16:30 - 16:45	17	0	**17**	3	0	**3**	26	0	**26**	0	0	0	**46**	5	0	**5**	311	13	**324**	4	1	**5**	1	0	1	**335**	604	24	**618**
16:45 - 17:00	19	0	**19**	10	0	**10**	36	0	**36**	0	0	0	**65**	2	0	**2**	300	7	**307**	6	2	**8**	0	0	0	**317**	623	17	**632**
17:00 - 17:15	21	0	**21**	5	0	**5**	44	1	**45**	0	0	0	**71**	2	0	**2**	291	8	**299**	14	0	**14**	0	0	0	**315**	593	17	**602**
17:15 - 17:30	17	0	**17**	4	0	**4**	44	1	**45**	0	0	0	**66**	5	6	**11**	339	5	**344**	10	4	**14**	0	0	0	**369**	653	20	**673**
Period End	**313**	**4**	**317**	**93**	**2**	**95**	**520**	**16**	**536**	**1**	**0**	**1**	**949**	**43**	**7**	**50**	**4573**	**181**	**4754**	**118**	**23**	**141**	**6**	**0**	**6**	**4951**	**9660**	**355**	**9989**

All Vehicles / **Time Per 15 Mins**	**SOUTH** *STROMEFERRY CRES*													**WEST** *RABY ROAD*														
	L			**T**			**R**			**U**				**L**			**T**			**R**			**U**				**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	8	0	**8**	2	0	**2**	9	0	**9**	0	0	**0**	**19**	40	1	**41**	275	5	**280**	2	0	**2**	0	0	**0**	**323**	538	31	**569**
8:00 - 8:15	16	0	**16**	7	0	**7**	8	1	**9**	0	0	**0**	**32**	20	1	**21**	292	11	**303**	0	0	**0**	0	0	**0**	**324**	547	37	**584**
8:15 - 8:30	16	0	**16**	9	0	**9**	7	0	**7**	0	0	**0**	**32**	34	4	**38**	278	11	**289**	0	0	**0**	3	0	**3**	**330**	556	48	**604**
8:30 - 8:45	11	1	**12**	8	0	**8**	10	0	**10**	0	0	**0**	**30**	39	1	**40**	259	7	**266**	3	0	**3**	1	0	**1**	**310**	509	29	**538**
Period End	**136**	**1**	**137**	**55**	**0**	**55**	**102**	**2**	**104**	**0**	**0**	**0**	**296**	**375**	**10**	**385**	**3327**	**108**	**3435**	**23**	**1**	**24**	**14**	**0**	**14**	**3858**	**6679**	**480**	**7159**
16:30 - 16:45	9	0	**9**	2	0	**2**	10	0	**10**	0	0	**0**	**21**	46	0	**46**	157	10	**157**	10	0	**10**	3	0	**3**	**216**	604	24	**618**
16:45 - 17:00	7	0	**7**	6	0	**6**	1	0	**1**	0	0	**0**	**14**	48	0	**48**	179	8	**179**	8	0	**8**	1	0	**1**	**236**	623	17	**632**
17:00 - 17:15	9	0	**9**	1	0	**1**	9	0	**9**	0	0	**0**	**19**	40	0	**40**	147	8	**147**	8	0	**8**	2	0	**2**	**197**	593	17	**602**
17:15 - 17:30	6	0	**6**	2	0	**2**	14	0	**14**	0	0	**0**	**22**	43	1	**44**	165	3	**168**	3	0	**3**	1	0	**1**	**216**	653	20	**673**
Period End	**107**	**1**	**108**	**83**	**0**	**83**	**120**	**1**	**121**	**0**	**0**	**0**	**312**	**831**	**15**	**846**	**2753**	**105**	**2832**	**76**	**0**	**76**	**23**	**0**	**23**	**3777**	**9660**	**355**	**9989**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *STRANDER CRES*													EAST *RABY ROAD*														
	L			T			R			U				L			T			R			U				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	98	2	**100**	9	1	**10**	137	7	**144**	0	1	**1**	**255**	6	1	**7**	520	81	**601**	20	9	**29**	3	0	**3**	**640**	2150	145	**2295**
Period End	**1257**	**31**	**1288**	**93**	**8**	**101**	**1525**	**69**	**1594**	**1**	**4**	**5**	**2988**	**42**	**6**	**48**	**5774**	**929**	**6703**	**218**	**106**	**324**	**21**	**0**	**21**	**7096**	**23043**	**1576**	**24619**
16:30 - 17:30	74	0	**74**	22	0	**22**	150	2	**152**	0	0	**0**	**248**	14	6	**20**	1241	33	**1274**	34	7	**41**	1	0	**1**	**1336**	2473	78	**2525**
Period End	**1023**	**16**	**1039**	**324**	**7**	**331**	**1767**	**46**	**1813**	**1**	**0**	**1**	**3184**	**148**	**28**	**176**	**15332**	**567**	**15899**	**389**	**69**	**458**	**22**	**0**	**22**	**16555**	**31841**	**1116**	**32853**

All Vehicles Time Per Hour	SOUTH *STROMEFERRY CRES*													WEST *RABY ROAD*														
	L			T			R			U				L			T			R			U				TOTAL	
	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	51	1	**52**	26	0	**26**	34	1	**35**	0	0	**0**	**113**	133	7	**140**	1104	34	**1138**	5	0	**5**	4	0	**4**	**1287**	2150	145	**2295**
Period End	**448**	**4**	**452**	**209**	**0**	**209**	**348**	**8**	**356**	**0**	**0**	**0**	**1017**	**1315**	**37**	**1352**	**11686**	**370**	**12056**	**62**	**4**	**66**	**44**	**0**	**44**	**13518**	**23043**	**1576**	**24619**
16:30 - 17:30	31	0	**31**	11	0	**11**	34	0	**34**	0	0	**0**	**76**	177	1	**178**	648	29	**651**	29	0	**29**	7	0	**7**	**865**	2473	78	**2525**
Period End	**345**	**4**	**349**	**248**	**0**	**248**	**405**	**4**	**409**	**0**	**0**	**0**	**1006**	**2645**	**43**	**2688**	**8858**	**332**	**9086**	**253**	**0**	**253**	**81**	**0**	**81**	**12108**	**31841**	**1116**	**32853**

Traffic Information Specialist

Location	**CAMPBELLTOWN ROAD**	**Duration**	**0600 - 1000**
	SWETTENHAM ROAD		**1430 - 1830**
	CAMPBELLTOWN ROAD		-
	RABY ROAD	**Day/Date**	**Tuesday, 19 July 2016**
Suburb	**KEANRS**	**Weather**	**FINE**

All Vehicles Time Per 15 Mins	**NORTH** *CAMPBELLTOWN ROAD*													**EAST** *SWETTENHAM ROAD*														
	L			T			R			U				L			T			R			U				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	0	0	**0**	35	1	**36**	104	10	**114**	0	0	0	**150**	2	1	**3**	11	1	**12**	5	0	**5**	0	0	0	**20**	521	30	**551**
8:00 - 8:15	1	0	**1**	31	2	**33**	106	16	**122**	2	2	4	**160**	3	0	**3**	6	0	**6**	2	1	**3**	1	0	1	**13**	528	39	**567**
8:15 - 8:30	1	2	**3**	36	2	**38**	114	12	**126**	5	0	5	**172**	4	2	**6**	10	3	**13**	17	0	**17**	0	0	0	**36**	555	45	**600**
8:30 - 8:45	0	0	**0**	41	0	**41**	84	12	**96**	0	0	0	**137**	4	0	**4**	9	1	**10**	8	0	**8**	0	0	0	**22**	525	27	**552**
Period End	**17**	**2**	**19**	**372**	**36**	**408**	**1330**	**247**	**1577**	**18**	**5**	**23**	**2027**	**45**	**4**	**49**	**86**	**14**	**100**	**67**	**4**	**71**	**1**	**0**	**1**	**221**	**6426**	**534**	**6960**
16:30 - 16:45	2	0	**2**	33	0	**33**	197	8	**205**	1	0	1	**241**	9	0	**9**	15	0	**15**	15	1	**16**	0	0	0	**40**	596	21	**617**
16:45 - 17:00	0	0	**0**	35	1	**36**	190	10	**200**	0	0	0	**236**	1	0	**1**	21	0	**21**	7	0	**7**	0	0	0	**29**	546	23	**569**
17:00 - 17:15	1	0	**1**	31	2	**33**	232	8	**240**	0	0	0	**274**	9	0	**9**	22	1	**23**	12	0	**12**	0	0	0	**44**	609	18	**627**
17:15 - 17:30	1	1	**2**	27	0	**27**	241	4	**245**	0	0	0	**274**	10	0	**10**	27	0	**27**	7	0	**7**	0	0	0	**44**	625	11	**636**
Period End	**14**	**1**	**15**	**441**	**26**	**467**	**3038**	**167**	**3205**	**3**	**0**	**3**	**3690**	**109**	**3**	**112**	**253**	**6**	**259**	**137**	**6**	**143**	**0**	**0**	**0**	**514**	**8960**	**413**	**9373**

All Vehicles Time Per 15 Mins	**SOUTH** *CAMPBELLTOWN ROAD*													**WEST** *RABY ROAD*														
	L			T			R			U				L			T			R			U				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	43	4	**47**	22	4	**26**	3	0	**3**	0	0	**0**	**76**	181	7	**188**	13	1	**14**	102	1	**103**	0	0	**0**	**305**	521	30	**551**
8:00 - 8:15	27	1	**28**	22	4	**26**	4	0	**4**	0	0	**0**	**58**	180	12	**192**	12	0	**12**	131	1	**132**	0	0	**0**	**336**	528	39	**567**
8:15 - 8:30	26	2	**28**	22	1	**23**	4	0	**4**	0	0	**0**	**55**	167	15	**182**	14	1	**15**	135	5	**140**	0	0	**0**	**337**	555	45	**600**
8:30 - 8:45	37	1	**38**	27	4	**31**	1	0	**1**	1	0	**1**	**71**	151	7	**158**	15	0	**15**	147	2	**149**	0	0	**0**	**322**	525	27	**552**
Period End	**391**	**22**	**413**	**298**	**47**	**345**	**42**	**1**	**43**	**4**	**0**	**4**	**805**	**2233**	**113**	**2346**	**139**	**6**	**145**	**1383**	**33**	**1416**	**0**	**0**	**0**	**3907**	**6426**	**534**	**6960**
16:30 - 16:45	112	2	**114**	22	2	**24**	1	1	**2**	1	0	**1**	**141**	96	4	**100**	13	0	**13**	76	3	**79**	3	0	**3**	**195**	596	21	**617**
16:45 - 17:00	96	2	**98**	9	3	**12**	1	0	**1**	0	0	**0**	**111**	95	5	**100**	5	0	**5**	82	2	**84**	4	0	**4**	**193**	546	23	**569**
17:00 - 17:15	93	1	**94**	15	2	**17**	1	0	**1**	0	0	**0**	**112**	110	3	**113**	7	1	**8**	71	0	**71**	5	0	**5**	**197**	609	18	**627**
17:15 - 17:30	96	0	**96**	15	3	**18**	3	0	**3**	0	0	**0**	**117**	102	3	**105**	11	0	**11**	80	0	**80**	5	0	**5**	**201**	625	11	**636**
Period End	**1549**	**41**	**1590**	**237**	**43**	**280**	**32**	**9**	**41**	**3**	**2**	**5**	**1916**	**1655**	**79**	**1734**	**132**	**9**	**141**	**1304**	**21**	**1325**	**53**	**0**	**53**	**3253**	**8960**	**413**	**9373**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *CAMPBELLTOWN ROAD*													EAST *SWETTENHAM ROAD*														
	L			T			R			U				L			T			R			U					
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	TOTAL LIGHT	TOTAL HEAVY	TOTAL
7:45 - 8:45	2	2	**4**	143	5	**148**	408	50	**458**	7	2	**9**	**619**	13	3	**16**	36	5	**41**	32	1	**33**	1	0	**1**	**91**	2129	141	**2270**
Period End	**57**	**8**	**65**	**1338**	**121**	**1459**	**4481**	**773**	**5254**	**64**	**17**	**81**	**6859**	**152**	**14**	**166**	**302**	**51**	**353**	**250**	**11**	**261**	**4**	**0**	**4**	**784**	**22368**	**1733**	**24101**
16:30 - 17:30	4	1	**5**	126	3	**129**	860	30	**890**	1	0	**1**	**1025**	29	0	**29**	85	1	**86**	41	1	**42**	0	0	**0**	**157**	2376	73	**2449**
Period End	**45**	**4**	**49**	**1485**	**77**	**1562**	**10127**	**527**	**10654**	**12**	**0**	**12**	**12277**	**369**	**9**	**378**	**898**	**17**	**915**	**469**	**17**	**486**	**0**	**0**	**0**	**1779**	**29674**	**1287**	**30961**

All Vehicles Time Per Hour	SOUTH *CAMPBELLTOWN ROAD*													WEST *RABY ROAD*														
	L			T			R			U				L			T			R			U					
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	TOTAL LIGHT	TOTAL HEAVY	TOTAL
7:45 - 8:45	133	8	**141**	93	13	**106**	12	0	**12**	1	0	**1**	**260**	679	41	**720**	54	2	**56**	515	9	**524**	0	0	**0**	**1300**	2129	141	**2270**
Period End	**1335**	**63**	**1398**	**1017**	**160**	**1177**	**160**	**4**	**164**	**16**	**0**	**16**	**2755**	**7813**	**383**	**8196**	**516**	**24**	**540**	**4863**	**104**	**4967**	**0**	**0**	**0**	**13703**	**22368**	**1733**	**24101**
16:30 - 17:30	397	5	**402**	61	10	**71**	6	1	**7**	1	0	**1**	**481**	403	15	**418**	36	1	**37**	309	5	**314**	17	0	**17**	**786**	2376	73	**2449**
Period End	**5168**	**139**	**5307**	**777**	**132**	**909**	**107**	**23**	**130**	**8**	**4**	**12**	**6358**	**5409**	**253**	**5662**	**470**	**24**	**494**	**4152**	**61**	**4213**	**178**	**0**	**178**	**10547**	**29674**	**1287**	**30961**

Traffic Information Specialist

Location	CAMPBELLTOWN ROAD	**Duration**	0600 - 1000
	BEN LOMOND ROAD		1430 - 1830
	CAMPBELLTOWN ROAD		-
	-	**Day/Date**	Tuesday, 19 July 2016
Suburb	LEUMEAH	**Weather**	FINE

All Vehicles Time Per 15 Mins	NORTH *CAMPBELLTOWN ROAD*										EAST *BEN LOMOND ROAD*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	156	15	**171**	37	2	**39**			**0**	**210**	84	20	**104**			**0**	107	15	**122**	**226**	586	82	**668**
8:00 - 8:15	148	24	**172**	49	2	**51**			**0**	**223**	123	16	**139**			**0**	109	17	**126**	**265**	605	77	**682**
8:15 - 8:30	142	12	**154**	68	1	**69**			**0**	**223**	117	25	**142**			**0**	94	15	**109**	**251**	603	69	**672**
8:30 - 8:45	155	18	**173**	80	5	**85**			**0**	**258**	82	17	**99**			**0**	71	11	**82**	**181**	562	61	**623**
Period End	**1747**	**233**	**1980**	**708**	**49**	**757**	**0**	**0**	**0**	**2737**	**1166**	**217**	**1383**	**0**	**0**	**0**	**1252**	**243**	**1495**	**2878**	**7314**	**934**	**8248**
16:30 - 16:45	141	9	**150**	85	2	**87**			**0**	**237**	145	9	**154**			**0**	185	9	**194**	**348**	689	37	**726**
16:45 - 17:00	136	6	**142**	103	4	**107**			**0**	**249**	158	3	**161**			**0**	155	6	**161**	**322**	662	25	**687**
17:00 - 17:15	128	10	**138**	90	6	**96**			**0**	**234**	185	7	**192**			**0**	196	5	**201**	**393**	718	35	**753**
17:15 - 17:30	151	5	**156**	94	1	**95**			**0**	**251**	199	5	**204**			**0**	187	5	**192**	**396**	756	19	**775**
Period End	**1904**	**183**	**2087**	**1339**	**56**	**1395**	**0**	**0**	**0**	**3482**	**2231**	**121**	**2352**	**0**	**0**	**0**	**2294**	**145**	**2439**	**4791**	9708	620	**10328**

All Vehicles Time Per 15 Mins	SOUTH *CAMPBELLTOWN ROAD*										WEST -												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00			**0**	55	3	**58**	147	27	**174**	**232**			**0**			**0**			**0**	**0**	586	82	**668**
8:00 - 8:15			**0**	31	4	**35**	145	14	**159**	**194**			**0**			**0**			**0**	**0**	605	77	**682**
8:15 - 8:30			**0**	38	2	**40**	144	14	**158**	**198**			**0**			**0**			**0**	**0**	603	69	**672**
8:30 - 8:45			**0**	36	3	**39**	138	7	**145**	**184**			**0**			**0**			**0**	**0**	562	61	**623**
Period End	**0**	**0**	**0**	**566**	**33**	**599**	**1875**	**159**	**2034**	**2633**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2441**	**192**	**8248**
16:30 - 16:45			**0**	20	0	**20**	113	8	**121**	**141**			**0**			**0**			**0**	**0**	689	37	**726**
16:45 - 17:00			**0**	20	1	**21**	90	5	**95**	**116**			**0**			**0**			**0**	**0**	662	25	**687**
17:00 - 17:15			**0**	22	0	**22**	97	7	**104**	**126**			**0**			**0**			**0**	**0**	718	35	**753**
17:15 - 17:30			**0**	27	1	**28**	98	2	**100**	**128**			**0**			**0**			**0**	**0**	756	19	**775**
Period End	**0**	**0**	**0**	**431**	**18**	**449**	**1509**	**97**	**1606**	**2055**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1940	115	**10328**

All Vehicles Time Per 15 Mins	NORTH *CAMPBELLTOWN ROAD*										EAST *BEN LOMOND ROAD*											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	601	69	**670**	234	10	**244**	0	0	**0**	**914**	406	78	**484**	0	0	**0**	381	58	**439**	**923**	2356	289	**2645**
Period End	**6103**	**793**	**6896**	**2373**	**158**	**2531**	**0**	**0**	**0**	**9427**	**4041**	**743**	**4784**	**0**	**0**	**0**	**4260**	**758**	**5018**	**9802**	25309	3109	**28418**
16:30 - 17:30	556	30	**586**	372	13	**385**	0	0	**0**	**971**	687	24	**711**	0	0	**0**	723	25	**748**	**1459**	2825	116	**2941**
Period End	**6326**	**602**	**6928**	**4490**	**192**	**4682**	**0**	**0**	**0**	**11610**	**7500**	**372**	**7872**	**0**	**0**	**0**	**7830**	**467**	**8297**	**16169**	32571	1998	**34569**

All Vehicles Time Per Hour	SOUTH *CAMPBELLTOWN ROAD*										WEST -											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	160	12	**172**	574	62	**636**	**808**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	2356	289	**2645**
Period End	**0**	**0**	**0**	**1945**	**122**	**2067**	**6587**	**535**	**7122**	**9189**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	25309	3109	**28418**
16:30 - 17:30	0	0	**0**	89	2	**91**	398	22	**420**	**511**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	2825	116	**2941**
Period End	**0**	**0**	**0**	**1400**	**59**	**1459**	**5025**	**306**	**5331**	**6790**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	32571	1998	**34569**

Location	**CAMPBELLTOWN ROAD**	**Duration**	**0600 - 1000**
	CAMPBELLTOWN ROAD		**1430 - 1830**
			-
		Day/Date	**Tuesday, 19 July 2016**
Suburb	**LEUMEAH**	**Weather**	**FINE**

All Vehicles Time Per 15 Mins	**NORTH WEST** *CAMPBELLTOWN ROAD*										**NORTH EAST** *CAMPBELLTOWN ROAD*											
	L			**T**			**R**				**L**			**T**			**R**				**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	74	1	**75**	127	5	**132**			**0**	**207**	128	3	**131**			**0**			**0**	**131**	329	9	**338**
8:00 - 8:15	53	3	**56**	152	16	**168**			**0**	**224**	149	1	**150**			**0**			**0**	**150**	354	20	**374**
8:15 - 8:30	53	3	**56**	246	10	**256**			**0**	**312**	95	2	**97**			**0**			**0**	**97**	394	15	**409**
8:30 - 8:45	68	2	**70**	137	20	**157**			**0**	**227**	202	1	**203**			**0**			**0**	**203**	407	23	**430**
Period End	**790**	**39**	**829**	**1791**	**175**	**1966**	**0**	**0**	**0**	**2795**	**1758**	**37**	**1795**	**0**	**0**	**0**	**0**	**0**	**0**	**1795**	**4339**	**251**	**4590**
16:30 - 16:45	142	5	**147**	334	12	**346**			**0**	**493**	114	4	**118**			**0**			**0**	**118**	590	21	**611**
16:45 - 17:00	119	6	**125**	372	6	**378**			**0**	**503**	94	4	**98**			**0**			**0**	**98**	585	16	**601**
17:00 - 17:15	145	4	**149**	349	5	**354**			**0**	**503**	69	6	**75**			**0**			**0**	**75**	563	15	**578**
17:15 - 17:30	128	4	**132**	371	13	**384**			**0**	**516**	128	3	**131**			**0**			**0**	**131**	627	20	**647**
Period End	**1985**	**106**	**2091**	**4719**	**119**	**4838**	**0**	**0**	**0**	**6929**	**1778**	**84**	**1862**	**0**	**0**	**0**	**0**	**0**	**0**	**1862**	**8482**	**309**	**8791**

All Vehicles Time Per 15 Mins	**SOUTH** *0*										**WEST** *0*											
	L			**T**			**R**				**L**			**T**			**R**				**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00			**0**			**0**			**0**	**0**			**0**			**0**			**0**	**0**	329	9	**338**
8:00 - 8:15			**0**			**0**			**0**	**0**			**0**			**0**			**0**	**0**	354	20	**374**
8:15 - 8:30			**0**			**0**			**0**	**0**			**0**			**0**			**0**	**0**	394	15	**409**
8:30 - 8:45			**0**			**0**			**0**	**0**			**0**			**0**			**0**	**0**	407	23	**430**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4339**	**251**	**4590**
16:30 - 16:45			**0**			**0**			**0**	**0**			**0**			**0**			**0**	**0**	590	21	**611**
16:45 - 17:00			**0**			**0**			**0**	**0**			**0**			**0**			**0**	**0**	585	16	**601**
17:00 - 17:15			**0**			**0**			**0**	**0**			**0**			**0**			**0**	**0**	563	15	**578**
17:15 - 17:30			**0**			**0**			**0**	**0**			**0**			**0**			**0**	**0**	627	20	**647**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8482**	**309**	**8791**

tiS Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *CAMPBELLTOWN ROAD*										EAST *CAMPBELLTOWN ROAD*											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	248	9	**257**	662	51	**713**	0	0	**0**	**970**	574	7	**581**	0	0	**0**	0	0	**0**	**581**	1484	67	**1551**
Period End	**2743**	**115**	**2858**	**5992**	**607**	**6599**	**0**	**0**	**0**	**9457**	**6170**	**109**	**6279**	**0**	**0**	**0**	**0**	**0**	**0**	**6279**	**14905**	**831**	**15736**
16:30 - 17:30	534	19	**553**	1426	36	**1462**	0	0	**0**	**2015**	405	17	**422**	0	0	**0**	0	0	**0**	**422**	2365	72	**2437**
Period End	**6588**	**339**	**6927**	**16159**	**402**	**16561**	**0**	**0**	**0**	**23488**	**5488**	**268**	**5756**	**0**	**0**	**0**	**0**	**0**	**0**	**5756**	**28235**	**1009**	**29244**

All Vehicles Time Per Hour	SOUTH *0*										WEST *0*											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	0	0	**0**	0	0	**0**	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	1484	67	**1551**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14265**	**801**	**15736**
16:30 - 17:30	0	0	**0**	0	0	**0**	0	0	**0**	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	2365	72	**2437**
Period End	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**28235**	**1009**	**29244**

Traffic Information Specialist

Location	**PEMBROKE ROAD**	**Duration**	**0600 - 1000**
	BEN LOMOND ROAD		**1430 - 1830**
	PEMBROKE ROAD		-
	BEN LOMOND ROAD	**Day/Date**	**Tuesday, 19 July 2016**
Suburb	**MINTO**	**Weather**	**FINE**

All Vehicles	**NORTH**										**EAST**												
Time Per 15 Mins	***PEMBROKE ROAD***										***BEN LOMOND ROAD***												
	L			**T**			**R**				**L**			**T**			**R**					**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	13	1	**14**	48	0	**48**	81	0	**81**	**143**	8	0	**8**	74	4	**78**	31	1	**32**	**119**	499	45	**544**
8:00 - 8:15	8	1	**9**	74	1	**75**	104	4	**108**	**192**	9	0	**9**	91	3	**94**	28	0	**28**	**131**	557	38	**595**
8:15 - 8:30	6	1	**7**	84	1	**85**	102	3	**105**	**197**	25	1	**26**	71	3	**74**	25	0	**25**	**125**	620	51	**671**
8:30 - 8:45	8	0	**8**	98	0	**98**	111	0	**111**	**217**	32	0	**32**	66	3	**69**	20	0	**20**	**121**	606	31	**637**
Period End	**106**	**7**	**113**	**947**	**18**	**965**	**1050**	**25**	**1075**	**2153**	**260**	**12**	**272**	**1025**	**70**	**1095**	**345**	**10**	**355**	**1723**	**7072**	**639**	**7711**
16:30 - 16:45	12	0	**12**	92	1	**93**	99	2	**101**	**206**	33	0	**33**	87	3	**90**	17	0	**17**	**140**	706	21	**727**
16:45 - 17:00	22	0	**22**	93	3	**96**	125	1	**126**	**244**	18	0	**18**	81	3	**84**	16	2	**18**	**121**	713	18	**731**
17:00 - 17:15	19	0	**19**	84	0	**84**	101	0	**101**	**204**	16	0	**16**	80	2	**82**	23	0	**23**	**121**	714	19	**733**
17:15 - 17:30	15	0	**15**	85	2	**87**	108	1	**109**	**211**	14	0	**14**	81	3	**84**	25	1	**26**	**124**	726	12	**738**
Period End	**238**	**3**	**241**	**1429**	**23**	**1452**	**1506**	**19**	**1525**	**3218**	**381**	**0**	**381**	**1091**	**36**	**1127**	**311**	**5**	**316**	**1829**	**10615**	**327**	**10942**

All Vehicles	**SOUTH**										**WEST**												
Time Per 15 Mins	***PEMBROKE ROAD***										***BEN LOMOND ROAD***												
	L			**T**			**R**				**L**			**T**			**R**					**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	24	4	**28**	81	1	**82**	17	0	**17**	**127**	55	11	**66**	48	16	**64**	17	6	**23**	**155**	499	45	**544**
8:00 - 8:15	31	7	**38**	64	0	**64**	23	1	**24**	**127**	53	6	**59**	59	7	**66**	13	7	**20**	**145**	557	38	**595**
8:15 - 8:30	30	7	**37**	106	4	**110**	30	0	**30**	**179**	72	6	**78**	62	13	**75**	7	10	**17**	**170**	620	51	**671**
8:30 - 8:45	17	5	**22**	70	2	**72**	34	0	**34**	**130**	57	6	**63**	81	10	**91**	11	3	**14**	**169**	606	31	**637**
Period End	**341**	**82**	**423**	**967**	**29**	**996**	**319**	**7**	**326**	**1758**	**727**	**94**	**821**	**763**	**182**	**945**	**196**	**90**	**286**	**2077**	**7072**	**639**	**7711**
16:30 - 16:45	30	2	**32**	105	2	**107**	42	0	**42**	**181**	66	2	**68**	98	5	**103**	24	4	**28**	**200**	706	21	**727**
16:45 - 17:00	26	2	**28**	104	1	**105**	39	0	**39**	**172**	77	1	**78**	90	4	**94**	20	1	**21**	**194**	713	18	**731**
17:00 - 17:15	57	6	**63**	102	1	**103**	46	0	**46**	**213**	78	3	**81**	90	2	**92**	16	4	**20**	**195**	714	19	**733**
17:15 - 17:30	33	1	**34**	120	0	**120**	48	0	**48**	**202**	67	1	**68**	109	2	**111**	20	1	**21**	**201**	726	12	**738**
Period End	**618**	**47**	**665**	**1611**	**11**	**1622**	**657**	**6**	**663**	**2958**	**1063**	**43**	**1106**	**1473**	**75**	**1548**	**215**	**50**	**265**	**2937**	**10615**	**327**	**10942**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *PEMBROKE ROAD*										EAST *BEN LOMOND ROAD*											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	35	3	**38**	304	2	**306**	398	7	**405**	**749**	74	1	**75**	302	13	**315**	104	1	**105**	**496**	2282	165	**2447**
Period End	**396**	**28**	**424**	**3157**	**60**	**3217**	**3614**	**88**	**3702**	**7343**	**864**	**45**	**909**	**3476**	**223**	**3699**	**1216**	**26**	**1242**	**5854**	**24180**	**2150**	**26330**
16:30 - 17:30	68	0	**68**	354	6	**360**	433	4	**437**	**865**	81	0	**81**	329	11	**340**	81	3	**84**	**506**	2859	70	**2929**
Period End	**757**	**11**	**768**	**4724**	**82**	**4806**	**5048**	**65**	**5113**	**10687**	**1244**	**0**	**1244**	**3598**	**118**	**3716**	**995**	**16**	**1011**	**5988**	**35253**	**1019**	**36272**

All Vehicles Time Per Hour	SOUTH *PEMBROKE ROAD*										WEST *BEN LOMOND ROAD*											
	L			T			R				L			T			R				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	102	23	**125**	321	7	**328**	104	1	**105**	**563**	237	29	**266**	250	46	**296**	48	26	**74**	**639**	2282	165	**2447**
Period End	**1167**	**278**	**1445**	**3291**	**93**	**3384**	**1117**	**26**	**1143**	**6007**	**2573**	**338**	**2911**	**2596**	**616**	**3212**	**643**	**292**	**935**	**7126**	**24180**	**2150**	**26330**
16:30 - 17:30	146	11	**157**	431	4	**435**	175	0	**175**	**768**	288	7	**295**	387	13	**400**	80	10	**90**	**790**	2859	70	**2929**
Period End	**2121**	**150**	**2271**	**5316**	**41**	**5357**	**2146**	**22**	**2168**	**9822**	**3514**	**122**	**3636**	**4952**	**212**	**5164**	**755**	**151**	**906**	**9775**	**35253**	**1019**	**36272**

Traffic Information Specialist

Location	**ROSE PAYTEN DRIVE**	**Duration**	**0600 - 1000**
	PEMBROKE ROAD		**1430 - 1830**
	SMITHS CREEK BYPASS		-
	PEMBROKE ROAD	**Day/Date**	**Tuesday, 19 July 2016**
Suburb	**MINTO**	**Weather**	**FINE**

All Vehicles Time Per 15 Mins			**NORTH** *ROSE PAYTEN DRIVE*									**EAST** *PEMBROKE ROAD*										**TOTAL**		
			L			**T**			**R**				**L**			**T**			**R**						
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45	-	**8:00**	39	6	**45**	44	0	**44**	29	1	**30**	**119**	6	1	**7**	79	3	**82**	30	4	**34**	**123**	635	27	**662**
8:00	-	**8:15**	42	6	**48**	49	1	**50**	31	0	**31**	**129**	0	0	**0**	88	0	**88**	40	6	**46**	**134**	623	24	**647**
8:15	-	**8:30**	29	8	**37**	52	1	**53**	32	0	**32**	**122**	3	0	**3**	110	2	**112**	47	8	**55**	**170**	685	24	**709**
8:30	-	**8:45**	60	9	**69**	36	1	**37**	28	12	**40**	**146**	2	1	**3**	165	1	**166**	59	4	**63**	**232**	695	33	**728**
Period End			**667**	**84**	**751**	**506**	**13**	**519**	**386**	**17**	**403**	**1673**	**30**	**7**	**37**	**1481**	**22**	**1503**	**522**	**55**	**577**	**2117**	**8733**	**292**	**9025**
16:30	-	**16:45**	37	4	**41**	112	5	**117**	92	1	**93**	**251**	5	0	**5**	145	0	**145**	42	4	**46**	**196**	772	17	**789**
16:45	-	**17:00**	51	8	**59**	117	2	**119**	77	0	**77**	**255**	5	0	**5**	158	1	**159**	34	3	**37**	**201**	747	20	**767**
17:00	-	**17:15**	42	2	**44**	119	2	**121**	71	0	**71**	**236**	3	0	**3**	108	0	**108**	60	10	**70**	**181**	774	17	**791**
17:15	-	**17:30**	59	4	**63**	102	0	**102**	103	0	**103**	**268**	5	0	**5**	117	2	**119**	34	5	**39**	**163**	773	13	**786**
Period End			**796**	**75**	**871**	**1501**	**30**	**1531**	**1186**	**9**	**1195**	**3597**	**74**	**1**	**75**	**2285**	**15**	**2300**	**691**	**62**	**753**	**3128**	**11815**	**251**	**12066**

All Vehicles Time Per 15 Mins			**SOUTH** *SMITHS CREEK BYPASS*									**WEST** *PEMBROKE ROAD*										**TOTAL**		
			L			**T**			**R**				**L**			**T**			**R**						
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45	-	**8:00**	61	0	**61**	135	4	**139**	8	0	**8**	**208**	81	0	**81**	98	8	**106**	25	0	**25**	**212**	635	27	**662**
8:00	-	**8:15**	40	0	**40**	130	0	**130**	4	0	**4**	**174**	61	8	**69**	115	1	**116**	23	2	**25**	**210**	623	24	**647**
8:15	-	**8:30**	55	2	**57**	110	1	**111**	6	1	**7**	**175**	70	0	**70**	133	0	**133**	38	1	**39**	**242**	685	24	**709**
8:30	-	**8:45**	64	2	**66**	81	1	**82**	5	0	**5**	**153**	55	0	**55**	117	1	**118**	23	1	**24**	**197**	695	33	**728**
Period End			**717**	**15**	**732**	**1523**	**18**	**1541**	**49**	**4**	**53**	**2326**	**1098**	**16**	**1114**	**1443**	**25**	**1468**	**311**	**16**	**327**	**2909**	**8733**	**292**	**9025**
16:30	-	**16:45**	39	1	**40**	42	0	**42**	1	0	**1**	**83**	58	0	**58**	138	1	**139**	61	1	**62**	**259**	772	17	**789**
16:45	-	**17:00**	32	1	**33**	40	3	**43**	1	0	**1**	**77**	52	0	**52**	145	1	**146**	35	1	**36**	**234**	747	20	**767**
17:00	-	**17:15**	39	2	**41**	50	0	**50**	3	0	**3**	**94**	57	0	**57**	157	0	**157**	65	1	**66**	**280**	774	17	**791**
17:15	-	**17:30**	34	0	**34**	48	0	**48**	4	0	**4**	**86**	60	0	**60**	148	1	**149**	59	1	**60**	**269**	773	13	**786**
Period End			**609**	**16**	**625**	**801**	**8**	**809**	**44**	**0**	**44**	**1478**	**780**	**8**	**788**	**2226**	**13**	**2239**	**822**	**14**	**836**	**3863**	**11815**	**251**	**12066**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *ROSE PAYTEN DRIVE*										EAST *PEMBROKE ROAD*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	170	29	**199**	181	3	**184**	120	13	**133**	**516**	11	2	**13**	442	6	**448**	176	22	**198**	**659**	2638	108	**2746**
Period End	**2244**	**281**	**2525**	**1745**	**47**	**1792**	**1298**	**65**	**1363**	**5680**	**107**	**26**	**133**	**4940**	**75**	**5015**	**1789**	**189**	**1978**	**7126**	**29656**	**1011**	**30667**
16:30 - 17:30	189	18	**207**	450	9	**459**	343	1	**344**	**1010**	18	0	**18**	528	3	**531**	170	22	**192**	**741**	3066	67	**3133**
Period End	**2595**	**233**	**2828**	**4951**	**107**	**5058**	**3905**	**31**	**3936**	**11822**	**243**	**4**	**247**	**7556**	**46**	**7602**	**2311**	**214**	**2525**	**10374**	**38738**	**837**	**39575**

All Vehicles Time Per Hour	SOUTH *SMITHS CREEK BYPASS*										WEST *PEMBROKE ROAD*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	220	4	**224**	456	6	**462**	23	1	**24**	**710**	267	8	**275**	463	10	**473**	109	4	**113**	**861**	2638	108	**2746**
Period End	**2509**	**48**	**2557**	**5224**	**66**	**5290**	**166**	**14**	**180**	**8027**	**3640**	**51**	**3691**	**4937**	**95**	**5032**	**1057**	**54**	**1111**	**9834**	**29656**	**1011**	**30667**
16:30 - 17:30	144	4	**148**	180	3	**183**	9	0	**9**	**340**	227	0	**227**	588	3	**591**	220	4	**224**	**1042**	3066	67	**3133**
Period End	**1941**	**56**	**1997**	**2575**	**28**	**2603**	**144**	**0**	**144**	**4744**	**2574**	**28**	**2602**	**7281**	**40**	**7321**	**2662**	**50**	**2712**	**12635**	**38738**	**837**	**39575**

Traffic Information Specialist

Location	**CAMPBELLTOWN ROAD**	**Duration**	**0600 - 1000**
	ROSE PAYTEN DRIVE		**1430 - 1830**
	CAMPBELLTOWN ROAD		-
	-	**Day/Date**	**Tuesday, 19 July 2016**
Suburb	**LEUMEAH**	**Weather**	**FINE**

All Vehicles Time Per 15 Mins			**NORTH** *CAMPBELLTOWN ROAD*									**EAST** *ROSE PAYTEN DRIVE*											
			L			T			R				L			T			R				TOTAL	
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45	-	**8:00**	129	14	**143**	294	8	**302**			**0**	**445**	11	4	**15**			**0**	159	20	**179**	**194**	957	63	**1020**
8:00	-	**8:15**	107	15	**122**	338	17	**355**			**0**	**477**	4	3	**7**			**0**	134	12	**146**	**153**	971	62	**1033**
8:15	-	**8:30**	113	19	**132**	341	12	**353**			**0**	**485**	11	6	**17**			**0**	146	14	**160**	**177**	894	66	**960**
8:30	-	**8:45**	105	18	**123**	339	21	**360**			**0**	**483**	12	3	**15**			**0**	105	13	**118**	**133**	836	73	**909**
Period End			**1382**	**263**	**1645**	**3625**	**212**	**3837**	**0**	**0**	**0**	**5482**	**132**	**40**	**172**	**0**	**0**	**0**	**2008**	**242**	**2250**	**2422**	**12041**	**1041**	**13082**
16:30	-	**16:45**	167	15	**182**	406	16	**422**			**0**	**604**	11	2	**13**			**0**	129	7	**136**	**149**	1065	58	**1123**
16:45	-	**17:00**	162	6	**168**	443	10	**453**			**0**	**621**	10	1	**11**			**0**	130	9	**139**	**150**	1181	40	**1221**
17:00	-	**17:15**	166	9	**175**	388	11	**399**			**0**	**574**	17	2	**19**			**0**	143	12	**155**	**174**	1086	39	**1125**
17:15	-	**17:30**	157	12	**169**	442	16	**458**			**0**	**627**	15	0	**15**			**0**	137	12	**149**	**164**	1153	46	**1199**
Period End			**2314**	**191**	**2505**	**6345**	**203**	**6548**	**0**	**0**	**0**	**9053**	**200**	**20**	**220**	**0**	**0**	**0**	**1783**	**139**	**1922**	**2142**	**15875**	**789**	**16664**

All Vehicles Time Per 15 Mins			**SOUTH** *CAMPBELLTOWN ROAD*									**WEST** -											
			L			T			R				L			T			R				TOTAL	
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45	-	**8:00**			**0**	297	12	**309**	67	5	**72**	**381**			**0**			**0**			**0**	**0**	957	63	**1020**
8:00	-	**8:15**			**0**	338	6	**344**	50	9	**59**	**403**			**0**			**0**			**0**	**0**	971	62	**1033**
8:15	-	**8:30**			**0**	217	11	**228**	66	4	**70**	**298**			**0**			**0**			**0**	**0**	894	66	**960**
8:30	-	**8:45**			**0**	222	9	**231**	53	9	**62**	**293**			**0**			**0**			**0**	**0**	836	73	**909**
Period End			**0**	**0**	**0**	**4223**	**180**	**4403**	**671**	**104**	**775**	**5178**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12041**	**1041**	**13082**
16:30	-	**16:45**			**0**	315	10	**325**	37	8	**45**	**370**			**0**			**0**			**0**	**0**	1065	58	**1123**
16:45	-	**17:00**			**0**	397	10	**407**	39	4	**43**	**450**			**0**			**0**			**0**	**0**	1181	40	**1221**
17:00	-	**17:15**			**0**	331	4	**335**	41	1	**42**	**377**			**0**			**0**			**0**	**0**	1086	39	**1125**
17:15	-	**17:30**			**0**	362	5	**367**	40	1	**41**	**408**			**0**			**0**			**0**	**0**	1153	46	**1199**
Period End			**0**	**0**	**0**	**4547**	**153**	**4700**	**686**	**83**	**769**	**5469**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15875**	**789**	**16664**

Traffic Information Specialist

All Vehicles Time Per 15 Mins	NORTH *CAMPBELLTOWN ROAD*										EAST *ROSE PAYTEN DRIVE*										TOTAL		
	L			T			R				L			T			R						
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	454	66	**520**	1312	58	**1370**	0	0	**0**	**1890**	38	16	**54**	0	0	**0**	544	59	**603**	**657**	3658	264	**3922**
Period End	**4821**	**883**	**5704**	**12466**	**716**	**13182**	**0**	**0**	**0**	**18886**	**416**	**143**	**559**	**0**	**0**	**0**	**6735**	**794**	**7529**	**8088**	**40690**	**3466**	**44156**
16:30 - 17:30	652	42	**694**	1679	53	**1732**	0	0	**0**	**2426**	53	5	**58**	0	0	**0**	539	40	**579**	**637**	4485	183	**4668**
Period End	**7606**	**596**	**8202**	**21039**	**670**	**21709**	**0**	**0**	**0**	**29911**	**666**	**68**	**734**	**0**	**0**	**0**	**6029**	**467**	**6496**	**7230**	**98972**	**6686**	**55574**

All Vehicles Time Per Hour	SOUTH *CAMPBELLTOWN ROAD*										WEST -										TOTAL		
	L			T			R				L			T			R						
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	**0**	1074	38	**1112**	236	27	**263**	**1375**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	3658	264	**3922**
Period End	**0**	**0**	**0**	**13952**	**588**	**14540**	**2300**	**342**	**2642**	**17182**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**40690**	**3466**	**44156**
16:30 - 17:30	0	0	**0**	1405	29	**1434**	157	14	**171**	**1605**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	4485	183	**4668**
Period End	**0**	**0**	**0**	**15400**	**503**	**15903**	**2247**	**283**	**2530**	**18433**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**98972**	**6686**	**55574**

Traffic Information Specialist

Location	**CAMPBELLTOWN ROAD**	**Duration**	**0745 - 0845**
	POUGH INN ROAD		**1630 - 1530**
	CAMPBELLTOWN ROAD		-
	HARBOUR ROAD	**Day/Date**	**Tuesday, 30 August 2016**
Suburb	**WOODBINE**	**Weather**	**FINE**

All Vehicles Time Per 15 Mins	**NORTH** *CAMPBELLTOWN ROAD*										**EAST** *POUGH INN ROAD*											
	L			**T**			**R**				**L**			**T**			**R**				**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	8	1	**9**	314	18	**332**	30	0	**30**	**371**	46	6	**52**	27	0	**27**	8	1	**9**	**88**	962	53	**1015**
8:00 - 8:15	9	1	**10**	331	21	**352**	17	1	**18**	**380**	70	7	**77**	22	1	**23**	6	0	**6**	**106**	949	48	**997**
8:15 - 8:30	9	2	**11**	375	22	**397**	35	1	**36**	**444**	72	6	**78**	23	1	**24**	7	0	**7**	**109**	1065	58	**1123**
8:30 - 8:45	9	1	**10**	327	24	**351**	32	0	**32**	**393**	53	6	**59**	18	1	**19**	4	1	**5**	**83**	930	66	**996**
Period End	**35**	**5**	**40**	**1347**	**85**	**1432**	**114**	**2**	**116**	**1588**	**241**	**25**	**266**	**90**	**3**	**93**	**25**	**2**	**27**	**386**	**3906**	**225**	**4131**
16:30 - 16:45	6	1	**7**	435	12	**447**	36	1	**37**	**491**	117	1	**118**	38	0	**38**	18	1	**19**	**175**	1224	40	**1264**
16:45 - 17:00	5	0	**5**	362	9	**371**	49	2	**51**	**427**	96	3	**99**	47	1	**48**	18	0	**18**	**165**	1211	25	**1236**
17:00 - 17:15	12	1	**13**	396	6	**402**	58	0	**58**	**473**	111	1	**112**	30	1	**31**	22	0	**22**	**165**	1208	22	**1230**
17:15 - 17:30	8	0	**8**	377	6	**383**	57	0	**57**	**448**	114	2	**116**	48	1	**49**	19	0	**19**	**184**	1233	27	**1260**
Period End	**31**	**2**	**33**	**1570**	**33**	**1603**	**200**	**3**	**203**	**1839**	**438**	**7**	**445**	**163**	**3**	**166**	**77**	**1**	**78**	**689**	**4876**	**114**	**4990**

All Vehicles Time Per 15 Mins	**SOUTH** *CAMPBELLTOWN ROAD*										**WEST** *HARBOUR ROAD*											
	L			**T**			**R**				**L**			**T**			**R**				**TOTAL**	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	**TOTAL**	LIGHT	HEAVY	**TOTAL**
7:45 - 8:00	14	2	**16**	343	21	**364**	86	1	**87**	**467**	31	0	**31**	30	3	**33**	25	0	**25**	**89**	962	53	**1015**
8:00 - 8:15	20	0	**20**	299	16	**315**	72	1	**73**	**408**	45	0	**45**	41	0	**41**	17	0	**17**	**103**	949	48	**997**
8:15 - 8:30	18	0	**18**	362	17	**379**	70	7	**77**	**474**	18	0	**18**	34	0	**34**	42	2	**44**	**96**	1065	58	**1123**
8:30 - 8:45	22	0	**22**	300	21	**321**	62	5	**67**	**410**	42	1	**43**	29	4	**33**	32	2	**34**	**110**	930	66	**996**
Period End	**74**	**2**	**76**	**1304**	**75**	**1379**	**290**	**14**	**304**	**1759**	**136**	**1**	**137**	**134**	**7**	**141**	**116**	**4**	**120**	**398**	**3906**	**225**	**4131**
16:30 - 16:45	19	1	**20**	435	19	**454**	42	3	**45**	**519**	24	0	**24**	26	1	**27**	28	0	**28**	**79**	1224	40	**1264**
16:45 - 17:00	24	0	**24**	495	7	**502**	38	0	**38**	**564**	26	2	**28**	25	0	**25**	26	1	**27**	**80**	1211	25	**1236**
17:00 - 17:15	26	0	**26**	448	9	**457**	23	2	**25**	**508**	29	1	**30**	28	1	**29**	25	0	**25**	**84**	1208	22	**1230**
17:15 - 17:30	23	1	**24**	485	12	**497**	32	3	**35**	**556**	31	0	**31**	22	1	**23**	17	1	**18**	**72**	1233	27	**1260**
Period End	**92**	**2**	**94**	**1863**	**47**	**1910**	**135**	**8**	**143**	**2147**	**110**	**3**	**113**	**101**	**3**	**104**	**96**	**2**	**98**	**315**	**4876**	**114**	**4990**

Traffic Information Specialist

All Vehicles Time Per 15 Mins			NORTH CAMPBELLTOWN ROAD									EAST POUGH INN ROAD										TOTAL		
			L			T			R				L			T			R					
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45	-	**8:45**	35	5	**40**	1347	85	**1432**	114	2	**116**	**1588**	241	25	**266**	90	3	**93**	25	2	**27**	**386**	3906	225	**4131**
16:30	-	**17:30**	31	2	**33**	1570	33	**1603**	200	3	**203**	**1839**	438	7	**445**	163	3	**166**	77	1	**78**	**689**	4876	114	**4990**

All Vehicles Time Per Hour			SOUTH CAMPBELLTOWN ROAD									WEST HARBOUR ROAD										TOTAL		
			L			T			R				L			T			R					
			LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	TOTAL
7:45	-	**8:45**	74	2	**76**	1304	75	**1379**	290	14	**304**	**1759**	136	1	**137**	134	7	**141**	116	4	**120**	**398**	3906	225	**4131**
16:30	-	**17:30**	92	2	**94**	1863	47	**1910**	135	8	**143**	**2147**	110	3	**113**	101	3	**104**	96	2	**98**	**315**	4876	114	**4990**

Traffic Information Specialist

Location	UNNAMED ROAD		Duration	0745 - 0845	
	EAGLE VALE DRIVE			1630 - 1530	
	GOULD ROAD			-	
	EAGLE VALE DRIVE		Day/Date	Tuesday, 30 August 2016	
Suburb	ESCHOL PARK		Weather	FINE	

All Vehicles	NORTH													EAST														
Time Per 15 Mins	UNNAMED ROAD													EAGLE VALE DRIVE														
	L			T			R			U				L			T			R			U				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	0	0	**0**	0	1	**1**	0	0	**0**	0	0	0	**1**	40	2	**42**	127	6	**133**	0	0	**0**	0	0	0	**175**	400	11	**411**
8:00 - 8:15	0	0	**0**	0	0	**0**	0	0	**0**	0	0	0	**0**	55	0	**55**	161	5	**166**	0	0	**0**	3	0	3	**224**	436	10	**446**
8:15 - 8:30	0	0	**0**	1	0	**1**	0	0	**0**	0	0	0	**1**	72	1	**73**	172	1	**173**	0	0	**0**	1	0	1	**247**	502	5	**507**
8:30 - 8:45	0	0	**0**	0	0	**0**	0	0	**0**	0	0	0	**0**	66	0	**66**	114	1	**115**	0	0	**0**	0	0	0	**181**	447	5	**452**
Period End	**0**	**0**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**233**	**3**	**236**	**574**	**13**	**587**	**0**	**0**	**0**	**4**	**0**	**4**	**827**	**1785**	**31**	**1816**
16:30 - 16:45	1	0	**1**	2	0	**2**	1	0	**1**	0	0	0	**4**	110	1	**111**	153	2	**155**	3	0	**3**	0	0	0	**269**	450	4	**454**
16:45 - 17:00	0	0	**0**	1	0	**1**	1	0	**1**	0	0	0	**2**	106	0	**106**	132	2	**134**	0	0	**0**	2	0	2	**242**	450	2	**452**
17:00 - 17:15	1	0	**1**	0	0	**0**	1	0	**1**	0	0	0	**2**	109	1	**110**	162	3	**165**	1	1	**2**	1	0	1	**278**	470	8	**478**
17:15 - 17:30	1	0	**1**	0	0	**0**	2	0	**2**	0	0	0	**3**	101	0	**101**	142	1	**143**	0	0	**0**	1	0	1	**245**	442	3	**445**
Period End	**3**	**0**	**3**	**3**	**0**	**3**	**5**	**0**	**5**	**0**	**0**	**0**	**11**	**426**	**2**	**428**	**589**	**8**	**597**	**4**	**1**	**5**	**4**	**0**	**4**	**1034**	**1812**	**17**	**1829**

All Vehicles	SOUTH													WEST														
Time Per 15 Mins	GOULD ROAD													EAGLE VALE DRIVE														
	L			T			R			U				L			T			R			U				TOTAL	
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	12	0	**12**	1	0	**1**	106	0	**106**	2	0	**2**	**121**	0	0	**0**	106	2	**108**	4	0	**4**	2	0	**2**	**114**	400	11	**411**
8:00 - 8:15	5	1	**6**	0	0	**0**	98	1	**99**	0	0	**0**	**105**	0	0	**0**	109	2	**111**	3	1	**4**	2	0	**2**	**117**	436	10	**446**
8:15 - 8:30	3	0	**3**	1	0	**1**	129	0	**129**	0	0	**0**	**133**	0	0	**0**	120	3	**123**	2	0	**2**	1	0	**1**	**126**	502	5	**507**
8:30 - 8:45	7	0	**7**	0	0	**0**	126	1	**127**	0	0	**0**	**134**	0	0	**0**	125	3	**128**	6	0	**6**	3	0	**3**	**137**	447	5	**452**
Period End	**27**	**1**	**28**	**2**	**0**	**2**	**459**	**2**	**461**	**2**	**0**	**2**	**493**	**0**	**0**	**0**	**460**	**10**	**470**	**15**	**1**	**16**	**8**	**0**	**8**	**494**	**1785**	**31**	**1816**
16:30 - 16:45	9	0	**9**	3	0	**3**	93	1	**94**	0	0	**0**	**106**	4	0	**4**	67	0	**67**	3	0	**3**	1	0	**1**	**75**	450	4	**454**
16:45 - 17:00	9	0	**9**	1	0	**1**	112	0	**112**	0	0	**0**	**122**	0	0	**0**	78	0	**78**	5	0	**5**	3	0	**3**	**86**	450	2	**452**
17:00 - 17:15	10	0	**10**	2	0	**2**	88	2	**90**	0	0	**0**	**102**	0	0	**0**	91	1	**92**	3	0	**3**	1	0	**1**	**96**	470	8	**478**
17:15 - 17:30	7	0	**7**	0	0	**0**	92	1	**93**	0	0	**0**	**100**	0	0	**0**	85	1	**86**	9	0	**9**	2	0	**2**	**97**	442	3	**445**
Period End	**35**	**0**	**35**	**6**	**0**	**6**	**385**	**4**	**389**	**0**	**0**	**0**	**430**	**4**	**0**	**4**	**321**	**2**	**323**	**20**	**0**	**20**	**7**	**0**	**7**	**354**	**1812**	**17**	**1829**

Traffic Information Specialist

All Vehicles Time Per 15 Mins			NORTH *UNNAMED ROAD*												EAST *EAGLE VALE DRIVE*														
			L			T			R			U				L			T			R			U					
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	TOTAL LIGHT	TOTAL HEAVY	TOTAL
7:45	-	**8:45**	0	0	**0**	1	1	**2**	0	0	**0**	0	0	**0**	**2**	233	3	**236**	574	13	**587**	0	0	**0**	4	0	**4**	**827**	1785	31	**1816**
16:30	-	**17:30**	3	0	**3**	3	0	**3**	5	0	**5**	0	0	**0**	**11**	426	2	**428**	589	8	**597**	4	1	**5**	4	0	**4**	**1034**	1812	17	**1829**

All Vehicles Time Per Hour			SOUTH *GOULD ROAD*												WEST *EAGLE VALE DRIVE*														
			L			T			R			U				L			T			R			U					
			LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	TOTAL LIGHT	TOTAL HEAVY	TOTAL
7:45	-	**8:45**	27	1	**28**	2	0	**2**	459	2	**461**	2	0	**2**	**493**	0	0	**0**	460	10	**470**	15	1	**16**	8	0	**8**	**494**	1785	31	**1816**
16:30	-	**17:30**	35	0	**35**	6	0	**6**	385	4	**389**	0	0	**0**	**430**	4	0	**4**	321	2	**323**	20	0	**20**	7	0	**7**	**354**	1812	17	**1829**

Traffic Information Specialist

Location	**CAMPBELLTOWN ROAD**	**Duration**	**0745 - 0845**
	BOUDDI STREET		**1630 - 1530**
	CAMPBELLTOWN ROAD		-
	ST ANDREWS ROAD	**Day/Date**	**Tuesday, 30 August 2016**
Suburb	**ST ANDREWS**	**Weather**	**FINE**

All Vehicles Time Per 15 Mins			**NORTH** *CAMPBELLTOWN ROAD*												**EAST** *BOUDDI STREET*														
			L			T			R			U				L			T			R			U					
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	TOTAL LIGHT	TOTAL HEAVY	TOTAL
7:45	-	**8:00**	1	0	**1**	120	15	**135**	32	4	**36**	1	1	2	**174**	20	0	**20**	14	1	**15**	15	0	**15**	0	0	0	**50**	489	53	**542**
8:00	-	**8:15**	1	0	**1**	126	20	**146**	50	1	**51**	3	0	3	**201**	23	0	**23**	13	0	**13**	22	1	**23**	0	0	0	**59**	508	47	**555**
8:15	-	**8:30**	0	0	**0**	134	16	**150**	44	2	**46**	1	1	2	**198**	20	0	**20**	16	0	**16**	11	0	**11**	0	0	0	**47**	534	41	**575**
8:30	-	**8:45**	1	0	**1**	116	15	**131**	45	4	**49**	0	1	1	**182**	17	0	**17**	20	0	**20**	6	0	**6**	0	0	0	**43**	557	39	**596**
Period End			**3**	**0**	**3**	**496**	**66**	**562**	**171**	**11**	**182**	**5**	**3**	**8**	**755**	**80**	**0**	**80**	**63**	**1**	**64**	**54**	**1**	**55**	**0**	**0**	**0**	**199**	**2088**	**180**	**2268**
16:30	-	**16:45**	2	0	**2**	165	4	**169**	109	0	**109**	1	0	1	**281**	19	0	**19**	9	0	**9**	6	0	**6**	0	0	0	**34**	561	15	**576**
16:45	-	**17:00**	3	0	**3**	145	8	**153**	130	4	**134**	1	0	1	**291**	10	0	**10**	6	0	**6**	6	0	**6**	0	0	0	**22**	513	21	**534**
17:00	-	**17:15**	1	0	**1**	138	8	**146**	149	3	**152**	0	0	0	**299**	12	0	**12**	10	0	**10**	5	0	**5**	0	0	0	**27**	598	16	**614**
17:15	-	**17:30**	4	0	**4**	162	4	**166**	155	0	**155**	0	0	0	**325**	17	0	**17**	8	0	**8**	5	0	**5**	0	0	0	**30**	597	13	**610**
Period End			**10**	**0**	**10**	**610**	**24**	**634**	**543**	**7**	**550**	**2**	**0**	**2**	**1196**	**58**	**0**	**58**	**33**	**0**	**33**	**22**	**0**	**22**	**0**	**0**	**0**	**113**	**2269**	**65**	**2334**

All Vehicles Time Per 15 Mins			**SOUTH** *CAMPBELLTOWN ROAD*												**WEST** *ST ANDREWS ROAD*														
			L			T			R			U				L			T			R			U					
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	TOTAL LIGHT	TOTAL HEAVY	TOTAL
7:45	-	**8:00**	20	0	**20**	108	26	**134**	7	2	**9**	2	0	**2**	**165**	86	0	**86**	7	2	**9**	56	2	**58**	0	0	**0**	**153**	489	53	**542**
8:00	-	**8:15**	33	0	**33**	98	15	**113**	6	1	**7**	2	1	**3**	**156**	67	3	**70**	6	1	**7**	58	4	**62**	0	0	**0**	**139**	508	47	**555**
8:15	-	**8:30**	44	0	**44**	88	14	**102**	10	0	**10**	2	0	**2**	**158**	83	2	**85**	11	4	**15**	70	2	**72**	0	0	**0**	**172**	534	41	**575**
8:30	-	**8:45**	51	3	**54**	85	9	**94**	11	0	**11**	1	1	**2**	**161**	109	1	**110**	10	3	**13**	85	2	**87**	0	0	**0**	**210**	557	39	**596**
Period End			**148**	**3**	**151**	**379**	**64**	**443**	**34**	**3**	**37**	**7**	**2**	**9**	**640**	**345**	**6**	**351**	**34**	**10**	**44**	**269**	**10**	**279**	**0**	**0**	**0**	**674**	**2088**	**180**	**2268**
16:30	-	**16:45**	38	0	**38**	119	10	**129**	14	1	**15**	1	0	**1**	**183**	33	0	**33**	10	0	**10**	35	0	**35**	0	0	**0**	**78**	561	15	**576**
16:45	-	**17:00**	49	0	**49**	69	4	**73**	25	1	**26**	1	0	**1**	**149**	30	1	**31**	10	1	**11**	28	2	**30**	0	0	**0**	**72**	513	21	**534**
17:00	-	**17:15**	65	0	**65**	113	2	**115**	29	2	**31**	3	0	**3**	**214**	32	0	**32**	15	1	**16**	26	0	**26**	0	0	**0**	**74**	598	16	**614**
17:15	-	**17:30**	43	0	**43**	89	5	**94**	27	0	**27**	0	0	**0**	**164**	30	1	**31**	19	0	**19**	38	3	**41**	0	0	**0**	**91**	597	13	**610**
Period End			**195**	**0**	**195**	**390**	**21**	**411**	**95**	**4**	**99**	**5**	**0**	**5**	**710**	**125**	**2**	**127**	**54**	**2**	**56**	**127**	**5**	**132**	**0**	**0**	**0**	**315**	**2269**	**65**	**2334**

Traffic Information Specialist

All Vehicles Time Per 15 Mins			NORTH CAMPBELLTOWN ROAD												EAST BOUDDI STREET														
			L			T			R			U				L			T			R			U				
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	TOTAL LIGHT	TOTAL HEAVY	TOTAL
7:45	-	**8:45**	3	0	**3**	496	66	**562**	171	11	**182**	5	3	**8**	**755**	80	0	**80**	63	1	**64**	54	1	**55**	0	0	**0**	**199**	2088	180	**2268**
16:30	-	**17:30**	10	0	**10**	610	24	**634**	543	7	**550**	2	0	**2**	**1196**	58	0	**58**	33	0	**33**	22	0	**22**	0	0	**0**	**113**	2269	65	**2334**

All Vehicles Time Per Hour			SOUTH CAMPBELLTOWN ROAD												WEST ST ANDREWS ROAD														
			L			T			R			U				L			T			R			U				
			LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	TOTAL LIGHT	TOTAL HEAVY	TOTAL
7:45	-	**8:45**	148	3	**151**	379	64	**443**	34	3	**37**	7	2	**9**	**640**	345	6	**351**	34	10	**44**	269	10	**279**	0	0	**0**	**674**	2088	180	**2268**
16:30	-	**17:30**	195	0	**195**	390	21	**411**	95	4	**99**	5	0	**5**	**710**	125	2	**127**	54	2	**56**	127	5	**132**	0	0	**0**	**315**	2269	65	**2334**

Traffic Information Specialist

Location	**CAMPBELLTOWN ROAD**	**Duration**	**0745 - 0845**
	-		**1630 - 1530**
	CAMPBELLTOWN ROAD		**-**
	BLAXLAND ROAD	**Day/Date**	**Tuesday, 30 August 2016**
Suburb	**WOODBINE**	**Weather**	**FINE**

All Vehicles Time Per 15 Mins			**NORTH** *CAMPBELLTOWN ROAD*								**EAST** -											
			L			T			R			L			T			R				TOTAL	
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45	-	**8:00**			**0**	266	14	**280**	126	15	**141**	**421**			**0**			**0**			**0**	**0**	815	53	**868**
8:00	-	**8:15**			**0**	266	17	**283**	112	13	**125**	**408**			**0**			**0**			**0**	**0**	809	50	**859**
8:15	-	**8:30**			**0**	300	10	**310**	135	16	**151**	**461**			**0**			**0**			**0**	**0**	929	53	**982**
8:30	-	**8:45**			**0**	382	15	**397**	124	21	**145**	**542**			**0**			**0**			**0**	**0**	979	60	**1039**
Period End			**0**	**0**	**0**	**1214**	**56**	**1270**	**497**	**65**	**562**	**1832**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3532**	**216**	**3748**
16:30	-	**16:45**			**0**	382	13	**395**	154	5	**159**	**554**			**0**			**0**			**0**	**0**	1054	40	**1094**
16:45	-	**17:00**			**0**	349	7	**356**	160	7	**167**	**523**			**0**			**0**			**0**	**0**	1287	24	**1311**
17:00	-	**17:15**			**0**	426	4	**430**	136	3	**139**	**569**			**0**			**0**			**0**	**0**	1180	20	**1200**
17:15	-	**17:30**			**0**	331	7	**338**	150	1	**151**	**489**			**0**			**0**			**0**	**0**	1106	32	**1138**
Period End			**0**	**0**	**0**	**1488**	**31**	**1519**	**600**	**16**	**616**	**2135**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4627**	**116**	**4743**

All Vehicles Time Per 15 Mins			**SOUTH** *CAMPBELLTOWN ROAD*									**WEST** *BLAXLAND ROAD*											
			L			T			R				L			T			R				TOTAL	
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45	-	**8:00**	34	0	**34**	325	15	**340**			**0**	**374**	48	9	**57**			**0**	16	0	**16**	**73**	815	53	**868**
8:00	-	**8:15**	13	0	**13**	283	14	**297**			**0**	**310**	91	6	**97**			**0**	44	0	**44**	**141**	809	50	**859**
8:15	-	**8:30**	31	2	**33**	292	16	**308**			**0**	**341**	116	8	**124**			**0**	55	1	**56**	**180**	929	53	**982**
8:30	-	**8:45**	46	3	**49**	246	8	**254**			**0**	**303**	117	13	**130**			**0**	64	0	**64**	**194**	979	60	**1039**
Period End			**124**	**5**	**129**	**1146**	**53**	**1199**	**0**	**0**	**0**	**1328**	**372**	**36**	**408**	**0**	**0**	**0**	**179**	**1**	**180**	**588**	**3532**	**216**	**3748**
16:30	-	**16:45**	44	0	**44**	293	15	**308**			**0**	**352**	120	6	**126**			**0**	61	1	**62**	**188**	1054	40	**1094**
16:45	-	**17:00**	47	0	**47**	517	4	**521**			**0**	**568**	147	4	**151**			**0**	67	2	**69**	**220**	1287	24	**1311**
17:00	-	**17:15**	34	1	**35**	358	4	**362**			**0**	**397**	139	6	**145**			**0**	87	2	**89**	**234**	1180	20	**1200**
17:15	-	**17:30**	35	4	**39**	340	14	**354**			**0**	**393**	150	4	**154**			**0**	100	2	**102**	**256**	1106	32	**1138**
Period End			**160**	**5**	**165**	**1508**	**37**	**1545**	**0**	**0**	**0**	**1710**	**556**	**20**	**576**	**0**	**0**	**0**	**315**	**7**	**322**	**898**	**4627**	**116**	**4743**

tiS Traffic Information Specialist

All Vehicles Time Per 15 Mins			NORTH *CAMPBELLTOWN ROAD*									EAST -										TOTAL	
			L			T			R			L			T			R					
			LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45	-	**8:45**	0	0	**0**	1214	56	**1270**	497	65	**562**	**1832**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	3532	216	**3748**
16:30	-	**17:30**	0	0	**0**	1488	31	**1519**	600	16	**616**	**2135**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	4627	116	**4743**

All Vehicles Time Per Hour			SOUTH *CAMPBELLTOWN ROAD*									WEST *BLAXLAND ROAD*										TOTAL	
			L			T			R			L			T			R					
			LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	S	LIGHT	HEAVY	S	LIGHT	HEAVY	S	TOTAL	LIGHT	HEAVY	TOTAL
7:45	-	**8:45**	124	5	**129**	1146	53	**1199**	0	0	**0**	**1328**	372	36	**408**	0	0	**0**	179	1	**180**	**588**	3532	216	**3748**
16:30	-	**17:30**	160	5	**165**	1508	37	**1545**	0	0	**0**	**1710**	556	20	**576**	0	0	**0**	315	7	**322**	**898**	4627	116	**4743**

Traffic Information Specialist

Location	Raby Road		Duration	0745 - 0845	
	Spitfire Drive			1630 - 1730	
	Raby Road			-	
			Day/Date	Tuesday, 30 August 2016	
Suburb	KEARNS		Weather	FINE	

All Vehicles Time Per 15 Mins	NORTH *Raby Road*										EAST *Spitfire Drive*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	0	0	0	341	8	349			0	349	52	8	60			0	0	0	0	60	608	30	638
8:00 - 8:15	0	0	0	283	11	294			0	294	73	2	75			0	0	2	2	77	547	24	571
8:15 - 8:30	1	0	1	306	4	310			0	311	70	3	73			0	1	0	1	74	607	14	621
8:30 - 8:45	0	0	0	290	6	296			0	296	77	3	80			0	0	0	0	80	631	15	646
Period End	1	0	1	1220	29	1249	0	0	0	1250	272	16	288	0	0	0	1	2	3	291	2393	83	2476
16:30 - 16:45	5	0	5	152	14	166			0	171	50	1	51			0	5	0	5	56	563	25	588
16:45 - 17:00	2	1	3	169	7	176			0	179	48	1	49			0	2	0	2	51	570	20	590
17:00 - 17:15	3	0	3	158	10	168			0	171	59	1	60			0	3	1	4	64	568	16	584
17:15 - 17:30	5	0	5	156	4	160			0	165	68	1	69			0	5	0	5	74	596	9	605
Period End	34	1	35	1306	54	1360	0	0	0	1395	424	8	432	0	0	0	24	1	25	457	2297	70	2297

All Vehicles Time Per 15 Mins	SOUTH *Raby Road*										WEST *0*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00			0	146	11	157	69	3	72	229			0			0			0	0	608	30	638
8:00 - 8:15			0	143	6	149	48	3	51	200			0			0			0	0	547	24	571
8:15 - 8:30			0	173	7	180	56	0	56	236			0			0			0	0	607	14	621
8:30 - 8:45			0	183	4	187	81	2	83	270			0			0			0	0	631	15	646
Period End	0	0	0	645	28	673	254	8	262	935	0	0	0	0	0	0	0	0	0	0	2393	83	2476
16:30 - 16:45			0	283	9	292	68	1	69	361			0			0			0	0	563	25	588
16:45 - 17:00			0	274	9	283	75	2	77	360			0			0			0	0	570	20	590
17:00 - 17:15			0	280	3	283	65	1	66	349			0			0			0	0	568	16	584
17:15 - 17:30			0	275	4	279	87	0	87	366			0			0			0	0	596	9	605
Period End	0	0	0	1112	25	1137	295	4	299	1436	0	0	0	0	0	0	0	0	0	0	2297	70	2367

All Vehicles Time Per 15 Mins	NORTH *Raby Road*										EAST *Spitfire Drive*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	1	0	1	1220	29	1249	0	0	0	1250	272	16	288	0	0	0	1	2	3	291	2393	83	2476
16:30 - 17:30	15	1	16	635	35	670	0	0	0	686	225	4	229	0	0	0	15	1	16	245	2297	70	2367

All Vehicles Time Per Hour	SOUTH *Raby Road*										WEST *0*												
	L			T			R				L			T			R				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	0	645	28	673	254	8	262	935	0	0	0	0	0	0	0	0	0	0	2393	83	2476
16:30 - 17:30	0	0	0	1112	25	1137	295	4	299	1436	0	0	0	0	0	0	0	0	0	0	2297	70	2367

Location	RABY ROAD		Duration	0745 - 0845	
	EAGLE VALE DRIVE			1630 - 1730	
	RABY ROAD			-	
Suburb	KEARNS		Day/Date	Tuesday, 30 August 2016	
			Weather	FINE	

All Vehicles	NORTH													EAST												
Time Per 15 Mins	0													RABY ROAD												
	L			T			R			U				L			T			R			U				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00			0			0			0			0	0	138	6	144	99	10	109			0	0	0	0	253	860	34	894
8:00 - 8:15			0			0			0			0	0	132	6	138	106	2	108			0	0	0	0	246	804	25	829
8:15 - 8:30			0			0			0			0	0	156	5	161	90	2	92			0	0	0	0	253	883	16	899
8:30 - 8:45			0			0			0			0	0	114	2	116	114	3	117			0	0	0	0	233	868	18	886
Period End	0	0	0	0	0	0	0	0	0	0	0	0	0	540	19	559	409	17	426	0	0	0	0	0	0	985	3415	93	3508
16:30 - 16:45			0			0			0			0	0	244	10	254	197	6	203			0	0	0	0	457	818	34	852
16:45 - 17:00			0			0			0			0	0	249	6	255	204	5	209			0	0	0	0	464	870	20	890
17:00 - 17:15			0			0			0			0	0	238	5	243	198	1	199			0	0	0	0	442	851	18	869
17:15 - 17:30			0			0			0			0	0	242	5	247	211	2	213			0	0	0	0	460	857	15	872
Period End	0	0	0	0	0	0	0	0	0	0	0	0	0	973	26	999	810	14	824	0	0	0	0	0	0	1823	3396	87	3483

All Vehicles	SOUTH													WEST												
Time Per 15 Mins	EAGLE VALE DRIVE													RABY ROAD												
	L			T			R			U				L			T			R			U				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:00	70	1	71			0	160	1	161	0	0	0	232			0	320	11	331	73	5	78	0	0	0	409	860	34	894
8:00 - 8:15	78	1	79			0	132	3	135	0	0	0	214			0	235	9	244	121	4	125	0	0	0	369	804	25	829
8:15 - 8:30	116	0	116			0	145	2	147	0	0	0	263			0	255	6	261	121	1	122	0	0	0	383	883	16	899
8:30 - 8:45	111	2	113			0	162	2	164	0	0	0	277			0	264	8	272	103	1	104	0	0	0	376	868	18	886
Period End	375	4	379	0	0	0	599	8	607	0	0	0	986	0	0	0	1074	34	1108	418	11	429	0	0	0	1537	3415	93	3508
16:30 - 16:45	83	2	85			0	92	1	93	0	0	0	178			0	130	14	144	72	1	73	0	0	0	217	818	34	852
16:45 - 17:00	99	0	99			0	101	1	102	0	0	0	201			0	144	7	151	73	1	74	0	0	0	225	870	20	890
17:00 - 17:15	96	0	96			0	102	1	103	0	0	0	199			0	137	7	144	80	4	84	0	0	0	228	851	18	869
17:15 - 17:30	95	0	95			0	85	3	88	0	0	0	183			0	144	4	148	80	1	81	0	0	0	229	857	15	872
Period End	373	2	375	0	0	0	380	6	386	0	0	0	761	0	0	0	555	32	587	305	7	312	0	0	0	899	3396	87	3483

All Vehicles	NORTH													EAST												
Time Per 15 Mins	0													RABY ROAD												
	L			T			R			U				L			T			R			U				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	540	19	559	409	17	426	0	0	0	0	0	0	985	3415	93	3508
16:30 - 17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	973	26	999	810	14	824	0	0	0	0	0	0	1823	3396	87	3483

All Vehicles	SOUTH													WEST												
Time Per Hour	EAGLE VALE DRIVE													RABY ROAD												
	L			T			R			U				L			T			R			U				TOTAL		
	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45 - 8:45	375	4	379	0	0	0	599	8	607	0	0	0	986	0	0	0	1074	34	1108	418	11	429	0	0	0	1537	3415	93	3508
16:30 - 17:30	373	2	375	0	0	0	380	6	386	0	0	0	761	0	0	0	555	32	587	305	7	312	0	0	0	899	3396	87	3483

Traffic Information Specialist

Location	-	Duration	0745 - 0845
	RABY ROAD		1630 - 1730
	CAMPBELLTOWN ROAD		-
	RABY ROAD	Day/Date	Tuesday, 30 August 2016
Suburb	RABY	Weather	FINE

All Vehicles Time Per 15 Mins		NORTH -													EAST *RABY ROAD*													
		L			T			R			U				L			T			R			U				TOTAL		
		LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45	8:00			0			0			0			0	0			0	127	19	146	47	6	53	0	0	0	199	784	53	837
8:00	8:15			0			0			0			0	0			0	134	7	141	43	11	54	0	0	0	195	669	62	731
8:15	8:30			0			0			0			0	0			0	156	6	162	41	6	47	0	0	0	209	714	28	742
8:30	8:45			0			0			0			0	0			0	117	5	122	36	6	42	0	0	0	164	686	42	728
Period End		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	534	37	571	167	29	196	0	0	0	767	2853	185	3038
16:30	16:45			0			0			0			0	0			0	224	12	236	43	2	45	0	0	0	281	651	34	685
16:45	17:00			0			0			0			0	0			0	212	10	222	38	3	41	0	0	0	263	621	36	657
17:00	17:15			0			0			0			0	0			0	200	5	205	36	3	39	0	0	0	244	624	19	643
17:15	17:30			0			0			0			0	0			0	188	7	195	38	2	40	0	0	0	235	643	20	663
Period End		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	824	34	858	155	10	165	0	0	0	1023	2539	109	2244

All Vehicles Time Per 15 Mins		SOUTH *CAMPBELLTOWN ROAD*													WEST *RABY ROAD*													
		L			T			R			U				L			T			R			U				TOTAL		
		LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45	8:00	95	3	98	0	0	0	50	2	52	0	0	0	150	162	13	175	303	10	313			0	0	0	0	488	784	53	837
8:00	8:15	92	5	97	0	0	0	48	8	56	0	0	0	153	143	16	159	209	15	224			0	0	0	0	383	669	62	731
8:15	8:30	90	2	92	0	0	0	41	0	41	0	0	0	133	145	8	153	241	6	247			0	0	0	0	400	714	28	742
8:30	8:45	94	0	94	0	0	0	44	0	44	0	0	0	138	156	6	162	239	25	264			0	0	0	0	426	686	42	728
Period End		371	10	381	0	0	0	183	10	193	0	0	0	574	606	43	649	992	56	1048	0	0	0	0	0	0	1697	2853	185	3038
16:30	16:45	124	3	127	0	0	0	42	2	44	0	0	0	171	53	2	55	165	13	178			0	0	0	0	233	651	34	685
16:45	17:00	130	3	133	0	0	0	34	1	35	0	0	0	168	40	3	43	167	16	183			0	0	0	0	226	621	36	657
17:00	17:15	105	1	106	0	0	0	37	2	39	0	0	0	145	60	0	60	186	8	194			0	0	0	0	254	624	19	643
17:15	17:30	127	2	129	0	0	0	53	0	53	0	0	0	182	49	3	52	188	6	194			0	0	0	0	246	643	20	663
Period End		486	9	368	0	0	0	166	5	127	0	0	0	495	202	8	155	706	43	571	0	0	0	0	0	0	726	2539	109	2244

All Vehicles Time Per 15 Mins		NORTH -													EAST *RABY ROAD*													
		L			T			R			U				L			T			R			U				TOTAL		
		LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45	8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	534	37	571	167	29	196	0	0	0	767	2853	185	3038
16:45	17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	600	22	622	112	8	120	0	0	0	742	1888	75	1963

All Vehicles Time Per Hour		SOUTH *CAMPBELLTOWN ROAD*													WEST *RABY ROAD*													
		L			T			R			U				L			T			R			U				TOTAL		
		LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	LIGHT	HEAVY	Σ	TOTAL	LIGHT	HEAVY	TOTAL
7:45	8:45	371	10	381	0	0	0	183	10	193	0	0	0	574	606	43	649	992	56	1048	0	0	0	0	0	0	1697	2853	185	3038
16:45	17:45	362	6	368	0	0	0	124	3	127	0	0	0	495	149	6	155	541	30	571	0	0	0	0	0	0	726	1888	75	1963

Traffic Information Specialist

Traffic and Transport Study

APPENDIX B

SIGNAL CONTROL PLANS

2016

AM Base

Intersection	Type	Cycle Time
Rose Payten Dr / Pembroke Rd	Fixed	90
Rose Payten Dr / Campbelltown Rd	Fixed	140
Campbelltown Rd / Ben Lomond Rd	Fixed	120
Camden Valley Way / Raby Rd	Fixed	140
Emerald Hills / Raby Rd	Fixed	140
Campbelltown Rd / Harbord Rd	Fixed	140
Campbelltown Rd / Blaxland Rd	Fixed	140

PM Base

Intersection	Type	Cycle Time
Rose Payten Dr / Pembroke Rd	Fixed	120
Rose Payten Dr / Campbelltown Rd	Fixed	90
Campbelltown Rd / Ben Lomond Rd	Fixed	120
Camden Valley Way / Raby Rd	Fixed	140
Emerald Hills / Raby Rd	Fixed	140
Campbelltown Rd / Harbord Rd	Fixed	120
Campbelltown Rd / Blaxland Rd	Fixed	120

2021

AM Upgrades

Intersection	Type	Cycle Time
Rose Payten Dr / Pembroke Rd	Fixed	90
Rose Payten Dr / Campbelltown Rd	Fixed	140
Campbelltown Rd / Ben Lomond Rd	Fixed	120
Camden Valley Way / Raby Rd	Fixed	140
Emerald Hills / Raby Rd	Fixed	140
Campbelltown Rd / Harbord Rd	Fixed	140
Campbelltown Rd / Blaxland Rd	Fixed	140
Spitfire Dr / Raby Rd	Fixed	120
Eagle Vale Dr / Raby Rd	Fixed	120
Campbelltown Rd Off-ramp / Raby Rd	Fixed	90
Pembroke Rd / Ben Lomond Rd	Fixed	90
Scenic Hills / Raby Rd	Fixed	120

PM Upgrades

Intersection	Type	Cycle Time
Rose Payten Dr / Pembroke Rd	Fixed	120
Rose Payten Dr / Campbelltown Rd	Fixed	90
Campbelltown Rd / Ben Lomond Rd	Fixed	120
Camden Valley Way / Raby Rd	Fixed	140
Emerald Hills / Raby Rd	Fixed	140
Campbelltown Rd / Harbord Rd	Fixed	120
Campbelltown Rd / Blaxland Rd	Fixed	120
Spitfire Dr / Raby Rd	Fixed	120
Eagle Vale Dr / Raby Rd	Fixed	140
Campbelltown Rd Off-ramp / Raby Rd	Fixed	120
Pembroke Rd / Ben Lomond Rd	Fixed	120
Scenic Hills / Raby Rd	Fixed	120

2026

AM Upgrades

Intersection	Type	Cycle Time
Rose Payten Dr / Pembroke Rd	Fixed	90
Rose Payten Dr / Campbelltown Rd	Fixed	140
Campbelltown Rd / Ben Lomond Rd	Fixed	120
Camden Valley Way / Raby Rd	Fixed	140
Emerald Hills / Raby Rd	Fixed	120
Campbelltown Rd / Harbord Rd	Fixed	140
Campbelltown Rd / Blaxland Rd	Fixed	140
Spitfire Dr / Raby Rd	Fixed	120
Eagle Vale Dr / Raby Rd	Fixed	120
Campbelltown Rd Off-ramp / Raby Rd	Fixed	90
Pembroke Rd / Ben Lomond Rd	Fixed	90
Scenic Hills / Raby Rd	Fixed	120
Thunderbolt Dr / Raby Rd	Fixed	120
Campbelltown Rd / Raby Rd	Fixed	120

PM Upgrades

Intersection	Type	Cycle Time
Rose Payten Dr / Pembroke Rd	Fixed	120
Rose Payten Dr / Campbelltown Rd	Fixed	90
Campbelltown Rd / Ben Lomond Rd	Fixed	110
Camden Valley Way / Raby Rd	Fixed	140
Emerald Hills / Raby Rd	Fixed	120
Campbelltown Rd / Harbord Rd	Fixed	120
Campbelltown Rd / Blaxland Rd	Fixed	120
Spitfire Dr / Raby Rd	Fixed	120
Eagle Vale Dr / Raby Rd	Fixed	120
Campbelltown Rd Off-ramp / Raby Rd	Fixed	120
Pembroke Rd / Ben Lomond Rd	Fixed	120
Scenic Hills / Raby Rd	Fixed	140
Thunderbolt Dr / Raby Rd	Fixed	120
Campbelltown Rd / Raby Rd	Fixed	120

2036

AM Upgrades

Intersection	Type	Cycle Time
Rose Payten Dr / Pembroke Rd	Fixed	90
Rose Payten Dr / Campbelltown Rd	Fixed	140
Campbelltown Rd / Ben Lomond Rd	Fixed	120
Camden Valley Way / Raby Rd	Fixed	140
Emerald Hills / Raby Rd	Fixed	120
Campbelltown Rd / Harbord Rd	Fixed	140
Campbelltown Rd / Blaxland Rd	Fixed	140
Spitfire Dr / Raby Rd	Fixed	120
Eagle Vale Dr / Raby Rd	Fixed	120
Campbelltown Rd Off-ramp / Raby Rd	Fixed	120
Pembroke Rd / Ben Lomond Rd	Fixed	90
Scenic Hills / Raby Rd	Fixed	120
Thunderbolt Dr / Raby Rd	Fixed	120
Campbelltown Rd / Raby Rd	Fixed	120
St Andrews Rd / Campbelltown Rd	Fixed	120
Stranraer Dr / Raby Rd	Fixed	120

PM Upgrades

Intersection	Type	Cycle Time
Rose Payten Dr / Pembroke Rd	Fixed	120
Rose Payten Dr / Campbelltown Rd	Fixed	90
Campbelltown Rd / Ben Lomond Rd	Fixed	120
Camden Valley Way / Raby Rd	Fixed	120
Emerald Hills / Raby Rd	Fixed	120
Campbelltown Rd / Harbord Rd	Fixed	120
Campbelltown Rd / Blaxland Rd	Fixed	120
Spitfire Dr / Raby Rd	Fixed	120
Eagle Vale Dr / Raby Rd	Fixed	120
Campbelltown Rd Off-ramp / Raby Rd	Fixed	120
Pembroke Rd / Ben Lomond Rd	Fixed	120
Scenic Hills / Raby Rd	Fixed	140
Thunderbolt Dr / Raby Rd	Fixed	120
Campbelltown Rd / Raby Rd	Fixed	120
St Andrews Rd / Campbelltown Rd	Fixed	120
Stranraer Dr / Raby Rd	Fixed	120

Traffic and Transport Study

APPENDIX C

BASE MODEL CALIBRATION

AM_Calibration

Intersection	Name	VissimID	Observed Flow	Modelled Flow	Difference	GEH
Camden Valley Way / Raby Rd	1NL	1-345@98.1-346@12.6	124	120	-4	0.36
	1NT	1-344@586.1-344@677.9	717	712	-5	0.19
	1EL	1-347@62.4-344@677.9	535	485	-50	2.21
	1ER	1-348@62.8-343@1017.9	161	139	-22	1.8
	1ST	1-343@927.2-343@1017.9	1345	1345	0	0
	1SR	1-342@115.3-346@12.6	807	789	-18	0.64
Raby Rd / Macarthur Grange Country Club	2EL	2-314@80.6-315@20.2	1	2	1	0.82
	2ET	2-312@618.7-312@671.6	709	651	-58	2.22
	2SL	2-317@181.6-312@671.6	1	0	-1	1.41
	2SR	2-317@181.6-316@19.6	1	0	-1	1.41
	2WT	2-313@579.2-313@631.6	904	893	-11	0.37
	2WR	2-318@77.6-315@20.2	0	3	3	2.45
Raby Rd / Thunderbolt Dr / Epping Forest Dr	3NL	3-283@100.1-281@10.0	205	222	17	1.16
	3NT	3-283@100.1-283@158.8	95	92	-3	0.31
	3NR	3-283@100.1-289@4.6	161	149	-12	0.96
	3EL	3-288@14.7-283@158.8	20	16	-4	0.94
	3ET	3-288@14.7-289@4.6	402	453	51	2.47
	3ER	3-288@14.7-282@268.2	100	104	4	0.4
	3SL	3-282@209.5-289@4.6	105	108	3	0.29
	3ST	3-282@209.5-282@268.2	109	123	14	1.3
	3SR	3-282@209.5-281@10.0	74	78	4	0.46
	3WL	3-280@1001.4-282@268.2	134	117	-17	1.52
	3WT	3-280@1001.4-281@10.0	702	702	0	0
	3WR	3-280@1001.4-283@158.8	52	40	-12	1.77
Thunderbolt Dr / Spitfire Dr	4EL	4-363@688.1-366@17.5	19	19	0	0
	4ET	4-363@688.1-363@724.8	265	304	39	2.31
	4SL	4-365@593.7-363@724.8	322	298	-24	1.36
	4SR	4-365@593.7-364@213.5	58	43	-15	2.11
	4WT	4-364@176.6-364@213.5	154	193	39	2.96
	4WR	4-364@176.6-366@17.5	127	88	-39	3.76
Raby Rd / Kearns Ave	5EL	5-297@640.9-304@13.7	36	36	0	0
	5ET	5-297@640.9-297@688.6	520	515	-5	0.22
	5SL	5-303@198.1-297@688.6	62	57	-5	0.65
	5SR	5-303@198.1-298@448.8	91	90	-1	0.11
	5WT	5-298@401.4-298@448.8	964	977	13	0.42
	5WR	5-302@82.5-304@13.7	26	22	-4	0.82
Raby Rd / Mustang Dr	6NL	6-299@188.5-298@682.7	148	146	-2	0.16
	6NR	6-299@188.5-297@452.2	19	17	-2	0.47
	6ET	6-297@406.7-297@452.2	587	534	-53	2.24
	6ER	6-301@83.3-300@10.6	62	55	-7	0.92
	6WL	6-298@637.9-300@10.6	20	16	-4	0.94
	6WT	6-298@637.9-298@682.7	1018	1049	31	0.96
Raby Rd / Eschol Dr	7EL	7-263@202.6-267@14.7	51	49	-2	0.28
	7ET	7-263@202.6-263@272.5	583	567	-16	0.67
	7SL	7-268@176.9-263@272.5	31	17	-14	2.86
	7SR	7-268@176.9-255@422.3	98	108	10	0.99
	7WT	7-255@352.2-255@422.3	1132	1175	43	1.27
	7WR	7-269@89.1-267@14.7	28	16	-12	2.56
Raby Rd / Spitfire Dr	8NL	8-261@69.1-255@517.0	281	258	-23	1.4
	8NR	8-261@69.1-262@26.6	1	0	-1	1.41
	8ET	8-263@107.8-263@151.1	633	617	-16	0.64
	8ER	8-256@57.4-256@99.8	290	352	62	3.46
	8WL	8-255@474.0-256@99.8	9	21	12	3.1
	8WT	8-255@474.0-255@517.0	1233	1260	27	0.76
Raby Rd / Eagle Vale Dr	9EL	9-254@143.9-257@14.4	380	358	-22	1.15
	9ET	9-254@143.9-263@19.8	556	625	69	2.84
	9SL	9-547@181.8-263@19.8	365	348	-17	0.9
	9SR	9-547@181.8-266@24.0	678	699	21	0.8
	9WT	9-255@601.0-266@24.0	1097	1156	59	1.76
	9WR	9-255@601.0-257@14.4	381	358	-23	1.2
Raby Rd / Campbelltown Rd / Hume Mwy	10ET	10-73@267.1-84@33.8	584	644	60	2.42
	10ER	10-73@267.1-80@19.9	222	220	-2	0.13
	10SL	10-87@21.3-84@33.8	344	349	5	0.27
	10ST	10-79@21.4-80@19.9	4	4	0	0
	10SR	10-79@21.4-86@25.9	148	140	-8	0.67
	10WL	10-81@21.4-81@82.2	725	777	52	1.9
	10WT	10-77@214.7-86@25.9	1085	1084	-1	0.03
Raby Rd / Stromeferry Cres / Stranraer Cres	11NL	11-74@191.9-91@14.0	100	104	4	0.4
	11NT	11-74@191.9-546@14.4	10	10	0	0
	11NR	11-74@191.9-89@15.6	144	145	1	0.08
	11EL	11-70@137.4-546@14.4	7	5	-2	0.82
	11ET	11-70@137.4-89@15.6	601	667	66	2.62
	11ER	11-70@137.4-544@15.7	29	21	-8	1.6
	11SL	11-75@119.3-89@15.6	52	59	7	0.94
	11ST	11-75@119.3-544@15.7	26	26	0	0
	11SR	11-75@119.3-91@14.0	35	45	10	1.58
	11WL	11-71@58.7-544@15.7	140	149	9	0.75
	11WT	11-71@58.7-91@14.0	1138	1061	-77	2.32
	11WR	11-71@58.7-546@14.4	5	15	10	3.16
Raby Rd / Campbelltown Rd / Swettenham Rd	12NL	12-34@62.5-40@27.7	4	8	4	1.63
	12NT	12-34@62.5-38@8.5	134	124	-10	0.88
	12NR	12-34@62.5-44@12.0	478	521	43	1.92
	12EL	12-42@187.1-38@8.5	14	14	0	0
	12ET	12-42@187.1-44@12.0	33	37	4	0.68
	12ER	12-42@187.1-36@6.7	27	32	5	0.92
	12SL	12-226@38.8-44@12.0	131	136	5	0.43
	12ST	12-226@38.8-36@6.7	94	95	1	0.1
	12SR	12-226@38.8-40@27.7	10	14	4	1.15
	12WL	12-41@33.2-36@6.7	733	691	-42	1.57
	12WT	12-41@33.2-40@27.7	37	46	9	1.4
	12WR	12-41@33.2-38@8.5	404	483	79	3.75
Campbelltown Rd / Campbelltown Rd	13NT	13-131@562.7-131@682.0	581	628	47	1.91
	13SL	13-129@50.7-129@186.7	1715	1710	-5	0.12
	13WL	13-134@103.9-134@222.9	257	247	-10	0.63
Campbelltown Rd / Ben Lomond Rd	14NL	14-214@64.1-208@7.9	670	656	-14	0.54
	14NT	14-214@64.1-218@41.1	244	263	19	1.19
	14EL	14-213@141.8-218@41.1	484	393	-91	4.35
	14ER	14-222@177.7-217@41.9	439	504	65	2.99
	14ST	14-27@423.5-217@41.9	172	166	-6	0.46
	14SR	14-219@76.2-208@7.9	636	655	19	0.75
Pembroke Rd / Ben Lomond Rd	15NL	15-415@211.9-412@30.9	38	38	0	0
	15NT	15-415@211.9-416@21.0	306	307	1	0.06
	15NR	15-415@211.9-414@24.9	405	390	-15	0.75
	15EL	15-408@19.3-416@21.0	75	99	24	2.57
	15ET	15-408@19.3-414@24.9	315	323	8	0.45
	15ER	15-408@19.3-420@12.1	105	106	1	0.1
	15SL	15-418@55.3-414@24.9	125	112	-13	1.19
	15ST	15-418@55.3-420@12.1	328	333	5	0.28
	15SR	15-418@55.3-412@30.9	105	117	12	1.14
	15WL	15-425@616.3-420@12.1	266	354	88	5
	15WT	15-425@616.3-412@30.9	296	275	-21	1.24
	15WR	15-425@616.3-416@21.0	74	99	25	2.69
Pembroke Rd / Rose Payten Dr	16NL	16-16@21.5-3@55.0	13	9	-4	1.21
	16NT	16-16@21.5-8@63.9	448	438	-10	0.48
	16NR	16-15@58.4-19@52.8	198	201	3	0.21
	16EL	16-5@339.6-8@63.9	224	232	8	0.53
	16ET	16-5@339.6-19@52.8	462	471	9	0.42
	16ER	16-6@77.6-13@47.6	24	25	1	0.2
	16SL	16-10@292.0-19@52.8	275	297	22	1.3
	16ST	16-10@292.0-13@47.6	473	472	-1	0.05
	16SR	16-11@62.4-3@55.0	113	115	2	0.19
	16WL	16-32@295.5-13@47.6	199	197	-2	0.14
	16WT	16-32@295.5-3@55.0	184	178	-6	0.45
	16WR	16-21@49.1-8@63.9	133	129	-4	0.35
Campbelltown Rd / Rose Payten Dr	17NL	17-120@133.7-122@45.1	520	523	3	0.13
	17NT	17-125@583.4-125@667.1	1370	1336	-34	0.92
	17EL	17-124@32.9-125@667.1	54	94	40	4.65
	17ER	17-123@83.2-1@550.4	603	629	26	1.05
	17ST	17-1@467.3-1@550.4	1112	1077	-35	1.06
	17SR	17-121@57.3-122@45.1	263	275	12	0.73
Eagle Vale Dr / Gould Rd	18NL	2000-257@152.7-554@60.0	224.2	178	-46	3.26
	18NT	2000-257@152.7-556@30.5	557.65	536	-22	0.93
	18NR	2000-257@152.7-552@44.5	0	0	0	0
	18EL	2000-533@118.3-556@30.5	28	28	0	0
	18ET	2000-533@118.3-552@44.5	2	2	0	0
	18ER	2000-533@118.3-547@49.9	507.1	498	-9	0.41
	18SL	2000-548@7.0-552@44.5	0	0	0	0
	18ST	2000-548@7.0-547@49.9	517	551	34	1.47
	18SR	2000-548@7.0-554@60.0	16	17	1	0.25
	18WL	2000-534@47.5-547@49.9	0	0	0	0
	18WT	2000-534@47.5-554@60.0	2	2	0	0
	18WR	2000-534@47.5-556@30.5	0	0	0	0

St Andrews Rd / Campbelltown Rd / Bouddi St	19NL	2001-513@16.6-527@61.7	3	3	0	0
	19NT	2001-513@16.6-515@64.6	562	581	19	0.79
	19NR	2001-513@16.6-530@47.4	182	181	-1	0.07
	19EL	2001-526@167.2-515@64.6	80	88	8	0.87
	19ET	2001-526@167.2-530@47.4	64	65	1	0.12
	19ER	2001-526@167.2-519@56.4	55	55	0	0
	19SL	2001-509@448.7-530@47.4	151	144	-7	0.58
	19ST	2001-509@448.7-519@56.4	443	492	49	2.27
	19SR	2001-509@448.7-527@61.7	37	33	-4	0.68
	19WL	2001-525@49.7-519@56.4	351	350	-1	0.05
	19WT	2001-525@49.7-527@61.7	44	44	0	0
	19WR	2001-525@49.7-515@64.6	279	258	-21	1.28
Harbord Rd / Campbelltown Rd / Plough Inn Rd	20NL	2004-125@1001.3-479@150.8	36	31	-5	0.86
	20NT	2004-125@1001.3-482@130.9	1288.8	1314	25	0.7
	20NR	2004-125@1001.3-486@67.4	104.4	97	-7	0.74
	20EL	2004-480@70.0-482@130.9	239.4	235	-4	0.29
	20ET	2004-480@70.0-486@67.4	83.7	85	1	0.14
	20ER	2004-480@70.0-1@129.7	24.3	22	-2	0.48
	20SL	2004-484@269.6-486@67.4	68.4	65	-3	0.42
	20ST	2004-484@269.6-1@129.7	1241.1	1227	-14	0.4
	20SR	2004-484@269.6-479@150.8	273.6	278	4	0.26
	20WL	2004-489@142.6-1@129.7	123.3	113	-10	0.95
	20WT	2004-489@142.6-479@150.8	126.9	126	-1	0.08
	20WR	2004-489@142.6-482@130.9	108	110	2	0.19
Blaxland Rd / Campbelltown Rd	21NT	2005-482@314.5-507@86.4	1143	1082	-61	1.83
	21NR	2005-492@93.8-499@112.8	505.8	561	55	2.39
	21SL	2005-506@416.1-499@112.8	116.1	114	-2	0.2
	21ST	2005-506@416.1-484@77.7	1199	1236	37	1.06
	21WL	2005-493@502.1-484@77.7	367.2	350	-17	0.91
	21WR	2005-493@502.1-507@86.4	162	110	-52	4.46

PM_Calibration

Intersection	Name	VissimID	Observed Flow	Modelled Flow	Difference	GEH
Camden Valley Way / Raby Rd	1NL	1-345@98.1-346@12.6	198	232	34	2.32
	1NT	1-344@586.1-344@677.9	1158	1394	236	6.61
	1EL	1-347@62.4-344@677.9	1069	1018	-51	1.58
	1ER	1-348@62.8-343@1017.9	123	105	-18	1.69
	1ST	1-343@927.2-343@1017.9	857	876	19	0.65
	1SR	1-342@115.3-346@12.6	566	597	31	1.29
Raby Rd / Macarthur Grange Country Club	2EL	2-314@80.8-315@20.0	0	7	7	3.74
	2ET	2-312@618.8-312@671.8	1207	1151	-56	1.63
	2SL	2-317@181.6-312@671.8	1	0	-1	1.41
	2SR	2-317@181.6-316@19.6	1	0	-1	1.41
	2WT	2-313@579.2-313@631.6	767	821	54	1.92
	2WR	2-318@77.6-315@20.0	0	6	6	3.46
Raby Rd / Thunderbolt Dr / Epping Forest Dr	3NL	3-282@209.5-281@10.0	89	41	-48	5.95
	3NT	3-283@100.1-283@158.8	110	102	-8	0.78
	3NR	3-283@100.1-289@4.6	146	143	-3	0.25
	3EL	3-288@14.7-283@158.8	51	38	-13	1.95
	3ET	3-288@14.7-289@4.6	923	945	22	0.72
	3ER	3-288@14.7-282@268.2	74	75	1	0.12
	3SL	3-282@209.5-289@4.6	124	137	13	1.14
	3ST	3-282@209.5-282@268.2	74	74	0	0
	3SR	3-282@209.5-281@10.0	43	41	-2	0.31
	3WL	3-280@1001.4-282@268.2	118	93	-25	2.43
	3WT	3-280@1001.4-281@10.0	535	576	41	1.74
	3WR	3-280@1001.4-283@158.8	132	142	10	0.85
Thunderbolt Dr / Spitfire Dr	4EL	4-363@688.1-366@17.5	16	6	-10	3.02
	4ET	4-363@688.1-363@724.8	72	82	10	1.14
	4SL	4-365@593.7-363@724.8	111	108	-3	0.29
	4SR	4-365@593.7-364@213.5	30	11	-19	4.2
	4WT	4-364@176.6-364@213.5	185	204	19	1.36
	4WR	4-364@176.6-366@17.5	286	242	-44	2.71
Raby Rd / Kearns Ave	5EL	5-297@640.9-304@17.3	102	101	-1	0.1
	5ET	5-297@640.9-297@688.6	1016	1031	15	0.47
	5SL	5-303@198.1-297@688.6	32	29	-3	0.54
	5SR	5-303@198.1-298@448.8	55	51	-4	0.55
	5WT	5-298@401.4-298@448.8	637	630	-7	0.28
	5WR	5-302@82.5-304@17.3	47	44	-3	0.44
Raby Rd / Mustang Dr	6NL	6-299@188.4-298@682.7	53	54	1	0.14
	6NR	6-299@188.4-297@452.2	12	10	-2	0.6
	6ET	6-297@406.7-297@452.2	1111	1124	13	0.39
	6ER	6-301@82.7-300@10.7	64	67	3	0.37
	6WL	6-298@637.9-300@10.7	33	31	-2	0.35
	6WT	6-298@637.9-298@682.7	663	646	-17	0.66
Raby Rd / Eschol Dr	7EL	7-263@202.6-267@14.7	112	97	-15	1.47
	7ET	7-263@202.6-263@272.5	1173	1179	6	0.17
	7SL	7-268@176.9-263@272.5	15	12	-3	0.82
	7SR	7-268@176.9-255@422.3	61	62	1	0.13
	7WT	7-255@352.2-255@422.3	673	683	10	0.38
	7WR	7-269@89.1-267@14.7	16	25	9	1.99
Raby Rd / Spitfire Dr	8NL	8-261@69.1-255@517.0	266	267	1	0.06
	8NR	8-261@69.1-262@26.6	8	1	-7	3.3
	8ET	8-263@107.8-263@151.1	1292	1276	-16	0.45
	8ER	8-256@57.4-256@99.8	310	266	-44	2.59
	8WL	8-255@474.0-256@99.8	35	20	-15	2.86
	8WT	8-255@474.0-255@517.0	695	725	30	1.13
Raby Rd / Eagle Vale Dr	9EL	9-254@143.9-257@14.4	729	703	-26	0.97
	9ET	9-254@143.9-263@19.8	1089	1101	12	0.36
	9SL	9-547@181.8-263@19.8	419	439	20	0.97
	9SR	9-547@181.8-266@24.0	429	422	-7	0.34
	9WT	9-255@601.0-266@24.0	588	684	96	3.81
	9WR	9-255@601.0-257@14.4	299	304	5	0.29
Raby Rd / Campbelltown Rd / Hume Mwy	10ET	10-73@266.1-84@34.8	1288	1312	24	0.67
	10ER	10-73@266.1-80@23.8	173	175	2	0.15
	10SL	10-87@20.3-84@34.8	523	500	-23	1.02
	10ST	10-79@19.5-80@23.8	1	3	2	1.41
	10SR	10-79@19.5-86@26.1	123	101	-22	2.08
	10WL	10-81@15.7-81@83.5	228	300	72	4.43
	10WT	10-77@211.0-86@26.1	784	803	19	0.67
Raby Rd / Stromeferry Cres / Stranraer Cres	11NL	11-74@191.9-91@14.0	74	70	-4	0.47
	11NT	11-74@191.9-546@14.4	22	20	-2	0.44
	11NR	11-74@191.9-89@15.6	152	153	1	0.08
	11EL	11-70@137.4-546@14.4	20	20	0	0
	11ET	11-70@137.4-89@15.6	1274	1305	31	0.86
	11ER	11-70@137.4-544@15.7	41	28	-13	2.21
	11SL	11-75@119.3-89@15.6	31	34	3	0.53
	11ST	11-75@119.3-544@15.7	11	0	-11	4.69
	11SR	11-75@119.3-91@14.0	34	27	-7	1.27
	11WL	11-71@58.7-544@15.7	178	195	17	1.24
	11WT	11-71@58.7-91@14.0	651	668	17	0.66
	11WR	11-71@58.7-546@14.4	29	40	11	1.87
Raby Rd / Campbelltown Rd / Swettenham Rd	12NL	12-34@62.5-40@27.7	2	5	3	1.6
	12NT	12-34@62.5-38@8.5	132	127	-5	0.44
	12NR	12-34@62.5-44@12.0	856	856	0	0
	12EL	12-42@187.1-38@8.5	24	24	0	0
	12ET	12-42@187.1-44@12.0	75	56	-19	2.35
	12ER	12-42@187.1-36@6.7	46	37	-9	1.4
	12SL	12-226@38.8-44@12.0	435	441	6	0.29
	12ST	12-226@38.8-36@6.7	67	103	36	3.9
	12SR	12-226@38.8-40@27.7	14	9	-5	1.47
	12WL	12-41@33.2-36@6.7	412	423	11	0.54
	12WT	12-41@33.2-40@27.7	44	27	-17	2.85
	12WR	12-41@33.2-38@8.5	298	312	14	0.8
Campbelltown Rd / Campbelltown Rd	13NT	13-131@562.7-131@682.0	422	470	48	2.27
	13SL	13-129@50.7-129@186.7	2013	1903	-110	2.49
	13WL	13-134@103.9-134@222.9	553	557	4	0.17
Campbelltown Rd / Ben Lomond Rd	14NL	14-214@64.1-208@7.9	586	558	-28	1.17
	14NT	14-214@64.1-218@41.1	385	361	-24	1.24
	14EL	14-213@151.8-218@41.1	711	624	-87	3.37
	14ER	14-222@177.7-217@41.9	748	656	-92	3.47
	14ST	14-27@423.5-217@41.9	91	120	29	2.82
	14SR	14-219@76.3-208@7.9	420	449	29	1.39
Pembroke Rd / Ben Lomond Rd	15NL	15-415@211.9-412@30.9	68	68	0	0
	15NT	15-415@211.9-416@21.0	360	315	-45	2.45
	15NR	15-415@211.9-414@24.9	437	401	-36	1.76
	15EL	15-408@19.3-416@21.0	81	79	-2	0.22
	15ET	15-408@19.3-414@24.9	340	335	-5	0.27
	15ER	15-408@19.3-420@12.1	84	80	-4	0.44
	15SL	15-418@55.3-414@24.9	157	131	-26	2.17
	15ST	15-418@55.3-420@12.1	435	422	-13	0.63
	15SR	15-418@55.3-412@30.9	175	197	22	1.61
	15WL	15-425@616.3-420@12.1	295	294	-1	0.06
	15WT	15-425@616.3-412@30.9	400	384	-16	0.81
	15WR	15-425@616.3-416@21.0	90	97	7	0.72
Pembroke Rd / Rose Payten Dr	16NL	16-16@21.5-3@55.0	18	19	1	0.23
	16NT	16-16@21.5-8@63.9	531	571	40	1.7
	16NR	16-15@58.4-19@52.8	192	182	-10	0.73
	16EL	16-5@339.6-8@63.9	148	138	-10	0.84
	16ET	16-5@339.6-19@52.8	183	188	5	0.37
	16ER	16-6@77.6-13@47.6	9	9	0	0
	16SL	16-10@292.0-19@52.8	227	267	40	2.55
	16ST	16-10@292.0-13@47.6	591	520	-71	3.01
	16SR	16-11@62.5-3@55.0	224	240	16	1.05
	16WL	16-32@295.5-13@47.6	207	214	7	0.48
	16WT	16-32@295.5-3@55.0	459	480	21	0.97
	16WR	16-21@49.1-8@63.9	344	387	43	2.25
Campbelltown Rd / Rose Payten Dr	17NL	17-120@133.7-122@45.1	694	686	-8	0.3
	17NT	17-125@583.4-125@667.1	1732	1769	37	0.88
	17EL	17-124@32.9-125@667.1	58	54	-4	0.53
	17ER	17-123@83.2-1@550.4	579	509	-70	3
	17ST	17-1@467.3-1@550.4	1434	1401	-33	0.88
	17SR	17-121@57.3-122@45.1	171	198	27	1.99
Eagle Vale Dr / Gould Rd	18NL	2000-257@152.7-554@60.0	428	408	-20	0.98
	18NT	2000-257@152.7-556@30.5	597	597	0	0
	18NR	2000-257@152.7-552@44.5	5	0	-5	3.16
	18EL	2000-533@118.3-556@30.5	35	35	0	0
	18ET	2000-533@118.3-552@44.5	6	6	0	0
	18ER	2000-533@118.3-547@49.9	447.35	471	24	1.1
	18SL	2000-548@7.0-552@44.5	4	4	0	0
	18ST	2000-548@7.0-547@49.9	371.45	392	21	1.05
	18SR	2000-548@7.0-554@60.0	20	20	0	0
	18WL	2000-534@47.5-547@49.9	3	0	-3	2.45
	18WT	2000-534@47.5-554@60.0	3	3	0	0
	18WR	2000-534@47.5-556@30.5	5	5	0	0

St Andrews Rd / Campbelltown Rd / Bouddi St	19NL	2001-513@16.6-527@61.7	10	10	0	0
	19NT	2001-513@16.6-515@64.6	760.8	695	-66	2.44
	19NR	2001-513@16.6-530@47.4	550	544	-6	0.26
	19EL	2001-526@167.2-515@64.6	69.6	79	9	1.09
	19ET	2001-526@167.2-530@47.4	33	33	0	0
	19ER	2001-526@167.2-519@56.4	22	22	0	0
	19SL	2001-509@448.7-530@47.4	224.25	197	-27	1.88
	19ST	2001-509@448.7-519@56.4	472.65	502	29	1.33
	19SR	2001-509@448.7-527@61.7	113.85	97	-17	1.64
	19WL	2001-525@49.7-519@56.4	127	129	2	0.18
	19WT	2001-525@49.7-527@61.7	56	57	1	0.13
	19WR	2001-525@49.7-515@64.6	158.4	153	-5	0.43
Harbord Rd / Campbelltown Rd / Plough Inn Rd	20NL	2004-125@1001.3-479@150.8	33	32	-1	0.18
	20NT	2004-125@1001.3-482@130.9	1603	1613	10	0.25
	20NR	2004-125@1001.3-486@67.4	203	169	-34	2.49
	20EL	2004-480@70.0-482@130.9	445	448	3	0.14
	20ET	2004-480@70.0-486@67.4	166	164	-2	0.16
	20ER	2004-480@70.0-1@129.7	78	78	0	0
	20SL	2004-484@269.6-486@67.4	94	113	19	1.87
	20ST	2004-484@269.6-1@129.7	1910	2056	146	3.28
	20SR	2004-484@269.6-479@150.8	143	153	10	0.82
	20WL	2004-489@142.6-1@129.7	113	115	2	0.19
	20WT	2004-489@142.6-479@150.8	104	104	0	0
	20WR	2004-489@142.6-482@130.9	98	96	-2	0.2
Blaxland Rd / Campbelltown Rd	21NT	2005-482@314.5-507@86.4	1519	1544	25	0.64
	21NR	2005-492@93.8-499@112.8	616	616	0	0
	21SL	2005-506@416.1-499@112.8	165	184	19	1.44
	21ST	2005-506@416.1-484@77.7	1545	1698	153	3.8
	21WL	2005-493@502.1-484@77.7	576	648	72	2.91
	21WR	2005-493@502.1-507@86.4	322	348	26	1.42

Traffic and Transport Study

APPENDIX D

INTERSECTION PERFORMANCE RESULTS

2021 AM Intersection Performance

Intersection	Movement	VissimID	Delay	Comment
Camden Valley Way / Raby Rd	1NL	1-345@93.8-346@12.6	2.52	
	1NT	1-344@582.5-344@678.5	38.26	
	1EL	1-347@62.4-344@678.5	13.41	
	1ER	1-348@62.8-343@1021.7	29.5	
	1ST	1-343@926.7-343@1021.7	12.73	
	1SR	1-342@115.3-346@12.6	25.25	
		1	20.98	*signal*
Raby Rd / Thunderbolt Dr / Epping Forest Dr	3NL	3-283@100.2-281@10.0	21.24	
	3NT	3-283@100.2-283@159.0	22.67	
	3NR	3-283@100.2-289@4.6	23.12	
	3EL	3-288@14.7-283@159.0	2.71	
	3ET	3-288@14.7-289@4.6	3	
	3ER	3-288@14.7-282@268.2	3.91	
	3SL	3-282@209.5-289@4.6	11.09	
	3ST	3-282@209.5-282@268.2	14.99	
	3SR	3-282@209.5-281@10.0	11.41	
	3WL	3-10581@0.1-282@268.2	8.49	
	3WT	3-10581@0.1-281@10.0	7.83	
	3WR	3-10581@0.1-283@159.0	10.64	
		3	23.12	*priority*
Raby Rd / Spitfire Dr	8NL	8-261@69.1-255@517.0	35.15	
	8NR	8-261@69.1-263@168.0	0	
	8ET	8-263@124.7-263@168.0	1.12	
	8ER	8-256@57.4-256@99.8	39.04	
	8WL	8-255@474.0-256@99.8	8.74	
	8WT	8-255@474.0-255@517.0	10.8	
		8	13.2	*upgraded to signals in 2021*
Raby Rd / Eagle Vale Dr	9EL	9-586@93.9-257@44.0	2.68	
	9ET	9-254@143.7-263@37.6	31.63	
	9SL	9-587@117.6-263@37.6	19.37	
	9SR	9-547@181.8-266@34.9	60.26	
	9WT	9-255@600.4-266@34.9	2.71	
	9WR	9-579@18.5-257@44.0	37.03	
		9	21.28	*upgraded to signals in 2021*
Raby Rd / Campbelltown Rd Off-ramp	10ET	10-73@267.2-596@7.4	5.01	
	10ER	10-73@267.2-80@18.6	53.75	
	10SL	10-600@22.2-596@7.4	35.94	
	10ST	10-600@22.2-80@18.6	45.43	
	10SR	10-600@22.2-86@26.0	37.83	
	10WL	10-81@28.0-81@88.8	3.49	
	10WT	10-77@214.9-86@26.0	18.89	
		10	16.94	*upgraded to signals in 2021*
Raby Rd / Campbelltown Rd / Swettenham Rd	12NL	12-34@62.5-40@27.7	33.17	
	12NT	12-34@62.5-38@8.5	16.94	
	12NR	12-34@62.5-44@12.0	14.52	
	12EL	12-42@187.1-38@8.5	30.43	
	12ET	12-42@187.1-44@12.0	53.37	
	12ER	12-42@187.1-36@6.7	47.03	
	12SL	12-226@38.8-44@12.0	3.42	
	12ST	12-226@38.8-36@6.7	5.22	
	12SR	12-226@38.8-40@27.7	2.87	
	12WL	12-41@33.2-36@6.7	3.53	
	12WT	12-41@33.2-40@27.7	3.57	
	12WR	12-41@33.2-38@8.5	14.98	
		12	53.37	*priority. Bad LOS but delay is from minor street which only has 85 vehicles of 2706 or 3%, if we ignore side street it is 29.79*
Pembroke Rd / Ben Lomond Rd	15NL	15-653@23.3-412@58.3	26.98	
	15NT	15-653@23.3-416@53.9	43.56	
	15NR	15-653@23.3-414@57.6	37.48	
	15EL	15-408@19.4-416@53.9	5.42	
	15ET	15-408@19.4-414@57.6	25.8	
	15ER	15-408@19.4-420@42.7	41.54	
	15SL	15-418@54.6-414@57.6	11.54	
	15ST	15-418@54.6-420@42.7	33.86	
	15SR	15-640@16.2-412@58.3	25.08	
	15WL	15-425@616.3-420@42.7	4.6	
	15WT	15-425@616.3-412@58.3	32.91	
	15WR	15-425@616.3-416@53.9	49.51	
		15	29.03	*upgraded to signals in 2021*
Harbord Rd / Campbelltown Rd / Plough Inn Rd	20NL	2004-125@1001.3-479@150.8	3.88	
	20NT	2004-125@1001.3-482@130.9	23.35	
	20NR	2004-125@1001.3-486@67.4	82.29	
	20EL	2004-480@70.0-482@130.9	14.4	
	20ET	2004-480@70.0-486@67.4	57.88	
	20ER	2004-480@70.0-1@128.1	57.77	
	20SL	2004-611@247.9-486@67.4	35.15	
	20ST	2004-611@247.9-1@128.1	36.64	
	20SR	2004-611@247.9-479@150.8	69.61	
	20WL	2004-489@142.6-1@128.1	11.85	
	20WT	2004-489@142.6-479@150.8	49.29	
	20WR	2004-489@142.6-482@130.9	105.97	
		2004	35.13	*signal*
Blaxland Rd / Campbelltown Rd	21NT	2005-482@314.5-507@86.4	5.09	
	21NR	2005-492@93.8-499@112.8	77.72	
	21SL	2005-506@416.1-499@112.8	7.3	
	21ST	2005-506@416.1-611@54.1	15.32	
	21WL	2005-493@502.1-611@54.1	1.8	
	21WR	2005-493@502.1-507@86.4	63.67	
		2005	22	*signal*

2021 PM Intersection Performance

Intersection	Movement	VissimID	Delay	Comment
Camden Valley Way / Raby Rd	1NL	1-345@98.1-346@12.6	3.27	
	1NT	1-344@586.8-344@678.5	42.17	
	1EL	1-347@62.4-344@678.5	17.91	
	1ER	1-348@62.8-343@1017.4	43.73	
	1ST	1-343@926.7-343@1017.4	11.28	
	1SR	1-342@115.3-346@12.6	24.42	
		1	24.51	*signal*
Raby Rd / Thunderbolt Dr / Epping Forest Dr	3NL	3-283@100.2-281@10.0	4.41	
	3NT	3-283@100.2-283@159.0	7.3	
	3NR	3-283@100.2-289@4.6	5.72	
	3EL	3-288@14.7-283@159.0	19.51	
	3ET	3-288@14.7-289@4.6	16.36	
	3ER	3-288@14.7-282@268.2	18.25	
	3SL	3-282@209.5-289@4.6	92.37	
	3ST	3-282@209.5-282@268.2	100.2	
	3SR	3-282@209.5-281@10.0	104.92	
	3WL	3-10581@0.1-282@268.2	3.71	
	3WT	3-10581@0.1-281@10.0	2.93	
	3WR	3-10581@0.1-283@159.0	4.95	
		3	104.92	*priority. Bad LOS but delay is from minor street which only has 266 vehicles of 3429 or 8%, if we ignore side street it is 19.!*
Raby Rd / Spitfire Dr	8NL	8-261@69.1-255@517.0	47.24	
	8NR	8-261@69.1-263@168.0	34.37	
	8ET	8-263@124.7-263@168.0	3.06	
	8ER	8-256@57.4-256@99.8	66.65	
	8WL	8-255@474.0-256@99.8	6.66	
	8WT	8-255@474.0-255@517.0	10.48	
		8	13.2	*upgraded to signals in 2021*
Raby Rd / Eagle Vale Dr	9EL	9-586@93.9-257@44.0	3.11	
	9ET	9-254@143.7-263@37.6	16.08	
	9SL	9-587@116.1-263@37.6	79.47	
	9SR	9-547@181.8-266@34.9	64.79	
	9WT	9-255@600.4-266@34.9	6.09	
	9WR	9-579@18.5-257@44.0	122.32	
		9	29.3	*upgraded to signals in 2021*
Raby Rd / Campbelltown Rd Off-ramp	10ET	10-73@267.2-596@7.4	20.26	
	10ER	10-73@267.2-80@18.6	34.28	
	10SL	10-600@22.2-596@7.4	35.35	
	10ST	10-600@22.2-80@18.6	35.51	
	10SR	10-600@22.2-86@26.0	31.23	
	10WL	10-81@28.0-81@88.8	10.61	
	10WT	10-77@214.9-86@26.0	41.99	
		10	28.56	*upgraded to signals in 2021*
Raby Rd / Campbelltown Rd / Swettenham Rd	12NL	12-34@62.5-40@27.7	5.19	
	12NT	12-34@62.5-38@8.5	10.93	
	12NR	12-34@62.5-44@12.0	6.63	
	12EL	12-42@187.1-38@8.5	40.17	
	12ET	12-42@187.1-44@12.0	62.56	
	12ER	12-42@187.1-36@6.7	67.82	
	12SL	12-226@38.8-44@12.0	10.86	
	12ST	12-226@38.8-36@6.7	11.59	
	12SR	12-226@38.8-40@27.7	15.52	
	12WL	12-41@33.2-36@6.7	1.81	
	12WT	12-41@33.2-40@27.7	2.53	
	12WR	12-41@33.2-38@8.5	7.7	
		12	67.82	*priority. Bad LOS but delay is from minor street which only has 150 vehicles of 2956 or 5%, if we ignore side street it is 15.!*
Pembroke Rd / Ben Lomond Rd	15NL	15-653@23.3-412@58.3	23.09	
	15NT	15-653@23.3-416@53.9	42.01	
	15NR	15-653@23.3-414@57.6	51.32	
	15EL	15-408@19.4-416@53.9	12.31	
	15ET	15-408@19.4-414@57.6	38.39	
	15ER	15-408@19.4-420@42.7	51.56	
	15SL	15-418@54.6-414@57.6	29.01	
	15ST	15-418@54.6-420@42.7	30.57	
	15SR	15-640@16.2-412@58.3	65.96	
	15WL	15-425@616.3-420@42.7	8.67	
	15WT	15-425@616.3-412@58.3	36.39	
	15WR	15-425@616.3-416@53.9	78.2	
		15	38.59	*upgraded to signals in 2021*
Harbord Rd / Campbelltown Rd / Plough Inn Rd	20NL	2004-125@1001.3-479@150.8	4.44	
	20NT	2004-125@1001.3-482@130.9	24.56	
	20NR	2004-125@1001.3-486@67.4	70.47	
	20EL	2004-480@70.0-482@130.9	17.29	
	20ET	2004-480@70.0-486@67.4	54.68	
	20ER	2004-480@70.0-1@128.1	52.02	
	20SL	2004-611@247.9-486@67.4	9.71	
	20ST	2004-611@247.9-1@128.1	22.15	
	20SR	2004-611@247.9-479@150.8	58.83	
	20WL	2004-489@142.6-1@128.1	39.45	
	20WT	2004-489@142.6-479@150.8	101.44	
	20WR	2004-489@142.6-482@130.9	64.94	
		2004	28.62	*signal*
Blaxland Rd / Campbelltown Rd	21NT	2005-482@314.5-507@86.4	4.06	
	21NR	2005-492@93.8-499@112.8	24.49	
	21SL	2005-506@416.1-499@112.8	29.77	
	21ST	2005-506@416.1-611@54.1	40.07	
	21WL	2005-493@502.1-611@54.1	2.87	
	21WR	2005-493@502.1-507@86.4	51.25	
		2005	23.09	*signal*

2026 AM Intersection Performance

Intersection	Movement	VissimID	Delay	Comment
Raby Rd / Thunderbolt Dr / Epping Forest Dr	3NL	3-730@5.4-298@18.6	62.85	
	3NT	3-730@5.4-725@20.0	59.59	
	3NR	3-283@100.3-289@4.5	68.71	
	3EL	3-799@237.5-725@20.0	19.83	
	3ET	3-799@237.5-289@4.5	30.61	
	3ER	3-729@45.6-727@16.0	48.53	
	3SL	3-728@13.1-289@4.5	35.14	
	3ST	3-728@13.1-727@16.0	38.71	
	3SR	3-282@209.8-298@18.6	56.95	
	3WL	3-574@66.7-727@16.0	4.54	
	3WT	3-574@66.7-298@18.6	12.93	
	3WR	3-731@49.3-725@20.0	75.66	
		3	26.27	*upgraded to signals in 2026*
Raby Rd / Spitfire Dr	8NL	8-261@69.1-736@82.3	38.51	
	8NR	8-261@69.1-802@21.6	0	
	8ET	8-919@19.6-802@21.6	0.69	
	8ER	8-256@57.2-256@99.6	41.88	
	8WL	8-736@39.4-256@99.6	14.6	
	8WT	8-736@39.4-736@82.3	7.51	
		8	10.65	*upgraded to signals in 2021*
Raby Rd / Eagle Vale Dr	9EL	9-586@80.9-257@34.8	3.92	
	9ET	9-254@144.1-263@37.9	27.74	
	9SL	9-587@126.2-263@37.9	21.59	
	9SR	9-547@181.8-266@15.7	39.72	
	9WT	9-734@26.7-266@15.7	5.88	
		9-734@26.7-10884@25.4	5.33	
	9WR	9-579@18.5-257@34.8	42.28	
		9	17.74	*upgraded to signals in 2021*
Raby Rd / Campbelltown Rd Off-ramp	10ET	10-73@267.2-596@7.6	5.32	
	10ER	10-73@267.2-80@18.6	42.35	
	10SL	10-600@22.1-596@7.6	37.97	
	10ST	10-600@22.1-80@18.6	27.61	
	10SR	10-600@22.1-86@26.0	36.48	
	10WL	10-81@364.5-81@425.2	2.81	
	10WT	10-77@214.9-86@26.0	24.45	
		10	18.27	*upgraded to signals in 2021*
Raby Rd / Campbelltown Rd / Swettenham Rd	12NL	12-733@48.4-40@47.8	47.74	
	12NT	12-733@48.4-38@49.0	41.85	
	12NR	12-732@48.2-44@55.4	92.25	
	12EL	12-42@187.1-38@49.0	52.75	
	12ET	12-42@187.1-44@55.4	55.13	
	12ER	12-42@187.1-36@45.0	53.87	
	12SL	12-719@21.8-44@55.4	7.88	
	12ST	12-226@39.0-36@45.0	56.98	
	12SR	12-226@39.0-40@47.8	82.07	
	12WL	12-722@7.8-36@45.0	18.49	
	12WT	12-39@108.1-40@47.8	30.3	
	12WR	12-39@108.1-38@49.0	34.27	
		12	39.83	*upgraded to signals in 2026*
Campbelltown Rd / Rose Payten Dr	17NL	17-120@132.9-122@45.1	3.25	
	17NT	17-758@181.3-758@265.1	16.68	
	17EL	17-124@32.9-758@265.1	9.72	
	17ER	17-123@83.2-610@410.8	64.76	
	17ST	17-610@327.8-610@410.8	3.59	
	17SR	17-121@57.3-122@45.1	56.58	
		17	20.16	*signal*
Harbord Rd / Campbelltown Rd / Plough Inn Rd	20NL	2004-754@119.2-479@150.8	2.22	
	20NT	2004-754@119.2-482@67.9	19.82	
	20NR	2004-754@119.2-486@67.4	74.31	
	20EL	2004-480@70.0-482@67.9	11.2	
	20ET	2004-480@70.0-486@67.4	56.81	
	20ER	2004-480@70.0-1@128.1	66.91	
	20SL	2004-611@301.4-486@67.4	34.13	
	20ST	2004-611@301.4-1@128.1	37.76	
	20SR	2004-485@55.1-479@150.8	54.28	
	20WL	2004-489@142.6-1@128.1	12.17	
	20WT	2004-489@142.6-479@150.8	48.55	
	20WR	2004-489@142.6-482@67.9	112.08	
		2004	32.01	*signal*
Emeralds Hills		2018	30.4	*signal*
Scenic Hills		193	13.77	*signal*

2026 PM Intersection Performance

Intersection	Movement	VissimID	Delay	Comment
Raby Rd / Thunderbolt Dr / Epping Forest Dr	3NL	3-710@3.7-574@117.6	66.95	
	3NT	3-710@3.7-707@15.2	72.33	
	3NR	3-283@100.7-289@4.5	75.27	
	3EL	3-791@233.7-707@15.2	20.13	
	3ET	3-791@233.7-289@4.5	20.35	
	3ER	3-708@47.1-705@15.8	56.51	
	3SL	3-711@10.2-289@4.5	44.46	
	3ST	3-711@10.2-10795@33.6	47.3	
	3SR	3-704@14.3-574@117.6	52.77	
	3WL	3-574@66.6-705@15.8	2.17	
	3WT	3-574@66.6-574@117.6	6.03	
	3WR	3-709@44.0-707@15.2	77.22	
		3	24.61	*upgraded to signals in 2026*
Raby Rd / Spitfire Dr	8NL	8-261@69.1-774@297.2	38.9	
	8NR	8-261@69.1-794@21.0	0.05	
	8ET	8-923@22.3-794@21.0	0.79	
	8ER	8-256@57.3-256@99.8	52.61	
	8WL	8-774@254.2-256@99.8	6.7	
	8WT	8-774@254.2-774@297.2	10.95	
		8	8.78	*upgraded to signals in 2021*
Raby Rd / Eagle Vale Dr	9EL	9-586@85.8-257@44.0	4.17	
	9ET	9-254@144.2-263@37.9	9.93	
	9SL	9-587@127.6-263@37.9	63.03	
	9SR	9-547@181.8-81@20.2	61.54	
		9-547@181.8-266@34.9	68.43	
	9WT	9-774@380.1-81@20.2	2.47	
		9-774@380.1-266@34.9	3.79	
	9WR	9-579@18.5-257@44.0	73.58	
		9	19.89	*upgraded to signals in 2021*
Raby Rd / Campbelltown Rd / Hume Mwy	10ET	10-73@267.2-596@7.6	29.51	
	10ER	10-73@267.2-80@18.6	51.02	
	10SL	10-600@22.1-596@7.6	39.37	
	10ST	10-600@22.1-80@18.6	44.61	
	10SR	10-600@22.1-86@26.0	43.03	
	10WL	10-81@380.0-81@439.8	0.83	
	10WT	10-77@214.9-86@26.0	48.99	
		10	34.71	*upgraded to signals in 2021*
Raby Rd / Campbelltown Rd / Swettenham Rd	12NL	12-34@61.7-40@47.0	45.58	
	12NT	12-34@61.7-723@56.7	54.27	
	12NR	12-38@59.9-713@59.6	31.42	
	12EL	12-42@187.1-723@56.7	57.2	
	12ET	12-42@187.1-713@59.6	52.94	
	12ER	12-42@187.1-36@10.4	62.08	
	12SL	12-719@25.5-713@59.6	32.3	
	12ST	12-226@38.8-36@10.4	48.89	
	12SR	12-226@38.8-40@47.0	56.87	
	12WL	12-722@13.7-36@10.4	8.78	
	12WT	12-39@107.9-723@56.7	31.1	
	12WR	12-39@107.9-40@47.0	37.04	
		12	31.26	*upgraded to signals in 2026*
Campbelltown Rd / Rose Payten Dr	17NL	17-120@226.5-122@45.1	2.64	
	17NT	17-776@224.7-776@308.5	17.72	
	17EL	17-124@32.9-776@308.5	7.61	
	17ER	17-123@83.2-610@410.8	39.01	
	17ST	17-610@327.8-610@410.8	10.68	
	17SR	17-121@57.3-122@45.1	38.98	
		17	16.35	*signal*
Harbord Rd / Campbelltown Rd / Plough Inn Rd	20NL	2004-776@642.1-479@150.8	1.44	
	20NT	2004-776@642.1-482@72.4	20.92	
	20NR	2004-776@642.1-486@67.4	70.57	
	20EL	2004-480@70.0-482@72.4	6.75	
	20ET	2004-480@70.0-486@67.4	56.17	
	20ER	2004-480@70.0-1@128.1	68.38	
	20SL	2004-611@298.1-486@67.4	27.47	
	20ST	2004-611@298.1-1@128.1	39.83	
	20SR	2004-485@51.3-479@150.8	47.14	
	20WL	2004-489@142.6-1@128.1	34.81	
	20WT	2004-489@142.6-479@150.8	84.91	
	20WR	2004-489@142.6-482@72.4	61.61	
		2004	34.47	*signal*
Emeralds Hills		2028	25.5	*signal*
Scenic Hills		193	17.56	*signal*

2036 AM Intersection Performance

Intersection	Movement	VissimID	Delay	Comment
Camden Valley Way / Raby Rd	1NL	1-345@93.8-346@12.6	6.68	
	1NT	1-344@582.5-344@678.5	48.69	
	1EL	1-347@121.2-344@678.5	9.76	
	1ER	1-348@62.8-343@1021.7	41.37	
	1ST	1-343@926.7-343@1021.7	13.5	
	1SR	1-342@115.3-346@12.6	27.84	
		1	24.33	*signal*
Raby Rd / Campbelltown Rd Off-ramp	10ET	10-73@267.2-596@7.6	13.53	
	10ER	10-73@267.2-80@18.6	108.5	
	10SL	10-600@22.1-596@7.6	47.66	
	10ST	10-600@22.1-80@18.6	48.76	
	10SR	10-600@22.1-86@26.0	94.26	
	10WL	10-81@364.5-81@425.2	3.41	
	10WT	10-77@214.9-86@26.0	23.72	
		10	25.11	*upgraded to signals in 2021*
Raby Rd / Stromeferry Cres / Stranraer Cres	11NL	11-74@192.5-91@29.1	59.89	
	11NT	11-74@192.5-546@27.2	48.43	
	11NR	11-896@31.6-89@30.6	55.94	
	11EL	11-70@137.5-546@27.2	3.7	
	11ET	11-70@137.5-89@30.6	5.56	
	11ER	11-897@35.9-544@31.6	178.18	
	11SL	11-75@119.3-89@30.6	100.32	
	11ST	11-75@119.3-544@31.6	82.15	
	11SR	11-75@119.3-91@29.1	101.51	
	11WL	11-71@58.9-544@31.6	21.32	
	11WT	11-71@58.9-91@29.1	21.79	
	11WR	11-898@37.0-546@27.2	108.69	
		11	25.14	*upgraded to signals in 2036*
Raby Rd / Campbelltown Rd / Swettenham Rd	12NL	12-733@106.5-40@47.8	47.33	
	12NT	12-733@106.5-38@49.0	86.42	
	12NR	12-732@107.2-44@55.4	168.54	
	12EL	12-42@187.1-38@49.0	88.53	
	12ET	12-42@187.1-44@55.4	67.39	
	12ER	12-42@187.1-36@45.0	67.53	
	12SL	12-719@21.8-44@55.4	8.55	
	12ST	12-226@39.0-36@45.0	51.18	
	12SR	12-226@39.0-40@47.8	61.16	
	12WL	12-722@25.7-36@45.0	5.91	
	12WT	12-39@108.1-40@47.8	19.02	
	12WR	12-39@108.1-40@47.8	19.02	
		12	42.78	*upgraded to signals in 2026*
Campbelltown Rd / Ben Lomond Rd	14NL	14-215@34.2-208@7.9	2.8	
	14NT	14-214@64.1-218@41.1	52.06	
	14EL	14-213@151.8-218@41.1	1.44	
	14ER	14-222@177.7-217@41.9	63.12	
	14ST	14-895@101.1-217@41.9	3.21	
	14SR	14-219@76.2-208@7.9	28.77	
		14	25.52	*signal*
Pembroke Rd / Ben Lomond Rd	15NL	15-653@69.5-412@61.1	34.21	
	15NT	15-653@69.5-416@53.9	52.03	
	15NR	15-653@69.5-414@57.6	40.25	
	15EL	15-408@16.6-416@53.9	8.99	
	15ET	15-408@16.6-414@57.6	27.75	
	15ER	15-408@16.6-420@42.7	44.52	
	15SL	15-642@14.1-414@57.6	3.49	
	15ST	15-418@54.6-420@42.7	32.72	
	15SR	15-640@16.2-412@61.1	26.71	
	15WL	15-425@616.3-420@42.7	2.66	
	15WT	15-425@616.3-412@61.1	35.56	
	15WR	15-425@616.3-416@53.9	40.06	
		15	29.7	*upgraded to signals in 2021*
Pembroke Rd / Rose Payten Dr	16NL	16-16@21.5-3@55.0	6.04	
	16NT	16-16@21.5-8@63.9	28.1	
	16NR	16-15@58.4-19@52.8	45.58	
	16EL	16-5@339.6-8@63.9	8.11	
	16ET	16-5@339.6-19@52.8	37.91	
	16ER	16-6@77.6-13@47.6	24.27	
	16SL	16-10@292.0-19@52.8	7.65	
	16ST	16-10@292.0-13@47.6	27.48	
	16SR	16-11@77.9-3@55.0	38.58	
	16WL	16-32@295.5-13@47.6	3.84	
	16WT	16-32@295.5-3@55.0	35.68	
	16WR	16-21@49.1-8@63.9	44.38	
		16	26.67	*signal*
Campbelltown Rd / Rose Payten Dr	17NL	17-120@132.9-122@45.1	4.07	
	17NT	17-758@181.3-758@265.1	16.67	
	17EL	17-124@32.9-758@265.1	35.66	
	17ER	17-123@83.2-610@410.8	105.2	
	17ST	17-610@327.8-610@410.8	7.94	
	17SR	17-121@57.3-122@45.1	67.57	
		17	28.11	*signal*
Harbord Rd / Campbelltown Rd / Plough Inn Rd	20NL	2004-754@119.2-479@150.8	1.68	
	20NT	2004-754@119.2-482@75.8	20.95	
	20NR	2004-754@119.2-486@67.4	81.02	
	20EL	2004-480@70.0-482@75.8	10.8	
	20ET	2004-480@70.0-486@67.4	57.05	
	20ER	2004-480@70.0-1@128.1	61.92	
	20SL	2004-912@39.4-486@67.4	39.27	
	20ST	2004-912@39.4-1@128.1	44.03	
	20SR	2004-485@51.2-479@150.8	59.99	
	20WL	2004-489@142.6-1@128.1	19.86	
	20WT	2004-489@142.6-479@150.8	46.14	
	20WR	2004-489@142.6-482@75.8	69.63	
		2004	34.39	*signal*
Blaxland Rd / Campbelltown Rd	21NT	2005-756@67.8-507@85.9	6.05	
	21NR	2005-492@180.2-499@112.8	88.31	
	21SL	2005-876@25.7-499@112.8	7.85	
	21ST	2005-876@25.7-611@54.1	15.85	
	21WL	2005-493@502.1-611@54.1	1.96	
	21WR	2005-493@502.1-507@85.9	62.02	
		2005	25.76	*signal*
St Andrews Rd / Campbelltown Rd / Bouddi St	19NL	2001-513@17.5-885@17.1	46.07	
	19NT	2001-513@17.5-515@86.1	39.78	
	19NR	2001-10995@8.8-530@84.4	45.93	
	19EL	2001-526@167.5-515@86.1	62.23	
	19ET	2001-526@167.5-530@84.4	52.27	
	19ER	2001-526@167.5-519@84.2	47.83	
	19SL	2001-509@448.3-530@84.4	11.42	
	19ST	2001-509@448.3-519@84.2	44.07	
	19SR	2001-509@448.3-885@17.1	75.63	
	19WL	2001-525@49.7-519@84.2	34.77	
	19WT	2001-525@49.7-885@17.1	36.85	
	19WR	2001-525@49.7-515@86.1	32.84	
		2001	39.74	*upgraded to signals in 2036*
Eagle Vale Dr / Gould Rd	18NL	2000-257@192.0-554@56.6	4.69	
	18NT	2000-257@192.0-556@30.5	2.9	
	18NR	2000-257@192.0-552@41.9	0	
	18EL	2000-533@118.2-556@30.5	8.57	
	18ET	2000-533@118.2-552@41.9	25.81	
	18ER	2000-533@118.2-547@28.7	11.28	
	18SL	2000-548@7.0-552@41.9	0	
	18ST	2000-548@7.0-547@28.7	5.02	
	18SR	2000-548@7.0-554@56.6	3.84	
	18WL	2000-534@47.5-547@28.7	0	
	18WT	2000-534@47.5-554@56.6	0.52	
	18WR	2000-534@47.5-556@30.5	0	
		2000	25.81	*priority*
Scenic Hills		193	19.48	*signal*

2036 PM Intersection Performance

Intersection	Movement	VissimID	Delay	Comment
Camden Valley Way / Raby Rd	1NL	1-345@98.1-346@12.6	6.02	
	1NT	1-344@586.8-344@678.5	37.32	
	1EL	1-347@141.4-344@678.5	12.06	
	1ER	1-348@63.3-343@1017.4	32.96	
	1ST	1-343@926.7-343@1017.4	8.75	
	1SR	1-342@115.3-346@12.6	40.54	
		1	23.13	*signal*
Raby Rd / Campbelltown Rd / Hume Mwy	10ET	10-73@267.2-596@7.6	21.17	
	10ER	10-73@267.2-80@18.6	57.59	
	10SL	10-600@22.2-596@7.6	49.14	
	10ST	10-600@22.2-80@18.6	62.03	
	10SR	10-600@22.2-86@26.0	53.84	
	10WL	10-81@379.9-81@439.8	1.16	
	10WT	10-77@214.9-86@26.0	58.42	
		10	36.42	*upgraded to signals in 2021*
Raby Rd / Stromeferry Cres / Stranraer Cres	11NL	11-74@192.0-91@30.3	51.89	
	11NT	11-74@192.0-546@18.2	38.6	
	11NR	11-850@42.0-89@33.5	53.38	
	11EL	11-70@137.5-546@18.2	20.48	
	11ET	11-70@137.5-89@33.5	21.17	
	11ER	11-849@34.2-544@23.8	127.82	
	11SL	11-75@119.3-89@33.5	91.56	
	11ST	11-75@119.3-544@23.8	0	
	11SR	11-75@119.3-91@30.3	80.29	
	11WL	11-71@58.7-544@23.8	29.33	
	11WT	11-71@58.7-91@30.3	33.24	
	11WR	11-851@34.5-546@18.2	224.3	
		11	31.43	*upgraded to signals in 2036*
Raby Rd / Campbelltown Rd / Swettenham Rd	12NL	12-34@61.7-40@47.0	73.97	
	12NT	12-34@61.7-723@56.7	66.61	
	12NR	12-38@102.3-713@59.6	32.91	
	12EL	12-42@187.1-723@56.7	59.34	
	12ET	12-42@187.1-713@59.6	58.45	
	12ER	12-42@187.1-36@10.4	63.54	
	12SL	12-719@24.9-713@59.6	40.97	
	12ST	12-226@38.8-36@10.4	57.16	
	12SR	12-226@38.8-40@47.0	55.2	
	12WL	12-722@30.1-36@10.4	19.92	
	12WT	12-39@107.9-723@56.7	58.35	
	12WR	12-39@107.9-40@47.0	52.81	
		12	40.89	*upgraded to signals in 2026*
Campbelltown Rd / Ben Lomond Rd	14NL	14-214@64.1-208@7.9	31.12	
	14NT	14-214@64.1-218@41.1	54.7	
	14EL	14-213@141.9-218@41.1	2.91	
	14ER	14-222@177.7-217@41.9	68.6	
	14ST	14-870@96.1-217@41.9	9.52	
	14SR	14-219@76.2-208@7.9	28.66	
		14	35.56	*signal*
Pembroke Rd / Ben Lomond Rd	15NL	15-653@68.3-412@58.3	25.61	
	15NT	15-653@68.3-416@53.9	42.17	
	15NR	15-653@68.3-414@57.6	54.93	
	15EL	15-408@19.4-416@53.9	17.17	
	15ET	15-408@19.4-414@57.6	42.08	
	15ER	15-408@19.4-420@42.7	59	
	15SL	15-418@54.6-414@57.6	35	
	15ST	15-418@54.6-420@42.7	39.61	
	15SR	15-640@16.2-412@58.3	66.98	
	15WL	15-657@8.2-420@42.7	2.42	
	15WT	15-425@616.4-412@58.3	46.55	
	15WR	15-655@10.3-416@53.9	53.83	
		15	41.59	*upgraded to signals in 2021*
Pembroke Rd / Rose Payten Dr	16NL	16-16@21.5-3@55.0	17.4	
	16NT	16-16@21.5-8@63.9	41.84	
	16NR	16-15@58.4-19@52.8	40.35	
	16EL	16-5@339.6-8@63.9	4.66	
	16ET	16-5@339.6-19@52.8	58.85	
	16ER	16-6@44.7-13@47.6	60.63	
	16SL	16-10@292.0-19@52.8	16.67	
	16ST	16-10@292.0-13@47.6	38.82	
	16SR	16-11@60.8-3@55.0	51.67	
	16WL	16-32@295.5-13@47.6	15.32	
	16WT	16-32@295.5-3@55.0	40.09	
	16WR	16-21@49.1-8@63.9	59.08	
		16	39.08	*signal*
Campbelltown Rd / Rose Payten Dr	17NL	17-120@133.8-122@45.1	3.52	
	17NT	17-776@224.7-776@308.5	18.36	
	17EL	17-124@32.9-776@308.5	13.09	
	17ER	17-123@83.2-839@299.8	46.59	
	17ST	17-839@216.8-839@299.8	9.8	
	17SR	17-121@57.3-122@45.1	33.97	
		17	17.11	*signal*
Harbord Rd / Campbelltown Rd / Plough Inn Rd	20NL	2004-776@642.1-479@150.8	5.31	
	20NT	2004-776@642.1-482@85.1	22.18	
	20NR	2004-776@642.1-486@67.4	87.11	
	20EL	2004-480@70.0-482@85.1	10.18	
	20ET	2004-480@70.0-486@67.4	54.06	
	20ER	2004-480@70.0-1@128.1	55.92	
	20SL	2004-834@33.2-486@67.4	34.82	
	20ST	2004-834@33.2-1@128.1	32.83	
	20SR	2004-485@42.0-479@150.8	47.63	
	20WL	2004-489@142.6-1@128.1	41.47	
	20WT	2004-489@142.6-479@150.8	95.61	
	20WR	2004-489@142.6-482@85.1	62.42	
		2004	32.29	*signal*
Blaxland Rd / Campbelltown Rd	21NT	2005-778@56.1-507@85.9	3.67	
	21NR	2005-492@179.7-499@112.8	29.59	
	21SL	2005-830@23.7-499@112.8	20.85	
	21ST	2005-830@23.7-611@54.1	40.67	
	21WL	2005-493@502.1-611@54.1	7.1	
	21WR	2005-493@502.1-507@85.9	50.71	
		2005	23.75	*signal*
St Andrews Rd / Campbelltown Rd / Bouddi St	19NL	2001-513@17.4-859@16.6	9.36	
	19NT	2001-513@17.4-515@89.1	15.16	
	19NR	2001-10979@5.1-530@81.9	28.32	
	19EL	2001-526@167.3-515@89.1	49.25	
	19ET	2001-526@167.3-530@81.9	57.47	
	19ER	2001-526@167.3-519@87.6	48.19	
	19SL	2001-509@448.8-530@81.9	22.66	
	19ST	2001-509@448.8-519@87.6	47.63	
	19SR	2001-509@448.8-859@16.6	98.73	
	19WL	2001-525@49.7-519@87.6	61.28	
	19WT	2001-525@49.7-859@16.6	65.36	
	19WR	2001-525@49.7-515@89.1	70.98	
		2001	37.18	*upgraded to signals in 2036*
Eagle Vale Dr / Gould Rd	18NL	2000-257@196.6-554@60.0	4.06	
	18NT	2000-257@196.6-556@30.5	2.66	
	18NR	2000-257@196.6-552@42.0	0	
	18EL	2000-533@118.2-556@30.5	16.88	
	18ET	2000-533@118.2-552@42.0	17.14	
	18ER	2000-533@118.2-547@33.7	20.26	
	18SL	2000-548@7.0-552@42.0	4.08	
	18ST	2000-548@7.0-547@33.7	4.08	
	18SR	2000-548@7.0-554@60.0	9.14	
	18WL	2000-534@47.5-547@33.7	0	
	18WT	2000-534@47.5-554@60.0	10.99	
	18WR	2000-534@47.5-556@30.5	15.12	
		2000	20.26	*priority*
Scenic Hills		193	10.22	*signals*